

# **Education on Environmental, Occupational Health and Safety's for Road Construction Workers at State Highway-85 during Covid-19 Pandemic Situation.**

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## **Abstract:**

India is a fast Developing Country in the World. During Construction or development of Road Projects occurs a Accidents for Labours , Traffic Vehicles in sometime Environmental problems are created due to Unscientific or Unsafe Highway Construction Management Technique's. In the Highway Construction involves Physical, Chemical, Electrical, and Machineries Hazardous to the labours or Workers in Road Construction Site. And also includes Risky Operations and Occupational Unhealthy Operation , Unskilled labours Causes Deaths, Minor or Major Health issues, Accidents, delay of work , Cost affect to Contractors, losses of Construction Company Reputation. For the most important the Ergonomic injuries due to the High or Low illumination of light , High levels of Sound (db) Toxic Substances are causes the Accidents are occurred from the Ergonomic factors , Such as Exertion ,Physical Contact with Pressure, Exposure to vibrating Machineries, Expose the body to Extreme Heat or Cold Environment have create major problems on Work and Safety of the Road Construction. Mainly the workers or Labors Suffering from the Muscular Skeletal Disorders, Strain & Stress Due to the hard work, Collision with Equipment, Vehicle related Accidents. Mainly the Labours and workers behavior Plays a very important role in the Road or Highway Construction Site. The Occupational Safety and Health Act (1970) defines Protect the Employers, have a legal obligation provide with a Safe Environment with Safety Precautionary Measurements in Highway Construction. The main agenda of this Paper is to Educate and Awareness for the labors , how and why to use of Personal Protective Equipment (PPE) at Highway Construction Site, Safety Regulations, Traffic Control Systems, Safety Culture adopted in

Highway Construction, Identifying the Hazard Materials, First Aid Treatment, Causes of Accidents and Hazards, Environmental Awareness and Health Awareness Programs , Covid-19 Pandemic's etc.. And Mainly the Paper Concluded that Create a Awareness among Highway Construction Workers and Educate to Adopt the Various Safety Related Equipments, Measurements, and Protection in Highway Construction Site.

**Key Words:** Safety, Highway Construction, Personal Protective Equipment (PPE), Labours.

### **Introduction:**

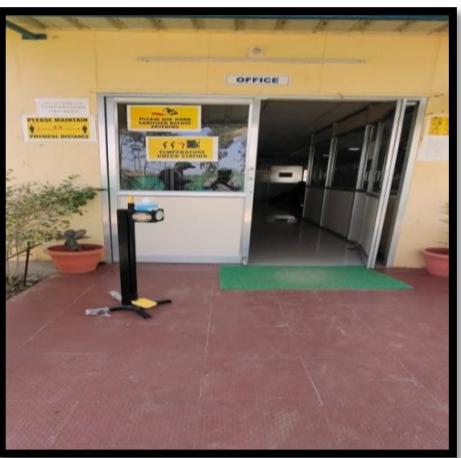
Mainly Health and Safety is important to all Construction workers , and also Safety is very needful in Construction industries. Now a day's occupational Safety and Work place Safety, Quality is also important for Labours and Workers. Apart from Quality and Safety work place, Working Environment is very needful. Implementation and Modifications is very essential in Environmental, Health and Safety Management. And it is very Safest Practicing in Constructional Activity. The Safety Culture is an team resulting product of group and individual values, Commitment , Style and Proficiency of the Company's Health and Safety Management. With respect to bureau of Labours and workers Statistics Construction Work is the Second most dangerous occupation in the world. And Many Accidents, Hazards occurred in during the operation of Road Construction work, Repairing, Bridge and Dam Construction , High and Low raise building Construction., Demolition of Existing Structure, Dismantling and Fitting out of the work. Without Safety it Causes the risks , Accidents , Hazards. And People get Seriously Injured, hurt and even Some times Death or Killed. The Main Problem in highway Construction regards to Work related Occupational Safety is that workers don't know much about. The main intension is educate to all Employers, Labours,, at Highway or Road Construction site. The main goal of this paper is Protecting Safety, health and Environment at Construction Site. The Safety Precautions that will be taken during a overall Project. The Main aim of the Construction safety Plan is to Protect the workers or Employers and the public from the Serious injury or Harm.

