

Facility Management Planning for Building Re-Occupation

Operations & Maintenance Programs



July 13, 2020





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Laurie is Vice President and COO at Facility Engineering Associates. Laurie's primary areas of expertise include facility systems assessments, energy management, sustainability, and facility management organizational analyses. She is a published author and instructor. Laurie serves on IFMA's Board of Directors as the 1st Vice Chair. She also serves on the Northwest Energy Efficiency Council's Building Operator Certification program advisory committee, the National Visiting Committee of Building Efficiency for a Sustainable Tomorrow (BEST) Center, and the IFMA representative for ASHRAE's Multi-disciplinary Task Group for Effective Building Operations.



Facility
Engineering
Associates

Agenda

July 13, 2020

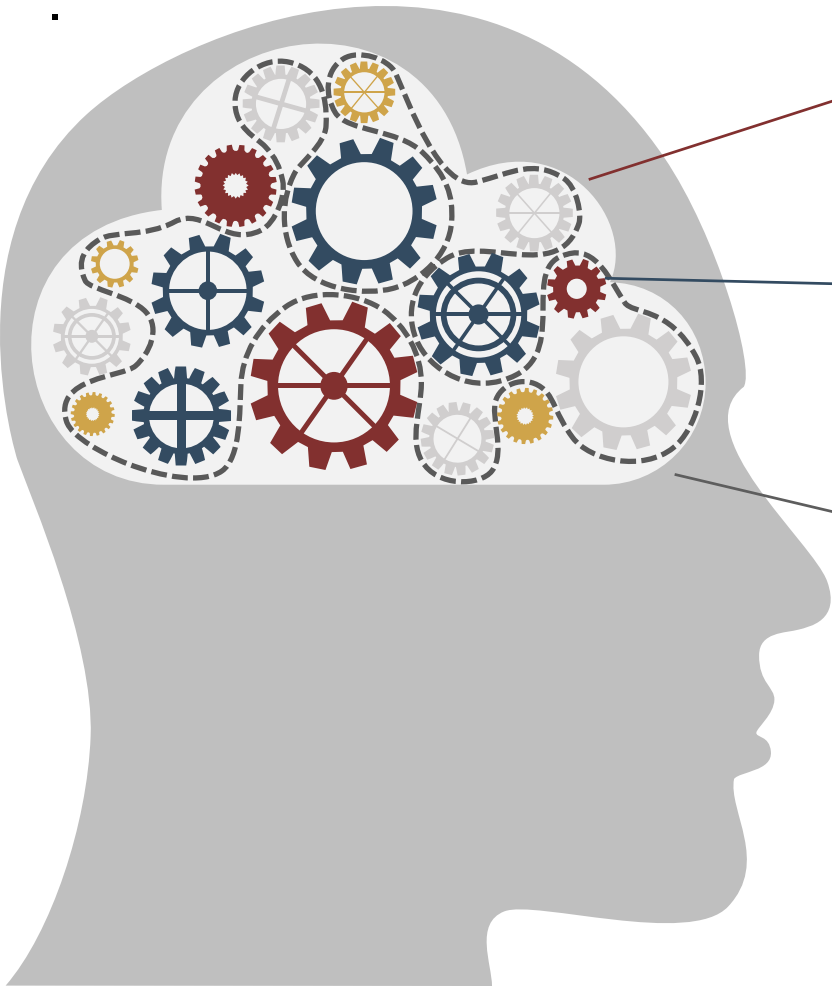
01 Introduction
- Defining “healthy” buildings

02 Mandates & Guidelines

03 Systems
1. Indoor environmental controls
2. Water & wastewater systems
3. Transport systems
4. Power systems
5. Buildings & grounds
6. Pest Management

Context

*The best **people** you can recruit . . .*



Strategic Contribution of a Facility Manager

Knowledge of your organization

Competency in facility management

Connections to the resources needed

*The best **process** to help your organization
recover, re-occupy, and plan for the long-term*

Re-Populating Our Buildings

What Makes an Office Building
“Healthy”

