

Building Construction**ROOFS****ROOFS IN GENERAL**

Whenever practicable, new buildings and extensions should be designed with pitched roofs, covered with tiles or slates, according to the locality and character of nearby buildings. Where normal pitched roofs would be incongruous or impracticable, low pitched roofs covered in asphalt or high performance felt are usually the only answer. Keep the roof construction simple and avoid penetrations. Profiled metal sheets of the standing seam type or cedar shingles may be considered where appropriate.

PITCHED ROOFS

Trussed Rafter roofs must be designed, fabricated and erected strictly in accordance with the requirements of BS 5268: Part 3. Details are given in this Standard for bracing. It should be noted that there are limitations concerning use of the Standard's recommendations for bracing and where appropriate reference should be made to TRADA Guidance Document 8 1999 "Bracing for non-domestic timber trussed roofs". The building designer should specify bracing requirements appropriate to the design function of the roof taking particular account of lateral bracing of the supporting structure. The designer must not assume that the Trussed Rafter Specialist will assume this responsibility as it is not a normal requirement.

For roof coverings the minimum pitch quoted by the manufacturers gives rise to added risks; particularly in exposed locations, and should not be used. A minimum 5° margin above the minimum pitch should be used. This is particularly important when using profiled metal sheet coverings, where problems have previously been experienced. Where valleys feature they should determine the minimum pitch.

Plastic roof accessories should only be used where they are unlikely to be subject to damage, and their life can be expected to be at least equal to the remainder of the roof.

In the case of proprietary tile coverings, dry fixed verges, hips and ridges are not encouraged. A solid mortar bed is preferred.

Lead is the preferred material for flashings and valleys.

Profiled metal sheet coverings should generally be aluminium, and of a tried and tested quality. Profiled steel sheeting has a history of rusting; and should be avoided. The use of profiled metal sheeting is more applicable on the larger span building where excessive weight would result from tiled roof construction, and is usually specified in conjunction with Contractor Design provisions within the forms of contract to ensure responsibility for the whole covering including flashings and perimeter trims.

Where appropriate, the manufacturer should also be responsible for the fascia and soffit design and integration, together with other similar adjoining elements, to avoid conflicts in design and detailing problems. Avoid using the material at low level where it may be subject to vandalism.

ROOF AND CEILING VOIDS

A safe means of access is to be provided to roof voids in accordance with the Building Regulations and for the maintenance of services, including provision of handrails.

Where appropriate walkways are to be provided as safe routes to items of equipment or services that require regular attention, together with a lighting provision.

Insulation within the roof space is generally to be provided at ceiling level, thus creating a cold roof, and with water storage and services within the space adequately lagged.

Roof voids are to be well ventilated.

LOW-PITCHED ROOFS

Inevitably roof voids beneath low pitched roofs are inaccessible and services can only be properly inspected or replaced by taking down the whole of the ceiling. Services other than wiring for lighting should be kept out of such roof voids. However, when it is necessary to position water services in low pitched roof voids, it is essential that valves and other items requiring occasional attention, are grouped together immediately above a ceiling access panel. The positioning of H&C service pipework close to the eaves is to be avoided, as the risk of freezing is increased and access is difficult.

At the perimeter of low pitched roofs aluminium trims are to be avoided. Weltdrips and downstands are to be provided over a softwood batten. With asphalt roofing use a mastic asphalt drip on galvanised expanded metal lath to approved details. Parapets and firewalls are to be avoided except where any overriding construction or planning demands.

Typical Solution:-

- Warm deck roofing with plywood base.
- Vapour *barrier*.
- Cork or mineral fibre.
- High performance elastomeric polyester based felt finished with a mineral capsheet.

The system chosen is to be one where the roofing Contractor has been nominated by the felt manufacturer as an approved user. The successful Contractor must provide a materials and labour insurance back guarantee for a minimum period of fifteen years. The issuing of the guarantee certificate in favour of West Sussex County Council must take place by the end of the defects liability period, and prior to the release of the balance of retention monies. We are able to provide a list of felt roofing contractors willing to provide this guarantee.

RAIN WATER

Roofs should be designed to shed rain water to the perimeter of the building. Avoid internal gutters and rainwater pipes. If inboard sectional gutters are unavoidable then they must be lined out with a two layer high performance felt bonded in hot bitumen or with a single membrane of a polymeric material. A moisture-resistant insulation board will be required to be bonded to the sole and sides of the gutter to level with the heads of the gutter fixing bolts. Where internal rain water pipes are unavoidable, allow adequate access to deal with blockages. Cast iron or cast aluminium rainwater goods should be used with lightning protection tapes hidden behind where installed.

Typical Solution:-

Aluminium rainwater goods.

Plastic not generally specified but maybe used at high level with our permission and incorporating cast iron RWPs.

WORKMANSHIP

Many roof problems stem from poor workmanship. It is vital that the roof structure is carefully inspected before the roof covering is laid. Keep construction simple, robust and give regard to building maintenance. The current codes of practice for the fixing of roof members to the structure of the building must be adhered to.

The recovering of flat roofs on older buildings as part of building maintenance, often provides the opportunity to introduce falls to shed rainwater and, at the same time, increase insulation.

ROOFLIGHTS

Natural light remains the preferred option and rooflights are only to be provided where for design or other reasons an adequate level of natural light is not achievable.

Flat roofs shall have domed twin wall polycarbonate roof lights, ventilated as appropriate.

It is essential to ensure that roof lights are supplied and installed in accordance with the manufacturer's recommendations and details. Failure to meet this requirement has led to leaks at the junctions of roof windows and adjoining tiles. Clearances for drainage channels to function correctly and proper drainage at the cill to prevent water collecting is vital. Roof openings should be dimensioned to take account of the gauging requirements of manufacturer's products. If in doubt when preparing details, consult the manufacturer's technical representative.

All roof lights must be double or triple glazed and ventilating roof lights must have a simple means of operating the ventilator. Electrically operated systems are only to be used where other manual remote systems are impractical. Blinds maybe required.

Special care should be taken when detailing roof lights in conjunction with heavily contoured roofing materials. The situation should be avoided wherever possible as problems can occur even if manufacturer's tolerances are complied with.

Atria must be of a robust design and fully compliant with the CDM Regulations for maintenance.

Typical Solutions:-

- Roof lights in flat/low pitched roofs
- Clear polycarbonate with insulated upstand
- Rooflights in pitched roofs
- Double glazed with toughened glass externally, and laminated glass internally

MAINTENANCE OF ROOFLIGHTS, HIGH LEVEL GLAZING AND VENTILATORS.

You must specifically consider the implications of the future maintenance of high level glazing and associated fittings. It will be expected that provision for a safe access method will be designed in at the earliest stage of the project.

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