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Guide to Creating Healthy Environments:

Designing for the New Future

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Certain global events have transformed the way we live and work in rapid order, and the current global pandemic is likely no different. Our job as architects is to immerse ourselves in the situation, sort through the research, and provide solutions.

Kirksey has identified three focus areas that can have significant impacts on the health of building occupants:

SURFACES SPACES SYSTEMS

We have created a summary to address incorporating them into both new projects and existing facilities while upholding our vision:

Healthy Buildings, Healthy People, Healthy Planet

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SURFACES

THINGS PEOPLE TOUCH

Limiting physical contact with commonly used objects and surfaces is the easiest and most effective way to reduce the spread of germs. Regular cleaning, sanitization, and disinfection further promote infection control and work together to create an environment optimized for occupant health. We've created a list of suggestions that will help to minimize the transmission of pathogens as you make decisions about the surfaces in your facility. It is important to prioritize surfaces that are touched often and by more people. Evaluate your space and identify the high-touch surfaces so you can focus your efforts to make the most impact.

REDUCE AND/OR LIMIT HIGH-TOUCH SURFACES

Reduce highly-used, high-touch surfaces by replacing them with touchless devices (automatic doors, plumbing fixtures, light switches, etc.). Since retrofitting with touchless devices comes at a cost, emphasis should be placed on densely occupied or highly-used (and touched) components – such as the front door to a facility. In bathrooms and other public spaces, limiting countertop surfaces in bathrooms and other public spaces can discourage the setting down of objects and reduce horizontal surfaces where virus particles can settle.

CONSIDER THE TYPE OF SURFACE

Evaluate the types (materials/finishes) of surfaces used in your space and their ability to transmit germs as well as their ability to be sanitized and disinfected. Opt for impervious, easy to clean surfaces when possible. COVID-19 has been shown to break down soon after landing on copper surfaces while lasting up to three days on stainless steel and plastics, less time on glass and fabrics, and significantly less time (less than 24 hours) on paper or cardboard [source: National Institute of Allergy and Infectious Disease].

CLEAN AND DISINFECT PROTOCOL

Both cleaning and disinfecting are recommended. Cleaning removes pathogens, while sanitizing and disinfecting kills them. Without cleaning first, pathogens can remain hidden under other contaminants or impurities on a surface and potentially survive later disinfection efforts. Protocol should be implemented for high-touch surfaces based on CDC guidelines.

Click here for further information on additional strategies and new products pertaining to surfaces: furniture, doors and cabinetry, technology, restrooms, and lighting.

****Caution**** There is little evidence of the effectiveness of antimicrobials in preventing diseases like COVID-19, and many antimicrobials are associated with detrimental human and ecological health impacts.

SPACES

PLACES WHERE PEOPLE GATHER

COVID-19 has forced us to rethink the reasons we gather and how to do so safely. It has also altered our behavior, from hygiene practices to the way we work, learn/educate, heal, research, entertain, shop, socialize, and worship [all sections]. For infection control, it is essential to address the built environment, both design and operations, and create protocols that promote healthy behaviors. Here are our recommendations and design considerations for places where people gather:

RECOMMENDATIONS FOR ALL SPACES

- **Promote Healthy Behaviors** - actively encourage anyone that is sick or high-risk to remain at home, recommend wearing masks, promote frequent hand washing and physical distancing, and provide hand sanitizing stations.

- **Establish Physical Distancing Protocol** - communicate policies before entry and provide readily available signage to promote physical distancing best practices.

- **Implement Sanitation and Disinfecting Practices** - see CDC Guidelines and BOMA Recommendations, also allow for more time between events/services/meetings to disinfect.

DESIGN CONSIDERATIONS

- **Decrease Density** – a reduction in density might be needed to accommodate physical distancing.

- **Flexibility** - program, design, and select furniture to optimize flexibility so that space can be reconfigured for physical distancing protocols.

- **Technology** - provide dedicated space or technology accommodations to support the organization's goals in a virtual environment during a pandemic.

- **Dedicated Arrival/Service Spaces** - provide an area outside of the building, that is covered and not subject to winds, for visitors to arrive and wait for service while practicing social distancing. Provide a separate space for deliveries (potentially repurpose current back-of-house spaces).

- **Natural Light** - utilize natural daylight when possible when possible, as it promotes occupant mental and physical wellness as well as provides some sanitizing function.

Architects understand that the design of a space influences how it is used and impacts the health of its occupants. Human behaviors, policies, and operations also affect how a space is used and maintained.

