#### AUGUST 2020

# REGULATORY, BUDGETARY, AND INSTITUTIONAL IMPACTS

# How will COVID-19 change future building regulations?

andemics are becoming more frequent in the twenty-first century. During the twentieth century, there were three Influenza pandemics with tens of thousands of victims (1918, 1957, 1968) (CDC, 2020). In the last 20 years, four similar viral pandemics have occurred (SARS- 2003, Swine Flu- 2009, MERS- 2012, COVID- 2019) (CDC, 2020). Preparation for the current and the next pandemics are no longer a question of "if," but "when."

Civic agencies represent many of the frontline workers that respond in times of crisis. Their ability to maintain their own staff safety allows a coordinated response that saves lives. There is a paradox of maintaining or even increasing public services while also trying to limit interaction with a public that may be infected with a communicable disease. Another difficulty that these agencies face is the variety of physical space that they are responsible for: police, sheriff and fire stations, detention facilities, morgues and labs, city and county administrations, and community centers and libraries. Each has its own challenges and strategies for maintaining a safe environment. For instance, state and federal prisons have reported 52,000 cases among inmates and 11,000 staff infections as of June 30 (Marshall Project, 2020).

COVID-19 has changed lives around the world, from the way people work, learn/teach, and deliver/receive healthcare. Architects have always been responsible for the health and welfare inside buildings. This new challenge is one more item that architects will have to consider as they design spaces for civic clients. Changes that have been already occurring have begun to accelerate as this moment is an opportunity to re-make society in its new image.

These responses will need to be codified to become mainstream and long-lasting. Building codes will need to change to provide better protection during pandemic events. Worker safety rules will need to be clarified to define ways in which we can protect ourselves while at work. Privacy rules about health information may need to have a place carved out for pandemic infections. And all of this takes place in an environment where civic agencies have the countering effects of lower income from sales taxes and higher demand for services. The world is changing in response to this pandemic. It can be a blip or an impetus for greater change and an improved society on the other side.

As the COVID-19 pandemic continues to disrupt nearly all aspects of life, from working and learning from anywhere to delivering



and receiving healthcare virtually, we at HMC Architects are looking at this disruption as an opportunity to learn and grow. By discovering and generating new knowledge and insight, we are determined to help our clients through this crisis by exploring their current pain points, streamlining their processes, and identifying solutions to improve their organizational metrics.

As part of this ongoing research effort, we are committed to share our findings with the industry on five main areas of Technology, Adaptability and Flexibility, Regulatory/ Budgetary/Institutional Impacts, Space Needs Restructuring, and Impact to Wellness/Mental Health. In this article, we cover our findings on Regulatory/Budgetary/Institutional changes.

#### METHOD

A group of representatives from different public agencies, including fire, police, sheriff, city and county administration as well as architects from HMC and consultants from public safety and engineering companies were invited to attend a virtual focus group to discuss and share insight. Prior to the focus group session, a short online survey was sent to the group for their review and evaluation of the short-and long-term impacts of COVID-19 on their current and future facility operation and design.

### **RESULTS/DISCUSSION**

The Occupational Safety and Health Administration (OSHA) was developed to protect all American employees from unsafe conditions. The General Duty Clause, Section 5(a)(1) of the Occupational Safety and Health (OSH) Act of 1970, 29 USC 654(a)(1), requires employers to furnish all workers "employment and a place of employment, which are free from recognized hazards that are causing or are likely to cause death or serious physical harm." (OSHA, 2020). In addition, states including California have their own state department for worker safety. In California, the Division of Occupational Safety and Health (Cal/OSHA) Aerosol Transmissible Diseases (ATD) standard is aimed at preventing worker illness from infectious diseases that can be transmitted by inhaling air that contains viruses (including SARS-CoV-2), bacteria or other disease-causing organisms. This standard is required in healthcare environments but can be applied to other high-risk spaces as well.

OSHA has confirmed that they are including COVID-19 in 'reportable illnesses' for workplace safety (LEE ANNE JILLINGS, 2020). This means that there is a potential liability for worker safety to avoid this risk. Worker's compensation insurance claims could be filed for treatment costs, which are averaging between \$40,000

# 66

Many civic agencies also provide health insurance to their staff through a self-funded mechanism. The cost to treat a small percentage of their staff could bankrupt the fund.





