



# SPECIFYING ROOF TERRACES

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A SPECIFYERS GUIDE TO USING  
ROOFLIGHTS FOR TERRACE ACCESS

**GLAZING**  
**VISION**

## SPECIFYING ROOF TERRACES

|  |    |
|--|----|
| Meet the experts                       | 4  |
| Why have a roof terrace?               | 6  |
| Specification considerations           | 8  |
| Building regulations and standards     | 10 |
| Access and safety considerations       | 14 |
| Getting the design and structure right | 24 |
| Loadings/supporting the terrace        | 26 |
| Logistics                              | 29 |
| Drainage                               | 30 |
| Thermal design                         | 31 |
| Fire performance                       | 32 |
| Warranties                             | 32 |
| Landscape design and features          | 34 |
| Planting                               | 38 |
| Lighting                               | 45 |
| Hard Landscape                         | 48 |



## MEET THE EXPERTS

Our team of roofing, terrace, planting and landscape design experts offer the best advice for designing the perfect terrace build.



### Guy Barter

RHS Chief Horticultural Advisor has experience in the commercial horticultural world and now runs the RHS Members' Advisory service.



### Jim Hooker

Jim Hooker is managing director at membrane roofing consultancy and provides independent technical advice on flat roofing. Jim has over 30 years experience working with insurance companies, product manufacturers and contractors.



### Joost Becking

Terrace conversion and rooflight expert, Joost has many years experience dealing with all aspects of terrace design and build and now specialises in roof terrace access products as Director of Glazing Vision Europe.



### Penny Carter

Penny Carter is an experienced landscape architect who works with clients and property developers across the UK. One of her career highlights was a landscape display at the Westonbirt Arboretum.



### Trevor Lang

Trevor Lang is technical manager at Alumasc waterproofing, who provides technical specification and support for green roof products and systems.

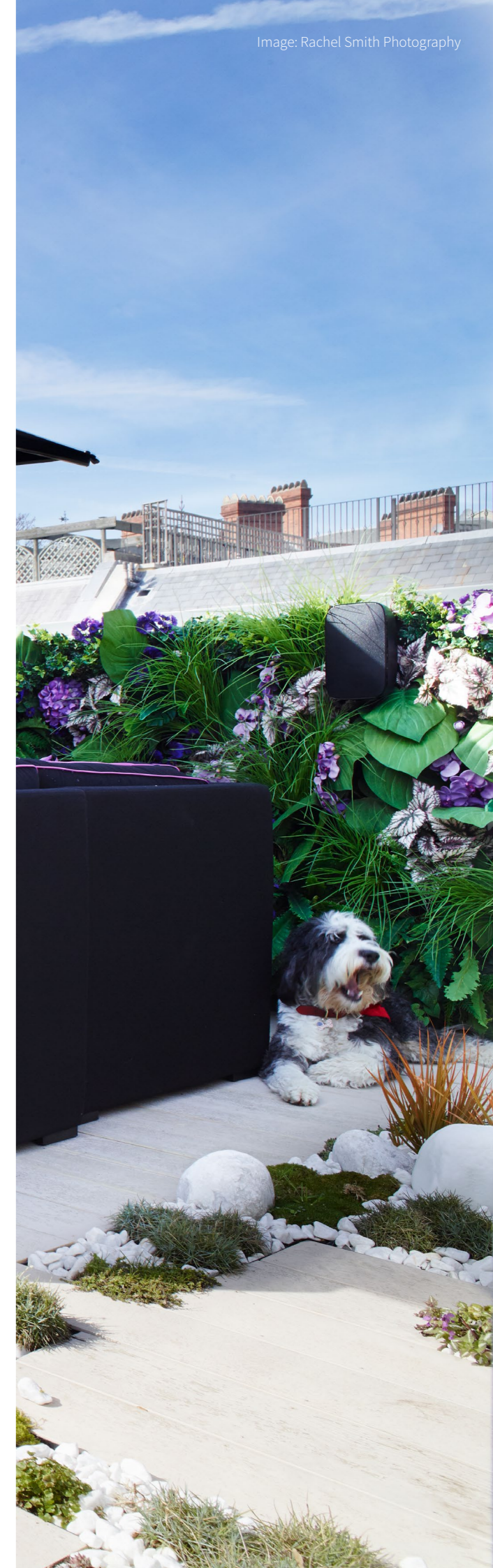
## OUTDOOR LIVING

In recent years, there has been an emerging trend of blending the lines between indoors and outdoors. Rooflights, bi-folding doors and natural materials have all helped to 'bring the outdoors in' - and now designers and homeowners are beginning to turn outdoor areas into luxurious and functional living spaces, thus bringing the indoors outside.

'Outdoor living' is an important consideration in the design of a building; using rooftop space to create a roof terrace will not only increase the appeal of a property but will also add value to each development.

In this ebook, our panel of experts provide a comprehensive guide to designing roof terraces that not only affords plenty of outdoor space but which also adds value to modern living.

