Does Your Building Have a Pulse?

The Healthy Building in a Post-Pandemic Environment

KA

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Inspection materials for HVAC equipment and ventilation systems.

WHY YOU NEED A HEALTHY BUILDING

Due to the rigorous demands of modern life, most of our time is spent indoors. Whether at work or at home, our physical health is continuously influenced by the interior environments of the buildings we inhabit.

The Healthy Building movement views each building as a complete system that can either improve or harm the physical and psychological wellbeing of its occupants. Its stated goal is to improve its occupants' health by making modifications to the building's infrastructure, systems, and management. Some of these changes are as simple as altering the cleaning regimen; others may require the introduction of additional equipment to control humidity or the spread of airborne particulate matter. Additionally, some might be very easy to accomplish in a new building while others are more difficult within an existing one.

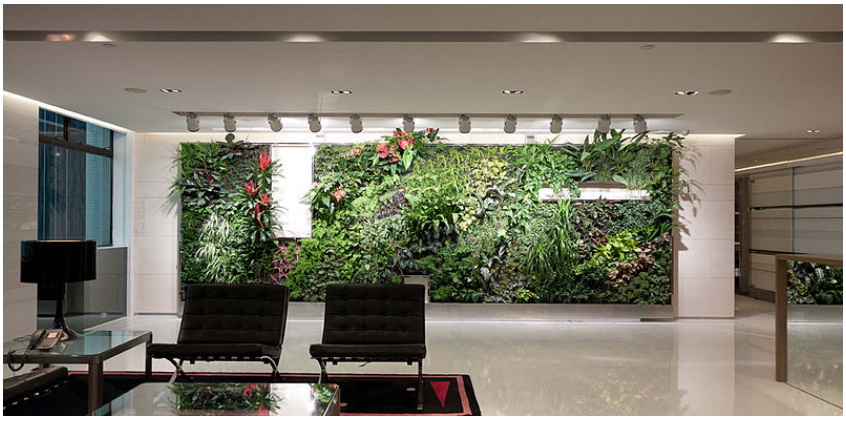
As shown by multiple studies, there is a direct correlation between interior environment and incidence of illness among building occupants. Healthy Building measures lead to reduced illness, higher productivity, and greater occupant comfort.

“Healthy Building measures lead to reduced illness, higher productivity, and greater occupant comfort.”

OUR APPROACH

Katz Architecture has developed the following checklist of recommendations for Building Owners, Developers, and/or Building Managers to lessen the risk of COVID-19 transmission, improve the overall health of a building and its occupants, and increase its value. We have broken the checklist into eight categories:

- Social Distancing
- Water Quality
- Air Quality
- The Things We Touch
- Humidity
- Cleanliness and Maintenance
- Materials and Furnishings
- Natural Light and Views



A green wall in a Hong Kong office by Ronald Lu & Partners, 2010. (Courtesy of Wikimedia Commons)

We then analyze and prioritize the recommendations based upon code requirements, market value to occupants, ability to reduce COVID-19 transmission, and relative cost.

We hope this checklist of recommendations is a helpful resource, and we look forward to the opportunity to discuss any questions or comments that you might have.

