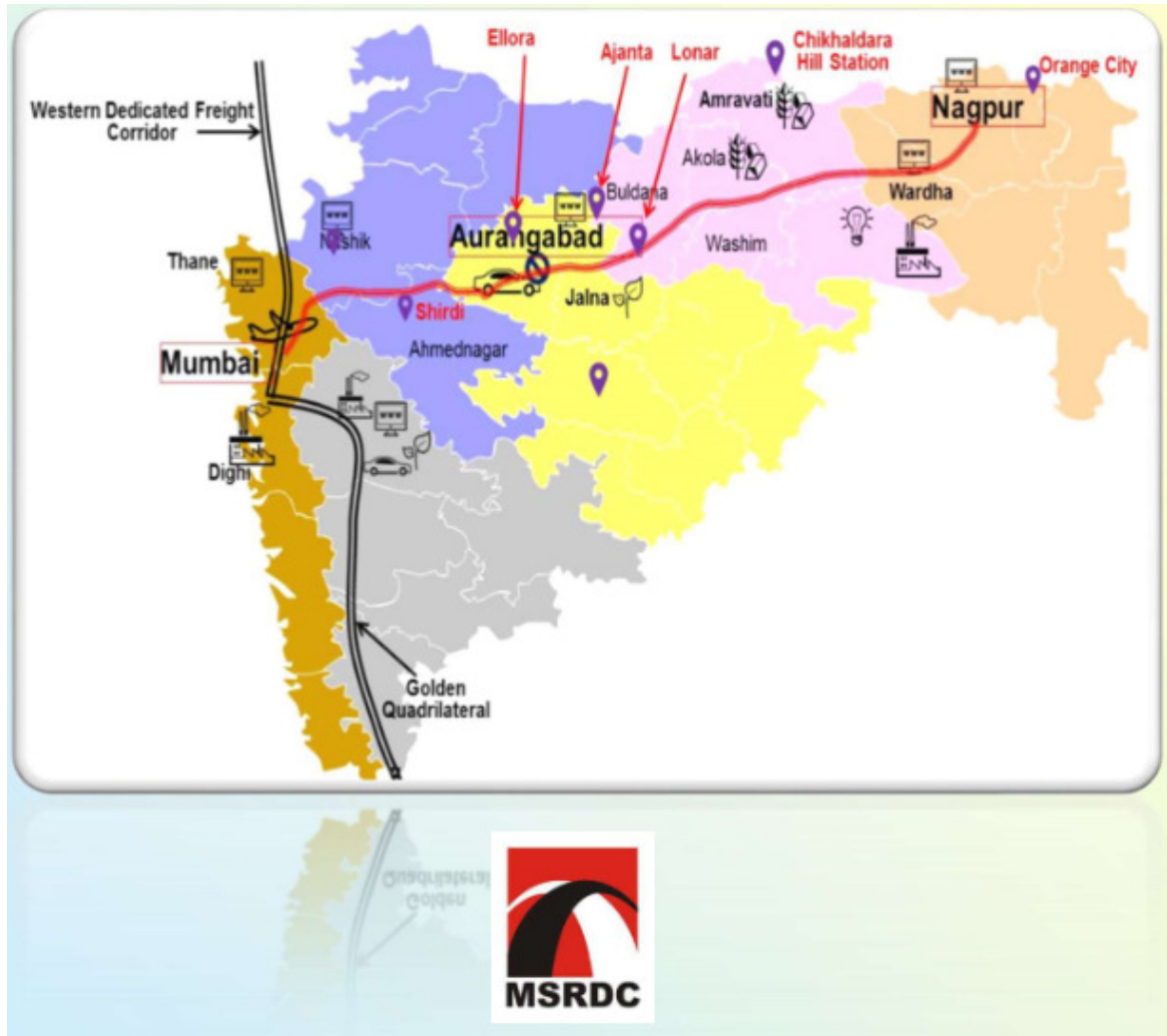


EXECUTIVE SUMMARY
for Ashta to Golegaon of 257.881 km Length
(Package II) of Access Controlled Nagpur-Mumbai
Expressway



Submitted by
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Executive Summary