It will look at the benefits of outdoor living, provide advice for creating a functional and safe space, consider issues such as design, structure and access, and give landscaping ideas for creating an outdoor space to meet a range of individual project requirements.



## WHY HAVE A ROOF TERRACE?

One way to increase the amount of outdoor living space on a property is to build a roof terrace. In many buildings, the roof area is left underutilised, and a roof terrace can help you to make the most of the space, while also creating a stylish multi-purpose area perfect for relaxing, entertaining and even working.

Space is often at a premium in the UK. In most of the country, around 20 per cent of households live in flats, many of which have no garden or balcony space. The problem is compounded in London where just over half of the accommodation is apartments.

Adding a roof terrace, in either a new-build or existing building, is an effective way to make the most of an otherwise unused area. The result: homeowners have a beautiful outdoor space, even in urban environments, while property developers see a higher return on investment.



## IS IT A ROOF TERRACE OR BALCONY?

The terms roof terrace and balcony sometimes get used interchangeably. Although both can provide much-needed outdoor space in urban environments, they're not the same things.

A roof terrace is defined as an outdoor area that's directly above an indoor space, while a balcony projects from the side of a building.

## THE BENEFITS OF SPENDING TIME OUTDOORS

In the modern world, where many of us work in offices and spend much of our free time consuming media or doing household chores, we often struggle to get sufficient amounts of fresh air and sunlight - two things that are important for our health and wellbeing.

Getting plenty of fresh air has been found to be good for digestion, while improving blood pressure, lowering your heart rate, giving you a boost of energy and clearing your mind.

Meanwhile, exposure to natural light can increase your vitamin D levels. Research has also shown that natural light can help people be more productive, happier and calmer.

In addition, spending time outdoors has been shown to keep stress levels down. Environmental psychologist Judith Heerwagon told the Huffington post that just looking at a garden or trees, or going for a walk can make you feel calmer. "There's something about being in a natural setting that shows clear evidence of stress reduction" she added.

It's thought scent could be another factor that helps to reduce stress. The smell of flowers like jasmine, lilacs and roses have been shown to decrease stress and increase relaxation, while the scent of fresh pine has been shown to reduce depression and anxiety.

With so many benefits to spending time outdoors, it's easy to see why adding any type of outdoor space can make a property more attractive to homeowners and potential buyers - and a roof terrace is an ideal way to achieve this, without compromising on the dimensions of the indoor living areas.

## SPECIFICATION CONSIDERATIONS

Designing a roof terrace isn't as simple as putting a few potted plants up on top of a home and calling it finished - there's a lot to think about to ensure the space is safe, easy to access and conforms to the Building Regulations.

### ROOF TYPES

The first step in creating a roof terrace will be to determine what type of roof the existing structure has.

- Pitched roofs - For obvious reasons, sloped roofs are not ideal candidates for roof terraces. However, flat spaces can be created either by building up an external wall or cutting into the roof. Getting planning permission for this type of project can often be difficult.
- Flat roofs - In most cases, an existing flat roof will be used to create a roof terrace. In concrete or steel frame buildings, the existing flat roof is likely to have enough structural strength for a terrace, because the roof is constructed like the floor structures below. Timber-framed residential constructions are much more likely to require upgrading. This will usually entail placing a steel joist underneath the roof structure, and this work is done from the bottom up, meaning there will probably be a significant amount of disruption to anyone currently living in the property.

Whatever type of roof the property currently has, a structural engineer will need to survey the property and drill inspection holes to determine how the roof has been built-up and what upgrades will be required.

Remember that attributes such as structure, waterproofing, insulation and fireproofing are all based on the entire system, rather than the individual components, and any change to the roof's construction could affect its performance.

Later in this ebook, we'll take a closer look at the structural aspects of designing a roof terrace.

Lattice screening is used in this project for privacy and to help shield occupants from the weather.



Hinged rooflight provides balustrade when open and planning-friendly low profile when closed.



### PLANNING PERMISSION

Whether the project needs planning permission, and how hard it is to get, will depend on the unique characteristics of the property and how much work is expected. For instance, as mentioned above, planning permission for flattening out a pitched roof can be tricky.

Privacy is one of the most common reasons for permission to be denied, and if there's a chance that the roof terrace will look out over neighbouring properties, then you will probably need to find a way to obstruct those views. For example, frosted glass balustrades or privacy screens may be required.

In built up environments there can often be restrictions imposed upon installing any objects which will increase the overall ceiling height of the building, this may rule out adding a full height staircase and door to access the terrace. However, solutions are available to overcome this, such as the hinged opening rooflight (above) which allows full access when open but maintains a low profile when closed that sits beneath the original chimney height.

# BUILDING REGULATIONS AND STANDARDS

A number of Building Regulations apply when planning roof terraces. These help to ensure the completed project meets minimum safety and structural requirements.