### **Materials and Methodology**

#### **Study Area:**

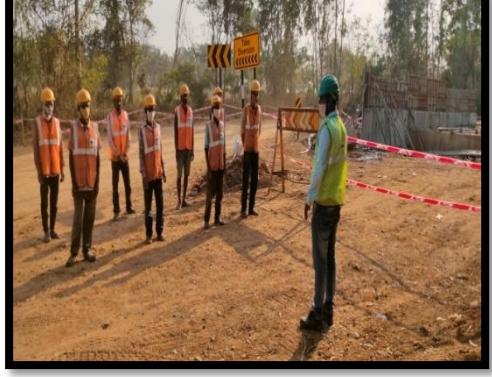
The "Two Laning with Paved Shoulder of Magadi to near Somwarpe ( Km 51.000 to Km 221.833 ) of State Highway -85, Total Highway Project is 166 km in the State of Karnataka, India on Hybrid Annuity Basis." The appointment date for the Project has been declared on 12.02.2020 .The Progress of work is being very badly affected after commencement of the work due to COVID-19.

**Environmental Health and Safety Implementation:**

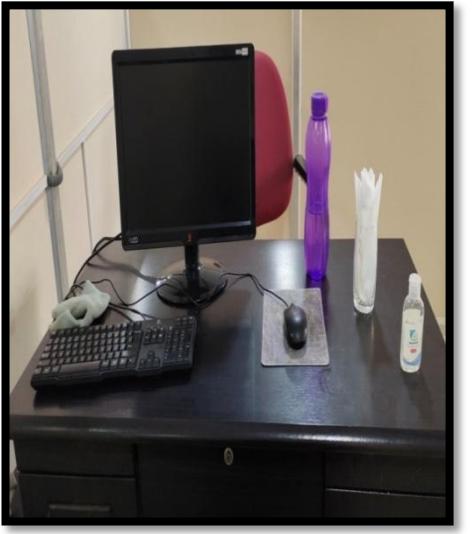
| Sl. No. | General Guidelines   | Implementation by Concessionaire  | Remarks   |
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| 1       | No Handshake and Only Namaste.   | <ul style="list-style-type: none"> <li>Strictly informed to all the Staff and Worker inside the Camp.</li> </ul>  |    |
| 2       | <p>Non-essential Physical work that requires close contact between labors Should be avoided to the extent possible. However, in event that such activities are unavoidable, Concessionaire should develop and implement precautionary protocols including provision of PPE kits, sanitizers, face shields and others as deemed fit as per industry best practices.</p>   | <ul style="list-style-type: none"> <li>All the staff and Worker are informed that no Physical contact during work.</li> <li>If any work in need should be very cautious during the work.</li> <li>Use of proper hand Sanitation, mask and Face Shield during the work hours.</li> </ul> |   |
| 3       | <p>Wash hands often (every 1-2 hours or frequently as possible) with soap for at least 40seconds . For every 10 members of workforce and labor, 1 soap dispenser , 1 hand sanitizer dispenser and 1 wash basin should be made available. Care must be taken so that dispensers are filled with soap and sanitizer at all times, and wash-basis has adequate water supply. Drainage systems in these areas should be adequately constructed to provide hygienic ecosystems to work force.</p> | <ul style="list-style-type: none"> <li>In each and every Bathroom Separate Soap, Hand wash Liquid and Tissue are Provided.</li> </ul>   |  |

