ARCHITECTS EDITION

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VISUAL

ASH & LACY

Scale & Distance

INTRODUCTION

Introducing a perforated façade into a building's design affords the designer a plethora of advantages relating to the building's appearance, functionality and internal environment. Without doubt, one of the key drivers in modern architecture is creating a building that delivers a striking first impression. In this edition, we will explore the topic of Scale & Distance considering how we view, what we view, where we view it from and how this influences design considerations.

FREE AREA TOOLS

CONTENTS

WHAT APERTURE SIZE SHOULD I CONSIDER?

There are some practical considerations surrounding the maximum and minimum hole sizes that can be perforated into certain materials, and different manufacturing processes involved depending on the hole size required and end-product sought.

PERFORATING PATTERNS

When perforating, minimum possible hole size is often dictated by the thickness of the sheet material:

1mm thickness = 1mm minimum diameter

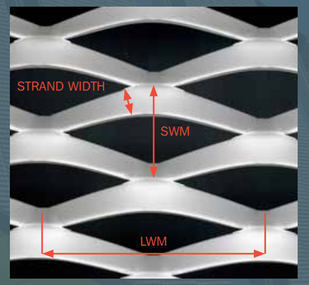
There can be some exceptions to this equation but it often requires specific tooling and specialised design input from the manufacturer.

Maximum hole size is limited by the resulting strength and rigidity of the panel when perforated, larger holes by nature will have a more significant impact on panel deflection when used in a rain screen cladding application.

EXPANDED PATTERNS

Architectural expanded patterns can be manufactured from as small as 10mm Long Way of Diamond up to 250mm, in a range of thicknesses from 1.5mm up to 5mm. The only fixed dimension is the is the Long Way of the Diamond. All other aspects of the mesh can be altered to scale with the project.

Expanded mesh tooling is relatively low cost and easy to manufacture so a bespoke sized mesh can by designed to suit a specific scale. Especially useful where the mesh interacts with windows or other features on an elevation.

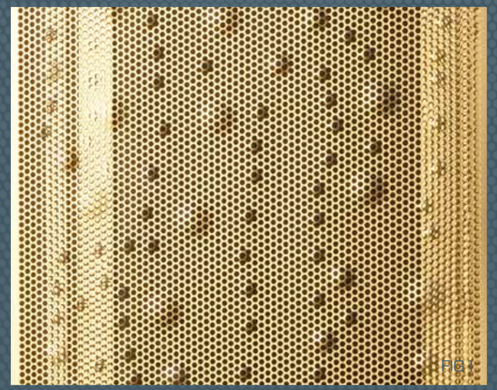


ASH & LACY CAN MANUFACTURE TOOLING TO MEET THE NEEDS OF EACH INDIVIDUAL PROJECT.

Project: Techspace One, Daresbury

SMALL HOLES

- Give better definition close up when producing images/patterns
- Forms can be placed onto of the basic pattern to create further impact fig 1.



LARGE HOLES

- Give better definition at a distance
- Economical to produce

A PRACTICAL NOTE

Depending on the position of the perforated cladding on the building, consideration should be given to safety and the practical implications during the life of the building.

- Position on the building – at ground level, medium to large perforations can potentially create 'finger traps' for pedestrians
- The post box effect – at ground level in pedestrian areas, large perforations or gaps can be used to dispose of litter
- Extreme climbers – if the apertures are large enough that a hand or foot could fit the building. We demonstrate a technique on how to overcome this on page 8-9.

HOW DOES APERTURE SIZE AND FREE AREA CONTRIBUTE?

Remember – free area is the number of perforations/holes in a given area and is often conveyed as a percentage. Free area influences the visual appearance of a pattern/mesh, and its physical performance.

It is possible to create the impression of a translucent veil by controlling the scale & free area of the perforated pattern. If smaller holes with a high free area are selected, when viewed from a distance the holes disappear and the effect can be to that of glass as seen in fig 1. As the free area is reduced further the mesh becomes less transparent fig 2.

The same veil affect can be achieved with a larger hole but works better on large scale elevations and the outline of the larger perforations can still be registered when viewed from distance as seen in fig 3.

It is therefore possible to design and scale a pattern to fit a specific space and its control visual impact with the added benefit of being able to specify practical requirement such as airflow/security.

VISDIAL

FIG 1

FIG 2

FIG 3

HOW TO CREATE THE EFFECT OF A LARGER HOLE OR SHAPE?

TAILOR THE PERFORATION SIZE

Small perforated hole sizes combined with high density coverage allows a high level of light transmission through the material, this can create the impression of a large open area when viewed a distance. Using this type of pattern configuration in low level areas can have the added benefit of improving security, by retaining strength in the material. Choosing to use large holes will also achieve a similar effect, when positioned alongside large areas of solid material it is easy to create edge definition. A popular use for this technique in the architectural sector is to achieve lettering designs.

PERFORATION SHAPE

By using special tooling, perforations can be formed in a specific shape, to further refine the outline of the proposed perforated design more accurately.

