

Section M - ROOFING

LIST OF CLAUSES M

BUILDING CONTROL

M.0 Compliance with the Building Regulations

TILES AND SLATES

M.1 Approvals of Samples
M.2 Nil
M.3 Nil
M.4 Nil
M.5 Interlocking Concrete Tiles and Fittings
M.6 Plain Concrete Tiles and Fittings
M.7 Nil
M.8 Fibre Reinforced Cement Slates (f.r.c.)
M.9
To Nil
M.12
M.13 Testing of Roof Tiles
M.14 Ridge Terminal Units
M.15 Nil
M.16 Vent Pipe and Ventilation Terminal Units
M.17 Nails
M.18 Rivets for F.R.C. Slates
M.19 Battens
M.20 Underlay
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M.26 Fixing Underlay
M.27 Fixing Battens
M.28 Tiling & Slating
M.29 Eaves
M.30 Verges
M.31 Ridges & Hips

SHEET METAL FLASHINGS

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M.34
To Nil
M.35
M.36 Fixing Accessories
M.37 Nil
M.38 Underlay
M.39 Nil
M.40 Flashings Generally
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M.53	Humidity Sensitive Wall Inlet
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To	Nil
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APPENDIX A: LIST OF REFERENCES AND STANDARDS

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M.0 **Compliance with Materials and Workmanship with the Building Regulations**

In order to demonstrate conformity with the Building Regulations (Part D; Materials and Workmanship), and with the Construction Products Regulation (Regulation (EU) No.305/2011) as set out in national rules for Ireland (S.I. No.225 of 2013), the Contractor shall provide proof (a Declaration of Performance (DoP)) and (where applicable) a CE marking for all building products to be placed in the works.

The Contractor shall ensure that the product to be incorporated in the works, while complying with CPR, is fit for the use for which it is intended. The Contractor may be required to demonstrate this by means of manufacturer's confirmation, or independent testing certificate

TILES AND SLATES

GENERALLY

M.1 **Approvals of Samples**

Samples of tiles and slates must be submitted and the Architects written approval obtained before work is commenced.

M.2
to
M.4

Nil

MATERIALS

M.5 **Interlocking Concrete Tiles and Fittings**

Interlocking concrete tiles shall be 420 x 330 mm complying with IS EN 490:2011 and IS EN 491:2011. The tiles shall be of approved manufacture and to the profile shown on the detailed drawings. Colour to be selected by the Architect from the manufacturer's standard range.

M.6 **Plain Concrete Tiles and Fittings**

Plain concrete tiles shall comply with IS EN 490:2011.

The tiles shall be of approved manufacture with the colour selected by the Architect from the manufacturer's standard range.

M.7 **Nil**

M.8 **Fibre Reinforced Cement Slates (f.r.c.)**

Slates for under cloaks shall be asbestos free fibre reinforced cement (f.r.c.) slates of approved manufacture. All slates must comply with IS EN 492:2012.

M.9
to
M.12

Nil

M.13 **Testing of Roof Tiles**

A representative selection of tiles from each consignment delivered on site shall be made in the presence of the Clerk of Works. As a guide the number of tiles to be sent for test shall be at least 25 from every five thousand tiles in the consignment and so chosen as to be reasonably representative. The samples for testing are to be sent by the Contractor on the instructions of the Clerk of Works to an approved testing authority in accordance with Clauses A33/220 and A33/560. The sample is to be clearly labeled and will be given an identification number by the Clerk of Works.

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M.14 Ridge Terminal Units

Ridge ventilation terminals to match remainder of the ridge tile to be as supplied by tile manufacturer.

Provide minimum of two per house or as otherwise indicated.

M.15 Nil

M.16 Vent Pipe and Ventilation Terminal Units

Vent pipe and ventilation terminal units shall be plastic profiled tile or slate units to match remainder of roof.

Type and pattern to be as shown on the drawings and a sample shall be approved by the Architect before installation. Terminal units shall be supplied complete with flexible connector, which shall be properly fixed and adequately supported.

