

A decorative graphic on a teal background. It features a central horizontal line of diagonal hatching. Above and below this line are two circles made of small vertical bars. The top circle is labeled 'PRESENT' and the bottom one 'PAST'. A dashed line curves around the top-left and bottom-left of the circles. A dotted line forms a partial circle around the word 'through' in the main title.

# designing through change

Evolving Design Tools During COVID-19

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# OVERVIEW

The world is navigating a new normal. There are many questions about what the future of our spaces will be and how we can transition into our new areas while feeling safe and comfortable.

This document is intended to help ease concerns and highlight ways to adapt our current and future buildings.

**Disclaimer:** The information contained in this document is meant to serve as a helpful resource, but should not be interpreted as legal or other professional advice. Due to the rapidly changing scientific, legal, and regulatory landscape related to the COVID-19 outbreak, this document may at any time be out of date. ALSC Architects does not guarantee its accuracy.

## > Pandemic:

- Timeline
- Case Study
- Historical & Societal Effects
- Guiding Design Principles

## > Infrastructure:

- Sunlight & Outdoors
- Natural Ventilation
- Mechanical Ventilation (HVAC)
- Indoor Humidity

## > Public Restrooms

## > Materials & Finishes

## > Back to the Office

## > In-Person Education

## > Sports & Recreation

## > Healthcare

## > Hospitality

## > Retail

## > Banking & Small Business Solutions

## > Multi-Family Housing

# PANDEMIC: Recent Pandemic Timeline

Throughout the last centuries many pandemics have been recorded. Below is a time line of the most recent and largest ones.



(11)



(10)

**14th Century**  
Bubonic Plague

Year

Deaths

20 million

**1918**  
Spanish Flu

20-50 million

**1981**  
HIV/AIDS

35 million

**2003**  
SARS

774

**2019**  
COVID-19

45.3m+



(5)



(9)



(12)

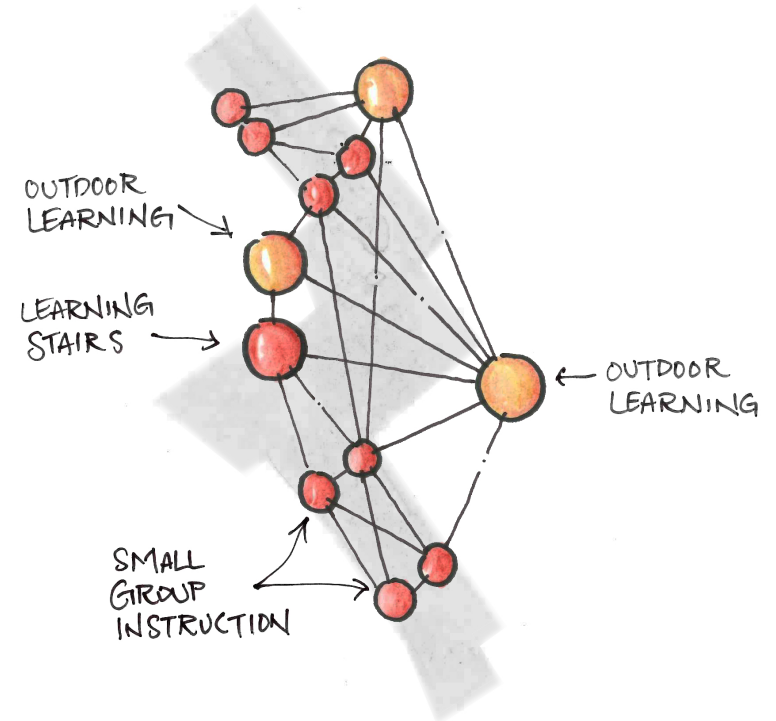


# DESIGN: Case Study

## Amistad Elementary School - Kennewick, Washington



Designed by ALSA Architects, Amistad is a great example of how a design can be very flexible in offering numerous exterior learning spaces that give teachers options for bringing the children outside and allowing for less group density; resulting in a healthier environment.



The school design also allows for more seamless collaboration between teacher and students through technology when required.

# PANDEMIC: Historical & Societal Effects

Looking back at the history of pandemics and the effects on society, some impacts stand out:

**Societal Relationships.** In stable times, people look outward. In unstable times, people look inward.

**Spirituality/religion,** family, and community become most important.

**Expertise** becomes most important. Set yourself apart.

**Less innovation and experimentation** as the economy isn't stable.

**Strongmen and gangs** can gain influence in communities.



(7)



(8)

# PANDEMIC: Current Societal Effects

## Will COVID-19 related changes be temporary or could they spark a new form of thinking?

**Pandemics are accelerators of long-term societal trends and, in this regard, COVID-19 has proven no exception. There are two particularly strong shifts being experienced:**

- > The first is a re-grounding in the local (on the scale of home, building, neighborhood, district). Professor Jeffrey Schnapp of the Berkman Klein Center at Harvard University further notes; “But being grounded has a way of re-grounding people’s values and I am persuaded that shelter-in-place policies are fostering a new hyperlocalism—a re-rooting in situ that is likely to continue to favor walkable and bike-able mobility over long-distance displacements.”(7)
- > The second is an intensifying migration toward virtual communities, institutions, economic activity, and cultural experiences (both local and global).
- > Telecommuting, home delivery of all essential supplies, curbside pickup of groceries, telemedicine, online classrooms, virtual concerts, and Zoom church services, weddings, and family reunions have all emerged as facets of a potential new normal. (7)

**Neither is new; both are likely to figure more prominently in the post-pandemic world.(7)**

- > After the politics of shelter-in-place runs its course, will we remember how to truly inhabit the places in which we have sought and received shelter?

**The aforementioned societal effects are a brief reason why the following information is meant to be read as a personal account of ALSC’s view of this pandemic thus far and how it may affect how we design our built environment.**

# PANDEMIC: Guiding Design Principles

These principles are meant to serve as a guide while designing during and post COVID-19.

**Flexibility** in the way we design and think about space.

**Wayfinding** to help guide the user through the space safely and comfortably (at a distance).

**Integration** of new and old ways of thinking and creating, merging of virtual to in-person.

**Collaboration** through being present in-person or virtually.



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Sources written in **grey**: Used for research but not directly used in this report.

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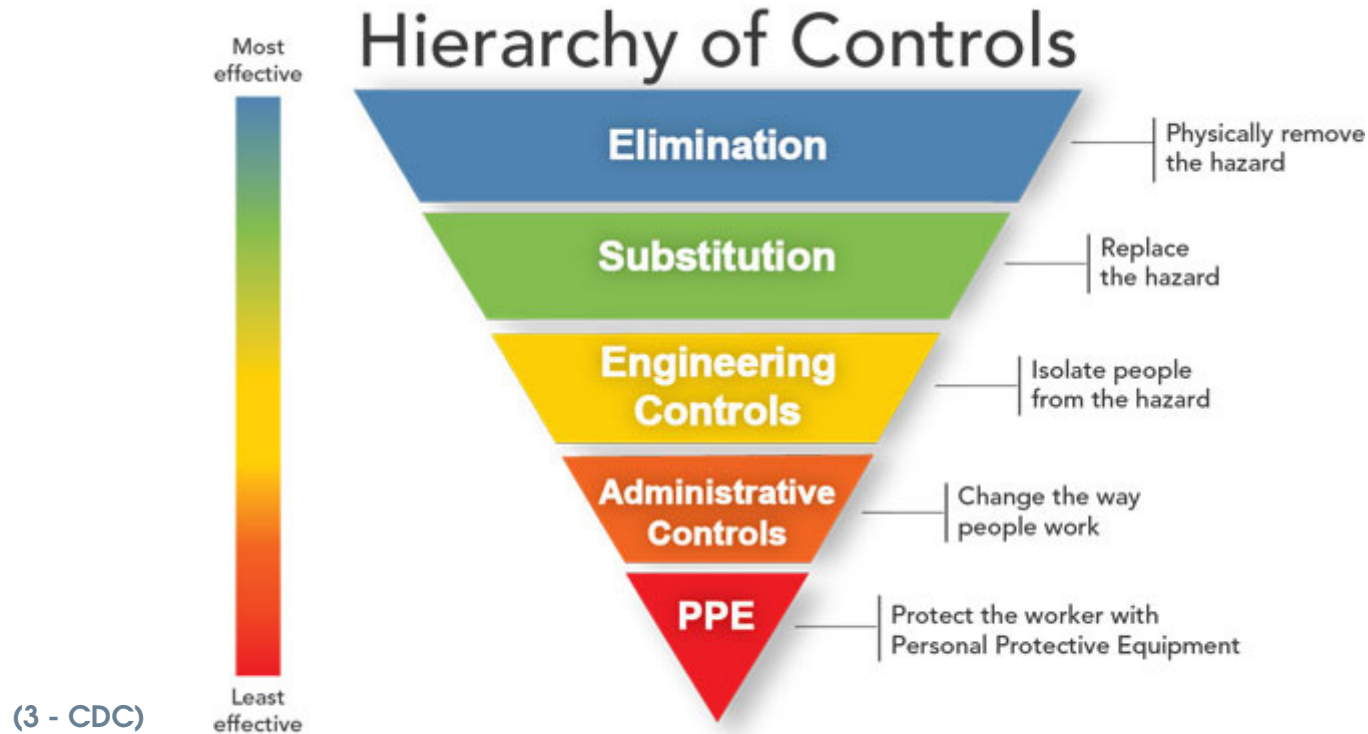
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# INFRASTRUCTURE

## Modifying the Built Environment

The National Institute for Occupational Safety and Health (NIOSH) traditionally uses a “Hierarchy of Controls” to determine how best to protect workers from exposure to work-related hazards. As you can see in the diagram below, the more effective the method is, the further up towards the top of the inverse triangle it is located. It also indicates that the safer system requires more effort to implement, especially if the process or building is existing. Thus ultimately, NIOSH believes in “**Prevention through Design to prevent or reduce occupational injuries, illnesses, and fatalities**”.



# INFRASTRUCTURE

If we use the NIOSH Hierarchy of Controls to determine how we approach the airborne COVID-19 virus, our top priority would be to evaluate a buildings infrastructure and how the building leverages the natural environment to eliminate the hazard or to substitute for the hazard.



Well-ventilated spaces offer better air quality, which can positively impact the health of the occupant. There are a multitude of particulates in the air that are unhealthy for a person to inhale, such as mold spores, dust, material off-gases, volatile organic compounds (VOC's), bacteria, and most acutely, viruses; i.e., COVID-19.

Physically relying on the natural environment surrounding a building can assist in removing hazards. The design could consider taking advantage of sunlight and wind patterns by:

- > Programming outdoor spaces for typically indoor uses.
- > Incorporate ways that the indoor environment can be opened up to the exterior.
- > Placing the structure on the site to best allow for daylight to penetrate the building.
- > Allowing prevailing winds to ventilate the building.



## Sunlight & Outdoors

Recent studies suggest that sunlight can quickly deactivate COVID-19. Additionally, the outdoor air is almost always moving and can carry virus particles away at a rapid rate. Among the countless benefits of sunlight and being out in nature, this is a strong argument for utilizing outdoor spaces more now than ever before.

According to The Journal of Infectious Diseases, sunlight drastically decreases the lifespan of the virus in its potential aerosol form (1). The mean decay rates resulting in 90% loss were found to be as follows:

- > Summer Sunlight Levels - 8 minutes
- > Late Winter / Early Fall Sunlight Levels - 19 minutes
- > No Sunlight - 286 minutes (~5 hours)

A recent study by the American Society for Photo-Biology shows that “90% or more of SARS-CoV-2 virus will be inactivated after being exposed for 11-34 min of midday sunlight in most U.S. and world cities during summer”. (4) However, according to an article in Epidemiology International, sunlight has not been proven to affect the virus in a person, yet it does have disinfectant properties for objects and surfaces. (5)

Jallili Elami’s research shows “evidence of the virus surviving in aquatic and sewage environments, (and that) its presence in water resources is dependent on essential factors such as temperature, sunlight, and the presence of organic compounds that the virus can adsorb to and protect (itself) against sunlight.” (6)

# INFRASTRUCTURE

Below are some example of spaces that successfully start blurring the line between the interior of a building and the exterior environment. The outdoor areas offer interior features, making them feel more like contained rooms or spaces rather than "just" outdoors.



(2)



(3)



(7)



# INFRASTRUCTURE

## Natural Ventilation

Sustainable methods for introducing natural ventilation into a building:

### Wind-Driven Ventilation (wind pressure induced)

This method relies on designing the building to allow air to naturally enter the space, driven by prevailing winds at the site. Incorporating this strategy should include:

- > Carefully locating operable windows, operable vents, roof and attic vents, etc.
- > Study of the wind patterns:
  - > Summer wind should be unobstructed by the landscape, and hit the building and ridge vents perpendicularly.
  - > Winter wind should be obstructed by a windbreak, such as evergreen trees.
- > Well-placed fans can aid in moving air throughout a building; further increasing airflow.



(5)



(4)



(9)

# INFRASTRUCTURE

## Buoyancy Ventilation (Temperature & Humidity - Induced Indoor/Outdoor Air Pressure)

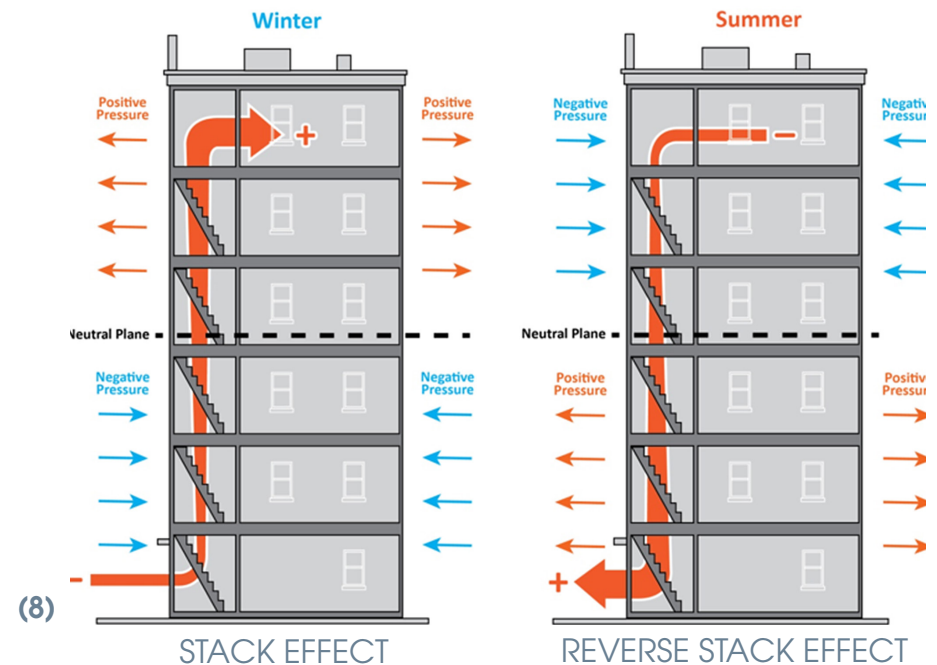
The difference in density between exterior and interior air causes warm air to rise above the cold air and create an upwards air stream.

Also referred to as the “stack effect”, the efficiency of this strategy depends on the local climate and how rapid the temperature change is.

- > Provide lower openings combined with ridge vents, operable clerestory windows, attic vents, or vented skylights.
- > Effective solution for taller, multi-story buildings:

Winter: Heat rises in cooler months. As cold air comes inside and warms, the heated air rises through the space and exits through higher openings.

Summer: During peak warm season, heated air is drawn inside, and falls as it cools inside the building, creating a negative stack effect.



# INFRASTRUCTURE

## Mechanical Ventilation (HVAC)

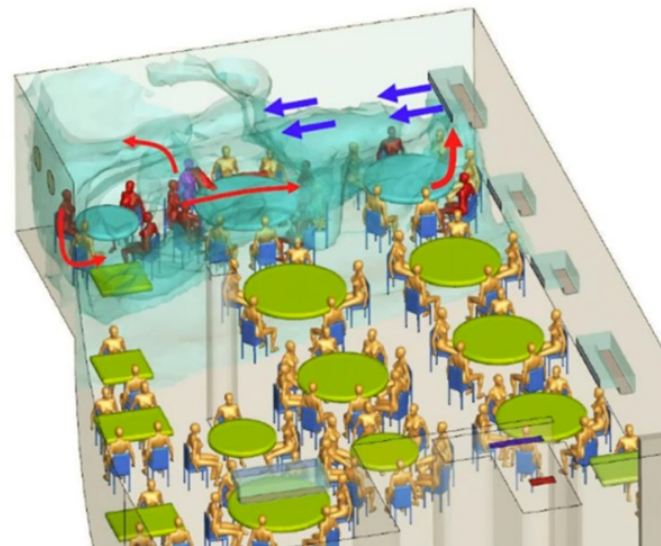
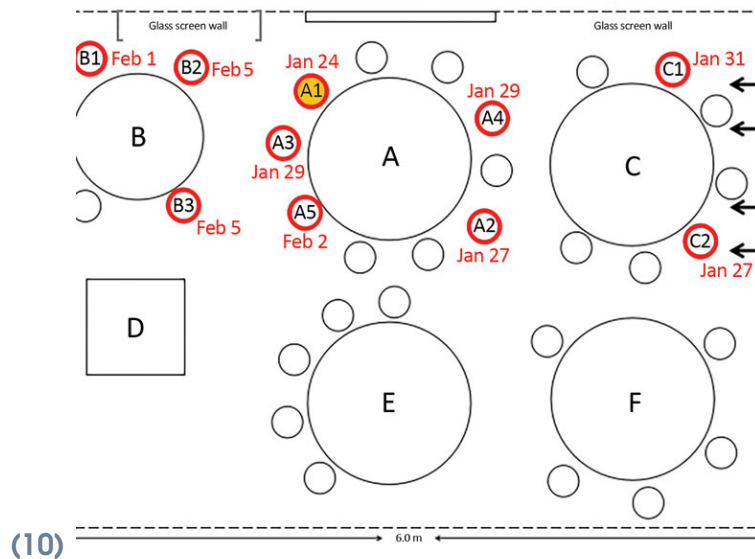
- > **Airflow Patterns**
- > **Increased Filtration**
- > **Disinfection / Ionization**



### Airflow Patterns

Studies have shown that mechanical ventilation systems will aid in transmitting airborne contaminants. In 1914, Dr. Mervyn Henry Gordon found that the reason for members of the British Parliament's House of Commons suffering from persistent influenza epidemics came from the mechanical ventilation system circulating airborne particles from the speaker throughout the space.

