

Environmental and Social Due Diligence Report

Project Number: 47083-004
September 2021

INDIA: Accelerating Infrastructure Investment Facility in India – Tranche 3

Ashoka Ankleshwar Manubar Expressway Private Limited (Part 8 of 24)

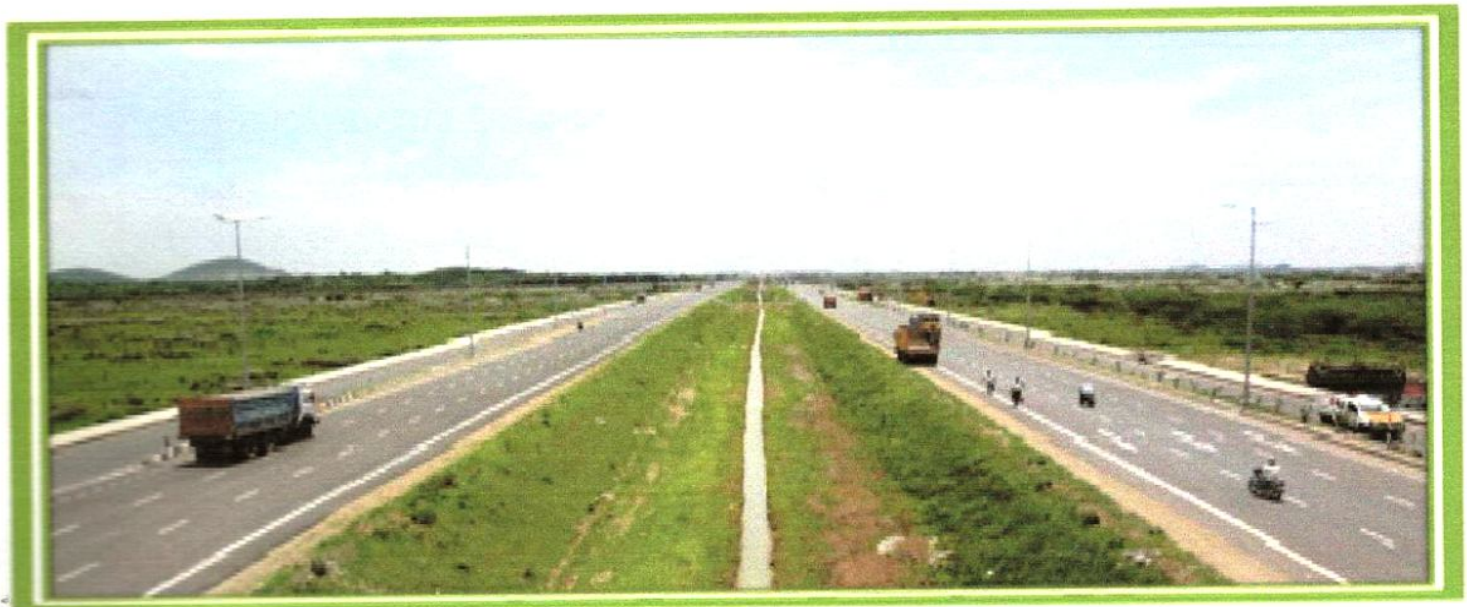
Prepared by India Infrastructure Finance Company Limited for the India Infrastructure Finance Company Limited and the Asian Development Bank.





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VADODARA KIM EXPRESSWAY (PACKAGE-IV), BHARUCH, GUJRAT

Environment Management Plan (EMP)



Rev:00	Prepared by	Reviewed by	Verified By	Approved by
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CHAPTER – 1

.BRIEF INTRODUCTION OF PROJECT

1.1 Project Details

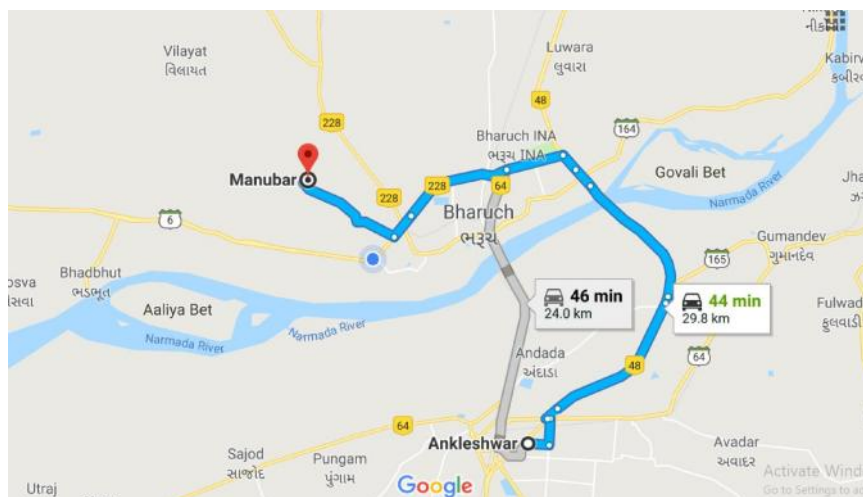
The project encompasses construction of Eight lane Vadodara Kim Expressway from Km 279.00 to Km 292 (Ankleshwar to Manubar Section of Vadodara Mumbai Expressway) in the state of Gujrat under NHDP phase-VI on Hybrid Annuity mode (phase IA-Package IV). As described in Annex-I of **Scheduled-B** and in **Scheduled-C**. This section of expressway starts from Hansot-Ankleshwar Road (old SH 6s) near Ankleshwar and then crosses Narmada River in Bharuch District. After Crossing Narmada the alignment crosses SH 6 leads to Bharuch on the east -an Industrial hub to Dahej on the west-an important Port . The alignment end just before Jambusar-Bharuch Road which has recently been upgraded to a National Highway NH 228 near village Manubar. The terrain is plain.

BRIDGES

A major bridge over Narmada river (length 2.5 km) at ch. 285.482.

FLYOVER

Only one Fly over having length 69.577m at ch. 279.353



Road Map

Details of Structure from km 279-km292

S.No	Type of Structure	Nos	Remarks
1.	Box Culvert	24	
2.	Fly Over	1	
3.	HPC	11	
4.	CUP	7	
5.	Canal	2	
6.	LVUP	3	
7.	Major Bridge over Narmada River	1	
8.	MNRB	2	
9.	MJRB Canal	1	
10.	Interchange	1	
11.	VUP	2	
Total		55	

Table-1

CHAPTER – 2

STATUTORY AND REGULATORY REQUIREMENTS

2.1. Legal Compliance

The Concessionaire, M/s. Ashoka Buildcon Limited, commits to attend all the environmental stipulated conditions over which obtained permission, NOC and license for compliance of legal and statutory requirements from the concerned authority for the execution of project. We shall conduct our operations in such a manner so that we protect the property, health of public and prevent damage to natural ecosystem and environment at the entire location on and off the project sites.