CONTRIBUTORS

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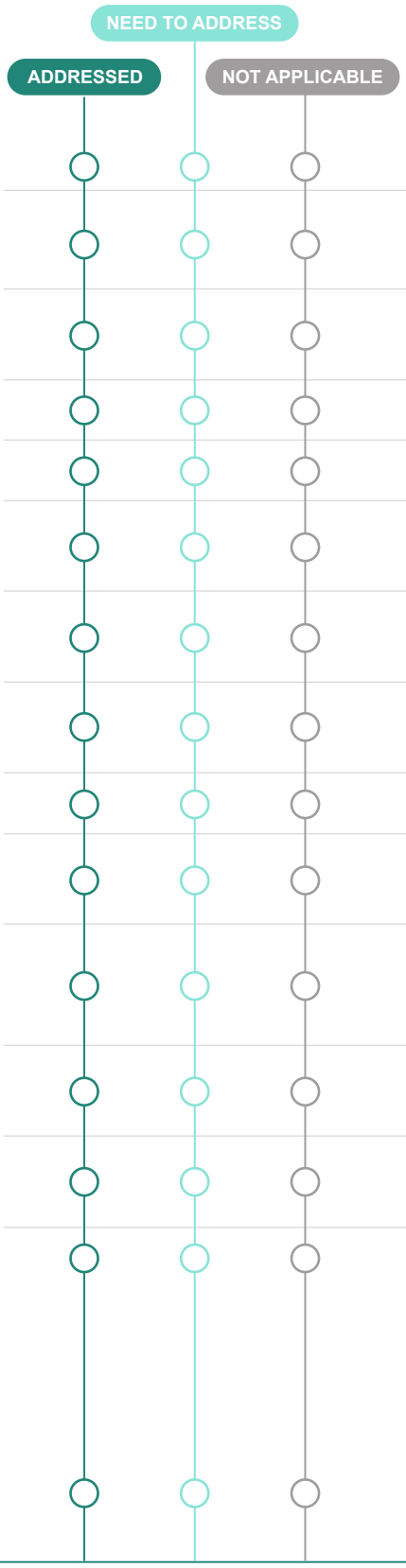
Eight Categories and One Hundred and Five Recommendations



Occupant Density Recommendations

a. Following the steps will help meet or exceed Centers for Disease Control guidelines on Public Health and Social Distancing:

1. Verify Center for Disease Control guidelines are being adhered to.
2. Explore methods to stagger occupant's schedules to reduce occupant density to levels within public health guidelines.
3. Identify areas where it would be difficult to meet public health social distancing requirements and create a temporary solution plan.
4. Develop and implement a Personal Protection Equipment Plan.
5. Establish a protocol for isolating any occupant showing symptoms.
6. Post signage stating the maximum occupancy of all building lobbies and designate temporary outdoor waiting areas.
7. Post Concierge at entry door to limit the number of occupants in the lobby.
8. Designate queue area for elevators with stanchions and separation panels.
9. Limit elevator overcrowding by posting maximum occupancy signs.
10. If available, make use of secondary and freight entrances during peak arrival times.
11. Limit restroom occupancy to every other fixture to maintain social distancing. Post hand hygiene educational signs for proper hand washing procedures.
12. Install temporary plexiglass dividers in public areas, counters and concierge desks to maintain adequate separation.
13. Provide markings on the floor and/or walls to indicate proper separation distances.
14. Encourage use of stairs to limit elevator density.

Water Quality Recommendations

a. Following the steps will help meet or exceed national water quality standards for water supply:

15. Test water for excessive amounts of heavy metals and pathogens due to potable water system reduced use or inactivity during stay at home order.

ADDRESSED | NEED TO ADDRESS | NOT APPLICABLE

16. Identify and replace any galvanized steel or lead pipes.

17. Consider flushing potable water system if your building has experienced a prolonged closing.

18. Inspect building for any plumbing leaks.

19. Consider installing centralized water purification systems as necessary by building location.

20. Replace drinking water fountains with reusable water bottle refilling stations.

21. Confirm that no piping is located within the exterior walls where susceptible to freezing.

b. Following the steps will help reduce the risk of potable water cross contamination:

22. Confirm if there are any occupancies within the building that may require a Backflow Prevention Device and install as needed.

23. Confirm all installed Backflow Prevention Devices meet the specification and standards of the NYC Department of Environmental Protection.

24. Install vacuum breakers at any exterior hose bibb used to water landscapes.

25. Verify all Backflow Prevention Device inspections and certifications are up to date.

Air Quality Recommendations

a. Following the steps will help establish a baseline for air quality:

26. Test the air the for presence of Particulates such as dust, soot, silica, Biological matter such as mold, legionella and allergens, gasses such as carbon dioxide and radon), and chemical matter such as volatile organic compounds, if it has not been done before.