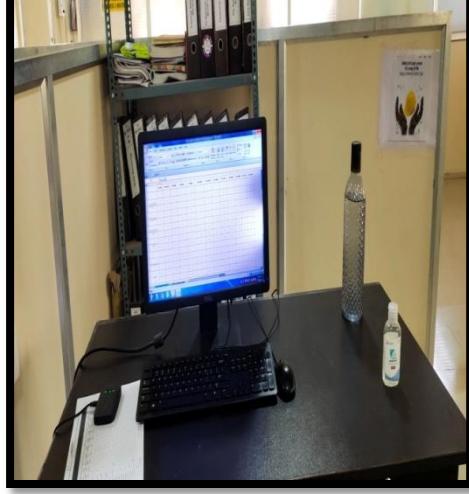
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| 4 | Awareness to use hand sanitizer by every persons at site. Signage's for using hand sanitizer.   | <ul style="list-style-type: none"> <li>Posters and Sign boards are fixed in the Office Premises regarding COVID-19.</li> </ul>                               |    |
| 5 | No person should enter the work site other than the authorized persons as authorized by supervisor.   | <ul style="list-style-type: none"> <li>Unauthorized Persons are not allowed inside the Premises of Crusher area or Camp without Prior Permission.</li> </ul> |   |
| 6 | Vehicles and machinery entering the construction sites should be disinfected by spray mandatorily.  | <ul style="list-style-type: none"> <li>All the Vehicles which are entered from outside are Disinfected while get inside the Camp Premises.</li> </ul>        |  |
| 7 | All personnel and staff at site must implement social distancing by maintaining a minimum distance of 2 of 6-feet from others at all times to eliminate the potential of cross contamination. | <ul style="list-style-type: none"> <li>All Staff and Worker are Strictly informed to Maintain a distance of 1.5-2m inside the Camp Premises</li> </ul>       |  |

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| 8  | <p>Avoidance of face to face meetings – critical situations requiring in-person discussion must follow social distancing i.e., 6 ft from others.</p>  | <ul style="list-style-type: none"> <li>All Staffs and Worker are informed to avoid the face to Face Interaction.</li> </ul>                |    |
| 9  | <p>Conduct all meetings via conference calls, if possible. Do not convene meetings of more than 10 people. Recommend use of cell phones, texting, web meeting sites and conference calls for project discussion.</p>  | <ul style="list-style-type: none"> <li>During Conference meeting only limited People are Attending with Proper Social distance.</li> </ul> |   |
| 10 | <p>Food should be consumed at designated areas only. Social distancing norms should be established in such areas by way of staggered meal timings in batches, sanitization of area after every batch. Post lunch, waste should be disposed by individual in designated bins and area should remain clean.</p> | <ul style="list-style-type: none"> <li>We provided a dedicated dining hall for taking food for all the staff and worker.</li> </ul>        |  |

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| 11 | All individual work group meetings/talks should follow social distancing.  | <ul style="list-style-type: none"> <li>• All staffs and workers are strictly follow social distancing during any kind of meeting or PPE talks and TBT</li> </ul>  |    |
| 12 | The salient features of COVID-19 would be displayed through signage's at the appropriate locations throughout worksites and stretches by the Contractor for wider dissemination and awareness. | <ul style="list-style-type: none"> <li>• Popular posters of Covid-19 are displayed inside the office and camp premises.</li> </ul>  |   |
| 13 | Each worksite should have laminated COVID-19 safety guidelines and hand-washing instructions.  | <ul style="list-style-type: none"> <li>• Guidelines of Covid-19 are provided the safety officer and head of the labor to brief about the fact of the diseases</li> <li>• In everyday before starting the work, these guidelines to be briefed in a short to the worker to understand the COVID-19 problems</li> </ul> |  |

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| 14 | All surfaces should be regularly cleaned, including mobiles, tabletops/surfaces, door handles, laptops, records, etc.  | <ul style="list-style-type: none"> <li>Staff office and camp premises are disinfected twice a day</li> </ul>   |    |
| 15 | All restroom/toilet facilities should be cleaned (minimum twice a day), and hand-washing facility must be provided with soap, hand sanitizer and paper towels. | <ul style="list-style-type: none"> <li>Every bathroom of staff and worker are kept with proper hand wash liquid soap, tissue and all the bathroom are disinfected twice a day for good hygienic condition</li> </ul> |   |
| 16 | All common areas and meeting areas are to be regularly Cleaned (min twice a day) and disinfected at least twice a day.   | <ul style="list-style-type: none"> <li>Common areas like staff office QC labs, mess and bachelor accommodation are disinfected regularly twice a day.</li> </ul>   |  |

