



Coworking & Office Building Pere IV

Recommendations for construction in the post Covid 19 era

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The new normal

The worldwide impact of the SARS-CoV-2 virus will likely result in new standards of infection prevention becoming the social norm, just like the adoption of new practices in hygiene contributed to the development of Medicine in the nineteenth century.

The present document includes a list of recommendations to reduce the risk of transmission of infectious diseases in public and private buildings, assuming that viruses can spread through air, water, or via contaminated surfaces.



General considerations

Recommendations to limit the entry and transmission of infectious agents and contaminants in buildings

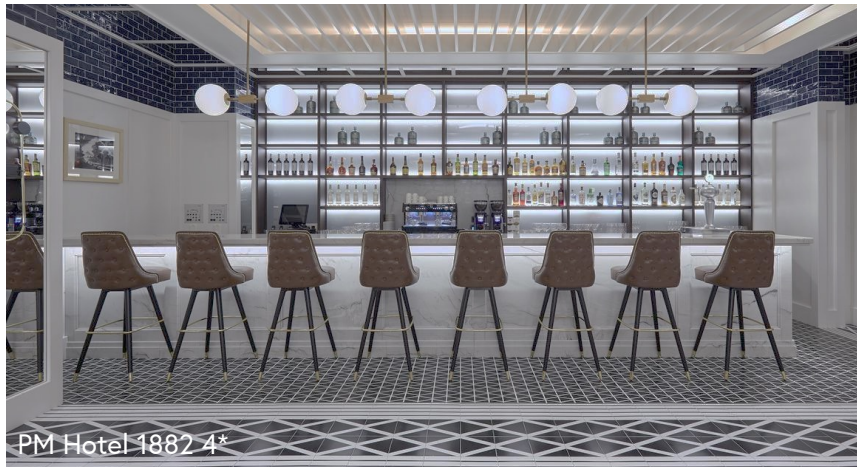
Access areas

- Adapt entrance halls, foyers and vestibules to include room and equipment for control, protection and disinfection
- Include double door systems with an intermediate segment to isolate the indoor from the outdoor area
- Consider larger and antimicrobial floor mats
- Adapt and monitor maximum occupant capacity



Common areas

- Increase the size of common areas and limit their occupant capacity in order to ensure social distancing, especially in elevators, canteens, restaurants and cafeterias, and other shared facilities such as meeting rooms or locker rooms.
- Encourage the use of stairs to guarantee social distance and de-congest elevator traffic.
- Promote hygiene by installing additional disinfection stations



Materials

- Prioritize the use of antimicrobial materials when selecting pavement, furniture and textile elements. Consider materials that are resistant to chemicals to avoid damage during disinfection
- Avoid the use of fabric in furniture and reduce the amount of decorative elements
- Define an adequate geometry for baseboards, floor joints and corners to ensure easy disinfection and cleaning, e.g. edge trims.



Interaction with the building



- Prioritize the installation of contactless and IoT technology in the interaction points with the building.

Examples:

- Buttonless elevators, voice and motion recognition elements for automatized doors and toilet facilities, automatic lighting and climate control systems, and connected vending machines that allow purchases via smartphone.
- Install self-cleaning elements for items where touch interaction cannot be avoided
- Control the periodic disinfection of desks, door handles, elevator buttons, light switches, faucets, phones, and IT hardware.

Back Fish Nanjing

Maintenance

- Update and define new standards to certify the cleanliness of buildings during and after construction or refurbishment
- Implement maintenance plans for infection prevention and control. These should ensure the health of users and verify the effectiveness of the established cleaning and hygiene protocols.



