VERSION 2.0

GUIDELINES

FOR RESUMPTION OF
AIR-CONDITIONING & VENTILATION,
FIRE & LIFE SAFETY, ELV SERVICES,
ELECTRICAL & PLUMBING SYSTEMS FOR
COMMERCIAL & INDUSTRIAL FACILITIES
POST COVID-19 LOCKDOWN

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Ministry of Commerce & Industry
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SECTION - A
GENERAL GUIDELINES

REFERRING TO CIRCULAR NO. Z-28015/17/2020-ESTT.I, ISSUED BY GOVERNMENT OF INDIA, MINISTRY OF HEALTH AND FAMILY WELFARE ON DT. 19TH APRIL 2020 EVERYONE IS ADVISED TO TAKE FOLLOWING PRECAUTIONARY MEASURES IN ORDER TO CONTAIN THE SPREAD OF COVID-19 BEFORE RESUMPTION OF OPERATIONS POST LOCKDOWN.

(i)   Must use reusable / cloth face cover.

(ii)   Ensure proper cleaning and frequent sanitization of the workplace, particularly of the frequently touched surfaces.

(iii)   Cover your nose and mouth with handkerchief / tissue while sneezing and coughing.

(iv)   Maintain personal hygiene and physical distancing.

(v)   Strict disinfection protocols should be followed in the building / room as per guidelines.

(vi)   Practice frequent hand washing with soap and water or use alcohol-based hand rub / sanitizers.

(vii)   Seating arrangement in Sections / rooms may be made to ensure adequate distance between officials in the rooms.

(viii)   Gathering especially in canteens must be avoided.

(ix)   Gathering of 5 or more persons at any place in the office should be avoided.

(x)   Discourage, to the maximum extent, entry of visitors in the office complex. Routine issue of visitors / temporary passes has already been suspended. Only those visitors who have proper

permission of the officer, whom they want to meet, should be allowed after being properly screened.

(xi)   Meetings should be done through video conferencing only.

(xii)   Undertake essential correspondence on official email and avoid sending physical files and documents to other offices, to the extent possible.

(xiii) Facilitate delivery and receipt of dak at the entry point itself of the office building, as far as possible

(xiv)   All officials are advised to take care of their own health and look out for symptoms such as fever, respiratory problem and, if feeling unwell, should leave the workplace immediately after informing their reporting officers.

(xv)   Such employees should observe home-quarantine as per the guidelines issued by MoH&FM, Government of India available at the following URL: https://www.mohfw.gov.in/pdf/Guidelines forhomequarantine.pdf

(xvi)   The leave sanctioning authorities are advised to sanction leave whenever any request is made for self-quarantine as a precautionary measure.

(xvii) All employees who are at higher risk i.e., older employees, pregnant employees and employees who have underlying medical conditions should take extra precautions. These employees should not be exposed to any front-line work requiring direct contact with the public.

The employees who are residing in notified containment zones are advised to follow the guidelines of the local authorities regarding movement in these zones and should join office only when such conditions are relaxed by the concerned local authorities.

All employees are advised to strictly follow the above mentioned precautionary measures.
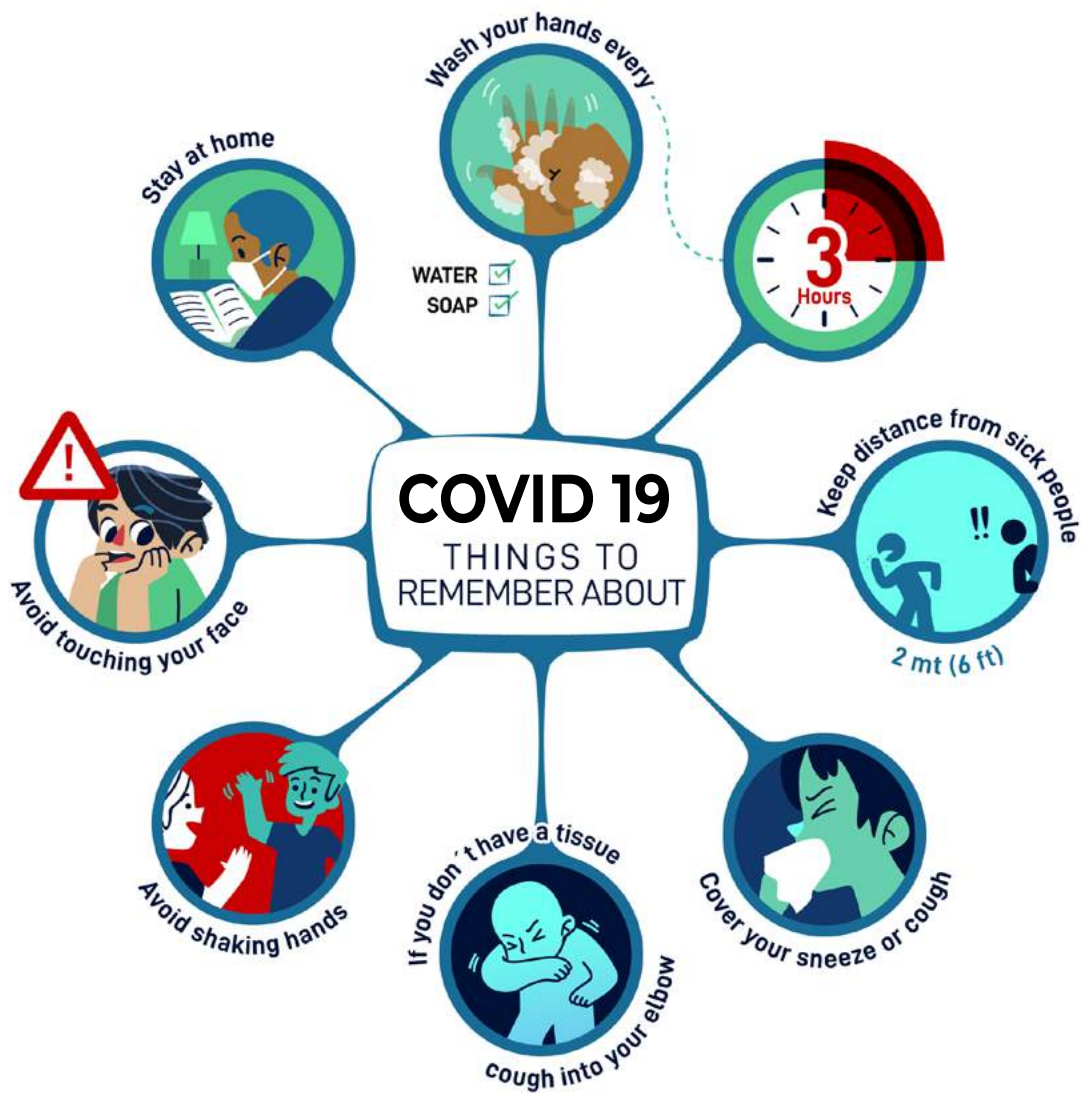
VERSION - 2.0
FOR RESUMPTION OF AIR-CONDITIONING & VENTILATION, FIRE & LIFE SAFETY,
ELV SERVICES, ELECTRICAL & PLUMBING SYSTEMS FOR COMMERCIAL & INDUSTRIAL
FACILITIES POST COVID-19 LOCKDOWN

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DISCLAIMER

In compiling this Document, the Task Force and the respective societies have strived hard be as accurate and complete, as possible. However any other entities thereof do not, at any time, warrant or represent that the contents within is complete. While all attempts have been made to verify information provided in this Document, ISHRAE / FSAI / IEEMA / IPA / GACS assumes no responsibility for any errors, omissions, contradictions information, contrary interpretations, the relevance of the application of Standards to mitigate the present Pandemic, or the reference of the latest updates of the information / data / charts of the subject matter herein.

This Document is only a collection of data assimilated from various sources and is not statutory or compliance document for any approvals, recommendations, certifications or reference.

For more details, write to: covid@fsai.in

ABOUT ASSOCHAM

ASSOCHAM

Celebrating 100 Years

THE KNOWLEDGE ARCHITECT
OF CORPORATE INDIA

ASSOCHAM initiated its endeavour of value creation for Indian industry in 1920. Having in its fold more than 300 Chambers and Trade Associations and serving more than 4 lakh members from all over India. It has witnessed upswings as well as upheavals of Indian Economy, and contributed significantly by playing a catalytic role in shaping up the Trade, Commerce and Industrial environment of the country.

Today, ASSOCHAM has emerged as the fountainhead of Knowledge for Indian industry, which is all set to redefine the dynamics of growth and development in the technology driven cyber age of 'Knowledge Based Economy'.

ASSOCHAM derives its strength from its Promoter Chambers and other Industry/Regional Chambers/Associations spread all over the country.

ASSOCHAM's vision is to be a Partner in Nation Building, leveraging an immense untapped energy of 130 crore Indians, aspiring to be among the top global leadership.

ASSOCHAM represents the interests of more than 4 lakh direct and indirect members. Through its heterogeneous membership, ASSOCHAM combines the entrepreneurial spirit and business acumen of owners with management skills and expertise of professionals to set itself apart as a Chamber with a difference. Currently, ASSOCHAM has 80 Expert Committees covering the entire gamut of economic activity in India. It has been especially acknowledged as a significant voice of Indian industry in the field of Information Technology, Biotechnology, Telecom, Banking & Finance, Company Law, Corporate Finance, Economic and International Affairs, Tourism, Civil Aviation, Corporate Governance, Infrastructure, Energy & Power, Education, Legal Reforms, Real Estate & Rural Development, Sustainability and GEM Green Building Certification etc.

ASSOCHAM is all geared up to leverage its strength of its exhaustive understanding of various global markets and provides strategies and opportunities to its members for overall development and optimized usage of 'Knowledge Based Resources'.

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1 AIR CONDITIONING & VENTILATION SYSTEMS

FOR RESUMPTION OF AIR-CONDITIONING & VENTILATION, FIRE & LIFE SAFETY, ELV SERVICES, ELECTRICAL & PLUMBING SYSTEMS FOR COMMERCIAL & INDUSTRIAL FACILITIES POST COVID-19 LOCKDOWN

ISHRAE

INDIAN SOCIETY OF HEATING, REFRIGERATING AND AIR CONDITIONING ENGINEERS

Start up and Operation of Air conditioning and Ventilation systems during Pandemic in Commercial and Industrial Workspaces

*Refer to ISHRAE COVID-19 Guidance Document for Guidance for Service Technicians and for Residence and Healthcare Facilities –

Download from www.ishrae.in

Indian Society of Heating, Refrigerating & Air Conditioning Engineers

ISHRAE®

About ISHRAE

The Indian Society of Heating, Refrigerating and Air Conditioning Engineers (ISHRAE), was founded in 1981 at New Delhi by a group of eminent HVAC&R professionals. ISHRAE today has over 30,000 HVAC & R professionals and Student -members. ISHRAE operates from 43 Chapters and sub Chapters spread across India with its Head Quarters in Delhi. ISHRAE is led by a team of elected officers, who are members of the Society, working on a voluntary basis, and collectively called the Board of Governors.