By Joseph G. Allen and John D.
Macomber

Harvard School of Public Health

April 29, 2020

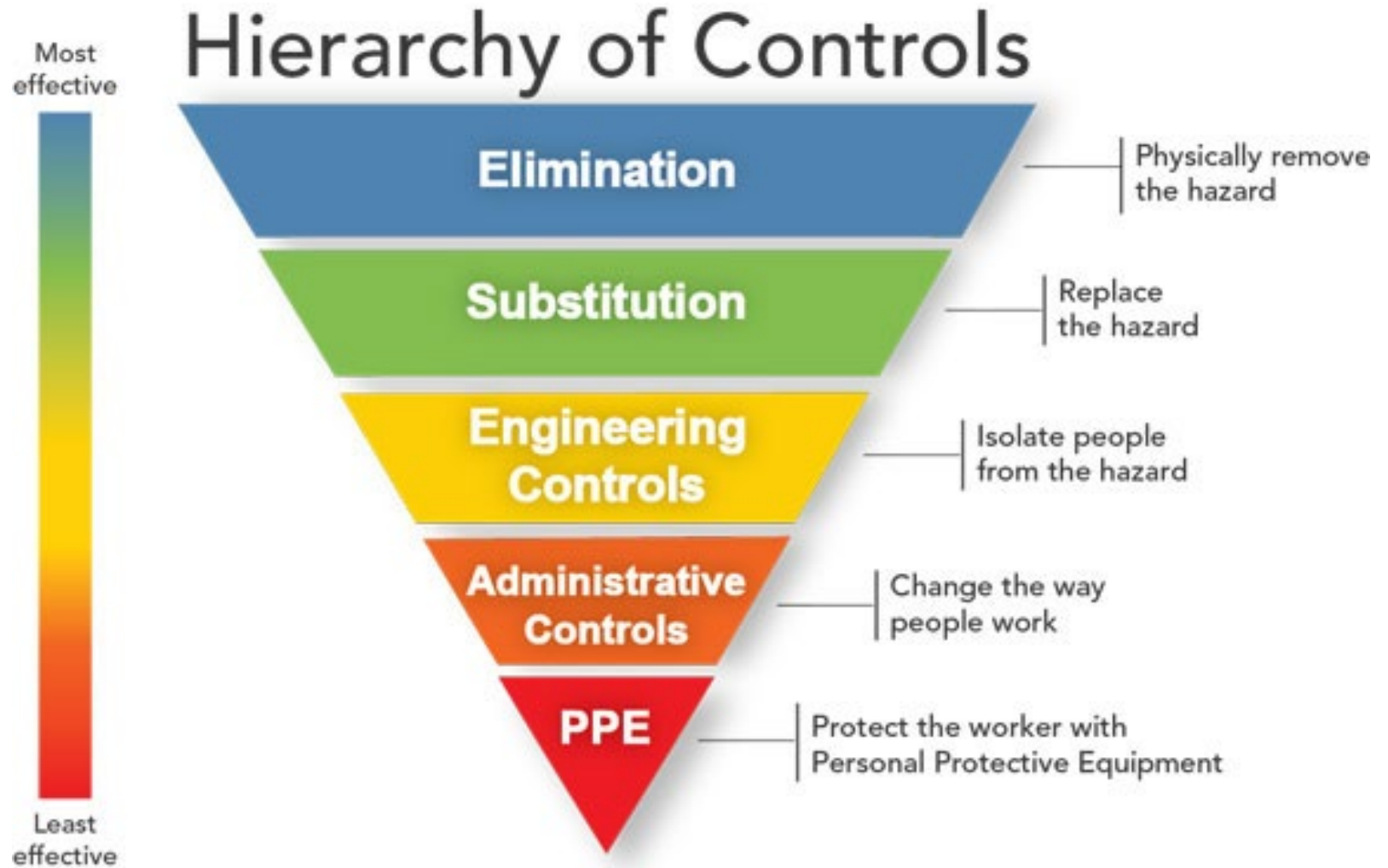
9 foundations of a healthy building

Operations & Maintenance

- Ventilation
- Air quality
- Thermal health
- Moisture
- Water quality
- Dust & pests
- Safety & security
- Noise
- Lighting and views

Operational Planning

*Minimizing risk using
a hierarchy of
controls*



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Mandates & Guidelines



- Visitors
- Occupants
- Facility Staff & Contractors



Mandates & Guidelines

Federal



State & Local



Industry



Organizational



CDC Considerations for Schools



Environment

- **Lowest Risk:** Students and teachers engage in virtual-only classes, activities, and events.
- **More Risk:** Small, in-person classes, activities, and events. Groups of students stay together and with the same teacher throughout/across school days and groups do not mix. Students remain at least 6 feet apart and do not share objects.
- **Highest Risk:** Full sized, in-person classes, activities, and events. Students are not spaced apart, share classroom materials or supplies, and mix between classes and activities.