The requirements in Scotland, Wales and Northern Ireland are, in most cases, similar to the English regulations, although there are differences. For more information, please refer to these resources:

- Scotland - The Building Standards technical handbooks
- Wales - The Approved Documents for Wales
- Northern Ireland - Building Regulations in Northern Ireland

## APPROVED DOCUMENT A: STRUCTURE

Part A as it's more commonly known requires that buildings be constructed so that combined dead, imposed and wind loads are sustained and transmitted to the ground safely and without causing deformation of any part of the building.

When creating a roof terrace, the extra weight of the landscaping, furnishings and people must be considered. Section 1 lists the various codes, standards and references for all building types, while Section 2 specifies the sizes of structural elements for certain residential buildings and other small buildings of traditional construction.

The latter includes the basic requirements for stability, as well as the necessary sizes for timber members in floors and roofs, and thicknesses for masonry walls.

## APPROVED DOCUMENT B: FIRE SAFETY

This document provides details about fire safety matters within and around buildings. Volume 1 covers dwellings, while Volume 2 focuses on buildings other than dwellings.

## APPROVED DOCUMENT H: DRAINAGE AND WASTE DISPOSAL

Part 3 of Approved Document H deals with rainwater drainage and how it will be removed from the roofs of buildings and the paved areas around them.

The document doesn't specify a minimum roof slope (see BS 6229), but it does require that rainwater be cleared efficiently since ponding is undesirable.

## APPROVED DOCUMENT K: PROTECTION FROM FALLING, COLLISION AND IMPACT

Part K of the Building Regulations defines what requirements must be met in order to prevent injuries due to falls, collisions and impacts. It deals with the safety of a variety of building components, such as headspace clearance and landings on staircases and guardrails around the perimeter of the roof.



## APPROVED DOCUMENT L: CONSERVATION OF FUEL AND POWER

This sets the standards for the energy performance of new and existing buildings, including guidance for U-values and thermal insulation.

One important issue to note is that where a renovation of an individual thermal element constitutes a major renovation, the renovation must be carried out to ensure the whole of the element complies with new requirements.

This means that if an older home is being fitted out with a new roof terrace, it's likely that the entire roof will need to be updated to meet current thermal performance regulations.

More information on Approved Document L can be found in our [Approved Document L Whitepaper](#).

## APPROVED DOCUMENT M: ACCESS TO AND USE OF BUILDINGS

Part M of the Building Regulations aims to ensure that people are able to access and use buildings and their facilities.

In particular, it covers wheelchair access, which can be a tricky issue to navigate with roof terraces for a variety of issues. These include stair-based access and the requirement for upstands on roofs, which protect elements from rain splashing and snow build-up, while also making level access difficult to achieve.

## APPROVED DOCUMENT Q: SECURITY IN DWELLINGS

This part of the Building Regulations covers the standards for doors and windows to resist physical attack by a burglar. It also applies to some rooflights designed for flat roof applications, particularly those installed on the top of single-storey extensions.

According to Part Q, rooflights need to be designed, manufactured and tested to PAS 24:2012, or another acceptable standard as long as they provide similar or better performance. However, PAS 24:2012 was originally written with vertically installed windows and doorsets in mind, so it is not particularly suitable for testing the security of rooflights in flat roof applications.

Since glass rooflights are designed for flat roof applications, they are more likely to be affected by opportunistic crime. Therefore, LPS 2081 is likely to be a more suitable standard to consult in flat roofing applications, due to the way it specifically tests against stealth attacks.

## BS 6229:2018 FLAT ROOFS WITH CONTINUOUSLY SUPPORTED FLEXIBLE WATERPROOF COVERINGS

Within BS 6229:2018, recommendations are given for design principles and application uses for flat roofs with continuously supported roof coverings.

Details are also given for weathertightness, drainage, thermal design, sound insulation, condensation control, structural support, fire precautions, maintenance and repair. This Code of Practice (COP) can be used for the following - terraces, podia, parking decks and green/garden roofs and roof coverings with a pitch not greater than 10° to the horizontal.



## ACCESS AND SAFETY CONSIDERATIONS

To meet the requirements of the Building Regulations, access to the terrace will need to be easy and safe. Since, by definition, these outdoor spaces are located on the roof of a building, a good access route can sometimes be tricky to achieve, and you'll need to incorporate creative solutions.

Roof terrace access can be split into two main types:

- Access from the same level - This is often the result of an extension project, where a single-storey extension is added to a property, and the flat roof of the extension is turned into a terrace. In this situation, access can be fairly easy: a set of doors can be built into the existing upper-storey wall to provide access.
- Access via stairs - If the proposed terrace is directly above the rest of the accommodation, then an opening will need to be created in the roof to allow access through it. A set of stairs will need to be installed to provide a route to the terrace, along with a means of securing and weatherproofing the new opening.



Access to terrace can be either by the same level or through an opening in the roof.