Start up and Operation of Air conditioning and Ventilation systems during Pandemic in Commercial and Industrial Workspaces.

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Preface

 Concerns have been raised about the likelihood of the spread of the COVID 19 Virus through operation of Air-conditioning and Ventilation Systems. Infectious diseases can spread by several different routes including transmission through air. The questions being asked are whether their spread can be accelerated or controlled by heating, ventilating, air-conditioning and refrigeration (HVACR) systems, depending on how the system is designed and operated.

To put a comprehensive guideline together, a COVID-19 Task Force was set up by ISHRAE's Technical Committee. This Guideline has been prepared after a detailed study and analysis of information and literature available till date.

ISHRAE recommends that all facilities operated with air conditioning and ventilation, on the Indian Sub Continent, follow this guideline.

Vishal Kapur
Chair – COVID 19 Task Force &
ISHRAE Technical Committee
For any queries please write to **covid@ishraehq.in**

Release Date:
April 21, 2020

Please refer to our **"COVID-19 Guidance Document for Air Conditioning and Ventilation"** for more details on :

• Guidance for Healthcare applications

• Guidance for Residences

• Guidance for portable air cleaners

• Do's and Don'ts for service technicians

This document is available for free download on www.ishrae.in

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Recommended Indoor Environment Conditions:

The COVID-19 pandemic, commonly known as CORONA has engulfed the world and India is no exception. The COVID-19 virus belongs to the CORONA family to which SARS and MERS also belong. As the COVID-19 virus is still not fully understood, the behavior of SARS and MERS is considered as a reference to the extent they do not contradict the present observations. The COVID-19 virus affects the respiratory track and starts with symptoms similar to the common flu. This virus is a mutated strain and as of today no vaccine is available.

1. TEMPERATURE

Set Room Temperature between 24°C and 30°C (In humid Climates set temperature closer to 24°C for de-humidification and in Dry Climates closer to or at 30°C. Use Fans to increase air movement .

2. RELATIVE HUMIDITY

Maintain Relative Humidity relative humidity between 40% - 70% . This band of humidity is the recommended suitable environment for humans & reduces the impact from pathogens.

3. VENTILATION (FRESH AIR & EXHAUST)

Fresh air must preferably be provided by an inlet duct and fan.

A minimum fresh air volume of 8.5 cum/hour per person and 1.1 cum per hour per sqm (5 cfm per person and 0.06 cfm per sq ft) must be provided . The recommendation is to maximize supply of outside air within the limits of the system.

Add a TFA (treated fresh air) unit if recommended Fresh Air intake impacts cooling performance.

In exceptional cases of very small commercial spaces without provision of mechanical ventilation systems actively use operable windows.

Commercial and Industrial Facilities:

Commercial Establishments and Industrial Facilities have multiple occupancy as well as transient visitors. It is this aspect that necessitates precaution in operating their Air conditioning Systems.

For the purpose of Guidance for operation during a Pandemic like COVID-19, Air Conditioning is Categorized based on the **types of Indoor Units installed as well as Outdoor Units and Systems**

Indoor Units may be connected via refrigerant or chilled water pipes to DX Outdoor Units , VRF Outdoor Units or a Chiller)

Outdoor Units and Equipment are described by Type – Condensing Units, Chillers, Cooling Towers, Pumps , Fans

Start up and Operation of Air conditioning and Ventilation systems during Pandemic in Commercial and Industrial Workspaces.

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General Start-up Guidance (Indoor Units):

Most Commercial establishments have remained closed during the lockdown. These establishments will need maintenance for both Engineering and Health safety. The air-conditioned spaces of establishments under prolonged lockdown will pose health hazards due to fungus and molds in the ducts and open spaces depending on the humidity and temperature prevailing within. Further there may be bird droppings, and excreta of rodents as well increased level of insects.

The following steps are recommended for the start-up of air conditioning system.

1. The user or the owner should get the area sanitized

2. Study the fresh air and exhaust system adequacy as per the guidelines and modify the system if possible.

3. Carry the preventive maintenance on all the units as per manufacturer's guidelines. This should include disinfecting and cleaning of :

    a. **Filters, grilles, diffusers & internal surfaces:** it is recommended to use 5% Cresol solution (containing 50% Cresol and 50% Liquid soap solution). Mix 1 liter of this solution in 9 liters of water. The surface shall besprayed with this solution, left for 10 minutes and then washed / wiped clean with water / cloth. (the above methodology is only for washable filters).

    b. **Condensate drain pan:** Disinfecting / treatment of condensate drain pan is suggested using UV treatment or 1% sodium hypochlorite solution.

    c. **Coils:** Follow standard recommendations of coil cleaning using the same protocol as that of the filters specified above.

4. In case the area has ducted air distribution, it is advisable to clean the ducts by an appropriate method that may include santization.

5. The following process is recommended at start-up :

    a. Open all the doors and windows of the space.

    b. Ensure that all cleaning protocols as advised above are complete

    c. Run the fresh air system at the maximum intake of air setting.

    d. Start and run the exhaust systems if available.

    e. Start the air conditioning system in fan mode only, and run it for minimum of two to four hours with doors open and exhaust system operational.

    f. Install the clean & sanitized filters

    g. Start the AC in normal mode and run for two hours with doors open and then close the doors and windows.

6. The fresh air and ventilation system should be kept on throughout the off cycle and on the weekend and holidays in air circulation mode.

General Start-up Guidance (Outdoor Units & Systems):

Follow standard practice for start up and operation of all installed Condensing Units , Chillers , Cooling Towers , Pumps , Fans that shall include inspection, strainer cleaning if applicable and check water quality where exposed to environment especially in Cooling Tower sumps.

SPECIFIC START UP & OPERATION GUIDANCE :

I) **Cassette Units:** Check and replace or clean Filters, wipe and disinfect all air contact surfaces, check and disinfect Drain pan, clean the coils, check and secure Fresh Air connectors to Cassette Unit.

ii) **Hi Wall Units:** Check and replace or clean Filters, wipe and disinfect all air contact surfaces, check and disinfect Drain pan, clean the coils

iii) **Tower Units:** Follow same guidance as for Hi Wall Units - as given in ii). above

iv) **Ducted Units:** Check and replace or clean filters, check and disinfect drain pan, clean the coils. It is recommended to install UVGI (Ultraviolet germicidal irradiation) in Larger Ducted Units, to keep Coils clean.

Add a TFA (treated fresh air) unit if required Fresh Air quantity impacts cooling performance.

v) **Room Fan Coil Units:** Check and replace or clean filters, check and disinfect drain pan, clean the coils. Check Functioning of Toilet Exhaust system adjoining Room.

vi) **Air Handling Units:** Fresh air must preferably be provided by an inlet duct and fan. It is advisable to provide a MERV 13 or higher filter fitted on the Air Handling Unit. If a filter of higher filtering capability is retrofitted into an existing system, care shall be taken to ensure that the fan and motor capacities are adequate to handle the higher pressure drop.

Add a TFA (treated fresh air) unit if required Fresh Air quantity impacts cooling performance.

Install UVGI (Ultraviolet germicidal irradiation) for AHUs to keep Coils continuously clean and disinfected. It is advisable to inspect the AHUs and ducts for Air tightness and low leakage.

vii) **Heat Recovery Wheels (HRW):** It is advisable to keep this wheel in off mode to reduce cross contamination. Upon restarting, the wheel must first be sanitized.

viii) **Air Purifiers :** Portable Room Air Cleaners

Some of the technologies used are Ionization, Bi-polar ionization, PCO, ESP and ozone generators. The efficacy of some of these is not yet clearly proven and in fact some of these technologies may have contra-indications. UVGI, if deployed correctly has proven to be useful in inactivating bio-aerosols. .

Passive technologies include HEPA filtration that can remove particles down to 0.1 micrometers or even smaller particles. A Certified H13 certified or equivalent HEPA filter should be installed, to remove viruses that pass through the cleaner.

It is recommended to select air cleaners with about 3-4 air changes per hour. The higher the air changes, the better the efficiency of cleaning. Hence, one must select the machine with the right Air Flow, based on room size and fan speed, to ensure proper filtration and comfort , that includes a desired level of quietness.

Start up and Operation of Air conditioning and Ventilation systems during Pandemic in Commercial and Industrial Workspaces.

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Additional Recommendations for Industrial Facilities

Minimum air changes of around 10-15 ACHP (Air Changes per Hour, of the Volume of the Space) is advised . The mechanical exhaust air shall be 70% to 80% of fresh air quantity to maintain necessary positive pressure in the space. In cases of evaporative cooling / air washers it is advisable to

a)   Disinfect the water using UVGI or Ionization or chemical dosing.

b)   Run the system in fan only mode for 30-60 minutes every day to dry the cooling pads.

c)   Operate only the pumps for water circulation without fans in operation for 30 minutes, to wash out any bacterial growth.

d)   Finally flush the water from the tanks and re-start the system with fresh water.

e)   In case of re-circulating system, it is recommended to limit return air circulation. The return air system could be converted to an exhaust system.

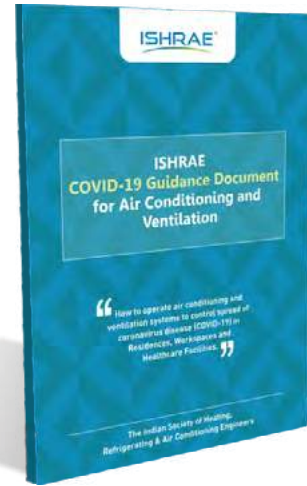**The same process must be followed in case evaporative cooling is used for a commercial facility.**

Additional Recommendations for Commercial Kitchens

a.   Clean the Baffle filters and grease / oil traps

b.   Wipe and disinfect the hood

c.   Clean the ducts and extract fans

d.   Clean the scrubber (if installed) as per manufacturer protocol

e.   Start the extract system without filters in the hoods

f.   Start the kitchen fresh air in fan mode only, and run it for minimum of two to four hours

g.   Install the clean & sanitized filters

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POST COVID-19 LOCKDOWN*

**FIRE & SECURITY
ASSOCIATION OF INDIA**

ABOUT FSAI

FSAI: IGNITING AWARENESS

FIRE & SECURITY ASSOCIATION OF INDIA (FSAI) is a non-profit organization established in 2002 representing the Fire Protection, Life Safety, Security, Building Automation, Loss Prevention and Risk Management domains.

Its primary aims and objectives are to:

- ✓ Foster a spirit of safe living among all citizens of India and inculcate a proactive mind-set towards safety and security at all times.
- ✓ Promote and advance the use of fire safety and security systems.
- ✓ Develop fire safety and security engineering education and awareness.
- ✓ Maintain high ethical standards amongst its members.