1 PREAMBLE

The Government of India has planned 10 world class express highways in order to boost the road infrastructure for faster connectivity between different cities. Simultaneously Government of Maharashtra has planned Nagpur Mumbai Expressway (NMEW) which intends to divert and redistribute the heavy traffic on existing corridors. The proposed NMEW is being implemented by Maharashtra State Road Development Corporation (MSRDC) which will pass through 10 districts from Vidarbha through Marathwada to Konkan regions. The major settlements which are set to be part of this plan are Nagpur District, Wardha District, Amravati District, Washim District, Buldana District, Jalna District, Aurangabad District, Ahmednagar District, Nasik District and Thane District. The NMEW will be designated as a Maharashtra State Highway (MSH) built on National Highway standards. The NMEW is a top priority project in the Government agenda. It will start from Shivmadka in Hingna, Nagpur and will end near Bhiwandi, Thane.

The project intends to develop a 6 lane expressway with paved shoulders from Nagpur to Mumbai in the State of Maharashtra. This six-lane Nagpur-Mumbai Prosperity Corridor has a ROW of 120 m and will bring the travel time between the two cities of Nagpur to Mumbai from 16 hours to six hours. This prosperity corridor will pass through all the five regions that make up Maharashtra Vidarbha, North Maharashtra, Marathwada, Western Maharashtra and Konkan thus linking developed and developing towns. The project ensures greater regional connectivity and equitable development as it passes through Vidarbha, North Maharashtra, Marathwada, Western Maharashtra and the Konkan region. It also promises to open new avenues of economic and social growth along the drought-hit districts of Vidarbha and Marathwada.

This Prosperity Corridor (NMEW) is being designed for sustainable growth with emphasis on agro-industries in rural and underdeveloped districts of Maharashtra. The project is so massive that it will open up multiple sectors including township along the expressway emerging as a self-reliant model. From textile sector to IT hubs, each node will have its distinct character developed to tackle the local requirements of livelihood of the people and growth. An equal opportunity to grow and develop is the only way for a region to ensure a prosperous demography. Cities have concentrated employment opportunities, skilled work force, financial independence and the infrastructure to keep the demand-supply cycle intact. Most of the needs of the urban areas in terms of food and electricity are sourced from the rural areas. Urban areas act as the drivers of economy for the rural regions, whereas the rural areas provide necessary resources. Thus the urban and rural areas in any state have an interdependent relationship with each other.

The Mumbai Nagpur Expressway not only connects the major cities in the state viz. Nagpur, Aurangabad and Mumbai but also connects the rural areas along the alignment to these major market places. As the Expressway travels from Nagpur to Mumbai, it promises to revive the textile, tourism, education and manufacturing industries on its major nodes. It also connects

the regional headquarters of the state to one another thereby facilitating administrative activities of the state.

Government of Maharashtra has decided to develop and strengthen the linkages and connectivity of major cities of state with Mumbai; one of such linkage being the Butibori – Wardha– Karanja – Aurangabad – Sinnar – Ghoti along with link from Karanja – Loni - Nagzari corridor. In this regard STUP Consultants Pvt. Ltd. has been mandated by the Maharashtra State Road Development Corporation Limited (MSRDC) for preparation of feasibility study and detailed project report for Package-II.

STUP Consultants Pvt. Ltd. appointed Fine Envirotech Engineers, to carry out the Environmental Impact Assessment studies and to assist the Client in obtaining Environmental Clearance.

2 PROJECT BACKGROUND

The NMEW will be developed as a high-density corridor establishing high-speed connectivity between Nagpur and Mumbai. As a first step in this direction the Government of Maharashtra has decided to develop and strengthen the linkages and connectivity of major cities of state with Mumbai, the state capital. Exploring the viability of one such connectivity between Nagpur and Mumbai, which includes links with and through Shivmadka – Wardha– Karanja – Aurangabad – Sinnar – Bhiwandi along with link from Karanja – Loni – Nagzari corridor.

