KPMG

COVID-19: Construction workplace safety

Documentation of select practices in India

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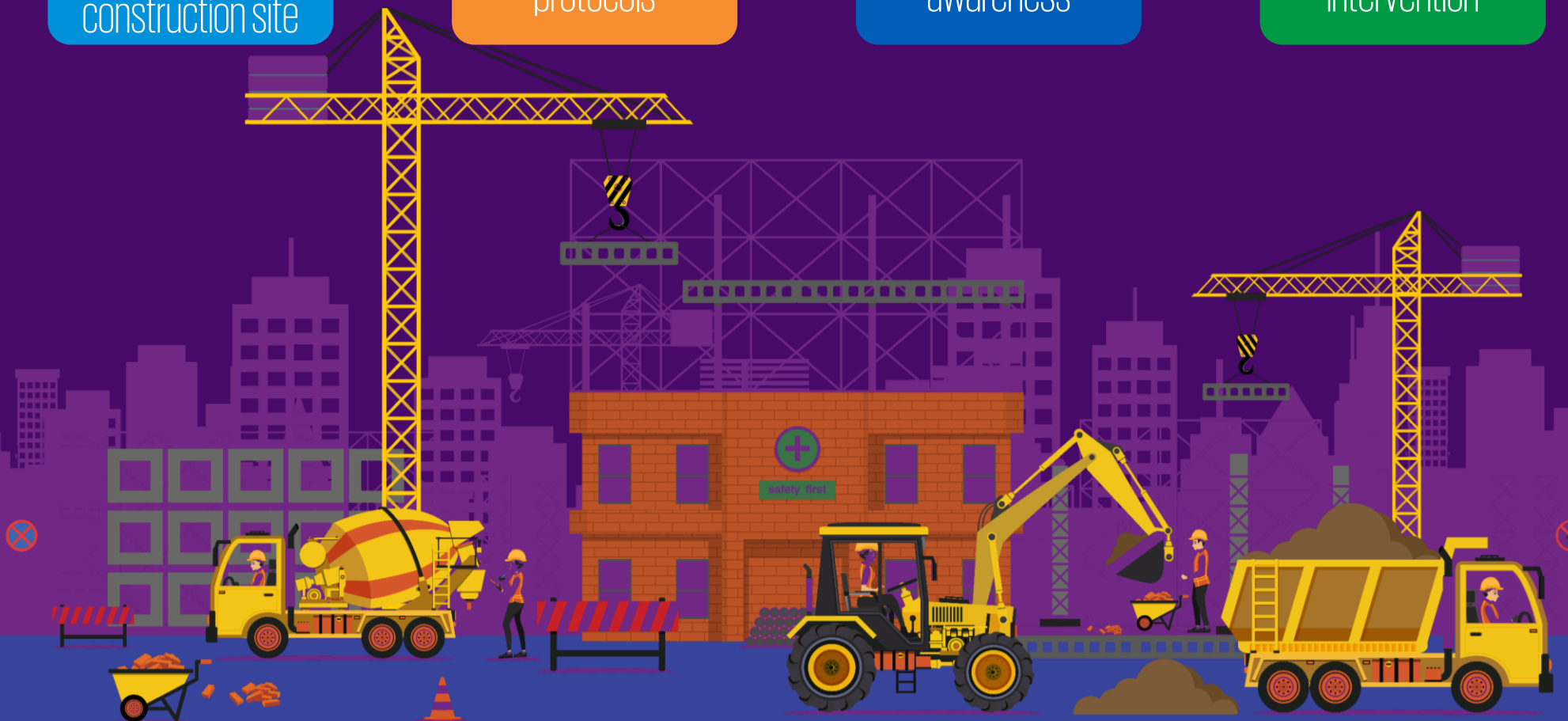
Site access and construction areas

Material management

Governance and reporting

Transportation to and from construction site

Labour colony protocols

Training and awareness

Technology intervention

Guidance note

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This document captures the select practices of construction workplace safety essential in the context of 'COVID-19' pandemic.

This document is being released for discussion purpose only. The information is indicative and illustrative and in no manner is an advice or opinion or recommendation on the subject matter(s) under consideration or any other aspect.

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These recommendations are based on current scenario. Given the dynamic situation they may not be entirely relevant as presented on date and therefore to be read as such.