FSAI aims to work closely with the Government and all other stakeholders to enable the Indian Fire and Security industry to reach global pre-eminence with better regulatory framework.

FSAI has over 8,500+ members with 24 chapters across the country.

Join FSAI online @
www.fsai.in

SECTION - B
TECHNICAL GUIDELINES FOR OPERATIONAL FACILITIES

2 FIRE AND LIFE SAFETY SYSTEMS

OBJECTIVE:

Objective of this note is to create awareness for taking necessary steps and measures for the safety of the personnel and restarting the operations post the lockdown, by following the safety and precautionary guidelines, for the Fire and Safety systems installed in respective premises and their smooth functioning.

BRIEF FOR NECESSITY OF THE SAFETY MEASURES TO BE TAKEN:

In the light of the long lockdown that we all have witnessed due to the COVID 19 Pandemic, and now as we are about to push the restart button and get our business operations back on track and bringing them back to normalcy.

Fire Safety being an essential service, few mission critical facilities such as data centres, telecom companies, oil refiners and depots, power plants etc. Have been working around the clock to ensure smooth functioning of these critical sectors. Therefore, it becomes even more important that the correct safety measures and guidelines are followed to avoid the spread of this virus when the operations start in full swing.

These are primary guidelines to be modified depending on the type of facilities.

SAFETY OF MANPOWER:

- It is important to carry out an awareness program for all company employees upto the grass root level.
- Ensure that all company employees are provided with Masks, gloves and sanitizer while visiting any site.
- Encourage least amount of physical contact while travelling to site or at site (Avoid Handshakes, sharing stationary, sharing tools and tackles etc.)
- Make sure all the employees are in perfect health condition before allowing them to come back to work.
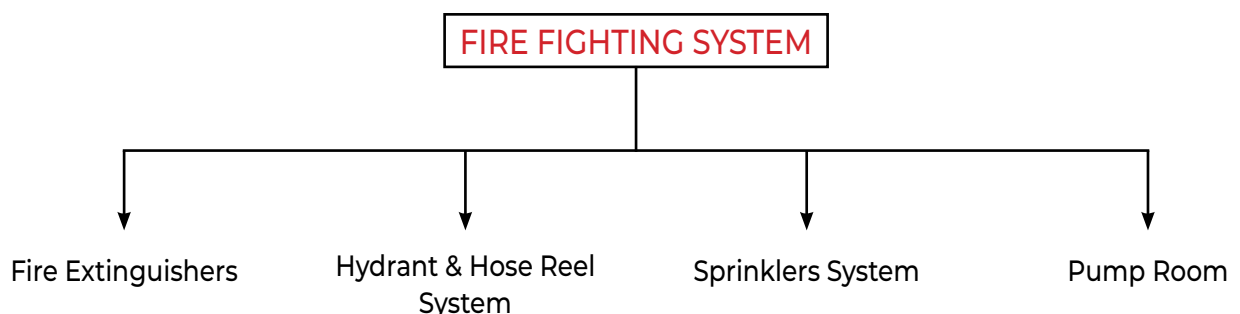
- Clean all equipment which are likely to come in human contact.
- Identify where and how coronavirus could be transmitted at your workplace. Consider all the high-traffic areas of your facility: door handles, lobbies, bathrooms, break rooms, and shared offices. Then formulate a plan to mitigate risk in those areas, both prior to reopening the office and as a new normal routine.
- Facility executives need to manage the top risks that partially occupied buildings face such as water leaks, theft, vandalism and fire.
- Facility managers must also minimize the energy consumption of assets such as HVAC and lighting while maintaining power to critical systems such as fire, security or data centers.
- Use technology to keep the communications going. Creating a 'What's App' group is an excellent way to do this.
- Before work starts, fire protection contractors and facility owners should ask whether anyone on either side is ill or has tested positive for COVID-19—and delay scheduled activities accordingly.
- Discuss details of the job in advance over the phone or via email or text to minimize face-to-face contact. Once technicians enter the facility, take adequate precautions to avoid exposing themselves or others to the virus:
- Clean and sanitize all equipment and surfaces that are touched at a facility. Facility managers should perform additional sanitation after technicians leave.

SAFETY OF SYSTEM AND EQUIPMENTS

- **Fire Alarm and Detection System:**
  - Visual inspection of all the system components for any kind of damage or loose connections, which might have happened during the lockdown period.
  - Fire panel, Repeater panel and their wires, plugs and switches should be properly disinfected at the time of reopening.
  - If there is any fault seen on the panel, check and rectify immediately on priority basis.
  - Check the analog level of detectors and clean the dust of detectors to avoid getting faults in the panel.
  - Check functionality of all the loops.
  - If possible, take walk test of installed fire detection system.
  - Check proper supply to the fire alarm panel (Raw/UPS) along with battery connections and back up.
  - Earthing also needs to be checked.
  - Check all sounders are functioning properly.
  - Check all internal cables for Tightness and carbonizing in the panel.
  - Check the functionality of autodialer and other notification systems connected with the same.
  - Check all the control modules and monitor modules and their functioning with 3 party devices.
  - Sanitize all the MCPs properly and check them.
  - Sanitize talk back panel and handsets before use.
  - Check the functionality and battery status of Emergency Lighting System.

- **Fire Suppression System:**
  - Physically inspect and clean all panels, Cylinders, actuators etc.

- Check all internal cables for tightness and carbonizing.
- Visually check the pressure of the all cylinders.
- Ensure that the systems are in auto mode.
- Check discharge valve and actuator connection.

- **Rodent repellent:**
  - Physical inspection of all RRS consoles, Satellites/Transducers.
  - Check Rodent Repellent Power Source.
  - Check Signal/Power cable dressing and Wire tagging.
  - Check operation of RRS console by using TEST MODE.
  - Public Address System
  - Clean P.A. zone console, Amplifier, Speakers, Mic, Rack etc.
  - Check PA Power Source.
  - Check each of the speakers and Mic.
  - Check activation of PA system, by simulating fire.

- **VESDA:**
  - Physical Inspection and cleaning of all VESDA Panels, Aspiration Tubes, Hooters etc.
  - Check VESDA panel power source and battery backup.
  - Check functioning of the VESDA system by stimulating smoke and testing the entire sequence including activation of hooters.

- **Water Leak Detection:**
  - Physical inspection and cleaning of all WLDS panels, Hooters.
  - Check all sensor cables.
  - Check the functioning of the system by using water around the sensor cables and verify alarm generation.

- **Fire Fighting System**

  We are sharing below line diagram for the understanding of Basic Fire Fighting System used in a building.

```
                    FIRE FIGHTING SYSTEM
    ┌──────────────┬──────────────┬──────────────┐
    ↓              ↓              ↓              ↓
Fire            Hydrant & Hose   Sprinklers      Pump Room
Extinguishers   Reel System      System
```

  Important Note: Service teams must ensure that:

  - They have full details of the of the system.
  - They have all the necessary tools, spares and refills needed to enable them provide the service required.
  - Service team have proper code of dressing i.e., protective gear (PPE) if necessary and identification as provided by the company.

- On reaching the customer's premises (If client is out sourcing the Service) are, proper introduction and identification must be done.
- Any major challenges arising must be communicated to supervisors or HOD's.

(A) Field Equipments & Systems

In the field, we have various equipment's and systems. These are identified as follows;

- Portable Fire Extinguishers – Those less than 25 kgs gross weight.
- Trolley Fire Extinguishers – These are wheeled trolleys normally 25 kgs and above.
- Hose Reel System – Pressurized water system with pipe network and reservoir tank.
- Hydrant System – Manual system that provides huge volumes of water for big fires
- Sprinkler System – Fixed automatic fire fighting system.
- Pump Room – Arrangements for pressurization of water with Auto / Manual operation.

PORTABLE FIRE EXTINGUISHERS

Portable Fire Extinguishers are equipments which do not exceed 25kgs. They come in two Types: Stored pressure and Cartridge operated.

STORED PRESSURE: The pressurizing agent is dry gas nitrogen stored within the body of the extinguisher.

CARTRIDGE OPERATED: This is the case where the expellant agent, usually carbon dioxide is stored within its own metal casing and the pressure is released on actuation of the valve as the cartridge is pierced.

The different types of portable fire extinguishers are as follows:

- Water Type: Extinguishing agent is water
- Foam Type: Extinguishing agent is water mixed with foam
- Dry Powder: Extinguishing agent is dry powder
- Carbon dioxide: Extinguishing agent is carbon dioxide gas

General Check-Up for all Portables

Dust: All equipment's must be well dusted.

Paint: A standard color has to be maintained. A coat of paint is recommended and especially where equipment's are kept in adverse weather conditions.

Corrosion: Rust and corrosion is an indication of equipment having become old and weak and may not withstand operating pressure. Great care must be observed on those weak points as these areas might have holes. In this case, the extinguisher must be condemned, removed from site and replaced with a new one.

All equipment's must have a clear instruction label on the front side indicating how one is supposed to use the equipment in case of fire. Old torn labels must be replaced.

Wall Mounting-Loose hanging extinguishers are very dangerous and may cause injuries. Wall fixing brackets must be securely mounted.

Sealing-All extinguishers must be sealed after every certified service.

Safety pin / Cap / Clip-Every extinguisher must have a safety pin, clip or cap.

A. Stored Pressure type Fire Extinguishers

- This type of extinguisher which is pressurized should not be opened in the field unless one has confirmed its empty and one has the refilling gear for it.
- Confirmation should be made by physically checking the pressure gauge. If it's found non-operational, refilling should be done in the workshop.
- Check the gauge position; turn the cylinder upside down several times to check the condition of the powder.
- Extinguishers which are found to be faulty and therefore not refillable are condemned and we recommend replacement and destruction of the used ones.
- For normal service, the general check-up procedure is followed for all extinguishers as well as checking the gauge to ensure it is in the correct location. The gauge is a circular glass faced instrument on the side of the grip valve, which has three levels starting from 0 to about 18 bars.
- It is red in color at the left side level. When the pointer is at this level, it means that the extinguisher is empty or under charged and therefore needs pressurizing. The middle level is green, which indicates the extinguisher is okay. The third position is red. At this point, the equipment is overcharged which is not recommended.
- On other extinguisher models you may find the gauges located on the cylinder body. If you find the cylinder empty and you are not carrying the filling gear, taking it to the workshop is advised.

B. Cartridge Type Fire Extinguishers

- Procedures will involve opening the extinguisher to get access to the internal parts of the cylinder e.g., Cartridge, which holds the pressurizing agent and siphon tube which releases the extinguishing agent.
- You will also note the level of the extinguishing agent. Check on the weight of the cartridge, which is normally indicated on the body as full, empty and content weight. An exchange with a charged one is required if content weight is 10% less.
- Water type cartridges are P.V.C. coated to rust and corrosion.
- Check whether the siphon tube and discharge hose are blocked by blowing through. Check that all the moving parts are free and well lubricated. Seals should also be in order. Broken or worn out seals should be replaced.

