Circular No : URA/PB/2022/01-CUDG
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Date : 1st March 2022

CIRCULAR TO PROFESSIONAL INSTITUTES

Who should know
Building owners, Developers, Qualified Persons

Effective date
1st March 2022

SCREENING OF MECHANICAL AND ELECTRICAL SERVICES AND CAR PARKS

This Circular supersedes Part B of the Circular: URA/PB/2004/29-CUDD dated 6 Sep 2004 on "Guidelines to encourage more innovative and better design of rooftops".

1 URA has undertaken a review of the existing screening guidelines for Mechanical and Electrical Services and Car Parks. The review incorporated feedback from the industry and took into account built examples.

2 The revised guidelines aim to promote the effectiveness of the screening while ensuring that the ventilation requirements for the proper functioning of Mechanical and Electrical equipment and fire safety requirements are not compromised. The guidelines are intended to provide clarity on what would be considered effective screening. Alternative proposals that achieve effective screening will be considered.

Areas where guidelines will apply

3 The screening guidelines will be applicable to all new erections, reconstruction works, major A&A works, cladding and roofing works within the Central Area, Urban Design Areas[1] outside of the Central Area, as well as government land sale sites and strategic redevelopment sites. See detailed guidelines in Annex 1 and built examples in Annex 2.

4 I would appreciate it if you could convey the contents of this circular to the relevant members of your organisation. You are advised to refer to the Development Control Handbooks and URA's website for updated guidelines instead of referring to past circulars.

5 For other information on the master plan, urban design guidelines, private property use and approval, car park locations and availability, private residential property transactions, and conservation areas and buildings, use URA SPACE

[1] A list of Urban Design Areas can be found at https://www.ura.gov.sg/maps/?service=SBUDCM

(Service Portal and Community e-Services). This is an online portal packed with useful data and visualisation to help building professionals, business operators and the general public in their decision-making. It consolidates detailed information on land use and private property into a one-stop platform presented on geospatial maps. For feedback or enquiries on this circular, please email us.

Thank you.

FUN SIEW LENG (MS)
CHIEF URBAN DESIGNER
for CHIEF EXECUTIVE OFFICER
URBAN REDEVELOPMENT AUTHORITY

Annex 1
Details of Guidelines

As a principle, successful screening of above-grade car parks and Mechanical and Electrical Services is achieved when it is designed as an integral part of the façade, building envelope and/or roof crown expression.

Screening of Mechanical and Electrical Services[2]

1 All rooftop Mechanical and Electrical services, such as air-conditioning (A/C) condenser units, water tanks, lift motor rooms, etc., shall be well integrated within the building envelope and visually screened from the top and all sides in accordance with the performance guidelines stated in paragraph 7:

a) If proposed at the rooftop, the design of the roof crown should take into consideration screening of such equipment;

b) For intermediate Mechanical and Electrical floors in high-rise towers, an extension of the façade cladding is an acceptable screening solution, provided that these floors are not excessively lit internally at night and thus not visible from the streets.

2 To allow for sufficient air circulation to A/C equipment such as cooling towers or air-cooled chillers where ventilation is necessary, localised screening can be omitted directly above such A/C equipment. The remaining areas should be effectively screened on top.

3 For developments served by multiple independent Mechanical and Electrical services, Mechanical and Electrical equipment, such as A/C condenser units, shall be neatly mounted on the external building facades and ledges, visually well-screened from all sides. There is no need for screening on top, to allow for air flow.

Car Parks

4 Above-grade car parking levels shall be fully screened in accordance with the performance guidelines stated in paragraph 7. In addition, the façade design of all proposed above-grade car parks shall be considered as part of the overall architectural treatment of the development.

5 Rooftop car parks shall also be visually well-screened from the top according to the performance guidelines as stated in paragraph 7.

6 Alternative screening measures can be considered if effective screening of light from headlamps from parked cars and unsightly services can be demonstrated. Additional submission requirements outlined in paragraph 9 will apply.

