

**MATERIALS FOR PIPES, FITTINGS AND JOINTS.**

3.1 THE MATERIALS FOR DRAINS SHOULD BE IN ACCORDANCE WITH THE RELEVANT STANDARDS GIVEN IN TABLE 3.1. WHERE DIFFERENT METALS ARE USED THEY SHOULD BE SEPARATED BY NON-METALLIC MATERIAL TO PREVENT ELECTROLYTIC CORROSION. RIGID PIPES SHOULD HAVE FLEXIBLE JOINTS. ALL JOINTS SHOULD REMAIN WATERTIGHT UNDER WORKING CONDITIONS. NOTHING IN THE PIPES, JOINTS OR FITTINGS SHOULD PROJECT INTO THE PIPE LINE OR CAUSE AN OBSTRUCTION.

TABLE 3.1 MATERIAL FOR UNDERGROUND FOUL DRAINAGE

MATERIAL	RELEVANT STANDARD
RIGID PIPES	
FIBRE CEMENT	BS EN 588
VITRIFIED CLAY	BS 65, BS EN 295
CONCRETE	BS 5911, BS EN 1916, BS EN 1917,
GREY IRON	BS 437

**FLEXIBLE PIPES:**

UPVC: BS 4960, BS EN 13598, BS EN 1401  
HEATING: BS 686, BS EN 295  
HOT WATER STORAGE SYSTEM CONTROLS

IN A BUILDING AN INDIRECTLY HEATED HOT STORAGE VESSEL WITH A HEAT EXCHANGER, SHALL HAVE A THERMOSTAT TO SHUT OFF THE SUPPLY OF HEAT TO THE HOT WATER STORAGE VESSEL WHEN THE STORAGE TEMPERATURE IS REACHED (IN THE CASE OF A HOT WATER CENTRAL HEATING SYSTEM, THIS WHEN HEAT IS NOT REQUIRED); AND  
B) A TIME CLOCK TO SHUT OFF THE SUPPLY OF THE HEAT WHEN WATER HEATING IS NOT REQUIRED.

\* INSULATION OF PIPES AND DUCTS.

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.

A) 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 DIAMETER OF THE PIPE OR 40mm, WHICHEVER IS THE LESSER; OR  
B) IN THE CASE OF A PIPE OR DUCT, IN ACCORDANCE WITH THE RELEVANT RECOMMENDATIONS OF BS 5422: 1999.  
\* CONTROL OF SPACE HEATING SYSTEMS.

IN A DWELLING A SPACE HEATING SYSTEM SHALL BE CONTROLLED BY:

A) ROOM THERMOSTATIC RADIATOR VALVES TO CONTROL THE TEMPERATURES INDEPENDENTLY IN ZONES THAT REQUIRE DIFFERENT TEMPERATURES SUCH AS SEPARATE SLEEPING AND LIVING AREAS. THESE METHODS SHOULD NOT PREVENT THE USE OF A RADIATOR AS A HEAT LAMP IN A SOLID FUEL SYSTEM.  
B) 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 WHEN THE HEATING SYSTEM OPERATES.  
C) TO MINIMISE BOILER CYCLING A GAS OR OIL FIRED BOILER SHALL SWITCH OFF WHEN THERE IS NO DEMAND FOR HEAT AND WHERE A SPACE HEATING SYSTEM IS CONTROLLED SOLELY BY THERMOSTATIC RADIATOR VALVES, THE SYSTEM SHALL BE FITTED WITH FLOW CONTROL, OR OTHER CYCLING DEVICE.  
D) NOTES A & C SHALL NOT APPLY TO INDIVIDUAL SOLID FUEL, GAS OR ELECTRIC FIRES AND ROOM HEATERS WITH INTEGRAL CONTROLS.  
E) NOTES A & C SHALL NOT APPLY TO DUCTED WARM AIR SYSTEMS OR TO FLAP CONTROLLED ELECTRIC STORAGE HEATERS BUT THESE SYSTEMS SHALL BE FITTED WITH THERMOSTATS AND TIME CONTROLS.  
\* PART K - SECTION 2 VENTILATION OF DWELLINGS

2.1 THIS SECTION GIVES THREE METHODS OF VENTILATING DWELLINGS, BY -  
METHOD 1 - FOLLOWING THE VENTILATION RATES SET OUT IN PARAGRAPHS 2.5 TO 2.7;  
METHOD 2 - PROVIDING THE SYSTEM GUIDANCE SET OUT -  
(i) FOR DWELLINGS WITHOUT BASEMENTS (PARAGRAPHS 2.8 TO 2.10); OR  
(ii) FOR DWELLINGS WITH BASEMENTS (PARAGRAPHS 2.10 TO 2.10); OR  
METHOD 3 - USING OTHER VENTILATION SYSTEMS (PARAGRAPH 2.109).

