Slates / Tiles
The design, performance and Installation of slates and tiles to be designed and installed to meet the requirements set out in BS 5534:2014

All structural timbers to be dried / kiln dried and so marked on site

Redland ridge vent to provide min. 10mm continuous ventilation at ridge

Ventilation

200 x 25mm ridge board

200 x 100mm C16 ridge beam

150 x 38mm rafters @ 400mm crs.

100mm Kingspan Kooltherm K7 Maintain 50mm ventilation space between insulation and roof covering. 62.5mm Kingspan Kooltherm K17 fixed to underside of rafter bonded & skimmed Provide vapour barrier to warmside of insulation.

Gildevale R.V 601 rafter vent with FV 250 over facia vent to maintain 25mm continuous ventilation

Rafters to be strapped down each joist to prevent roof spread

HALL

2475

Stepped D.P.C to be min. 150mm above ground level

Foundations taken down to firm clay to the local building control officers satisfaction

750 x 300mm conc. foundation

750 750 750

2900

Section a-a

Redland ridge vent to provide min. 10mm continuous ventilation at ridge

Ventilation

Diagonal bracing

Longitudinal bracing

2No, 200mm layers fibreglass quilt insulation between and over trusses to prevent cold bridging

Truss roof @ 400mm c/c

Gildevale R.V 601 rafter vent with FV 250 over facia vent to maintain 25mm continuous ventilation

Close cavity with 12.5mm fibre board

12.5mm plasterboard bonded and skimmed

MASTER BEDROOM

EN-SUITE

LIVING

W.C

UTILITY

2400

1575 2100 525

1050 2100 1050

1050 2250 1200

600

R.C lintels to schedule with stepped D.P.C between

Vertical D.P.C and insulation to jambs of all openings in external walls

Precast concrete cills with D.P.C under, turned up back and ends. Insulate to detail

40 100

Stepped D.P.C to be min. 150mm above ground level

Foundations taken down to firm clay to the local building control officers satisfaction

750 x 300mm conc. foundation

600 x 300mm conc. foundation

750 750 600 600 750

7400

Truss design calculations, details and general arrangement to be submitted to Building Control Office 14 days prior to erection on site

Roof trusses to be designed and certified by roof truss manufacturer prior to erection on site

Bracing to ceiling joist members and chevron bracing to webs all to comply with BS5268 Part 3 2006

All structural timbers to be dried / kiln dried and so marked on site

First floor to be constructed as per detail

Section b-b

Slates / Tiles
The design, performance and Installation of slates and tiles to be designed and installed to meet the requirements set out in BS 5534:2014

Redland ridge vent to provide min. 10mm continuous ventilation at ridge

Ventilation

2No, 200mm layers fibreglass quilt insulation between and over trusses to prevent cold bridging

Truss roof @ 400mm c/c

Gildevale R.V 601 rafter vent with FV 250 over facia vent to maintain 25mm continuous ventilation

Close cavity with 12.5mm fibre board

12.5mm plasterboard bonded and skimmed

Longitudinal bracing

BEDROOM 4

2400

12.5mm plasterboard bonded and skimmed

KITCHEN / DINING

2625

Stepped D.P.C to be min. 150mm above ground level

Foundations taken down to firm clay to the local building control officers satisfaction

750 x 300mm conc. foundation

750 750

4700

Truss design calculations, details and general arrangement to be submitted to Building Control Office 14 days prior to erection on site

Roof trusses to be designed and certified by roof truss manufacturer prior to erection on site

Bracing to ceiling joist members and chevron bracing to webs all to comply with BS5268 Part 3 2006

All structural timbers to be dried / kiln dried and so marked on site

First floor to be constructed as per detail

Section c-c

GENERAL

1. Work to figured dimensions only and all dimensions to be checked on site prior to ordering or manufacturing any item.
2. The contractor commencing works prior to all approvals being received does so entirely at his own risk.
3. The client or the contractor shall not permit any changes to this drawing without notification to the architectural consultants, building control officer and planning authority.
4. All construction to be in accordance with relevant building regulations (N.I) 2012 and to the satisfaction of the local building control inspector. all relevant british standards and codes of practice to be strictly conformed to.
5. Contractor to complete all notices required under building regulations for inspection of work as contract proceeds
6. All materials to be installed strictly in accordance with manufacturers recommendations.
7. Where work commencing prior to building control approval being granted the contractor to liase closely with local inspecting officer and gain his approval to all areas of construction
8. All construction work to be carried out to the latest edition of the Health & Safety Construction (Design & Management) Regulations (N.I.). The health and safety inspector shall be notified of all works prior to commencement of any site works.