M.17 Nails

Nails for tiles shall comply with BS 1202-3:1974 for aluminium alloy nails, of the length and diameter as recommended by Slate manufacturer.

Nails for underlay shall comply with BS 1202-1:2002 for steel nails, galvanised finish, Table 4 extra large head felt nails, 20 mm long x 3 mm diameter.

Nails for battens shall comply with BS 1202-1:2002 for steel nails, galvanised finish, Table 1, round plain head nails, 75 mm long x 2.65 mm diameter.

Clips for fixing interlocking tiles without provision for nail fixing shall be of the requisite types supplied by the tile manufacturer. Nails for fixing the clips shall be aluminium alloy to comply with BS 1202-3:1974 and of the length and gauge recommended by the tile manufacturer.

M.18 Rivets for F.R.C. Slates

Rivets shall be disc headed copper rivets, with a 19 mm head and a 19 mm long x 2 mm diameter shank.

M.19 Battens

Shall be as described under "Woodwork". (Section N: Woodwork)

M.20 Underlay

Underlay (sarking) felt shall be either

- Bitumen reinforced as Class 1F of IS EN 13707:2004 (+A2:2009) and comply with BS 8747:2007.
- Polyester based class 5U in compliance with BS 5534:2003 (+A1:2010).

Note: Class 5U underlay offers a higher resistance to tearing and should be used as an eaves starting strip, or where stresses on the felt are predicted. See BS 5534:2003 (+A1:2010) Annex A, page 77 for more information.

M.21 Eaves Ventilation

Eaves ventilators shall be continuous over fascia ventilators giving 10,000mm²/m, for pitched roofs, ventilation ('Glidevale FV100' or equivalent or as otherwise indicated on drawings).

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M.22 Rafter Ventilation

Rafter ventilators shall provide 10,000mm²/m continuous ventilation ('Glidevale RV200 Continuous Rafter Roll' or equivalent or as otherwise indicated on drawings).

M.23 Nil

WORKMANSHIP

M.24 Laying of Tiles Generally

Concrete tiles shall be laid and fixed in accordance with IS ICP 2:2002, and with the manufacturers recommendations.

M.25 Stacking

Concrete tiles shall be stacked on wood strips or pallets on level ground.

M.26 Fixing Underlay

The underlay should allow drainage of water into the eaves gutter. It shall extend over the tilting fillet and fascia board and lap into the gutter and be laid so that no troughs are formed in which water may be trapped.

Vertical laps should be not less than 150 mm and each end should be securely nailed over the rafters. The edge distance to the fixings should be not less than 50 mm.

Horizontal laps should be not less than 150 mm and where they are not fully supported they should occur under a batten with at least 25 mm of underlay projecting. (Provide additional intermediate battens if required).

M.27 Fixing Battens

Battens shall be nailed through the felt to each rafter. Battens shall be laid level across rafters throughout the whole length of the roof. Prices shall be deemed to have included for any timber packings required to maintain the level of the battens. Joints shall be square ended with not more than one batten in four jointed on any one rafter.

M.28 Tiling and Slating

Tiling and slating shall be close jointed with the horizontal and vertical joints ranging perfectly straight. Each course shall be laid flat on the previous course and properly fixed.

Unless otherwise specified tiles and slates shall be fixed as follows:-

The top and bottom courses and every second course of interlocking tiles shall be fixed with nails or clips.

Verges shall be clipped. Minimum headlap shall be 100 mm.

Every second course of plain tiles shall be fixed with two nails to each tile. In addition to which the two bottom and two top courses shall be similarly nailed and at verges, hips, valleys and abutments the two end tiles of every course shall be twice nailed. Minimum headlap shall be 65 mm.

M.29 Eaves

Interlocking tiles at eaves shall be laid in accordance with the manufacturer's written instructions. Profiled tiles shall be fitted with an approved eaves filler unit as provided by the tile manufacturer. Fit

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eaves ventilation as Clauses M21 and M22 in accordance with the drawings and manufacturer's recommendations.