2.2 THERE SHOULD BE REASONABLE ACCESS PROVISION FOR MAINTENANCE. THIS SHOULD INCLUDE ACCESS FOR THE PURPOSE OF CHANGING FILTERS, REPLACING COMPONENTS AND CLEANING DUCT WORK.

2.3 EXTRACT FANS AND VENTILATION SYSTEMS LOWER THE PRESSURE IN A BUILDING, WHICH CAN CAUSE THE SPILLAGE OF COMBUSTION PRODUCTS FROM OPEN-FUELED APPLIANCES. THIS CAN OCCUR EVEN IF THE APPLIANCE AND THE FAN ARE IN DIFFERENT ROOMS. CEILING SWEEP FANS PRODUCE AIR CURRENTS AND HENCE LOCAL DEPRESSIONS WHICH CAN ALSO CAUSE THE SPILLAGE OF FUEL GASES FROM OPEN-FUELED GAS APPLIANCES OR FROM SOLID FUEL OPEN FIRES. IN BUILDINGS WHERE IT IS INTENDED TO INSTALL OPEN-FUELED COMBUSTION APPLIANCES AND EXTRACT FANS, THE COMBUSTION APPLIANCE SHOULD BE ABLE TO OPERATE SAFELY WHETHER OR NOT THE FANS ARE RUNNING. REFER TO PART L, COMBUSTION APPLIANCES AND FUEL STORAGE SYSTEMS.

\* INSULATION OF HOT WATER STORAGE VESSELS.

1. A NORMAL DOMESTIC SIZE (120 LITRES) HOT WATER STORAGE VESSEL, COMPLYING WITH BS 1566: 1990 OR BS 3198: 1981 OR EQUIVALENT SHALL BE THERMALLY INSULATED EITHER:  
a) TO LIMIT THE STANDING HEAT LOSS TO NOT MORE THAN 1W/m2 WHEN TESTED IN ACCORDANCE WITH BS 1968 PART 1: 1990; APPENDIX B4; OR  
b) WITH A FACTORY APPLIED COATING OF POLYURETHANE FOAM NOT LESS THAN 38mm THICK AND A MINIMUM DENSITY OF 30 KG/M3.

2. A HOT WATER STORAGE VESSEL, COMPLYING WITH BS 1966: 1980) OR BS 3198: 1981 OR EQUIVALENT AND HAVING A CAPACITY OF OTHER THAN 120 LITRES SHALL BE THERMALLY INSULATED EITHER:  
A) WITH THE SAME MATERIAL AND THICKNESS OF INSULATION AS THAT REQUIRED FOR A 120 LITRE HOT WATER STORAGE VESSEL, COMPLYING WITH PARAGRAPH 1A; OR  
B) WITH A FACTORY APPLIED COATING OF POLYURETHANE FOAM NOT LESS THAN 38mm THICK AND A MINIMUM DENSITY OF 30 KG/M3.

THE HOT WATER PIPES CONNECTED TO A HOT WATER VESSEL, INCLUDING THE VENT PIPE AND THE PRIMARY FLOW AND RETURN TO THE HEAT EXCHANGER, WHERE FITTED, SHALL BE THERMALLY INSULATED FOR AT LEAST 1 METRE FROM THEIR POINT OF CONNECTION TO THE VESSEL, OR TO THE POINT WHERE THEY BECAME 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 IMPERE THE SAFE OPERATION AND VIBRATION DISCHARGES OF ANY UNVENTED HOT WATER STORAGE VESSEL.

**HEARTH:**

3.2 A HEARTH SHOULD BE CONSTRUCTED OF SUITABLE ROBUST MATERIALS AND TO APPROPRIATE DIMENSIONS SO THAT, IN NORMAL USE, IT PREVENTS THE COMBUSTION APPLIANCE SETTING FIRE TO THE BUILDING FABRIC AND FURNISHINGS. IF THE CHIMNEY IS NOT INDEPENDENTLY SUPPORTED, THE HEARTH SHOULD BE ABLE TO ACCOMMODATE THE WEIGHT OF THE COMBUSTION APPLIANCE AND ITS CHIMNEY.

3.23 WHERE AN APPLIANCE IS NOT TO BE LOCATED IN AN APPLIANCE RECESS AND IT HAS BEEN INDEPENDENTLY CERTIFIED THAT IT CANNOT CAUSE THE TEMPERATURE OF THE HEARTH TO EXCEED 100°C, IT SHOULD STAND WHOLLY ON A HEARTH MADE OF NON-COMBUSTIBLE BOARD, SHEET MATERIAL OR TILES NOT LESS THAN 12 MM THICK. (SEE DIAGRAM 3.10A).

ALL OTHER APPLIANCES SHOULD BE PLACED ON A CONSTRUCTIONAL HEARTH IN ACCORDANCE WITH PARAGRAPHS 3.24 TO 3.29. (SEE DIAGRAM 3.10B) AND (C).