C. Trolley Mounted Fire Extinguishers

These are big extinguishers, which are on a wheeled carrier for ease of movement.

Pressurized Type Trolley Extinguishers

Follow general check-up procedure. Check gauge position. Turn equipment upside down. This can only be done by two people because of the weight.

Cartridge Operated Trolley Extinguisher

The content weight is normally indicated on the container body. The expellant agent normally CO_2 cylinder 2kgs or 5kgs is tied beside the extinguish ant cylinder. This acts as the cartridge and the weight is also indicated as full, empty and content weight. Scale balance is used to establish weight. Always ensure that the powder content is free flow.

HYDRANT & HOSE REEL SYSTEM

HYDRANT SYSTEM

These are large manual/ automatic systems, which provide large volume of water for fighting big fires. They are suitable where a fire may spread rapidly and require more water to put off. Another aspect of hydrant system is that it can incorporate foam units to cater for fires involving different classes like liquids and other risks.

A hydrant system comprises of piping, hydrant valves and pump installed as required on a particular site. Hydrant valves should be supplied with fire hoses and nozzles for delivering the water to required points.

* On servicing, check free opening and closing of valve.
* Lubricate if necessary.
* Confirm the seals are not worn-out
* The fire hose should be run-out and checked for leakages
* The pump must be checked to ensure it is giving rated pressure

HOSE REEL SYSTEM

FIXED TYPE

This is fitted in a fixed position and doesn't move and it's only suitable for areas which you don't need to rotate the plate.

SWING TYPE

It's fitted in areas where you need to shift the plate to the desired location. Swinging recessed is suitable for areas where the hose reel forms a part of a conform like recessed cabinets.

They all come in a standard plate comprising of hose tubing and nozzles in sizes of 1" or 3/4"and a length of 30m or 60m. The hose assists in fighting a fire at a safe distance area from a building before it spreads. The nozzle assists the water to come in high jet spray or both combined. A booster pump is connected to this system to give adequate pressure to the water. Minimum water throw should be at least 7 to 9m away from the location of the fire upwards.

* Check the free movement of the reel and condition of control arm.
* Ensure that the rubber hose is not broken or worn out
* Check for leakages normally caused by worn-out 'O' rings which should be replaced.
* Ensure the nozzle is giving the three modes of jet, spray, and jet/spray.
* Confirm the gate valve is closing and opening.

SPRINKLER SYSTEM/ FOAM SYSTEMS

These are fixed automatic fire fighting systems. They are installed and will operate only in the installed areas and for a particular risk. Most common sprinkler employs the 'wet' system where water is held at pressure inside the piping. The sprinkler head contains quartzite liquid filled bulb designed to break at a preset
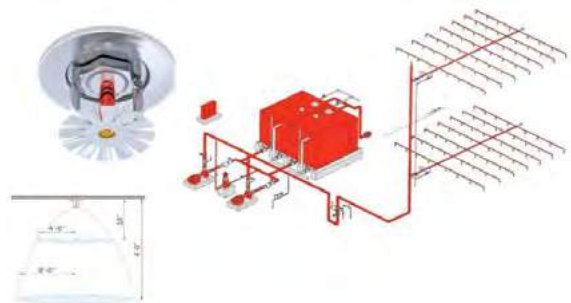
temperature.

• Service of these systems involves checking pressure levels, motor operations, etc.
• Water must recycle periodically to avoid scaling problem.

PUMP ROOM

Electrically Driven Main (Hydrant / Sprinkler/ Jockey) Pumps:

These are electrically operated machines for pressure to the Fire Fighting system. They normally operate automatically on reduction of a set pressure level. They start automatically once the hose reel valve / Hydrant Valve / Sprinklers is opened and stops once closed.

• Pump must be physically checked: Mech. Seal, all valves must be operational and would be in open position.

• Before starting the pump please drain all lines if the pressure is available.
• Check the rotation of the pump manually whether it is rotating or jammed.
• If it fails to Electric start, check whether the power supply is okay.
• Failure to this, check whether the pump has tripped and reset.
• If running but there is no pressure, please check the rotating direction of the pump.
• Still it is operational and not giving any pressure, has to be taken to workshop for further observation.
• If it starts giving pressure please check the pressure is hold by NRV or not.

Diesel Driven Pumps:

These are diesel driven pumps for pressure to the Fire Fighting system. They normally operate automatically on reduction of a set pressure level but when the raw power (Electricity) is not available. They start automatically once the hose reel valve / Hydrant Valve / Sprinklers is opened and stops once closed.

• All above measure must be taken.
• Except above we must ensure that the battery is charged or not.
• We must Ensure coolant is available or not.
• We must ensure the Oil pressure of the engine.
• Diesel must be available in diesel tank.
• Still it is not operational please ask for OEM for the servicing or checking.
• ITM (inspection Testing and Maintenance) of fire protection systems remains critical during the pandemic. Neglecting system upkeep can make the current situation worse, stressing emergency response and dramatically increasing the risk of injuries, deaths, and damage from fire.
• It is imperative that fire suppression/detection systems are up to date with the inspection, testing and maintenance requirements for that system.
• Fire doors and smoke barriers are vital passive fire protection systems within a building. Blocking open fire-rated doors to avoid touching handles can compromise the integrity of a

building's compartmentation plan. Maintaining these opening protectives is critical, especially in healthcare occupancies.

- Ensure that your water system is safe to use after a prolonged shutdown to minimize the risk of Legionnaires' disease and other diseases associated with water.
- Stagnant, or standing water can cause conditions that increase the risk for growth and spread of Legionella and other biofilm-associated bacteria. When water is stagnant, hot water temperatures can decrease to the Legionella growth range (77–108°F, 25–42°C). Stagnant water can also lead to low or undetectable levels of disinfectant, such as chlorine.

3 ELV SERVICES

ELV SERVICES

Access Control System

- Strictly avoid attendance thru fingerprint based biometric machines (to avoid mass touch) instead use face/eye scanning biometric machines.
- Sanitize all biometric machines/ card readers periodically (Before every shift) along with their cables, plugs and switches etc.
- Disinfect ID Cards/ Proximity cards on regular basis
- Check proper supply(direct & UPS) to all the readers, controllers and lock
- Sanitize access doors and their handles and release buttons properly on daily basis.
- Check the functionality of integration with Fire Alarm Panel
- Check the functionality of all door locks from software
- Visual inspection of all the system components for any kind of damage or loose connections, which might have happened during the lockdown period.
- Update your door access control methods to a hands-free option. Offering motion-detection features for its readers or a Bluetooth-based system eliminates extra touch points at high-traffic access areas like lobbies, elevators, and entryways. You can take your safety protocols a step further and integrate the access control system with automatic door openers, which allow employees to enter and exit without touching a door handle.
- Invest in more automated and voice-activated technology. Being able to manage daily operations from a personal device can eliminate common touch points throughout the workspace. Secure your system via encrypted technology on the cloud to keep security risks low, as well as offer greater flexibility for administrators.
- Increase the frequency of routine deep cleanings, with a focus on high-touch surfaces in the workplace, such as workstations, keyboards, telephones, handrails, and doorknobs.

- Increase your security measures. Traditional security systems may not be well-equipped for a post-coronavirus office environment. Now more than ever, you should be aware of who is coming and going from your facility, be able to track that data in real-time, and react swiftly in case of an emergency. With remote work and staggered shifts likely to continue, make sure your security system offers cloud-based access so you can easily control access to your facility remotely and offer better security for your employees.

Key Takeaways for Coronavirus Office Safety Guide:

The most important factor of your business is the health and safety of your employees. While it may seem daunting to adjust your workplace policies after COVID-19, it's vital to approach the return to the office with an abundance of caution. To ensure both your facilities and employees are prepared for a post-coronavirus work environment, you should establish COVID-19 workplace safety guidelines to mitigate risk and reduce the transmission of germs between employees. While personal hygiene plays a key role in preventing the virus from spreading, there are many control factors for businesses to consider, including updating to hands-free door access methods, reconfiguring offices to allow for social distancing, and increasing disinfection and sanitization frequency in high-touch areas of the workplace.

Remote Security Management:

Transitioning to a cloud and mobile-based security system makes site management simpler and safer, without the need to depend on localized servers or on-site personnel. When it comes to updating for coronavirus building security, a system that can be managed remotely offers greater control and flexibility.

Cloud-managed access control solution can offer the following tools for secure and convenient security management that can be done from anywhere:

- **Remote Unlock** - Any entry point can be remotely unlocked from anywhere, which means there will be no need to be on premise for unforeseen situations such as an office delivery or temporary entrance for an employee. This discretionary feature can be made available to authorized users on a mobile device or in the Control Center.

- **Lockdown** - In the event of a breach or emergency, a Lockdown or Lock-Open Plan can be immediately implemented from anywhere. Appropriate lockdown plan can be activated based on the potential scenario underway. The Plan can also be remotely reverted when it is no longer needed.

- **Instant Mobile Credentialing and Guest Passes** - Instantly issue a secure mobile credential to anyone who needs it with the click of a button. No need to track down lost or stolen keycards or fobs and skip the hassle of reissuing one that would need to be delivered or handed over to someone in person. Employees can simply use their phones to access the facility, offering a more sanitary experience for the entire office. Guests can access the facility at set times via a text or email link.

- **Door schedule changes** – Since workers are coming in at odd hours and shifts are being spread out differently, all the old schedules and permissions need to change. With the right tools, administrators can easily navigate unexpected building closures, manage multiple office locations from one application, delegate permissions to local admins, and make real-time changes to keep access available and facilities secure.

- **Real time alerts** - Get notified immediately of any access event, including potential security threats such as a door left ajar or forced open for extra peace of mind that the facility is secure when the administrator isn't there.

- **Integrations** - Open platform allowing countless integration opportunities to streamline the system with other tools, offering a heightened security experience. Integration with video

monitoring solution will enable association with access events with video footage, giving real-time video feeds that the system administrator can monitor remotely.

Probable Solutions:

- Face Scanning Biometric Solution
- Eye/Retina Scanning Biometric Solution
- Thermal Face scanning Biometric Solution
- App based attendance Solutions

PA System

- Visual inspection of all the system components for any kind of damage or loose connections, which might have happened during the lockdown period.
- Properly sanitize controllers, amplifiers, zone selectors, microphones etc. of installed PA system along with their cables, connectors etc.
- Check the proper functionality of all the speakers.
- Check the paging and announcement.
- All the mounting racks, tables etc., where the system is kept need to be disinfected properly.