2.1 Project Location

This Environmental Impact Assessment report is prepared for Package II starting from Ashta Village, Amravati District (CH 89+300) and ending at Golegaon, Buldhana District (CH 347+190). The total length of the project is approximately 257.881 km. The proposed alignment of NMSCE package-II is located in Amravati, Washim and Buldhana district of Maharashtra state. The project corridor starts from Amravati and traverses through number of 159 villages/towns of 11 Taluka viz. Dhamngaon Rly, Chandur Rly, Nandgaon (Khandeshwar) of Amravati District, Karanja, Mangrulpir, Malegaon, Risod of Washim District and Mekhar, Lonar, Sindkhed Raja, Deulgaon Raja of Buldhana District . The project intends to develop 6 lane expressway with paved shoulders in the state of Maharashtra. The design speed is proposed such that Vehicles shall be able to reach an average speed of 150 km per hour on it.

3 DESCRIPTION OF THE ALIGNMENT

The proposed package II of Nagpur-Mumbai expressway is of length 257.881km along the road there will be development of nodes. Eight service interchanges are identified in proposed alignment.

3.1 Salient Features of the Project Corridor

Sr. No	Salient Feature	Details
1.	Project Stretch	The proposed project road is Greenfield expressway. Package 2 starts at Wardha River near at Pulgaon and ends at the district boundary near Sindhakhedraja. The total length is approximately 257.881 Km
2.	Width of Road	The expressway is designed for (3+3) lanes in the initial phase with a provision for widening to (5+5) configuration with paved shoulders
3.	Right of Way	For the proposed road alignment the ROW width that has been estimated is about 120m.
4	Land Use	Predominantly Agriculture land is prevalent all throughout the stretch. About 169.393 Ha of Forest land is proposed to be diverted.
5	Embankment height	The average embankment height is expected to be around 3 m.
6	Bridge	12 Major and 110 Minor.
7	ROB	03 nos.
8	Interchanges	08 nos.
9	Overpass/	65
10	Underpass	221
11	Road Safety	Metal Beam Crash Barriers will be provided along the outer edges of the carriageway. Additional Safety features will be ensured by providing adequate Sight Distances while designing the expressway. Retro reflective road signage will be provided for better night visibility
12	Service Roads	Service Roads will be provided on a need basis to cater local traffic
	Road User Facilities	Rest Areas, Emergency telephones, Traffic Aid Posts, Medical Aid posts, Truck Lay byes and Bus Bays will be provided along the expressway
14	Forest Land	169.393 ha of forest land will be diverted for non forest purpose
15	Water bodies	There are 04 ponds/lakes (water bodies) within the proposed RoW which shall be bridged by providing appropriate cross drainage structures
16	Cost of the project	13017.03 Crores

4 LAND AQUISITION

Land Acquisition is under process, after calculation of area of land, type of land and the market rate R & R plan will be designed.

In lieu of monetary compensation it is contemplated under land pooling scheme that 25% / 30% developed NA Plot will be allotted to the concerned landlord/person affected depending upon type of land to be acquired, along with annuity for 10 years. In case for some areas where consents are not received under land pooling scheme possibility of acquisition of required land under prevailing guidelines of State Government will be explored.

This shall be Rs. 75,000 per hectare per annum for Jirayat land; Rs. 1, 12,500 per hectare per annum for Hangami Bagayati Land and Rs.1,50,000 per hectare per annum for Bagayat Land.

5 UTILITY REQUIREMENT

5.1 Raw Material

Various raw materials such as Cement, Steel, Bitumen, Stones & Aggregates etc will be required for construction of proposed expressway.

5.2 Flyash

The Flyash can be procured from Butibori, Wardha and Paras near Akola City, Maharashtra which is about 100 Km from center of the stretch. The Fly ash can be used after checking the properties and testing the flyash material which may be used for Embankment and Concrete works.

5.3 Water Requirement

Total Water requirement for construction phase will be 2250 KLD. Out of the total water requirement 2000 KLD will be required for construction purpose and 250 KLD will be required for domestic use of workers. The water requirement for domestic purpose will be fulfilled through potable water sources and for construction work water from surface water sources such as ponds, rivers and tanks etc. shall be used.

5.4 Power Requirement

Total power requirement during construction phase will be 16376 KW. Also adequate Solar panel will be installed during construction phase. 61 Nos. of DG sets of 125 KVA capacity will be used as power backup for Construction purpose.