Approved Document K sets out the requirements for creating safe spaces around staircases, including headspace clearance and landings. It applies whether the project is in a private dwelling or a public building.

Rooflights are a popular solution for achieving the requirements of Approved Document K, the latest rooflight designs will open at the touch of a button so that users can ascend the stairs with no head height restrictions, or they will incorporate vertically glazed sections to raise the ceiling height to an appropriate level.

Including a rooflight in your design comes with the added benefit of flooding interior spaces with natural light and, with options ranging from hinged and sliding rooflights to box rooflights, there's sure to be a design that suits your project.

Joost Becking has been completing terrace installations across Europe for well over a decade, and agrees that loading is one of the most important factors to consider when embarking on a terrace conversion.

“There are various ways of achieving access to a roof terrace. Our clients tend to specify hinged opening or sliding box style rooflights for their terrace conversion as they usually involve less structural work and flood stairwells with so much daylight”



Image: Taylor Wimpey - Central London



‘Including a rooflight in your design comes with the added benefit of flooding interior spaces with natural light’

Image: Andrew Gibson Photography/PJ Livesy Group

## HEADSPACE CLEARANCE FOR ACCESS ROOFLIGHTS

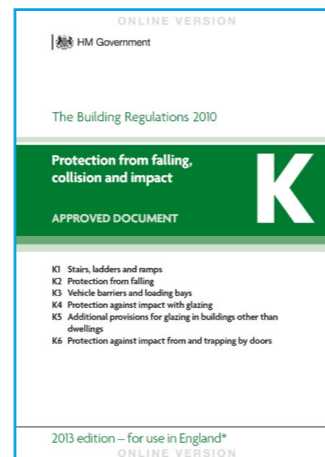
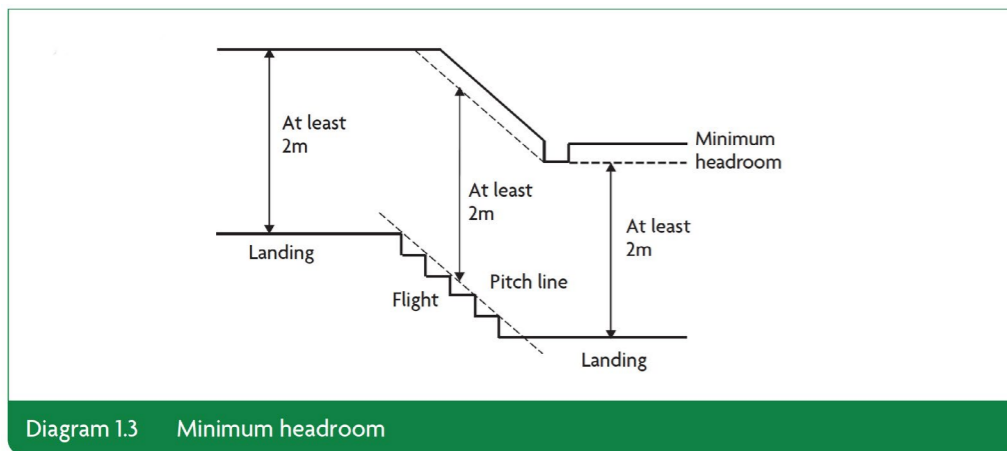
Approved Document K states that there needs to be at least 2m of head clearance on any staircase (measured from the pitch line). In most situations, private stairs intended for use in a single dwelling can have a maximum permitted pitch of 42 degrees.

Rooflights can help you to achieve this headspace clearance by providing additional vertical space over a staircase. Box rooflights are a popular choice for this purpose, but hinged and sliding rooflights may also provide a suitable solution if they can be opened remotely.

## LANDING REQUIREMENTS

The last step at both the bottom and top of a flight of stairs should be considered a landing, and will, therefore, need to be meet certain requirements.

For instance, Part K specifies that the width and length of a landing should be at least as great as the smallest width of the flight of stairs. In most cases, the width of a landing should be at least 400mm and free from obstructions such as swinging doors.



Ensure that adequate head clearance can be achieved when considering roof terrace access options.





## OTHER SAFETY CONSIDERATIONS

Section 3 of Approved Document K addresses protection from falling and describes situations where safety barriers may be required in regards to roof terraces.

It states that guard rails should be provided wherever it is “reasonably necessary for safety” in order to guard the edges of any part of a floor, balcony, roof or other places where people might have access.

This means that railing will probably need to be installed around the perimeter of the roof terrace. If access rooflights are installed, guards may also need to be installed around it.

In a single-family dwelling, the minimum height requirement for the guard rails around stairs, landings, ramps and edges of internal floors will be 900mm. For external balconies and roof edges, the height must be 1,100mm.

In locations that may be used by children under five years of age during normal use, the guard rails will need to meet a few additional requirements. For example, horizontal rails should be avoided to prevent children from being able to climb the barrier. The guard should also be designed so that a 100mm sphere cannot pass through any openings.