(under medical insurance) and \$70,000 (with no medical insurance) for a six-day hospital stay (Fair Health, 2020). Many people require longer treatments of up to a month. Many civic agencies also provide health insurance to their staff through a self-funded mechanism. The cost to treat a small percentage of their staff could bankrupt the fund.

OSHA encourages employers to create an Infectious Disease Preparedness and Response Plan as part of their required overall Emergency Action Plan. Pandemics should now be included in the potential emergencies. Some of the items that should be considered when you update your plan are:

- a. Shortage of PPE/short-term solutions (raincoats and garbage bags as PPE)
  - i. When respirators are necessary to protect workers, employers must implement a comprehensive respiratory protection program in accordance with the Respiratory Protection Standard (29 CFR 1910.134).

## LOWER CAUTION

Performing administrative duties in non-public areas of work sites, such as police or fire stations, away from other staff members.

# 1EDIUM AUTION

Interacting, includin as part of public safety or rescue operations, with members of the general public.

Working at publicfacing facilities, where the public may arrive for assistance.

- b. Cleaning/sanitizing processes for office space, equipment, and vehicles
- c. Staff interactions
- d. Building and building systems changes (see CBC code changes)

Planning will require storage of PPE and cleaning products for each environment to be sanitized. New equipment may also be required to spray these sanitizing solutions in a regular and predictable quantity. These action plans will require regular communication with staff and be part of all new hire onboarding procedures.

The elimination of all risks is not possible within civic agencies. A risk reduction strategy must be employed to address the most likely public interactions that could cause infection. One way that civic agencies are addressing COVID-19 is a presumption of infection for all staff and public interactions (McCliman, 2020). This presumption increases the threat level of any public interactions based on the table below.

# HIGH CAUTION

Entering the home of a person, including when an occupant reports signs and symptoms consistent with COVID-19.

Providing care for a known patient not involving aerosol-generating procedures.

# VERY HIGH CAUTION

Performing aerosol-generating procedures (e.g., cardiopulmonary resuscitation, intubation) on known or suspected COVID-19 patients.



During pandemic events, one of the most important elements when addressing the situation is, "trust."



Post-incident sanitizing of staff and equipment will add time to respond to calls. During pandemic events, one of the most important elements when addressing the situation is, "trust." When an agency communicates openly with the public and staff and provides the equipment needed, people are able to take responsibility for acting to maintain their own safety within a work environment. When these proactive actions are taken, staff absenteeism can be limited and reduce liabilities for healthcare.

# HEALTH INSURANCE PORTABILITY AND ACCOUNTABILITY ACT OF 1996 (HIPAA)

HIPAA covers many elements of healthcare treatment, but one of the biggest changes was in the area of privacy. HIPAA created standards and safeguards for personal medical information (HHS, 2020). During a pandemic event, these safeguards could prevent public agencies from knowing a person's infection status.

There are currently some exceptions for "national priorities." Under this program, "An authorization is not required to use or disclose protected health information for certain essential government functions. Such functions include protecting the health and safety of inmates or employees in a correctional institution." (Health Insurance Privacy, 2020) At the moment, this is the one of the few conditions where a public agency would be allowed to notify staff of the health status of an individual. This caveat may need expanded or further allowed in declared pandemic emergencies to protect the health of civic employees.

# CALIFORNIA BUILDING CODE CHANGES

Chapter 8 of the California Building Code currently provides the requirements of "interior finishes." At the moment, the only cleanability issue covered in the code is the requirement to provide a coved floor base in bathrooms. Other safety issues such as fire and flame spread are tested and required of interior finish materials. In future versions of the code, as well as sooner through local amendments, testing data may be required for interior finishes on the material's cleanability and ability to limit biological growth. Test reports on cleanability may also be required for high touch objects (when touchless options are not available) such as door handles, sink levers, and light switches. The building code could also begin to require tested barrier separations between different risk level individuals, such as office staff and the public.

Plumbing issues related to COVID-19 are the potential of stagnant water to become a vector for Legionnaires' disease. Water pipes that are demolished are required to be capped to prevent this deadly disease. When pandemics create empty spaces for long periods of time, this disease risk grows. The main symptom of this disease is also ironically similar to COVID-19; a lung inflammation that causes a severe pneumonia with smoking as an added risk factor. When buildings are re-occupied, operations staff need to safely purge the water systems to eliminate the risk to building occupants (ASHRAE, 2020).

