

CONSTRUCTION SPECIFICATION

Project No:	22.134 - North Cottage
Project Address:	North Cottage, Reading Road, Goring RG8 0LL
Client	Mr & Mrs Coffey
Description	Internal alterations at first floor level including the addition of 2 rooflights.

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GENERAL

This document and associated drawings do not constitute a full specification, they are for general guidance only and their primary function is to assist the Local Authority Building Inspector in determining the Building Regulations application.

The contractor will be responsible for ensuring that all building work carried out by him, or under his instruction, complies with the relevant current Building Regulations, British Standards and codes of practice (including workmanship) by-laws and manufacturer's written instruction.

All works specified in this document and associated drawings shall be undertaken in accordance with all current Health & Safety legislation.

If a Contractor wishes to deviate from this document, or use any alternative materials or structural elements, it is his responsibility to ensure that these are to the satisfaction of the Building Inspector.

All specialist works such as electrical, plumbing and heating installations are to be carried out by a qualified tradesman and to the appropriate authorities recommendations and standards.

All specified items are to be installed in accordance with manufacturer's recommendations.

All given dimensions are to be checked and confirmed on site prior to works commencing.

Special attention to be paid to the tight fittings of insulation and taping of joints; particularly at junctions of wall and roof insulation, to ensure that the building is airtight.

SITE PREPARATION

Demolition

The contractor shall be required to provide evidence of insurance cover equivalent to the requirements of the Conditions of Contract.

Pulling down is to be carried out in such a manner as to cause as little inconvenience as possible to the occupants of the existing building, to adjoining owners, or to the public and the Contractor will be held responsible for any claims which may arise from disregard of this clause. Debris is to be kept well watered during the work to prevent dust arising.

The Contractor must design and supply all shoring, needling and strutting, or other supports to walls, floors, roofs etc., necessary for the protection and safety of existing buildings and all fans, screens and other protection necessary to protect adjoining owners and the general public.

The Contractor shall alter, adapt and maintain all such temporary works as may be necessary from time to time and finally clear away and make good all disturbance. He will be held solely responsible for the safety of existing buildings on or adjacent to the site and temporary works, and the making good of all damage done.

All materials not described to be re-fixed or stored and all rubbish and debris are to be removed from the site.

No rubbish or material to be discarded shall be burned on site.

Materials arising from the demolitions must not be stacked or allowed to accumulate on existing structures in such a way as to endanger their stability. The Contractor will be held entirely responsible for damage arising from this cause.

The Contractor shall be responsible for locating all existing services affected by the demolitions and arranging for their disconnection or diversion so that they may be entirely self-contained within the parts of the premises which are to remain. The Contractor shall give notices to water, gas, telephone and electricity companies and allow facilities for removing any fixtures, fittings or services which may belong to them and pay any charges arising.

STRUCTURAL STEEL AND LINTELS

Steelwork

- Hot rolled steel sections except angles to be to BS 4, Part 1, 1980, made from steel to BS 4360.
- Hot rolled steel equal and unequal angles shall be to BS 4848, Part 4, 1972, made from steel to BS 4360.
- Bolts, screws and nuts shall be to BS 4190 or BS 3692.
- Washers shall be to BS 4320
- Steel shall be blast cleaned in accordance with BS 4232.
- Fabrication and erection shall be in accordance with BS 449, Part 2.

All connections are designed by Structural Engineer to safely support the loads, reactions and bending moments imposed on the structure. Engineer's drawings, details and calculations to be strictly followed by Contractor. Holes shall be drilled, not punched and have all burrs removed. Bolt clearances shall have the tolerances indicated on the Structural Engineer's drawings.

All steelwork shall be prepared by removing all scale and rust, cleaned free from grease and dirt. Steelwork to be delivered on site painted with one coat red oxide primer.

Steelwork must not be stacked or handled before or during erection in such a way as would cause undue stress to the members or joints or damage to priming.

The Contractor must ensure that all steelwork installed is accurately lined, levelled and plumbed in accordance with the Structural Engineer's drawings.