Promotion Behaviors that Reduce Spread

- Staying home when Appropriate
- Handy Hygiene and Respiratory Etiquette
- Cloth Face Coverings
- Adequate supplies *to support healthy hygiene*
- Signs and Messages *to promote behaviors*

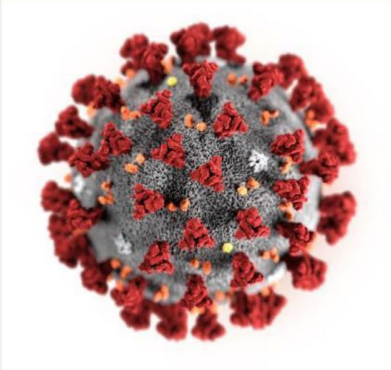


Illustration: CDC / Alissa Eckert & Dan Higgins

Protecting the Safety and Health of Workers

Coronavirus Disease 2019 (COVID-19)

Using OSHA/CDC Guidance to protect workers as we bring workplaces online



CERTIFICATE OF COMPLETION

**By completing the certificate, you certify that you have completed this training and understand the safety guidance provided.*

Please complete the fillable certificate, and provide a copy to your employer.
Keep a copy for your record as well.

See next slide for instructions on how to save a copy of your certificate to your computer

To download your Certificate of Completion for this training, please visit:
<https://labor.vermont.gov/document/covid-19-training-certificate>

Administrative and Work Practice Controls

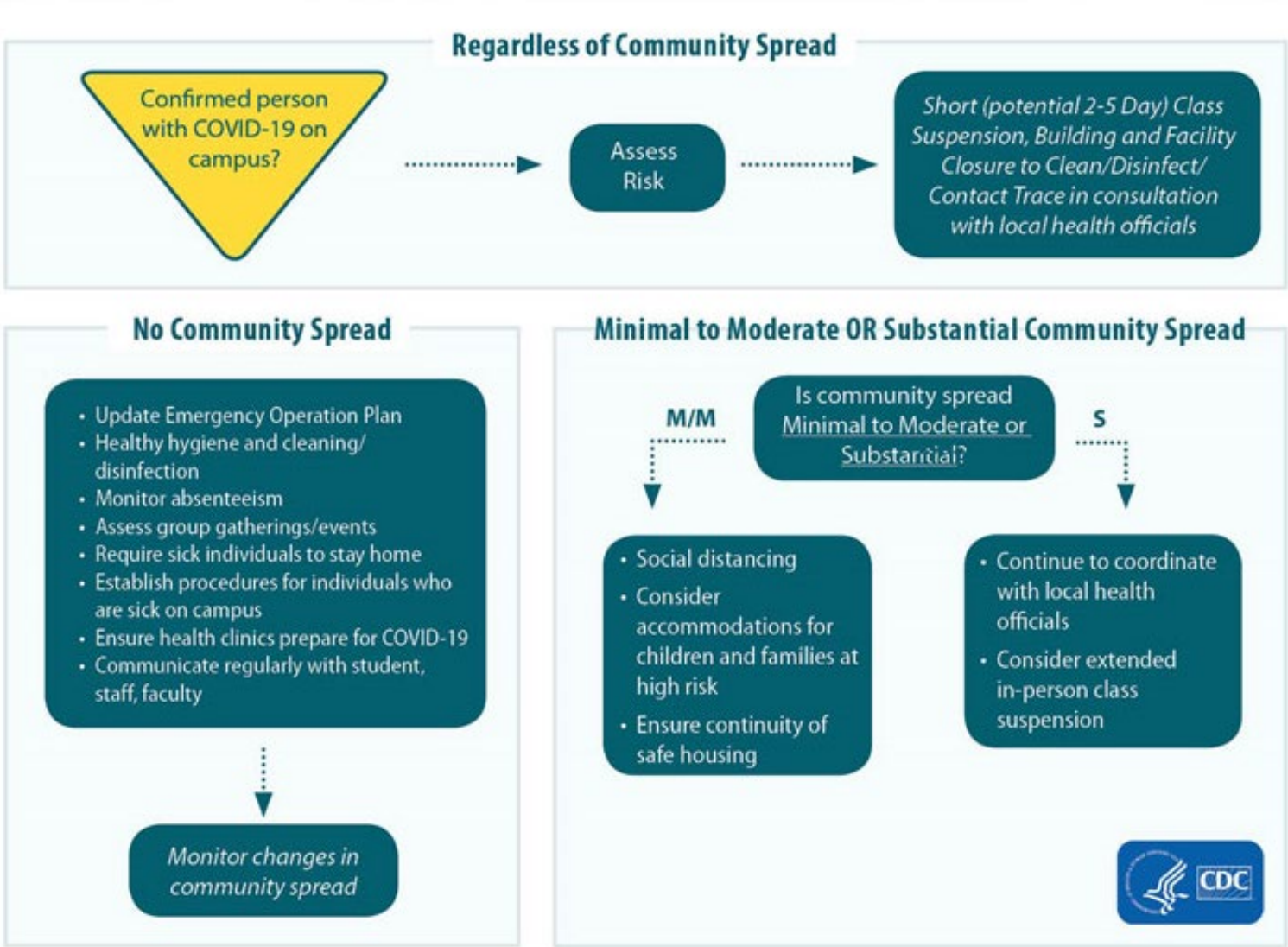
Work Practice Controls can be very effective in preventing the spread of COVID-19