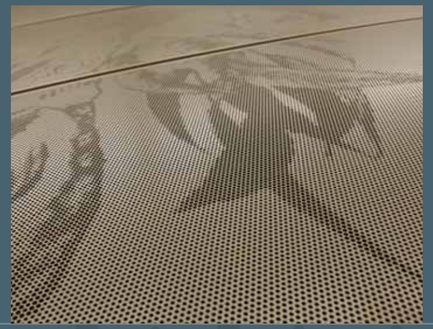
Project: Wolverhampton Girls School, West Midlands

HOW WILL MY DESIGN BY AFFECTED BY PERSPECTIVE?

VIEWING DISTANCE

Consider the size of your canvas. When viewing a façade from a distance, patterns or images might be read across the whole elevation or building in its entirety. Therefore, the scale of the image, influenced by the hole size and free area chosen, will need appear over a large area.

In this scenario, conversely, when viewing a single panel from a short distance, the overall design may not be visible, or will only form a part of the full picture.

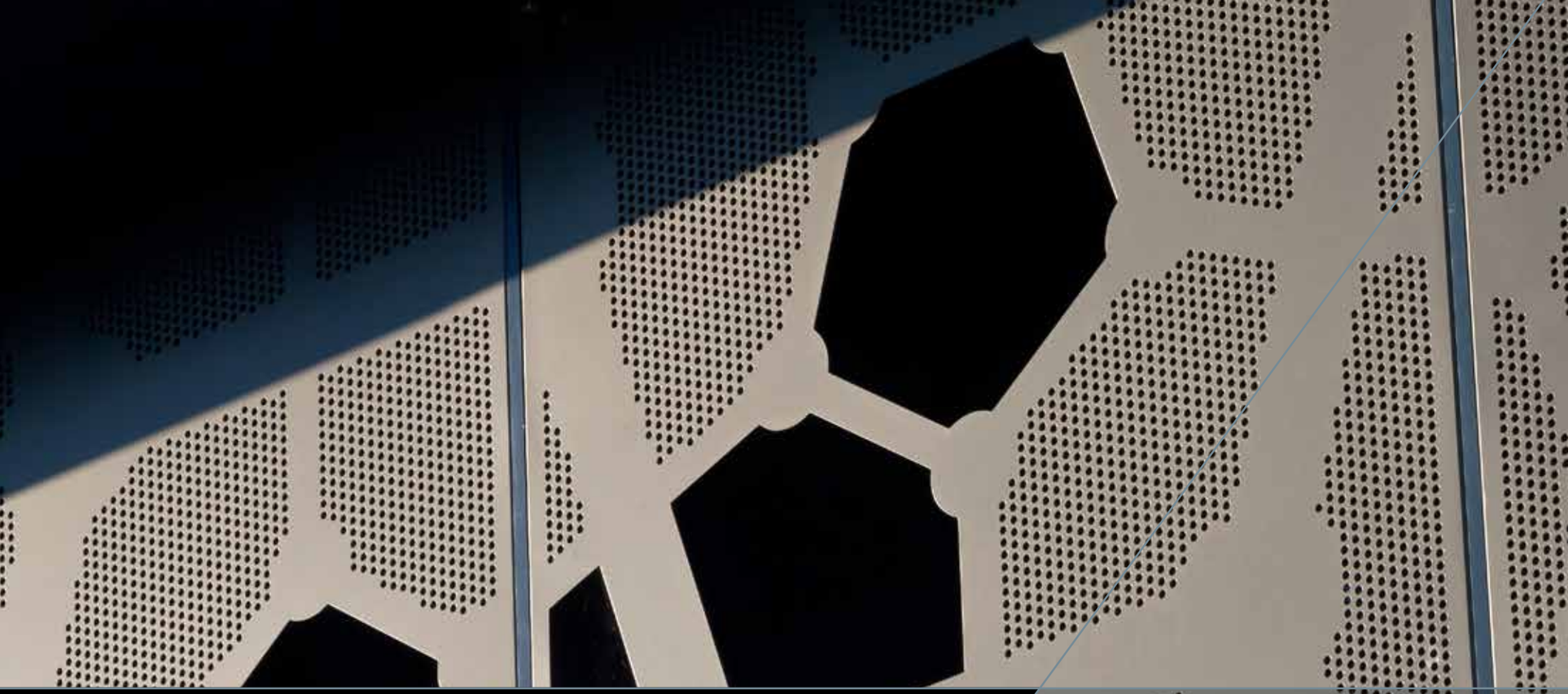


VIEWING ANGLE

From certain angles it may be not possible to read visible perforated patterns on a façade. For example, when looking up at a building, the scale at which your eyes read the pattern is affected by your proximity to the low-level perforations.

Ash & Lacy can assist architects to decide on the correct scale to suit the location of the building and the perspective from which it will be seen. With professional 3D modelling in-house, we have the ability to bring a project design to life, even at the early stages of conception.

Project: Liverpool Lime Street, Liverpool



The next issue of the VisuAL series 'Design & Images' and will explore how perforated facades can incorporate visual imagery to foster a unique building identity.

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