STRUCTURAL TIMBER AND GENERAL CARPENTRY

Ceiling Joists

All new timbers used for structural work are to be supplied pre- treated against insect and rot attack by pressure impregnation in accordance with BS 5268:1997 Part 5 and all cut surfaces and notches made on site shall be treated with a suitable brush applied preservative.

Joist hangers, timber connectors, framing anchors etc shall be of stainless steel and obtained from an approved manufacturer.

The plates, joists, rafters, purlins and other pieces used for the construction of the roof are to be of the sizes and grades specified on the Architect's and Engineer's drawings. All timbers shall be properly framed and secured with a suitable number and size of nails or as specified on the drawings. As far as possible, wall plates shall be in one piece between points of change of direction and joints where necessary and at corners shall be halved. Wallplates shall be secured to the inner leaf of cavity walls by 30 x 5 mm galvanised steel straps at 1.2 m max. centres.

Floor and ceiling joists of the sizes and grades indicated on the drawing shall be built in to the inner leaf of external walls and lapped and spiked together at cross walls. Joists must not be notched at bearings. Provide one line of herring bone strutting in the centres of floor joists where the span exceeds 2.5 m, with 150 x 38 mm struts well nailed and tightly wedged. Alternatively approved galvanised steel struts may be used.

Where holes are to be cut for the passage of pipes etc they must be confined to the middle third of the depth of the joist.

Trimmer and trimming joists shall be the same depth as the common joists and of the thickness specified on the drawing. All mortise and tenon and half depth housing joints shall be accurately constructed so that the alignment of the members is maintained while the stresses of the connections are fully engaged.

Architraves Skirting & Linings

All moulded work shall be accurately worked as per the Finishes Schedule. All skirtings, architraves, plates and other joinery works shall be accurately scribed to fit the contour of any irregular surface against which they may be required to form a close butt connection. It is the Contractor's responsibility to ensure that no joinery assembly is too large to be brought to its location in the building.

Linings to internal door openings to be hardwood and to extend the full thickness of the finished wall, securely fixed to wall behind.

Finishes

Where joinery is specified to be painted it shall be delivered to the site coated with an appropriate primer and all built in surfaces shall be primed. Where joinery is specified to be stained it shall be delivered to the site coated with one coat of an appropriate clear sealer in accordance with the instructions of the stain manufacturer.

Except where a painted, stained or polished finish is specified, all floors, stairs, landings and other joinery works shall be cleaned down, scrubbed and left in good order to the complete satisfaction of the Architect on completion.

Workmanship

All timber is to be well seasoned, free from large, loose and dead knots, decayed or waney edges, splits and any other defects which would render it unsuitable for its purpose.

Softwood for carpentry generally is to be in accordance with BS 4978:1996 and to the grades specified on the drawing. The timber is to be seasoned to a moisture content of or below the maximum values specified in BSCP 112: 1971 for its position in the structure before fabrication.

Softwood for joinery unless otherwise specified is to be European Redwood, European Whitewood, Douglas Fir or Western Hemlock and to conform to the requirements of BS EN 942-1:1996 (replaces BS 1186 Part 1).

Hardwood of the species specified shall be of prime quality, kiln dried, free from seasoning defects and of uniform colour and grain.

The moisture content of the timber for joinery when it is manufactured and delivered to the site shall come within the limits given in BS EN 942-1:1996, for each use, and shall be maintained until the building is completed

All joinery work shall be carried out in accordance with BS 1176, Part 2:1971. including all necessary mortising, tenoning, grooving, matching, tonguing, housing, rebating, and other works necessary for correct jointing and fixing in the building whether or not specifically indicated on the drawing.

Plywood shall conform to BS EN 636-1:1997, -2:1997 and -3:1997 and DD ENV 1099:1998, bonding to be WBP, MR, or INT as specified on the drawing. Plywood shall be faced both sides with birch veneer and shall be grade BB quality.

The provisions of the Building Regulations shall be observed in the positioning of any timber adjoining a fireplace, flue or hearth.

Shavings, chippings, sawdust etc, shall be cleared away and must not be left in roof spaces, under suspended floors or in other hidden positions.

TILE PITCHED ROOF COVERINGS

With regard to assembly, methodology, timber sizes etc adopted for each type of roof construction, refer to Architect's drawings and Structural Engineer's details, drawings and calculations.