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| 17 | Non-touch waste bin with disposable garbage bag should be installed for waste collection at all common access areas.  | <ul style="list-style-type: none"> <li>Good hygienic non-touchable waste bins are provided in all the common places.</li> </ul>  |    |
| 18 | All persons to maintain their own water bottle and should not be shared.  | <ul style="list-style-type: none"> <li>In office a separate kettle is provided to the staffs who are working inside the premises.</li> <li>Separate water bottle is provided to all the staffs.</li> </ul> |    |
| 19 | To avoid external contamination, it is recommended everyone bring food from home.   | <ul style="list-style-type: none"> <li>All staffs are instructed to bring their home food for their own hygiene.</li> </ul>  |  |
| 20 | Cover coughing or sneezing etiquette should be communicated to workforce e.g. with a tissue, and then throw the tissue in the trash and wash hands, if no tissue is available then cough/sneeze into your upper sleeves or elbow. Do not cough or sneeze into your hands. | <ul style="list-style-type: none"> <li>We strictly instructed to all the staff and workers during cough or sneezing etiquette must use your handkerchief or tissue.</li> </ul>                             |  |

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| 21 | <p>Clean your hands after coughing or sneezing thoroughly by using soap and water (Min for 20 seconds). If soap and water are not available, please use a hand sanitizer. The Contractor shall ensure adequate quantities of sanitizer and soap are made available at all locations including site offices, meeting rooms, corridors, washrooms /toilets, etc. as appropriate</p> | <ul style="list-style-type: none"> <li>Utilize proper hand sanitation or soap wash after coughing or sneezing should be done.</li> </ul>   |    |
| 22 | <p>Avoid touching eyes, nose, and mouth with your hands.</p>  | <ul style="list-style-type: none"> <li>Posters and cautions notices are provided at all office and camp premises.</li> </ul>   |   |
| 23 | <p>The workers coming from outside should observe home-quarantine for at least 14 days or shall follow such protocols as per the guidelines issued by MoHFW3 and local authorities.</p>   | <ul style="list-style-type: none"> <li>Workers are coming outside are home quarantined for 14 days.</li> <li>Quarantine site is maintained inside the camp site at Km 174+080. Procedures are followed as per the guidelines of MoHFW3 and local authorities.</li> </ul> |  |
| 24 | <p>Hospital/clinics in the nearby area, which are authorized to treat COVID-19 patients, should be identified and list should be available at Site all the time.</p>  | <ul style="list-style-type: none"> <li>All staff and workers are undergone a medical checkup.</li> <li>During the checkup if anyone identified with any symptoms of COVID-19 those are separated and take necessary precaution for the symptoms.</li> </ul>              |  |

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| 25 | Doctor to be periodically available at site (at least once a week) at pre-determined slot for any medical assistance  | <ul style="list-style-type: none"> <li>Doctor is appointed in regular basis (weekly once in week) to check the condition of the staff and workers inside the camp premises.</li> </ul> |    |
| 26 | Appropriate signage at construction to showcase safety practices in the local language, English and Hindi   | <ul style="list-style-type: none"> <li>Poster of safety slogans should be displayed inside camp premises.</li> </ul>   |   |
| 27 | Work schedules are adjusted to provide time for proper cleaning and disinfecting as required.   | <ul style="list-style-type: none"> <li>All the workers who are working in construction zone are strictly implementing the hand sanitation.</li> </ul>                                  |  |
| 28 | For any confusion, clarification and update, everyone should approach designated authority or rely on authentic source. Do not believe on rumors and don't spread them. | <ul style="list-style-type: none"> <li>For any clarification and any doubts are clarified by HR / concerned persons.</li> </ul>  |  |
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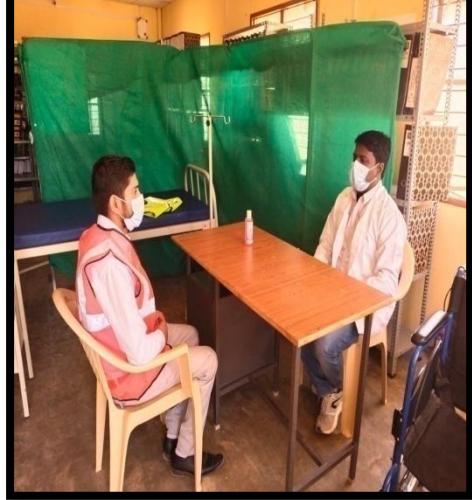
| <b>Construction Site Preventive Measures and Control</b> |   |
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| 29   | <p>The objective is to ensure continuous progress in construction work while maintaining social distancing (2m, or 1m with risk mitigation where 2 m is not viable, is acceptable), wherever possible, including arriving at and departing from work, while in work and when travelling between sites.</p> <p>We conducted safety awareness program.</p> <p>We conducted Demonstration of advanced life support and basic life support skill</p> <p>Initial management of traumatized patients at field level.</p> <p>Initial management of unconscious patients. At KNRCL-SH-85 Base Camp.</p>   |
| 30   | <p>Where the social distancing guidelines cannot be followed in full in relation to certain activities, contractor should incorporate innovative methods (ex. Usage of PPE, masks, usage of ground markers) to continue the activity for the project, and, ensure all the mitigating actions possible to reduce the risk of transmission between their personnel. Mitigating actions include:</p> <p>Increased frequency of hand washing and surface cleaning</p> <p>Keeping the activity time involved as short as possible.</p> <p>Rigorous and strict use of PPE kits.</p> <ul style="list-style-type: none"> <li>• We provide a mask, face shield, Reflective jackets, Hard-hat shoes, Safety Helmet and Hand Sanitizers, etc, Personal Protective Equipment.(PPE)</li> </ul> |