**CONSTRUCTIONAL HEARTHS**

3.24 A CONSTRUCTIONAL HEARTH SHOULD -  
(A) HAVE PLAN DIMENSIONS NOT LESS THAN THOSE SHOWN IN DIAGRAM 3.7; AND  
(B) BE MADE OF SOLID, NON-COMBUSTIBLE MATERIAL, SUCH AS CONCRETE OR MASONRY, NOT LESS THAN 25 THICK INCLUDING THE THICKNESS OF ANY NON-COMBUSTIBLE FLOOR AND/OR DECORATIVE SURFACE.  
3.25 COMBUSTIBLE MATERIAL SHOULD NOT BE PLACED BENEATH A CONSTRUCTIONAL HEARTH UNLESS -  
(A) THERE IS AN AIR SPACE OF NOT LESS THAN 50 MM BETWEEN THE UNDERSIDE OF THE HEARTH AND THE COMBUSTIBLE MATERIAL; OR  
(B) THE COMBUSTIBLE MATERIAL IS NOT LESS THAN 250 MM BELOW THE TOP OF THE HEARTH. (SEE DIAGRAM 3.8).

3.26 AN APPLIANCE SHOULD BE LOCATED ON A HEARTH SO THAT IT IS SURROUNDED BY A SURFACE FREE OF COMBUSTIBLE MATERIAL AS SHOWN IN DIAGRAM 3.9. THIS SURFACE MAY BE PART OF THE SURFACE OF THE CONSTRUCTIONAL HEARTH OR IT MAY BE THE SURFACE OF A SUPERIMPOSED HEARTH LAID WHOLLY OR PARTLY UPON A CONSTRUCTIONAL HEARTH. THE EDGES OF THIS SURFACE SHOULD BE MARKED WITH A CHANGE IN LEVEL TO PROVIDE A WARNING TO THE BUILDING OCCUPANTS AND TO DISCOURAGE COMBUSTIBLE FLOOR FINISHES SUCH AS CARPET FROM BEING LAID TOO CLOSE TO THE APPLIANCE.

3.27 THE DIMENSIONS SHOWN IN DIAGRAM 3.9 MAY BE REDUCED TO MANUFACTURER'S RECOMMENDATIONS FOR APPLIANCES WITH SURFACE TEMPERATURES NOT EXCEEDING 85°C WHEN IN NORMAL OPERATION AND WHERE THERE IS NO RISK OF SPILLAGE OF FUEL OR ASH.

3.28 COMBUSTIBLE MATERIAL PLACED ON OR BESIDE A CONSTRUCTIONAL HEARTH SHOULD NOT EXTEND UNDER A SUPERIMPOSED HEARTH BY MORE THAN 25 MM OR CLOSER THAN 150 MM, MEASURED HORIZONTALLY, TO THE APPLIANCE. (SEE DIAGRAM 3.10C).

3.29 HEARTHS SHOULD BE INSTALLED AS SHOWN IN DIAGRAM 3.10B) AND (C).

**PART L**

**SECTION 3 SOLID FUEL BURNING APPLIANCES (INCLUDING SOLID FUEL) WITH A RATED HEAT OUTPUT UP TO 50 KW**

THIS SECTION SETS OUT THE ADDITIONAL GUIDANCE AND PROVISIONS THAT SHOULD BE MET FOR A SOLID FUEL BURNING COMBUSTION APPLIANCE OVER AND ABOVE THOSE PROVISIONS GIVEN IN SECTION 2.

**AIR SUPPLY TO APPLIANCES**

3.1 ANY ROOM OR SPACE CONTAINING A COMBUSTION APPLIANCE SHOULD HAVE A PERMANENT AIR VENT OPENING OF A SIZE NOT LESS THAN THAT SHOWN IN TABLE 3.1. FOR AN APPLIANCE DESIGNED TO BURN A RANGE OF DIFFERENT SOLID FUELS, THE AIR SUPPLY SHOULD BE DESIGNED TO ACCOMMODATE BURNING THE FUEL THAT PRODUCES THE HIGHEST HEATING OUTPUT.

3.2 WHERE THE MANUFACTURER'S INSTALLATION INSTRUCTIONS REQUIRE GREATER AREAS OF PERMANENTLY OPEN AIR VENTS THAN THOSE SPECIFIED IN TABLE 3.1, THE MANUFACTURER'S ADVICE SHOULD BE FOLLOWED.