Tiles

Each course of tiles must be laid with tails aligned using special tiles at ends of courses to maintain bond and to ensure that cut tiles are as large as possible. Tiles must be fixed in accordance with the manufacturer's instructions using aluminium nails, with minimum head lap to manufacturer's instructions.

Form tiling edges and junctions using the specified and manufacturer's recommended fittings and accessories to match tile colour and finish unless specified otherwise. Fix edge tiles and fittings securely to neat true lines. Fix every tile adjacent to an edge or junction by nailing or clipping as appropriate. Ensure that all flashings are fixed with or immediately after tiling and are neatly dressed down.

Cover valley with strip of underlay 600 mm wide, under-lapping general underlay. Lay valley tiles loose and coursed in with general tiling. Cut adjacent tiles to fit neatly and fix the last tile in each unfixed course with 2 nails each.

At ridges lay a length of underlay to overlap by not less than 150 mm, securely fix ridge ventilation terminals at a rate of 1 per 2.8 m of ridge length, to manufacturers fixing instructions. Fix each roof tile in the last course of each slope and make weather-tight with ridge tiles laid to a true line with edges bedded and joints solidly bedded in mortar, neatly struck off flush as the work proceeds.

Mortar for bedding and pointing to consist of 1:3 cement:sand. To be finished neatly and any residue removed.

Battens

Battens to be 25 x 38mm (to suit tile requirements) softwood grade GS to CP112 part 2, preservative treated, fixed with galvanised steel cut or wire nails 65 mm long to each rafter.

Underlay

Roofing underlay to be Kingspan Nilvent to BS 747:2000 Part 2 Type 1F to be fixed in accordance with manufacturers instructions to eaves so that water will drain freely, with 150 mm horizontal laps and vertical laps not less than 100 mm wide coinciding with supports. Cut neatly and accurately around pipes.

At eaves, fix continuous Airtrak-EC eaves carrier to prevent water retaining troughs. Dress underlay over eaves carrier as per manufacturer's instructions and fix tiles with tails projecting to ensure that all water discharges into gutter.

The supply and installation of the roofing underlay, insulation and vapour barrier is to be carried out by an approved specialist roofing contractor who must provide a minimum 10 year guarantee in respect of his materials and workmanship. On completion a copy of the guarantee must be handed to the Architect.

Ventilation

Voids between tiles and insulation to be insulated via:

Eaves ventilation - Supply 25mm continuous ventilation via exposed rafter feet. Insect mesh to be installed at ventilation openings. Install Airtrak RV Roll ventilator to ensure clear airpath at the eaves.

Flashing

Lead for flashings, saddles, pipe flanges etc. to be mild sheet lead to BS EN 12588:1999 unless specified otherwise. Flashings shall be in lengths of not more than 1.5 m and fixed with lead wedges at not more than 400 mm centres.

At junction of ridge with hip, valley, abutment, or higher roof slope fix code 4 lead saddle over the underlay.

At abutments with walls or parapets the roofing felt must be turned up the wall with an angle fillet, to finish at least 150 mm above the level of the finished roof, bonded to the turned up vapour barrier, and covered with a lead flashing specified elsewhere.

WINDOWS, ROOF LIGHTS AND GLAZING

Windows

Windows to achieve min. 1.4W/m²K U-Value in accordance with AD L1.A

Window frames to be installed with hinges, casement stays, fasteners and adjustable ventilators.

All side hung windows to open to 90 degree angle.

All windows where noted as escape windows to provide a free area of 0.33m² minimum, at least measure 450mm x 450mm min. and to be at a height between 800mm and 1100mm from FFL.

Extended cills of appropriate length are to be allowed for to areas over timber weather boarding.

Provide trickle ventilator units to head of windows providing 10,000mm² to habitable rooms and kitchens and 4,000mm² to bathrooms.

All windows and doors to be fitted with Compriband TP600 Seal around frame. Mastic to be applied around frames internally and externally.

Glazing

The whole of the glass shall be of British manufacture to BS 952, Part 1:1995, free from spalls, cracks, bubbles or other defects.