GENERAL

All dimensions to be verified on site.
All work to be in accordance with Building Regulations whether detailed on drawing or not.
All structral timber to be pressure impregnated with preservative prior to arrival on site.
Strength class of timber to be in accordance with BS 5268 Part 2 1996 either C16 or C24 and timber should be marked accordingly.
Timber to be clearly marked DRY OR KD - kiln dried.
All electrical works to be in accordance with I.E.E. Regulations and to be installed by a registered contractor.
Steel purlins to have 100x38mm wooddplate bolted on top.
End of beams to rest on 100mm 1:2:4 concrete padstones.
Habitable rooms to have an opening sash area equivalent to 1/20 in the floor area of the room being served.
Provide lateral restraint at gable and ceiling level using 30x8mm m.s. straps at 2m crs, carried over 3no. rafters/joists with solid bridging support.
Provide 200mm fibreglass insulation to back of trap door
Trap door to be fitted with a compressible seal and hatch.
Insulated hatches to unheated valves to be hinged and bolted to compress draught seal at perimeter.

MANHOLE

150mm thick concrete base.
225mm thick high press concrete brick walls flush pointed.
1/2 round PVC channel with suitable sand and cement benching.
Medium duty cover and frame.
100mm dia. PVC sewer laid to even fall on clean gravel bed.

FOUNDATIONS

Foundations unless otherwise indicated to be 750X300mm concrete strip to cavity walls and 450x300mm to party walls.
Depth of foundations subject to local ground conditions and to be brought down to a firm bearing 750mm min, below finished ground level.
Minimum crushing strength for foundations to be 25n/mm at 28 days.
Foundation concrete mix to be c20 mix.

DRAINAGE

All drainage foul and storm connections to be 100mm PVC including house connections laid in 1:40 minimum.
Pipes should be beamed over where they pass through walls or foundations.
Sewers with less than 750mm cover to be surrounded with pea gravel.
All waste gullies to be of the back inlet type and to be roddable.
All sanitary appliances to be fitted with deep deal traps.
Shower to have deep seal removable access trap.
Sizes of sanitry pipework as follows:
wash hand basin and bidet to be 32mm dia. sink, bath and shower to be 40mm dia. and WC to be 100mm dia.
Drainage pipes to be bed / surrounded with granular material.
Provide 75mm UPVC R.W.D.P'S with 110mm h.r. gutter to match,
Pipework to comply with BS 4660 1973.
Perforated sub soil irrigation pipes from septic tank to have a fall of 1:200.
Septic tank capacity to be min. 2.7m cubed to standard environmental health design.

FLOORS

Solid floor construction consisting of 100mm sand/cement screed on 100mm Kingspan Thermafloor TF70 Zero ODP on 1200 gauge visqueen D.P.M. on 100mm concrete (1:2:4) subfloor on 1200 gauge Radon membrane on 50mm dust blinding, all on 225mm min well consolidated hardcore (max fill not to exceed 600mm).
Provide 1200 gauge vapour to warm side of insulation, D.P.M. to be continuous and to be lapped and bonded to wall D.P.C'S.
Refer to handout for jointing, floor details and seals etc.

WALLS

External walls in 350mm cavity construction with 100mm concrete block outer leaf with finish to be as specified on elevation drawing with 100mm blockwork inner leaf.
Provide 150mm Platinum bead full fill cavity wall insulation.
Wall ties placed every 750mm crs horizontally 450mm crs vertically, 225mm crs vertically at all openings and within 150mm of opening.
Provide horizontal and vertical D.P.C'S to all openings with min, 50mm H.D. PIR insulation where cavities close prevent cold bridging.
DPC to be min. 150mm above G.L.
DPM to be lapped and bonded to wall
DPC min 150mm.
Blockwork inner leaf and internal walls unless otherwise indicated to be 100mm with min. crushing strength of 7N/mm.
Wall tie to be Rawl RT 2 ties stainless steel.
Height of footings should not exceed 4 times the thickness.