- PROVIDE A COMMISSIONING PLAN IDENTIFYING THE FIXED BUILDING SERVICES THAT NEED TO BE TESTED & THE TESTS THAT NEED TO BE CARRIED OUT  
- THE VENTILATION SYSTEM IS TO BE COMMISSIONED IN ACCORDANCE WITH THE @COMMISSIONING COMPLIANCE GUIDE  
- THE PERSON CARRYING OUT THE WORK SHALL GIVE, NOT MORE THAN 5 DAYS AFTER COMPLETION OF THE WORK, A NOTICE IN WRITING TO THE BUILDING OWNER GIVING SUFFICIENT INFORMATION INCLUDING OPERATIONAL & MAINTENANCE REQUIREMENTS, TO ENABLE THE DWELLING & ITS FIXED BUILDING SERVICES TO BE OPERATED & MAINTAINED IN AN ENERGY EFFICIENT MANNER. THIS INFORMATION SHOULD BE IN A DURABLE FORMAT & BE READILY UNDERSTANDABLE BY THE OCCUPIER  
- AN ELECTRONIC COPY OF THE AS-BUILT TENDER CALCULATIONS IS TO BE GIVEN TO THE OWNER TO FACILITATE FUTURE ANALYSIS  
- THE COMMISSIONING PLAN IS TO BE FOLLOWED & EVERY SYSTEM WILL BE INSPECTED IN AN APPROPRIATE SEQUENCE, TO A REASONABLE STANDARD & TEST RESULTS ARE TO CONFIRM THAT THE PERFORMANCE IS REASONABLY IN ACCORDANCE WITH THE DESIGN REQUIREMENTS. THIS NOTICE IS TO BE PROVIDED TO THE OWNER NOT MORE THAN 5 DAYS AFTER COMPLETION OF THE COMMISSIONING WORKS  
NOT MORE THAN 5 DAYS AFTER COMPLETION OF THE WORK, THE OWNER OF THE DWELLING IS REQUIRED TO BE GIVEN SUFFICIENT INFORMATION ABOUT THE DWELLING, INCLUDING DETAILS OF THE INSTALLED BUILDING SERVICES & CONTROLS, AND OTHER DETAILS SO THAT THE DWELLING CAN BE OPERATED IN SUCH A MANNER AS TO USE NO MORE FUEL & POWER THAN IS REASONABLE IN THE CIRCUMSTANCES  
- ALL NEW BUILD APPLICATIONS: THE PERSON CARRYING OUT THE WORK SHALL, BEFORE CONSTRUCTION BEGINS, UNDERTAKE AN ANALYSIS OF AND GIVE CONSIDERATION TO THE USE OF AVAILABLE HIGH-EFFICIENCY ALTERNATIVE SYSTEMS IN THE WORK; REFER TO EXAMPLE IN REGULATION 45A

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(B) THE COMBUSTIBLE MATERIAL IS NOT LESS THAN 250 MM BELOW THE TOP OF THE HEARTH. (SEE DIAGRAM 3.8).

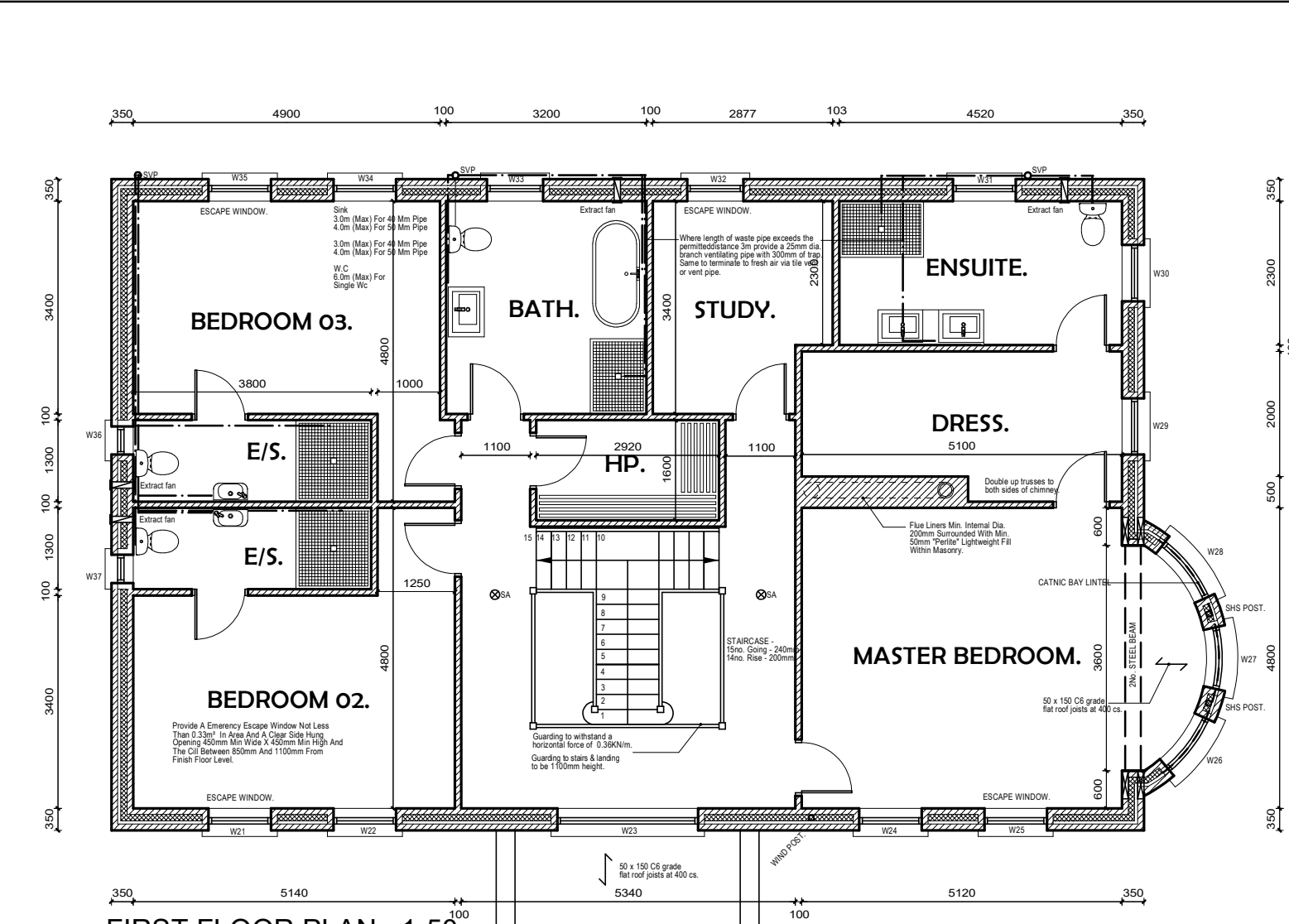
3.26 AN APPLIANCE SHOULD BE LOCATED ON A HEARTH SO THAT IT IS SURROUNDED BY A SURFACE FREE OF COMBUSTIBLE MATERIAL AS SHOWN IN DIAGRAM 3.9. THIS SURFACE MAY BE PART OF THE SURFACE OF THE CONSTRUCTIONAL HEARTH OR IT MAY BE THE SURFACE OF A SUPERIMPOSED HEARTH LAID WHOLLY OR PARTLY UPON A CONSTRUCTIONAL HEARTH. THE EDGES OF THIS SURFACE SHOULD BE MARKED WITH A CHANGE IN LEVEL TO PROVIDE A WARNING TO THE BUILDING OCCUPANTS AND TO DISCOURAGE COMBUSTIBLE FLOOR FINISHES SUCH AS CARPET FROM BEING LAID TOO CLOSE TO THE APPLIANCE.