Introduction

Both project owners and contractors are responsible for ensuring the implementation of and compliance with post COVID-19 rules and other applicable requirements issued by the government. These regulations are centered around the safety and wellbeing of construction workers, such as: The Building and Other Construction Workers Act (BOCW), Epidemic Disease Act 1897, National Disaster Management Act 2005, The Contract Labour Act, Government of India, Ministry of Home Affairs order (15 April 2020), Ministry of Health and Family Welfare safety awareness guidelines, etc. This document is not meant to supersede those requirements.

This document includes selected construction workplace safety practices that may be followed at construction sites, which are also in line with the ones issued by the government and concerned authorities.

Careful planning, awareness and compliance monitoring and reporting will be required on a regular basis to ensure enlisted practices are followed at sites. The workforce will need to be trained to enable them to follow these new norms applicable to their routine construction tasks post COVID-19.

The process of documentation will become particularly important post COVID-19. Staff data, in terms of recent travel history, medical history, symptoms if any and data which would enable contact tracing to identify persons who could potentially be infected, is critical to not only to inform the government authorities promptly, but also identify the infected zone and track down at-risk individuals in and around the site, should the incidence have emerged from the site.

Safety practices herewith have been organised keeping in view typical work activities undertaken by construction staff on daily basis. There is specific focus in this document on technology, governance and training which will further strengthen the Safety practices.

Key considerations for project owners and contractors post COVID-19

1 How do I create a COVID-19 safe working environment for my workforce?

2 How do I minimise any risk of negative brand impact, in case of an instance/spread of COVID-19 from my site?

3 How can technology be leveraged for effective safety, tracking and monitoring of workforce?

4 Are there lessons from other industries to be leveraged?

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1. Transportation to and from construction site

- Screening, sanitization and safe distancing norms need to be duly followed prior and during transportation of construction staff to and from site. Travel time can also be effectively utilised to create awareness of the required safety norms.

- Working hours may be staggered if possible, or remote working options for project management staff be put in effect to minimise the number of construction staff at site.

- Non-essential visitors should be discouraged to visit construction site.

- Additional practices for transportation of construction staff could include the following:

1. Vehicles being used to transport workers to construction sites or vice-versa to be thoroughly disinfected prior to onboarding of staff for each trip

2. Every worker to undergo temperature screening and only the ones 'fit to travel' to be allowed to board the vehicle

3. Adequate marking on the ground to be put in place for staff waiting to be screened to comply with safe distancing norm

4. Log of workers screened to be maintained and anyone suspected of symptoms post screening to be prevented from onboarding from the labour camp, before start of day's work. Instance to be reported to the company safety coordinator immediately for such cases on daily basis

5. Workers 'fit to travel' to be allowed boarding the vehicle

6. Wearing of suitable masks and Personal Protective Equipment (PPE) as per regulatory guidelines to be made mandatory at all times

7. 'Journey management plan' documenting the travel route, time, and traveller details to be prepared for each trip

8. Safe distancing norms to be practiced in the vehicle to seat the workers. Additional trips or vehicles to be arranged to accommodate the required number of staff. No one to be allowed to travel while standing in the vehicle

9. Travel time to be utilized to create awareness about construction worker safety norms using audio – visual mediums and/or display of educational graphic media in the vehicle

10. Vehicle wash down/disinfection area to be created at site entry to ensure adequate safeguards

11. Traffic warden to be deployed at drop off location to ensure safe distancing measures are maintained while off boarding of worker from more than one vehicle

12. Construction staff to be off boarded from the vehicle while ensuring safe distancing norms.

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| Site access | Site office | Lunchrooms/canteens | Stairwell, scaffold stair towers | Hoist operations | Site sanitation measures | Construction areas | On-site medical infrastructure |

2. Site access and working areas

- Each construction site, contractor and its subcontractors are recommended to appoint one or more COVID-19 Safety Coordinators, who should be tasked to ensure compliance for their respective staff against the set out COVID-19 safety compliance procedures on daily basis.

- COVID-19 compliance procedures to be mandatorily included in the contractor's site-specific safety manuals. Post review and approval of the safety manual by the approving agency (owner, owner's representative, general contractor, etc.), site mobilisation to be allowed.

- Site safety manuals to clearly highlight work activities and corresponding mitigation plans to be identified where COVID-19 safety procedures might be difficult to adhere to, given the nature of work (E.g.: Concrete pour, lifting –transporting material, etc.), PPEs (face shields, fall protection ropes, etc.), tools, equipment which could be

potential transmission points due to shared use.