This will be achieved by the incorporation of following:

- 1. Organization set-up for responsibility of EHS management System*
- 2. Sound Management Planning in execution of works*
- 3. Strong Commitment for remedial actions on Environmental Management Plan*
- 4. High degree Commitments on Pollution Prevention and Abatement*
- 5. Prompt actions for the safeguards of natural ecosystem and environment*
- 6. Commitment for continuous monitoring and reporting on environmental aspects*
- 7. Occupational, Health and Safety for staffs and workers*
- 8. Prompt actions on the safety for road –users and Personnel safety for workers*
- 9. Addressing grievances redress and approach*
- 10. Training and participation*

2.2. NOC/ Permit/ License

- 1.** NOC for new quarries from Department of Mines and Geology, State Pollution Control Board, land conversion from State Revenue Department and District Administration. If mining area comes under forest land, permission from State Forest Department;
- 2.** NOC from Pollution Control Board and the Village *Panchayat* for the installation of crushers plant (as per the recent guidelines from Supreme Court);
- 3.** License for use of explosive from the office of Explosives controller;
- 4.** Permission for withdrawal of ground water from the Central Ground Water Authority and pond / river from Village *Panchayat* / Irrigation Department as applicable;
- 5.** NOC from State pollution Control boards for consent of establishment (CFE) and consent of operation (CFO) for setting up Batching Plant;
- 6.** NOC from State Pollution Control Board for Establishment and Operation of Drum Mix Asphalt Plant, WMM Plant.
- 7.** Borrow Earth: i) *Permission required from Village Panchayat and owner of the land in case of private land ;ii) Permission from Local Municipalities and Development Authorities;*

8. Permission of State Forest Department for cutting of trees, if any ;i) Ministry of Finance / RBI: i)Approval for foreign investment and foreign loans, if required; ii) Approval for import of equipment and machinery for construction and operation, if required; iii) Exemption of Excise Duty on construction materials, if required;
9. Department of Telecommunication: i)Permission / clearance for setting up of wireless system, if required; ii) Clearance / permission for the use of optical fiber cables from the Department of Telecommunication, if required;
10. Electricity :i) Consent from State Pollution Control Board for installation of Diesel Generator (DG); ii) Permission required from State Electricity Board (SEB) for electrical connection, if power source is available;
11. Sewage Lines and Water Mains :i)Permission from local Municipalities and Development Authorities; and
12. Any other permits or clearances required under Applicable Laws.

2.3 Applicable Law and Acts

Apart the above, the ABL shall obtain all applicable Permits and NOC required for environmental protection and conservation from the Competent Authority as provision under the acts and rules governed in India and applicable for this project.

Health, Safety & Environment Rules and Regulations applicable for project site :-

MOEF&CC Requirement Road construction - EIA Report & Environment clearance from MOEF- Applicable
Environment Protection Act :1986 - - Applicable
The Water (Prevention & control of pollution) Act, 1974 - - Applicable
The Water (Prevention & Control of pollution) Cess Act, 1977, including rules, 1978 - - Applicable
The Air (Prevention & control of pollution) Act, 1984 - - Applicable
The Hazardous Waste (Management & Handling) Rules, 2000 - - Applicable
Manufacture, Storage & Import of Hazardous Chemicals Rules, 1989 - - Applicable
Forest clearance for tree cutting (Local, State and Centre if required) -- Applicable
Local authority or Grampanchayat permission (NOC) for establishment of plant - Applicable
District Industry Centre permission for industry - Applicable
Factory Act: 1948 (Crusher VSI & HMP) Plant Establishment - Applicable
State Factory Rule (Director of Industrial Safety and Health requirement) -Applicable
Building and Other Construction worker Act, 1996 Applicable
The Mines & Minerals Act, 1957 -- Applicable
Land acquisition Rule-1998 -Applicable
Petroleum Rules, 1976 (Petroleum & Explosive Department) - - Applicable
The Indian Electricity Rules, 1956 - - Applicable
Batteries Act, 1989 - - Applicable
Minimum Wages Act, 1948 - - Applicable

CHAPTER – 03
INSTITUTIONAL ARRANGEMENT AND
ENVIRONMENT MANAGEMENT SYSTEM

3.1 Health, Safety and Environment Policy

Health, Safety & Environment Policy

We, at **Ashoka Buildcon Limited** are committed to become an icon in infrastructure development, through innovation, professionalism, active leadership in product quality and sustained growth by delivering value to our Clients.

We shall conduct our operations in a manner so that we protect people, property and the environment by identifying, controlling and reducing all associated risks to a level As Low As Reasonably Practicable.

This will be achieved by:-

1. Our commitment to continual improvement of quality, environmental and occupational health and safety management system performance
2. Commitment to prevention of pollution, injury and ill health.
3. Complying with all applicable legal and contractual requirements.
4. Adopting state of art technology available.
5. Communicating and consulting all associated stakeholders for establishing organizational objectives.

Quality, Health, safety and Environmental Objectives

To improve Planning

To reduce customer complaints

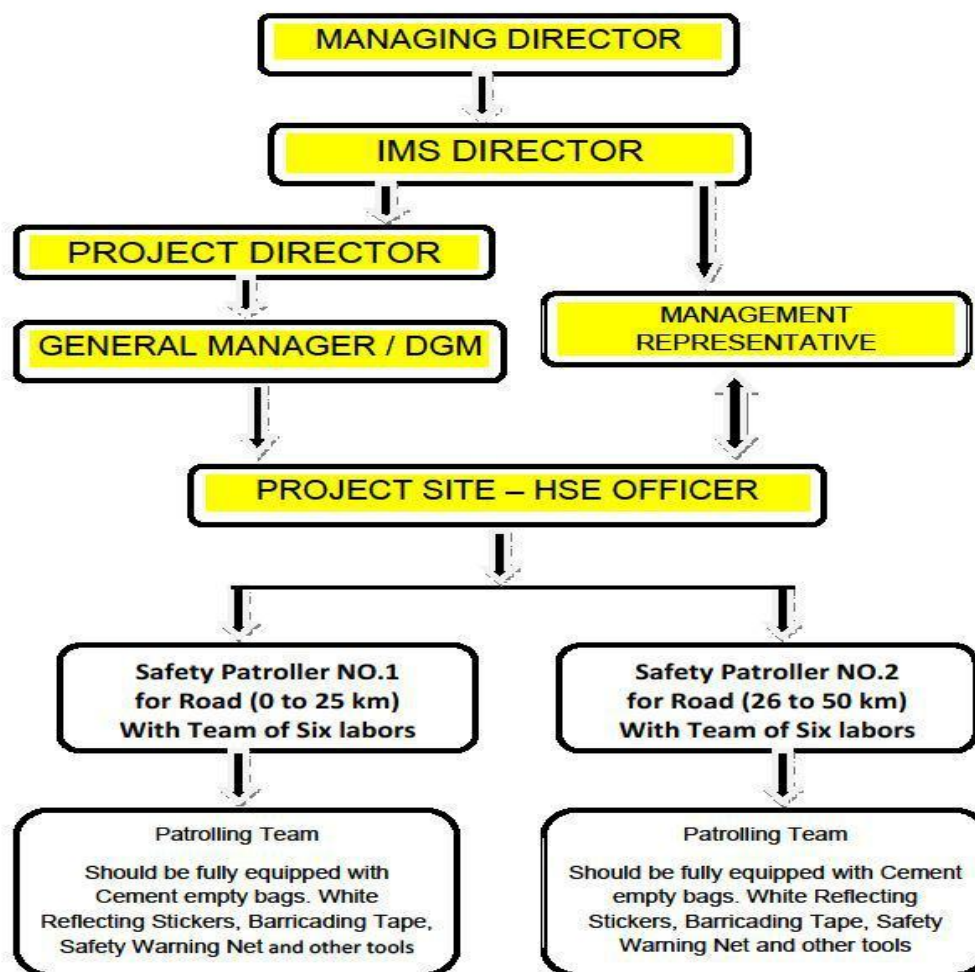
To enhance motivation of employees

To improve skill through trainings

To comply with all the statutory rules and regulations

To minimize air, water, land pollution and preventing injuries and ill health's

3.2 Project Site HSE Organization Chart:



3.2.1 ROLES & RESPONSIBILITIES

The responsibility of implementation of the Environmental Safety Social Management Plan rests with the following personnel involved in the implementation of the project.