Current COVID-19 research conducted in China, (10) demonstrates how one infected person (yellow A1 in floor plan figure) infected nine others with the aid of an air conditioner recirculating the airborne contaminants.



# INFRASTRUCTURE

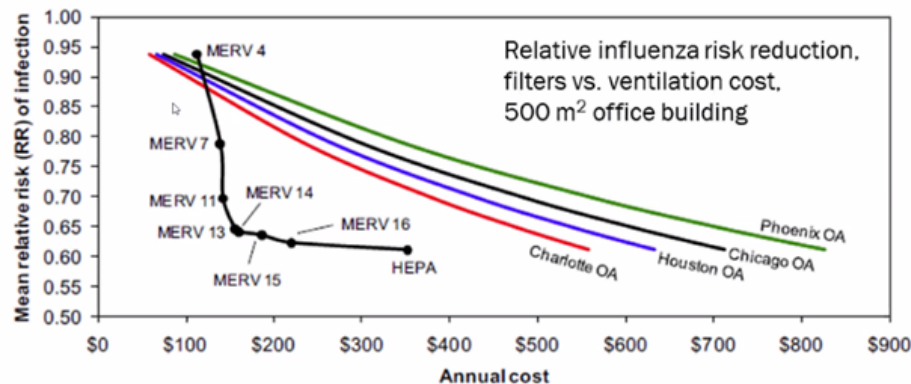
**Airflow Patterns** - A reduction in airborne transmission can be achieved in existing spaces. The following strategies can reduce or eliminate exposure of airborne contaminants to people located "downstream".

Adjusting HVAC diffusers or physically relocating diffusers and returns to create a better airflow pattern within the space.

- > Adjusting furniture layouts to better work with existing diffuser and return locations.
- > Creating "Negative Pressure Spaces", where the offset forces air to enter a room and prevents infectious particles from escaping (14).
- > HEPA filters used to recirculate the interior air, and remove airborne particles. Recirculation also minimizes pressure buildup that can cause leakage into an adjacent space.

**Increased Filtration Level and Dilution with Outside Air** - By increasing the number of fresh air exchanges per hour closer to 100%, a space can become much healthier for inhabitants by reducing contaminants in the air. Changing the unit filter from a standard one to a MERV 13 or MERV 14 reduces the risk of infection via the HVAC system. If possible, the use of an HEPA filter can lower risk of exposure to airborne viruses.

## Filtration vs. Outside Air Dilution

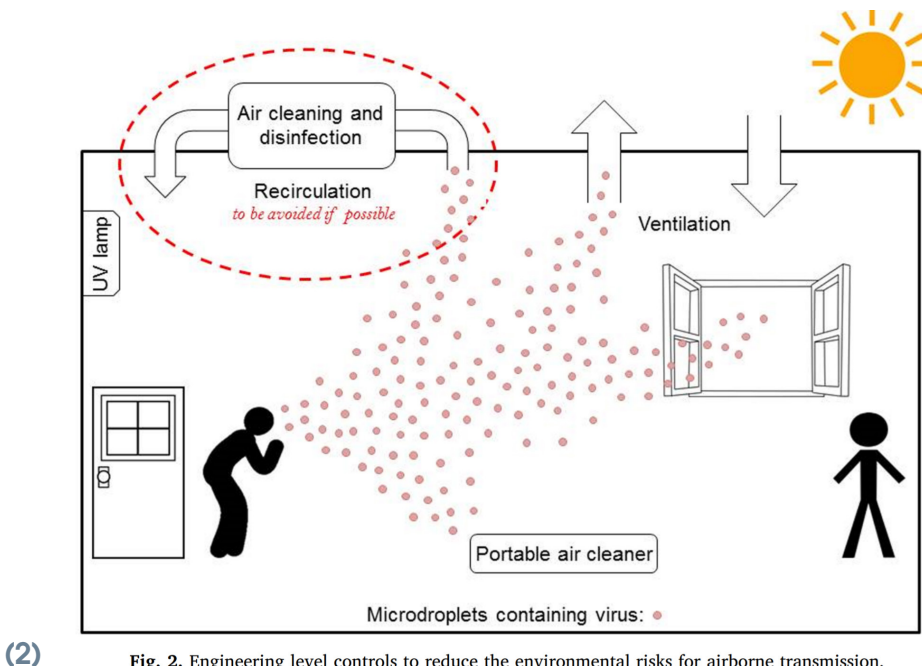




## Mechanical Ventilation (HVAC)

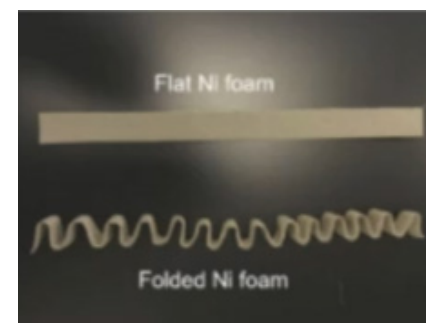
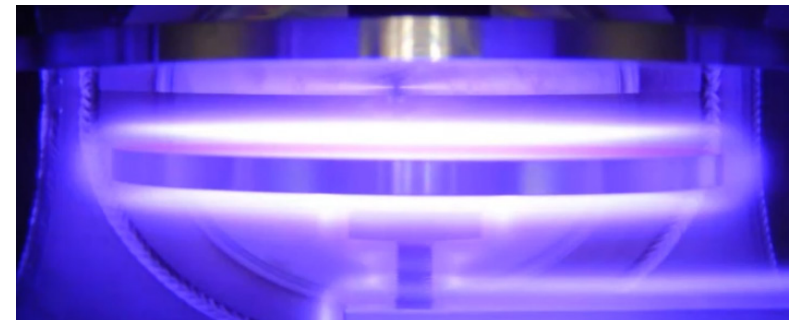
**Disinfection / Ionization** - New air filtering technologies are being developed to sanitize the air, effectively killing airborne viruses. Examples include:

- > Germicidal Ultraviolet Light (GUV) can be placed inside HVAC systems or up under the ceiling of a space:
  - UV-C (200-280nm) light that has the germicidal effect.
  - However, placing the GUV inside the upper volume of space can disinfect a larger volume of air.
- > “Far” UV-C light fixtures utilizes low doses of UV-C light to sanitize the air while illuminating the space.
- > Cold Plasma air filters use cold plasma technology to kill any virus, bacteria, and fungi quickly:
  - This technology is currently implemented to sterilize medical equipment and wounds. It also has food processing applications.
- > Ni-Foam filters utilize localized heat to kill viruses; up to 200 degrees Celsius.



(2)

Fig. 2. Engineering level controls to reduce the environmental risks for airborne transmission.



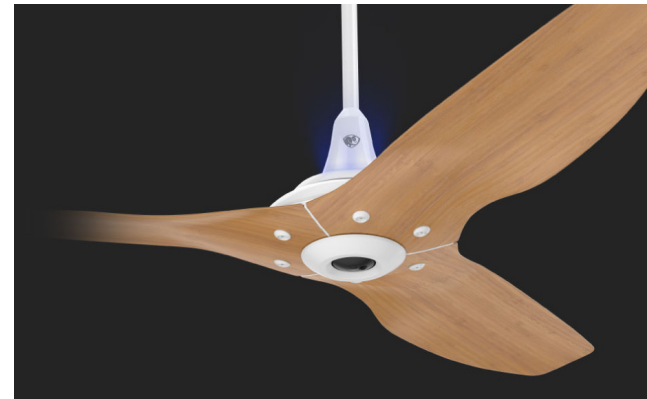
# INFRASTRUCTURE

**Ionization** - Effectively breaks down the structure of viruses and other pathogens. It also amalgamates particulates in the air, facilitating capture by filtration systems spaces such as dugouts.

- > “Clean Air System”, **kills 99.99% of SARS-CoV-2** (causes COVID-19) and other airborne pathogens while safely neutralizing allergens, odors, and fumes.
- > Industrial fan company, Big Ass Fans, has developed a clean air system combining ionization and ultraviolet technology to help disinfect the air. Use of the space, the layout, and size will determine the most appropriate process for that area.

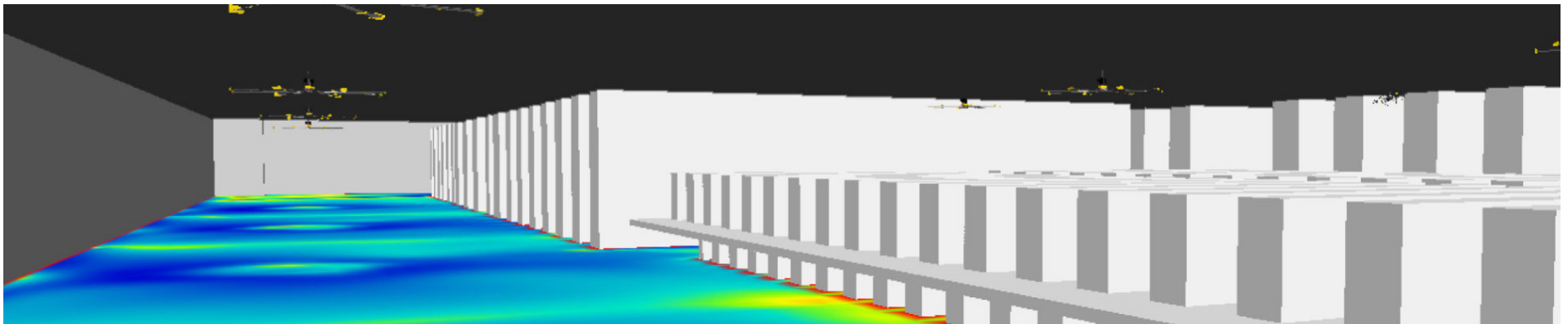


AIREYE with ION Technology



Haiku with UV-C

(15)



Create a Custom Airflow Analysis of Facility Using 3D Speclab Software

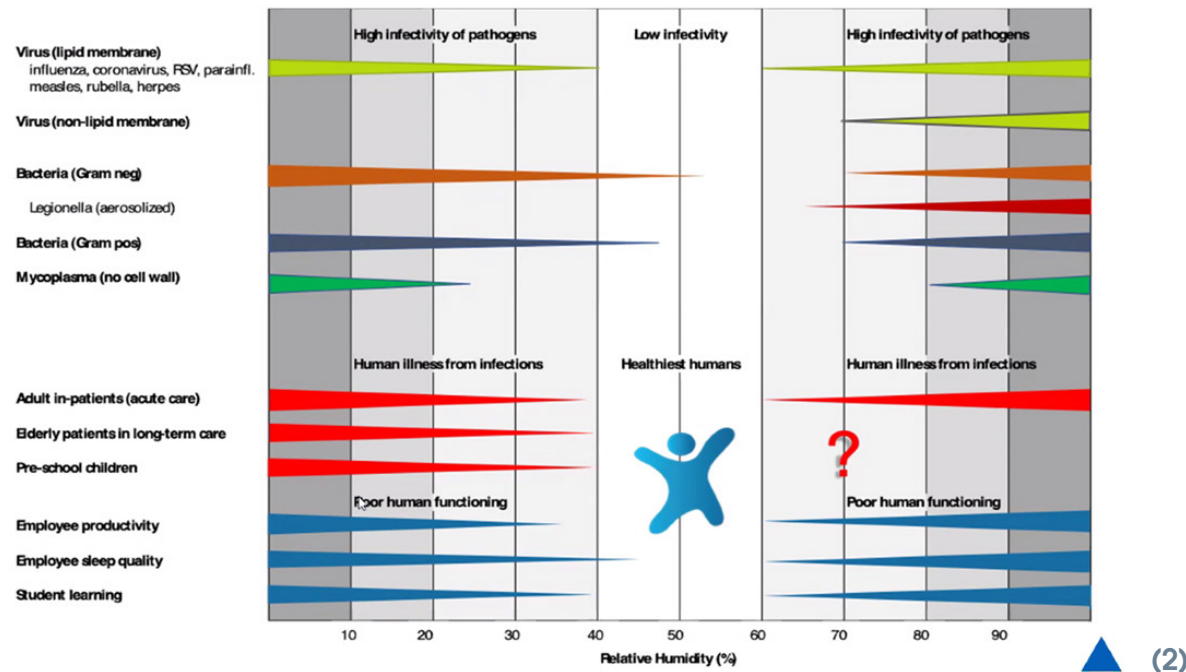


## Indoor Humidity

Maintaining a proper indoor humidity range is crucial in the reduction of evaporation of contaminated droplets.

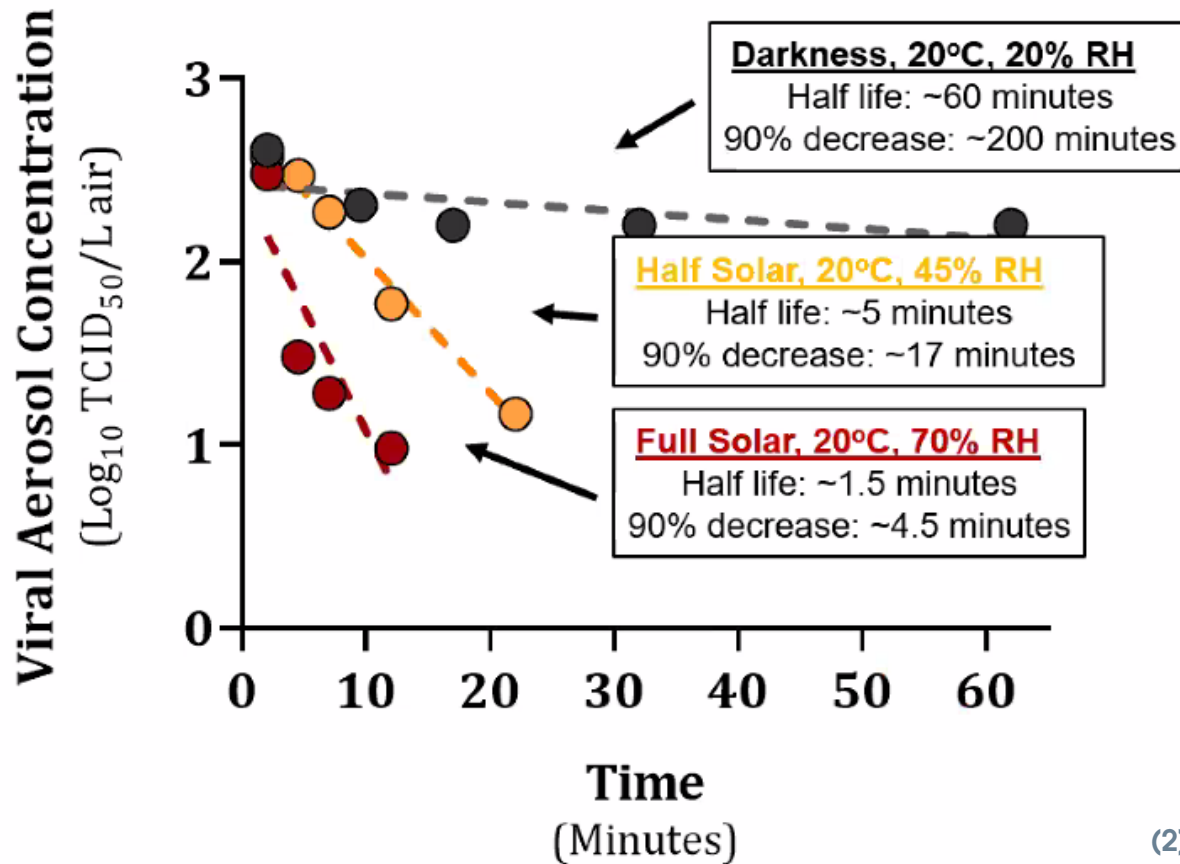
- > Low humidity in the air increases evaporation. Virus-contaminated droplets become smaller and can travel further, escalating the risk of spread.
- > A range of 40-60% relative humidity (RH) is found to be most effective in creating an environment that reduces aerosol suspension and travel within the air, thereby helping to minimize viral survival.

## 40-60% RH – Great for Health!



# INFRASTRUCTURE

A healthy indoor humidity range, combined with sunshine, helps speed the decay of airborne viral aerosol concentration.