3.27 THE DIMENSIONS SHOWN IN DIAGRAM 3.9 MAY BE REDUCED TO MANUFACTURER'S RECOMMENDATIONS FOR APPLIANCES WITH SURFACE TEMPERATURES NOT EXCEEDING 85°C WHEN IN NORMAL OPERATION AND WHERE THERE IS NO RISK OF SPILLAGE OF FUEL OR ASH.

3.28 COMBUSTIBLE MATERIAL PLACED ON OR BESIDE A CONSTRUCTIONAL HEARTH SHOULD NOT EXTEND UNDER A SUPERIMPOSED HEARTH BY MORE THAN 25 MM OR CLOSER THAN 150 MM, MEASURED HORIZONTALLY, TO THE APPLIANCE. (SEE DIAGRAM 3.10C).

3.29 HEARTH'S SHOULD BE INSTALLED AS SHOWN IN DIAGRAM 3.10B) AND (C).

**PART L**



FIRST FLOOR PLAN... 1-50



FRONT & SIDE ELEVATIONS... 1-100



REAR & SIDE ELEVATIONS... 1-100

\* COMBUSTION APPLIANCES:

EXTRACT FANS LOWER THE PRESSURE IN A BUILDING AND THIS CAN CAUSE THE SPILLAGE OF COMBUSTION PRODUCTS FROM AN OPEN-FUELED APPLIANCE.

IN A BUILDING WHERE IT IS INTENDED TO INSTALL AN OPEN-FUELED APPLIANCE AND AN EXTRACT FAN, THE COMBUSTION APPLIANCE SHOULD OPERATE SAFELY WHETHER OR NOT THE FAN IS RUNNING, TO MINIMISE THE RISK OF SPILLAGE OF FLUE GAS THE FOLLOWING PROVISIONS SHOULD APPLY -

(A) FOR A GAS APPLIANCE - WHERE A ROOM CONTAINS AN OPEN-FUELED APPLIANCE, THE ROOM EXTRACT FAN RATE SHOULD NOT EXCEED 20 LITRES/SECOND (OR 1/3000 OF THE ROOM VOLUME) AND A SPILLAGE TEST AS RECOMMENDED IN BS 5401, SHOULD BE CARRIED OUT.

(B) FOR OIL APPLIANCES - WHERE A ROOM CONTAINS AN OPEN-FUELED APPLIANCE THE EXTRACT RATE SHOULD BE LIMITED TO 40 LITRES/SECOND FOR AN APPLIANCE WITH A PRESSURE JET BURNER AND 20 LITRES/SECOND FOR AN APPLIANCE WITH A PRESSURE BURNER WHEN SPILLAGE OR FLE DRAUGHT INTERFERENCE IS IDENTIFIED, IT MAY BE NECESSARY TO ADD ADDITIONAL VENTILATION TO THE ROOM OR SPACE. A FLE DRAUGHT INTERFERENCE TEST FOR OIL-FIRED APPLIANCES AS DESCRIBED IN OFTEC TECHNICAL BOOKS 2 AND 3 SHOULD BE CARRIED OUT.