5.5 Man Power Requirement

For construction phase manpower employed will be 5500 nos. which will include skilled, semi-skilled workers, technicians, engineers, managers and other professionals for both construction phase and operational phases

5.6 PROJECT COST

Total cost of the proposed project is Rs.13017.03 Crores

6 BASLINE ENVIRONMENT

As the proposed project is linear structure i.e. highway the study area was selected of 500-600 m range on either side of the alignment. Prior to start of actual baseline study reconnaissance survey was conducted throughout the alignment. The survey was conducted to find out ecological features like water bodies, vegetation cover, barren lands; geographical features such as plains; villages in the vicinity etc. and primarily to decide location for ambient air quality, noise level, soil quality, water quality monitoring. The alignment was divided in 36 segments each of 7.3 km approx. These 36 segments of the alignment encompass 39 villages.

6.1 Soil Quality

Most of the agricultural field of the Package 2 of the alignment has black soil. In order to know the quality of the soil 20 nos. of samples were collected from the study area. After detailed analysis following was the observance.

pH was neutral at all location. Organic carbon was in a range of 1.3 to 2.3 mg/l. Nitrogen was in a range of 22 to 280 mg/l. Phosphorus was observed in a range of 16 to 20 mg/l. potassium in a range of 500 to 550 mg/l. Copper 5 to 6 mg/l. Magnesium, Electro Conductance was observed in a range of 0.1 to 1 mg/l whereas Calcium was observed in a range of 0.1 to 0.2 mg/l. CaCO_3 was in the range of 4.5 to 6 mg/l. Alkalinity was observed in the range of 500 to 600 mg/l

6.2 Air Quality

The proposed alignment is passing through mainly agricultural land. Hence air pollution is not an issue in section of roads where it is passing through agricultural land and through rural area. To establish baseline air quality 30 monitoring locations were identified along the proposed alignment. The air quality monitoring has been carried out according to the 16th November, 2009 Notification. After detailed analysis following was the observance.

PM₁₀

The PM₁₀ concentration in the study area ranged from 39.9-51.3.3 $\mu\text{g}/\text{m}^3$ during the monitoring period. The maximum concentration of PM₁₀ is found at site Sindkhed Raja (51.3), however it is within the national AAQM standards for industrial (100 $\mu\text{g}/\text{m}^3$), residential & rural (100 $\mu\text{g}/\text{m}^3$).

PM_{2.5}

The PM_{2.5} concentration in the study area ranged from 10.4-14.3 $\mu\text{g}/\text{m}^3$ during the monitoring period. The maximum concentration of PM_{2.5} is found at site Shendurjana, however it is well within the national AAQM standards for industrial (60 $\mu\text{g}/\text{m}^3$), residential & rural (60 $\mu\text{g}/\text{m}^3$).

Sulphur Dioxide (SO₂)

Ambient SO₂ levels observed during the monitoring period indicated a fluctuation ranging from 6.5-9.2 µg/m³. The maximum concentration of SO₂ is mainly at Jawle. Though the concentration well below the prescribed limit of NAAQS for SO₂ of Industrial, Residential, Rural and Other Areas.

Oxides of Nitrogen (NO_x)

Ambient NO₂ levels observed during monitoring period varied from 10.0-14.4 µg/m³. The maximum concentration of NO₂ is found in Pimpalkhuta, but it is well within NAAQS for NO_x of Industrial, Residential, Rural and Other Areas.

Carbon Monoxide (CO)

Ambient CO levels observed during monitoring period varied from 0.35-0.49 mg/m³. The values of CO was within the prescribed limit of NAAQS for CO of Industrial, Residential, Rural and Other Areas.

6.3 Noise Environment

Noise level monitoring was conducted on at 50 numbers of location within study area to understand the baseline noise levels. The day time noise levels were observed to be ranging from 44.4 dB(A) to 52.2 dB(A). Highest noise level of 58.5 dBA was recorded at Pimpalkhuta. The night time noise levels for the 50 locations ranged between 42.5 dB(A) to 51.0 dB(A) with highest value being recorded at Pimpalkhuta. 51.0 dB(A). Lowest noise levels of 42.5 dB(A) were recorded at Mogra. The assessment of the noise levels at the specified locations in the project area clearly indicates that the existing environment in the project is free from potential causes of noise pollution.