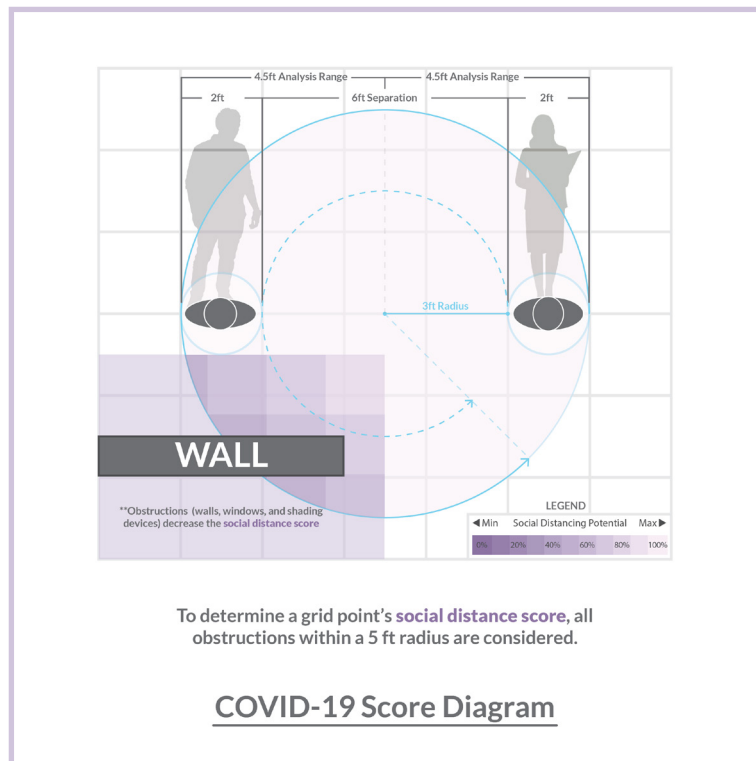


# INFRASTRUCTURE

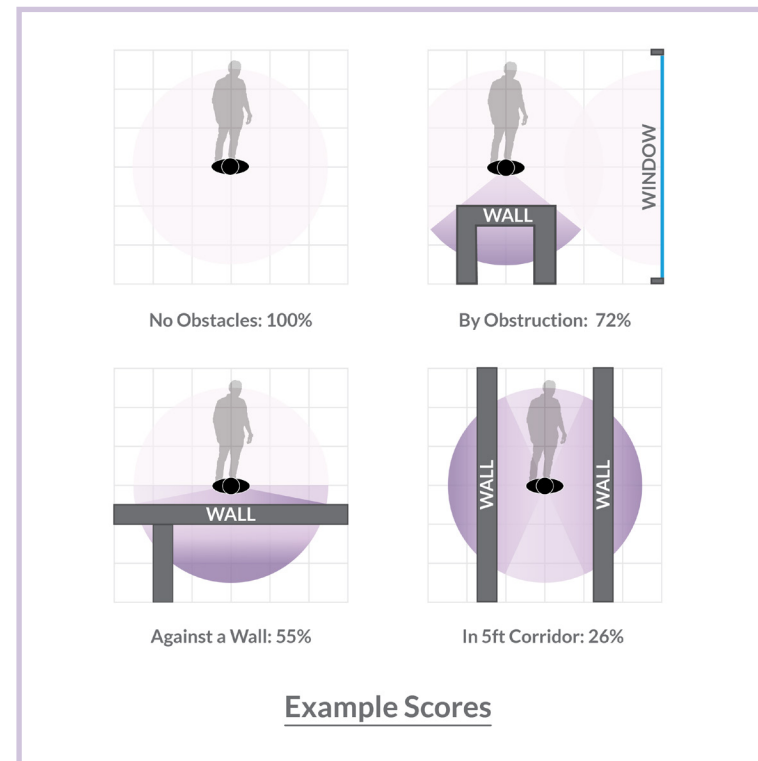
## Safe Building Inhabitant Ratios

### Sample COVID-19 Occupancy Assessment Analysis by CoveTool

- Analysis of the whole building floor area provides a recommended number of maximum building occupants (per level and entire building),
- Percentile evaluation of floor area in which a building occupant can safely social distance.
- Heatmap visualization of risky places (purple) less likely for two people to maintain a social distance, and safe locations (blue-green) with enough unobstructed space for two people to maintain a 6-foot distance adequately.



(1)



# INFRASTRUCTURE

**Reading the Results** - Two resulting values provided by the COVID assessment score.

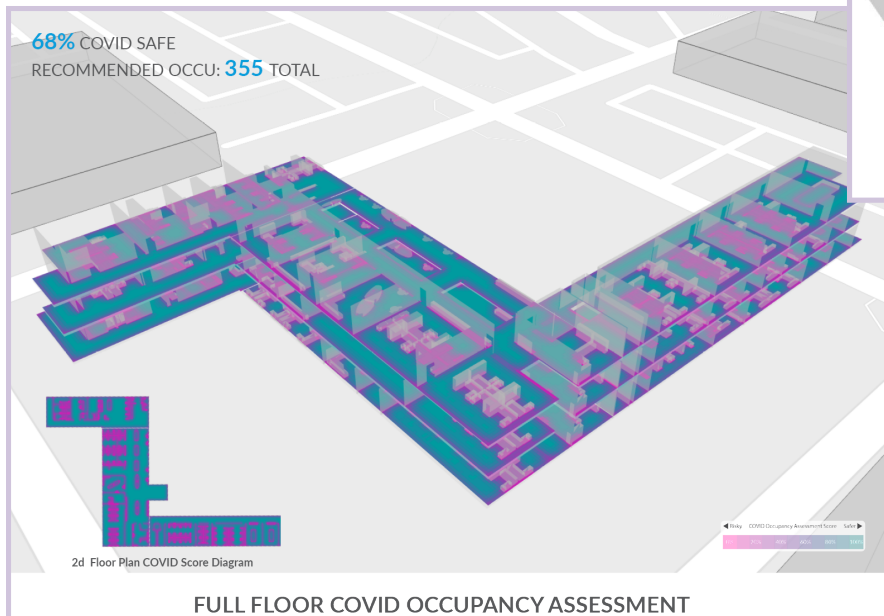
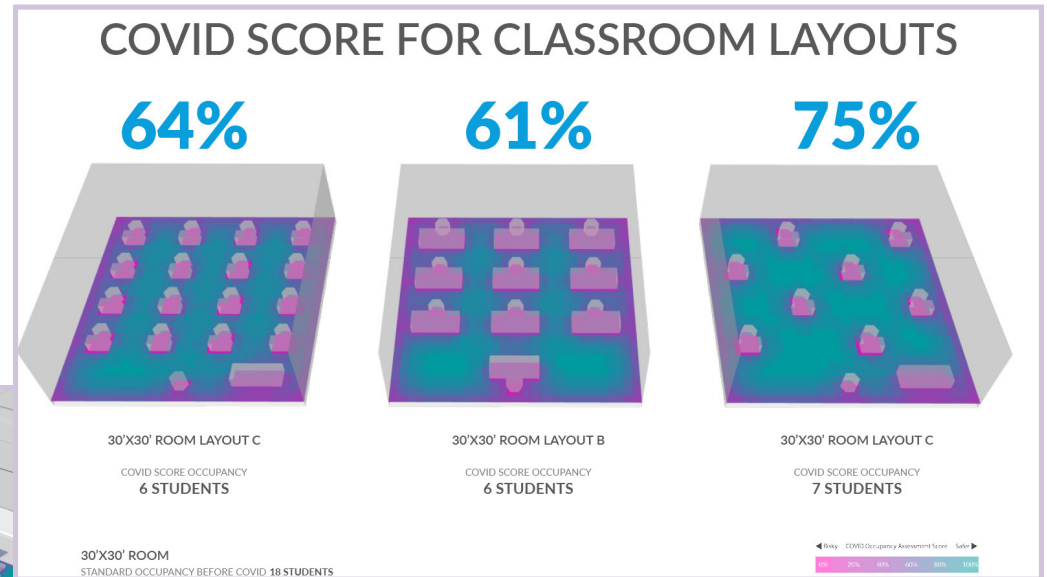
## 1. COVID Score Percentage

The amount of available open space of each floor and the whole building that is most capable of maintaining a social distance between people. Each floor is analyzed and color-coded as a heatmap grid for risky (purple) to safe (blue) spaces.

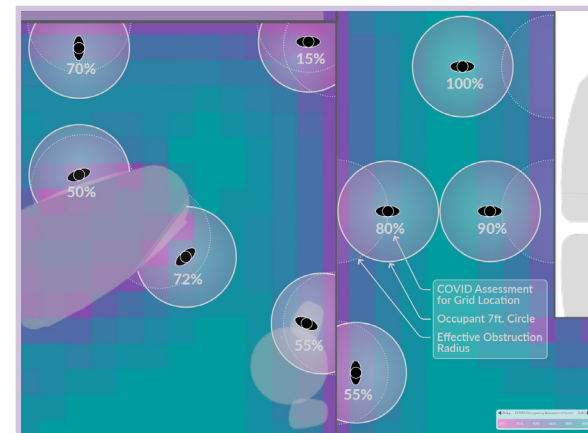
## 2. Recommend Occupancy

The suggested occupancy of each floor and provided as a total for the whole building to maintain proper social distancing measures for each occupant.

The resulting values and heatmap diagram vary by the density of each floor level and the layout of interior partition walls and furniture.



(1)



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## Indoor Humidity

1. Addressing Environmental Decay and Decontamination Gaps for SARS-Cov-2 to inform Operational Response. This work was funded under Contract No. HSHQDC-15-C-00064 awarded by the Department of Homeland Security (DHS) Science and Technology Directorate (S&T) to The National Biodefense Analysis and Countermeasures Center (NBACC), a Department of Homeland Security federal laboratory (DHS) sponsored by the DHS Science and Technology Directorate and operated by the Battelle National Biodefense Institute. April 16, 2020.
2. Covid-19 Pedestrian Modeling & HVAC. AIA Washington, Presentation 2020-06-25

## Safe Building Inhabitants Ratios

<https://help.covetool.com/en/articles/4295290-covid-occupancy-assessment-analysis>

### KEY:

Sources written in **blue**: Directly used as sources in this booklet.

Sources written in **grey**: Used for research but not directly used in this report.





# PUBLIC RESTROOMS

## Top Challenges For Restrooms

- > Crowded, Enclosed Spaces
- > Physical Distancing
- > Airflow and Moisture
- > Numerous Touch-Points
- > Entry and Exit

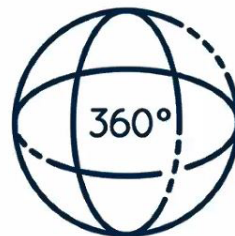
### A 360 Perspective for Evaluating Post COVID-19 Design

#### Design Case Studies

A 360° perspective for evaluating post-COVID design

##### Overall Risk Assessment

- Physical distancing & density
- Airflow & moisture
- Touchpoint reduction



##### Mitigation, Cleaning & Maintenance

- Consumable management
- Manufacturer documentation
- Stockout & downtime prevention
- Ease of cleaning & maintenance
- Facility auditing & monitoring

##### Space Design

- Entry & exit doors
- Queuing & gathering
- Traffic flow
- Signage
- Accessibility

##### Product Selection

- Touchless products
- Ease of maintenance & refills
- Novel solutions
- Waste disposal
- Toilet compartment enhancements



(12)

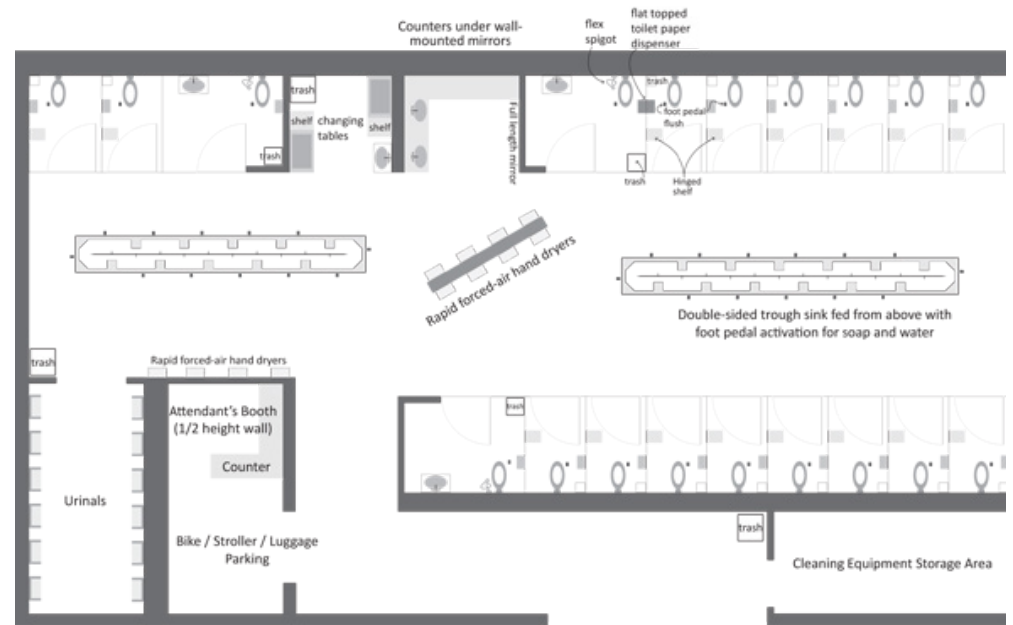
(1)

# PUBLIC RESTROOMS

## Modified Layouts

“Even before COVID-19, European restroom models with gender-neutral layouts were gaining popularity. “A parallel can be drawn between the benefits of a restroom planned to be gender-neutral and planned to address COVID-19 concerns. The European model of stalls forming a perimeter around communal washing stations with open circulation may be a layout we see more of in the U.S.,” Kempen predicted. “This design can help facilitate one-way traffic and minimize cross-traffic.” (5)

Design elements including eliminating doors, adding S-curved and automated doors, and widening doorways are also gaining popularity.



(11)

## Hands-Free Solutions

Long before COVID-19, places have been increasingly incorporating touch-less fixtures such as faucets and paper towel dispensers. The technology has evolved to no-touch exit switches, exit motion sensors, and intelligent door opening systems.

**EASIEST INVESTMENT**  
Self-cleaning Touch Point Skins



**LOW INVESTMENT**  
Hands Free Door Pull / Foot Operated



**HIGHER INVESTMENT**  
'Hands Free' Electronic Sensor / Door Opener



(1)

# PUBLIC RESTROOMS

## Antimicrobial Finishes and Materials

Many restroom surfaces, such as grab bars, are now available with antimicrobial coatings. Clients can select seamless, antibacterial, and non-porous materials. It is also becoming more critical to avoid water collecting on floors and surfaces, as stagnant water is a breeding ground for germs to grow. A solution could be locating soap and drying options closer to sinks. A demand for all-in-one hand-washing fixtures that contain soap will rise.



(6)

**Bradley All-In-One:** Clean, Rinse & Dry

### Positioning Facilities for Handwashing Success Maintenance Perspective

- If building don't have soap, towels and hot water, patrons won't wash and dry their hands
- Non-operating soap dispensers should be removed or replaced
- Dispensers and fixtures—free of buildup and debris—should be easy to disinfect, sanitize and restock
- Open market soap and paper towels—lead times and cost are important
- Label and store products & consumables properly



**David Dickman, AAP, CIMP**  
Consultant  
Allynt Solutions



(1)



(10)

**A Device Holder Keeps Personal Items Off the Counter**

# PUBLIC RESTROOMS

## Improved Ventilation

According to The American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE), the 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.



Taller door panel helps to reduce bacteria spreading into the rest of the bathroom before it is extracted by the ventilation system.

(1)

## Hand Dryer vs. Paper Towels

Choosing the best option between air dryer and paper towels varies from project to project. Both choices are critical in reducing the spread of bacteria since wet hands spread germs much faster than dry hands. The image below shows the statistical economic advantage of hand dryers over paper towels.

90-95% savings versus paper towel cost					
MANUFACTURING PLANT		CLASS A OFFICE BUILDING		MAJOR LEAGUE BALLPARK	
Using 5,000 cases of paper towels @ \$17.49/case plus freight, tax, and labor costs.		Using 4,950 cases of paper towels @ \$17.25/case plus freight, tax, and labor costs.		Using 1,525 cases of paper towels @ \$32.93/case plus freight, tax, and labor costs.	
Paper Towel Cost	\$131,175/yr	Paper Towel Cost	\$128,081/yr	Paper Towel Cost	\$75,327/yr
Hand Dryer Operating Cost	\$6,000/yr	Hand Dryer Operating Cost	\$5,197/yr	Hand Dryer Operating Cost	\$1,830/yr
Annual Savings	\$125,175/yr	Annual Savings	\$122,883/yr	Annual Savings	\$73,497/yr

(9)



# SOURCES: Public Restrooms

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2. [https://www.assaabloyesh.com/en/solutions/hands-free-solutions/?\\_ga=2.31086972.2133814280.1588265771-164381947.1588265771](https://www.assaabloyesh.com/en/solutions/hands-free-solutions/?_ga=2.31086972.2133814280.1588265771-164381947.1588265771)
3. <https://www.bradleycorp.com/>
4. <https://www.ashrae.org/technical-resources/resources>
5. <https://industrytoday.com/six-ways-the-pandemic-is-transforming-restroom-design/>
6. <https://www.bradleycorp.com/touchless-handwashing-solutions>
7. “Sink Selection for Sustainability and Accessibility” sponsored by Sloan: Webinar 7-29-2020
8. <https://www.mayoclinic.org/healthy-lifestyle/adult-health/expert-answers/hand-drying/faq-20443044>
9. Panel Discussion: Sink Selection for Sustainability and Accessibility By Sloan Jul 29, 2020
10. Bobrick B-635 Klutch Stainless Steel Mobile Device Holder <https://www.webstaurantstore.com/bobrick-b-635-klutch-stainless-steel-mobile-device-holder/179B635.html>
11. <https://fooshlights.com/a-better-public-bathroom-by-design/>
12. ALSC Architects - Northern Quest Resort & Casino

## KEY:

Sources written in **blue**: Directly used as sources in this booklet.

Sources written in **grey**: Used for research but not directly used in this report.



# MATERIALS & FINISHES

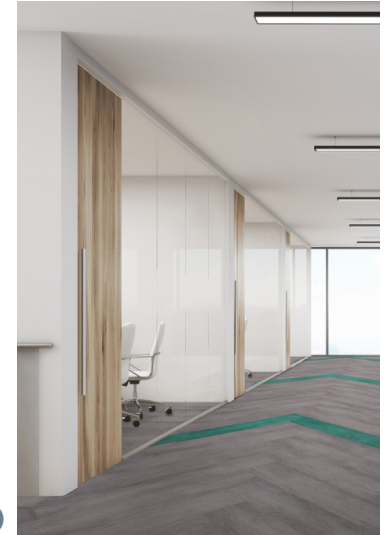
## Distancing Through Flooring

Wayfinding measures can be used to show 6 foot distancing through the flooring. "Corridor traffic throughout the space will need to become mono-directional in many instances (this will depend on corridor width) to promote proper distancing. Flooring cues can designate directionality in these areas."(1).

Signage on the floor has become a popular method in grocery stores and other public places, making it a familiar and easy tool to use.