27. If your building is equipped with a cooling tower, consider checking condensate for bacterial growth.

28. Conduct a thorough visual inspection of the entire building, including all maintenance, mechanical and storage areas to identify possible sources of contamination.

ADDRESSED | NEED TO ADDRESS | NOT APPLICABLE

29. Inspect outdoor areas for pollutions sources, such as smoking areas and exhaust from neighboring buildings. confirm these pollutants are not being drawn in by ventilation systems.

30. Pay attention to cleanliness issues. Look for signs of mold and mildew.

31. Perform a preventative pre-season HVAC tune-up, clean any rust or dust from moving parts. Replace any filters that may cause system to run under unnecessary stress.

32. Confirm HVAC system provides outdoor air ventilation to indoor spaces.

33. Confirm that all operable windows used to provide natural ventilation are in working order and properly maintained.

34. Provide live plants to naturally clean air.

b. Following the steps will help reduce the risk of potable water cross contamination:

35. Confirm if there are any occupancies within the building that may require a Backflow Prevention Device and install as needed.

36. Confirm all installed Backflow Prevention Devices meet the specification and standards of the NYC Department of Environmental Protection.

37. Install vacuum breakers at any exterior hose bibb used to water landscapes.

38. Verify all Backflow Prevention Device inspections and certifications are up to date.

The Things We Touch Recommendations

a. Following the steps will help minimize the spread of contagions from frequently touched surfaces:

39. Install automatic or motion sensor door operators in lobby and other common areas.

40. Designate building employee with personal protection equipment to open doors and operate elevator where automated controls cannot be provided.

ADDRESSED | NEED TO ADDRESS | NOT APPLICABLE

41. Limit security keypads touch with optical scans, key fobs or voice operation.
42. Replace light switches with motion sensor controls.
43. Provide a station/dispenser for hand sanitizer in public areas and in proximity to elevators.
44. Provide a station/dispenser for personal protection equipment in building lobby or common areas.
45. Remove unnecessary furniture.
46. Provide removable and cleanable coverings over all furniture to remain.
47. Provide removable and easy to clean films over frequently touch surfaces.
48. Install hands-free water faucets, hand soap dispensers, towel dispensers, and water fountains.
49. Install hands-free trash cans in public areas.
50. Consider installing personal headsets instead of shared phones at concierge desk or other public counters.

Humidity Recommendations

a. Following the steps below will help optimize relative humidity in spaces:

51. Evaluate buildings heating source and design a plan for proper humidification.
52. Install humidification system in accordance with ASHRAE 2013b.
53. Maintain optimal relative humidity levels between 40% and 60%.
54. Install individual temperature and humidity controls for separate common spaces and tenancies.
55. Inspect for evidence of dampness and mold and correct causes.
56. Provide exhaust fans in all damp rooms in accordance with ASHRAE 160.

ADDRESSED | NEED TO ADDRESS | NOT APPLICABLE

Cleanliness and Maintenance Recommendations

a. Following the steps will help identify the presence of any pests

57. Inspect and seal walls between tenancies and interior/exterior to prevent pest from entering the building and moving freely between spaces.

58. Inspect public spaces, mechanical rooms and low traffic storage areas for evidence of pest droppings or nesting materials.

59. Interview tenants regarding the presence of pests.

60. Create a pest mitigation plan.

b. Following the steps will help improve building cleaning protocols

61. Limit the use of cleaning products to those that do not have a negative impact to the environment and do not contain harmful or caustic chemicals.

62. Use Center for Disease Control certified disinfectants.

63. Verify building has a trash collection schedule.

64. Post waste disposal instruction signs.

65. Provide separate room for waste with designated air exhaust.

66. Post recycle items disposal signs, label bins accordingly.

67. Consider using cleaning tools that are design to attract and capture dirt and bacteria, such as microfiber cloths and dusters.

68. To avoid cross-contamination of surfaces, institute a color-coding system to identify cleaning tools and where they are used.

69. Substitute standard vacuum cleaners with ones equipped with High Efficiency Particulate Air filters which can trap 99.9% of particles and pathogens.