CHIEF OPERATING OFFICER (COO) /PROJECT DIRECTOR

The COO/ Project Director is responsible for the overall implementation of the project. In the present case, the EPC contractors are also members of the SPV, VHPL, and hence the Project Director is responsible for undertaking the engineering, procurement and construction of the project.

- Guiding the formation of Policy & its Approval
- Giving the guideline for the Budget & its Approval
- Review of the safety & Environment Procedure & its Approval
- To provide guideline for All legal aspect of project & comply all environment legal rules & regulation.
- To provide guidance for the implementation of OHSAS & EMS System

PROJECT INCHARGE / SR. GENERAL MANGER

The Project Incharge / Sr. General Manager are responsible for the overall implementation of the project. The Project Incharge / SGM is responsible for undertaking the engineering, procurement and construction of the project. The SGM shall oversee the implementation of the EMP by assigning the necessary resources and periodically review the effective use of the EMP on site.

Health, Safety Officer-

Implementing the HSE&S Manual, Environment Safety and Social Management Plan, Emergency preparedness plan and HSE-Work Instructions. Train the workers and employee as per the training programs. Prepare the HSE Training program as per the site specific requirement. Provide the Safety & Environmental awareness /Induction training to employee (EPC and subcontract employees) after getting the formal information from the HR & Admin Department. Carry out HIRA (Hazard identification and risk assessment) & EAI (Environmental Aspects and its Impacts) and prepare mitigation measures and approve it from Head- HSE&S. Identify the IDLH /Risk and guide to process owner of risk for control measures. Daily Safety Observation Tour, Work place Monitoring, Safety Findings to be recorded & Informed to site Project Incharge and Process Owners. Conducting Safety Committee Meeting including preparation of agenda, near miss & accidents reports & forward to Corporate Office before 3rd of every month. Monthly HSE Report sending to be sent HSE- Corporate Manager before 3rd day of every month Emergency preparedness plan and its effectiveness report (i.e. Mockdrill Report) on quarterly basis. Visit the labour camp, Workers canteen to do the audit on welfare provided and required Accident reporting per as Govt. Authority norms

Environmental Officer-

The Environmental Officer shall report directly to the Resident Construction Manager / Project Manager so that the pertinent environmental issues that he raises are promptly dealt with. He shall also have a direct interaction with the Environmental Specialist and the Environmental Officer of the IE and the Concessionaire respectively. Monitor / implement measures laid out in the EMP and or as directed by the IE for the work executed both by petty contractors and the contractor. Provide key inputs in the development of the Contractors" implementation plan for all construction activities, including haulage of material to site, adhering to the requirements of the EMP and getting approval of concessionaire and the IE on the same before start of works. Ensure that the regulatory permissions required for the construction equipment, vehicles and machinery (given in the EMP) have been obtained and are valid at all times during the execution of the project. Prepare / fill up the environmental and safety related compliances monthly/Qtr. given in the EMP Prepare Safety Plans, Emergency Response Plans and Quarry Management and other safety, health and environment related Plans for approval of the IE and the Concessionaire. Identify locations for siting construction camps and other plants, machinery, vehicles and equipment, as well as locations for storage and disposal of wastes, both from the construction camps and from the site and obtain approval for the same from the concessionaire and the IE.

Detail out site-specific environmental mitigation and enhancement measures and obtain approval of concessionaire and the IE for the same. Carry out the measurements of environmental mitigation and / or enhancement works and prepares bills for the same for approval and payment through the Concessionaire's Environmental Officer. Ensure that the safety of the workers and other site users is not compromised during construction. Ensure that adequate monitoring facilities are available for collecting samples of all discharges from the Contractor's plants, equipment and camps. Verify the extent of environmental compliance at sites from where the Contractor is procuring the material –Borrow Area, Quarries, Crushers or even sand and suggest appropriate mitigation measures, if required responsible for implementation of safety and health regulations if also acting as safety officer.

SUBCONTRACTORS

Sub-contractors shall be sensitized on environmental aspects as they form part of the road construction in terms of transportation, earthwork, concrete and form work. The environmental effects due to and transportation of material, debris removal and residues shall be properly conducted to minimize damage to the environment. The site engineers/supervisors shall be responsible for monitoring the implementation of EMP at this level.

Overall Responsibility - All Employees

Overall responsibility for the environment, social, occupational health and safety management system lies with the Project Head of the SPV who will establish and maintain an organizational structure that defines roles, responsibilities, and authority to implement the EMP. This will include the designation of in-house personnel during the different phases of the Project as described below. The HSE &S activities will be carried out by SPV, EPC and/or O&M contractor and third parties. All these activities will be undertaken under contract with company and will be supervised by company which will ensure that all contracts include terms and conditions requiring contractors to adopt management systems which comply with the ISO 14001, OHSAS 18001 and with the EMP requirements.

3.3. Various Committees and Working

Project site management has formed various committees to implement the EMP smoothly. To address and resolve the issues related to Safety, Health, Environment, mess, labour camp, Employees grievances and public grievances. These committees will meet on following schedules.

Sl. No.	Name of Committee	Committee Head/Chairman	Functional Responsibility	Frequency
01.	HSE Committee	Project In-Charge	HSE Officer	<i>Monthly</i>
02.	Canteen Committee	Project In-Charge	Base Camp HR In-Charge	<i>Monthly</i>
03.	Grievance Committee	Project In-Charge	Site HR Office/ Liaisoning Officer	<i>Quarterly</i>
04.	Emergency Response Team	Camp In-Charge/Project Manager	HSE Officer/ HSE Supervisor	<i>Quarterly</i>

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04.	Emergency Response Team	Camp In-Charge/Project Manager	HSE Officer/ HSE Supervisor	Quarterly

All the Committees do meet as per the Frequency stipulated and necessary decisions & implementations are monitored strictly by the Committee members. Also the grievances are resolved on priority.

3.4 Environment Management System

The Concessionaire shall identify and evaluate the consequences of Health, Safety and the Environment during the project implementation process by making good environmental management practices, making changes to organizational structure, addition of suitable personnel for HSE, equipment, processes and procedures. Accordingly, the Concessionaire shall adopt the environmental construction management practices.

This Environmental Management Plan has been prepared in the line with proposed Environmental Mitigation measures as suggested in EIA report, keeping consistency with applicable law and national/International good construction practice.

Management Plan has been finalized and is as below

- (i) *Documentation of Management Plan*
- (ii) *Implementation, Recording and Monitoring*
- (iii) *Risk Evaluation and Management*
- (iv) *Audit and Review*

The detail lists related with the sound environmental management practices which stipulate the specific environmental code of conduct for the environmental management is given in chapter

3.4.1: ENVIRONMENTAL MANAGEMENT SYSTEM PLAN

In addition to the suggested mitigation measures mentioned in this EMP, the SPV, EPC and/or Sub- contractor will develop and implement following management Programs and plans under the EMP:

Management Plans:-

- 3.4.1.1)Construction Labour Management Plan;
- 3.4.1.2)Pollution Prevention Management Plan;
- 3.4.1.3)Traffic Management Plan;
- 3.4.1.4)Training Programs and plan;

Company will work upon the above mentioned management action plans for necessary changes, where required while being practiced. A brief description of the above mentioned plans is given as following:

3.4.1.1) Construction Labour Management Plan:-

The Company, SPV and EPC will base the employment relationship on the principle of equal opportunity and fair treatment, and will not discriminate with respect to any aspects of the employment relationship, such as recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, and promotion, termination of employment or retirement, and disciplinary practices. The Company will take measures to prevent and address harassment, intimidation, and/or exploitation, especially in regard to women.