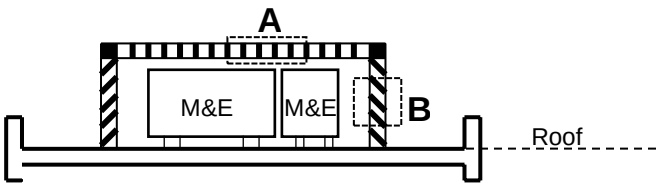
[2] Last updated on 19/01/2024

Performance requirements for screening

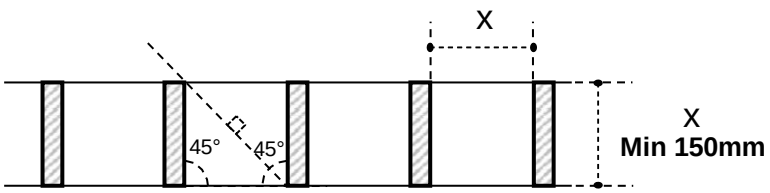
7 The requirements for the different forms of screening are as follows:

a) Trellis/ Louvres
The spacing of trellises, louvres or other similar types of construction used for screening shall be equal to or less than the depth of the screening element. The spacing to depth ratio is hence minimally at a ratio of 1:1. In addition, each screening element shall have a minimum depth of 150mm to ensure they are effective in terms of visually screening the services behind them. The screening elements shall be orientated to cut off views of the services from major public spaces, the street level, and surrounding buildings. See details A and B.

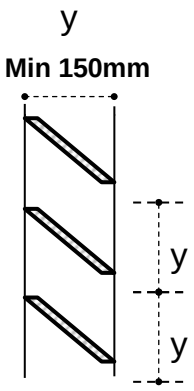
An example using trellises / louvres



Detail A – Sectional View of Screening Elements



Detail B – Sectional view of Screening Elements

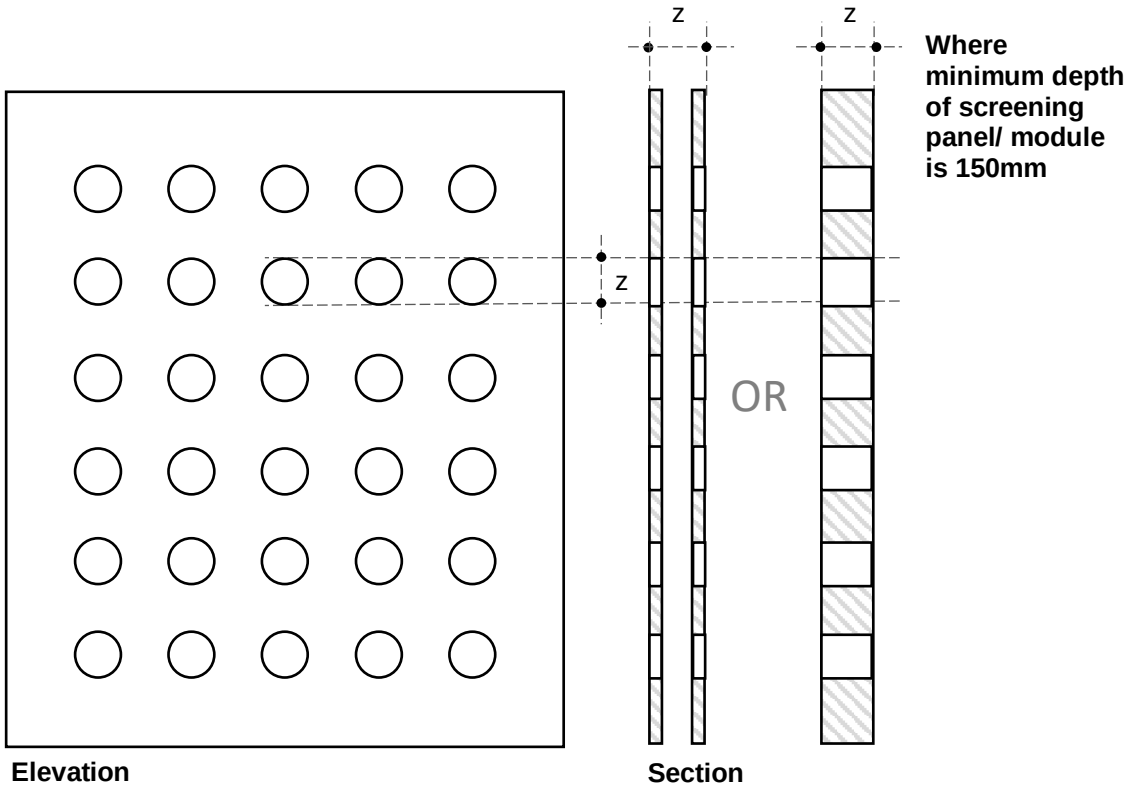


b) Perforated Panels
Perforated panels with insufficient depth (thickness) tend to be ineffective in providing visual screening, especially when the interior spaces are lit up. Hence, perforated panels that do not fulfil a minimum depth requirement of 150mm will not be accepted as a screening solution.