Glazing to be in accordance with the Building Regulations A.D. Part K.

Standard glazing units: 24mm hermetically sealed double glazed units to BS6262, BS EN 12600, BS5713 with Argon filled cavity, black spacer bars and low E coating in 6:12:6 configuration.

Obscure glass (specification TBA) to WC and Bathroom windows.

All window opening controls to be max 1900mm from finish floor level.

On completion all glass shall be cleaned inside and out and left perfect.

Safety Glazing

Toughened glass to be installed to all critical locations;

- Between finished floor level and 800mm above
- Between finished floor level and 1500mm above in doors and in side panels which are within 300mm of either edge of the door.

Toughened safety glass must be marked with;

- The glass product standard BS EN 12150
- The classification following testing to BS EN 12600. This will be Class 1,2 or 3.
- The name or trade mark of the manufacturer.

DOORS AND FRAMES

Internal Doors

Internal doors shall be supplied and installed in locations as per the contract documents and door schedule. Internal door specification to be agreed with the client prior to ordering.

Allow for door furniture as follows:

- 3 no. hinges
- Handle and latch
- Turn and release Lock to bathroom and W.C. doors

Internal doors should also allow for the post-fitting of tiles/carpet and underlay.

All Internal doors to be supplied and delivered to site wrapped and the covering not removed until completion.

FIRE PROTECTION

Fire Alarm And Detection

To B.S.5446:Part 1 and Building Regulations Part B, 2000 and in accordance with current IEE regulations.

Fire alarm to be mains operated with battery back up, failure of the system should trigger a visual and audible signal on each unit. Detectors are to be located min 300mm from walls / light fittings and not directly above radiators.

For all locations refer to drawing .

- Heat detector to be installed in Kitchen
- Smoke detectors to be installed at every floor level in circulation space.
- Carbon monoxide detector to be installed within 2-4m of every wood or gas burning appliance.

Encased Steel Beams / Ceiling Linings

All surface linings to meet classification 1 from B.S. 476: Part 7 and provide minimum 30 minutes of fire protection.

Steels to be protected min. 30 Minutes resistance using intumescent paint or fire rated plasterboard. All to be installed in accordance with manufacturer's instructions.

All down lighters located in ceilings to be fitted with proprietary fire hoods to ensure an appropriate period of fire protection.

All pipework/ductwork penetrating 1/2hr fire resisting walls/floors to be fitted with suitable 1/2hr fire resistant collars and dampers in accordance with A.D. B.

PLASTERING AND SCREEDING

Plastering

All plasters are to be mixed and used strictly in accordance with the manufacturer's printed instructions.

Ceiling and timber partition wall linings shall be formed using 12.5 mm Gyproc wallboard.

Moisture resistant plasterboard to be used in bathrooms and kitchens.

Gyproc Fireline plasterboard to be installed with Gyproc encasement system around all steel beams and columns.

Plasterboard shall be stored and used strictly in accordance with the manufacturer's printed instructions. All joints and angles shall be filled with Gyproc joint filler and reinforced with 85 mm wide jute scrim embedded in plaster.

All plastered and plasterboard surfaces shall be finished with 'Thistle Multi Finish' skim finish plaster by British Gypsum. plaster to be applicator to recommended thickness and trowelled to a smooth but not polished surface.

All external angles in plasterwork are to be formed using stainless steel plasterboard beads as appropriate supplied by British Gypsum or similar approved.

Screed

Cement for screeds shall be ordinary Portland Cement in accordance with BS 12:1989.

Sand for screeds shall be in accordance with BS 882 : Part 2 1992.

All beds for screeds shall be well wetted, brushed clean and free from all mortar droppings etc and well brushed with clean water before laying commences

Floors indicated on the drawings to have a screed finish shall be rendered with cement and sand 1:3 trowelled to a uniform smooth finish free from trowel marks and other blemishes with the following maximum permissible deviations:

From a 3 m straight edge : 6 mm.

From a 1 m straight edge : 2 mm.