Examples of safety barriers being installed for edge protection and to prevent building occupants falling into void created by access rooflights.



“If access rooflights are installed, guards may also need to be installed around it”



Glass balustrade installed for perimeter edge protection makes you feel like you're nestled in the tree canopy.

## GETTING THE DESIGN AND STRUCTURE RIGHT

If the terrace is an amendment to an existing building, it's likely that the roof structure won't have been designed to carry the weight of additions like decking, furniture, potted plants and multiple people. If objects like large planters, hot tubs and swimming pools are added, they could add significant amounts of weight to the building structure.

Structural calculations and an assessment of the building will need to be carried out in order to determine what kind of loads the existing roof will be able to handle - and what steps will need to be taken to reinforce the structure adequately.

Even if it's a new building, the original design may not have considered the weight of landscaping and terrace features, so adjustments might be required.

## GENERAL REQUIREMENTS FOR FLAT ROOFS

When planning a roof terrace, it's important to remember the structure's primary purpose as a roof: it needs to protect the interior of the property from outdoor elements. This means it should be waterproof, have adequate drainage, provide fire protection and be thermally efficient. The covering also needs to be able to withstand heavy winds.

The basic requirements for a flat roof are laid out in BS 6229:2018: Flat roofs with continuously supported flexible waterproofing coverings.

Planters, furniture and box rooflight all add to the overall load imposed on the roof structure and insulation.



## LOADING

"It's a common issue that roof terraces are planned without much thought about what's actually going to be put on them," warns Jim Hooker, director at Membrane Roofing Consultancy Limited.

He explains that any dead load on the roof - whether it's a small planter or complete outdoor kitchen - will need to be planned out well ahead of time, and a structural engineer will need to advise on how to proceed with the work.

Jim also points out that loading isn't just about the joists and how strong they are. Careful attention also needs to be paid to the insulation and whether it can withstand those loads. If it can't, load spreading may be a suitable option. Otherwise, new insulation might be necessary. The right choice will depend on your specific situation.

It's also important to remember that loading could change the roof slant and increase the potential for ponding.



Free floating roof terrace build in Amsterdam.

## SUPPORTING THE TERRACE

Joost Becking comments “Typically a roof is not designed to carry the load of a roof terrace. In Europe the building regulations tell us that the roof structure has to be able to carry 250 kg/m<sup>2</sup>. A typical roof in a city centre is designed to carry the weight of rain, water and snow, which is somewhere between 75 to 150 kg/m<sup>2</sup>. In order to get a building permit, you therefore have two options: the first is to reinforce the roof structure from the inside out, for example by adding wooden beams. The second option is to install a free floating steel structure on top of the roof, that divides its weight onto the brick walls that lead to the top of the house. These walls are most of the time strong enough to carry the added weight”

Opting for a floating terrace solution can be less labour intensive, and cause less overall disruption inside the building. These types of systems also offer the advantage of being able to create a truly flat roof deck as the surface can be levelled independently of the original roof level, allowing drainage to run freely over the weather proof membrane beneath.

“Loading is one of the most important factors to consider when embarking on a terrace conversion”

If the roof structure has been checked and is deemed capable of supporting the additional load of a terrace, then it is possible to build directly onto the weathering membrane. The most widely adopted way of doing this is to use pedestal system which is designed to work with decking or paving finishes. In a similar way to floating steels, the pedestals raise the final level of the terrace above the waterproof level of the roof, allowing drainage through and a level surface to be created. This can be achieved by manually adjusting the pedestals or going for a self levelling system.

Using a pedestal set up is also a great solution if you need to run any services such as air conditioning or waste pipes as they can fit in the cavity created beneath your deck.



Pedestal system supporting terrace paving.



Typical roof terrace install in London will still require a crane to manoeuvre materials onto site. Larger commercial developers will often have their own team to handle logistics (right)



## LOGISTICS

Rooflight expert Joost Becking comments, “You can’t build a proper roof terrace without a crane to transport the materials onto the roof. A typical roof terrace consists of the supporting structure, roof entrance hatch, decking, fencing and stairs. It can be smart to ask the craneage company to transport your furniture and plants to your new roof top right away”

Depending on the height and the distance of your roof top to the road there’s a choice of different cranes you might need. The craneage company can advise you on the right crane and can also take care of the permit and if necessary any road closures.

The responsibility of logistics will depend on the scale and type of project. Often, main contractors and craneage companies will look after these aspects, but for smaller projects its wise to double check with your builder to make sure that all possibilities have been accounted for. Organising logistics can often take a few weeks of preparation time so factor this into your schedule.

## DRAINAGE

There are four main reasons that ponding could spell trouble for any roof, whether it has a terrace or not:

- Stagnant water can lead to the growth of algae and moss.
- Standing water creates extra weight on the roof, which could lead to structural damage. It also becomes progressively worse as more water is added.
- If there are any existing problems with the waterproofing, ponding exacerbates the issue and could lead to more water coming through the roof.
- Puddles can be slippery after rainfall, especially in cold conditions when they freeze.