LIGHT SOCKETS

Wall mounted socket outlets and switches shall be located not more than 1200mm or not less than 450mm above floor level.
Pull chord shall terminate not more than 1200mm above floor level.

FIXED EXTERNAL LIGHTING

Shall have a maximum output of 100W per fitting and be fitted with auto presence and daylight control and automatically switch off -

(i) when there is adequate daylight; and
(ii) when not required at night; or

(b) have sockets that can only be fitted with lamps having a luminous efficacy greater than 40 lumens per circuits - Watt,

FIXED INTERNAL LIGHTING

Fixed internal low energy light fitting (not bulbs alone) shall be installed in 100 % of the dwelling

HWS SYSTEM

Dwellings over 150m2 to have 2 seperate heating zones with Independant time and temperature control, Water heating to be on seperate zone, Central heating and hot water systems to be designed , Installed and commissioned for the purposes of conservation of fuel and power and handed over in efficient working order, Central heating and hot water systems to be commissioned in accordance with the procedure given in the DCLG publication "Domestic Heating Compliance Guide".

HWS SYSTEM CONTROLS

In a building an indirectly heated hwsv with a heat exchanger, having sufficient heating capacity for effective control, shall have -
a thermostat to shut off the supply of heat to the hwsv when the storage temperature is reached (In the case of a hw central heating system, this thermostat shall be linked with the space heating controls to switch off the boiler when the heat is not required); and
a time clock to shut off the supply of heat when water heating is not required.
The provisions above shall not prevent the use of off-peak electricity for water heating.

CONTROL OF SPACE HEATING SYSTEMS, HWS SYSTEMS

In a dwelling the output of a space heating system shall be controlled by -
room thermostats or thermostatic radiator valves to control the temperatures
Independently in zones that require different temperatures (such as seperate sleeping and living areas); and
shall not prevent the use of a radiator as a heat leak in a solid fuel system;
where heat is provided by a boiler, other than a solid fuel boiler which operates only by natural draught, a time clock shall be provided to control the periods wherein the heating system operates.
To minimise boiler cycling -
provide wall thermostat in conjunction with hw tank thermostat (location to be in hall area).

INSULATION OF HW PIPES CONNECTED TO HWSV

The hw pipes connectedto a hwsv (including the vent pipe and the primary flow and return to the heat exchanger, wherefitted, shall be thermally insulated for at least 1m from their point of connection to the vessal, or to the point where they become concealed, with material which has a thermal conductivity of not more than 0.045 W/mK and a thickness of not less than 15mm
When providing insulation, care shall be taken to ensure that any insulating material does not impede the safe operation and visibility of warning discharges of any unvented hwsv.

INSULATION OF HW STORAGE VESSALS

A normal domestic hwsv complying with BS 1566 : 1984 (1990) or BS 3198 : 1981 or equivalent shall be thermally insulated either -
to limit the standing heat loss to not more than 1W/litre when tested in accordance with BS 1566 : Part 1 : 1984 (1990) : appendix B4; or
with a factory applied coating of polyurethene foam not less than 50mm thick and a min. density of 30Kg/m cubed.

INSULATION OF PIPES

Unless the heat loss from a pipe or duct contributes to the useful heat requirement of a room or space
It shall be thermally insulated -
in the case of a pipe, with insulating material which has a thermal conductivity of not more than 0.045 W/mK
And a thickness equal to the outside dia. of the pipe or 40mm whichever is the lesser;
or in the case of a pipe or duct, in accordance with the revelant recommendations of BS 5422 : 1990.