The Company will ensure that all workers receive notice of dismissal and severance payments mandated by Indian labour law and collective agreements in a timely manner. All outstanding back pay and social security benefits and pension contributions and benefits will be paid on or before termination of the working relationship to the workers, where appropriate, for the benefit of the workers, or payment will be made in accordance with a timeline agreed through a collective agreement. Where payments are made for the benefit of workers, workers will be provided with evidence of such payments.

The Company will provide a grievance mechanism for worker to raise workplace concerns. The company will inform the workers of the grievance mechanism at the time of recruitment and make it easily accessible to them. In Project office and Camp area grievance box for easy and immediate communication. The Company will provide a safe and healthy work environment, taking into account inherent risks in its particular sector and specific classes of hazards in the project work areas, including physical, chemical, biological, and radiological hazards, and specific threats to women.

Child Labour

The Company & its EPC, Sub-contractor will not employ children in any manner that is economically exploitative, or is likely to be hazardous or to interfere with the child's education, or to be harmful to the child's health or physical, mental, spiritual, moral, or social development.

Forced Labour

The Company & its EPC, Sub-contractor will not employ forced labour, which consists of any work or service not voluntarily performed that is exacted from an individual under threat of force or penalty.

Worker

During the construction peak work labour strength of approximately 250-300 persons is expected. A brief of the measures that have been suggested for the construction labour under the construction labour management action plan include the following:- Provisions of labour camps provided with individual/share dwelling units supported with piped water supply, Provision of proper accommodation, food and sanitation etc. Monthly inspection of labour camps and mess-hall to focus on the following General observations on cleanliness; Drinking water availability with respect to source, cleanliness of storage tanks and quality fit to be consumed; Provision of first aid facility, sanitation facilities to water availability in the toilets their cleanliness and drainage; Provision of garbage collection, segregation and disposal facilities. Workers' participation in safety & environment management.

Creches

(1) In every factory / Construction site wherein more than [thirty women workers] are ordinarily employed there shall be provided and maintained a suitable room or rooms for the use of children under the age of six years of such women.

(2) Such rooms

- shall provide adequate accommodation,
- shall be adequately lighted and ventilated,
- shall be maintained in a clean and sanitary condition and
- shall be under the charge of women trained in the care of children and infants.

Canteen: Company /EPC Contractor shall provide and maintain in every place wherein not less than two hundred and fifty building workers are ordinarily employed, a canteen for the use of the workers.

- ❖ **Workers Management Relationship:-**Company has a formal and documented human resource policy which are communicated in local language, And has a policy of making workers organization wherein workers representative and management representatives discuss any issue and resolved suitably and same is documented.
- ❖ **Worker engaged by Third party & Supply Chain:-** Enough care is taken by the company while selecting and appointing third party & supply chain that they have the competency and infrastructure for effective implementation ESSMS.
- ❖ **Security Management Strategy:-**
Company has a well define security management system and it is monitored and reviews time to time for its effectiveness.

3.4.1.2) Pollution Prevention Management Plan

During the project life-cycle, Company will consider ambient conditions and apply technically and financially feasible resource efficiency and pollution prevention principles and techniques that are best suited to avoid, or where avoidance is not possible, minimize adverse impacts on human health and the environment. The principles and techniques applied during the project life-cycle will be tailored to the hazards and risks associated with the nature of the project.

Resource and efficiency :-

Company has a policy to use latest technology and machines for construction work to avoid environmental pollution problem and to encourages innovative ways of conservations of natural resources like water and energy.

Pollution Prevention :-

Company will avoid the release of pollutants or, where avoidance is not feasible, minimize and/or control the intensity and mass flow of their release. This applies to the release of pollutants to air, water, and land due to routine, non-routine, and accidental circumstances with the potential for local and regional.

Environmental issues specific to construction and operation of roads include the following:

- Eco-system and Habitat alteration;
- Storm water;
- Waste;
- Noise;
- Air emissions;
- Waste water,
- Chemical Spill Management Plan
- Detailed environmental mitigation measures are described in Environmental Management Plan (EMP)

3.4.1.3) Traffic Management Plan:-

It is expected that there will be increase of traffic for construction related activities of the Project. This may disturb local people in the area and also increase chances of road accidents requiring a traffic management plan to minimize adverse impacts. The traffic management action plan includes the following elements.

1. Transport management planning;
2. Driver training;
3. Access road maintenance;
4. Vehicle management and maintenance;
5. Community liaison and safety, and
6. Traffic diversion during the road construction.

The traffic management action plan covers the following aspects:

1. Sourcing or recruitment of drivers and number of qualified drivers needed;
2. Drivers' training and drivers commitment;
3. Driver communication with control point and vehicle equipment;
4. Source of suitable vehicles, Vehicle quality and specification;
5. Vehicle management and preventative maintenance programme;
6. Vehicle routes, route planning and alternative routes;
7. Overall vehicle movements - access route selection and management;
8. Strategic vehicle parking locations - to minimize impact of vehicles on local community, villages, roads, and
9. Inspection and audit of the project traffic.

The traffic management is to be monitored on daily basis to evenly spread traffic flow during a day so as to avoid congestion and minimize chances of road accidents. The plan also describes roles and responsibilities of SPV, EPC –O&M, and Sub-contractors. The Traffic management & diversion is available at road project site. The project site HSE Officer is responsible for preparation of diversion plan and its effective implementation. In order to make an accident free zone at road construction chainage, SPV, EPC / subcontractor will ensure an elaborate traffic management plan and procedures which will be in line with IRC: SP-55 standard and tie up with local administration. The required and mandatory road signage shall be posted at working zone.

3.4.1.4) Training Programs:-

HSE induction training and job specific training needs will identified by EPC /SPV and training will be imparted to EPC project personnel, SPVS and sub-contractor engaged for the project activities. Specific training will be imparted to undertake the required ESMP management actions and monitoring activities. The project will ensure that all concerned team members assigned for implementation of EMP and project specific ESMP understand the following aspects through the training programme:-

- Purpose and Importance of EMP & ESMP for Various project activities ;
- Requirements of the mitigation measures under the management plan and specific action plans ;
- Understanding of the sensitive environmental and social features within and surrounding the project area ;
- Aware of the potential risks from the project activities.

Suggested training module matrix for EPC, SPV and Sub-contractor for better implementing are as below

Sr. no	Training Topic	Designation						Frequency
		Project Management (GM, DGM, Sr. Manager and Manager)	Engineers / Departmental Heads	Supervisor	Operators	Driver	Labour /Workers	
1	Construction Site Safety Induction		√	√	√	√	√	Six Monthly
2	Emergency Preparedness and Response Plan	√	√	√	√	√		Quarterly
3	Hazard Identification and Risk Assessment and Risk Control	√	√	√	√			Quarterly
4	Environment Aspect and Impact Assessment and control measures	√	√	√	√			Quarterly
5	Fire Fighting			√	√		√	Six Monthly
6	Hazardous Material (MSDS)		√	√	√		√	Six Monthly
7	Road Safety & Road Barricading			√	√	√	√	Quarterly
8	First Aid Box & its use	√	√	√	√	√	√	Six Monthly
9	Working at Height		√	√	√		√	Six Monthly
10	Material Handling		√	√	√		√	Six Monthly
11	Electrical Safety	√	√	√	√		√	Quarterly
12	Defensive Driving	√	√	√	√	√	√	Six Monthly

3.4.2 Implementation, Recording and Monitoring

The Concessionaire shall adopt the methodology for the construction in accordance with defined guidelines for the mitigation of environmental impacts and monitored through active employee participation for continuous improvement of environmental quality at the project site. The Concessionaire shall develop and use systematic monitoring systems for both proactive and reactive performance measures to measure and support HSE objectives.