- Approved mitigation measures to be discussed prior to start of work. Product cut sheets of the sanitisation products to be deployed by the contractor to be identified upfront and submitted for approvals.

- Consumption of tobacco, smoking and spitting in open to be strictly prohibited inside the construction site.

- COVID-19 awareness signage, posters in regional languages to be installed at all traffic prone areas including entry, exit points, labour camps, break out areas, canteens, meeting rooms, fabrication yards, material docks, stores, etc.

- As the construction staff arrives at site, following procedures to be followed. Once the construction staff enters the site, their movement outside of the site to be restricted, in case of exit and re-entry the suggested steps to be reperformed.
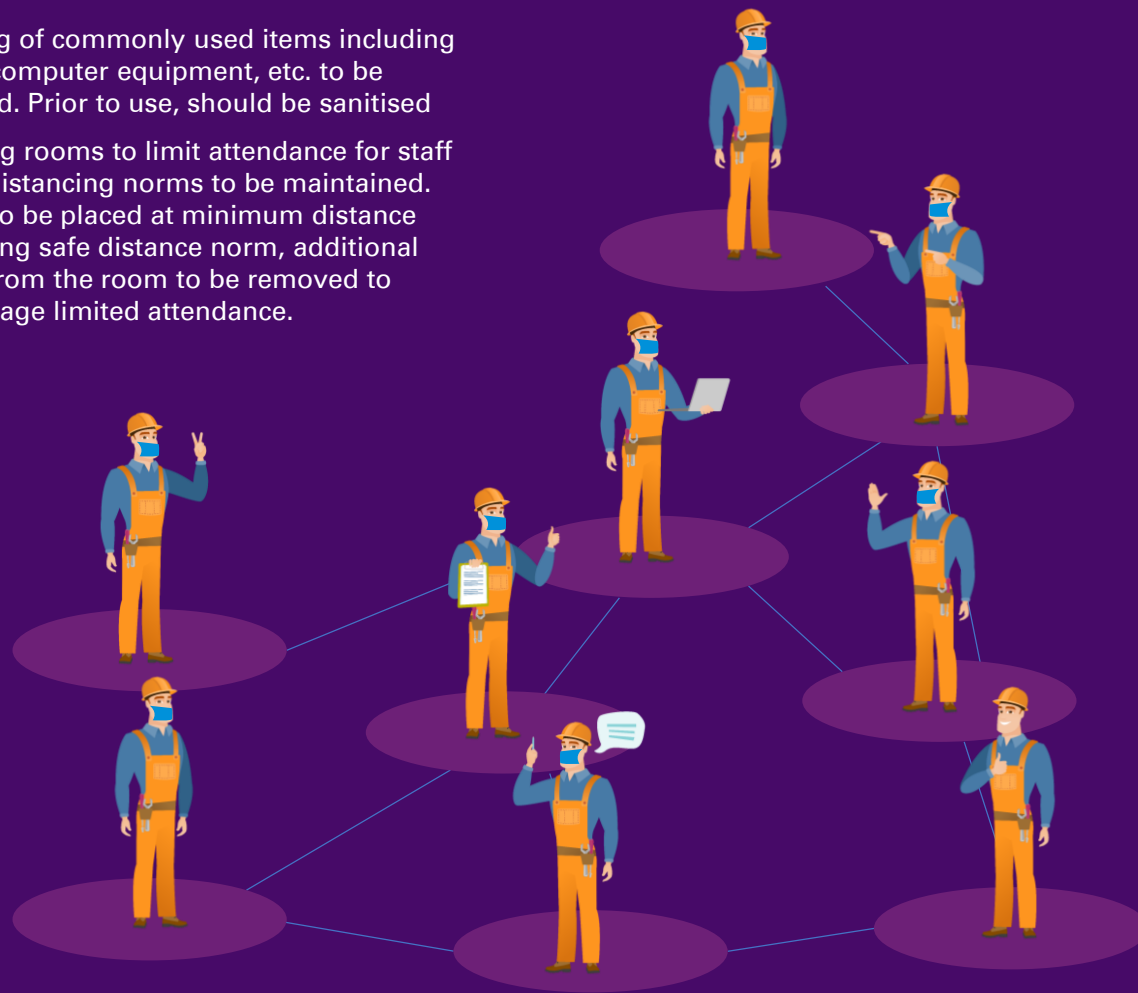
A Site access
B Site office
C Lunchrooms/canteens
D Stairwell, scaffold stair towers
E Hoist operations
F Site sanitation measures
G Construction areas
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A. Site access