A building's air circulation system is designed from requirements of the building code and standards. The American Society of Heating, Refrigerating and Air-Conditioning Engineers (ASHRAE) creates standards for air systems that are referenced and incorporated into the building code. Air delivery systems can be a way to spread or stop an outbreak. As COVID-19 and other airborne infections become pandemics, a building's air system may be asked to operate in new and inventive ways. A few of the possible responses to pandemics that could become more stringent and/or required in the future are:

- Installing high-efficiency air filters
   (ASHRAE 52.2): Air systems are designed
   based on a specific filtration system.
   Increasing the filtration rating could cause
   a drop in the delivery of air to a space,
   creating stagnant air with increased viral
   potential. Localized HEPA filtration is possible
   but needs to be done in a way to work with
   the air system and not to re-direct air in a
   negative manner. ASHRAE is recommending
   a MERV of 13 or higher. HEPA is any filter
   above 16. HEPA may be capable of filtering
   out virus in the air.
- Installing UV in ductwork (ASHRAE 185.2): These light fixtures have the ability to inactivate microorganisms to allow air to be circulated within a building with no other changes. These systems may be required to provide a safe indoor environment.
- Programming two-hour pre- and postoccupancy daily air purge cycles in the work environment (Mills, 2020).

Building systems are already built to purge air (typically used during construction for off gassing from carpets, etc.). This

# CIVIC 5



A coordinated government response to pandemic events is critical to reduce the impact to society.



programming would add a timed purge to each daily cycle.

- Negative pressure rooms (for isolation of known COVID-19 positive): Typically, a space will be designed for stable or even slightly "positive" air, meaning that you provide slightly more air in a space than is exhausted out. To limit the spread of virus in a known space, such as a clinic in a jail or prison environment, negative pressure may be employed. "To maintain negative pressure in a room, the exhaust air (EA) volume needs to be 10 percent larger than the supply air (SA) volume." (Kim, February 2019) Additionally, the locations of supply and exhaust air create safe staff zones for treatment and check-ins. These rooms are already included in many buildings. They could become more used and required in the future.
- Humidity: Currently, most air systems are designed to provide a mild- to low- humidity environment. "A study conducted in Sydney during the early epidemic stage of COVID-19 has found an association between lower humidity and an increase in locally acquired positive cases. Researchers discovered a 1 percent decrease in humidity could increase the number of COVID-19 cases by six percent." (University of Sydney (AU), 2020)
- Sustainability (ASHRAE 90.1): Energy usage requirements have been tightening as the goal of "Net-Zero Energy" buildings are becoming the norm. As the air systems may be asked to do more to prevent infection, the energy usage may increase outside of the current standards and code requirements.

As you can see, air systems can play a big part in how a building can limit or spread an infection. Air balancing and commissioning of new buildings could take on an added importance as we address infectious control in all types of civic building. Many of these items may become required, while others may become incorporated as "best practice".

# CARES ACT II- FEDERAL STIMULUS FUNDING

To date, the federal government has provided assistance to unemployed individuals and corporations struggling during this pandemic event. However, civic agencies are already feeling the pinch and preparing for even worse conditions as the assistance to individuals and corporations wears off. In the City of Los Angeles, the current loss of revenue is estimated at \$231 million this fiscal year and up to \$598 million for next fiscal year, from a total revenue projection of \$6.38 billion (Galperin, 2020). While this reduction in revenue has occurred, costs have increased for public agency services. Cleaning and sanitizing have added costs. Staff efficiency has been reduced in many areas to address the pandemic risks.

Cities and states have requested federal assistance to address this emergency. Some specific grant funding (of \$150 billion) was included in the "Phase 3" bill that was already passed. There are small funds included to reimburse local agencies, pay for housing, transportation, testing, and law enforcement, etc. Each of these programs will require local agencies to file for the funding.

At the moment, the United States House of Representatives has passed a direct funding bill, but the Senate and President have not signaled any desire to provide this type of funding. Without this direct funding, civic services and employees could become added victims of the pandemic.