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| 31 | <p>Social distancing should be mandatorily followed across construction site, and not just the place where personnel spend their maximum time, such as entrances and exits, change rooms, canteens and similar settings. These are often the most challenging areas to maintain social distancing, however awareness among the personnel should be specifically created for following social distancing.</p>  | <ul style="list-style-type: none"> <li>In work zone, all the workers are instructed to maintain a proper social distancing with hand sanitation during working hours.</li> <li>COVID-19 Guidelines are followed with proper understanding</li> </ul> |   |
| 32 | <p>Staggering arrival and departure times at construction site to reduce crowding into and out of the construction site</p>   | <ul style="list-style-type: none"> <li>Followed by arranging arrival of vehicle in 5 minutes interval of time to avoid crowd</li> </ul>  |  |
| 33 | <p>In majority cases, labors reside at the construction site, in which case there is need for development of walking-route protocols along with the number of people who can walk together. For labors staying outside, (which are always nearby) special transportation facility will be arranged without any dependency on the public transport system. Such transportation system should follow social distancing norms with a space of at least one empty seat between two persons. Sanitization of such transportation vehicle safe reach trip is preferred.</p> | <ul style="list-style-type: none"> <li>Well established transport systems are organized to all the staffs, workers inside the camp premises and outside work zone.</li> </ul>  |  |

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| 34                               | Personnel(staff of IE, Authority and contractor) shall drive to worksite in a single occupant vehicle (in case of Bikes and Two occupants in case of cabs/cars to ensure social distancing)          | <ul style="list-style-type: none"> <li>In four wheeler, only two people are allowed and two wheeler only single people are allowed to drive the vehicle. Instruct the user to use proper mask, hand sanitizer while utilizing the vehicle.</li> </ul> |    |
| 35                               | Contractor should limit the number of visitors at the site and restriction-essential visitor at the site. Details of every person entering the construction site needs to be recorded in a logbook . | <ul style="list-style-type: none"> <li>Unauthorized persons are not allowed inside the premises. Entries are restricted with a limitation. All the visitors are name, designation, mobile number are recorded for our official purposes</li> </ul>    |   |
| 36                               | Providing hand washing facilities and hand sanitizer, at entry and exit points.  | <ul style="list-style-type: none"> <li>Entrance of the office and camp premises we provide hand sanitizer, thermal scanner to all the people.</li> </ul>  |    |
| <b>PPE and Site Sanitization</b> |  |   |   |
| 37                               | Contractor, authority and IE personnel should mandatory wear face masks at construction site.  | <ul style="list-style-type: none"> <li>We provide sanitizers, face shield, face mask, safety shoes, and safety helmets at work site.</li> </ul>   |  <p>Latitude: 12.921027<br/>Longitude: 77.167355<br/>Elevation: 863.55 m<br/>Accuracy: 10.00 m<br/>Time: 31-05-2021 12:07<br/>Note: Sanitizer working site BG 57+900<br/>Powered by NotesCam</p> |