Remember that access to check rainwater outlets will be required so a marked access point should be included in any pedestrian finish.

It's generally recommended that flat roofs are not completely flat, and an adequate fall should help to ensure that the roof drains freely.

BS 6229:2018 states that flat roofs should be designed with a fall of 1:40 to ensure a 1:80 fall is achieved once the roof is completed, including gutter soles.



Drainage system installed in felted flat roof.

## THERMAL DESIGN

Thermal design is all about the flow of both heat and water vapour through the roof construction, and these can have an impact on overall performance of the roof.

On flat roofs, the two main types of insulation are rigid boards above the deck or a fibrous quilt above the ceiling. When specifying insulation, considerations include:

- The required thermal performance (U-values)
- The build-up thickness
- The weight of the insulation products
- The compressive strength of the insulation
- The type of foot traffic and the weight of features being added to the roof terrace
- Compatibility with other roofing components
- Fire resistance
- Acoustic performance
- Environmental properties

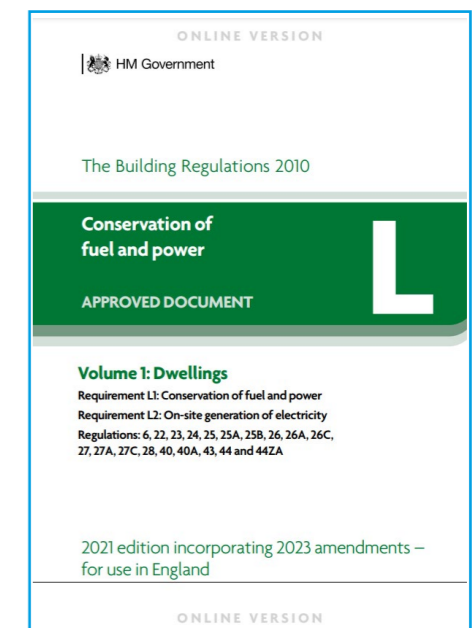
According to the Building Regulations Part L, when refurbishing or replacing an existing flat roof covering, the replacement system must also make provision for an upgrade to the roof's thermal properties.

Also remember U-values are based on an entire system so adding or changing an element, such as installing new waterproofing or putting in a rooflight could change the thermal performance. This means you may need to take additional steps to ensure the finished project meets the minimum requirements.

## CONDENSATION ANALYSIS

This is usually carried out by the insulation provider, in order to ensure the dew point of the system is not below the waterproofing system, where it would cause condensation to occur, especially over heated, occupied spaces, and even more so above areas of high humidity such as kitchens, bathrooms or laundry rooms.

“Thermal design is all about the flow of both heat and water vapour through the roof construction”





## FIRE PERFORMANCE

The importance of fire safety cannot be overstated, and it's critical for those involved in a roof terrace project to consult all the relevant regulations and standards to ensure that the completed roof meets or exceeds the requirements.

Since every project is different, a comprehensive discussion of fire performance is well beyond the scope of this ebook.

One important point to note is that a building's fire performance is determined by the whole system - that is, how all the different elements work together.

Since it's the whole package that gets the fire certificate, if any single element is changed, or new elements are added on top, it's likely that a new certificate will be required. In most cases, this will be the responsibility of the architect - but this, too, can vary.

## WARRANTIES

Trevor Lang, Technical Manager - roofing division, at Alumasc Exterior Building Products Ltd, recommends checking whether the roof is currently the subject of a manufacturer's warranty.

If it is, be sure to confirm with the manufacturer that the works you propose will not invalidate that guarantee. They may also be able to provide additional or alternative recommendations for the project.



## LANDSCAPE DESIGN AND FEATURES

Planning the landscaping and features is one of the most enjoyable parts of creating a new outdoor space. As long as you have the safety, structural and privacy elements taken care of, the rest is up to you and your creativity.

So, how do you decide what to include on the roof terrace?

Landscape architect Penny Carter explains that when she meets clients for the first time, one of her main priorities is to find out what their aspirations are for the space - and to work out what the engineering and architectural opportunities and constraints are for the site. Armed with all of this information, she can then create a design brief.

While it's common for landscape architects to be consulted after the more technical and structural parts of the project have been planned out, or even completed, it's always better to get them involved as early in the process as possible. This will help to ensure that the finished structure works with the landscaping plans.

## HOMEOWNER ASPIRATIONS

Roof terraces can be extremely personal spaces that reflect the residents' lifestyle and design preferences.

Penny explains that everyone wants to turn their roof terraces into spaces for entertainment, but how that's done can vary widely, with just some options including rooftop cinemas, soft seating areas, water features, hot tubs, dining areas and fireplaces.

She says that to get a better sense of how clients would like the overall space to look she often asks them about places they've loved to visit around the world and to show her pictures of designs they like.