Video Surveillance System

- Visual inspection of all the system components for any kind of damage or loose connections, which might have happened during the lockdown period.
- Security Room should be properly cleaned and sanitized.
- Doors and handles of security rooms should disinfect on regular basis.
- Racks, tables etc should sanitize properly.
- Properly clean and sanitize keyboard, mouse and display screens of CCTV along with their wires, cables and switches etc.
- Check proper and seamless supply to the installed surveillance system.
- Check if all the cameras are working properly as per required angles and views.
- Check recording of each camera and all the recorders (DVR/NVR/Servers etc.).
- Check proper network feasibility for remote access.
- Properly sanitize tool-kit and spare material, cable etc. kept in the security room.
- Sanitize all documents, telephone and notice board in the security room.
- Synchronize the date and time.
- Clean all the cameras for clear viewing.

Building Management Systems (BMS)

- Visual inspection of all the system components for any kind of damage or loose connections, which might have happened during the lockdown period.
- Check the functionality of entire system from the panel and its integration with different services.
- Check proper supply to all the controllers (Raw / UPS) along with battery connections and back up.

4 ELECTRICAL SYSTEMS

OBJECTIVE

Objective of this note is to provide safety measures to be taken for the electrical system post lock down for restarting the operations and during day to day office functioning.

BRIEF FOR NECESSITY OF THE SAFETY MEASURES TO BE TAKEN:

As we all are aware that we had long lock down due to the COVID 19 pandemic, now that we are close to overcoming the crises and reopen the operations, which slowly and steadily get ramped up to the normal operation.

During the lock down almost all the facilities were non functional or marginally functional depending on the nature of the operations.

This document covers few steps or brief guidelines which can be followed for safe reopening and to avoid / minimize the spread of the virus. These are generic guide lines , exact process to be followed will very from the premises to premises, which the reader may take a note of. Systems must be turned on preferably by qualified / licensed technicians only.

FOLLOWING STEPS CAN BE TAKEN AS OF NOW WITHOUT MODIFICATION TO THE ELECTRICAL SYSTEMS OR PROVIDING ANY ADDITIONAL MEASURES:

1. Carry out the visual inspections of the distribution boards, switch boards. This is to ensure that during lock down insects have not got trapped in the electrical apparatus.
2. Look for the burning marks, insulation damage, if any which may have caused prior to lock down and went unnoticed.
3. Since there is a chance to clean up the distribution boards, switch boards, please have it vacuumed.
4. Carry out the preventive maintenance such as tightening of the connections.
5. If possible verify the breaker settings.

6. Verify the voltages prior to starting the equipment's. Ensure no CT connections are open.
7. Do not start the equipment's at one go.
8. Kick start the equipment's, wait and then start the gradually one by one.
9. Keep a watch for any abnormalities and current and voltage.
10. Keep an any on power factor as well. While starting the equipments , APFCR can be kept off and then turned on .
11. Should any abnormalities are observed during step 1 and step 7 , carry out at least minimum test of megger , community etc.
12. If possible, get the earth values check of the earth pits.
13. If the equipment's like UPS, Batteries, Isolation transformers were switched off, get the OEM to carry out the pre-commissioning test and start the equipment's.
14. During the normal operations, please get the mostly touched metal parts of the equipment's cleaned time to time by the trained technicians, to avoid accidents by non-qualified personal.
15. Ensure that all stand by equipment's are tested for the operations, such as DG sets. 16. Ensure to have those equipment's in auto mode, if they were kept in auto mode prior to the lock down.
17. Remove all unwanted temporary connections.
18. Ensure all the openings of the electrical room are appropriately closed / sealed to avoid the entry of rats, lizards which may cause the electrical accident or fire.
19. Check for water seepages if any on the electrical equipment's, ensure all the taps are closed.
20. Please ensure that all the operating staff is trained once again for the SOP's and critical operations.

LIFT OPERATIONS

1. Sanitization of lifts and their control buttons should be made mandatory
2. Lift operator should strictly use gloves and mask during duty hours
3. Passenger occupancy is not more than four at a time
4. Avoid direct touch to the control buttons, walls, handles etc.
5. In case of emergency use elbow or back side of finger and sanitize
6. Keep the face towards the wall while using lift
7. In case without operator smart solutions for lifts operation to be implemented (To avoid direct touch)

Probable Solution:
1. QR Code scanner for lift.

ABOUT IEEMA

Indian Electrical & Electronics Manufacturers' Association (IEEMA) is an Apex Industry Association of the Indian electrical equipment, industrial electronics and allied equipment manufacturers – representing a combined turnover of $42 Billion. First ISO certified industry association in India, with 800+ member organizations Represents businesses encompassing the complete value chain in generation, transmission & distribution equipment. IEEMA members have contributed to more than 90% of the power equipment installed in India. A platform for constructive interactions between Industry, Utilities and Policy Makers.

www.ieema.org

FOR RESUMPTION OF
AIR-CONDITIONING & VENTILATION,
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ELECTRICAL & PLUMBING SYSTEMS FOR
COMMERCIAL & INDUSTRIAL FACILITIES
POST COVID-19 LOCKDOWN

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INDIAN ELECTRICAL & ELECTRONICS MANUFACTURERS' ASSOCIATION

![ieema – your link to electricity]

IEEMA Guidelines
Post Covid 19 - for restarting of Factories/ Offices

"

Government of India has permitted restarting of manufacturing activity in certain sectors after 20th April, 2020 in compliance to the guidelines notified by Ministry of Home Affairs No. 40-3/2020-DM-II(A) dated 15th April 2020, to help offset the economic damage of a nationwide coronavirus lockdown, even though lockdown has been extend till 17th May 2020.

The opening of the units will be in strict compliance of the MHA guidelines and with the measures laid down by the State Government.

"

Standard Operating Procedure:

A. *General instructions/ guidelines before recommencement of the work:*

1) Sanitization and Fumigation of the Factory / Office / Work place.

2) Deployment of decontamination booth or fumigation chamber or UV Light booth to disinfect incoming employees' and unavoidable visitors' including all occupants of incoming vehicles (passenger of goods) bodies, clothes and other belongings such as laptop bags.

3) All incoming employees and unavoidable visitors to be subjected to thermal scanning or temperature check at the time of entry.

4) Mask, Googles, Gloves, and Apron should be made available to employees and workers on the shop floor.

5) Display board regarding the procedure of disinfection shall be displayed at entrances / prominent places.

6) Redesigning of the work stations to maintain social distancing. Seating at least 6 feet away from others on job sites and in gatherings, meetings and training sessions.

7) Staggered Shifts of Operations. 30-45 minutes gap between two shifts to be maintained, between outgoing workers and incoming batches.

8) Use of own vehicle should be encouraged amongst employees.

9) Exclusive Transport for the workers coming from outside or Stay on Premises Facility to be arranged temporarily for few months till situation normalises.

10) Awareness on Government of India Advisories with DOs and DONTs for staff to be made through LED display board / TV Screen inside plant premises and public announcement systems. Information on CORONA VIRUS Helpline numbers must be affixed in the prominent locations of the factory / work place.

11) Training of staff in case of emergencies.

12) HR to collect the travel histories of the employees and their family members. The employees / workers coming from the areas sealed by Central / State Governments to be discouraged from joining duties, till the time the sealings are lifted.

USE MASK
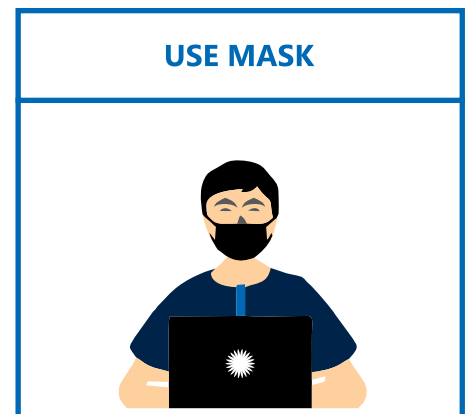
WORK FROM HOME

13) All Security, Canteen and drivers to be provided with PPE kits. All equipment, premises, gates, stairways, Lifts, railings, sitting arrangements are to be properly fumigated before the start of operations, by qualified people and / or properly trained own workers.

14) Incoming materials, imported and coming from red zones, must be fumigated before being handled by employees and unloaded.

15) Employees whose work is not essential to come to the office, to be allowed to work from home. Only those whose physical presence is essential, are to come to office. Pregnant women, Diabetic, Heart history employees to work from home.

16) Medical insurance for the workers to be made mandatory.

17) Arogya Setu App may be encouraged to be downloaded and used for self-health declaration and entry into premises.

18) All employees should fill the self-declaration on the day of joining office/factory.

19) If any person is resuming job after quarantine, ensure local legal requirement is met.

USE SANITISER

20) All Delivery, Loading and Unloading personnel to be briefed about the COVID awareness everyday morning. The vehicles carrying the goods to be thoroughly sanitized before loading and after unloading. Drivers should remain, as far as possible, in the cabin on the truck at loading and unloading points.

21) Check for Rodents & Snakes while cleaning/sanitization before commencement of operations.

22) Inspect for any damage, physical condition and operation of equipment's and services supporting building, Mechanical ventilation system, Water System, Electrical System like earth pit values, oil in transformers, DG set operation, Fire Fighting and Fire Detection systems etc. etc.

23) List of Hospitals/Clinics in the nearby areas, which are authorized to treat COVID-19 patients shall be available at the workplace at all times.

24) Adequate posters highlighting precautionary measures to COVID-19 must be affixed in the factory premises to raise awareness.

25) Each industry should have a designated area as isolation area to confine any person developed/symptom till such time they are transported out to the medical facility.

26) Biomedical waste has to be disposed separately as per norms

27) The movement of individuals for all non-essential activities, shall remain strictly prohibited between 7.00PM to 7.00AM. In all zones, persons above 65 years of age, person with co-morbidities, pregnant women, and children below age of 10 years, shall stay at home. These measures shall be strictly complied with MHA guidelines point no. (5) of order dated 1st May 2020.

THERMAL SCANNING

28) Before starting the factories and offices, cleaning and servicing of AC should be done and also periodically after that as AC filters carry lots of dust and dust mite and viruses.

29) Private offices can operate with 33% strength as per requirement with remaining persons working from home.

B. Guidelines on Resumption of the work

1) Security checking at the Entrance: Compulsory Screening of all employees at the entrance irrespective of cadre / status entering through gate with thermal scanner and temperature screening.

2) Compulsory wearing of masks by all employees and workers (masks needs to be changed every day). Disposal of used mask can be considered as bio-medical waste and to be disposed accordingly.

3) Hand sanitizers to be kept ready at the entrances and people after entry to sanitize their hands before proceeding to their work spots. Strict adherence towards hand washing every hour preferably through soap and in case soap is not available, alcohol based sanitizers may be used.

4) Attendance Recording – No Biometric Attendance. Attendance would be captured at the department manually through registers

5) Restriction on the entry of outsiders. A visitor may be permitted in most exceptional and important situation only after pre- ap¬proval of the Function Head.