70. Minimize the use of mop buckets that can hold and spread dirty water. Consider using mops with built-in cleaning solution reservoirs.

71. Maintain a well-stocked supply of materials, do not wait until cleaning materials are depleted before replenishing.

72. Consider utilizing ultraviolet C light cleaning equipment to disinfect every morning before building is occupied.

ADDRESSED | NEED TO ADDRESS | NOT APPLICABLE

c. Following the steps will help establish regular maintenance, routine inspections and identify areas for improvement:

73. Create and maintain a schedule to replace HVAC filters.

74. Clean all HVAC supply and return register regularly to prevent distribution of dust and particulates.

75. Initiate dust limiting cleaning regimen at all public spaces

76. Listen, investigate, and address tenant comments about smells, mold and pests promptly.

Materials and Furnishing Recommendations

a. Following the steps will help eliminate unhealthy interior environments:

77. Consider the use of materials fire resistive materials with low production of noxious gases when exposed to fire.

78. If building has acoustical ceiling tiles, verify they made of materials free of formaldehyde.

79. Encourage the use of hard flooring surfaces that support ease of cleaning and are water and wear resistant.

80. Promote the use of materials and surfaces that are resilient against the corrosive properties of germicides and cleaning agents.

81. Consider the use of materials certified as green and/or sustainable by third party accreditation agencies such as Green Seal or Blue Green Alliance.

82. As carpeted surfaces are potential reservoirs for germs and bacteria, their use should be limited to low traffic areas.

83. Partitions should be built with smooth surfaces and free of crevices that could promote the accumulation of dust and the growth of bacteria.

84. Consider limiting the use of wall coverings that can trap moisture and promote the growth of mildew or mold within their substrate materials.

85. Consider the use of low VOC paint coatings with microbicidal agents to reduce the risk of transmission of Staph, MRSA, E. coli, VRE and other pathogens.

86. Encourage the use of furniture and textiles with antimicrobial surface treatments.

ADDRESSED | NEED TO ADDRESS | NOT APPLICABLE

87. Consider finishing wood surfaces with mold resistant natural zero VOC coatings such as tung and linseed oils or shellacs.

88. Encourage the use of antimicrobial metal alloys such as copper, brass and bronze for high contact surfaces and furnishings in high-traffic public areas.

89. Consider reducing the use smooth stainless steel and plastic furnishings as viruses and bacteria can survive on these surfaces for a longer period.

90. Select furnishings made with materials composed of a high recycle content.

91. Avoid new furnishings made with foam cushions that contain polybrominated flame retardants, which are suspected of causing cancer.

92. When buying new furniture, request fabric blanket wrapping instead of plastic or foam, during shipping to help with off gassing prior to the furniture arriving at the building.

Natural Light and Views Recommendations

a. Following the steps below will help improve lighting to interior spaces:

93. Provide sufficient daylight throughout to minimize use of electricity.

94. Provide appropriate task lighting at work areas and workstation to reduce energy usage.

95. Consider enlarging existing windows or adding new ones.

96. Where possible replace solid doors with glass doors to allow more light into spaces.

97. Where privacy is a concern, add transoms above doors or translucent sidelights.

98. Add skylights to penthouses or roof to introduce daylight.

99. Consider the installation of motorized active light monitors to provide diffused daylight to lower stories.

100. Consider using lighter paint colors that reflect light in support of daylight strategies.

ADDRESSED	NEED TO ADDRESS	NOT APPLICABLE	
			b. Following the steps will help provide outdoor views and green spaces to building occupants:
○	○	○	**101.** Whenever possible, provide views to the outside for occupants.
○	○	○	**102.** Incorporate natural elements and plants in the design of interior spaces.
○	○	○	**103.** Consider the use of open floor plan layouts to improve views to the outside.
○	○	○	**104.** Create landscaped outdoor spaces on available building terraces or roofs.