PLUMBING

All pipework to be insulated using insulation such as 'Armaflex' and to be min. 19mm thick on pipework in screeds, ducts and roofspace and 9mm thick on pipework in ceiling spaces.
Provide new H.W. cylinder of 150L capacity with 50mm factory fitted foam Insulation.
Thermostat to be fitted to cylinder to limit the max temp. of stored H.W. If water in the H.W. cylinder is capable of exceeding 80°C a control device is to be fitted to ensure the max temperature supplied to the domestic H.W. distribution system will not exceed 60°C.
Hot water supply to bath to be fitted with a temperature control device such as an in-line blending valve to limit the temperature to a maximum of 48°C
The output from space heating system is to be controlled by a room thermostat or thermostatic radiator valves.
The thickness of the insulation to the hot water and heating pipes should be at least equal to the diameter of the pipes.
Provide time clock to regulate the output of the space heating system.
All pipes within 1m of cylinder to be insulated to 0.045w/mk thickness equal to outside dia. of pipe or 40mm whichever is lesser.
All heating to be under floored.
Provide pressurised water system.

VALLEYS

Provide code 5 lead flashing on 200x25mm S.W. valley boards, Lead to valleys to be rolled.
Provide 200x38mm layboards nailed to main rafter to form valleys.

CEILINGS

12.5mm plasterboard with bonding and skim finish.
Provide 10mm layer of gypsum to give 1/2 hour fire protection.
All joints to have support and to be scrim taped.

CHIMNEYS

Clay chimney pot with weathered concrete capping
Chimney lined with 200mm dia, rebated and socketed flue liners to comply with BS EN 1457:1999 with sockets uppermost and pointed in fireclay cement,
Lightweight aggregate concrete surround.
Concrete hearth to be min, 125mm deep and to project 500mm from breast.
Any flue angle to be not less than 45 degrees above the horizontal.
For location of DPC in chimney see detail.
No combustable material within 50mm of chimney stack ref to Technical Booklet 'L'2.15.

BOILER

Boiler flue to be twin wall Insulated and fitted with condensate collecting vessal.
Provide low level permanent vent to boiler.
Insulated metal chimney to comply with BS 4543 Part 1 1990 and Part 2 1990 for solid fuel fired appliances, and Part 1 1990 and Part 3 1976 for oil fired appliances.

PARTITIONS

All partition walls formed in 75x38mm S.W. studs at 600mm crs.
Noggings at 600mm crs staggered.

LINTELS

Lintels to be concrete, both inner and outer skin.
Minimum end bearing to be 225mm.
Provide stepped D.P.C'S over all lintels.
For lintels over 2400mm span they are to be pre-stressed made by specialist.

UTILITY

Not to be used for preparing, storing, treating, cooking or manufacturing food or drink intended for human consumption or cleansing of utencils or appliances which come into contact with such food or drink.

LIGHT SOCKETS

Wall mounted socket outlets and switches shall be located not more than 1200mm or not less than 450mm above floor level.
Pull chord shall terminate not more than 1200mm above floor level.

FIRE DETECTION

Dwelling to be provided with a fire alarm system complying with BS 5839-6:2013 of at least Grade B Category LD2 standard.
Smoke detectors compling with BS 5446-1 : 2000
Heat detectors compling with BS 5446 : 2003
System to be wired to an ldependant circuit with isolating protective device, all cabling and fixings to be fire resistant.
The back up power source to system is to be provided by a secondary battery.
System to be fitted with silencing facility.
Commissioning certificate to be provided upon completion.

CARBON MONOXIDE ALARM

Carbon monoxide alarm to be fitted to any room with a combustion appliance not designed solely for cooking purposes.
Carbon monoxide alarm to be:
a) Battery powered to comply with BS EN 50291 alarm to incorporate warning device to alert to end of working life of alarm,
b) Mains powered to comply with BS EN 50291 Alarm to incorporate warning device to alert to end of working life of alarm sensor. Alarm to be permanently wired to mains circuit.
Alarm to be located between 1m and 3m horizontally from appliance.

ROOF VENTILATION NOTES

Provide cross ventilation to roof using Gildevale FV 250 vents (25mm continuous ventilation) in conjunction with RV 625 rafter vents,
Provide G51 ridge vent at 2.4m crs.
Provide high level ventilation to mono pitch roof.
Provide 25mm continuous ventilation at eaves.