Cast screeds continuously as far as possible, without joints in accordance with manufacturer's instructions. As soon as screed has set closely cover with polythene sheeting and keep in position for not less than 7 days and protect screed from physical damage. The screed shall be reinforced with galvanised wire mesh positioned at approximately mid-depth of the screed.

SHEET AND TILE INTERNAL FINISHES

Workmanship

Walls and floors shall be prepared for tiling in accordance with the recommendations of BSCP 212 : 1963 Section 3.

Before tiling commences the sub-surface must be dry and clean in accordance with the tile manufacturer's instructions.

All finished floors must be protected from any following operations and any damage made good at the Contractor's expense.

Tiles

Refer to contract drawings for all locations and specification of wall and floor tiles. Tiles shall be set out as per the tender/ contract drawings.

All exposed edges to tiles to be finished with a tiling bead.

Tiling shall be continued into the reveals of all window and door openings within the tiled areas.

The tiles shall be laid strictly in accordance with the manufacturer's instructions using the recommended adhesives.

All tiled surfaces are to be washed down and left clean on completion.

Movement joints - refer to manufacturer's information.

Grout

Jointing of wall tiles is to be in cement based waterproof grouting as recommended by the tile manufacturer. Colours TBC.

All joints between sanitary fittings, Kitchen worktops and vanity units and tiling to be sealed with white Dow Corning or similar silicone sealant, neatly pointed.

PAINTING, STAINING AND VARNISHING

Generally

All paints, stains and other materials are to be supplied in the manufacturers' sealed containers and are to be obtained from approved manufacturers.

All materials must be stored and used strictly in accordance with the manufacturer's instructions and BS 6150:1991.

All ironmongery and other removable fixtures and fittings, including radiators and electrical fittings, shall be removed prior to decoration and cleaned and re-fixed on completion.

Floors and any fittings etc which cannot be removed must be protected during decoration from damage and from marking by paint.

Plaster surfaces shall be clean of all efflorescence, dirt, plaster splashes, etc., and all cracks, imperfections and damaged plaster shall be cut out and the edges undercut. Large cracks shall be made good with Keene's or other approved cement and small cracks filled with Polyfilla or similar.

All surfaces to be painted shall be prepared in accordance with the paint manufacturer's instructions.

No painting shall be carried out during wet, frosty or foggy weather or upon surfaces not thoroughly dry. Areas must be free from dust before painting is commenced. All newly painted surfaces must be protected from dust or other injury.

All finished paintwork and stain shall be uniform in colour, free from blemishes, runs, etc., and conspicuous brush marks.

Walls, Ceiling, Cornice & Architraves

After preparation, all walls and ceilings, except where tiled are to be finished with one mist coat and 2 coats of white matt emulsion paint.

Joinery

Preparation of softwood joinery for painting shall include treating all knots with two thin coats Pure Shellac Knotting, priming with 1 coat pink wood primer internally and 1 coat aluminium wood primer externally, stopping with White Lead Putty and rubbing down to smooth keyed surface.

ABOVE & BELOW GROUND DRAINAGE

The design and pipe sizing of the plumbing and drainage installations shall be the responsibility of the Contractor subject to the routing of pipework being approved by the Architect.

The entire plumbing installation shall be designed and installed in accordance with all manufacturers instructions and any relevant British Standard Code of Practice and shall comply with the Building Regulations and the Water and Gas Companies regulations. The Contractor shall carry out any such tests as may be required to satisfy these regulations.

All white goods provided to be A rated.

Above Ground Drainage

Soil, waste and ventilating pipes, traps and other fittings shall be the jointed and fixed in accordance with the manufacturer's instructions. Pipe sizes shall be as followed;

- Soil and waste to be 110mm dia single stack drainage system connecting via a suitable adaptor to the underground drainage system (200mm min. radius at base).
- Soil stub stacks to be 110mm dia UPVC, fitted with air admittance valve, (where indicated) above cistern level.
- Washbasin: 32mm dia. trap and 75mm deep seal PVC bottle trap
- Shower: 40mm dia. trap and 50mm deep seal PVC bottle trap
- Sink/washing machine/dishwasher: 40mm dia. trap and 75mm deep seal PVC bottle trap
- WC: 100mm dia. trap and 50mm deep seal PVC bottle trap

Waste sizes increase to 40mm for WHB over 1.7m long (up to 3.0m max) and 50mm for bath/showers over 3.0m long (up to 4.0m max).