Image: Joost Becking

Sandbox and childrens seating area with drawer underneath to store the toys.

## MULTIFUNCTIONAL DESIGN

Although roof terraces can add a significant amount of living area to a home, they still tend to be small spaces, so opting for multifunctional elements can be key to tailoring to suit your needs. A simple example of multifunctional design might be a bench that doubles as a storage box, but good design can go much further.

For instance, plants are an essential element for most outdoor spaces, and they often serve a purely ornamental purpose. However, careful plant selection can result in a visually appealing space where you grow fruit and vegetables, while also supporting local wildlife like birds and insects.

Other eco considerations, such as grey water recycling can contribute to the multifunctionality of the space, while vegetation and other elements can help to keep temperatures inside the home down during the summer.



Image: Matthew Weinreb Photography

Using the natural tree canopy and additional rooftop planting makes this terrace a visually appealing space.

## MICROCLIMATE

The microclimate of the roof terrace will depend on its orientation, how other buildings are arranged around it, the local climate and the location's prevailing winds. This should all play a role determining the best layout of the space, as well as the best types of plants to include.

## PLANT

When selecting plants for your roof terrace, be sure to think about what purposes the plants can serve. For example, you can choose plants because they grow food, provide shade, add bursts of colour or emit relaxing scents.

In addition to thinking about the types of plants that you can include, be realistic about which plants can't be used in your roof garden. A large potted tree might seem like a good idea, but it might be too heavy for the roof structure, it could be difficult - or impossible - to get up to the roof and it may prove dangerous in high-wind areas.

## PLANTING

Through their Greening Grey Britain campaign, the Royal Horticultural Society is encouraging people across the UK to add gardens wherever they can. The organisation says that gardens play a crucial role in urban and suburban areas, and may be even more important in the future as the climate changes.

Roof gardens provide the perfect opportunity to green up an otherwise grey space. However, choosing the right plants is essential, and you'll need to consider a variety of factors, such as the roof terrace's microclimate and how much effort the homeowners want to put into maintaining the garden.

When planning a roof terrace, it's a good idea to discuss the plant options with an expert who can assess the location and the roof's unique characteristics. Here are some plants to consider for specific conditions and purposes:

### HOT, DRY LOCATIONS

Look for plants that are tolerant of wind and sun - those with waxy cuticles are adapted to retain moisture.

Guy Barter, the chief horticultural advisor at the RHS, says that most Mediterranean plants are capable of surviving UK winters, and they thrive in hot, dry conditions. Lavender and rosemary are excellent options, and so are dwarf conifers - they give the impression of trees, without the bulk.

You might be surprised that heathers tend to do well in hot locations. They're resilient plants that also provide some wonderful colour.

In frost-free locations like London, succulents and cacti also do very well. Prickly pear and agave are just two of the options to consider.



## WINDY LOCATIONS

Roof gardens tend to be very exposed locations, so choosing plants that can withstand high winds is essential.

In some cases, trellis can be used to provide a windbreak, and they're also great for climbing plants. Low-growing, ground cover plants are another option since they avoid the wind entirely.

## GROWING FOOD

A roof garden can be a great place for growing food, and even in a small roof garden, it's possible to have a good harvest.

Mr Barter notes that most herbs are Mediterranean plants, so are likely to do well on roofs. His other suggestions include plants that stay low to the ground like bush tomatoes, strawberries and most root vegetables. However, he advises against plants with big leaves like cucumber and squash, since they get shaken up too much in windy locations.

Dwarf fruit trees are another option to consider. They come in options including apple, cherry, apricot and peach, and tend to do well on roof gardens. However, they will need some shelter from the wind so that bees can get to them for pollination.

## BENEFITTING WILDLIFE

As well as providing a lovely outdoor space for people, roof terraces can also benefit local wildlife.

Choose wildflowers that grow on hilltops, explains Mr Barter. Plants like cowslips and harebells can be purchased as turfs for easy planting, and bumblebees love them.

Birds often enjoy roof gardens because they're usually safe from cats. Areas with long grass are great for birds nests, and berries and shrubs are also good for birds. Cotoneaster and pyracantha are both resilient berrying plants that can provide nutrition for birds in the winter.

## LOVELY SCENTS

If you want a fragrant roof terrace, Mr Barter recommends plants with very strong scents, since the high airflow is likely to whisk away the smells.

We've already discussed how lavender, rosemary and herbs all tend to do well on roof gardens, and these are plants also known for their pleasant odours. Other options to consider include green shrubs like choisya, an evergreen shrub with the aroma of orange blossoms.

## BURSTS OF COLOUR

If you want a colourful garden, be sure to think about when each plant is in bloom. Mr Barter explains that with judicious planting, you can have colour in your garden nearly all year - despite the British climate.

If you want bright colour in the early spring, then go for dwarf bulbs like daffodils and tulips - these are less likely to get blown over in high winds. Crocus and snowdrops also do well.