(C) FOR A SOLID FUEL APPLIANCE - A ROOM EXTRACT FAN SHOULD NOT BE INSTALLED IN THE SAME ROOM, IF MECHANICAL EXTRACTION IS UNAVAILABLE THEN SEEK SPECIALIST ADVICE FROM A MECHANICAL SERVICES ENGINEER TO ENSURE SAFE OPERATION OF THE APPLIANCE.

\* STAIRCASE:

CLEAR WIDTH TO BE 800MM WITH 20 MM VERTICAL HEADROOM MEASURED FROM FITCH LINE. HANDRAILS TO BE 900MM HIGH AND WHERE BUILT IN IS PROVIDED NO OPENING TO BE LARGE ENOUGH TO PERMIT A 100MM SPHERE TO PASS THROUGH, AS SO DESIGNED AS NOT TO BE EASILY CLIMBED BY CHILDREN. THRESHOLDS TO BE CONSTRUCTED OF 18MM BOARDING AND TO HAVE 24MM GOING WITH NOBING TO PROJECT 15MM OVER STEP BELOW GOING TO BE 12MM BOARDING WITH HEIGHT OF RISE 205MM WITH 14 NO RISERS.

INTERNAL FLOOR:

TIMBER OR METAL JOIST, WITH WOOD-BASED BOARD AND PLASTERBOARD CEILING, AND ASSORTMENT MATERIAL.

FLOOR SURFACE OF TIMBER OR WOOD-BASED BOARD, MINIMUM MASS PER UNIT AREA 15 KG/M2;

CEILING TREATMENT OF SINGLE LAYER OF PLASTERBOARD, MINIMUM MASS PER UNIT AREA 10 KG/M2, FIXED USING ANY NORMAL FIXING METHOD; AN ASSORTMENT LAYER OF MINERAL WOOL, MINIMUM THICKNESS 100 MM, MINIMUM DENSITY 10 KG/M3 LAD IN THE CAVITY.

INTERNAL WALLS:

5.16 TIMBER OR METAL FRAMES WITH PLASTERBOARD LININGS ON EACH SIDE OF FRAME

EACH LINING TO BE TWO OR MORE LAYERS OF PLASTERBOARD WITH STAGGERED JOINTS, EACH SHEET OF MINIMUM MASS PER UNIT AREA 10 KG/M2; LININGS FIXED TO TIMBER FRAME WITH A MINIMUM DISTANCE BETWEEN LININGS OF 75 MM, OR METAL FRAME WITH A MINIMUM DISTANCE BETWEEN LININGS OF 45 MM.

ALL JOINTS WELL SEALED.

LATERAL RESTRAINT:

PROVIDE 30 x 5mm GALVANISED STEEL STRAPS SCREWED TO UNDERSIDE OF TIMBER NOOGS AT MAX 2m CRS

FOR DWELLINGS OF MASONRY CONSTRUCTION, RESTRAINT SHOULD BE PROVIDED AT RAFTER LEVEL FOR GABLE WALLS, LARGER GABLE OR SEPARATING WALLS, AND ALSO REQUIRE RESTRAINT AT CEILING LEVEL.

LATERAL RESTRAINT STRIPS SHOULD HAVE A MIN. CROSS SECTION OF 30MM X 3MM AND A MINIMUM ANCHORAGE DOWN RUN OF 900MM. STRAPS SHOULD BE OF SUFFICIENT LENGTH TO BE FIXED TO THREE TRUSSES AND SHOULD BE FIXED WITH SOLID BLOCKING. IN FRAMED ROOFS, AS AN ALTERNATIVE, PURLS AND PILE PLATES CAN ALSO PROVIDE RESTRAINT IF THE TIMBER ABUTS A GABLE CONSTRUCTION, WHERE PURLS ARE USED TO PROVIDE RESTRAINT THEY SHOULD NOT BE SPACED AT MORE THAN 2M CENTRES, UNLESS THE DESIGN SHOWS THEY ARE ADEQUATE AT GREATER SPACING, IN TRUSSED RAFTER ROOFS, AN ALTERNATIVE IS TO PROVIDE RESTRAINT THROUGH GABLE LADDER DETAILING.

WALL RESTRAINTS - LATERAL RESTRAINT BY FLOORS AND ROOFS:

4C.21 WALLS IN EACH STOREY OF A BUILDING SHOULD EXTEND TO THE FULL HEIGHT OF THAT STOREY, AND HAVE HORIZONTAL LATERAL SUPPORTS TO RESTRICT MOVEMENT OF THE WALL AT RIGHT ANGLES TO ITS PLANE.