All soil pipes to be wrapped in a min of 25mm mineral wool sound deadening quilt (min 15kg/m³).

All points of discharge into the system to be fitted with traps retaining a min seal of 25mm of water

All pipes to be provided with rodding access at head & base of wet section

75mm dia. flexible vent pipe taken through roof void, to proprietary ridge terminal (located minimum 900mm above highest window head level).

The overflows from all cisterns are to be of a larger diameter than the supply pipes. They shall be carried through the external wall and terminate with a tee at least 100 mm from the outside face of the wall.

All SVP's and skirting pipework to be encased in soil pipe boxing (see specification above).

No drainage connection to be made within 200mm of WC branch.

Below Ground Drainage

Pipes, bends, junctions, gullies and access fittings to be 100 mm SuperSleeve flexible jointed vitrified clay to BS 65:1997 or U-PVC to BS 4660, Kitemark certified, manufactured by the Hepworth Iron Company Ltd and installed strictly in accordance with their instructions.

Before starting work the Contractor must check invert levels and positions of existing drains, sewers, inspection chambers and manholes against information shown on drawings and report any discrepancies to the Architect. Adequately protect existing live drains and maintain normal flows during construction.

Transport and store bed/joint pipes fittings and components in accordance with the manufacturer's site-work instructions. Store rubber jointing rings so that they are not exposed to sunlight. Lay pipes straight to line and true to gradient on an even bed for the full length of the barrel and joint using the recommended lubricants, leaving recommended gaps at ends of spigots to allow for movement. Adequately protect pipelines from the ingress of debris and seal all exposed ends of pipelines during construction. Carefully backfill in accordance with the manufacturer's instructions immediately after successful testing.

Excavate trenches to approximately 150 mm below invert level of pipes and with vertical sides up to 300 mm above crown of pipe and width at this point as narrow as practical but not less than the external diameter of the pipe plus 300 mm. Ensure that the trench bottom is free of hard or soft spots and lay bed of 10 mm single size granular aggregate to BS 882 across the full width of the trench.

After testing lay and compact further granular material uniformly in 100 mm layers to 150 mm above the crown of the pipe. Above this level backfill with material excavated from the trench in well compacted layers not exceeding 300 mm thick. Mechanical compaction must not be used until there is a minimum of 600 mm of compacted material above the crown of the pipe. Trenches under roads to be backfilled with Granular Sub-base material type 1 Department of Transport clause 803.

Where the crown of the pipe is less than 300 mm below the underside of any concrete slab or less than 450 mm below the surface of any road or driveway the pipe must be provided with a concrete surround as specified below. Where the bottom of the drainage trench is lower than and less than 1 m from building foundations the pipe must be surrounded in 150 mm concrete and the trench filled with concrete up to the level of the foundation bottom. Where the trench is further than 1 m from the foundation but the depth of the trench below the bottom of the foundation is greater than the distance from the foundation (the critical level) the pipe must be surrounded by 150 mm concrete and the trench filled with concrete to a level equal to the critical level.

Where a concrete surround is specified above, form vertical construction joints in surround at face of pipe joints using 18 mm thick compressible fibreboard or polystyrene pre-cut to finished profile of concrete and pipes. Fill any gap between spigot and socket with resilient material to prevent entry of concrete. Lay and compact bed of concrete grade C20 to BS 5328 (20 mm nom. max. size of aggregate) over full width of the trench to a level just clear of pipe couplings and allow to set. Lay pipes on concrete bed and after testing place and compact further concrete to encase pipe up to a level 150 mm above crown or to other levels as specified above or shown on drawings.

All concrete encasements to have expansion joints at intervals not exceeding 9m maximum.

Pipes passing through walls, foundations or other structural elements must be surrounded by 50 mm of compressible material and a lintel incorporated into the brickwork.

Manholes/Inspection chambers in 225 Class 'B' engineering bricks laid in water bond in cement mortar on minimum 150 concrete base: or other approved system.