1. Install adequate mark up on ground to help staff comply with safe distancing norm as they que up for gaining site access

2. Conduct temperature scan of staff for COVID-19 screening at start and end of shifts. Log in staff details basis predefined questionnaire pertaining to travel history, if the individual came in contact with any COVID-19 positive individual during last 24 hours, or at the end of shift if they are experiencing any COVID-19 symptoms. Exceptions to be highlighted to site safety in-charge and also reported immediately to regulatory authorities as prescribed in next steps

3. A colour-coded entry pass (one for each day of week) to be provided to the staff upon entry to represent 'fit to work' staff. The pass to be worn at all times during stay at the site and be visible to others

4. Designate area for staff to wear PPE to be disinfected at least twice a day. PPE, radios (walkie-talkie) to also be disinfected before and after use. Do not share PPE, radios (walkie-talkie) between staff

5. Use of regulatory authority prescribed safety mask to be made mandatory for staff while at site

6. Mandatory site orientation meeting and safety toolbox for site staff prior to start of daily work to be conducted. Agenda items to include daily work plan and COVID-19 safety procedures to be maintained for the activities as per workplan and in general during the stay at site

7. Daily orientation meetings and toolbox talks to be held in open areas preferably while maintaining safe distancing norms. If to be conducted in rooms, then only number of individuals that can maintain safe distancing to be allowed, else additional sessions to be conducted.

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B. Site office

1. Identify typical visitors list and limit their access into the site office, tasks that can be addressed outside (e.g.: dropping of forms, etc.) or at a different location, to be encouraged

2. Post signages at the entrances 'Restricted access'

3. Handwash sink to be piped to secured drains, or hand sanitizers to be made available for visitors / staff at entrance. Additional hand sanitizers to be made available in each room

4. Develop checklist of all commonly used items (doorknobs, pantry equipment, stair rails, chairs, etc.) and surfaces (pantry counters, sinks, etc.) to be wiped cleaned periodically by sanitizer solution by housekeeping staff. Construction safety coordinator to ensure procedural compliance

5. Site office to be disinfected at a minimum prior and post completion of work on daily basis

6. Sharing of commonly used items including pens, computer equipment, etc. to be avoided. Prior to use, should be sanitised

7. Meeting rooms to limit attendance for staff basis distancing norms to be maintained. Seats to be placed at minimum distance following safe distance norm, additional seats from the room to be removed to encourage limited attendance.

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C. Lunchrooms/canteens

1. Stagger break/lunch hours to reduce number of staff in the room at the same time

2. If possible, deploy individual to control number of individuals entering the space to encourage distancing norms, especially in case of large construction sites

3. Food should be consumed at designated areas only ensuring safe distancing

4. Post appropriate signage in the rooms to create COVID-19 safety awareness

5. Seating arrangements to be modified complying with safe distancing norms

6. Clean and disinfect tables, microwaves and other commonly handled items (doorknobs, etc.)

7. Kitchen deliveries, utensils to be cleaned prior and after use as per regulation guidelines

8. Kitchen surfaces which gets frequently in contact with staff to be regularly cleaned and sanitised.

D. Stairwell, scaffold stair towers

1. Institutionalize process of 'call out' by staff prior to using the stairs, this will avoid crossing over of staff on a staircase and safe distancing norms being compromised

2. Institutionalize one-way access stairwells, if possible, to avoid cross over traffic

3. Handrails to be regularly disinfected and procedure time logged in the compliance form for review.
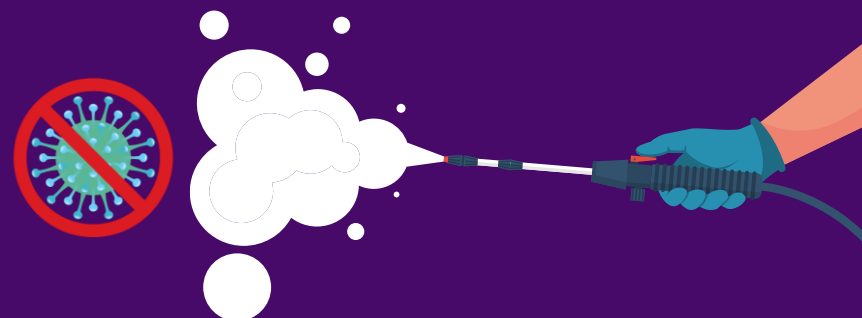