6.4 Water quality

6.4.1 Surface Water Quality

The water surface samples were collected from eight numbers of location and were analyzed for physic-chemical and biological parameters. It was observed that pH was neutral at all location. DO was in a range of 5.0 to 7.5 mg/l only at Rishi talav it was observed 3.8 mg/l. BOD in a range of 6 to 10 mg/l

6.4.2 Ground Water

In order to access the quality of ground water the ground water samples were collected from the dugwell located within the agricultural land near the proposed alignment. Total 20 numbers of samples were collected and analyzed. It was observed that pH was neutral at all location. DO was in a range of 6.5 to 7.5 mg/l. BOD in a range of 6 to 10 mg/l

7. Ecology & Biodiversity

8. Flora in the study area

Species richness indicates the total number of species present in a given area or in a given category. The total species richness is often used as indicator of biodiversity Value. The

species richness in the study area was measured by calculating the total number of species encountered during the study phase.

Total 194 species were encountered during the study phase. The biodiversity of the area in and around the project site is dominated by tree species followed by herb and then shrub

7.2 Fauna in the study area

i. Mammals

The common mammals observed in the study area were the Common langur. Other mammals like Black buck and Nilgai seen in some patches near Pangri village. Total 9 species of mammals from 8 family observed during study.

ii. Avian diversity

In the study area, 83 species of birds were observed during the study. The observations were made based on direct sightings and bird calls. Amongst the birds documented during this study none of the species were classified as Endangered or rare except *Ciconia episcopus* which is a Vulnerable species .

iii. Reptiles

During Study of reptiles, stone lifting was done rock crevices and wall space of structures in the Study site was checked. Amphibians were searched near the stagnant water pools and small streams and rivers etc. Total 28 species of reptiles from 11 Families were observed in Study area. While 7 Species of Amphibian from 4 families were recorded.

iv. Fishes

Fish studies were carried out from Rivers, ponds, and lake Etc. As well as from local fish Market. Common fishes observed during study like Catla catla, Labeo rohita, Cyprinus carpio etc. Total 24 Species of fishes from 11 families were recorded.

v. Insect

Butterflies are indicators of a healthy environment and healthy ecosystems so butterfly study is very important from ecological point of view. Therefore the butterfly studies were carried out in entire study area of the alignment. During study 47 species of butterfly from 4 families were observed.

9 Anticipated impact & Mitigation

**ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES
CONSTRUCTION PHASE**

Sr. No.	Environmental Parameters	Impact Attributes	Degree of Impacts	Mitigation Measures	Implementing Organization
1	Physiography	Disturbance in relief feature	Mild	Will be achieved by systematic planning and designing of the project activities	Promoter through prospective contractor
2	Land resources	Change in land use	Mild	Will be achieved by systematic planning and implementation	Promoter through prospective contractor
3	Human resources	No adverse impact	Negligible	Will be achieved by systematic planning and resources	Promoter through prospective contractor
4	Ecology	Ecological resources – Flora & Fauna	Around 169.393 ha of forest area will be acquired for proposed alignment	<ul style="list-style-type: none"> ➤ Afforestation to compensate for the cutting of the trees during the proposed highway construction activity. ➤ A green belt along the alignment shall be developed. ➤ Rare plants of economic importance, medicinal plants and wildlife species shall be conserved and regenerated. ➤ Avenue Tree Plantation, Median Plantation, Slope Turfing , tree guards, landscape in islands ➤ Plantation of trees and shrubs of required number and type at the appropriate locations within the 	Promoter through prospective contractor

5	Environmental aesthetics values	Removal of trees & green strips along the road have impacts on landscape & aesthetic values of the area	Moderate	Loss of vegetation will be kept minimum as far as possible during site clearance.	Promoter through prospective contractor
6	Utility & infrastructural facilities	Removal of utility line like electrical poles, telephone poles, transformer, HT & LT lines	Negligible	Shifting and elevation of utility lines will be done in consultation with concerned Government Organisations.	Promoter, MSEB, telecommunication dept. & line dept. of GoM.
7	Sub-surface hydrology	There are dugwells within the proposed alignment	Negligible	Whenever possible, care is taken to avoid its relocation by judicious engineering road design.	Promoter through prospective contractor
8	Religious places	--	--	--	--
9	Geology	Not much affected	Negligible	Systematic planning and implementation	Promoter through prospective contractor