6) During duty hours, employees shall work on their seats and avoid going to other seats as far as possible. To the maximum possible discussions / interaction can be held through landline & mobile phones. Wear cap / helmet and mask while working in the line. Follow standard operating procedures as prescribed in the line

7) To avoid hard copy files where ever possible and soft copy correspondences / approvals are to be increased by mails or E-office.

8) All employees to strictly adhere to the social distance of minimum 1 meter at all time, either at entry point, during work station, lunch/ tea time etc. Always follow social distancing between one employee to another in the Company premises. Please wait till the next person moves.

9) Tools and other equipment should not be shared.

10) Office Doors to be kept open for all rooms and hangers to reduce contact points.

WEB MEETINGS

11) Use of locker rooms to be regulated strictly. Only one employee to use at a time, of two employees, then those two having lockers separated by > 2 mtrs should be allowed, with face masks intact.

12) Housekeeping to keep and Admin staff to ensure all working area is clean and hygienic. Sanitise shop floor after every shift. Special attention be given to wash rooms / toilets by periodical cleaning, swabbing, disinfecting and maintaining dry.

13) Employees should be encouraged to bring tiffin and water bottle from home & may be allowed to consume food at desk.

14) Physical Meetings are to be avoided as far as possible and VC / Conf. calls / other modes can be used in place.

15) Lifts to be cleaned and sanitized frequently. Lifts shall not be crowded and social distancing inside lift to be ensured. Not more than 2/4 persons (depending upon the size) will be allowed to travel in lifts.

16) There should be strict ban of gutka, tobacco etc. and spitting should be strictly prohibited.

17) Management to make all efforts to create awareness about COVID-19 and preventive measures to prevent spread, within a limited group of people at a time adhering to ade¬quate social distancing.

18) As far as possible, Air Conditioners are to be switched off with doors open for ventilation. In case ACs are required, then ensure microfilter (Micro 95) in the ACs, as applicable.

19) Frequent touch points disinfection to be done regularly every hour. Additional manpower to be deployed if housekeeping is less. Personal Protective Equipment usage mandatory for cleaning staff. Alcohol-based disinfectant to be used.

20) Arrive to pantry in staggered timings and maintain social distance. Do not chat in groups. Leave pantry once you drink water or take coffee / tea. Bring own cups and water bottles, if possible.

21) Large factory units / manufacturing plants / worksites / shop-floors should break operations into 2-3 shifts, with an at least 40-minute gap between shifts so that workers do not mix.

22) Intensive Communication and training on good hygiene practices among the workers/employees have to be done by the industry.

23) Any person violating the lockdown measures and the national directives for COVID-19 management shall be liable to be proceeded against as per the provisions of section 51 to 60 of Disaster Management Act 2005.

24) The industries which are permitted to function under the guidelines shall furnish all required details in prescribed proforma in the self-declaration prescribed format for follow up guidelines issued by MHA, Govt. of India from time to time in this aspect.

25) Recommended Temperature for use of air conditioners are between 24- 30°C with relative humidity 40% -70%. Fresh air must be preferably be provided by an inlet duct and fan.

Let's fight CORONA together and
Refuel the Economic Engine

5 PLUMBING SYSTEMS

*FOR RESUMPTION OF
AIR-CONDITIONING & VENTILATION,
FIRE & LIFE SAFETY, ELV SERVICES,
ELECTRICAL & PLUMBING SYSTEMS FOR
COMMERCIAL & INDUSTRIAL FACILITIES
POST COVID-19 LOCKDOWN*

INDIAN PLUMBING ASSOCIATION

GUIDELINES

Remedial Measures for Plumbing Systems after COVID-19 and other infections

Due to the pandemic created by COVID-19 (Corona virus), many public places including restaurants, clubs, sports facilities, malls, offices etc. have been closed initially for 21 days which may be extended depending upon the prevailing situation.

When these facilities are re-opened, a lot of damage may have taken place to the plumbing system of these facilities. It is critical that agencies involved in maintaining these plumbing systems are made aware of these potential problems and the remedies.

Damage to plumbing can create different types of health problems.

Indian Plumbing Association (IPA) presents a white paper to help service providers and the general public to resolve these issues.

Let's Fight
Together against
CORONA

MISSION
I SAVE
WATER
"Jal Hai to Kal Hai
Jal Nahi to Kal Nahi"

OBJECTIVE:

The objective of the below guidelines is to provide practical guidance on Health & Safety Norms to be followed by the professionals and the workforce engaged in plumbing for different kind of locations, post COVID-19 pandemic. Please note that while COVID-19 is a big hazard in present scenario, other hazards like power supply, sewer lines, gas lines, high pressures, code compliances and other PHE requirements shall be adhered to.

It should not be forgotten that the eruption of the SARS epidemic from Hong Kong in 2003 was a result of dry drains in a bathroom! While this is a worse-case scenario, other kinds of damage in plumbing systems can create different types of health problems and add to the load of health care facilities

As per the reports, there is likelihood of COVID-19 virus spreading while working in the building's sanitary and drainage systems, considering the potential of coming in contact with water and aerosols that contain the coronavirus. It is highly recommended that appropriate precautionary measures shall be taken by all while preparing for operations post COVID-19 pandemic.

Let's Fight
Together against
CORONA

1. General Guide lines

Here are some tips and best practices on deep cleaning and disinfecting a facility during a closure.

- Use Face Mask / Shield / Goggles and Gloves. Face Visor is also recommended.

- Ensure proper Hand Hygiene through Sanitization and Surface Decontamination.

- Maintaining Effective Social Distancing. Preferably 6 Feet

- Make sure the disinfectant you're using is approved for use against SARS-CoV-2, the coronavirus that causes COVID-19.

- Disinfect all touch points, not just the frequently touched surfaces.

- Remove any visible soil with a detergent-based cleaner before applying a disinfectant and follow instructions on the product label for effective disinfecting.

- Ensure surfaces remain visibly wet for the contact time specified on the product label.

To minimize cross contamination, here are additional considerations when disinfecting surfaces.

- Disinfect surfaces from clean areas to dirty areas. For example, restrooms being one of the highly contaminated areas should be cleaned last.

- Disinfect surfaces from higher height areas to lower height areas so that any dirt or dust that may contain germs dislodged from above are removed when you clean the lower surfaces.

- Disinfect lower areas last after other activities (including emptying trash, removing visible soil and vacuuming) are complete, so that any potentially contaminated dirt and dust don't re-contaminate already disinfected surfaces.

- In case of high-rise buildings ensure that the anti-siphonage / vent stacks are functioning properly, to avoid any negative pressures in the traps.

- In order to check clogged lines, never open and clean the chambers individually. Instead prefer using water jets or gas or other de-clogging methods for inspection / maintenance available with the local authorities. Use Endoscopic cameras if available

- Ensure backflow preventers are installed in the water and drainage lines

- Ensure water seal is there in all traps.

- In case there are conventional faucets which require operation by hand, suggest to the management to replace them with sensor based/ touch less faucets and sensor based urinal flush valves.

- In case Waterless urinals are used, then priming and disinfection to be done on a regular basis based on manufacturer's recommendations

- Educate the staff to flush the Water closets with the seat covers down and disinfect/sanitise using hot air or disinfecting agents to make the virus inactive

2. Considerations for Large Building Water Quality after Extended Stagnation

Recommissioning guidance must account for site-specific variability in plumbing design, mechanical/plumbing equipment, specific appliances, and end-use devices.

Estimating the total volume of all system components, including service lines, may be helpful to know how much water to flush at each location. After a site-specific approach is developed, flushing should begin by establishing fresh water. Avoid contaminated water entering the building.

a. Service line

The service line provides water to the building for cold and hot systems as well as other property water systems. It is critical that water is flushed at the building to avoid drawing stagnant or potentially contaminated water into the building plumbing.

b. Equipment

An effective flushing or disinfection protocol should be considered for the mechanical and plumbing equipment that are typically located in mechanical spaces or plant rooms. Bacterial growth, including pathogen growth, has been associated with this equipment and associated with subsequent disease cases.

c. Plumbing configuration

Pipe length, diameter, and layout can vary greatly. Thus, estimating water volume or designing sequential flushing plans can be challenging. Implementing effective protocols may require access to plumbing plans (or as-built drawings. Such drawings may also be useful in inventorying every water outlet (e.g., outdoor spigots, forgotten taps) so that every pipe and location is flushed. Dead ends (pipes that lead to nowhere) can also exist in buildings, especially if buildings have been remodelled or had a change in use. Dead-end pipes cannot be flushed without more extreme actions.

d. Appliances

End use Appliances also have small amounts of water storage. As pathogen issues have been associated with many of these devices their operation must be taken into account for recommissioning. These can be replenished by running them on manual action.

e. Fixtures

Unlike most plumbing components, fixtures such as faucets, aerators, fountains, thermostatic mixing valves, showerheads, and shower wands can be relatively easily removed, cleaned, and/or replaced, though it is time and labour intensive.

Pathogen growth and heavy metal accumulation (e.g., particles of copper, iron, lead) has been associated with these plumbing components. Thermostatic mixing valves, used in showers and faucets to mix hot and cold water to prevent scalding, have been identified as particularly problematic for growth of Legionella.

f. Ensuring complete flushing

Incomplete flushing could result in contaminated water remaining in the system or not deliver the intended benefits.

g. Pipe material

Piping material can vary widely within a building, and service line materials may differ from plumbing materials in the building (e.g., copper service line and plastic plumbing). These materials can contribute changes in water quality that has implications for public health. Thus, initial stagnation and recommissioning procedures will vary from building to building.

2. Building Premises / Common Infrastructure:

- **Pre-preparation:**

  o Clean all the water tanks, if not possible add chlorine tablets to achieve 2.5 mg/l dosage. This will help to do away with problem of quality of stagnant water.

  o Flush the entire water supply piping system for minimum 15 minutes with clean fresh water. This will help to clean all water supply pipes and remove stagnant water.

  o Open and clean all water treatment vessels, wash / rinse media and refill.

  o Check panels / starters for continuity of power, earthing, breakage of cable / wires.

  o Check proper functioning of pumps, blowers, dosing units, belts, chains, water treatment vessels, valves etc. If required open, clean and apply appropriate lubricant for proper functioning.

  o If recycled / STP treated water is being used for flushing, gardening, air-conditioning plants, washing etc., need to check / re-commission / install disinfection system since such water may have traces of corona virus (not yet proved) at two levels. One before the storage of water and another online system at the outlet of supply pump.

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o Run exhaust system of Pump Room / Plant Room to remove foul air.

o Check shelf life of chemicals / materials stored. Remove unusable chemicals / materials.