Further, the Concessionaire is made strong commitment to follow the documents to which are the part of the Concession Agreement to meet the environmental quality and health and safety for the workers and staffs. The Concessionaire also commit to keep all records, information of incidents which actually, or have the potential to, affect Health, Safety and the Environment. The Concessionaire will take all corrective actions to prevent recurrence of incidents after the investigation of any mishaps and incidents.

The lists of documents to be followed to meet the objective of HSE policy are given in Table : 3.4.2.1

Sr. No	Particulars	Reference Document	Objective and Responsibility
1	Environment & management plan- Standard operating procedure	Environment Management Plan (EMP)	1) The ABL shall take remedial measures as per environmental management plan attached with the Concession Agreements. 2) The ABL are committed to take all responsibility to resolve the environmental issues to prevent loss and damage to environment following all norms and policy, Acts and rules of GOI.
2	HSE work Instructions	IMS System manual	The ABL will implement HSE work Instructions as per HSE manual.
3	Guideline for Traffic Management Plan	Traffic Management Plan	The ABL will provide all safety measures for the road users at the construction sites during the contract planning and traffic diversions. Further, all measures to achieve zero accidental risks shall be taken during the construction.
4	PPE Matrix for road & bridge construction worker	PPE matrix	1) The ABL shall conduct tool box talks on day to day basis at morning hrs prior to the start of works for the awareness of workers and staffs and ensure PPE's in place at work place. 2) The ABL shall procure the PPEs and keep in advance all types of PPEs as per their working activity and provide to the workers to ensure the personnel safety.
5	Emergency Response Plan	ABL- Emergency Response Procedure	The ABL implement an effective Emergency Response Plan to respond and manage emergency to protect life, environment and properties
6	Guideline for Grievance Redressal	ABL- Guidelines Grievance Redressal Mechanism	The ABL shall develop grievance redressal cell. The representative of the company and local administration shall be the member of the cell. The company will facilitate

Sr. No	Particulars	Reference Document	Objective and Responsibility
	<i>Mechanism</i>		<i>complaint of ownership, disputes etc. for the resolution of issues amicably as per guideline MP-18</i>
7	<i>HSE Training Modules</i>	<i>ABL- Training modules</i>	<i>The ABL shall conduct environmental, health and safety training programme, on quarterly basis as per company safety manuals.</i>
8	<i>Guideline for Tool Box</i>	<i>ABL- Guideline for Tool Box Talk</i>	<i>The ABL shall conduct Tool Box Talk at the every work- site at the fixed Assembly points as per the company safety manuals for Tool Box talks at bridge works, road construction, welding works, high-rise, quarry sites, and borrow sites.</i>
9	<i>Guideline for Monsoon Safety</i>	<i>ABL- Monsoon Safety Tips</i>	<i>The ABL shall follow the guidelines and display the Poster at the work place for what to DO and Don't for Safety of Workers during the monsoon period.</i>
10	<i>Safety Posters for awareness</i>	<i>ABL - Safety Posters</i>	<i>Camp Entrance safety posters Canteen Safety Posters</i>

3.4.3 Risk Evaluation and Management

The Concessionaire, ABL, commits for continuous evaluation of processes and activities for specific hazards – assessment, records and controls the subsequent risks to tolerable level. For this, the methodology shall be established to identify both acute and chronic hazards and their associated impacts. The entire infrastructure site shall be verified, periodically, to overcome the construction risks. Hazard assessments shall be conducted at all accidental and construction sites including the structural section, deep excavation, bridges, narrow carriageways, faulty equipment's, machinery yards, storage yards, explosive sites etc.

3.4.4 Audit and Review

The Concessionaire, ABL shall conduct audits and reviews to verify the implementation and effectiveness of the HSE Management System and its conformation to this specification. To come this into the affect, the Concessionaire shall set audit exercises to which will be initiated by the management at least once in three months. The MR shall prepare the site audit plan on the basis of the status and importance of the activity to be audited. Based on these plans, the MR prepares a schedule indicating the names of internal auditors, the site/department to be audited and the dates.

Also maintain document and distribute the audit report for corrective action and future for reference. It will be reviewed with all affected employees. For effective actions, the infrastructure site shall be monitored for corrective actions at the regular intervals. Also, schedule periodic management system reviews shall be developed to include, but not be limited to the followings:

- ❖ *Summarizing of Audit finding*
- ❖ *Analysis of incidents, regulatory citations and non-compliance Current and future requirements at the project sites*
- ❖ *Feedback from other stakeholders Feedback from employees*
- ❖ *Analysis of risks management processes*
- ❖ *Create review team with the authority to change the system and update the system requirements.*

3.4.5 Integration of EMP within the Project

The Concessionaire commits to maintain the environmental quality and take mitigation measures as per result of monitoring programme of Air, Noise, Water and Soil that shall be conducted on quarterly basis except the monsoon. Moreover, all the construction activities shall be carried – out following the environmental management plan and remedies shall be taken for the minimal impacts so that the work should be carried –out in environmental friendly manner.

3.4.6 Enforcement

The HSE Personnel of the ABL will monitor all works and inspect facilities to ensure all compliance with this plan. The General Manager will ensure that all employees under their control comply with this environmental, health and safety norms. The Codes of Conduct as detailed above explains the responsibility of each and every person for the project. The Chief Project Manager shall have overall responsibility of ensuring that the Codes of Conduct is followed during Project implementation.













CHAPTER – 4

HEALTH AND SAFETY ASPECTS

The details safety provisions are described in ABL- Safety Management Plan (SMP). Safety management plan includes General Safety Measures during Road Constructions, TRAFFIC MANAGEMENT IN CONSTRUCTION WORK ZONE OF ROADS, SAFETY IN VARIOUS ACTIVITIES OF THE ROAD CONSTRUCTION WORKS, and Safety Measures for Major Plant & Machinery, Emergency Preparedness, Occupational Health Measure and HSE Communication and reporting.

7.1 PPE Matrix

PPE Matrix for Road & Bridge Construction Worker






Personal Protective Equipment	Working Location details	Life of PPE	IS Code	Approx Prices in Rs
Safety Helmet	 Is compulsory for all working activities	One & half year	IS:2925-1984	200- 350
Safety Shoes	 Is compulsory for all working activities	One & half year	IS 1989 –1 986 (Pt.2)	350- 750
Reflective Vest	 Is compulsory for all working activities	Three Months		150- 300
Fit Mask	 Is compulsory for Crusher, WMM, HMP, CRMB and RMC Workers and employees	Ten Days	IS 9473 – 2002	15- 65
Plug	 Is compulsory for Crusher, WMM, and HMP, CRMB, RMC and DG Set Workers and employees	Ten Days	IS 9167 – 1979	10-70
Muff	 is compulsory if Noise Level is high greater than 85 dB	Two Year	IS 9167 – 1979	350- 1250
Safety goggle	 Is compulsory for Crusher, WMM, and HMP, CRMB, RMC and DG Set Workers and employees	Six Months	IS 8940 – 1978 / IS 1179 – 1967	150 - 350
Proton Coverall / dungaree	 Petrol pump operator and fuelling operator	One year	IS 8519 – 1977	350 - 500
Hand Gloves	 Store Person- Cotton Hand Gloves for Bitumen & Concrete laying – Rubber Hand gloves For Electrical work – Shock proof Hand gloves For Welding Work – Heat proof	Ten Days Six Months One Year One Year	IS 4770 – 1968 / IS 2573 – 1986/ IS 6994 – 1973 part I	10 – 25 30 – 60 150- 450 100- 200
Gumboot (Thermal proof)	 Is compulsory for Bitumen & Concrete laying (Gumboot -Heat proof activity and Concreting activity Rubber-gumboot)	Six Months		300 - 500
Welding Glass	 Is compulsory for all welding and cutting activity	One year	IS 8940 – 1978 / IS 1179 – 1967	150- 300
Full Body Harness	 Is compulsory for working at height above 1.8 M Should be compulsory for Bridge workers who are working at height.	Two Years	IS 3521 – 1999	750 – 1250