#### SUMMARY

A coordinated government response to pandemic events is critical to reduce the impact to society. It's a well-known maxim that regulations are built from the ashes of tragedy. Guidelines that have been used for years in the built environment will be updated after this crisis has passed. Public safety in buildings will require laws, codes, standards, and product tests to be updated to meet the challenge. In the short term, acquiring funding may be difficult to update buildings with these new rules.

As a new normalcy returns, architects will need to design buildings with COVID-19 and future pandemics in mind.

To create or update your own OSHA Emergency Action Plan: <u>https://www.osha.</u> gov/SLTC/etools/evacuation/expertsystem/ emergencyplan.html

# CIVIC 6

### REFERENCES

ASHRAE. (2020). Managing the Risk of Legionellosis Associated with Building Water Systems, Guideline 12-2020. Atlanta, GA: ASHRAE.

CDC. (2020, July 05). Centers for Disease Control. Retrieved from <u>www.cdc.gov</u>

Fair Health. (2020, March 25). The Projected Economic Impact of the COVID-19 Pandemic on the US Healthcare System. Retrieved from Fair Health: <u>https://www.businessinsider.com/</u> <u>coronavirus-covid-19-treatment-testing-</u> <u>costs-2020-3</u>

Galperin, R. (2020). L.A. Controller Estimates \$231 Million Less City Revenue Than Expected This Fiscal Year; Deeper Plunge Likely Next Year. Los Angeles,CA: Controller, City of Los Angeles.

Health Insurance Privacy. (2020, July 09). Retrieved from Health and Human Service: <u>https://www.hhs.gov/hipaa/for-professionals/</u> <u>privacy/laws-regulations/index.html</u>

HHS. (2020, July 12). Health Information Privacy. Retrieved from Health and Human Services: <u>https://www.hhs.gov/hipaa/for-</u> <u>professionals/privacy/laws-regulations</u>

Kim, J. C. (February 2019). Improved Ventilation System for Removal of Airborne Contamination in Airborne Infectious Isolation Rooms. ASHRAE Journal. Retrieved from ASHRAE: <u>https://www.ashrae.org/technical-resources/</u> <u>ashrae-journal/featured-articles/improved-</u> <u>ventilation-system-for-removal-of-airborne-</u> <u>contamination-in-airborne-infectious-isolation-</u> <u>rooms</u> LEE ANNE JILLINGS. (2020, May 19). Revised Enforcement Guidance for Recording Cases of Coronavirus Disease 2019 (COVID-19). Retrieved from OSHA: <u>https://www.osha.gov/</u> <u>memos/2020-05-19/revised-enforcement-</u> <u>guidance-recording-cases-coronavirus-</u> <u>disease-2019-covid-19</u>

Marshall Project. (2020, July 02). Retrieved from The Marshall Project: <u>https://www.</u> <u>themarshallproject.org/2020/05/01/a-stateby-state-look-at-coronavirus-in-prisons</u>

McCliman, M. (2020, June 11). Deputy Fire Chief, City of Rancho Cucamonga. (S. Kiss, Interviewer)

Mills, H. Y. (2020, July 12). COVID-19 and Buildings :Re-Occupation After Lockdown. Retrieved from ASHRAE: <u>https://www.</u> <u>ashrae.org/File%20Library/Professional%20</u> <u>Development/Learning%20Portal/Instructor-Led%20Training/Online%20Instructor-Led/7.8.2020-Covid-19-and-Buildings-Re-Occupation Final.pdf</u>

OSHA. (2020, July 12). Emergency Response. Retrieved from OSHA: <u>https://www.osha.gov/</u> <u>SLTC/covid-19/emergency-response.html</u>

OSHA. (2020, July 12). Standards. Retrieved from OSHA: <u>https://www.osha.gov/SLTC/</u> <u>covid-19/standards.html</u>

Peters, T. (2020, May). The Rules: OSHA Regulations and COVID-19. Architect, p. 29.

University of Sydney (AU). (2020, June 1). Reduced humidity linked to increased COVID-19 risk. Retrieved from Medical Xpress: <u>https://medicalxpress.com/news/2020-06-</u> <u>humidity-linked-covid-.html</u>

# For additional questions, contact:

Steven Kiss Civic Practice Leader <u>steven.kiss@hmcarchitects.com</u> Adeleh Nejati Healthcare Planner and Researcher <u>adeleh.nejati@hmcarchitects.com</u>