- Understand the basic principles of prevention:
 - **Social Distancing:** Social distancing is when people are able to maintain a minimum of **6 feet apart**.
 - **Personal Cleanliness:** Hand washing facilities and hand sanitizing must be provided, readily available, and their use must be encouraged.
 - **Work Surface Cleanliness:** Employers should implement protocols for regularly cleaning and disinfecting high-touch surfaces in the work environment.
 - Wipe down surfaces such as door push bars, shopping carts, points of sale machines, chairs in waiting areas, and other areas that customers, visitors, or workers frequently touch.

Employee Training

- Train all workers about their risk of occupational exposure to COVID-19 as well as on what to do if they have traveled to high-risk areas or been exposed to possible cases.
- For workers at particular risk of exposure (e.g., in healthcare sectors), discuss:
 - Sources of exposure to the virus and hazards associated with that exposure.
 - Appropriate ways to prevent or reduce the likelihood of exposure, including use of engineering and administrative controls, safe work practices, and PPE.
 - Some OSHA standards (e.g., BBP, PPE) require worker training.

CDC Decision Tree for Taking Action Based on Community Spread





EPA Water Flushing Best Practices

Remember that each drinking water outlet should be flushed individually; flushing a toilet will not flush your water fountains. All flushing should be recorded in a log submitted daily to the office, or person, in charge of this program.

- Locate the faucet furthest away from the service line on each wing and floor of the building, open the faucets wide, and let the water run for 10 minutes. For best results, calculate the volume of the plumbing and the flow rate at the tap and adjust the flushing time accordingly. This 10-minute time frame is considered adequate for most buildings.
- Open valves at all drinking water fountains without refrigeration units and let the water run for roughly 30 seconds to one minute, or until cold.
- Let the water run on all refrigerated water fountains for 15 minutes. Because of the long time period required, routinely flushing refrigerated fountains may not be feasible. It may therefore be necessary, and more economical, to replace these outlets with lead-free, NSF-approved devices.
- Open all kitchen faucets (and other faucets where water will be used for drinking and/or cooking) and let the water run for 30 seconds to one minute, or until cold.

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Systems

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Operations & Maintenance

Are the building systems functioning and ready?

Are any modifications required?