(1)



## Privacy Screens

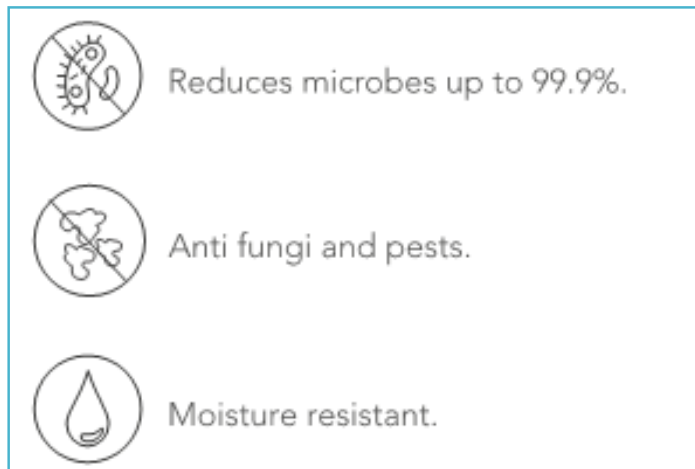
When the proper distance cannot be met, it is recommended to use a privacy or screen wall. The example seen below is a resin material that can be cleaned with a multitude of products while still maintaining performance.



(2)

## Antibacterial Laminate

"Silver Ions technology offers antimicrobial and anti-fungal protection, reducing up to 99.9% of microbes on the surface. Lamitech surfaces are also proven against germs and some viruses."(5).



(5)

# MATERIALS & FINISHES

## The Comfort of Home in the Workplace

We have adapted to the ease of working in a comfortable and inviting atmosphere. As we begin the transition back into our previous routines, we must be mindful of the physical environment changes people are going through and how that is going to affect them. We can make that transition easier for people by bringing a home-like atmosphere to the workplace and schools. Achieving this through “Rich textures, tonal palettes, and visual warmth can create a sense of calm and comfort - contributing to the well being and positive experience of the people in the space.” (1).



(8)



(7)

## Biophilic Design

A sense of comfort can be achieved through biophilia “to increase occupant connectivity to the natural environment through the use of direct nature, indirect nature, and space and place conditions (6).

The use of living plants, materials that emulate patterns from nature (carpet, for example), and a warm color palette are all essential elements to consider as people return to work and desire a sense of calm and comfort.



# SOURCES: Materials & Finishes

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  2. <https://www.3-form.com/products/desk-wrap-partition>
  3. <https://www.archdaily.com/921998/soul-garden-house-spacefiction-studio/5d3fdce4284dd1f20f00006f-soul-garden-house-spacefiction-studio-photo>
  4. <https://floors.milliken.com/floors/en-us/programs/social-factor>
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  8. [ALSC Architects - Spokane Community College - Lair Remodel](#)
- [https://www.architectmagazine.com/technology/the-realities-of-disinfectant-lighting\\_o](https://www.architectmagazine.com/technology/the-realities-of-disinfectant-lighting_o)
- <https://learn.asid.org/products/healthy-interiors-choosing-materials-that-contribute-to-healthy-building-practices>
- <https://www.gensler.com/research-insight/blog/tips-for-signage-and-wayfinding-in-a-post-covid-19-world>

## KEY:

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# BACK TO THE OFFICE

## Minimizing Airborne Transmission in the Workplace

Many recent studies have shown that COVID-19 can travel much farther than previously thought and can enter HVAC systems. Merely distancing by 6 feet (or more) is not enough to ensure safety in the office. Here is what's recommended to manage and minimize the airborne spread of COVID-19, and future viruses, in the office.

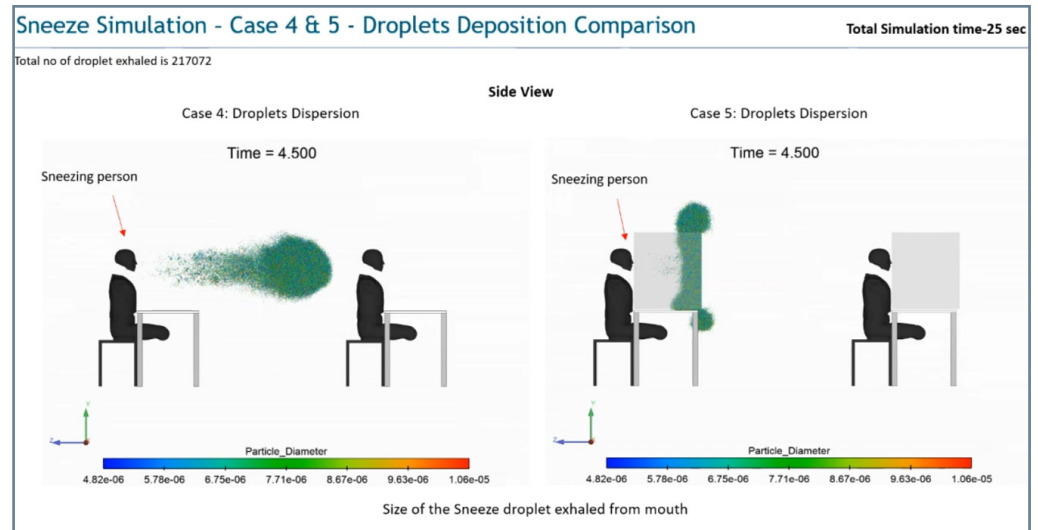
### Filtration of Building Air Localized Protection

**Filtration** - About 55% of micro-droplets are captured by separation panels, then pushed to the floor. The remaining 45% of micro-droplets float above the panels where captured by the HVAC airflow, and moved to air vents. For this reason, it is important to consider effective HVAC air filters.

**Localized Protection** - Implementing localized protection at workstation by use of separation panels can capture and contain micro-droplets.



(4)



(5)

# BACK TO THE OFFICE

## Returning to the Workforce

### Evaluate Touch-Less and Easy to Clean Options:

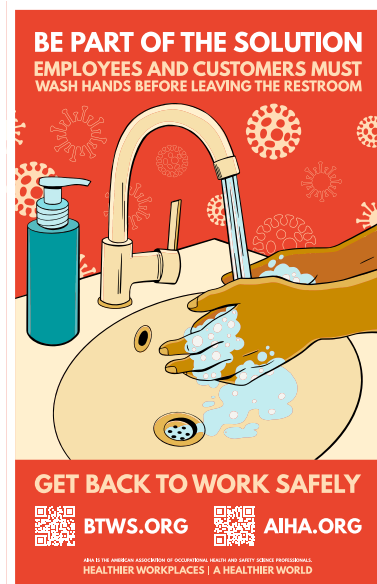
- > Doors
- > Fixtures
- > Appliances
- > Equipment

### Integrate Sanitation Station Solutions

### Upgrade A/V and Acoustics for Improved Remote Conferencing

### Add Sensors to Furniture for Better Utilization Data

### Evaluate Finish and Fabric Selections for Clean-ability



# SOURCES: BACK TO THE OFFICE

1. <https://humanscale.cmail20.com/t/ViewEmail/j/ED12B42F1986CAA62540EF23F30FEDED/7A23EDF5E4FA07A9942A2DF08F503B7C>
2. Road Map for Return; Guidance for a return to the office during COVID-19. Perkins & Will. May 6, 2020.
3. <https://www.backtoworksafely.org/>
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5. The New Workplace Webinar Series, Part 5: Designing a COVID-Safe Office: Is it All Up in the Air? An Analysis of Microdroplet Dispersion Research and Solutions for Risk Mitigation. Dr. Alan Hedge.

<https://aiawa.org/2020/06/04/essentials-for-reopening-the-office-webinar/>

<https://www.cna.com/web/guest/cna/sp/covid-19>

<https://www.lni.wa.gov/safety-health/safety-topics/topics/coronavirus>

## KEY:

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# IN-PERSON EDUCATION



(2)

## Full Return Model:

All students are welcomed back to school. “Using CDC’s recommendation of six-foot distancing, we have found that only 40-45% of the students in a typical class will fit in the classroom.

Other areas of the school such as a library, cafeteria, or gymnasium will need to be considered as instructional space to maintain this distancing requirement” (2).

## Alternating Return Model:

“Combination of in-person learning and remote learning. In this hybrid scenario, the student population is split into two groups that alternate between attending the physical building and engaging in remote learning from home” (2).

This helps with the social distancing requirement and minimizes the number of people in the building.



(2)



(2)

## Flexible Return Model:

“Support full-time in-school learning prioritized for youth in high-need situations based on family work or living circumstances, support for SPED & EL, and those without access to remote learning” (2).

This model allows teachers to hold one-on-one meetings with students or small groups where everyone can be spaced far apart. Furthering a close relationship between teachers, students, and their families, this model can enhance the experience while feeling safe for every party involved.

# IN-PERSON EDUCATION

## Steps to Take at Home

To provide a safe learning environment at home, the following steps should be considered:

- > Hand-washing.
- > Do not share bathrooms; leave exhaust on in the bathroom at all times.
- > Fresh air and ventilation with open windows whenever possible.
- > Use of portable air filter/cleaner in any rooms with a high risk person.

**How do you protect the youngest children in school, especially those who can't realistically remain consistently masked?**

- > Ventilation and air cleaning is even more important.
- > Smaller group learning environments with social distancing.
- > Tents for outdoor learning? This has been done during past pandemics.
- > We must be creative and re-imagine the possibilities.

### YES

Hand-washing

Mandatory Masks

Opening Windows

Stagger Arrival Time

Stagger Timing of People in Hallways

### NO

Music that Involves Breathing  
Into the Air Without Masks

Singing

Wind Instruments

Large Groups

# SOURCES: IN-PERSON EDUCATION

1. Dr. Joseph Allen – Keeping COVID-19 out of the Classroom: Webinar 7-23-2020
2. <https://www.fieldingintl.com/covid-resiliency/>
3. <https://www.fieldingintl.com/alternating-return-strategies/>
4. <https://www.fieldingintl.com/flexible-return/>

[https://www.architectmagazine.com/design/the-back-to-school-facilities-toolkit-helps-visualize-school-design-after-covid-19\\_o?utm\\_source=newsletter&utm\\_content=Article&utm\\_medium=email&utm\\_campaign=AN\\_070120](https://www.architectmagazine.com/design/the-back-to-school-facilities-toolkit-helps-visualize-school-design-after-covid-19_o?utm_source=newsletter&utm_content=Article&utm_medium=email&utm_campaign=AN_070120)

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# SPORTS & RECREATION

## Considerations for Assessing Risk - Youth Sports

- > The physical closeness of athletes while engaged in play/activity.
- > The social distance while not engaged in play/activity.
- > They are touching shared equipment.
- > Size of the team/number of participants.
- > Exposure to non-essential visitors, spectators, and volunteers.
- > Travel to competing communities.

## YOUTH SPORTS GAME PLAN

Reduce the Spread of COVID-19

LOWER RISK

HIGHER RISK



Skill-building drills  
at home



Team practice



Within-team  
competition



Competition with  
teams from your area



Full competition from  
different areas

(6)

# SPORTS & RECREATION

## Maintaining Healthy Environments - Youth Sports

Cleaning & Disinfection

Shared Objects

**Ventilation**

**Water Systems**

**Modified Actions and Physical Distancing**

**Physical Barriers and Guides**

**Communal Spaces**

**Ventilation** - When playing inside, increase the circulation of outdoor air as much as possible. Increase airflow of the HVAC system whenever possible, and open windows and doors.

**Water Systems** - Encourage staff and players to bring their own water bottles. Clean and disinfect drinking fountains often.

**Modified Actions and Physical Distancing** - Prioritize outdoor play as much as possible. Discourage groups forming before and after activities. Allow time between events for cleaning and disinfecting.

**Physical Barriers and Guides** - Signs, tape on floors/fields to be utilized to remind users of physical distancing.

**Communal Spaces** - Close spaces such as locker rooms whenever possible. Limit the number of players in confined spaces (such as dugouts).



## Maintaining Healthy Environments - Aquatic Facilities

Cleaning & Disinfection

Shared Objects

**Ventilation**

**Water Systems**

**Modified Layouts**

**Barriers and Guides**

**Communal Spaces**

**Signs and Messages**

**Ventilation** - Increase circulation of outdoor air as much as possible. Increase airflow of the HVAC system whenever possible, and open windows and doors.

**Water Systems** - Take extra steps to ensure all water systems are safe from temporary shutdowns that can cause the growth of mold and Legionnaires' disease. Additional steps include minimizing indoor humidity (not exceeding 50%), assessing mold before re-opening, performing any required remediation, flushing the water system, and thoroughly cleaning all water fountains.

**Modified Layouts** - Changing deck layouts to ensure standing and seating areas allow for users to be 6 feet apart.

**Physical Barriers and Guides** - Physical cues or guides such as lane lines or chairs and tables on the deck to maintain social distancing of 6 feet apart.

**Communal Spaces** - Close spaces such as locker rooms whenever possible. When closing such areas is not possible, stagger the timing of use of communal spaces, leaving time in between events to allow for disinfecting.

**Signs and Messages** - Posting signs in highly visible areas and broadcasting over the PA system.



(9)



# SPORTS & RECREATION

## Maintaining Healthy Environments - Public Gyms



- > Utilize on-line reservations or check-in whenever possible.
- > Utilize outdoor spaces as much as possible.
- > Limit attendance at indoor group training sessions. Use a cloth face covering when social distancing isn't possible.
- > When indoors, open as many windows as possible to increase airflow.
- > Make sure all shared equipment is continuously cleaned and disinfected.



### Current Regulations in Washington (as of an update on August 3, 2020):

- > Occupancy is limited to 25% of the facility's occupancy limit.
- > Face coverings are required by staff.
- > Face coverings are required immediately before and after strenuous exercise.

# SOURCES: Sports & Recreation

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2. <https://www.aacounty.org/services-and-programs/pool-rental>
3. <https://blog.cincinnatichildrens.org/healthy-living/fitness-and-nutrition/sports-specialization-why-balance-is-healthy-for-young-athletes>
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6. <https://www.cdc.gov/coronavirus/2019-ncov/downloads/community/youth-sports-risk-assessment-covid19.jpg>
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8. ALSC Architects - Evergreen Middle School
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## KEY:

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## Key Questions to Consider:

1. Healthcare facilities had to make many short term modifications in response; how does this affect the long-term outlook?
2. How does what healthcare designers are working on now shape what other facility designers consider as occupants return to those spaces?
3. How will technology reshape our interaction with the built environment post-pandemic?
4. Designing for infection control within occupied spaces, and a patients' experience has become a chief concern. What can we learn from healthcare design and apply to either short or longer-term solutions for other areas?

### Overall big ideas we are seeing throughout healthcare:

- > Social Distancing and screening.
- > Protocol for quarantine and isolation of ill workers.
- > Robotic assistance will further develop US manufacturing capabilities.
- > Adaptability.
- > Leverage healthcare knowledge/clinical knowledge.
- > Ability to inform.



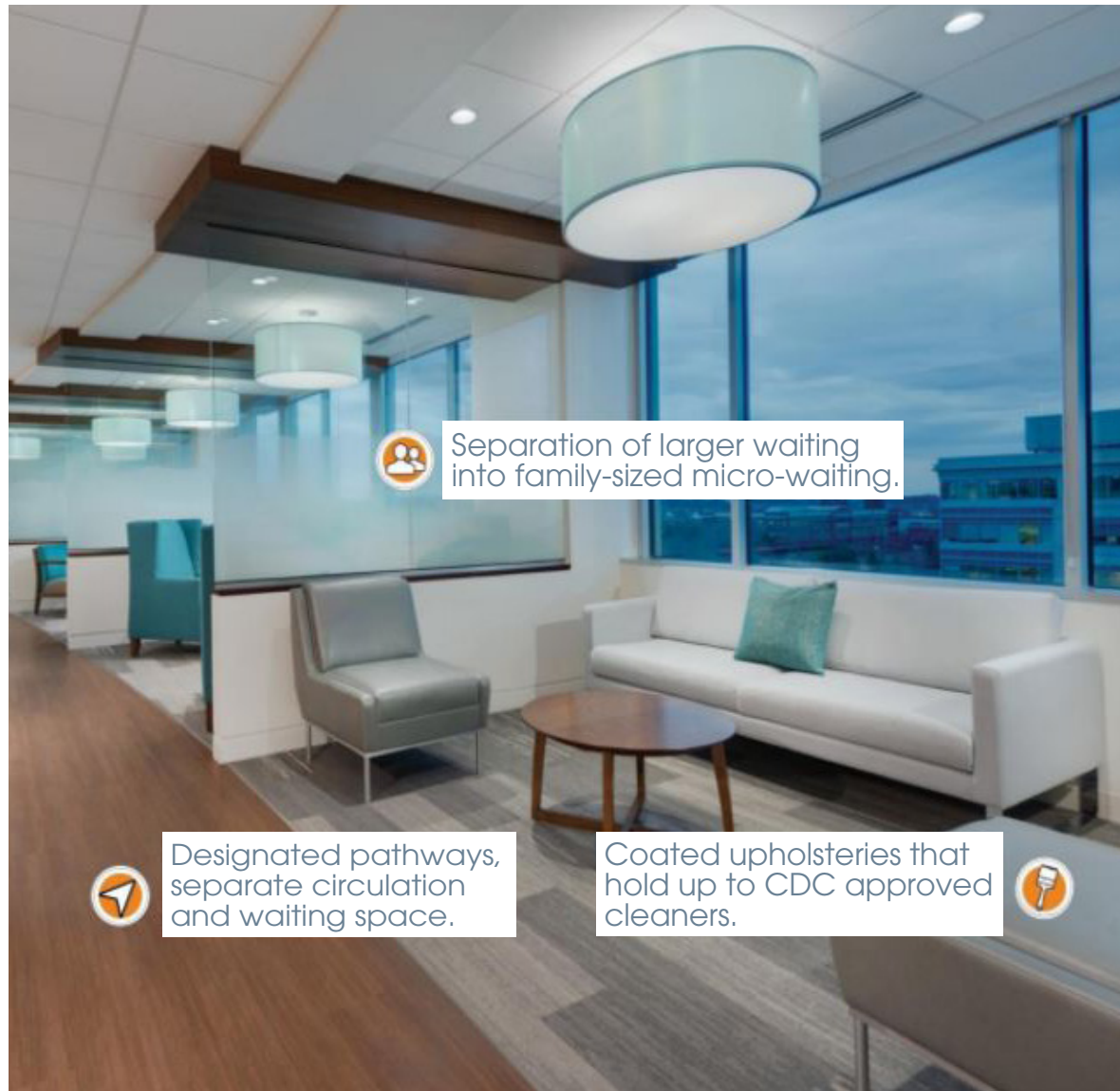
# HEALTHCARE: The Big Picture

## Disease Outbreak Response System Condition

<b>DORSCON ALERT LEVELS</b> (Disease Outbreak Response System Condition)				
	<b>GREEN</b>	<b>YELLOW</b>	<b>ORANGE</b>	<b>RED</b>
<b>Nature of Disease</b>	Disease is mild <b>OR</b> Disease is severe but does not spread easily from person to person (e.g. MERS, H7N9)	Disease is severe and spreads easily from person to person but is occurring outside Singapore. <b>OR</b> Disease is spreading in Singapore but is (a) Typically mild i.e. only slightly more severe than seasonal influenza. Could be severe in vulnerable groups. (e.g. H1N1 pandemic) <b>OR</b> (b) being contained	Disease is severe <b>AND</b> spreads easily from person to person, but disease has not spread widely in Singapore and is being contained (e.g. SARS experience in Singapore)	Disease is severe <b>AND</b> is spreading widely
<b>Impact on Daily Life</b>	Minimal disruption e.g. border screening, travel advice	Minimal disruption e.g. additional measures at border and/or healthcare settings expected, higher work and school absenteeism likely	Moderate disruption e.g. quarantine, temperature screening, visitor restrictions at hospitals	Major disruption e.g. school closures, work from home orders, significant number of deaths.
<b>Advice to Public</b>	<ul style="list-style-type: none"> <li>• Be socially responsible: if you are sick, stay at home</li> <li>• Maintain good personal hygiene</li> <li>• Look out for health advisories</li> </ul>	<ul style="list-style-type: none"> <li>• Be socially responsible: if you are sick, stay at home</li> <li>• Maintain good personal hygiene</li> <li>• Look out for health advisories</li> </ul>	<ul style="list-style-type: none"> <li>• Be socially responsible: if you are sick, stay at home</li> <li>• Maintain good personal hygiene</li> <li>• Look out for health advisories</li> <li>• Comply with control measures</li> </ul>	<ul style="list-style-type: none"> <li>• Be socially responsible: if you are sick, stay at home</li> <li>• Maintain good personal hygiene</li> <li>• Look out for health advisories</li> <li>• Comply with control measures</li> <li>• <b>Practise social distancing: avoid crowded areas</b></li> </ul>