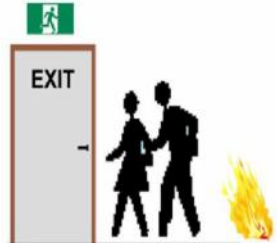
Note: - After Issuing the PPE to worker/staff, Self declaration letter should taken from worker/Staff. If Employee/staff/worker found without PPE'S at work area or during the working. He will be penalized and suspended from work.

7.2 Emergency Preparedness Plan

The Emergency Response plan is necessary as a moral and legal obligation of management to protect the safety people, property and environment. The objective of this “Emergency Response Plan” is to provide the organizational guidelines and directions to ensure fast and effective response in any emergency situation in order to save life, property and environment. At any time, it may be necessary to minimize harm to personal, the environment and business operations. Please remember that saving life and property is only possible if the emergency response procedure is effectively followed. This plan shall be followed in all cases of emergency. Therefore, it is imperative that every employee must be familiar and knowledgeable of what to do in case of emergency. We have formed our Emergency Response Team in each Base Camp to combat with the Emergency situations.

Emergency Response Plan

EMERGENCY PROCEDURES		
REMOVE Anyone in immediate danger	ONLY IF SAFE TO DO SO!	
ALERT Others in immediate area Fire Wardens Activate Whistle, Air Horn, Bell, Siren etc. 3 times for 30 sec. Other Tenants and Adjacent Neighbors RING THE EMERGENCY SERVICES Fire Brigade, Police or Ambulance. <i>1. Advise Site:</i> <i>2. Advise address:</i> <i>3. Advise nearest cross street:</i> <i>4. Provide your Name & phone number.....</i> <i>5. Provide details of incident.....</i>		
		
		

DO NOT HANG UP UNTIL THE ADDRESS HAS BEEN REPEATED			
CONTAIN THE FIRE Use correct Fire Extinguisher or Fire Hose Reel Turn OFF Electricity, Air Conditioning Close doors and windows to contain fire ALL IF ONLY IF SAFE TO DO SO!			
			
EVACUATE Proceed to the nearest exit. Gather together at Exit, if safe to do so, <i>then</i> Evacuate via exit and proceed to the Assembly Area			

Emergency Response Team

Incident Controller

Name and Contact Number

Fire Fighting Team leader Name & Contact Number	Rescue Team Leader Name & Contact Number	First Aid Team Leader Name & Contact Number
Team Leader – Fire Chief-	Team Leader – Rescue Chief-	Team Leader – First Aid Chief-
Member-1-	Member-1-	Member-1-
Member-2-	Member-2-	Member-2-
Member-3-	Member-3-	Member-3-
Member-4-	Member-4-	Member-4-

Vehicle Coordinator - Name & Contact Number

Electrical Coordinator - Name & Contact Number

Emergency Contact Number

List of Emergency contact number will be prepare and display at suitable locations so that in case of emergency all employees can use the numbers. The Emergency number includes

1. Fire Brigade / Stations
2. Ambulance
3. Police
4. Crane / Hydra
5. Hospitals
6. Incident Controller
7. Security
8. Corporate Office

CHAPTER 05

ENVIRONMENTAL REPORTING AND FREQUENCY

ABL will maintain the reporting system for environmental management indicators and report to the Independent Engineer as per the monitoring plan.

The formats for reporting and monitoring of environmental aspects during the entire project cycle on a regular basis are given in table 8.1.

Table 8.1: Reporting Format

Format No.	Environmenta l Format	Project Stage	Frequency
<i>ABL/EMP-FR 01</i>	<i>Legal Matrix</i>	<i>Pre- Construction</i>	<i>Quarterly</i>
<i>ABL/EMP-FR 02</i>	<i>Training attendance Sheet</i>	<i>Construction</i>	<i>Monthly</i>
<i>ABL/EMP-FR 03</i>	<i>Borrow Area Management</i>	<i>Construction</i>	<i>Weekly and Monthly</i>
<i>ABL/EMP-FR 04</i>	<i>Solid waste Management</i>	<i>Construction</i>	<i>Monthly</i>
<i>ABL/EMP-FR 05</i>	<i>Construction site and Service Area Details</i>	<i>Construction</i>	<i>Monthly</i>

Legal Matrix

Sr. No.	Issued Dept.	Licence/Permissions	Licence Number/ issue	Validity		Remark	Code Of
	Name.	Description.	date.	FROM	To		Document
1							
2							
3							
4							
5							
6							
7							

Training Attendance Sheet

[illegible]

Borrow Area Management

Location of Borrow area	Distance from Construction site	Capacity of Borrow Area	Total quantity of Earth excavated (in Cu.m)	Quantity of Top Soil excavated (in Cu.m)	Location where Top soil has been stored

Location where Top soil re-laid/used	Distance from storage site	Quantity re-laid/used	Total quantity of Earth excavated (in Cu.m)

Quantity of Earth obtained from excavation of Existing Highway	Quantity reused	Details of disposal of unused earth	Details of disposal of unused earth

Supervised and Checked by

(Name and Signature with Date)

Concessionaire's Site Engineer:

Solid Waste Management

Location:

Chainage: Km----- to Km-----

Terrain: Flat/Undulating/Rolling

Wind Direction:

Land use in adjoining area:

Name and Distance of settlements in a 2km radius of the site

Location	Chainage	Method of collection	Storage (Possibility of any re-use)	If reused, mention area where utilized	Method of Disposal (Details of area where disposed)
Construction site -1					
Construction site – 2					

Include Details of Disposal Area along with a sketch map and photographs showing the debris storage and management in the disposal site. Furnish details of consultation held with local populace prior to initiation of civil works

Supervised and Checked by

(Name and Signature with Date)

Concessionaire's Site Engineer:

Construction site and Service Area Details

Concessionaire:

Road section:

Location:

Chainage:Km to Km

Terrain: Flat/Undulating/Rolling

Land use in adjoining area:

Name and Distance of settlements in a 2 km radius of the site

Mitigation Measures Employed	Construction Site				
	Site 1	Site 2	Site 3	Site 4	Site 5
	Chainage	Chainage	Chainage	Chainage	Chainage
Dust Control Measures employed					
Traffic Management					
Storage Site					
Maintenance Shed and service area					

Furnish details of public consultation held with the local populace.