M.30 Verges

Verges to interlocking tile roofs shall have special end interlocking tiles where such are made.

All verges shall have F.R.C. slate/tile undercloak bedded and jointed in cement/sand (1:3) mortar.

M.31 Ridges and Hips

Bed and joint ridge and hip tiles in cement/sand (1:3) mortar.

The tiles shall be bedded continuously along edges with solid bedding at butt joints. No ridge or hip tiles shall be solidly bedded except at butt joints and ridge ends.

End ridge tiles shall be both mechanically fixed, in accordance with the detailed drawings, and bedded as above.

SHEET METAL FLASHINGS

MATERIALS

M.32 Lead

Lead shall be milled sheet or strip complying with IS EN 12588:2006 and the requirements of BS 6915:2001 (+A1:2014). Lead sheeting shall be 2.24mm Colour Code 'Red' for flashings, valley gutters and slates and 1.8mm Colour Code 'Blue' for soakers.

M.33 Stainless Steel

Sheet and expanded metal mesh shall be stainless steel grade 1.4301 in accordance with IS EN 10088-1:2005. Unless otherwise specified sheet shall be 0.7mm thick and mesh 0.3mm thick.

Shop welding shall be TIG to IS EN 1011-3:2000 (+A1:2004).

M.34
to
M.35

Nil

M.36 Fixing Accessories

Nails shall comply with BS 1202-2:1974, Table 2 jagged shank copper clout nails for lead sheet, of 3.35mm diameter and not less than 25mm long. Stainless steel nails shall be used for stainless steel sheet. Screws shall comply with BS 1210:1963, brass for lead sheet and for stainless steel sheet, 10 gauge and not less than 25mm long.

Fixing clips and wedges shall be cut from the same material as the sheet being fixed.

M.37 Nil

M.38 Underlay

Underlay shall be sheathing felt complying with IS EN 13707:2004 (+A2:2009) Type 4A and comply with BS 8747:2007.

M.39 Nil

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WORKMANSHIP

M.40 Flashings Generally

Sheet metal flashings and soakers shall be as described, neatly cut, formed and dressed.

Flashings turned into brickwork or concrete shall be turned 25mm into joint or groove, and wedged at each step and at 500mm maximum centres unless otherwise shown. Free edges of flashings shall be clipped at 500mm maximum centres unless otherwise shown.

Unless otherwise shown, sheet metal flashings shall be formed from pieces not exceeding 1800 mm length and lapped not less than 100mm at joints.

Stepped flashings shall lap upstands by not less than 65mm, other cover flashings shall lap upstands by not less than 75mm.

M.41 Nil

M.42 Substrates and Underlay

Surfaces to receive underlay or sheet metal linings and flashings shall be even, free from protrusions and clean and dry.

Felt underlay shall be laid with butt joints, fixed sufficiently to prevent movement during the fixing of the sheet and kept dry.

M.43 Cavity Trays

Cavity trays to walls and metal trays to chimneys shall as described under "Metalwork" (Section Q).

PASSIVE STACK VENTILATION SYSTEM

GENERALLY

M.44 Location

A fan-assisted, passive stack ventilation system in accordance with the Technical Guidance Document, Part F: Ventilation, 2009 shall be provided to all wet areas ie. all Bathrooms and Kitchens and Internal WC's in locations and to details shown on the Drawings.

M.45 Compliance

The design and installation of the system, which shall be entire, shall be in accordance with BRE Information Paper IP 13/94 - 'Passive stack extract ventilation systems.' and the system shall carry an Agreement Certificate. Fan-assisted PSV devices shall comply with IS EN 13141-4:2011.

M.46 Background Ventilation

Background ventilation shall be provided in all habitable rooms, including areas serviced with PSV systems as clause M.44.

General background ventilation rates to be achieved in accordance to table 1: 'Basic ventilation provision using background ventilators and specific provision for extract and purge ventilation' in technical Guidance Document, Part F, 2009'.