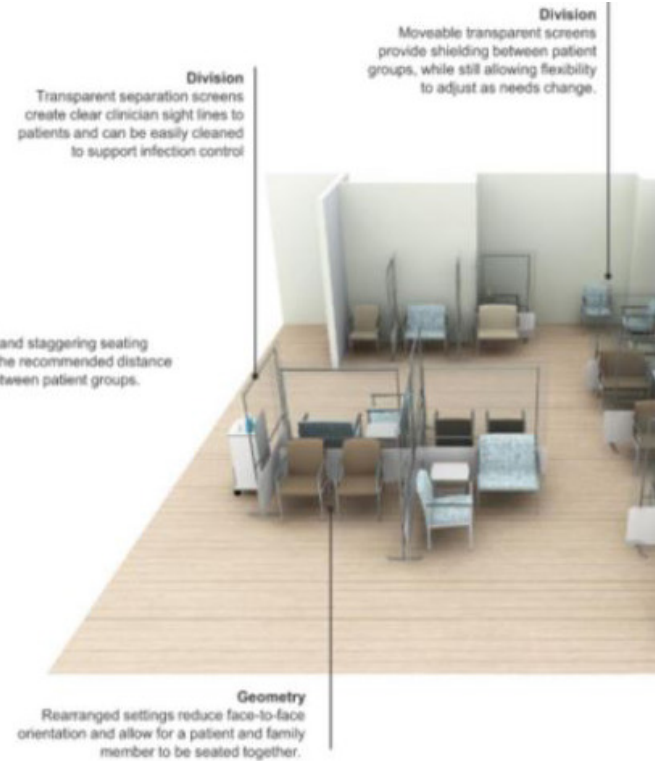
# HEALTHCARE: The Big Picture

## Waiting Room Changes



# HEALTHCARE: The Big Picture

## Waiting Room Changes

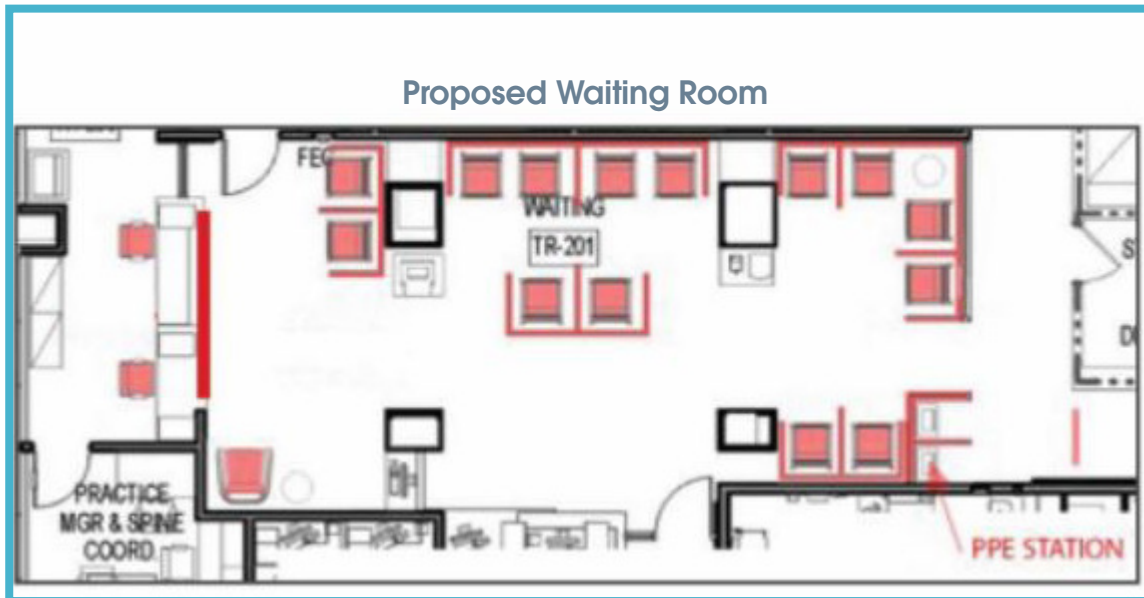


Images provided by Steelcase



# HEALTHCARE: The Big Picture

## Clinic Waiting Room Changes

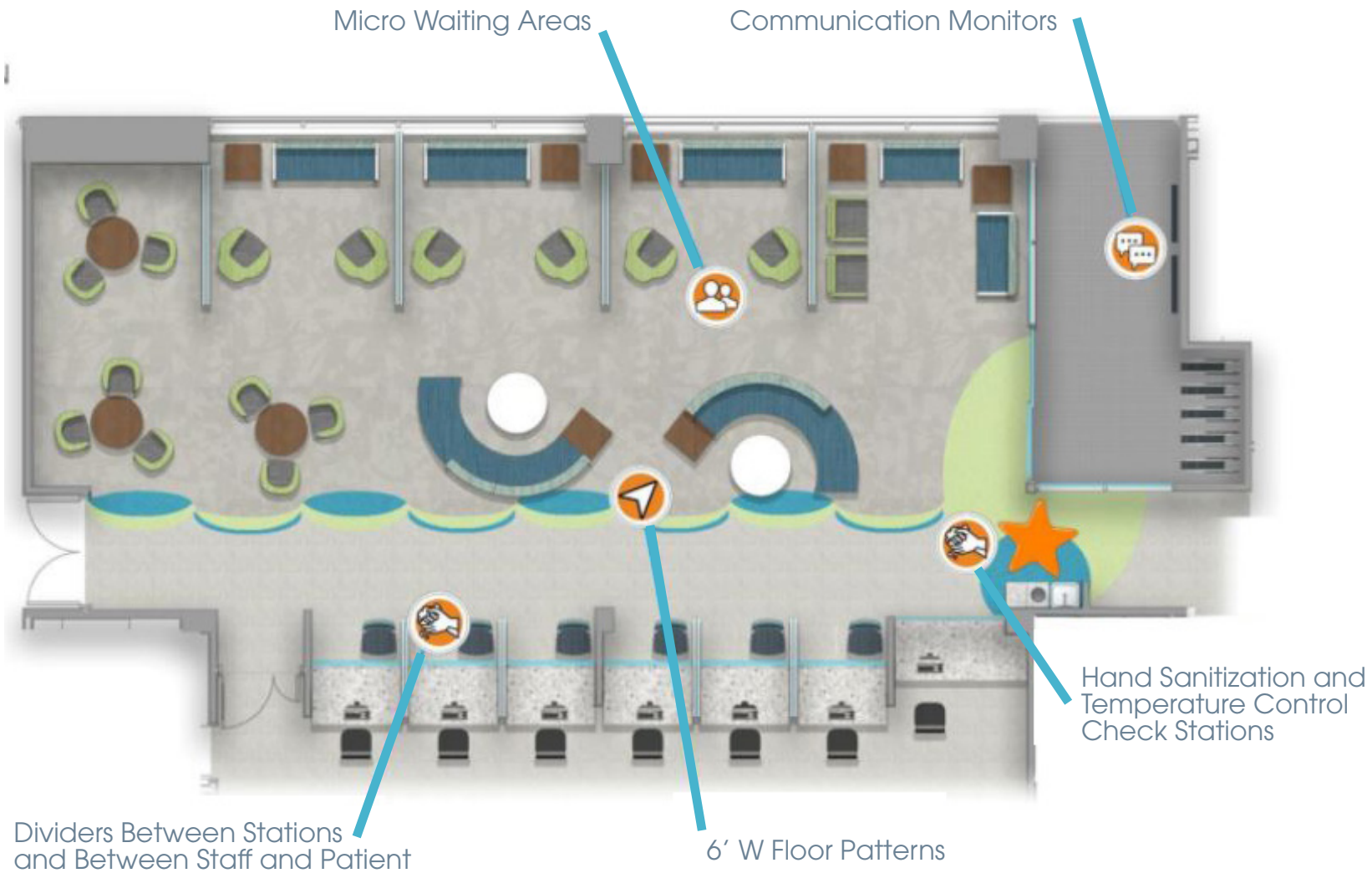




# HEALTHCARE: The Big Picture

## Clinic Waiting Room Changes

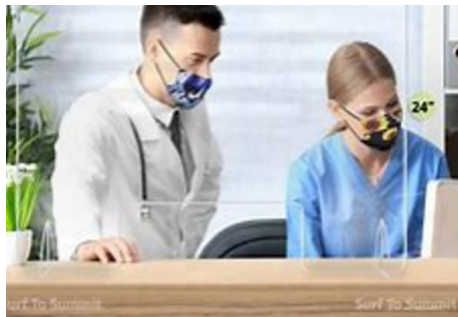
### Proposed Waiting Room



# HEALTHCARE: The Big Picture

## Patient Experience Solutions: Check-In

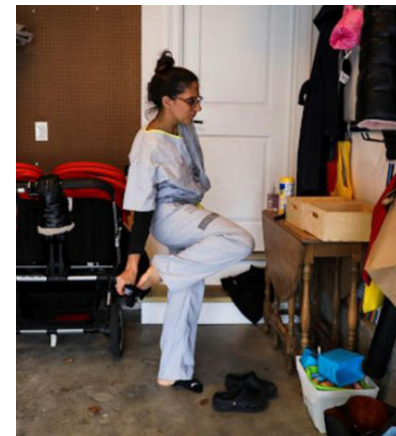
Conceptual Illustration of Registration Window with Infection Control Glass Panels



# HEALTHCARE: The Big Picture

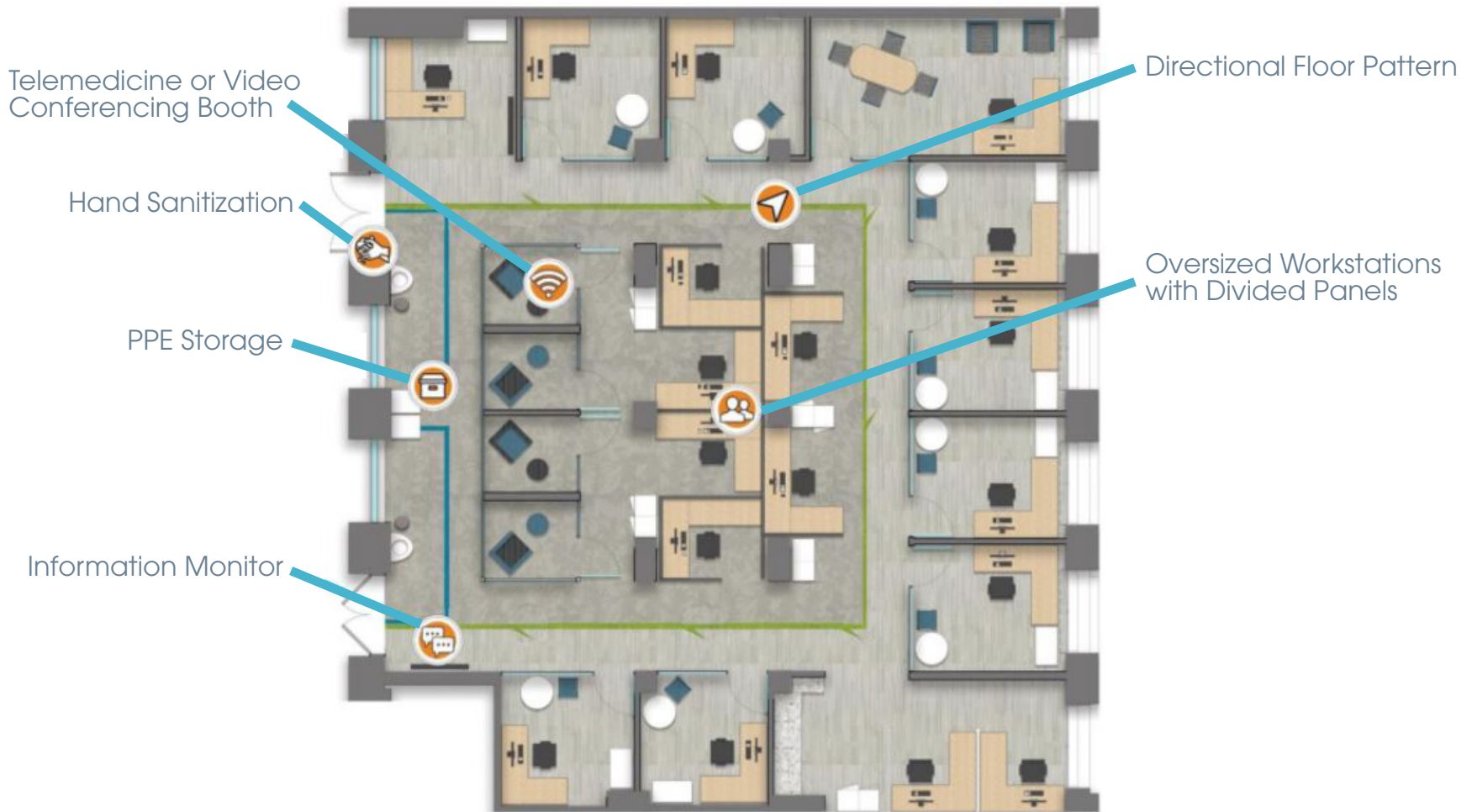
## Staff Recreational Area Changes

- > Need for increased dedicated staff areas.
- > Need for changing pre-post shifts.