Supervised and Checked by

(Name and Signature with Date)

Concessionaire's Site Engineer:



Ashoka Buildcon Limited

Project: "Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mumbai Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)"



ENVIRONMENT MANAGEMENT PLAN (EMP) COMPLIANCE REPORT

MARCH 2021

Report Compiled By

Sadashiv Borade & Anil Nikam
Corporate Health, Safety and Environment (HSE) Department
Ashoka Buildcon Limited

Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mur Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
1.	Avenue tree cutting and plantation	Prepare an action plan for an estimated 1521 Nos. (Approx.) of trees to be affected/felled in the project stretch	Quarterly	<p>The contractor have targeted 13085 no of trees for median and Avenue plantation. Tree plantation is under process.</p> 
		Intimate Mamlatdar forest office before cutting trees	Quarterly	<p>Tree felling permission is taken from Mamlatdar forest office, Bharuch (Reference No. FOR/Vashi/283/19, FOR/Vashi/282/19 Date: 19.03.2019)</p>
		Avenue Plantation: The avenue plants proposed along the project stretches are as per IRC-SP-21:2011. The avenue plants proposed to be planted in the project are about 26000 either side of the road in three rows.	Quarterly	<p>Avenue plantation program is under progress for the entire stretch.</p> 
		There are 48 nos. of borrow areas, Sand quarries are identified in the project and the same shall get NOC from the private / Government owners well before start of the work.	Monthly	<p>Details of Borrow Areas are attached as Annexure 01 NOCs for Borrow Areas are secured from government authorities.</p>



Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mur Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
2.	Borrow pits and Quarry (stone)	Borrow areas shall be carried out up to depth of 2.0m in non-cultivable & elevated lands, 0.45 m in productive lands etc. with a slope of not steeper than 1 vertical to 4 horizontal.	Monthly	Borrowing of soil carried out as per prescribed conditions and the precautions are taken so as to avoid any type of environment degradation.
		The borrow areas shall be located at least 800 m away from the villages/towns.	Monthly	The locations are selected as per the prescribed conditions.
		Resurfacing and landscaping of the borrow pits utilized in the project.	Monthly	The rehabilitation of borrow area locations is carried out as per the conditions and land owner requirements.
3.	Site for storage and Construction camp	The project Contractor shall select a Campsite which is duly confirming the labour laws. Storage of HSD will be expected as per the stipulated guidelines. Besides these, emergency response plan will be in place towards meeting unforeseen emergencies. Trained personnel will be handling such materials and care will be taken so that spills are abated and in case of spills, immediately they are contained.	Monthly	Yes, Maintaining and following instructions as per the standard. Procedure and implemented HSD stored very safely and secured location Maintained fire points at required locations Emergency Response Plan is prepared for Camp Area to cover all type of possible emergency and displayed at prominent locations
4.	Sewage and solid Waste disposal	For sewerage disposal, septic tanks with soak pits will be provided at campsites. Proper sanitation facilities at the construction workers camp shall be provided	Monthly	Septic tank with soak pit is provided at campsites. Maintaining and following instructions / guidelines.
		Salvage material / demolition wastes will be reused to the possible extent in embankments, shoulders, slopes, approach roads and temporary campsites.	Monthly	Noted and ensured to reuse the salvage/disposal materials at temporary roads.
		It is envisaged that approximate 200 Kg of domestic solid waste per day will be generated from the workers camps which will be disposed to local villagers for Animal feed.	Monthly	Solid waste generated at camp area is collected at camp areas and disposed to local parties.
		The solid waste generated due to construction and allied activities would mainly consist of earth materials. These materials will be reused for rehabilitation of borrow area / quarry sites, camp	Monthly	The construction activities waste generated are disposed off as per the construction waste management best practices.


Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mur Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
		sites and in temporary diversions and slopes.		
		The solid wastes generated in construction & workers camp will be disposed-off at nearest identified location of disposal / landfill sites of local authority with payments in environmentally acceptable manner. Domestic refuse shall be collected separately for bio- degradable waste as well as the inert waste and the same shall be sent for the village disposal.	Monthly	The construction activities waste generated are disposed off as per the construction waste management best practices.
5.	Traffic management	The project stretch passes through village roads and therefore traffic management arrangement should be done as per IRC guidelines	Monthly	Traffic Management measures like display of warning signs, placement of traffic control devices like Barricades, NJ barriers, delineators etc. are taken at major junctions.
		Secure assistance from local police for traffic control during the construction.	Monthly	Information has been passed on to Concern Police Station and Police Department.
		Safety measures shall also be undertaken by installing road signs and markings for safe and smooth movement of traffic.	Monthly	Traffic Management measures like display of warning signs, placement of traffic control devices like Barricades, NJ barriers, delineators etc. are taken at major junctions.
6.	Noise level	Stationary equipment shall be placed as far as possible from residential areas to minimize noise impacts on the near inhabitants.	Quarterly	We have taken proper precaution during the execution and Noise Level Monitoring Reports are submitted to GPCB.
		Construction activities will be strictly prohibited between 10.00 p.m. to 6.00 a.m. near habitation.	Monthly	Working hours and safety measures during working near to habitation area has been taken to avoid the disturbance.
		Provision of ear plugs to workers exposed to high noise levels in the project who work in batch mix plants, hot mix plants, quarries etc.	Monthly	Provided ear plugs to workers exposed to high noise levels in the project.


Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Murr Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
7.	Air Quality	The mean Respirable Particulate Matter (PM10) values shall be within the range of CPCB standard i.e. 100 micro gram/m3 residential/industrial category. However, all the values shall be within the stipulated standards.	Quarterly	<p>Quarterly Environmental Monitoring has been done.</p>  <p>All parameters of air quality are within prescribed standards. Air Quality Monitoring Reports is attached as Annexure- 01</p>
8.	Air Quality	<p>During construction, a good number of trucks will carry the construction material for which emission of air pollutants will increase. We should see that all the vehicles deployed for construction of the project will tested for pollution under control certificate</p> <p>DG sets will also emit air pollutants in the area during construction period. The emission generated during Construction will be temporary and localized in nature.</p>	Quarterly	<p>The Machineries used at site are provided with Certificates.</p>  <p>Temporary use of DG sets is ensured with provision of Stacks and acoustic enclosures for restrict air and noise pollution in nearly working areas.</p>
		Vehicles carrying construction material shall be covered to avoid spilling.	Monthly	Vehicles are being covered with proper tarpaulin while carrying construction materials.



Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mur Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
				
		Ready Mix plant shall be over 500m away from Residential neighborhood and 300m away from the road.	Monthly	Complied. RMC plants are more than 500m away from the habitat nearby
		Mixing equipment shall be seated and equipped with dust removal device.	Monthly	The RMC plant is provided with canopy and sprinklers on the conveyor to avoid dust emissions in nearby area
		Water will be sprinkled in morning and evening hours at the construction yards and the unpaved sections of the road.	Daily / As and when required	Water sprinkling is being carried out on regular basis for dust suppression.


Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mur Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
				
9.	Water Quality & Solid waste	Prior permission of the concerned engineer and regulatory authorities shall be taken regarding the discharge or disposing of any material arising from the execution of the works.	Quarterly	Permission from Gujarat State Pollution Control Board is obtained and Copy of CTE and CTO
		During construction it will be ensured that contractor does not dispose off debris in water bodies.	Monthly	Construction waste disposal methodology is in place and Precautions are taken during execution.
		Soil laden run off will not be diverted to water bodies. Provision of waste disposal site for waste from construction and storage yards shall be made.	Monthly	Soil laden run-off restricted from water bodies. Waste Management Practices are followed for disposal of waste

Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mur Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
		Vehicle maintenance and refueling will be confined to areas under construction yard to trap discarded lubricant and fuel spills.	Monthly	<p>P&M Maintenance shed construction in progress in our base camp and rest of the Sub- contractors camp it shall be implemented.</p>  <p>Oil Collection trays are used at fabrication yard</p>
10.	Occupational Health and Safety	Labors shall be equipped with proper safety gears like helmets, gloves and gum boots.	Monthly	<p>PPEs has been provided to all workers during construction work</p> 
		Periodic health checkup of construction workers.	Annually	Periodic Health Checkup will be conduct as per schedule.
11.	Basic amenities And sanitation facilities for	Adequate sanitary facilities shall be provided to the workers to avoid health related problems. Sanitation Waste from workers camp will not be diverted to water bodies.	Monthly	Welfare facilities are provided to the workers and labour such accommodation, drinking water, sanitary, Canteen, lights and first aid facility.
	labors	Periodic health checkup of labors shall be done.	Annually	Periodic Health Checkup has been conducted as per schedule

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S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
		Public health utilities plan for the workers camp and other working sites, which make adequate provision for safe disposal of all wastes and prevention of spillages, leakage of polluting materials etc.	Monthly	Waste Management practices are implemented as per standard operating procedures was in place and implemented during the execution
		Contractor will be required to pay all costs associated with cleaning up any pollution caused by their activities and to pay full compensation to those affected.	Monthly	Necessary measures had taken during the execution and construction phase to avoid any type of pollution.
12.	Fuel for labors	Adequate supply of fuel (LPG) shall be provided to the labors to avoid felling of trees for cooking and other domestic chores.	Monthly	LPG used for domestic purpose at canteen area.
13.	Prevention of erosion and scouring	Stabilizing the embankment with appropriate technique immediately after placing.	Monthly	Soil erosion measures like turfing, slope protections coir mat are provided at site to avoid soil erosion. Sample photographs are as follows: 
		The high embankment slopes near to the major bridges are washed out or weaken and the same shall be strengthened.	Monthly	the high embankment areas are provided with boundry wall and provided with soil protection coir mats to avoid any type of runoff.


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S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
		Treating high embankment slopes with rip rap, stone pitching or other technologies to prevent erosion.	Monthly	Measures are taken at site for strengthen high embankment slopes by providing Turfing.
		Construction of RCC/Box drain all along the road on both sides.	Monthly	RCC Box drains are provided from both site of Road at the locations as per the Concessions agreement.
		Avoiding obstruction of existing drainage during filling.	Monthly	Environment friendly methodology is adopted to avoid obstruction of existing drainage during filling.
14.	Drainage system	Adequate care has been taken for the purpose of free flow of flood discharge in the design stage itself. The Construction of new minor bridge/ Widening of minor bridge, Proposed Vehicular Underpass proposed along the project corridor to allow free flow of the natural drainage water in the area.	Monthly	Construction of structure is done as per the approved design.
		Construction of RCC/ Box drain along the road on both the sides.	Monthly	RCC Box drain construction work at required locations on the road is done are the work scope
		Avoiding obstruction of existing drainage during filling.	Monthly	The drains were cleaned and ensured that there is free water flow.
15.	Conservation of Eco resources	To preserve earth borrowing areas, piling, and building temporary camps are prohibited in forests lands.	Monthly	No Forest areas covered at entire project stretch for camp and Borrow areas.
		Arable lands should not be used as earth borrowing whenever possible. If needed, the topsoil (30cm) should be kept and refilled after construction is over to minimize the impact on ecosystem and agriculture.	Monthly	Borrow areas are selected as per the standard requirement and rehabilitation measures are taken for land development
		Construction workers should be told to protect natural resources and wild animals.	Monthly	Trainings are carried out for construction workers for the awareness
		Construction vehicles should run at temporary accesses to avoid damaging arable lands and cattle-raising lands.	Monthly	Noted and Trainings are conducting to all operators for safe and environment friendly use of machinery.


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S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
				
16.	Communications and Transportation	Local materials should be used as much as possible so as to avoid long distance transportation that of earth, sand and stone.	Quarterly	Borrow Areas and crushers etc. are selected from nearby locations confirming to the work requirements.
		If there is traffic jammed during construction, measures should be taken to move the jam with the coordination of transportation and public security department.	Daily	Complied, we did proper coordination with local authorities and made a system arrangements during construction phase. Co-coordinating with local police authority.
		Temporary access should be built at the interchange of the highway and other roads.	Daily	

Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mur Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
				
		Passing time on National Highways will be limited, similar measures will also be applied to roads with traffic jams.	Daily	The vehicular traffic is guided with the help of traffic control devices and installation of road furniture at required locations.
		Materials may be delivery in advance in relatively leisurely season of traffic.	Daily	Measures are taken for on time delivery of material.
		A transportation plan of materials will be formulated to avoid delivered of them at peak hours on existing roads.	Monthly	The transportation routes are decided as per the plan and also the temporary routes are levelled for smooth movement of heavy vehicles.
17.	Utilization of Fly Ash	In the proposed project, There are Chandrapura and Bhokaro Thermal Power Stations and Bokaro power stations are proposed which fall within 50 Km from the project corridor. Hence, Utilization of Fly Ash in the project is estimated to be 10 lacks cum provision made as per the IRC SP: 58 2001 and Fly ash Notification 2007and the subsequent amendments in 25th March, 2015.	Monthly	The fly ash is utilized as filling material for construction activities and approx. 10 Lakhs. MT Fly /Pond ash is utilized at project site.
		Top Soil: Top soil of 15cm will be carefully stripped and utilized as top layer in median filling and / or embankment slopes prior to turfing / sodding for restoration of temporary sites, etc.	Monthly	Top soil is carefully removed before excavation of Borrow area and later the soil is filled on the surface for further use.

Project: Construction of 8 lane Vadodara KIM Expressway from Km 279.000 to 292.000 (Ankleshwar to Manubar section of Vadodara Mur Expressway) in the State of Gujarat under NHDP Phase IV on EPC/Hybrid Annuity (Phase-I (A)-Package-IV)

S. No.	Project related Issues	Action to be taken	Frequency	Action plan (Current Status)
18.	Surplus earth/ Muck disposal	Excavated Materials: Suitable excavated materials will be reused in road embankments formation. The non-usable material will be utilized for reclamation / rehabilitation of quarries and borrow pits or can be used to fill the depression.		

Waste management Practices

Following are the details of major type of Solid waste generated at VME Project and there disposal process.

Waste Category	Details of Disposal
Construction Material / Concrete Waste	It is green field project and therefore there is no any construction waste generated during project activity
Metal Scrap	Approximate 120 ton of MS scrap was generated till now which is dispose off by sale to authorized vendor
Tyres	There are around 320 tyres are sold to authorized vender
Used Oil	Around 1200 lit of Used oil is used as anticorrosive agent during structure activities and workshop activities

Details of New Materials/ Technology etc. used (Month-wise)											
Fly-ash											
Sr. No.	Name of State	Number of Projects	Unit of the Quantity Utilized	Already utilized					Overall Cost Savings (If any)	Performance w.r.t conventional material	Any Other Benefit
				Upto Dec,2020	Jan, 2021	Feb, 2021	Mar, 2021	Total (Cumulative)			
	Gujarat	VME Pkg-IV	41843	41843	115	45	0	42003	-	-	-

Details of New Materials/ Technology etc. used (Month-wise)											
Slag - Copper Slag											
Sr. No.	Name of State	Number of Projects	Unit of the Quantity Utilized (MT)	Already utilized					Overall Cost Savings (If any)	Performance w.r.t conventional material	Any Other Benefit
				Upto Dec,2020	Jan, 2021	Feb, 2021	Mar, 2021	Total (Cumulative)			
1	Gujarat	VME Pkg-IV	1013546	0	0	0	0	1013546			