10	Air quality	Short term deterioration of air quality due to generation of fugitive dust.	Moderate	<p>Trucks carrying soil sand stone, will be covered to avoid spilling</p> <p>Fugitive dust sources will be sprayed with water to suppress dust.</p> <p>Emissions from vehicles & machinery will be checked regularly & maintained properly to confirm to National and State Emission Standards</p>	Promoter through Prospective Contractor (PC)
11	Noise level	Increased noise levels due to project activities	Mild	<p>All the equipments will be duly lubricated, maintained in good working condition to minimize noise levels.</p> <p>Stationary construction equipments will be placed as far as possible from dense habitation.</p> <p>Provision of protection devices (ear plugs) to be provided to the workers operating in the vicinity of high noise generating machineries.</p>	Promoter through Prospective Contractor (PC)
12	Ecological resources – Flora & Fauna	One near threatened (Balck Buck) and one vulnerable (Wooly Necked Strok) species found during study	Moderate	Proper care will be taken to maintain eco-balance	Promoter through Prospective Contractor (PC)

13	Land use	There will be change in land use	Severe	Proper management planning will be achieved.	Promoter through Prospective Contractor (PC)
14	Accident hazards and safety	Short term impacts from road accidents	Mild	Proper maintenance of the machinery.	Promoter through prospective contractor (PC)

**ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES
OPERATION PHASE**

Sr. No.	Project Related Issues	Actions to be Taken	Responsible Organisation
1	Prevention of Road side Squatters or indirect Urban Sprawls	<ul style="list-style-type: none"> ➤ Involve land use planning agencies like the Revenue Department at all levels during operation stage. ➤ Plan and control development activity. ➤ Removal, cleaning of squatter and temporary hutments of construction workers once construction activities has been completed. 	P & C in consultation local body
2	Road Safety and Traffic Management	<ul style="list-style-type: none"> ➤ Adequate number of proper & legible signs will be installed along the road. ➤ Prepare and administer a monitoring system on road/ accidents. 	P & C in consultation with Traffic Police
3	Air Quality	<ul style="list-style-type: none"> ➤ Monitor periodically ambient air quality at selected sites. ➤ Confinement and absorption of the pollutants at source by creating vegetation along the length. ➤ Enforcing different control measures to check pollution (e.g. catalytic converters, unleaded petrol, proper serving etc.) 	P & C in consultation with MPCB

4	Noise level	<ul style="list-style-type: none"> ➤ Monitor periodically ambient noise level at selected sites. ➤ Thick vegetation along the road for attenuation of noise ➤ Noise barrier is proposed for 4.5 kms along the proposed expressway to mitigate the impact of noise on habitats. 	P & C in consultation with MPCB
5	Water Quality	<ul style="list-style-type: none"> ➤ Monitor periodically water quality for establishing the change of water quality, if any, and assessing its potentiality of surviving aquatic flora and fauna and for irrigation use. 	P & C and MPCB
6	Soil Characteristics	<ul style="list-style-type: none"> ➤ Periodic monitoring of soil quality at specified distance for assessing contamination by vehicular emissions. ➤ Checking the overflow of spillage from the carriageway by promoting growth of vegetation cover along the road shoulders and preventing overflow to green belt. 	P & C in consultation with authorities.
7	Maintenance of Avenue trees	<ul style="list-style-type: none"> ➤ Plantation will be undertaken by the concession company on an aggressive note along the whole stretches on the both sides of the road. ➤ Employment of local population for maintenance avenue plantation. 	P & C in consultation with authorities and State forest Department
	Human Health and Safety	<ul style="list-style-type: none"> ➤ Vulnerable stretches, which are prone to accidents, will be identified. ➤ Adopt Safety measures and other control measure for regulating traffic in such areas by: <ul style="list-style-type: none"> - Installing proper road signs, marking along the whole stretch of the tolled highway in the form of cautioning, informatory and mandatory signs of gantry mounted overhead sizes. - Installing precautionary roads signs for controlling vehicle a speed in urban areas and curve stretches. 	P & C in consultation with authorities.