# HEALTHCARE: The Big Picture

## Provide Telehealth Suite

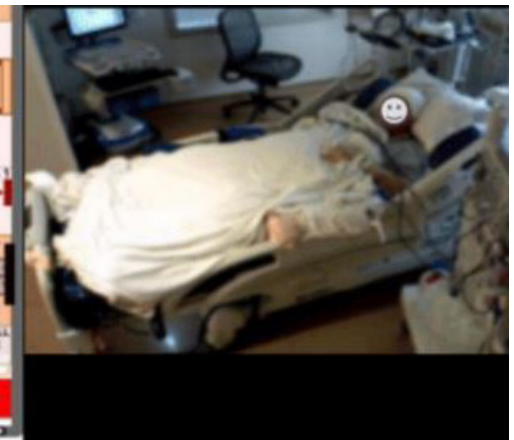
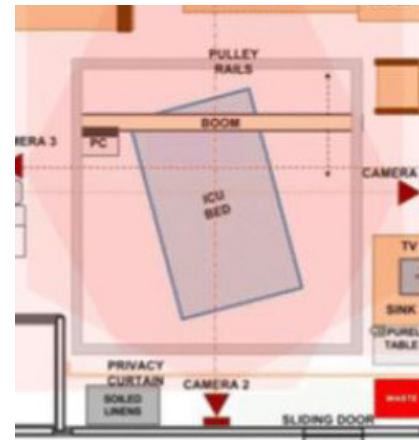




# HEALTHCARE: The Big Picture

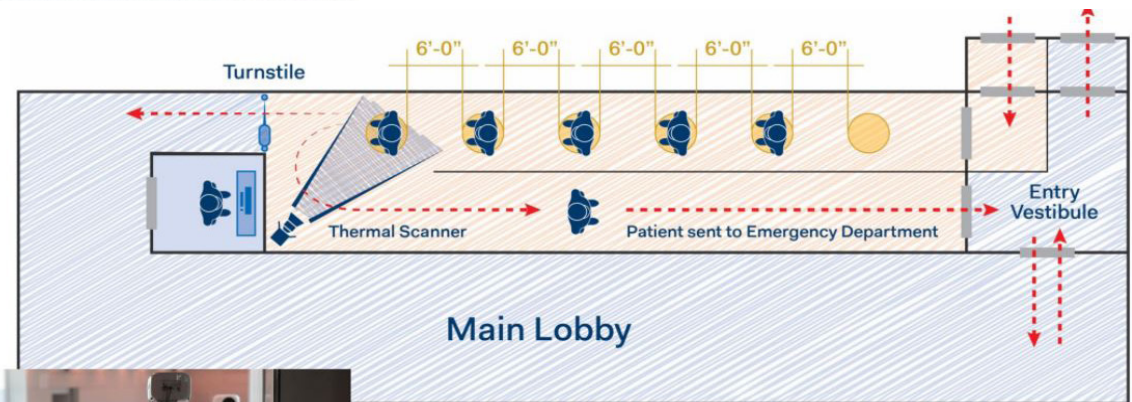
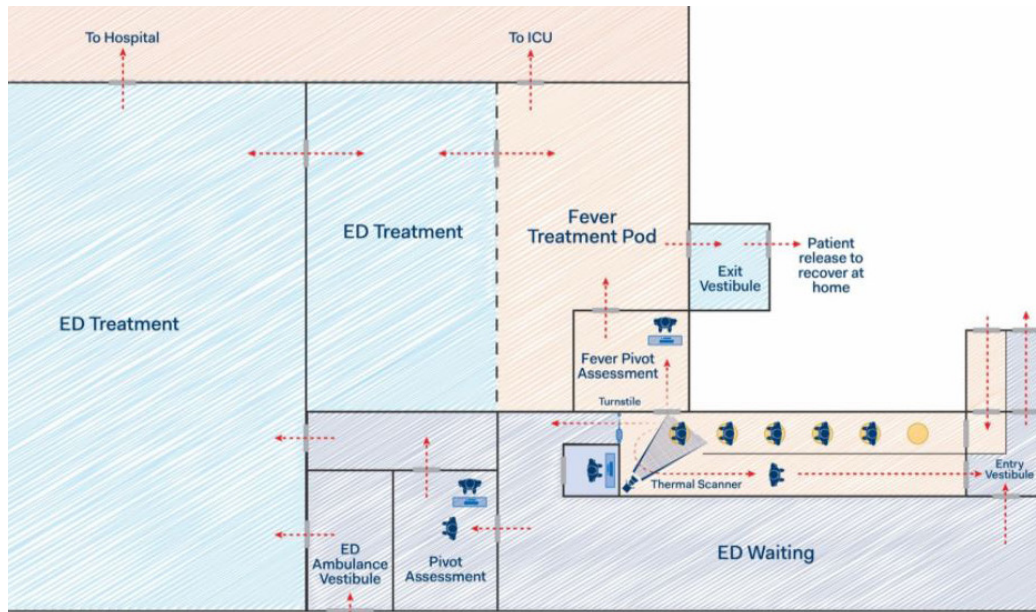
## Product Changes Used in Procedures For Staff Protection

- > Remote Check-Ins
- > Virtual Visits
- > Remote Temporal Scanning
- > Remote Patient Viewing
- > Increased PPE for Staff
- > Reinforcement of Anti-Bacterial Surfaces
- > Ease to Access PPE



# HEALTHCARE: Outpatient

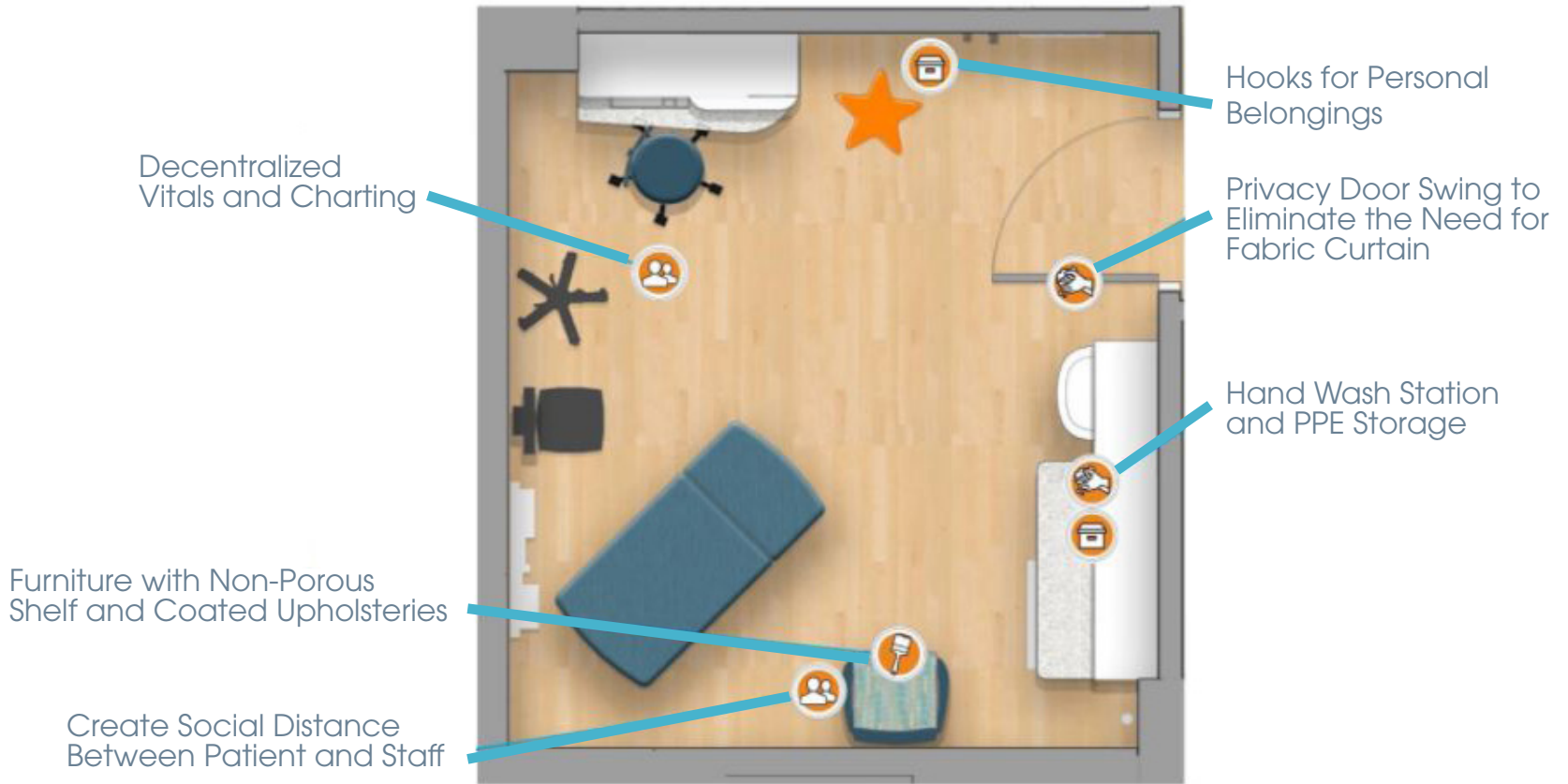
## Outpatient Experience: Entry





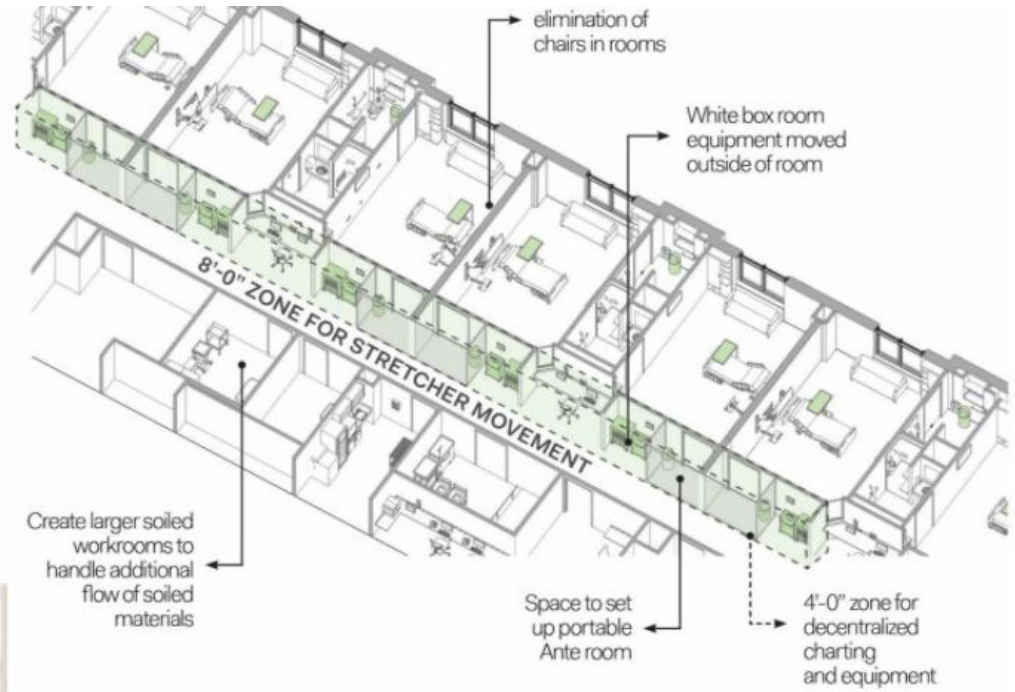
# HEALTHCARE: Outpatient

## Outpatient Experience: Entry



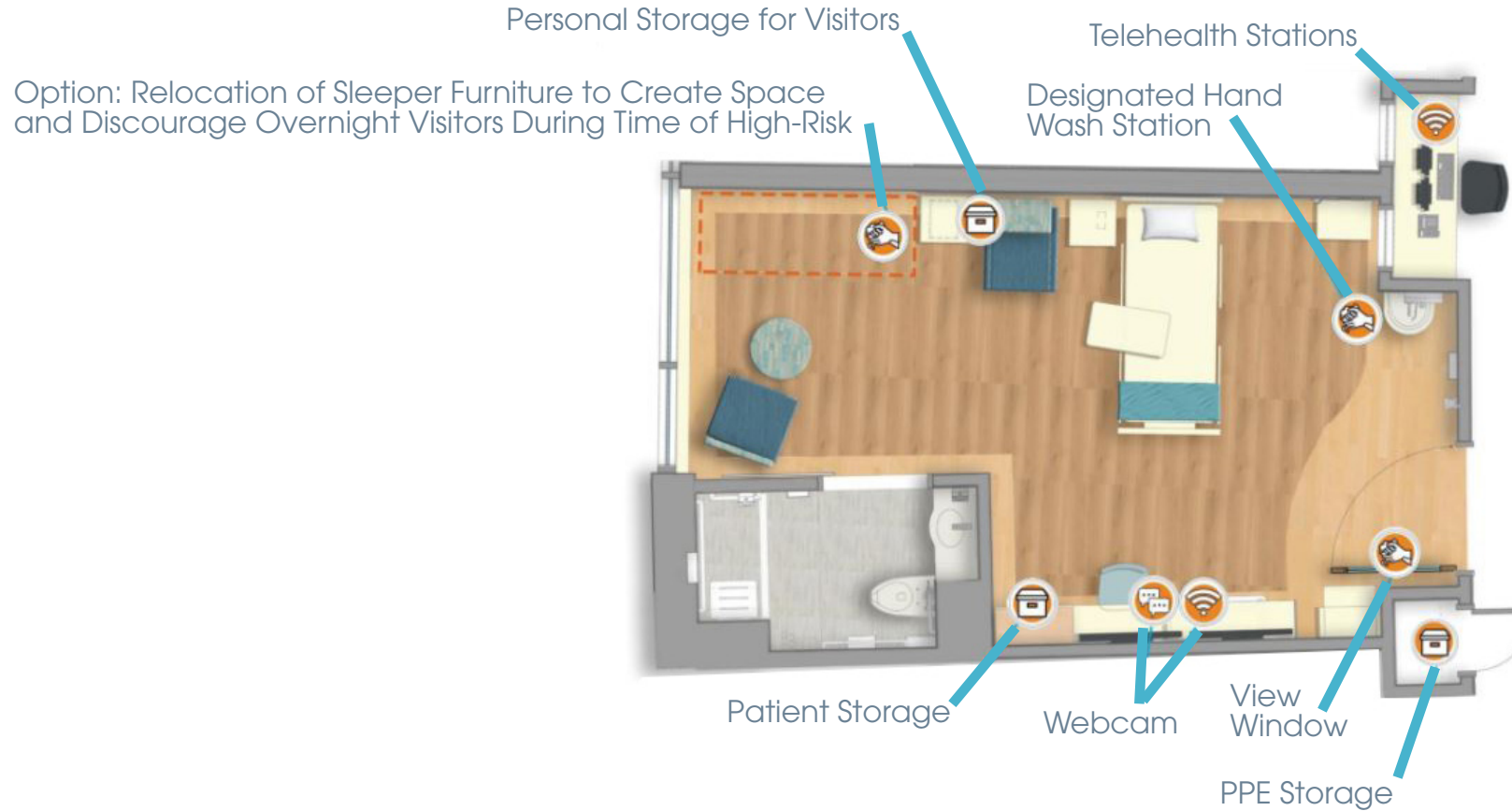
# HEALTHCARE: Inpatient

## Inpatient Environments



# HEALTHCARE: Inpatient

## Inpatient Environments



# HEALTHCARE: Temporary Solutions

## 5 Levels of Escalation

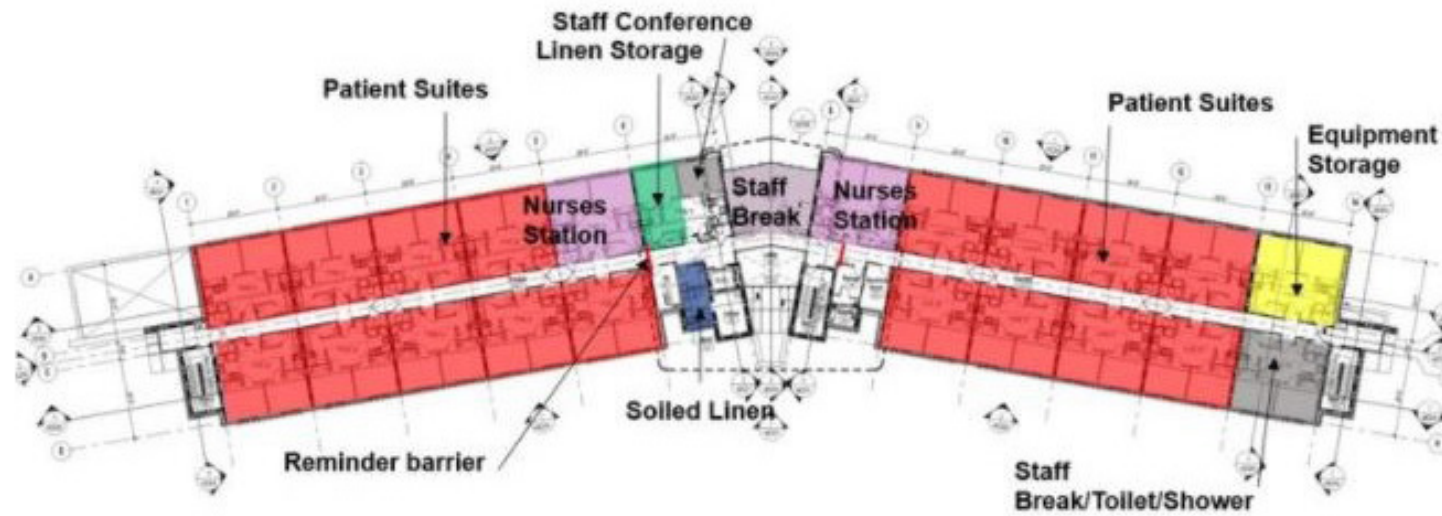
<b>Level 5</b>	Temporary/Pop Up Acute sites created in non-health care locations	In partnership with government – non-health care sites such as hotels and retail converted to patient care.
<b>Level 4</b>	Targeted ambulatory sites repurposed for non-COVID-19 care	Targeted services moved to key ambulatory sites to help stem spread and free capacity for COVID-19 patients.
<b>Level 3</b>	ICUs expanded into other units such as PACU	ICUs expanded to multiple room occupancy and expanded into other units appropriately equipped within our acute sites. Expanded postponing of procedures/visits.
<b>Level 2</b>	COVID-19 Units established at all acute sites	Every acute site has a designated unit for all COVID-19 patients. Temporary testing sites erected across most acute campuses. 1-800 consumer number launched. Virtual visits extended to 24/7. Targeted elective procedures and well visits postponed. Visitor hours modified.
<b>Level 1</b>	COVID-19 protocols in place	Incident command in place and all protocols in place.

- > Temporary structures.
- > Conversions of existing healthcare spaces to accommodate ICU isolation care.
- > Alternative care sites.