M.47 Nil

M.48 Installation

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The installation to be carried out in accordance with the system manufacturers recommendations.

M.49 **Nil**

MATERIALS

M.50 **Ceiling Extracts**

Ceiling extracts to be humidity sensitive operating between 40% and 70% relative humidity ('Passivent System Ref. A161' or equivalent)

M.51 **Roof Ridge Terminals**

Ridge terminals to provide an air flow resistance not exceeding 10Pa at an air movement of 100m³/h ('Passivent System Ref. PRT' or equivalent)

M.52 **Roof Tile Terminals**

Roof tile terminals to provide an air flow resistance not exceeding 5Pa at an air movement of 100m³/h ('Passivent System Ref. TT9' or equivalent)

M.53 **Humidity Sensitive Wall Inlet**

Humidity sensitive wall inlets to provide background ventilation ('Passivent System Ref. 99H' or equivalent) to habitable rooms including wet areas.

M.54 **Ducting**

Provide ducting as supplied by system Manufacturer. Ducting to be capable of fitting within 75mm zone of timber stud walls.

Ducting in roof space to be fully insulated.

M.55 **Fittings**

Provide for all fixtures, fittings and couplings that may be required.

M.56
to
M.62

Nil

WORKMANSHIP

M.63 **Kitchen Extracts**

Kitchen extracts should be positioned where possible within 1 metre of the cooker hob but not directly over it. This should not be mistaken for as the cooker extract hood.

M.64 **Ducting**

Ducting to be kept as vertical as possible and insulated ductwork in roof space should drop no less than 45°.

All flexible duct connections to be clamped, taped, with rigid connections to be taped and properly supported.

M.65 **Tile Terminals**

Tile terminals should be fixed within three courses of the ridge.

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M.66 Fire Dampers (3 storey houses only)

In 3 storey houses provide for fire dampers to system in accordance with the manufacturers details to comply Technical Guidance Document, Part B: Fire Safety.

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Appendix A: List of References and Specifications

Item No.	Clause	Reference	Comment
1.	M.5	IS EN 490:2011	Concrete roofing tiles and fittings or roof covering and wall cladding – Product specification. (to replace IS EN 490:2005)
2.	M.5	IS EN 491:2011	Concrete roofing tiles and fittings for roof covering and wall cladding – Test methods. (to replace Bs 473;500)
3.	M.8	IS EN 492:2012	Fibre-cement slates and fittings – Product specification and test methods.
4.	M.17	BS 1202-3:1974	Specification for nails – Aluminium nails.
5.	M.17	BS 1202-1:2002	Specification for nails – Steel nails.
6.	M.20	IS EN 13707:2004 (+A2:2009)	Flexible sheets for waterproofing – Reinforced bitumen sheets for roof water proofing – Definitions and characteristics (to replace BS 747:2000)
7.	M.20	BS 8747:2007	Reinforced bitumen membranes (RBMs) for roofing. Guide to selection and specification. (newly added standard)
8.	M.24	IS ICP 2:2002	Irish Code of Practice – Slating and tiling.
9.	M.32	IS EN 12588:2006	Lead and lead alloys – Rolled lead sheet for building purposes.
10.	M.32	BS 6915:2001 (+A1:2014)	Design and construction of fully supported lead sheet roof and wall coverings – Code of Practice.
11.	M.33	IS EN 10088-1:2005	Stainless steels – Part 1: List of stainless steels.
12.	M.33	IS EN 2011-3:2000 (+A1:2004)	Welding – Recommendations for welding of metallic materials – Part 3: Arc welding of stainless steels.
13.	M.36	BS 1202-2:1974	Specification for nails – Copper nails.
14.	M.36	BS 1210:1963	Specification for wood screws.
15.	M.45	BRE Information Paper IR 13/94	Passive stack ventilation, extract ventilation systems.

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Appendix B: Amendments List	
Date of Amendments	Amendments
1/05/2014	This section was amended by Barry Sheils and approved by David Byrne, Senior Architect, Fingal County Council.