ROOF

Provide concrete tiles/slates (refer to elevation dwg.) on 25x38mm treated S.W. battens on Kooltherm sarking felt to BS 474 on C16 grade rafters to sizes indicated on structural roof plan/sections.
Provide 100x50mm wallplate secured to wall at 900mm crs with 30x8mm galv. straps.
Cavity to be closed with 12.5mm fibreboard
Provide 225x19mm fascia.
Provide 200x12mm plywood soffit.
For roof ventilation see seperate notes.
Vertical tilthers, tiles, and rafters to be bolted together with metal plate connectors to prevent spread.

EMERGENCY EGRESS WINDOWS

Emergency egress windows required in accordance with TBE

1) Clear opening not less than 0.33m² at least 450mm high and 450mm wide.
(minimum size of opening to be 450x734mm in every habitable room on the first floor or 575x575mm (see paragraph 1.9))
2) Lower edge of opening between 800 and 1100mm from floor.

GLAZING

The first floor requires to have an alternative escape route in the form of an openable window having a clear opening of at least 850mm high and 500mm wide.
The lower edge of the window opening to be not less than 800mm and not more than 1100mm above floor level.
All glazing under 800mm high to windows and 1500mm above floor level in a door or within 300mm of the door to be laminated safety glass.
Safety glass to comply with BS 6206 1981.

WINDOWS

Where any part of a window, skylight or ventilator, when open could project more than 100mm horizontally into a space less than 2m above thr ground or floor it shall be-
(a) fitted with a suitable device to restrict the projection in normal use to not more than 100mm; or
(b) marked by a suitable feature such as-
a barrier or rail not less than 1100mm high;
a high relief of surface; or a landscape feature, which extends to at least the maximum projection of the window, skylight or ventilator

Where the external face of glazing is designed to be cleaned from the inside of a building the glazing shall be either-
(a) accessed safely from a floor; or
(b) accessible from specialist access equipment,

Where the external face of glazing is designed to be cleaned from the inside of a building the glazing shall be either-
(a) within safe reach of a person standing on a floor
(b) accessible from specialist access equipment,
Where there is a risk of falling when cleaning reversible glazing the glazing shall be fitted with a mechanism which holds it in reversed position,

Where the external face of glazing is designed to be cleaned from the outside of the building, the glazing shall be-
(a) accessed from a safe place having a firm level surface; and
(b) reached from an area adequate in size for the method of cleaning.
Where the height of the window cill is less than 6m and access is by a ladder, the standing surface may be soil.

NOTCHING AND HOLING

Notches shall be no deeper than0.125 times the depth of a joist and shall not be cut closer to the support than 0.07 of the span, nor further away than 0.25 times the span.
Holes shall be no greater diameter than 0.25 times the depth of the joist and shall be drilled at neutral axis and shall be not less than 3 diameters (centre to centre) apart and shall be located between 0.25 and 0.4 times the span from the supports.

LIMITING AIR INFILTRATION

To reduce the infiltration of cold air, leakage paths thru the building fabric shall be limited by -
sealing gaps between dry-lining and masonry walls at the edges of openings such as windows and doors and at junctions with walls, floors and ceilings;
sealing gaps between frames and openings and draughtproofing the openable elements of windows, doors and rooflights;
sealing hatches to unheated floor and roof voids;
sealing service penetrations and at floor and ceiling junctions where services are not boxed in;
sealing around joist ends where joist are built into the external wall; and
sealing vapour control membranes in timber framed construction.
the provisions are illustrated in diagram 1.5.

MECHANICAL VENTILATION

Provide mechanical ventilation to kitchen, bathroom, utility, ensuite, shower room as follows:

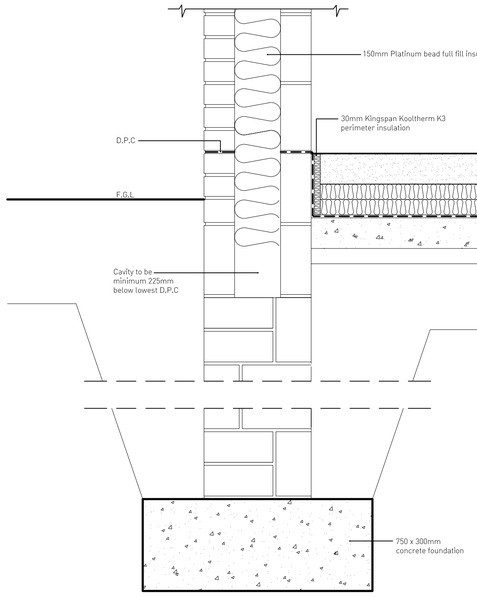
Kitchen -	vent axia VA 150 T x (64L/S).
Utility -	vent axia VA 150 T x (46L/S).
Bathroom -	vent axia VA 100 SELV XT x (21L/S).
En suite -	vent axia VA 100 SELV XT x (21L/S).
W.C -	vent axia VA 100 SELV XT x (17L/S).