SAFE DISTANCING

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E. Hoist operations

1. Outside the hoist, post signage for the staff to maintain safe distancing norms, install appropriate marking on the ground/floor for compliance

2. Hoist surfaces including operating buttons, etc. which are touched frequently by the operator and passengers to be disinfected regularly

3. Limit passenger capacity in the hoist to ensure compliance with the distancing norms. Advisable to install marking on the hoist floor for visitors to stand

4. Onboard passengers in a sequence to ensure they don't cross others to deboard. Individuals to deboard first should stand next to the hoist door

5. Preferably the passengers to stand facing out to avoid being in the breathing zone of others.

F. Site sanitation measures

1. Locate hand sanitizers or handwash sinks (including temporary) with clean running water, paper towels at all high traffic areas and one in each construction zone, designated area at the site including stores, fabrication yard, etc. Provide foot operated garbage cans in all toilets and site office rooms

2. Discharge from the sinks not to be done in the open, it should be either piped to a covered drain or collected in a container which should be removed and discharged periodically into covered drains prior to flooding

3. Limit number of staff to use toilet facilities at a given time to ensure distancing norms, install signages outside of facilities mentioning capacity for use at a given time

4. Toilet facilities and fixtures to be disinfected by maintenance staff regularly and documented in procedure checklist to ensure compliance.

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G. Construction areas

1. Preplan daily work and organize work areas into zones to ensure safe distancing norms are followed. Also, restrict the no. of workers in a defined zone to the extent possible

2. Prior to start/end of daily work, disinfection of tools, equipment, PPEs to be done

3. Disinfecting work zones periodically during the day, at break hours to be undertaken

4. Management to recommend staggered start, end times of crew to prevent overcrowding at entry/exit points

5. Gatherings around any inauguration, ground-breaking ceremony, top up's, vendor/sub-contractor meets, contractor reward recognition ceremonies shall not to be permitted

6. Shuffling of workers operating equipment or working in any other area of the zone to be avoided

H. On-site medical infrastructure

1. Temporary isolation rooms and rest rooms to be created at site for staff who may develop COVID-19 symptoms while at site

2. Necessary tie-ups with nearest hospitals to be made for treatment of COVID-19 affected patients

3. COVID-19 safety coordinator, site safety officer at minimum to be provided training in handling and isolating any affected staff at site per statutory guidelines.

3. Labour colony protocols

1. Limit labour dormitory occupancy to ensure compliance with distancing norms. Beds for the labour to be earmarked

2. Social gatherings to be restricted, safe distancing and recommended hygiene protocols for common facilities (dining rooms, restrooms, etc.) to be implemented

3. Labour colonies to be cleaned and disinfected on daily basis

4. Install additional hand washing stations with clean running water and soaps at common locations and at the entrance of room clusters. Handwashing stations to discharge in covered site drains

5. Install do's and don'ts posters at colony premises in all languages spoken by the workers. Audio messages through public address systems may also be used

6. Ensure compliance through security guards or use of cctv cameras installed at strategic locations

7. Arrangements to be made for supply of all essential items like food grains, groceries, drinking water, etc. in the labour colony itself, to restrict movement of labour outside

8. Labour camps to be fenced and secured, especially on large sites, with visitor entry to be manned and restricted.

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4. Material management

1. Loading/unloading zones to be clearly identified with limited access to concerned teams only

2. All vehicles entering or exiting the site to be disinfected

3. The delivery staff should go through the site access procedures as outlined earlier in the document

4. To the extent possible shipment documents to be reviewed and validated in digital formats and exchange of physical paperwork to be avoided

5. Unloaded delivery to be disinfected prior to keeping in store. In case the delivery item cannot be disinfected, the item to be stored in a separate weather protected area for 72 hours prior to use. Stores to be disinfected daily

6. Construction waste to be removed from site in covered containers/vehicles.

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5. Training and awareness

1. Agreements with contractors to include clause to provide required trainings, PPE, other infrastructure to ensure COVID-19 safety compliance as per contract requirements

2. Contractors to update their safety induction, orientation, regular training programmes to include topic of COVID-19 safety for construction workers

3. COVID-19 safety trainings to also be conducted at predefined frequency

4. Documentation including training logs to be maintained for all trainings conducted and be readily available for review upon request

5. Institutionalize reward and recognition program for subcontractors and individuals. Three strike policy may be implemented for non-compliance i,e if any individual fails to comply the norms three times or more may be subjected to penalization or termination

6. Recommend installation of Aarogya Setu app by individuals. This app has been developed to spread awareness about COVID-19 and notify the individual if they came in close contact with an individual with COVID-19 history.