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| 38                       | Machinery tools should be cleaned / sanitized before changing hands during activity.  | <ul style="list-style-type: none"> <li>All the vehicles, crusher unit, hot mix plant unit, RMC unit are proper sanitized weekly twice. Inside the premises, we provide hand sanitizer and mask compulsorily to avoid any kind of problems.</li> </ul> |    |
| 39                       | Adequate disposal arrangements (non touch waste bins, pedal bins etc.) should also be provided at sites.  | <ul style="list-style-type: none"> <li>Proper non touchable metallic waste dust bins are provided inside the office and camp premises.</li> </ul>   |   |
| 40                       | All worksites should have access to toilet and hand washing facility.   | <ul style="list-style-type: none"> <li>In every toilet location, we provide hand wash with tissue. Apart from hand wash soap are provided in each toilet to maintain hygienic condition</li> </ul>  |  |
| <b>Camp Arrangements</b> |   |   |   |
| 41                       | Thermal Screening at entry and exit points of construction camps: Personnel should be deployed at entry and exit points of the camps to monitor inflow of staff and labor of contractor at camps. Each person should be thermally screened at entry and exit points and their details need to be recorded in a logbook. | <ul style="list-style-type: none"> <li>Thermal scanner is provided in the entry point of office premises. All the entry and exit of staffs, workers and visitors are recorded for official purposes.</li> </ul>                                       |  |

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| 42 | Separate accommodation facilities for labors and staff of contractors and IE arriving from other states/districts, to minimize the risk of any community transmission in the area.  | <ul style="list-style-type: none"> <li>A well maintained accommodation is provided to the staffs and worker who come from different location are quarantine for 14 days as per the guidelines for safe</li> </ul>         |    |
| 43 | Labors of same shift groups to be accommodated in one facility so that should where contact is unavoidable, this happens between the same set of labors.  | <ul style="list-style-type: none"> <li>Followed with distribution of works done by DPMs.</li> </ul>   |   |
|    | <b>Medical facilities and Positive Case Event control</b>   |   |   |
| 44 | Setting up of quarantine facilities at site: Contractor should set up quarantine rooms in case of need of isolation for labors and personnel showing symptoms of COVID 19.  | <ul style="list-style-type: none"> <li>Well sanitized rooms with healthy food facilities are provided in Hotel Pavitra Paradise &amp; Company's Guest House at Nagamangala &amp; KR.Pete for quarantine people</li> </ul> |  |
| 45 | Dedicated team of health workers at site: Contractor should deploy a team of health workers (doctors and nurses) at the site for monitoring the health and safety of the personnel at site, through regular mandatory health checkups (at least once a week). Contractor should ensure COVID 19 test to be mandatory conducted for new labors before joining the workforce. | <ul style="list-style-type: none"> <li>Medical officer and doctor are available on weekly basis.</li> </ul>   |  |
| 46 | Only medically fit workers  | <ul style="list-style-type: none"> <li>Duty doctor suggest to</li> </ul>  |   |

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| certified by the doctors will be deployed at construction site. | HR/ Admin office. |  |
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### Results and Discussion:

The COVID-19 global Pandemic is impacting the Construction Project on many levels. Delays, Disruptions and Uncertainty as well as increased Project Cost is Challenging for the Concessionaire. We are being asked about what approaches are being taken to manage the risks On the Project site. We have been provided the document sets out advisory on how to work in Construction sites safely while minimizing the risk of spreading COVID-19. Here we provide a Collated view of practical steps that are being taken promptly to manage the risks of the current COVID-19 epidemic to Construction workers, official staff and to surrounding areas.

We wish to ensure that we are taking all the mitigation measures to protect our workforce and minimize the risk of infection on spread. We remind the workforce at every opportunity of the Site Operating Procedures (SOP) which are aimed to protect them and their family from the COVID-19.

### Conclusion:

Awareness and Education regards to Environmental, Health and Safety ,Covid-19 will be given to all employees to take required measures at House/Camp/Workplace. Covid-19 Awareness Pictorial made at Camp, Construction site and placed on wall to create knowledge on Do's and Don'ts. All the Employees (aged 45+ years as per direction by the govt.) at site have received their first dose of Covid-19 Preventive Vaccine from Government Hospital, Devlapura Village, Nagamangala Taluk, Mandya District. Most of them have received the Second dose of COVID-19 as well. Further, Staff will receive their Dose of Vaccine as and when available.

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