Installations

Implement and promote the use of centralized Building Management Systems (BMS) to guarantee a clean environment

Hygiene and disinfection

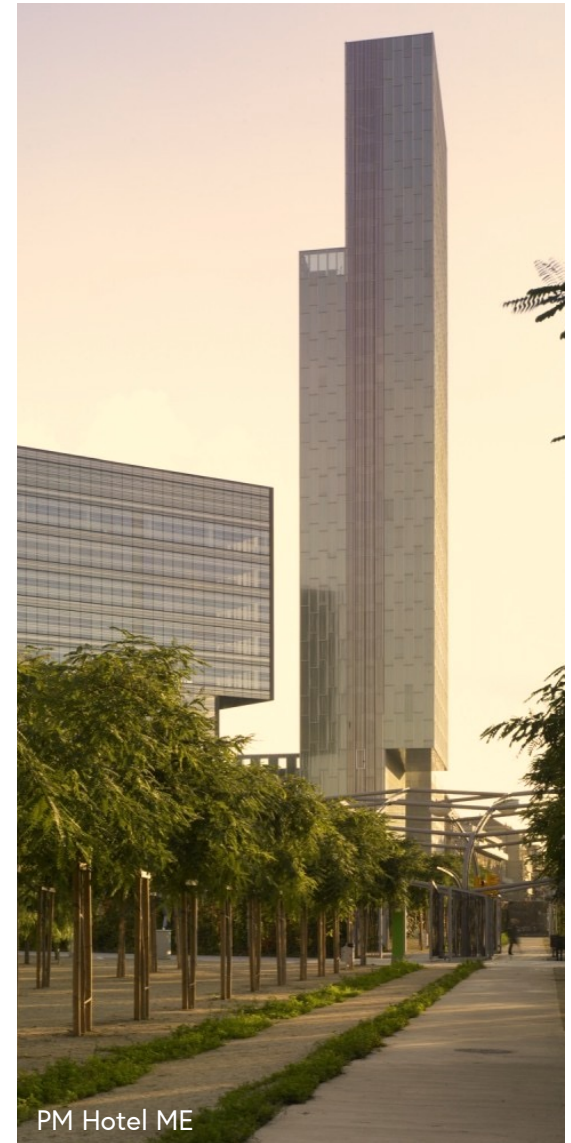
- During the design phase, consider systems for occupancy monitoring, such as thermal, PIR or ultrasonic solutions
- Install IoT sensors to guarantee social distancing or limit capacity at the workplace
- Consider additional power outlets for new contactless devices
- Install chemical sensors for particle and pathogen detection
- Integrate UV disinfection systems and photocatalytic oxidation (PCO) purifiers to be activated when occupants are not present in the building
- Install air-cleaning devices with HEPA filters