4. Private Premises:

• **Pre-preparation:**

o Open toilet / pantry doors and windows / vents and keep open for at least 30 minutes. This will help to remove all stagnant foul air from the toilet.

o Flush toilets / urinals once to completely to drain all the unused treated water from the piping system.

o Apply cleaning agent, keep it for 30 minutes and flush again.

o Allow water to run for a minute through all taps (ensure water supply lines are flushed before).

o Empty RO / Water Cooler / Freezer/Fridge and clean them properly. Fill up with fresh water and check for proper functioning.

o Start toilet exhaust fans and run it for 30 minutes while keeping all doors and windows open. This will help to remove all foul air from the toilet.

• **Operation:**

o Flush the toilets properly and wash hands every time

o Avoid touching your eyes, nose or mouth

o Wash hands before eating

o Bring metal water bottle from home and use it for drinking water. Fill it when required. Avoid using glass

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IPA COVID19 GUIDELINES

S. No.	PROBLEM	SOLUTION
01	**Drying of water in floor traps:** In India, the wash basin drain pipe is connected to the floor trap in the bathroom. When the bathroom is not used for a long time, the water in the trap evaporates. The water in a trap is called a 'trap seal' and is effective in preventing the entry of foul gases in the waste line from entering the bathroom. When the water in the trap has evaporated, foul gases, bacteria, viruses will gain entry into the bathroom. *This phenomenon of a dry trap can create conditions for a SARS-like viral outbreak* Floor trap	• If some access to the toilet block / bathroom is available, pour a little water in the floor drain OR if the wash basin outlet is connected to the floor drain, then opening the pillar tap (wash basin tap) for about 10 seconds is an alternate way and will also ensure that the floor trap always remains filled with water. OR Pour one table spoon of edible oil in the trap. The oil will form a film on the surface of the water in the trap (as oil is lighter than water) and this will slow down the evaporation of water from the trap.
02	**Formation of bio-film and sedimentation in supply pipes** Stagnant water in water supply lines can generate a bio film in the pipe lines. Water supply pipe lines can also get blocked due to sedimentation that will occur when no water is moving through the pipeline for long periods 	**Explanation:** A biofilm is a collective of one or more types of microorganisms (bacteria, fungi and protists) that can grow on pipe surfaces when the water is stagnant. A biofilm will contaminate the water supply and create a health hazard. • Shut the main valves and drain the pipe lines if possible. When the plumbing system must be re-started for use, open the valves and flush the pipe in totality for minimum 15 minutes with clean fresh water
03	**Damage and Deterioration in pipe quality due to stagnant water** Water supply pipes will get damaged due to non-use for long periods. The stagnant water may be unfiltered water and the pipe will deteriorate in quality and life of the pipe is greatly reduced	**Before closure:** • Flush the complete piping system with clean potable water • Fill the pipe with water/chlorine solution of 50 parts per million and stand for 24 hours OR • Fill the pipe with water/chlorine solution of 200 parts per million and stand for 3 hours • Then flush the pipe with clean water

S. No.	PROBLEM	SOLUTION
04	**Operation of Sewage Treatment Plants** Problems may be caused to STPs (Sewage Treatment Plant) due to non-maintenance of STP plants in case of long closures	Different types of sewage treatment technologies are being used in our country and there are be specific solutions for each technology. • Re-commissioning of the plant must be through the STP vendor or a specialised agency • For an aerobic STP, the blowers which supply air to the aeration tank should be kept working and this will supply air to the collection tank to prevent it from becoming septic. • Air diffusers to be cleaned and reinstalled • All filter media to be removed from vessels, cleaned properly and refilled properly before re commissioned • All dosing pumps, controller units to be checked for its proper functioning. • Check and replenish all chemicals and additives • The STP plant may take 10 to 15 days (sometimes more) to stabilize, entire plant area to be including all tanks to be thoroughly cleaned before starting re commissioning process. • All Electrical connections to be checked and repaired if required • All pumps, blowers, oil levels to be checked by the vendor • In case of MBR (Membrane Bio Reactor) plants, membranes shall be cleaned properly as per manufacturer's guidelines before re-commissioning
05	**For Water Supply Agencies** It is strongly recommended to supply water in supply pipes with 1 ppm residual chlorine dosing. As per ISO7393, this chemical treatment decomposesthe virus in water	
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ABOUT IPA

Indian Plumbing Association (IPA) is the apex body of plumbing professionals in India. Established in 1993, with the objective to promote development of plumbing and building services industry, IPA membership is open to everyone engaged directly or indirectly with the construction industry. Indian Plumbing Association (IPA) has 4500+ members, across the country from every segment of the building industry including Consultancy, Manufacturing, Contracting, Trading, Academia and Architecture. The head quarter of IPA is at New Delhi and is having 23 chapters in the country.

Issued in Public Interest by

INDIAN PLUMBING ASSOCIATION
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Jal Nahi to Kal Nahi"

SECTION - C
TECHNICAL GUIDELINES FOR UNDER CONSTRUCTION SITES

Due to prolonged lockdown where construction activities were brought to sudden halt, resumption of work is feared to pose unique challenge to the site managers. This document aims to identify such challenges and list the recommendations for those responsible for smooth and safe operations.

SECTION-I: LIKELY RISKS

1. Temporary Support Structures like Load Bearing Stagings, Trestles, Scaffolds, Access Stair Towers, Ladders, Freely standing Scaffolds, Access Platforms etc. might have got disturbed and unbalanced or their critical members gone missing.

2. Malfunctioning of Plant and Machinery like Batching Plants, Gantries, Cranes, Transit Mixtures, Trailers, Excavators, Rigs due to long period idling during lockdown.

3. Electrical Power Generations (DG Sets), Distribution and Appliances including Earthing have turned unserviceable.

4. Danger of Infection from incoming construction raw materials which might have been contaminated during transportation/ handling.

5. Spread of infection from existing or new workman who might be a carrier of Virus.

6. Contamination from communities through intermingling during off hours/ off days.

7. Lack/absence of Competent and Experienced site Engineers and staff who are not in the city as well as unable to return due to transportation difficulty or hotspot .

8. Biological hazards (Example Insect bite: Snake, Scorpion, Honeybees etc.) while handling materials at sites/stores which are lying untouched due to long periods of lockdown.

9. Many part of nation would be experiencing heavy rains from early June onwards. With the onset of monsoon, working conditions at sites are likely to become more difficult. This may result in increased possibilities of unsafe conditions leading to accidents at site. In view of above, all sites needs to be well prepared and raise their safety standards to prevent accidents & injuries.

SECTION-II: MITIGATION OF LIKELY RISKS

A. Plants & Machinery and Dealing with Biological Risk

Due to long period of lock down, Construction machinery, Lifting equipments, Electrical equipments etc., may malfunction resulting in Safety violations. Also stacked material may became a hiding place of reptiles etc.

The following precautions to be taken before starting any activity on these Plant and Machinery as well as stacks:

(i) Prior to start of any activity, location specific risk assessment to be done by Safety In-charge. The location wise risk assessment to take care of aspects like:

- o Integrity of Assets (Condition of Batching plants, winch machine, lifting tools & tackles, back stay/guy rope arrangements etc.) & strength of the same.
- o Inspection of erected tower cranes/ gantries for any missing parts.
- o Stability of Scaffolding & other work platform/ arrangements before loading or permitting workers to climb on.
- o Safety of Electrical systems including Earthing.
- o Biological Hazards (Snakes/other poisonous reptiles or insects), clearing of bushes & spraying of chemical repellents to be carried out.

(ii) After preparation of location specific risk assessment, a thorough inspection to be carried out on the identified risks and corresponding control measures & to be recorded & approved by Safety In-charge.

(iii) Safety critical inventories like Cranes, Lifting tool and tackles, DG Sets, Scaffolds etc., to be got re-inspected and certified Safe worthy by competent person/ OEM.

B. Disinfection of Incoming materials at project sites

(i) Incoming materials may be contaminated while transportation and hence all incoming material vehicles arriving to the project sites shall be parked at stores/ safe location and the material should not be handled/touched for stipulated hours.

(ii) Thereafter all the new material to be disinfected with recommended concentration of sodium hypochlorite solution before use except for items which can reacts with the disinfectant.

C. Prevention of Spread of Virus amongst Workers

1. For Workers/ staff staying at Labour Colony/ Camps/ Site:

(i) It shall be mandatory for all the workers/ staff to wear face mask, hand gloves and full sleeve shirt/ kurta/ trouser/ pyjama all the time so that their faces, hands, arms and legs are covered. Sufficient number of safety masks, gloves, safety shoes, helmets etc., shall be arranged for all workers.

(ii) Regular visit of Doctor/ medical staff in the labour camp shall be ensured. Tie up with nearby hospital dealing with COVID 19 testing and treatment to be ensured. Contact mobile number of the doctor/medical assistance shall be prominently displayed in the camp at number of locations. Routine medical check-up of each labour/ staff by qualified medical staff shall be ensured at least once in a week.

(iii) Any person with symptoms of COVID-19 infection shall be immediately placed in designated isolation rooms. In case of positive test results for COVID-19, he should be admitted to designated hospitals or Government quarantine center.

(iv) Social distancing shall be ensured in labour camps by providing adequate number of rooms for workers.

(v) Food items, vegetables and other items of daily requirement for the labours / staff shall be arranged by the contractor from one or more reliable sources in the camp itself and no one from the camp will be allowed to move out for these requirements . Labour camp to be cordoned off

(vi) Consumption of liquor shall be strictly prohibited in labour camps as it may result in violation of social distancing.

(vii) The camp, rooms and wash-rooms shall be kept clean with good hygiene. The area shall be sanitized with sodium hypochlorite solution daily. Arrange adequate soaps in wash-rooms and hand washing arrangements with soap/ liquid soap/ sanitizers at key locations. The workers shall be regularly educated to wash their hands.

(viii) Publicity materials like posters of Do's & Don'ts issued by the state government shall be displayed in the camps to improve awareness.

(ix) List of worker/ staff leaving and entering each labour camp shall be maintained and updated every day. Any missing worker shall be reported and traced immediately.

(x) Transportation of workers/ staff from labour camp shall be only by designated vehicles/ buses with social distancing maintained in the vehicles/ buses. They should return back by same vehicle. Once the workers/ staff are back to the camp, they shall clean their hands with soap thoroughly before going to their rooms.

2. For Workers/ Staff Staying at locations other than labour camp

(i) Efforts should be made to keep all the workers and staff in labour/ site camp only.

(ii) The workers/ staff, if any, coming from COVID-19 hot spot shall not be allowed. Daily update of the COVID-19 positive cases of their locality to be taken to assess the potential risk.

(iii) Any worker and staff coming from outside should not use public transport. Transport shall be by designated vehicles by maintaining social distancing. Drivers of vehicles to use protective masks, gloves with sanitizers in each vehicle.