1. Indoor environmental controls
2. Water & wastewater systems
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Operations & Maintenance

Maintaining:

- Air quality
- Humidity
- Filtration

*Transmission of SARS-CoV-2 through the air is sufficiently likely that airborne exposure to the virus should be controlled. **Changes to building operations, including the operation of heating, ventilating, and air-conditioning systems, can reduce airborne exposures.***

- ASHRAE's statement on airborne transmission of SARS-CoV-2/COVID-19

*Ventilation and filtration provided by heating, ventilating, and air-conditioning systems can reduce the airborne concentration of SARS-CoV-2 and thus the risk of transmission through the air. Unconditioned spaces can cause thermal stress to people that may be directly life threatening and that may also lower resistance to infection. In general, **disabling of heating, ventilating, and air-conditioning systems is not a recommended measure to reduce the transmission of the virus.***

- ASHRAE's statement on operation of heating, ventilating, and air-conditioning systems to reduce SARS-CoV-2/COVID-19 transmission



Indoor Environmental Controls

- Cleaning of heating/cooling coils, registers/diffusers & ducts
- Check damper operation and control
- Checking and cleaning of filtration systems
- Air Flushing: introduction of additional outside air and disabling Demand Control Ventilation (DCV)
- Air quality testing prior to re-entry (if required - risk management decision)
- Control checks to re-balance (if required)
- Introduction of new technology (UV) into existing systems
- Portable room air cleaners for high use areas/classrooms



Consider use of PPE when interacting with ventilation materials such as filters and condensate



Indoor Environmental Controls

A little bit about filters...

MERV Std 52.2	Intended Dust Spot Efficiency Std 52.1 (2)	Average Arrestance	Particle Size Ranges	Typical Applications	Typical Filter Type
1 - 4	<20%	60 to 80%	> 10.0 μm	Residential/Minimum Light Commercial/ Minimum Minimum Equipment Protection	Permanent / Self Charging (passive) Washable / Metal, Foam / Synthetics Disposable Panels Fiberglass / Synthetics
5 - 8	<20 to 60%	80 to 95%	3.0-10.0 μm	Industrial Workplaces Commercial Better / Residential Paint Booth / Finishing	Pleated Filters Extended Surface Filters Media Panel Filters
9 - 12	40 to 85%	>90 to 98%	1.0-3.0 μm	Superior/Residential Better/Industrial Workplaces Better/Commercial Buildings	Non-Supported / Pocket Filter / Rigid Box Rigid Cell / Cartridge V-Cells
13 - 16	70 - 98%	>95 to 99%	0.30-1.0 μm	Smoke Removal General Surgery Hospitals & Health Care Superior/ Commercial Buildings	Rigid Cell / Cartridge Rigid Box / Non-Supported / Pocket Filter V-Cells

Quiz Question



Maintaining Indoor Air Quality includes all of the following aspects except...?

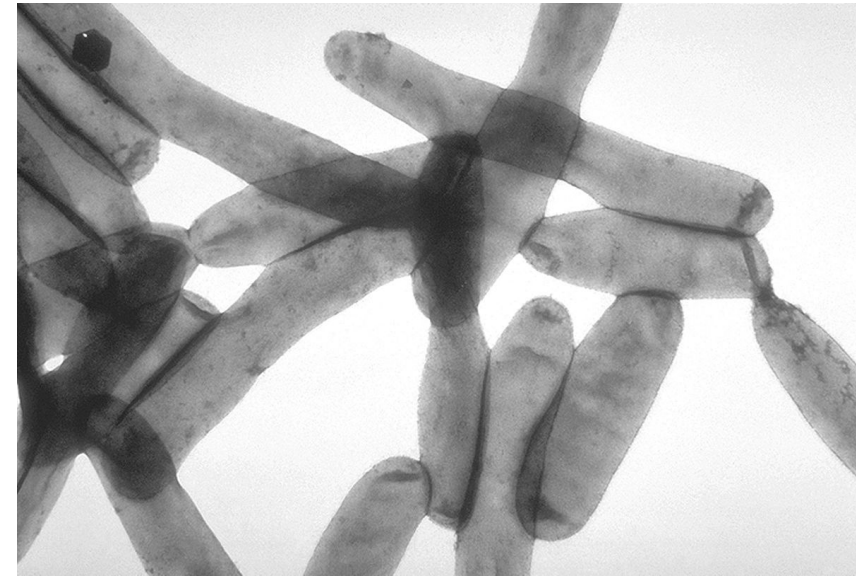
- a. Temperature**
- b. Humidity**
- c. Vibration control**
- d. Filtration**