PM Hotel Hyatt Barcelona Tower

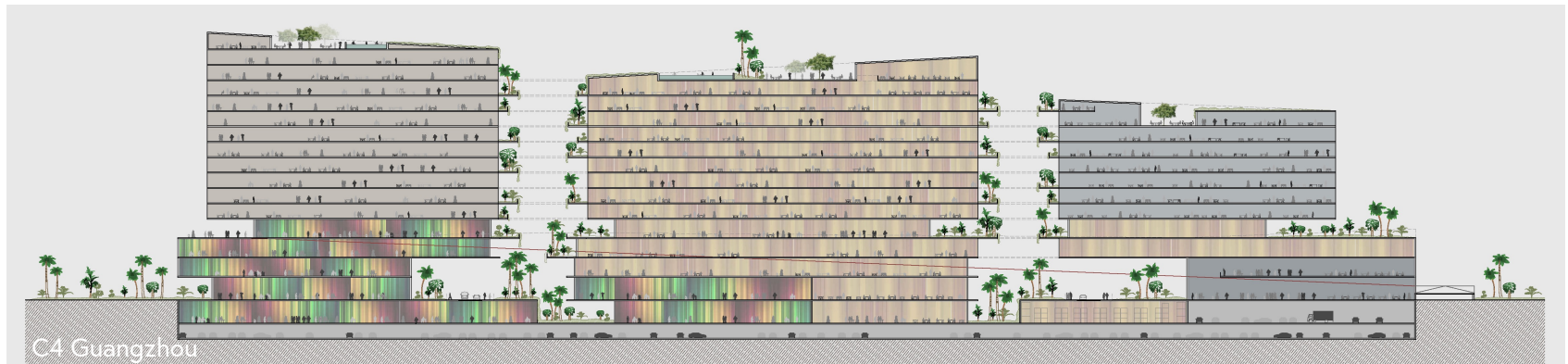
HVAC systems

- Avoid systems that exclusively rely on recirculated air. Favor all-air systems with energy recovery
- In central systems, add HEPA or carbon filters. Consider absorbers of polluting gases and volatile particles, hygienizers with UV radiation, or photocatalytic oxidation to remove microscopic particles
- Favor low-speed air conditioning and heating systems that minimize the displacement of large quantities of air within the room.
- Install multi-pipe units with heat recovery and allow individual unit control
- Replace thermostats with contactless alternatives