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6. Governance and reporting

1. Constitute a COVID-19 response unit including COVID-19 safety officer, select members of management and owner staff and to co-ordinate and plan responses and provide information to leadership and management for decision making, prioritisation of urgent actions, co-ordination with other stakeholders

2. Daily, weekly, monthly reports, senior management meetings to include status of COVID-19 safety compliances including information pertaining to worker screening (E.g.: No. of workers screened at different pre-identified locations, details of workers suspected to have symptoms)

3. All meetings of the project stakeholders may be mandated to start with the status of COVID-19 safety compliance highlighting importance of worker safety. This shall also encourage repeat messaging and stronger compliances going forward

4. Update site safety procedures including compliance checklists to include measures to be adopted for COVID-19 safety, updated job descriptions, Key performance indicators (KPI) of respective staff including COVID-19 safety coordinator, in line with revised documentation.

How can we help?

7. Technology intervention

1
Artificial Intelligence and advance algorithms on visual feeds can be used for PPE monitoring.

4
Digital scanners for recording staff attendance, documenting questionnaire responses in an electronic database may be deployed.

7
Data from these GPS/IOT enabled devices can also feed into any reward and recognition, three strikes programs at the sites.

2
Thermal imaging scanners may be deployed for easy temperature screening of a group of individuals.

5
Post screening 'fit to work' staff may be provided with a GPS/IoT enabled wearable safety device for the duration of stay at the site for maintaining and monitoring compliance with distancing norms. Devices to be returned to site management team prior to exit from site by staff.

8
Construction zone marking may be done with Geo-fencing and alarms to be triggered to workers and control rooms in case of violations.

3
Drones with options of spraying disinfectant on an isolated risk area, monitoring worker safety, making any important or precautionary announcements, thermal imaging may be deployed for large scale, spread out sites to ensure compliance.

6
Automated alerts and notifications to management basis predefined COVID compliance thresholds and reporting frequencies.

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7. Technology intervention

9

Occupancy of common areas (training rooms, canteen, etc.) may be displayed through digital displays to comply with physical distancing. Data from the wearable devices can be used to read and display space occupancy.

11

Real time scenarios using virtual reality technology may be used to make workers acclimatize to the COVID-19 compliance safety norms.

13

Digital safety training kiosks may be implemented at sites to increase or test awareness among workers about COVID-19 safety compliance requirements.

10

Use of building information modelling (BIM) for improving resource efficiency may be encouraged to ensure more off-site construction by staff to be done in a controlled environment to facilitate better COVID-19 safety compliances.

12

COVID-19 compliance app including chat bots in multiple languages may be introduced over mobile applications to answer any on the move queries.

14

A control centre with appropriate remote camera technology may be established at/off site for compliance monitoring of COVID-19 and other safety practices also allowing overall progress monitoring.

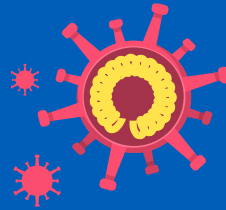| Transportation to and from construction site	Site access and construction areas	Labour colony protocols	Material management	Training and awareness	Governance and reporting	Technology intervention

How can we help?

Technology solutions for construction workplace safety and productivity enhancement

Prioritisation of your portfolio projects

COVID-19 impact assessment on projects

Post COVID-19 project delivery strategy assessment and implementation support

Digitally enabled portfolio and project transformation

Setting up an outcome driven program and project management office

Appendix: Important web links

Government of India, Ministry of Home Affairs, Order, No. 40-3/2020-DM-I(A)	https://www.mha.gov.in
Government of India, Ministry of Health and Family Welfare, COVID awareness guidelines	https://www.mohfw.gov.in
Building and other construction workers act	https://labour.gov.in
Labour laws	https://labour.gov.in/labour-law-reforms
Disaster Management Division - Laws, Policies and Plans	https://www.ndmindia.nic.in/laws-plans-and-policies

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4. Guidelines work camps during COVID-19, Government of Yukon

5. Centers of Disease Control and Prevention, Corona Disease 2019

6. COVID-19, Occupational Safety and Health Administration (OSHA), United States Department of Labor

7. Construction site health and safety during COVID-19, Ministry of Labour, Training and Skills Development, Government of Ontario

8. Epidemic Disease Act, 1897

9. The Disaster Management act, 2005

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