Kirksey is continuing to research post-pandemic planning principles for market-sector specific spaces. **Click here** to learn more about Healthcare Spaces.

SYSTEMS

BUILDING TECHNOLOGIES

Optimizing building systems is a long-term effort as different operational practices, technologies, and their effects are tested and refined over time. However, organizations such as ASHRAE, and various building certification standards, have established a collection of best practices for improving indoor environmental quality. Drawing from these best practices are six primary areas related to building systems that can help ensure occupant health and safety during the current pandemic.

Click here for a more in-depth Kirksey article on Building Systems & Technologies

VENTILATION AND AIR TREATMENT

Delivering outside air and treating recirculated air have the most significant impact on occupant health. Strategies to consider for ventilation and air treatment include:

- Increasing the supply of outside air
- Filtration strategies such as HEPA or ULPA filters
- Ultraviolet (specifically UV-C) light sanitation
- Air ionization to clean the air
- Photocatalytic oxidation to clean the air

AIR MONITORING

Critical to ensure that other pollutant containment and mitigation strategies are operating properly.

- Sample the air to test the chemical makeup for CO2 and other pollutants
- Monitor the air ventilation system to ensure pressurization differentials and humidification ranges are appropriately maintained. For example, public restroom facilities should be maintained at negative pressure, compared to adjacent spaces, and humidity levels should be kept at 40%-60%, which is optimal for thermal and respiratory comfort while decreasing the survival time of microorganisms.

PLUMBING FIXTURES

Represent high-contact components of a building's interior and a potential source for the spread of pathogens. There is some evidence that contaminants can be aerosolized by toilet flushing or spread through plumbing systems.

- Toilets should be flushed with lids down, if possible.
- Ensure that water seals are functioning.
- Operate exhaust fans continuously.
- Use touchless fixtures.

INTERNAL TRANSPORTATION SYSTEMS (such as elevators, escalators, etc.)

High-contact and densely occupied areas that need regular cleaning and sanitation*, and protocols to promote physical distancing. Design considerations include:

- Materials used for elevator cab finishes, escalator cladding, etc. should be impervious and easily cleaned.
- Use signage and graphics in place to instruct physical distancing protocols.
- Use control systems which minimize touching high-contact surfaces. Elevator example: use a call-less system activated by a key card or mobile phone.

TOUCHLESS DEVICES

Any button, switch, or similar device requiring human touch should be evaluated for proper functioning with a touchless version. Emphasis should be placed on densely occupied or often used (and touched) components – such as the front door to a facility.

HEALTHY BUILDING PROGRAMS

Health-focused certification programs, while not a "building system" itself, are a set of prescriptions and metrics that will, in part, dictate how buildings perform. Complying with the USGBC's LEED program, the IWBI's WELL Building Standard, RESET AIR, and/or others will inherently provide building systems and the design parameters which emphasize the health and wellness of building occupants.

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PRIMARY SOURCES & HELPFUL RESOURCES

Centers for Disease Control and Prevention Coronavirus (COVID-19) Information

CDC Guidelines, Cleaning and Disinfecting Your Facility

BOMA International's Coronavirus Resource Center

ASHRAE COVID-19 Preparedness Resources

AIA National – Reopening America: Strategies for Safer Buildings

Greater Houston Partnership - Houston COVID-19 Resources

BUILDING CERTIFICATION PROGRAMS

USGBC LEED Rating System

International WELL Building Institute, WELL Health-Safety Rating

The RESET® Air Standard

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While this guide provides an overview on Surfaces, Spaces, and Systems, Kirksey has more detailed research supporting each of these areas; see linked resources*.

Contact the following Kirksey leaders for more information on designing healthy, forward-thinking environments for your specific needs:

Workplace - Randall Walker / Brian Malarkey

Healthcare - Necia Bonner / David McLemore

Community/Religious - Janis Brackett

Government – Benito Guerrier

Collegiate - Steve Durham

pK-12 - Nicola Springer

Hospitality/Hotels/Multifamily - Doug Hammel

Science & Technology (Labs, Mission Critical, & Industrial) - Brian Richard

Commercial Buildings - Paul Newsoroff / Scott Wilkinson

Sustainability & Building Programs - Colley Hodges

Building Physics/Systems - Kapil Upadhyaya

Brand Integration/Graphics + Signage - Melissa Schmitz

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Visit Kirksey.com/COVID-19 for up-to-date information and resources