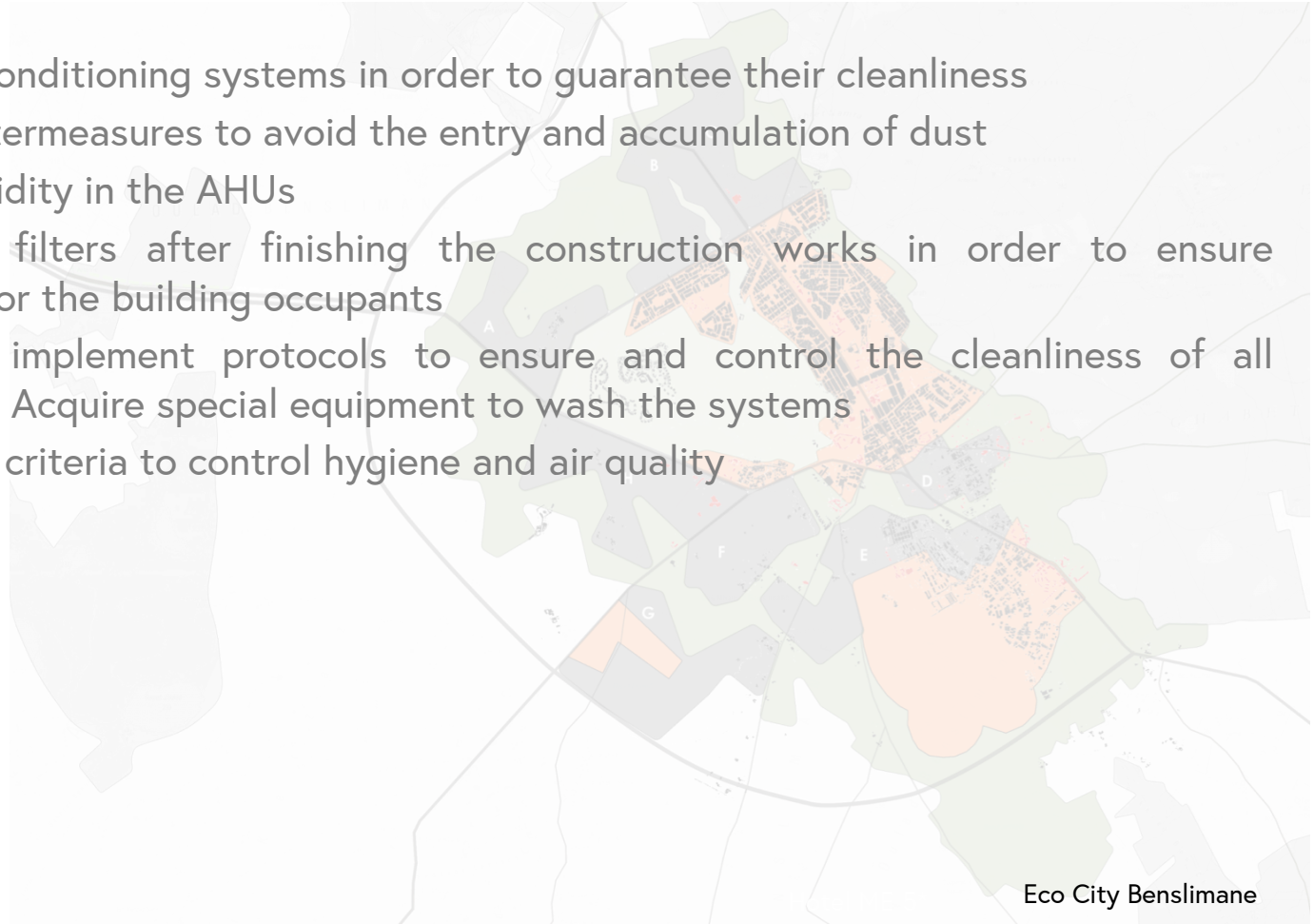
Ventilation and humidity

- Increase the inflow of clean air per hour and occupant via forced ventilation and heat recovery or freecooling to minimize the amount of contaminated air
- Allow natural ventilation
- Ensure proper ventilation in waiting rooms and corridors
- Control humidity in the air handling units (AHUs) and keep relative humidity between 30% and 50% in order to prevent virus propagation and survival
- In existing installations, add humidity control devices for different rooms
- Keep lower pressure in intermediate spaces (e.g. vestibules), restrooms and locker rooms



Construction and maintenance

- Protect air-conditioning systems in order to guarantee their cleanliness
- Define countermeasures to avoid the entry and accumulation of dust
- Control humidity in the AHUs
- Change air filters after finishing the construction works in order to ensure cleanliness for the building occupants
- Define and implement protocols to ensure and control the cleanliness of all installations. Acquire special equipment to wash the systems
- Define audit criteria to control hygiene and air quality



Building types

Public buildings, office buildings, housing and urbanism

Public buildings (I)

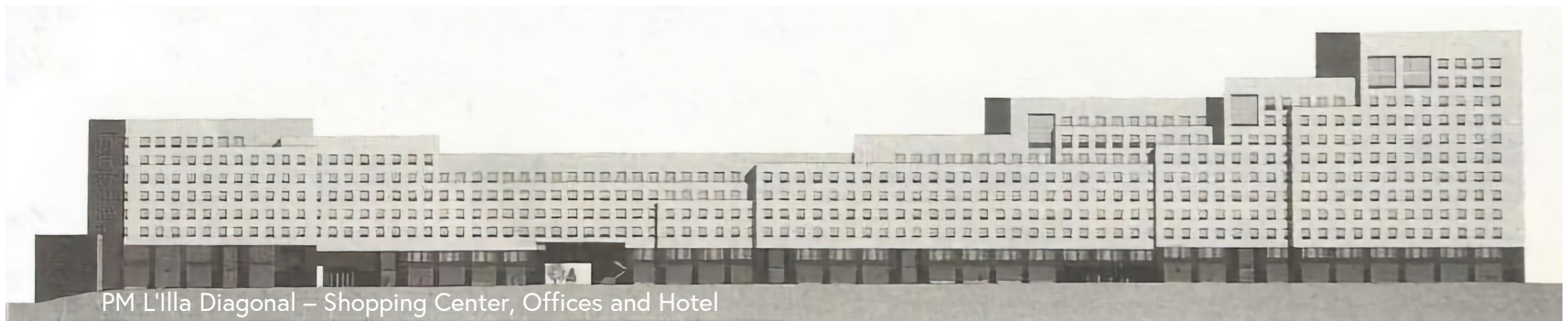
- Access control:

In shopping centers and large buildings, use thermal cameras and image-processing technology to count and monitor occupancy

Control body temperature in indoor public spaces

Include IR sensors for temperature monitoring in small businesses

In buildings with multiple entrances, limit the inflow and outflow and favor one-way access points. Centralize inflow in one single access point



Public buildings (II)