Once those have finished blooming, then it's time for plants like primulas, primroses, pansies and violets to start blooming - and with the right care, they can continue adding colour to your garden through the summer and into autumn.

## LOW MAINTENANCE

Choose plants that, once established, will require little care. Slower-growing hedges like yew and holly will require less trimming.

Automatic watering systems can be useful, and selecting larger pots is a smart way of cutting down on the watering. For the ultimate in low-maintenance, you could try artificial turf instead - although it doesn't offer the same benefits as natural grass.



Low maintenance options may suit those who don't have the time to tend rooftop planting.

Spectacular views framed by gothic spires in this tower top terrace, views can be equally spectacular in the heart of the city (right).



## ENJOYING THE VIEW

Installing a roof terrace can provide the homeowner with spectacular views, whether its an uninterrupted vista of rolling countryside or a unique perspective of a city skyline, if you're lucky enough to have a roof terrace with a beautiful view, then you'll want to make the most of it.

Design the layout, so the main seating area makes the most of your view and use glass safety barriers to avoid obstructing your sightlines. It may be possible to use the existing architecture of the building to frame your view as seen in this project (left) the gothic spires of the tower frame spectacular views of the Bowland Fells.

On the other hand, you can also hide bad views with plants, frosted glass and other elements.



## LIGHTING

If you want the roof terrace to be enjoyed after the sun goes down, then you'll need to think about how you'll illuminate the space. These days, there's a huge range of outdoor lighting solutions, with just some popular options including colour-changing strip LEDs for embedding in decking, through to low-energy spotlights and ambient lights.

According to the Houzz survey, outdoor systems and equipment such as lighting are now integral to our gardens. More than one-third of renovating homeowners (34%) chose LED lights, while solar lights were used by 29%.

When planning a lighting scheme, try to avoid "lighting the sky" by pointing lights up and away from your roof. This wastes energy and contributes to the problem of light pollution. Instead, use lights to highlight various features and design elements and bounce the light back into the terrace.



Integrated LED lighting system is used to dramatic effect in this contemporary roof terrace.



## HEATING AND SHADE

A roof terrace isn't just for summer - if it's designed right, you can enjoy the space throughout the year. Retractable shelters, for instance, can provide protection from sun, wind and rain, while patio heaters and fireplaces can add extra warmth when the nights get chilly.

## LOW MAINTENANCE

As well as thinking about what elements to include on a roof terrace, Penny says she also always thinks about how much maintenance it will require - and whether that suits her clients' requirements.

It's likely that most homeowners will want a roof terrace that looks great with as little effort as possible, so taking steps to add in features that make maintenance a breeze will help to make the space more enjoyable for the long term. Options include artificial grass, irrigation systems, solid paving and weatherproof furnishings.

“Most importantly, a roof garden should suit you, suit your space and fit the opportunities and constraints of the site.”  
-Penny Carter



Overhead louvre system provides a shady spot, whilst at night it provides accent lighting using integrated LED (see previous page)



## HARD LANDSCAPE

A successful roof terrace design will combine safety and functionality with visual elements and unique features that define the space for the end user.

Questions to ask when planning a roof garden include:

- Will the space be used by children?
- Will pets use the space?
- How much time will be spent on the terrace?
- How can you maximise the best views?
- Will you need walk-on roof lights for lighting up the space below?
- What's the microclimate like?

There are many hard landscaping options to choose from. While aesthetic preferences are certainly something to consider, it's also essential to select a decking option that doesn't compromise the performance characteristics of the roof.

Here are some things to think about:

- Whether it's slippery when wet
- Its structural grading
- Maintenance requirements
- Fire performance
- Whether it will compromise the integrity of the waterproofing underneath
- If it's compatible with the build up of the roofing system

Jim warns that installing decking on waterproofing could invalidate the warranty, so it's essential to discuss the requirements with the waterproofing manufacturer to find out what options are suitable.

Paving slabs, which are usually laid on pedestals and can be easily removed, may be an appropriate solution since they will allow you to fulfill the requirements of any care and maintenance agreement, but this will depend on the situation.

Fire performance must also be considered when choosing a hard landscaping product. For example, wood decking will need to be fire treated - A fire performance certificate will be required for the overall roof build-up including the decking.

Trevor also notes that any new decking or paving should be installed in a way that won't inhibit water drainage. All outlets should be checked to make sure they function correctly and are not blocked in order to avoid excessive ponding or standing water.



When installing decking, check with the waterproofing manufacturer that their warranty is not affected.

Image: Alan Camp Architects

“A successful roof terrace design will combine safety and functionality with visual elements and unique features”

In summary, roof terraces are an effective way of making the most of outdoor space in any given project, offering added value for both developers and homeowners. For more information take a look at our access rooflights designed to make outdoor living space practical and enjoyable at [glazingvision.co.uk](http://glazingvision.co.uk)



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