Priority Analysis

COVID-19 TRANSMISSION ↓	CODE REQUIREMENT ↓	MARKET VALUE TO OCCUPANTS ↓	RELATIVE COST ↓	
●●●●	●●●	●●●	$	1. Verify Center for Disease Control guidelines are being adhered to.
●●●	●●	●●●	$	2. Explore methods to stagger occupant's schedules to reduce occupant density to levels within public health guidelines.
●●●●	●●	●●●●	$ $	3. Identify areas where it would be difficult to meet public health social distancing requirements and create a temporary solution plan.
●●●●	●●●	●●●●	$ $	4. Develop and implement a Personal Protection Equipment Plan.
●●●●	●●●	●●●●	$	5. Establish a protocol for isolating any occupant showing symptoms.
●●●●	●●	●●●	$ $	6. Post signage stating the maximum occupancy of all building lobbies and designate temporary outdoor waiting areas.
●●●	●●	●●●	$ $	7. Post Concierge at entry door to limit the number of occupants in the lobby.
●●●	●●	●●●	$	8. Designate queue area for elevators with stanchions and separation panels.
●●●	●●	●●●	$	9. Limit elevator overcrowding by posting maximum occupancy signs.
●●●	●●	●●	$ $	10. If available, make use of secondary and freight entrances during peak arrival times.
●●●	●●	●●	$	11. Limit restroom occupancy to every other fixture to maintain social distancing. Post hand hygiene educational signs for proper hand washing procedures.
●●●	●●	●●●	$ $	12. Install temporary plexiglass dividers in public areas, counters and concierge desks to maintain adequate separation.
●●●	●●	●●●	$ $	13. Provide markings on the floor and/or walls to indicate proper separation distances.
●●●	●●	●●	$	14. Encourage use of stairs to limit elevator density.
●●●	●●●	●●●	$ $	15. Test water for excessive amounts of heavy metals and pathogens due to potable water system reduced use or inactivity during stay at home order.

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a. Following the steps will help meet or exceed Centers for Disease Control guidelines on Public Health and Social Distancing:

Water Quality Recommendations

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●●	●●	●●●	$ $	**16.** Identify and replace any galvanized steel or lead pipes.
●●●●	●●●	●●●●	$ $ $ $	**17.** Consider flushing potable water system if your building has experienced a prolonged closing.
●●●	●●●	●●●	$	**18.** Inspect building for any plumbing leaks.
●●	●●	●●	$ $	**19.** Consider installing centralized water purification systems as necessary by building location.
●●●●	●●●	●●●	$ $ $	**20.** Replace drinking water fountains with reusable water bottle refilling stations.
●	●●	●●	$	**21.** Confirm that no piping is located within the exterior walls where susceptible to freezing.
				b. Following the steps will help reduce the risk of potable water cross contamination:
●●●●	●●●●	●●●	$ $ $ $	**22.** Confirm if there are any occupancies within the building that may require a Backflow Prevention Device and install as needed.
●●●	●●●●	●●●	$ $	**23.** Confirm all installed Backflow Prevention Devices meet the specification and standards of the NYC Department of Environmental Protection.
●●	●●●	●●	$	**24.** Install vacuum breakers at any exterior hose bibb used to water landscapes.
●●	●●●●	●●	$ $	**25.** Verify all Backflow Prevention Device inspections and certifications are up to date.
				Air Quality Recommendations
				a. Following the steps will help establish a baseline for air quality:
●●●	●●	●●●	$ $ $	**26.** Test the air the for presence of Particulates such as dust, soot, silica, Biological matter such as mold, legionella and allergens, gasses such as carbon dioxide and radon), and chemical matter such as volatile organic compounds, if it has not been done before.
●●	●●●	●●●	$ $	**27.** If your building is equipped with a cooling tower, consider checking condensate for bacterial growth.
●●	●●●	●●	$	**28.** Conduct a thorough visual inspection of the entire building, including all maintenance, mechanical and storage areas to identify possible sources of contamination.