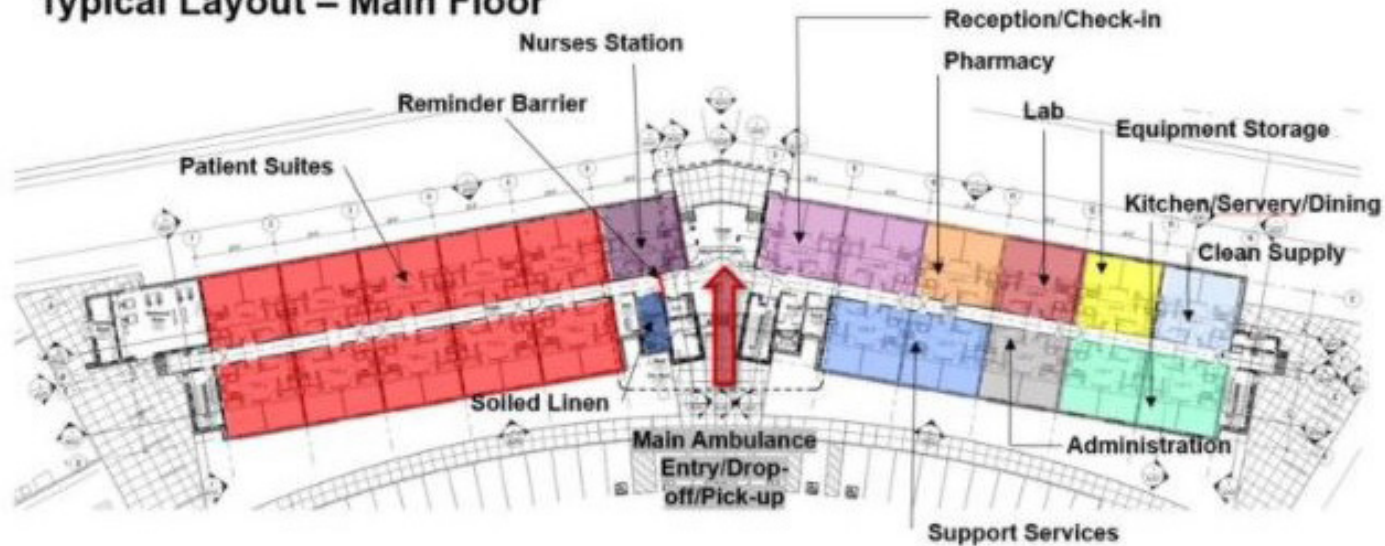


# HEALTHCARE: Temporary Solutions

## Critical Solution: Dorm Conversion Plan

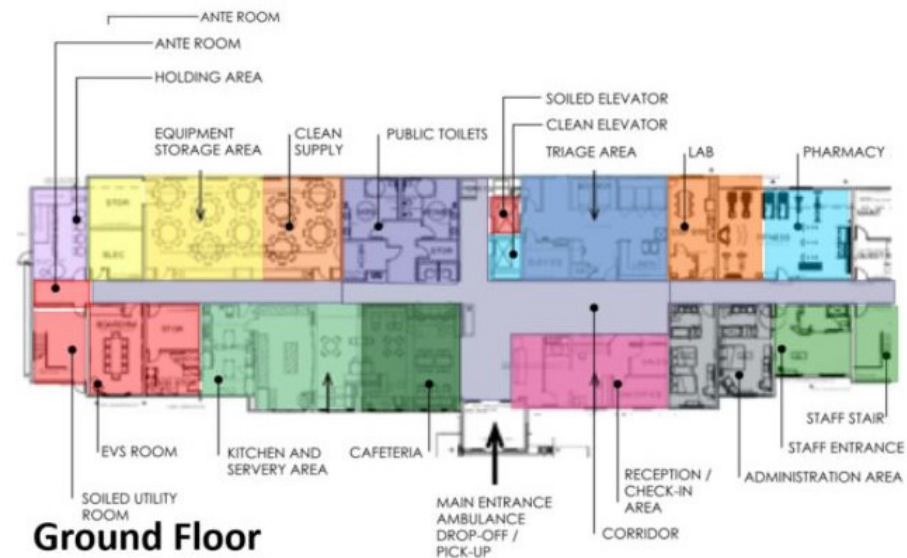
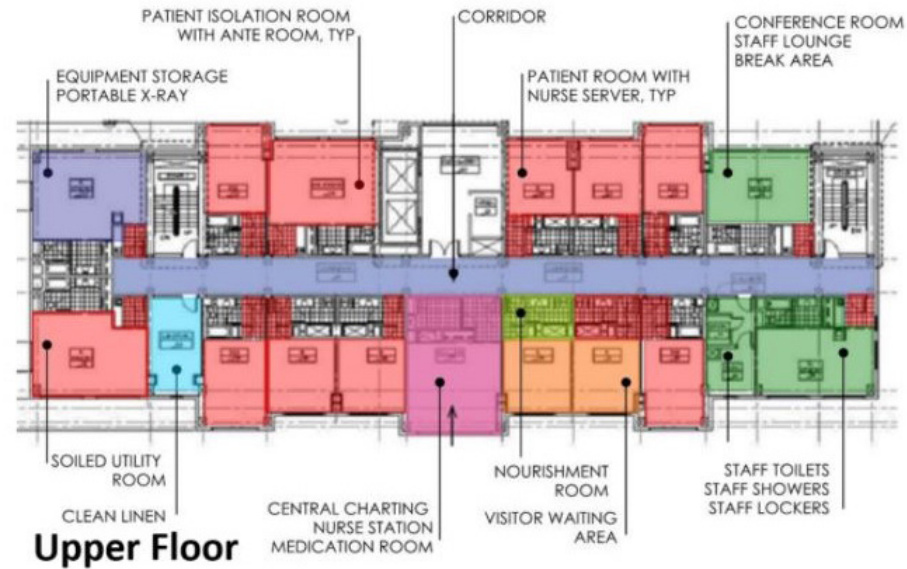


### Typical Layout – Main Floor



# HEALTHCARE: Inpatient

## Critical Solution: Hotel Conversion Plan





# HEALTHCARE: Temporary Solutions

## COVID-19 Hospital Assessments to Increase Capacity

Accessed 5 hospital sites (licensed for nearly 2,000 beds) in 48 hours

- Identify all rooms that were legacy semi-private patient rooms (now used mostly as private rooms)
- Former patient rooms used for other uses
- Rooms that could be brought on-line quickly with minor enhancements
- Rooms that can be renovated quickly back to patient care
- Prep & recovery bays/rooms that can be used for patient care
- Identify COVID-19 patient units, and develop potential private patient rooms to be converted to COVID-19 dual patient occupancy rooms

**CANNONDESIGN**



# HEALTHCARE: Temporary Solutions

## NHS Modular Solution

- > Modular system designer and tested to allow for quick build and re-location.
- > All equipment palletized to be easily stored and shipped globally.
- > No foundations nor groundworks required.
- > Suspended floor allows for easy install, maintenance and removal.
- > Self-sufficient strategy in terms of install and service provision not to depend on local service providers.
- > Benefits Include: 100-bed CCU facility, operational in 23 days, exact standards, "Off Grid", re-deployable post pandemic.



Micro Hospital

Infectious Disease Unit

# HEALTHCARE: Building System Changes

## Existing Conditions and Challenges

### **Optimizing the Use of Existing Equipment:**

- > Plenty of HVAC capacity.
- > Normal and emergency power availability.
- > Time required to understand the setup.

### **Designing to Available Equipment:**

- > Isolation exhaust fans and accessories.
- > HEPA filters and negative air machines.
- > Medical gas source equipment and accessories.
- > Electrical distribution equipment and associated wiring/cabling.
- > Headwalls.
- > Medical gas source equipment and accessories.
- > Nurse call systems.

# HEALTHCARE: Building System Changes

## CDC Air Change Clearance Rate

- > Ventilate the room and terminal clean before re-use / assess HVAC systems.
- > Follow CDC Air change clearance rate:

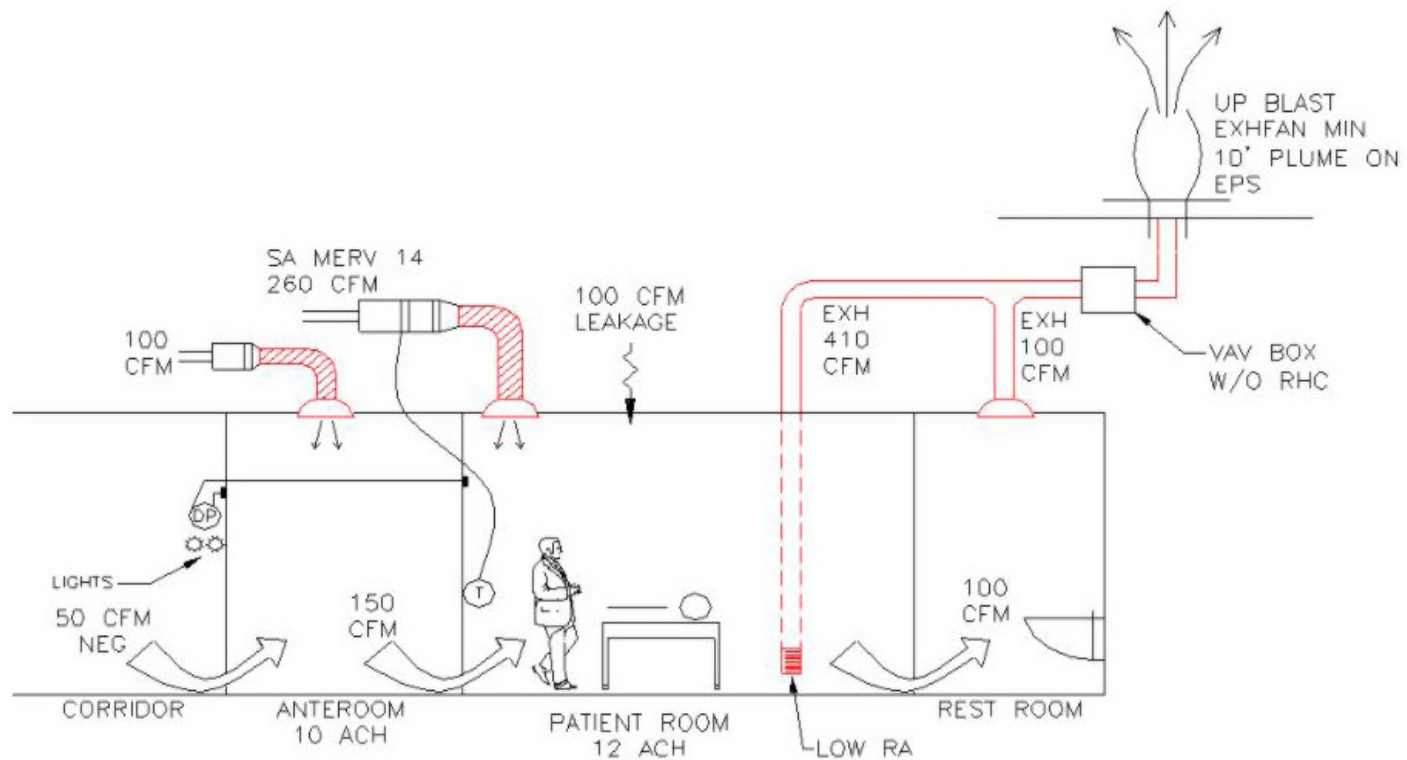
ACH § ¶	Time (mins.) required for removal 99% efficiency	Time (mins.) required for removal 99.9% efficiency
2	138	207
4	69	104
6 <sup>+</sup>	46	69
8	35	52
10 <sup>+</sup>	28	41
12 <sup>+</sup>	23	35
15 <sup>+</sup>	18	28
20	14	21
50	6	8

- > Review ASHRAE Ventilation of Health Care Facilities Guide.

# HEALTHCARE: Building System Changes

## Airborne Infectious Isolation Room

- > CDC recommends using A.I.I. room for aerosol-generating procedures only.
- > Minimum 12 air changes/hour.
- > Negative relative pressure (clean to less clean).
- > All air exhausted directly to outdoors.





# HEALTHCARE: Building System Changes

## Patient Room Conversion/Modifications

Temporary Exhaust



Temporary Once-Through Air/Preconditioned Outside Air Unit



Vestibule at ICU

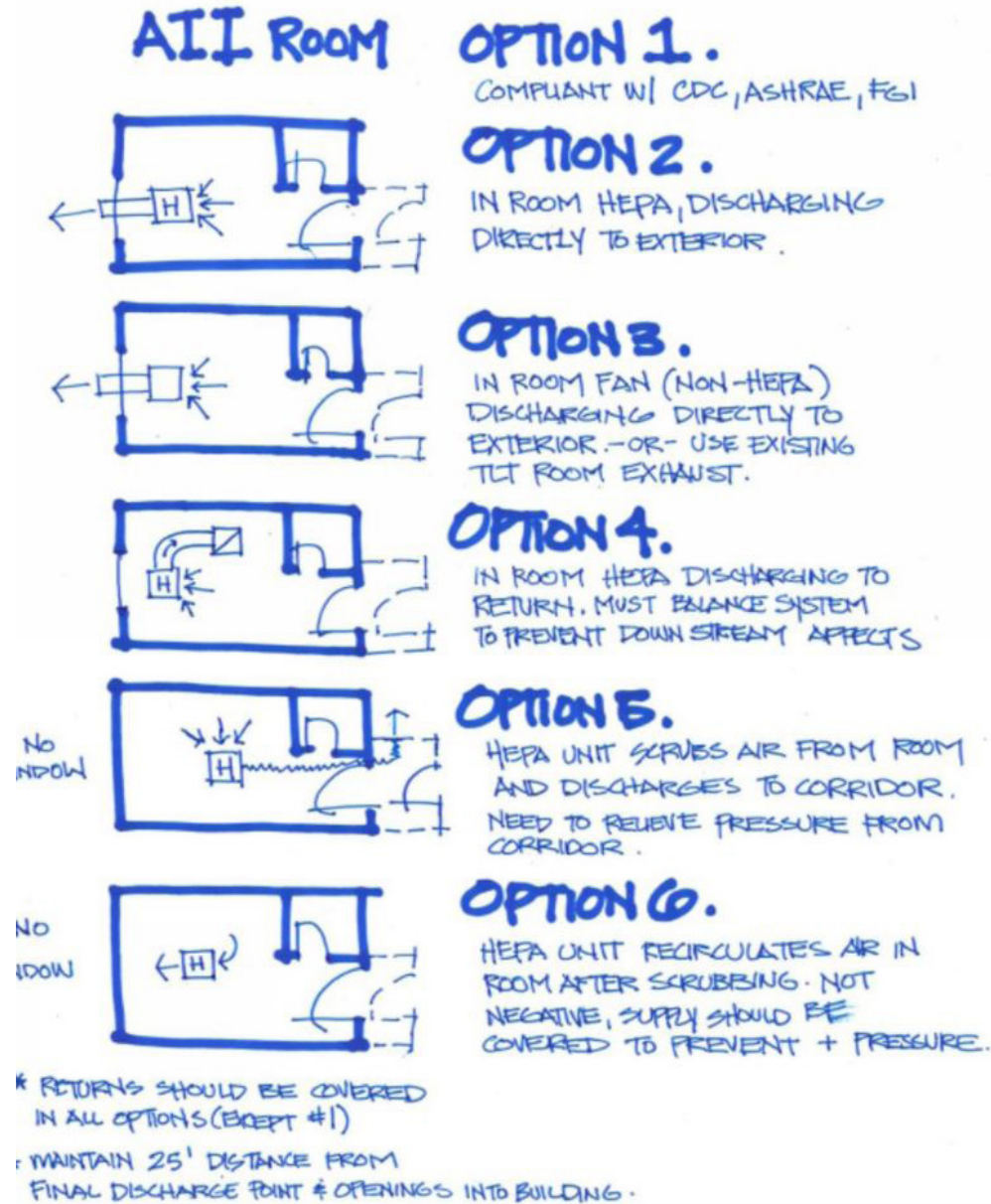


### HVAC System

- > Negative relative pressure helps contain contaminants.
- > Air changes dilute contaminant level.
- > Exhaust removes contaminants.
- > Filtration removes contaminants.

# HEALTHCARE: Building System Changes

## Patient Room Conversions/Modifications



# SOURCES: Healthcare

1. Webinar: Understanding and Solving COVID-19 Healthcare Building Challenges May 6, 2020 by Michael Sheerin, Jeff Hankin, Scott T. Fote, Jennifer Kovacs Silvis [https://event.webcasts.com/starthere.jsp?ei=1313246&tp\\_key=e766a867c9](https://event.webcasts.com/starthere.jsp?ei=1313246&tp_key=e766a867c9)
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3. Webinar: COVID-19 Lessons Learned: The Evolution of Healthcare Interiors By Healthcare Design
4. Webinar: Response Time: Healthcare Designers Help Combat COVID-19 April 22, 2020 by Jennifer Kovacs Silvis, Hank Adams, Jeffrey C. Stouffer, Jocelyn Stroupe, Joshua A. Theodore [https://event.webcasts.com/viewer/event.p?ei=1304669&tp\\_key=67e46df598](https://event.webcasts.com/viewer/event.p?ei=1304669&tp_key=67e46df598)
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[https://www.archdaily.com/945383/mass-design-group-creates-covid-19-guide-for-senior-housing?utm\\_medium=email&utm\\_source=ArchDaily%20List&kth=4,117,262](https://www.archdaily.com/945383/mass-design-group-creates-covid-19-guide-for-senior-housing?utm_medium=email&utm_source=ArchDaily%20List&kth=4,117,262)

## KEY:

Sources written in **blue**: Directly used as sources in this booklet.

Sources written in **grey**: Used for research but not directly used in this report.





# HOSPITALITY

## Re-Imagining Hospitality Post Covid-19

### First Steps

- > Touch-less solutions and safer materials that are less porous and easy to clean.
- > Anti-microbial materials should be considered in high-traffic areas such as lobbies, check-in desks, conference spaces, linens, and materials used in the rooms.
- > Self-check-in technology.

### Integration of COVID-19 Safety Principals

Addition of new products that play a role in interior design, such as permanent acrylic screens and suggestive floor pattern that promotes 6' radius or one-way travel path.

### Hotel for Business Traveling

Speculation: Although people will never truly stop traveling, we will see hospitality trend away from efficient hotel rooms or hotels that cater to a work-life scenario, and instead focus on travel for the sake of cultural immersion and vacation and exploration.

### Safety

Guests want to feel a sense of safety and security. Brands must reinforce this at every touch-point, from the entry to room or table.



(1)



(4)



## What Can Hotels Do To Ease Comfort and Concerns?

**“Hotels should very clearly communicate the efforts from their staff training, operations, and cleaning practices to make guests feel safe”(2).**

### Upon Arrival

Transitional space or safety corridor including:

- > Wellness screenings.
- > Sanitize / wash stations.
- > Refresh before accessing different parts of the property.

### Dining Experience

Offer room service or restaurant dining:

- > Menus projected onto surfaces or accessible via a QR (Quick Response) code scanned with a phone.
- > Limit capacity and space tables a minimum of 6’ apart.
- > “Private Pods” for people to eat in.