4C.22 FLOORS AND ROOFS SHOULD -  
(A) ACT TO TRANSFER LATERAL FORCES FROM WALLS TO BUTTRESSING WALLS, PIERS OR CHIMNEYS; AND  
(B) BE SECURED TO THE SUPPORTED WALL BY CONNECTIONS SPECIFIED IN PARAGRAPHS 4C.23 TO 4C.25 AND TABLE 4C.8.

4C.23 THE WALL SHOULD BE STRAPPED TO THE FLOORS ABOVE GRADE LEVEL, AT INTERVALS NOT EXCEEDING 2M AND AS SHOWN IN DIAGRAMS 4C.12A), (B) AND (C); BY TENSION STRAPS CONFORMING TO BS EN 845-1. FOR CORROSION RESISTANCE PURPOSES, THE TENSION STRAPS SHOULD BE METAL, REFERENCE 14 OR 16 OR 18 (GALVANISED MILD STEEL) OR OTHER MORE RESISTANT SPECIFICATIONS INCLUDING MATERIAL REFERENCES 1 OR 3 (AUSTENITIC STAINLESS STEEL). THE MINIMUM CROSS-SECTION OF THE STRAP SHOULD BE 30 MM X 5 MM.

4C.24 TENSION STRAPS NEED NOT PROVIDED -  
(A) IN THE LONGITUDINAL DIRECTION OF FLOOR JOISTS IN HOUSES OF NOT MORE THAN 2 STOREYS, IF THE JOISTS ARE AT NOT MORE THAN 1.2 M CENTRES AND HAVE AT LEAST 90 MM BEARING ON THE SUPPORTED WALLS OR 75 MM BEARING ON A TIMBER WALL-PLATE AT EACH END;  
(B) IN THE LONGITUDINAL DIRECTION OF FLOOR JOISTS IN HOUSES OF NOT MORE THAN 2 STOREYS, IF THE JOISTS ARE CARRIED ON THE SUPPORTED WALL BY JOIST HANGERS IN ACCORDANCE WITH BS EN 845-1 OF THE RESTRAINT TYPE DESCRIBED IN BS 5628 PART 1 AND SHOWN IN DIAGRAM 4C.12D); AND ARE INCORPORATED AT NOT MORE THAN 2 M CENTRES;  
(C) WHEN A CONCRETE FLOOR HAS AT LEAST 90 MM BEARING ON THE SUPPORTED WALL (SEE DIAGRAM 4C.12E)); AND  
(D) WHERE THE FLOOR IS AT, OR ABOUT, THE SAME LEVEL, ON EACH SIDE OF THE WALL, AND CONTACT BETWEEN THE FLOORS AND THE WALL IS EITHER CONTINUOUS OR AT INTERVALS NOT GREATER THAN 2 M, WHERE CONTACT IS INTERMITTENT, THE POINTS OF CONTACT SHOULD BE IN LINE, OR NEARLY IN LINE, ON PLAN.

METHOD 2) - VENTILATION SYSTEMS FOR DWELLINGS WITHOUT BASEMENTS

SYSTEM 1 - BACKGROUND VENTILATORS AND INTERMITTENT EXTRACT FANS FOR ADDITIONAL INFORMATION SEE WORKED EXAMPLES C1 AND C3 IN APPENDIX C. DESIGN OF SYSTEM 1

2.12 THE BACKGROUND VENTILATORS HAVE BEEN SIZED FOR THE WINTER PERIOD. ADDITIONAL VENTILATION MAY BE REQUIRED DURING WARMER MONTHS AND IT HAS BEEN ASSUMED THAT THE PROVISIONS FOR RAPID VENTILATION (E.G. OPENABLE WINDOWS) WILL BE USED FOR THIS PURPOSE.

INTERMITTENT EXTRACT

2.13 INTERMITTENT EXTRACT RATES ARE GIVEN IN TABLE 2.1. FOR SANITARY ACCOMMODATION ONLY, AS AN ALTERNATIVE, THE RAPID VENTILATION PROVISIONS (E. WINDOWS) GIVEN IN APPENDIX C CAN BE USED.

2.14 INSTEAD OF A CONVENTIONAL INTERMITTENTLY USED EXTRACT FAN, A CONTINUOUSLY RUNNING SINGLE ROOM HEAT RECOVERY VENTILATOR COULD BE USED IN WET ROOMS. IT SHOULD SILENCE THE MINIMUM HIGH RATE GIVEN IN TABLE 2.1 AND 50% OF THIS VALUE. AS THE MINIMUM LOW RATE, NO BACKGROUND VENTILATOR IS REQUIRED IN THE SAME ROOM AS THE SINGLE ROOM HEAT RECOVERY VENTILATOR; FURTHERMORE, THE TOTAL EQUIVALENT BACKGROUND VENTILATOR AREA DESCRIBED IN THE TABLES BELOW MAY BE REDUCED BY 2500 MM2 FOR EACH ROOM CONTAINING A SINGLE ROOM HEAT RECOVERY VENTILATOR.