Internal Dimensions			Cover Sizes	
Depth	(W)	(L)	(W)	(L)
0 - 600mm	450	450	450	450
600 - 1m700	720 or 600mm dia.		450	450
Over 1m 750	1200		600	600

Covers and frames to B.S. 497 set in concrete top and surround.

Manholes/inspection chambers over 1m deep to be fitted with step irons or ladders as necessary.

All to the approval of the Local Authority.

Rainwater

Downpipes, hoppers and gutters to match existing. Rain water drainage design to be in accordance with approved document H. All gutters adjacent to trees to be provided with leaves guard. Down pipes to be connected to drains via gullies & rodding access plates. Surface water drainage to run from gullies into soakaways. For soakaway locations refer to drawing GA.1313.

Soakaways, where used, to be minimum 5m from any building or highway and to comply with B.R.E. Digest No. 365. Notional location indicated on drawings.

HOT & COLD WATER SYSTEMS

The design and pipe sizing of the hot & cold water, heating and gas installations shall be the responsibility of the Contractor subject to the routing of pipework being approved by the Architect.

The entire hot & cold water, heating and gas installation shall be designed and installed in accordance with all manufacturers instructions and any relevant British Standard Code of Practice and shall comply with the Building Regulations and the Water and Gas Companies regulations. The Contractor shall carry out any such tests as may be required to satisfy these regulations

Hot & Cold Water

Hot and Cold Water and Gas pipework shall be in copper to BS EN 1057:1996, BS EN 12449:1999, and BS EN 12451:1999, and shall be fixed with single copper saddle clips except where lagging is required when two piece copper spacing clips shall be used. Fittings shall be of the capillary type to BS 864 using lead free solder.

Provide trapped standpipe and cold water supply for washing machine and dishwasher. Supply pipes must terminate with valves suitable for flexible hose connection.

Wherever possible pipework shall be out of sight under floorboards, in ducts or cupboards and in roof spaces or the like. Pipework shall be adequately fixed to walls and other surfaces. Care shall be taken to avoid vibration being transmitted from circulating pumps and noise caused by water hammer. Where exposed, pipes shall be neatly and unobtrusively arranged, running vertically or horizontally subject to any required falls.

Stop valves complying with BS 1010:1973 shall be provided on all hot and cold water services in the following positions:

- (1) On all cold water down services from a storage cistern at the cistern.
- (2) On all hot and cold water service pipes before every appliance, or range of appliances served.

Access doors shall be provided on all main soil and waste stacks with access panels in any enclosing structure as described under Carpentry and Joinery. All waste traps shall be accessible.

All water storage cisterns shall be insulated with purpose made plastic covered insulation jacket held with plastic straps. All pipe-work in roof spaces or other unheated areas shall be insulated with preformed foam pipe lagging adequately secured, without gaps.

The overflows from all cisterns are to be of a larger diameter than the supply pipes. They shall be carried through the external wall and terminate with a tee at least 100 mm from the outside face of the wall.

All water storage cisterns, cylinders and the like shall be adequately supported with joists, bearers and boarding etc and pipes shall be supported throughout their length to prevent misalignment.

Heating

Heated towel rails are to be installed to the identified rooms as per the Contract drawings. Design of the heating system to be carried out by the supplier and to be provided by the contractor.

Contractor to include a suitable sum for additional builder's work in connection with services.

ELECTRICAL SYSTEMS

The electrical installation is to be designed, supplied and installed by the Contractor to the requirements of this Specification and the Architect's drawings.

The installation must comply with the latest edition of the A.D. P - Electrical Safety and IEE Regulations for the Electrical Equipment of Buildings and the requirements of the local Electricity Company. The Contractor shall carry out any tests required to prove compliance, give all notices and pay all charges arising.