COVID-19 TRANSMISSION	CODE REQUIREMENT	MARKET VALUE TO OCCUPANTS	RELATIVE COST	
●●	●●	●●	$	**29.** Inspect outdoor areas for pollutions sources, such as smoking areas and exhaust from neighboring buildings. confirm these pollutants are not being drawn in by ventilation systems.
●●	●●●	●●●	$	**30.** Pay attention to cleanliness issues. Look for signs of mold and mildew.
●●	●●●	●●●●	$ $ $	**31.** Perform a preventative pre-season HVAC tune-up, clean any rust or dust from moving parts. Replace any filters that may cause system to run under unnecessary stress.
●●●●	●●●	●●●	$ $	**32.** Confirm HVAC system provides outdoor air ventilation to indoor spaces.
●●●	●●	●●●	$	**33.** Confirm that all operable windows used to provide natural ventilation are in working order and properly maintained.
●●	●	●●	$	**34.** Provide live plants to naturally clean air.
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●●●●	●●	●●●	$ $ $	**38.** Verify all Backflow Prevention Device inspections and certifications are up to date.
				The Things We Touch Recommendations a. Following the steps will help minimize the spread of contagions from frequently touched surfaces:
●●●	●●	●●	$ $	**39.** Install automatic or motion sensor door operators in lobby and other common areas.
●●	●●	●●	$ $	**40.** Designate building employee with personal protection equipment to open doors and operate elevator where automated controls cannot be provided.

COVID-19 TRANSMISSION	CODE REQUIREMENT	MARKET VALUE TO OCCUPANTS	RELATIVE COST	
●●●	●	●●●	$ $	**41.** Limit security keypads touch with optical scans, key fobs or voice operation.
●●●	●	●●●	$ $	**42.** Replace light switches with motion sensor controls.
●●●●	●●	●●●	$	**43.** Provide a station/dispenser for hand sanitizer in public areas and in proximity to elevators.
●●●●	●●	●●●	$	**44.** Provide a station/dispenser for personal protection equipment in building lobby or common areas.
●	●	●	$	**45.** Remove unnecessary furniture.
●●	●	●●	$	**46.** Provide removable and cleanable coverings over all furniture to remain.
●●●	●●	●●●	$	**47.** Provide removable and easy to clean films over frequently touch surfaces.
●●●	●●●	●●●	$ $	**48.** Install hands-free water faucets, hand soap dispensers, towel dispensers, and water fountains.
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				Humidity Recommendations a. Following the steps below will help optimize relative humidity in spaces:
●●●	●●●	●●●	$ $	**51.** Evaluate buildings heating source and design a plan for proper humidification.
●●●●	●●●●	●●●	$ $	**52.** Install humidification system in accordance with ASHRAE 2013b.
●●●●	●●●●	●●●	$ $ $	**53.** Maintain optimal relative humidity levels between 40% and 60%.
●●●	●●	●●●●	$ $ $	**54.** Install individual temperature and humidity controls for separate common spaces and tenancies.
●●●	●●	●●●	$	**55.** Inspect for evidence of dampness and mold and correct causes.
●●	●●	●●●	$ $	**56.** Provide exhaust fans in all damp rooms in accordance with ASHRAE 160.