(iv) All workers coming from a particular locality should be engaged in a separate area sufficiently away from the workers from labour camp or other locality and in no case they should be allowed to intermingle.

(v) Daily thermal scanning and supply of soap, sanitizers, masks, safety PPE etc., is to be ensured for such workers/ staff.

3. Procedure and Precautions to be taken at Work Site

(i) Entry to site to be strictly controlled to allow only staff and workers related to site. List of persons prohibited due to COVID 19 infection or with symptoms or coming from hot spot areas of COVID 19 should be displayed at each entry point and updated daily at site

(ii) Number of entry points to be restricted. Thermal scanning, checking for COVID 19 symptoms, wearing of masks, gloves, Safety PPEs to be ensured for each person at these entry points.

(iii) The workers shall restrict themselves to their respective work area allocated to them. They shall not interact or violate the norms of social distancing.

(iv) Entry of workers of any shift shall also be done in small groups by staggering their time of reporting to the entry gate. The lunch hours also to be staggered to avoid large gatherings

(v) The work sites shall be kept clean with good hygiene. The work area including casting yards, site containers, cabin of every crane and batching plants shall be sanitized with

sodium hypochlorite solution once daily. All frequently touched elements like railing, stairs, water points etc. to be sanitized twice daily.

(vi) Provide adequate hand wash facility with soap and sanitizers at the work site. Toilet facilities shall be provided at every site.

(vii) Posters with do's & don'ts issued by the state government shall be displayed at number of prominent locations on each work site to create awareness.

(viii) Contractor shall arrange food packets and tea (twice a day) for the workers/ staff available at site and they should not go outside to buy any food item.

D. New Workmen/ staff

(i) Induction of new Workers / staff should be avoided as far as possible. Worker/ staff from hot spot or potential risky areas should not be inducted at site at all.

(ii) If a new worker is coming to site, his background should be verified to know any history of illness/disease. Each new worker/ staff should be checked for any COVID19 symptoms by qualified Doctor even if the information provided by him is satisfactory.

(iii) All the newly inducted person should be kept in a separate camps and not allowed to mix up with existing workers for 14 days. Separate work area to be allocated for newly inducted persons for 14 days.

(iv) Briefing should be given to them regarding precautions and procedure to be adopted before entering the camp/ work site for the first time.

E. Maintaining Hygiene and Resources at Site & Process of daily monitoring

(i) Disinfection/Sanitization activities to be carried out at all areas regularly (Areas to be included are open areas of stores, entrance gate of project site, open areas of workmen camp, toilets, walls etc.) using Sodium Hypochlorite solution.

(ii) Mandatory items required for personal sanitization in stores, offices & at workmen camps along with minimum sufficient to be maintained at site.

F. Competent strength required for the resumption activity

All efforts shall be made to ensure experienced & competent engineers, supervisors and staff to oversee the resumption of work. Those with prior understanding of site are ideally suited for the challenges. However, if inescapable then suitable alternative workforce shall be mobilized at least for safety critical profiles like certified scaffolders, temporary work coordinators, lifting in-charge with riggers, Mechanical & Electrical engineers, Doctors and First Aiders, plant operators, drivers etc.

G. Monsoon Preparedness

Weather forecast and information on met conditions shall be obtained regularly and precautions be taken to prevent injuries to personnel & damage to equipment undertaken. Following safety precautions should be implemented/adopted at sites as monsoon preparedness & prevention of any accidents during adverse weather conditions:

(i) Excavations

- All excavations must be checked on daily basis, especially those near road side need to be inspected each day to ensure that adjacent areas are supported to prevent collapse.

- All Deep excavations exceeding 2 m in depth shall be supported by shoring to prevent collapse or angle of repose maintained.

- Avoid working in excavations immediately after rainfall and de-watering operations. Loose

material or any construction material/machines shall not be around/near excavation edges.

- All backfilled area should be properly compacted and loose soil removed from site. Such area shall be restricted for any movement of machines or material handling.

- Underground works including ground level run off will require the necessary supply of pumps for de-watering as and when required to prevent build up of water and subsequent flooding. Sumps and water paths for the drainage of rainwater to designated outfall points is recommended.

- Proper drainage shall be provided around site to prevent water logging. A Bund like protection of either brick, block work, concrete or similar around the opening should be provided to eliminate the possibility of water ingress. De-watering pump availability to be ensured.

- Openings at ground level especially leading to works below must be provided with full cover on the top. A purpose built horizontal frame with sheeting or Hut with pitched roof is suggested.

(ii) Electrical Safety:

- All electrical system, metal structure, containers etc shall be properly earthed. For all connections, a network of Earthing stations/earth pits shall be established. Earthing shall be checked for continuity and resistance on fortnight basis by the electrical engineer / in charge and records maintained for the same.

- All electrical cables should be inspected for deterioration of insulation on routine basis. The supervisor in charge of electric works shall maintain a record of inspection.

- Joints in the wire connecting halogen lamps and other light fixtures shall be prohibited. All electrical cables & joints, if inescapable, to be raised above the ground level and covered with additional rubber tube or standard connectors to be used. Cable shall not be laid on ground.

- Distribution boards to be at height, properly barricaded, locked & covered to protect it from rain. ELCB/RCCB or MCCB of appropriate rating shall be provided.

- Ensure use of plugs and sockets of appropriate IP rating. Only IP – 44 industrial electrical panels to be used at site along with industrial plug tops.

- Personnel other than electricians should not handle electric wires, switches or connections. Only authorized licensed electricians with helpers shall be engaged for electrical work. While carrying out repair work, a rubber mat shall be used by all electricians.

- Provision of suitable lightening arrestor on all metallic high height structures like gantries etc. must be insured.

(iii) River/Water Body sites

With rains in catchment areas, there is a likelihood of sudden rise in water level at the work sites. Close watch needs to be kept in this regard. A constant vigil shall be kept round the clock on water level in the river. All machinery/equipment will be so located that evacuation is possible within available time. Emergency plans shall be made for evacuation in case of unforeseen events. If required, gate sites at the water release point shall be manned.

(iv) General Precautions

- Strong winds may cause damage to the roofs, walls and scaffoldings. Additional anchorages for scaffolds and wind ties should be provided to protect the roof sheeting. All scaffolds should be checked immediately after rain, storm etc. All loose material must be kept secured to avoid scattering during wind.

- Platforms must be washed and wiped frequently to prevent slippery conditions. Equipment

lying on the top of platforms should be secured by ropes and lashing to reduce the effect of strong winds. Guardrails to be provided to prevent fall of personnel. All access like ladder/ scaffold tower stairs must remain cleaned at all time to avoid any slippery condition. All activities having probability of slippery condition must be avoided during rainfall.

- Cranes and other heavy machinery should be operated from level and stable ground. The site team shall ensure proper ground stability before performing lifting operation. Always avoid lifting operation in case of rain and strong winds.

H. General

(i)   Designate one person as COVID marshal along with supporting team who shall exclusively look after the implementation of all the precautions and procedure.

(ii) COVID marshals, safety officers and any other designated officers should daily inspect work areas, common areas, offices and labour camps

(iii) Records to be maintained for all the activities related to COVID 19, like issue of protective items, sanitization, thermal scanning, suspected infected persons etc.

(iv) Full protective gears including gowns, goggles, mask gloves etc to be ensured to sanitizer team, COVID Marshal and his team. All other persons who comes into contact with multiple persons like canteen/ mess boys, store keeper, drivers, cashier etc should wear masks and gloves and they should always keep sanitizers on their counters/ tables.

I. Emergency Response Plan

Ensure availability of Emergency Response Plan and its awareness to all at project site. The effectiveness of the plan to be checked through Table Top exercise or by conducting Mock drill.

ABOUT GACS

GLOBAL ASSOCIATION FOR CORPORATE SERVICES

ABOUT GACS

Global Association for Corporate Services is an association passionately driven by leaders in the field of corporate services across the globe. This is a forum of working professionals from across various sections of corporate services, providing Knowledge Management, Crisis Support and Networking opportunities to its members. In its larger role, this domain can provide governance support structure & guidance to various governmental / non-governmental organizations to ensure ease of doing business is more realistic & achievable.

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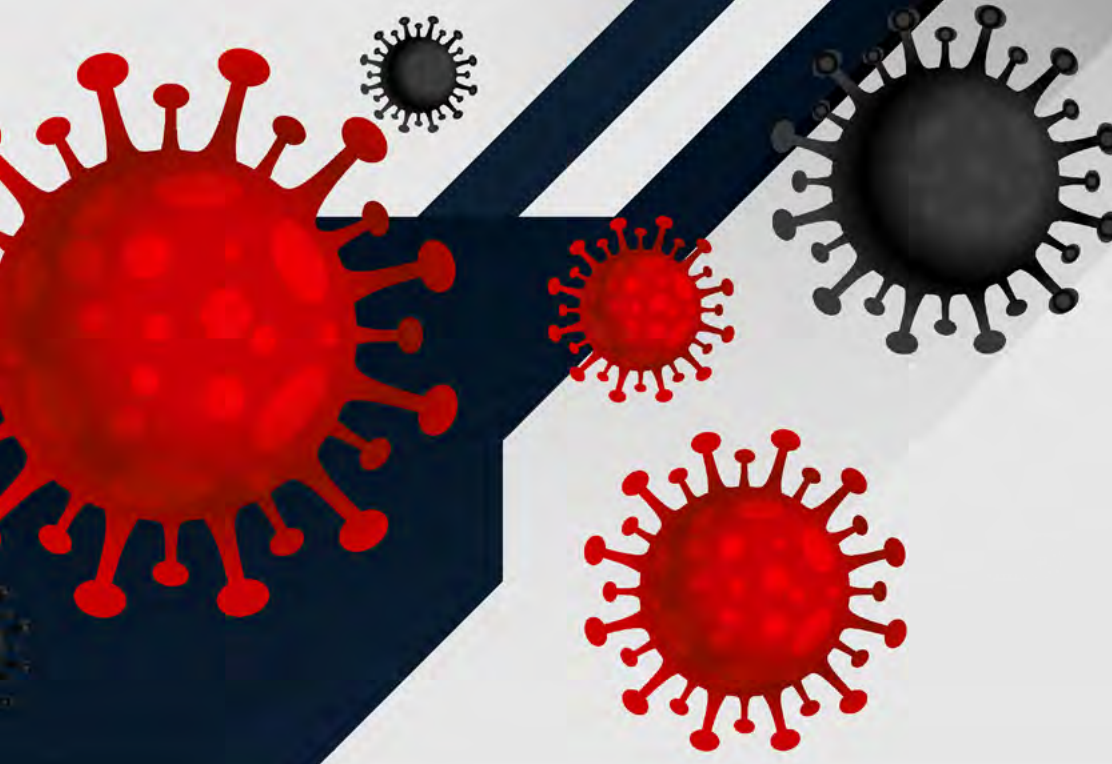
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