All extract fans to sanitary accommodation to overun for a period of 15 minutes.
All extract fans to be fitted with anti-backdraught shutters,
Through wall units ductwork to have a slight downward angle from inside to outside to prevent water ingress.
The duct sleeve is to be of rigid material, in situations where this is not possible the flexible ductwork is to be kept to a minimum, pulled taught and supported throughout its length.
The duct sleeve is to be sealed to the external wall to ensure air tightness.
Axial fans to have a maximum 1.5m length of flexible ductwork.
All ductwork to be insulated where it passes through unheated areas.
All horizontal ductwork is to be sloped downward away from the appliance to prevent water ingress into the appliance.
All vertical ductwork is to incorporate a condensate trap to prevent water ingress back into the appliance.

VENTILATION

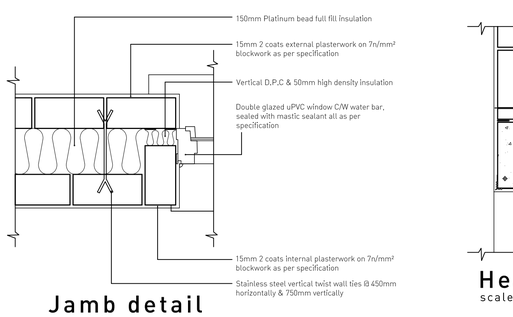
Provide background ventilation at a rate of 121000mm² for whole house ventilation as per calculation sheet. Background ventilators to be located in all rooms with external walls, with min 5000mm² to all habitable rooms and 2500mm² to all wet rooms.

To ensure good airflow within dwelling provide min 10mm undercut to all doors from fitted out finished floor or 20mm from unfinished screed floor / floorboards to provide minimum 7600mm².
Habitable rooms to have an opening sash area equivalent to 1/20 in the floor area of the room being served.

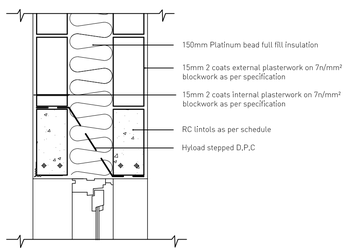


Floor detail
scale 1:10

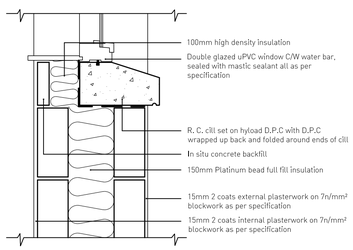
Infrastructure for high-speed communications networks



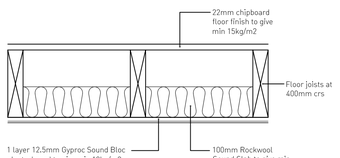
Jamb detail
scale 1:10



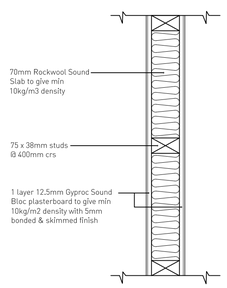
Head detail
scale 1:10



Cill detail
scale 1:10



Sound insulated first floor detail



Sound insulated stud wall detail

HOUSE TYPE A

WS DESIGN
22 GILFORD ROAD—PORTADOWN—
CO.ARMAGH—BT63 5ED—
T—02838 882 052
M—0781 861 3252
E—ws.design@btinternet.com

TITLE—
Proposed development of 4No, dwellings at 92b Carnreagh, Hillsborough

CLIENT—
Bill Brown

DRAWING—
Sections

SCALE— 1:50
DATE— Sep 2019
PROJECT NO— 454
DRAWING NO— W04