COVID-19 TRANSMISSION	CODE REQUIREMENT	MARKET VALUE TO OCCUPANTS	RELATIVE COST	
				Cleanliness and Maintenance Recommendations
				a. Following the steps will help identify the presence of any pests
●●	●●	●●●	$ $	**57.** Inspect and seal walls between tenancies and interior/exterior to prevent pest from entering the building and moving freely between spaces.
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●●●	●●	●●●●	$ $	**59.** Interview tenants regarding the presence of pests.
●●●	●●●	●●●●	$ $	**60.** Create a pest mitigation plan.
				b. Following the steps will help improve building cleaning protocols
●●●	●	●●●	$	**61.** Limit the use of cleaning products to those that do not have a negative impact to the environment and do not contain harmful or caustic chemicals.
●●●●	●●	●●●●	$ $	**62.** Use Center for Disease Control certified disinfectants.
●●●	●●●	●●●●	$	**63.** Verify building has a trash collection schedule.
●●	●●	●●●	$	**64.** Post waste disposal instruction signs.
●●	●●●	●●●	$ $	**65.** Provide separate room for waste with designated air exhaust.
●●	●●●	●●●	$	**66.** Post recycle items disposal signs, label bins accordingly.
●●●●	●●	●●●	$ $	**67.** Consider using cleaning tools that are design to attract and capture dirt and bacteria, such as microfiber cloths and dusters.
●●●●	●●	●●●	$	**68.** To avoid cross-contamination of surfaces, institute a color-coding system to identify cleaning tools and where they are used.
●●●●	●●	●●●	$ $	**69.** Substitute standard vacuum cleaners with ones equipped with High Efficiency Particulate Air filters which can trap 99.9% of particles and pathogens.
●●●	●●	●●●	$ $	**70.** Minimize the use of mop buckets that can hold and spread dirty water. Consider using mops with built-in cleaning solution reservoirs.
●●●	●●	●●●●	$ $	**71.** Maintain a well-stocked supply of materials, do not wait until cleaning materials are depleted before replenishing.
●●●●	●●	●●●	$ $ $	**72.** Consider utilizing ultraviolet C light cleaning equipment to disinfect every morning before building is occupied.

COVID-19 TRANSMISSION	CODE REQUIREMENT	MARKET VALUE TO OCCUPANTS	RELATIVE COST	
				c. Following the steps will help establish regular maintenance, routine inspections and identify areas for improvement:
●●●	●●	●●●	$ $	**73.** Create and maintain a schedule to replace HVAC filters.
●●●●	●●	●●●	$	**74.** Clean all HVAC supply and return register regularly to prevent distribution of dust and particulates.
●●●●	●●	●●●	$	**75.** Initiate dust limiting cleaning regimen at all public spaces
●●●	●●	●●●●	$	**76.** Listen, investigate, and address tenant comments about smells, mold and pests promptly.
				Materials and Furnishing Recommendations a. Following the steps will help eliminate unhealthy interior environments:
●●	●●●●	●●●	$ $	**77.** Consider the use of materials fire resistive materials with low production of noxious gases when exposed to fire.
●	●●	●●●	$ $	**78.** If building has acoustical ceiling tiles, verify they made of materials free of formaldehyde.
●●	●●	●●●	$ $	**79.** Encourage the use of hard flooring surfaces that support ease of cleaning and are water and wear resistant.
●●●●	●●	●●●●	$ $ $	**80.** Promote the use of materials and surfaces that are resilient against the corrosive properties of germicides and cleaning agents.
●●	●●	●●●	$ $ $	**81.** Consider the use of materials certified as green and/or sustainable by third party accreditation agencies such as Green Seal or Blue Green Alliance.
●●●●	●●	●●●	$ $	**82.** As carpeted surfaces are potential reservoirs for germs and bacteria, their use should be limited to low traffic areas.
●●●	●●	●●●	$ $	**83.** Partitions should be built with smooth surfaces and free of crevices that could promote the accumulation of dust and the growth of bacteria.
●●●	●●	●●●	$ $	**84.** Consider limiting the use of wall coverings that can trap moisture and promote the growth of mildew or mold within their substrate materials.
●●●	●●	●●●●	$ $	**85.** Consider the use of low VOC paint coatings with microbicidal agents to reduce the risk of transmission of Staph, MRSA, E. coli, VRE and other pathogens.
●●●●	●●	●●●	$	**86.** Encourage the use of furniture and textiles with antimicrobial surface treatments.