Water & Wastewater

Building systems that deliver potable water

- Flushing and disinfection of water system
 - Building systems - water heaters, drinking fountains, restroom and kitchen fixtures, in-line filtration, aerators
 - Occupant systems (water fountains, filling stations, showers)
- Cleaning of decorative water systems
- Treatment of hot-tubs, spas, athletic facilities, and employee amenities that use water
- Treatment emergency equipment - fire sprinklers, eye wash stations, safety showers



References:

ANSI/ASHRAE Standard 188-2018,
Legionellosis: Risk Management for
Building Water Systems

“Guidance for Reopening Buildings
After Prolonged Shutdown or Reduced
Operation”

(<https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html>)



Water & Wastewater

Waste water systems

- Ensure systems are flushed and traps are filled
- Inspect Lift Stations and Forced Mains
- Test Pumps, Flow Monitoring
- Consider Jetting Sewage Lines, Smoke Testing

Storm Water Drains/Systems - Prioritize Inspections



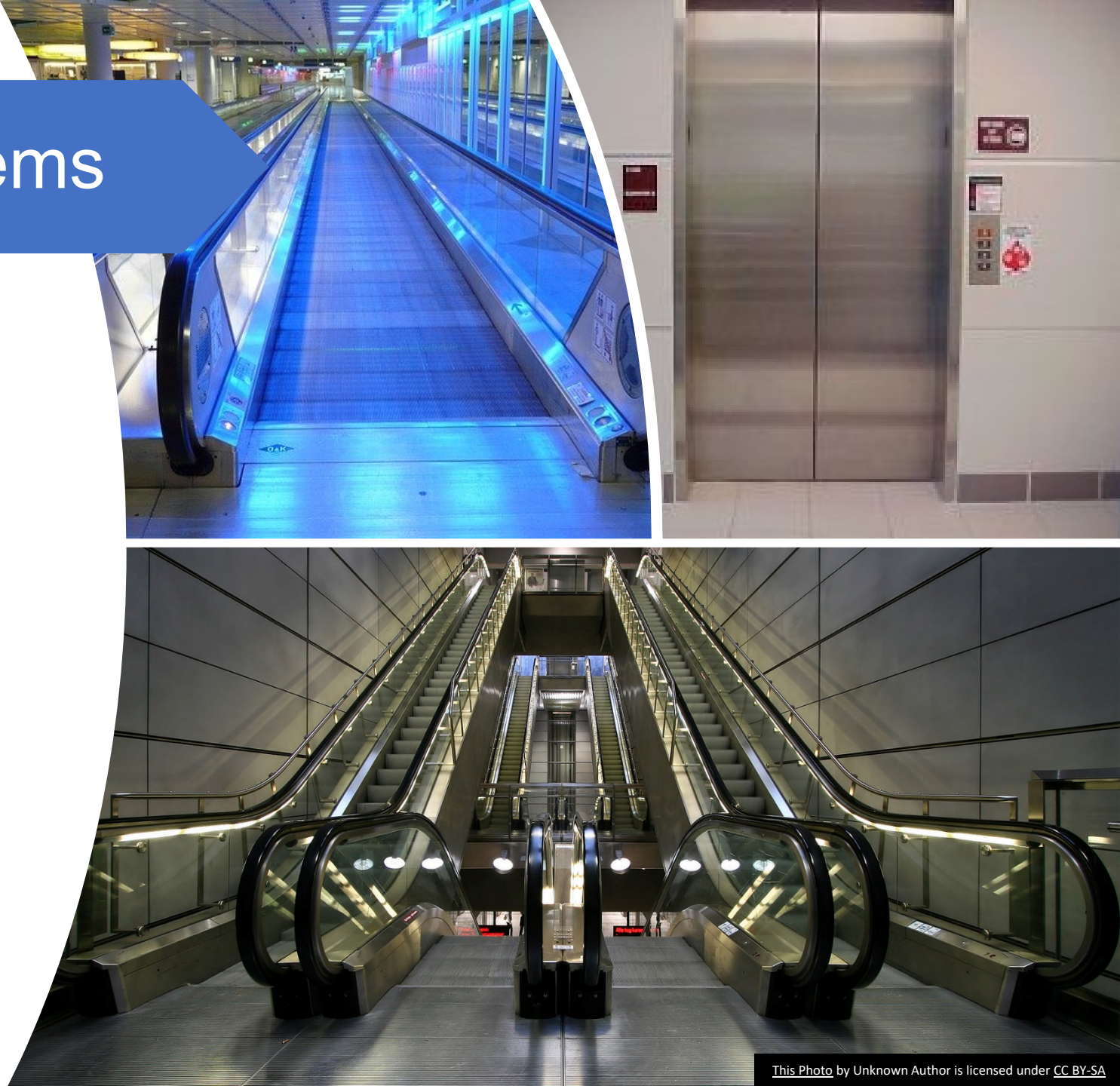
References:

- “Guidance for Building Water Systems (CDC on Water Systems.pdf)
(<https://www.cdc.gov/coronavirus/2019-ncov/php/building-water-system.html>)
- “Water Flushing Best Practices”
(https://www.epa.gov/sites/production/files/2018-09/documents/flushing_best_practices_fact_sheet_508.pdf)



Transport Systems

- Check functionality
- Review and execute cleaning and disinfection requirements
- Check against local health requirements for public access spaces
- Consider elevator cab sizes, number of building floors, and daily number of users when placing queuing marks
- Designate elevators for “up” and “down” use to avoid longer ride times.





Power Systems



Restricted Access Areas

- Check electrical distribution systems for functionality (by proper personnel)
- Verify that proper access requirements are being maintained (locked doors, access restrictions)

Public Access Areas

- Check electrical closets, panel access areas
- Verify that proper access requirements are being maintained (locked doors, access restrictions, panel covers)

Visual inspections should include checks for open safety issues, rodent infestation, blockages to access, open panelboards





Pest Management

Review current contracted services

- Frequency
- Level of service
- Follow an Integrated Pest Management Plan

Determine current requirements for re-entry

- Changes to service level
- Changes to frequency



Nature returns to an interrupted campus...

References:

- “What Is Integrated Pest Management?” (<https://www.cdc.gov/nceh/publications/factsheets/What%20Is%20Integrated%20Pest%20Management.pdf>)
- “Integrated Pest Management (IPM) Principles” <https://www.epa.gov/safepestcontrol/integrated-pest-management-ipm-principles>)



Buildings & Grounds

Grounds

- Review current training of contract employees
- Check that appropriate PPE and social distancing training is covered
- Trim vegetation to help with line of sight/security issues
- Check boundary fences for damage and condition



References:

- “Cleaning and Disinfection for Community Facilities”
(<https://www.cdc.gov/coronavirus/2019-ncov/community/organizations/cleaning-disinfection.html>)
- “Cleaning and Disinfecting Your Facility”
(<https://www.cdc.gov/coronavirus/2019-ncov/community/disinfecting-building-facility.html>)



Key Takeaways: O&M

1



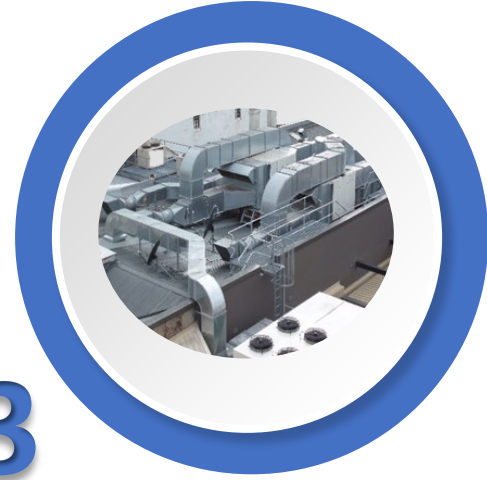
Water

2



Outside Air & Filtration

3



Balance Guidelines With
System Capabilities

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Up next . . .

July 16



O&M Programs

Thanks for tuning in!

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