10 EMERGENCY CONTROL PROCEDURE

10.1 For Natural Calamity

In the event of occurrence of natural calamity during the construction phase, all work will be suspended and all construction material will be shifted to the safer location. In order to minimize losses/ damages to pavement, incomplete CD structures during the heavy rains the inventory of material storage at site will be kept to a minimum during rainy period i.e. May to September. During the operation phase, in the event occurrence of Natural Calamity the concessionaire will stop traffic on the highway and will guide the traffic at time of closure for follow up of safer route. The traffic will be regulated right from receipt of warning. The emergency control centre will be in direct contact with the district administration for their advice for the steps taken for the traffic control and other assistance.

11 For Hazard

The onset of emergency will in all probability commences with a major fire or explosion and shall be detected by the member of staff on duty at construction camp/on Highways. If located by a staff member on duty, he (as per site emergency procedure of which he is adequately briefed) will go to the nearest fire alarm call point, break glass and trigger off the fire alarms. He will also try to inform about location and nature of fire/ accident to the Site Main Controller on mobile phone.

In accordance with work emergency procedure, the following key activities will immediately take place to intercept and take control of emergency:

- The fire group will arrive at the site of incident with fire fighting controls
- Site Main Controller will commence his role from the Control Centre
- The First Aid Group will take care of injured
- Site Main Controller will be directing and deciding a wide range of desperate issues. In particular DMC has to decide and direct:
 - Whether fire fighting and first aid groups require reinforcement of man power and facilities
 - Whether the facility is to be shut down or more importantly kept running
 - Respond to any large size complaints from outside public and to assess an offsite impact arising out of the onsite emergency.
 - When the incident has eventually been brought under control as declared by the fire fighting group, the Site Main Controller shall visit himself personally for:
 - An assessment of total damage and prevailing conditions with particular attention to possibility of re escalation of emergency, which might of the time being, be under control.
 - Inspection of other facilities, which might have been affected by impact of incident.
 - Based on visit, Site Main Controller will finally declare and communicate termination of emergency and authorize step by step restoration of normal operation of the refuelling and storage facility. The fire siren will be sounded with all CLEAR SIGNAL.

- During entire period of emergency the site will remain out of bounds to external visitors except:
 - External Fire Personnel;
 - External hospital ambulance staff;
 - Local Government;
 - Insurance authorities;

11.1 Alarm System to be followed during Disaster

Suitable alarms will be developed after establishment of construction camp/opening of Highways for traffic and these will be explained to each personnel working at the Highways. The alarm will also be displayed at office for the information of visitors.

11.2 Actions to be Taken on Hearing the Warning Signal

On receiving the disaster message following actions will be taken:

- Fire Fighting group, first aid group shall reach the ECC
- Team members will remain ready in their respective sections for further instructions

11.3 For Petroleum Product Leakage

In the event of massive spillage of HSD/ Gasoline/ Kerosene/ Furnace oil the spilled quantity should be reclaimed from the storm drainage channels/ rain water harvesting pits. The traces of the products may be absorbed in sand or cotton rags. The spilled area at main carriageway/ service road should be thoroughly washed with water or any neutral solvent to avoid any slippage or skidding. All effect should be made that spilled oil does not enter surface water body.

11.4 Head-on Collision /Vehicle Accident on the road

The major risk involved in this type of Disaster fatal or high degree of injury. Early response will be in terms of well-equipped ambulance with paramedical team reaching on the site. This will help in rescue of passengers from the accident site and will be taken to the nearest hospital. If need so arises the patient can be taken to one of the major and super specialty hospital in the area.

11.5 Spillage and Leakages of Oil On the road

This Disaster can occur during a leak or spillages of oil or fuel carrying tankers met with an accident on the road. The various risks involved in this is danger of skidding of other vehicles due to spillages. Risk of catching fire depends upon the flash point of the material. The early response in this case will be stoppage of vehicular movement immediately by using communication system and towing the damaged vehicle in order to make traffic easier. It is important to carry out mopping operations to collect oil spilled on the road. The clean-up procedure is of immense importance in order to avoid further hazards and consequences.

12 PROJECT BENEFITS

It is expected that the proposed Project will improve transport efficiency directly on this highway and indirectly to the State and National roads network, which will ultimately contribute to development of economic opportunities and poverty reduction in the Project influence area, in the State, as well as the nation as a whole.