Where installing, inspection and testing of electrical installations, either:

1. Use an Electrician / Installer registered with a Competent Person's scheme, or
2. Submit a Building Regulations Application, where:
 - a) An Electrician registered with a recognised trade body such as NICEIC, ECA and NAPIT (who need not to be registered under a Competent Persons scheme) tests the works and issue a design, installation and test certificate under BS 7671
 - b) The work is carried out by an unregistered electrician or is a DIY installation, the applicant is required to have the work inspected and tested by a registered electrician as in part (a) above

Wiring generally shall be carried out using PVC sheathed cables complying with BS 6004:2000 and shall be concealed. As far as possible cables shall be run in the interfloor spaces or the roof void. Holes through joists shall be as near as possible to the neutral axis and in any case not less than 50 mm from the top of the joist. Cables shall be adequately supported and secured to avoid straining or kinking. In roof voids cables shall be secured by buckle clips at not more than 1 m centres.

The whole of the electrical installation and all other metal fixtures and fittings to be installed as part of the building shall be earthed in accordance with the requirements of the IEE Regulations and the Local Electricity Supply Company.

Cables concealed in plastered walls shall be protected by galvanised metal capping and as far as possible run vertically from floor or ceiling to the fitting. In no case shall the plaster cover be less than 6 mm.

All cables shall be spaced at least 230 mm from any pipes intended to carry hot water. The Contractor shall be responsible for checking the proposed runs of any such pipes before commencing wiring.

The Contractor shall check and confirm with Client/Employer the location of all fittings prior to the commencement of wiring, and should it be necessary to make minor adjustments to the location of any fitting this shall be done without charge.

Allow suitable sum for Builder's work in connection with services.

Sockets

Switched socket outlets and fused connection units shall be supplied and installed in locations as per the contract documents.

All socket outlets shall be 13A rating 3 pin shuttered, switched, rectangular pin pattern, complying with BS 1363:1995. Cooker control unit shall include 45A DP main switch and 13A switch socket outlet with neon indicators, faceplate marked "Cooker", complying with BS 4177:1992 and BS 1363:1995. 13A fused connection units shall comply with BS 5733:1979. Plate light switches and ceiling switches shall comply with BS 3676:-1:1989. Co-axial socket outlets shall comply with BS 3041:1985. Telephone socket outlets shall be B.T. approved.

Switch plates, socket outlets, fused connection units, co-axial socket outlets, telephone socket outlets and cooker control unit shall be flush pattern, white plastics fittings from the Capital range manufactured by Crabtree Electrical Industries Limited or similar approved, on concealed galvanised steel installation boxes complying with BS 4662:1989 fixed squarely and flush with wall surfaces. Socket outlets shall be generally positioned 450 mm above floor level or 150 mm above worktops and light switches under 1200mm above floor level.

Consumer Unit

The consumer unit shall be metal clad and comply with BS 5486:1989 Miniature circuit breakers to BS EN 61008 and of adequate rating for the duty. Miniature circuit breakers to BS EN 60898:1991 shall be provided for all circuits. Sufficient ways shall be provided for lighting, ring main power circuits, electric cooker, immersion heater(s), garage, door bell and two spare. A list of circuits shall be provided clearly marked in ink.

Extracts

Supply and install extract ventilators and controllers as shown on Architect's drawings.

Kitchen - cooker hood to provide 30l/s mechanical extract over hob (60l/s elsewhere) to external wall vent
Utility Room - extract to provide 30L/S ventilation with 15 minutes overrun to external wall vent
WC - extract to provide 6L/S ventilation with 15 minutes overrun to external wall vent
Bathroom and Ensuite - extract to provide 15L/S ventilation with 15 minutes overrun to external wall vent

T.V. & Data Connections

From an agreed position in the roof void, run co-axial television aerial wire to the position(s) directed by Client/Employer, 450 mm above finished floor level, for T.V. aerial outlets.

From the position directed by Client/Employer for the BT telephone inlet, run suitable telephone connection cable to the telephone socket connection points, 450 mm above finished floor level.

Light Fitting

All new light fittings shall be supplied and installed as per the Contract documents.

All light fittings to be low energy LED in accordance with the minimum requirements set out in the Domestic Building Compliance Guide.

CLEARANCE WORKS

On completion of the works the contractor is to repair and replace as necessary all fencing, Clear away all debris from the gardens, Make good all hard standings and trenches where necessary, Allow for reseeded turf which has been damaged due to construction works, Clean the works both internally and externally, Clear away all Contractor's plant, materials, etc. and vacate site.