In line with the design principle behind trellises and louvres, if perforated panels are used, the depth of screening shall have a minimum depth of 150mm, for example by using double layer panels constituting a depth of 150mm. The size of opening shall be equal to or less than the depth of the screening. See detail C.

With this stipulation of minimum depth and size of opening to correspond to the depth of the panel, there is no more porosity requirement for the perforated panels. This is also aimed at reducing conflicts with natural ventilation and fire safety requirements.

Detail C



8 The revised performance guidelines are intended to provide clarity and transparency. Applicants can propose alternative screening types other than the examples shown above, provided they meet the performance requirements of effective visual screening from the street level and the surrounding developments. See Annex 2 for examples of effective screening design that have incorporated effective screening principles.

Submission Requirements

9 Details of the design, layout and material used for the screening of services shall be clearly annotated in the submission drawings to comply with the above guidelines. Where alternative design solutions are proposed that do not comply

with the performance criteria stated in paragraph 9, detailed drawings including sightlines analysis, 3-D digital models, etc, demonstrating the effectiveness in screening the car parks and rooftop Mechanical and Electrical equipment, are required to be submitted for detailed design evaluation.

Annex 2

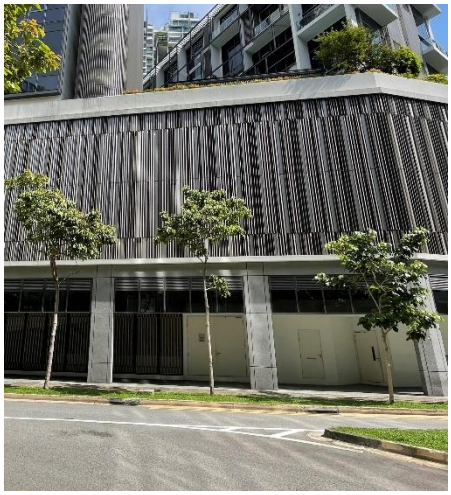
BUILT EXAMPLES OF EFFECTIVE SCREENING

Screening of Mechanical and Electrical Services

Marina Bay Financial Centre
Screening of Mechanical and Electrical Services is well integrated with the façade and roof crown expression.

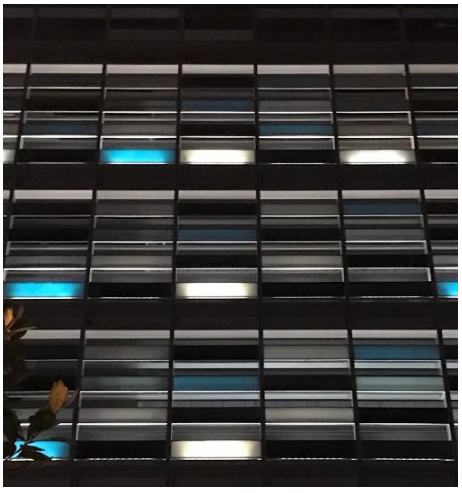
The Central
Screening of Mechanical and Electrical Services by angled louvers of varying directions with sufficient depth

Screening of Car Parks



M Social
Screening of car park with by angled louvers of varying directions with sufficient depth

<u>Icon</u>
Screening of car park with louvers with sufficient depth.



<u>Guoco Tower</u>
Screening of car park by two rows of panels that form part of façade expression.

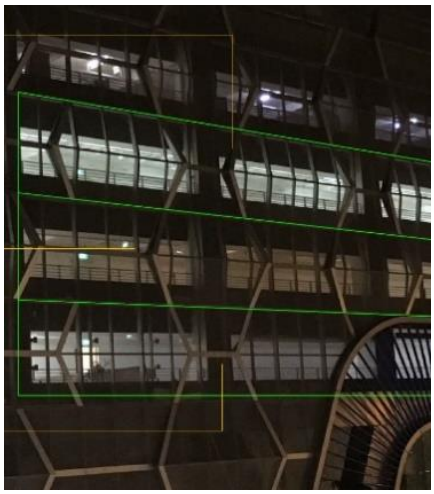
BUILT EXAMPLES OF LESS EFFECTIVE SCREENING

The following has been observed to be less ineffective:

- Screening with insufficient depth; and
- Screening solely via greenery or night lighting as this is dependent on their continued upkeep and maintenance

A/C ledges: Louvers with insufficient depth

Car parks: Relying solely on greenery for screening is not effective as greenery may thin out over time and is not effective as a screening device on its own.



Car parks: Perforated screening material lacks sufficient thickness or depth and is ineffective as a screening device when the interior of the car park is lit.

Car parks: Louvers without sufficient depth are ineffective as a screening device when the interior of the car park is lit.