(4)

# HOSPITALITY

## Re-Imagining Hospitality Post Covid-19

**Technology**

**Outdoor Spaces**

Flow Indoor and Outdoor  
Spaces to Spread People Out

Utilize Street Space

**Transparency**

**Book A Private Event  
With The Chef**

Chef Will Send the  
Ingredients and Recipe

One-on-One Virtual Experience

Great for a Dinner Party

**Flexible Layout**

Loose Furniture

Ability to Rearrange the  
Dining Room

**Washrooms**

Locate in Front  
of Restaurant



# HOSPITALITY

## Re-Imagining Hospitality Post Covid-19



(7)



(6)



(7)

# SOURCES: Hospitality

1. <https://www.hospitalitynet.org/hottopic/coronavirus>
  2. <https://www.hospitalitydesign.com/news/business/architects-designers-look-toward-future/>
  3. F+B Update | Tectonic Shifts and Design Strategies
  4. [https://mozdesigns.com/products/dividers/?utm\\_source=Moz+Main+List&utm\\_campaign=346cf7039f-202008\\_AcrylicDividers2&utm\\_medium=email&utm\\_term=0\\_caceee706a-346cf7039f-265294593&goal=0\\_caceee706a-346cf7039f-265294593](https://mozdesigns.com/products/dividers/?utm_source=Moz+Main+List&utm_campaign=346cf7039f-202008_AcrylicDividers2&utm_medium=email&utm_term=0_caceee706a-346cf7039f-265294593&goal=0_caceee706a-346cf7039f-265294593)
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  7. <https://www.architecturaldigest.com/story/restaurant-design-covid-19>
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## Step-By-Step Risk Management Plan for a Retail Establishment

- > Consider temporarily **closing every other cash register** to create more distance between customers.
- > Install **translucent shields** between employee and customer at checkouts to minimize employee's risk.
- > Provide **contact-less payment** options.
- > Encourage **on-line purchasing** with pick-up at a designated location or **delivery** option.
- > Use **visual cues** such as signs, tape marks, and decals, **placed six feet apart**, to indicate a safe distance.
- > Shift primary stocking activities to off-peak or **after-work hours** to limit the number of people in the store.
- > Identify and address potential language, cultural, and disability barriers associated with communicating COVID-19 virus information to employees and customers.
- > **Touch-less hand sanitizer** stations and **multi-lingual posters** that encourage hand hygiene.
- > Ensure operating hours that allow for downtime between shifts for thorough and **routine cleaning** of all frequently touched surfaces in the workplace such as workstations, keyboards, telephones, handrails, and door handles.
- > Discourage employees from using colleagues' items within their 6 foot radius (phones, keyboards, etc.).
- > **Prohibit** employees from **eating or drinking** anywhere **inside the workplace** other than the designated break rooms to **ensure masks are being worn** correctly and consistently.
- > Dedicate **shopping hours for vulnerable populations**, preferably at a time that follows a complete cleaning.
- > Providing **options** that allow consumers to make decisions based on their personal preferences, **comfort levels** and circumstances will be critical.

## How Can Architects & Engineers Help?

- > Selection of floor surfaces that suggests distancing and mapping.
- > Provide systems that can monitor relative humidity.
- > Design a permanent outdoor canopy, if possible, for partially protected exterior queuing.
- > Help in the selection of no-touch trash cans, doors, toilets, sinks, etc.
- > Design parking area to include signage identifying reserved parking for curbside pick-up.
- > Specify light switches with motion sensor controls or phone based app controls.
- > Design separate entry and exit doors provided for safety and efficiency.
- > Consider adding touchless entry capability.
- > Grab and walk-out service - self service.
- > Other types of touchless retail.



(4)



(5)

# SOURCES: Retail

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[https://www.aia.org/resources/6299247-reopening-america-strategies-for-safer-bui/?utm\\_source=real-magnet&utm\\_medium=email&utm\\_campaign=aiamem20-covid-19-14-weekly-001members](https://www.aia.org/resources/6299247-reopening-america-strategies-for-safer-bui/?utm_source=real-magnet&utm_medium=email&utm_campaign=aiamem20-covid-19-14-weekly-001members)
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# BANKING & SMALL BUSINESS SOLUTIONS

**American Industrial Hygiene Association, AIHA, (2) has created a set of guidelines for re-opening that are specifically for business services such as banks, credit unions, notaries, etc.:**

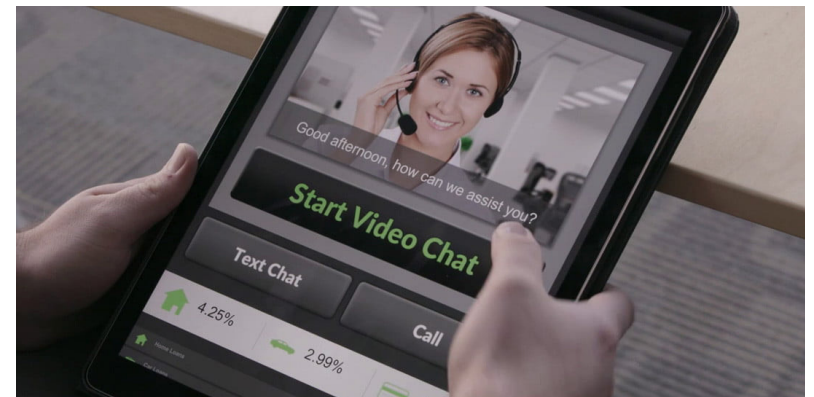
- > Actions for employers to take.
- > Actions for employees to take.
- > Actions for customers to take.

**Any interior space can greatly benefit from:**

- > Upgrade central air system filters to a MERV 13 (or higher) or HEPA filter.
- > Good ventilation including the use of outside air.
- > Social distance employees from members, and members from each other.
- > Regularly wash hands and all surfaces someone may come in contact with.
- > Follow all other public regional guidelines.

**Strategies for Small Relationship-based businesses:**

- > Attentiveness.
- > Just as in-person, a member wants to feel that they are a priority.





# BANKING & SMALL BUSINESS SOLUTIONS

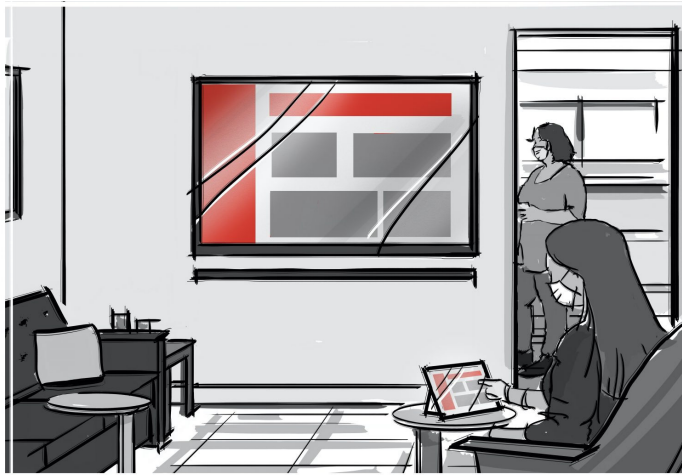
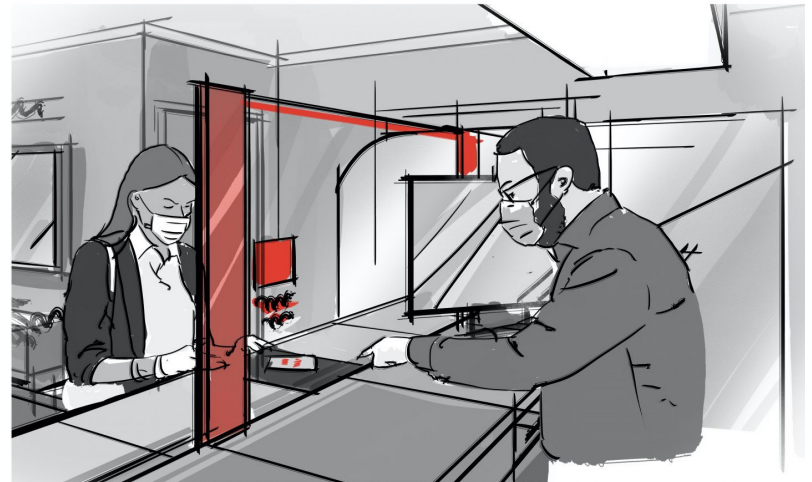
## Familiarity

Provide a formal location within the branch that can be a backdrop for remote video calls, or outside while the branch lobby is closed for those who are unable to come inside. Having an employee from each branch answer calls would create a more comfortable environment with a familiar voice or face on the other end of the call.

## Transactions & Meetings

Little Diversified Architectural Consulting (4) recently published a study re-imagining what the banking world could look like during and post-pandemic. One suggestion was a UV light in the teller drawer which could sanitize anything that passes through. This technology would help minimize virus transmission during the transaction.

Also recommended are private scheduled meeting rooms. This allows the room to be cleaned between uses, and if scheduled, it would help decrease the number of members waiting in the lobby.



# BANKING & SMALL BUSINESS SOLUTIONS

## Utilizing Outdoor Spaces For Socializing

Credit Unions and Banks can be a social gathering place for community members to grab a cup of coffee and catch up with each other. To allow social interaction more safely, an option is to make use of open-air patios and courtyards (while maintaining proper distancing and safety precautions).

According to The Journal of Infectious Diseases, sunlight drastically decreases the lifespan of the virus in its potential aerosol form (1).

Outside air is continuously moving, so we are less likely to breathe in air and particles that others have exhaled. Security is always a concern with financial institutions, but there are many ways that outdoor spaces can be both inviting and secure.

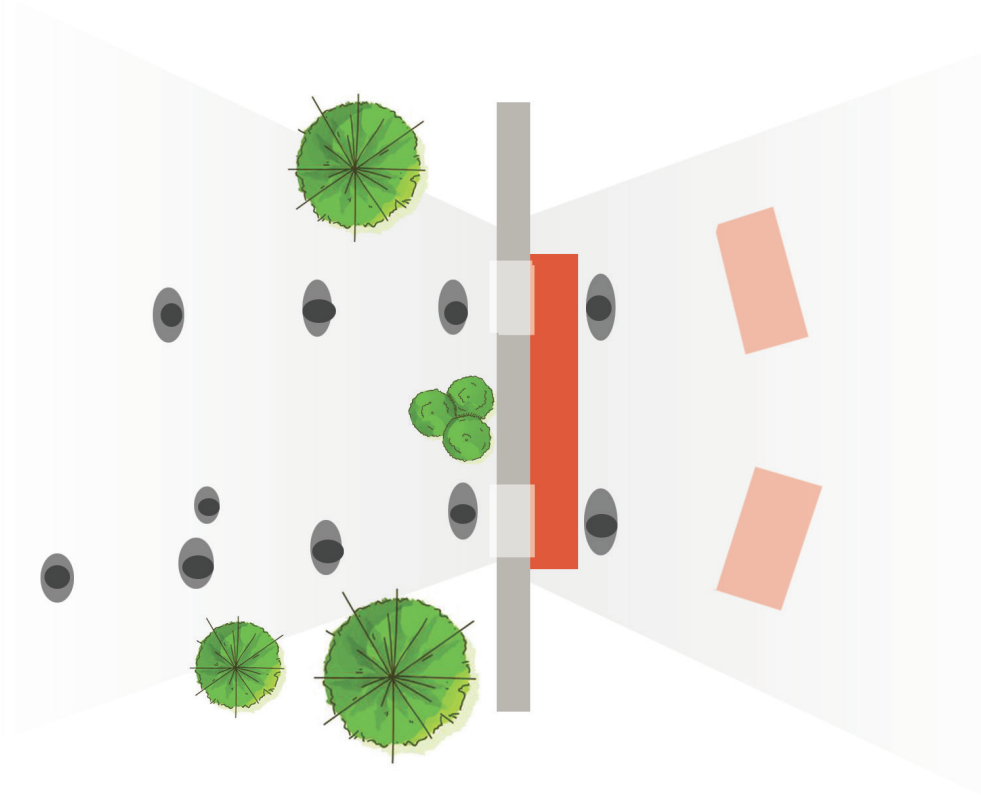


(6)

# BANKING & SMALL BUSINESS SOLUTIONS

## Utilizing Outdoor Spaces for Banking

There is the potential for walk-up teller windows, similar to the already prevalent drive-up windows. Members could walk up a secured patio and make their transactions without ever having to enter the building.



# SOURCES: BANKING & SMALL BUSINESS SOLUTIONS

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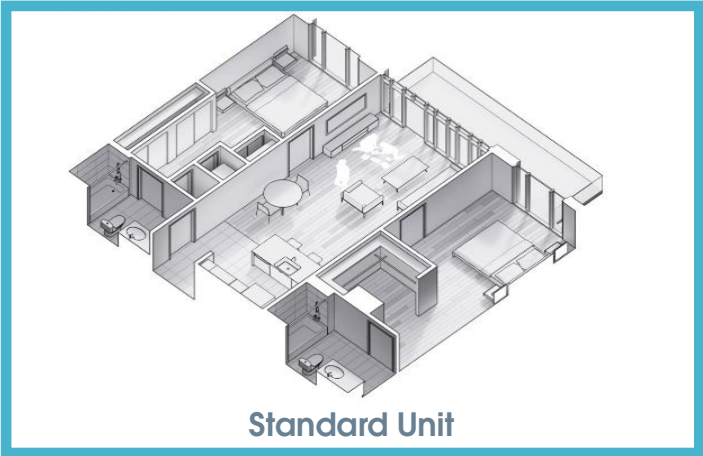


# MULTI-FAMILY HOUSING

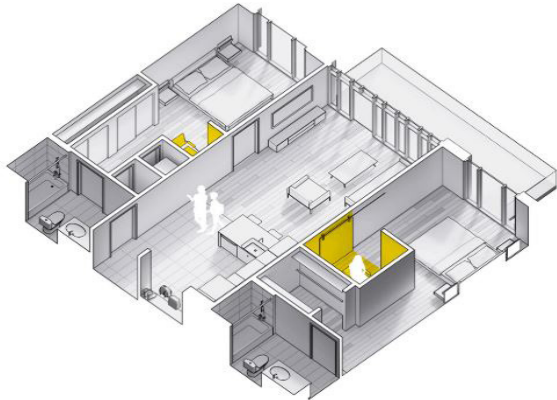
## Work From Home

As telecommuting has become the new normal, many tenants now feel boxed in, without having a proper place to focus on their work. Open floor plans have been largely accepted for standard office design, but the home office may become a permanent space of the future.

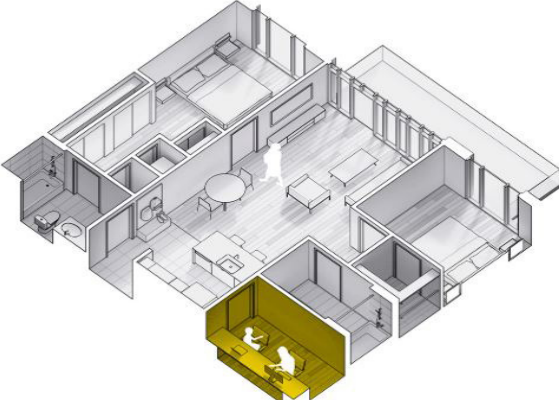
Below are some studies provided by the architectural firm HKS to illustrate how a standard 2- bedroom unit can include a personal work space.



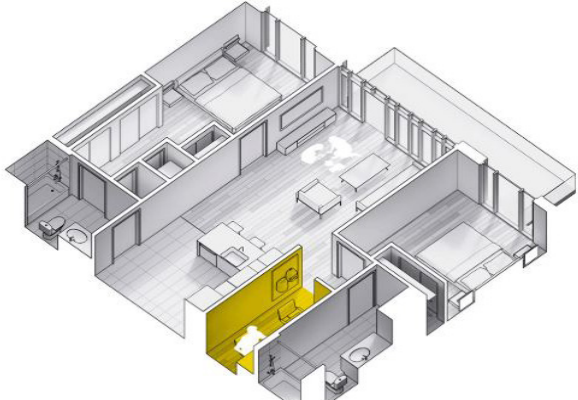
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Private Office



Entry Home Office



Central Home Office

# MULTI-FAMILY HOUSING

## Social Spaces

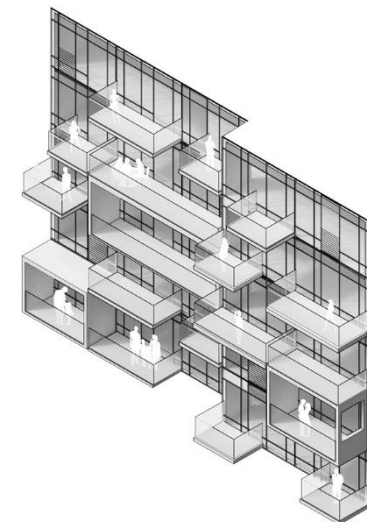
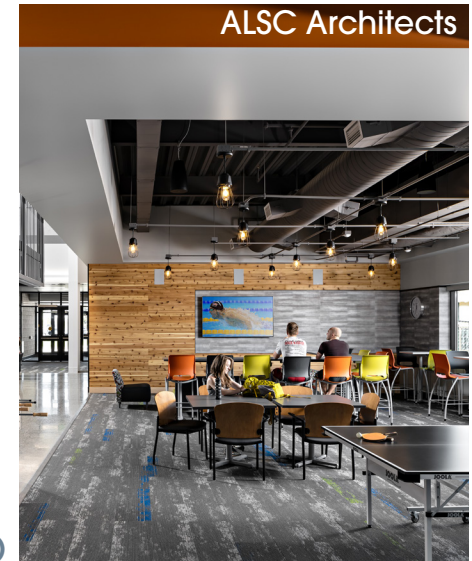
Previously social spaces, such as a clubhouse, might transform into a more thoughtful design of shared building spaces and work areas; a strategy that comes from the hospitality industry.

## Marketing

Virtual apartment tours may become more popular. Communication between potential renters and leasing staff is occurring through calls and e-mail follow-up. With new digital locks, renters can let themselves in for a self-guided tour.

## Connection to Outdoors

There is deep consideration for how we will live together in the future; how we will care for ourselves, the planet, and each other. Experiencing the 2020 quarantine has helped architects realize the importance of providing people with opportunities to socialize safely. Future spaces will need to be generous and adaptable, with a fresh look at the value of balconies and terraces. In urban communities where the population is dense, personal outdoor spaces were often the only opportunity to leave the indoors during self-isolation.



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## KEY:

Sources written in **blue**: Directly used as sources in this booklet.

Sources written in **grey**: Used for research but not directly used in this report.