- **Reception or disinfection areas:**

Design "airlocked" spaces by maintaining lower pressure at intermediate areas connecting the street with the entrance halls

Provide hand sanitizer and protection equipment

Establish disinfection protocols in package delivery facilities and increase their size

- **Common areas:**

Increase the size of elevator lobbies to avoid congestion

In public toilet facilities, install automatic faucets, and contactless soap and hand towel dispensers. Design cubicles to be equipped with a toilet and a sink

Increase the size of locker rooms and their access areas

Plan separate rooms to isolate individuals who develop symptoms of infectious disease until their evacuation

Office buildings

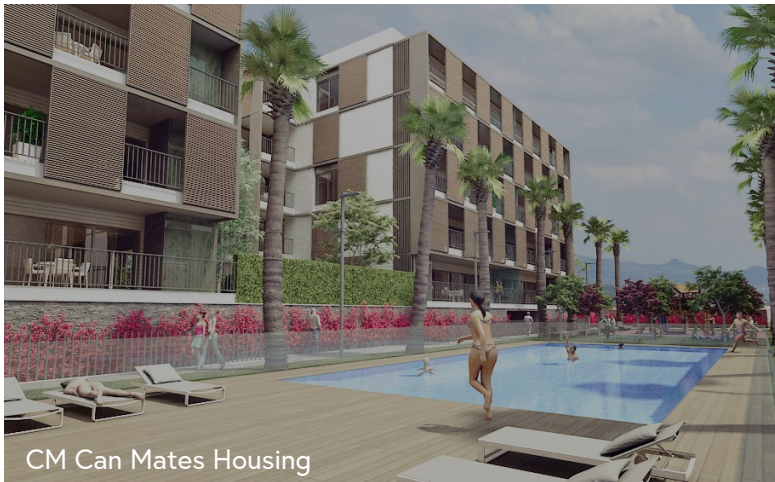


- Raise the occupation ratio from 6-9 sqm up to 12sqm per person to ensure compliance with distancing protocols.
- Increase the size of workspaces to guarantee a distance of 2m. Alternatively, install protective screens between desks and cubicles
- Avoid hot-desking. Assign personal desks instead
- Avoid sharing electronic devices and office material
- Adapt coworking spaces to the new distancing guidelines, especially in common areas such as pantries. Shared facilities shall be equipped with hand sanitizers

F1, F2 Hangzhou

Housing (I)

- Design adaptable spaces that enable both work and leisure-related activities. Consider additional needs for families with children (e.g. playgrounds)
- Optimize the layout of outdoor spaces to ensure enough room for sports, walking or playing.
- Adapt package reception facilities to new e-commerce needs: replace traditional mailboxes with larger lockers for parcel delivery



Housing (II)

Distribution:

- In larger apartments or houses, design spaces with well-defined purposes: work and study, play, fitness and leisure
- In smaller apartments, prioritize open and modular spaces with movable partition walls and furniture in order to adapt to different needs and purposes



Housing (III)

- Apartments and houses should allow work and leisure-related activities and have a "live, work and play" structure according to the needs of its occupants
- Use vestibules as a transition area to keep shoes and outerwear used outside
- Adapt hallways to provide additional space for playing or walking
- Make use balconies for reading, eating and gardening and adapt them accordingly
- Consider storage rooms and larger closets
- If possible, plan a larger room with adjacent toilet facilities where an individual can isolate and live comfortably for extended periods of time
- Prioritize natural lighting and cross ventilation

Urbanism

- Density and cleanliness factors shall be balanced in future urban planning projects in order to guarantee the sustainable development of cities
- Decentralize hospitals and schools in urban areas, leading to more locations of less volume each
- Encourage hygiene in public parks, especially in those with children playgrounds and fitness equipment
- Increase frequency of public transport to avoid congested vehicles and ensure social distance
- Encourage the use of clean transportation, e.g. bicycles or electric vehicles
- Increase the amount of outside tables in restaurants, cafés and bars

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