The project will facilitate pro-poor economic growth by improving connectivity in the State and with the adjoining states that will help easy transportation, hence increased employment, and accessibility to basic services especially for the poor.

It should bring out details of benefits by way of:

- Improvements in the physical infrastructure and road access,
- Improvement in social services due to quicker and safe mode of transport,
- Employment potential—skilled, semi-skilled and unskilled labour—both during construction and operational phases of the project with specific attention to employment potential of local population as well as necessity for imparting any specialized skills to them to be eligible for such employment in the project
- Reduction in traffic congestion in the city/town/and other locations,
- Development of tourism, industrial parks, technology parks, smart cities, and educational complexes along the route of the expressway
- Reduced pollution, vehicle maintenance, fuel saving due to better quality of roads,

Over all development in economy and improved lifestyle

The proposed development of Nagpur-Mumbai super communication Expressway will have positive impact on the entire stretch of 750 kms. The existing conditions of Socio-economic, Infrastructure and Environmental setting will also get facelift and will be improved to great extent. Various components which may give boost for improvement includes –

- | | |
|----------------------------|-----------------------------|
| ➤ Water Supply | ➤ Road Conditions |
| ➤ Power Supply | ➤ Access to the villages |
| ➤ Public Health | ➤ Telecommunication |
| ➤ Health & Hygiene | ➤ Storm Water Network |
| ➤ Educational Institutions | ➤ Rain Water Harvesting |
| ➤ Transportation | ➤ Improvement in Green Belt |
| ➤ Solid Waste | |

13 PROPOSED IMPROVEMENT

Proposed Nagpur – Mumbai Communication Super Expressway with Access Control would be first of its kind development in India and will be beneficial for rapid transportation of the goods reducing travel time to almost half of the current travel time with a design speed of 150Kmph. It will decrease the cost of the product due to rapid transportation with low operation & maintenance cost.

Proposed Super Expressway finally shall have 3+1+1 lanes on either side of the median surfaced in concrete. Central Divider and Central Service duct dedicated for utility service corridor shall be provided if requirement is envisaged for the same.

The provisions made for this proposal are:

- Flyover/Interchange at major road crossings.
- Vehicular under pass (VUP) and Pedestrian under pass (PUP) at every village/ town.
- Bypass at every major city.
- 3+1+1 lane roads on both sides along entire length of corridor.
- For every 100 Km of the expressway there should be a aero plane landing stretch of 5Km

The following facilities are proposed be provided along the corridor:

- Emergency telephones @ every 5km
- Parking and Truck Stops
- Ambulance and Towing Facilities
- Quick Response Vehicle (QRV)
- Rest Areas at every 50 km including –
- A fuel filling station,
- Wash rooms,
- Baby changes and a playground
- Food plaza & restaurants, Shops

Wayside Amenities:

- Trauma Centre
- Truck Terminus
- IT Parks and IT Companies
- Educational Institute
- Median Plantation/Landscaping
- Bus Bays
- Tunnel Lighting
- Bridge- Beautification
- Street Lighting
- Digitized Signage
- Light Cutters
- Junction Beautification

Information Technology includes:

- Free Wi-Fi access
- Traffic Surveillance and enforcement
- CCTV
- Optical Fiber Ducts (OFC) in median for multiple network
- Traffic Safety Measures

14 ENVIRONMENTAL MONITORING PROGRAMME

			Monitoring				Institutional responsibility
			Standard	Location (Chainage)	Frequency	Duration	Implementation
Air	Operation Stage	PM10, PM2.5, SO ₂ , NO _x , CO	Air (Prevention and Control of Pollution) Rules, CPCB, 1981	All locations where baseline monitoring has been carried out.	Twice a week for 2 weeks in each location in every season (except monsoons)	Continuous 24 hours	Implementation will be done by MSRDC
Noise	Operation Stage	Noise levels on dB (A) scale	Noise Standard by CPCB,2000	At 2 locations	Reading to be taken in one location once in a season.	Continuous 24 hours	MSRDC
Soil	Construction Stage	Monitoring of Pb, oil and grease	Threshold for each contaminant set by IRIS database of USEPA until national standards are promulgated	At an accident/spill location involving bulk transport carrying hazardous material 50 m from road centre line	Once in a season for 3 seasons (except monsoons)	-	-