COVID-19 TRANSMISSION	CODE REQUIREMENT	MARKET VALUE TO OCCUPANTS	RELATIVE COST	
●●●	●	●●●	$	**87.** Consider finishing wood surfaces with mold resistant natural zero VOC coatings such as tung and linseed oils or shellacs.
●●●	●	●●●	$ $	**88.** Encourage the use of antimicrobial metal alloys such as copper, brass and bronze for high contact surfaces and furnishings in high traffic public areas.
●●●	●	●●●	$ $	**89.** Consider reducing the use smooth stainless steel and plastic furnishings as viruses and bacteria can survive on these surfaces for a longer period.
●	●●	●●●	$ $	**90.** Select furnishings made with materials with a high recycle content.
●	●●	●●●	$ $	**91.** Avoid new furnishings made with foam cushions that contain polybrominated flame retardants, which are suspected of causing cancer.
●	●	●●●	$	**92.** When buying new furniture, request fabric blanket wrapping instead of plastic or foam, during shipping to help with off gassing prior to the furniture arriving at the building.
				Natural Light and Views Recommendations a. Following the steps below will help improve lighting to interior spaces:
●●	●●	●●●●	$ $ $	**93.** Provide sufficient daylight throughout to minimize use of electricity.
●●	●●	●●●●	$ $	**94.** Provide appropriate task lighting at work areas and workstation to reduce energy usage.
●●	●	●●●	$ $ $	**95.** Consider enlarging existing windows or adding new ones.
●●	●	●●●●	$ $	**96.** Where possible replace solid doors with glass doors to allow more light into spaces.
●	●	●●●	$ $ $	**97.** Where privacy is a concern, add transoms above doors or translucent sidelights.
●	●●	●●●●	$ $	**98.** Add skylights to penthouses or roof to introduce daylight.
●	●	●●●	$ $ $	**99.** Consider the installation of motorized active light monitors to provide diffused daylight to lower stories.
●	●	●●●	$ $	**100.** Consider using lighter paint colors that reflect light in support of daylight strategies.

COVID-19 TRANSMISSION	CODE REQUIREMENT	MARKET VALUE TO OCCUPANTS	RELATIVE COST	
				b. Following the steps will help provide outdoor views and green spaces to building occupants:
●●	●	●●●●	$ $ $	**101.** Whenever possible, provide views to the outside for occupants.
●●	●	●●●	$ $	**102.** Incorporate natural elements and plants in the design of interior spaces.
●●	●	●●●	$ $	**103.** Consider the use of open floor plan layouts to improve views to the outside.
●●	●	●●●●	$ $ $ $	**104.** Create landscaped outdoor spaces on available building terraces or roofs.

An open gathering space in a London office building features natural light and greenery. (Courtesy of Piqsels)

“Katz Architecture works as a partner to building managers, design professionals, and city agencies to ensure the ongoing integrity of our built environment.”

NEXT STEPS

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About This Series

Throughout history, the built environment has transformed in response to the psychological and physical reactions to disease. Likewise, there is a long tradition in architecture of retrofitting buildings for health and hygiene.

In New York City in 1832, a cholera outbreak attributed to the lack of clean water, killed 5,000 people over the course of three months. In response, five years later, work began on the Croton Aqueduct and a complex system to supply enough water for indoor plumbing - an unheard of luxury before that time.

America's first tuberculosis sanatorium opened in 1885 at Saranac Lake, in Upstate New York where patients were encouraged to sit in wide, glass-enclosed "cure porches" to take in natural light and fresh air. The idea of a sleeping porch or sunroom thus worked its way into the architectural vocabulary of residential buildings from that point forward.

In the days and weeks ahead, New York will face some very difficult challenges. Spaces that seemed adequate before the pandemic will no longer function properly. The building lobby, the office, the restaurant, the grocery store, the apartment, even our green spaces will all require more permanent measures of separation and cleanliness. All of this will need to be done with great speed and with severely limited budgets.

Katz Architecture focuses on the restoration, renovation, preservation, and maintenance of the physical environment. In that capacity, our services include feasibility studies, design, code and zoning consulting, team formation, filing and construction administration services. We have been in practice since 2002, and remain committed to the health, well being, and future of this city.

We continue to actively research the specific architectural implications of the COVID-19 pandemic and the potential new types of spaces and uses that will result from it. We view this as an extension of the work we have always been doing. As a firm, we remain firmly committed to finding order and creating light-filled, hygienic, and uplifting places for people to live, work, and play – and we continue to be ready for those challenges and opportunities.

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