LOCATION OF INTERMITTENT EXTRACT FANS

2.15 INTERMITTENT EXTRACT FANS SHOULD BE INSTALLED IN EACH WET ROOM.

2.16 INTERMITTENT EXTRACT FANS OTHER THAN COOKER HOODS SHOULD BE INSTALLED AS HIGH AS IS PRACTICABLE AND PREFERABLY WITHIN 400 MM OF THE CEILING.

2.17 COOKER HOODS SHOULD BE 650 MM TO 750 MM ABOVE THE HOOD SURFACE (OR INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS).

2.18 WHERE FANS AND BACKGROUND VENTILATORS

METHOD 2 - SYSTEM 1 CALCULATION:

256mm² FLOOR AREA  
IF GREATER THAN 100mm² ADD A FURTHER 7000mm² TO EVERY ADDITIONAL 10m²  
7000mm² x 1.9 = 136,500mm²  
4 BEDROOM - 6500mm² + 136,500mm² = 201,500mm²  
TWO STOREY DWELLING ADD 1000mm²  
201,500mm² + 1000mm² = 210,500mm²

9600mm² BACKGROUND VENTILATION TO EACH WINDOW  
BACKGROUND VENTILATORS TO BE FITTED BOTH HIGH & LOW POSITIONS.

FIXED INTERNAL LIGHTING: FIXED INTERNAL ENERGY EFFICIENT LIGHT FITTINGS TO BE INSTALLED IN THE MOST FREQUENTLY AREAS IN THE DWELLING, AND THERE SHALL BE NOT LESS THAN:  
1) ONE PER 200 OF DWELLING FLOOR AREA (EXCLUDING GARAGES) OR PART THEREOF; OR THE FOUR LIGHT FITTINGS, WHICHEVER IS GREATER, THE ENERGY EFFICIENT LIGHT FITTING (INCLUDING THE LAMP, CONTROL GEAR AND AN APPROPRIATE SHROUD, REFLECTOR, SHIELD OR OTHER DEVICE FOR CONTROLLING THE LIGHT OUTPUT) IS A LIGHT FITTING THAT CAN ONLY BE FITTED WITH LAMPS HAVING A LUMINOUS EFFICACY GREATER THAN 40 LUMENS PER CIRCUIT-WATT.

FLOURESCENT AND DEDICATED COMPACT FLUORESCENT LIGHT FITTING WOULD MEET THIS REQUIREMENT, BUT THOSE ACCOMMODATING GLS TUNGSTEN HALOGEN AND COMPACT FLUORESCENT LAMPS (CFLS) WITH A BAYONET CAP OR EDISON SCREW BASE, OR TUNGSTEN HALOGEN LAMPS WOULD NOT.

F E D EXTERNAL LIGHTING:

EXTERNAL LIGHTING PERMANENTLY FIXED TO AN EXTERNAL SURFACE OF THE DWELLING AND UNDER THE DIRECT CONTROL OF THE OCCUPANT BY HAVING AN ELECTRICITY SUPPLY OF THE FOLLOWING SHALL:  
A) HAVE A MAXIMUM OUTPUT OF 150W PER FITTING AND AUTOMATICALLY SWITCH OFF.  
B) WHEN THERE IS ADEQUATE DAYLIGHT; AND  
C) WHEN NOT REQUIRED AT NIGHT; OR  
D) HAVE THAT CAN ONLY BE FITTED WITH LAMPS HAVING A LUMINOUS EFFICACY GREATER THAN 40 LUMENS PER CIRCUIT-WATT.

Table 3.1 Air supply to solid fuel burning appliances

Type of appliance	Type and amount of ventilation(1)
Open appliance such as an open fire with no throat or a fire in a cavity as in Diagram 3.6	Permanently open air vents with a total equivalent area of not less than 50% of the cross-sectional area of the throat opening area(2)
Open appliance, such as an open fire with a throat as in Diagrams 3.5 and 3.12	Permanently open air vents with a total equivalent area of not less than 50% of the throat opening area(2)
Other appliance, such as a stove, cooker or boiler, with a flue draught stabiliser	Permanently open vents as below: If design air permeability is 0.2 m³/m²/m² then - 300 mm²/m² for first 5 kW of appliance rated output, and 500 mm²/m² for balance of appliance rated output; If design air permeability is 0.3 m³/m²/m² then - 400 mm²/m² for first 5 kW of appliance rated output(2); 500 mm²/m² for balance of appliance rated output(2)
Other appliance, such as a stove, cooker or boiler, with no flue draught stabiliser	Permanently open vents as below: If design air permeability is 0.2 m³/m²/m² then - 500 mm²/m² of appliance rated output above 5 kW; If design air permeability is 0.3 m³/m²/m² then - 600 mm²/m² of appliance rated output(2)

Notes:  
(1) Extract fans should not be installed in the same room or space as a solid fuel burning appliance.  
(2) For single open fires as depicted in Diagram 3.12 the air supply requirement can be met