Asplan

DESIGN - PLANNING - APPROVAL

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Building Regulations Construction Notes

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CBuildE chartered building engineer

RICS

General Notes

Asplan Associates Ltd shall have no responsibility for any use made of this document other than for which it was prepared and issued which is for the benefit of the employer and cannot be relied upon by any third party.

Any discrepancies in measurement or construction should be reported to the designer for further survey and acceptance or design alteration.

The Builder and other employed trades/sub contractors are hereafter known singularly and collectively as the Contractor.

The Contractor must ensure that all workmanship and building materials and components are suitable for their intended purpose and must follow the relevant requirements for their respective Codes of Practice, British Standards, Building Regulation, NHBC Requirements (or equivalent), British Board of Agrément & manufactures specification/installation guidance. Truss roof, timber frame manufactures, TGI joist, hollow core/widespan floors, block and beam floors manufactures (and other proprietary systems that provide design input) take responsibility for their designs.

These notes are to be read in conjunction with all Engineers drawings and notes. The Contractor is responsible for the implementation of all the drawings and notes, and shall seek professional advice where unsure. Special attention shall be paid to the structural engineers requirements. It is the Contractor's responsibility for the erection, stability and maintenance of all temporary supports.

Prior to commencement of work the Contractor is to resolve any outstanding Planning and Building Regulation Conditions. This would typically include; agreeing sample material for external finishes, tree protection, specialist survey reports, ground investigation reports and exposing existing construction for suitability etc.

The Contractor is responsible for "setting out" and checking the site and drawing measurements. Once the "setting out" is complete the contractor shall notify the designer and the Local Planning Department. The local Planning Departments Approval shall be obtained prior to starting work.

All work to comply fully with the with The Building regulations and be carried out to the satisfactory inspection of the Building Control Inspector.

All new construction works shall be carried out in accordance with all pertinent health and safety regulations by competent and experienced contractors who are familiar with the type of work to be undertaken. Operatives must receive full and appropriate training for the operations they are to undertake.

The contractor must obtain confirmation from the client that Party Wall Agreements are in place prior to commencing any excavation work or construction work on the party wall.

All drawing dimensions are in millimetres unless otherwise stated. Do not scale off drawings.

The Contractor is to compile a "health and safety file" for the building, which is to be given to the client & principle designer on completion of works. This health and safety file is to include; photo evidence of all major works, details and locations of all mechanical ventilation & ducts, electrical works, plumbing and drainage services, and shall include manufactures data for all products installed.

Where the existing building is to take additional loads/forces it is the Contractor's responsible for exposing these elements and ensuring there suitability for the additional loads. It is recommended that trail holes are made to assess the existing structure and ground conditions prior to commencement of works to prevent unforeseen costs.

Competent contractors are to be used for this build. The contractor is to be the "responsible person" for this project.

The Contractor must comply with the following Legal Acts & Requirements;

- The Health and Safety at Work etc. Act 1974,
- The Construction (Design & Management) Regulations 2015 (CDM 2015)
- The Party Wall etc. Act 1996
- The Building Act 1984
- Town and Country Planning Act 1990
- Environment Protection Act 1990
- The Regulatory Reform (Fire Safety) Order 2005
- The Landlord and Tenant Act 1985

DESIGNERS RISK ASSESSMENT:
HEALTH AND SAFETY
The Construction (Design and Management) Regulations 2015

DUTIES OF PRINCIPAL DESIGNER, DESIGNERS & PRINCIPAL CONTRACTOR.

Principal Designer:

The Principal Designer has to co-ordinate the Health & Safety aspects of project design and the initial planning to ensure as far as they can that -

1. Designers comply with their duties, in particular, the avoidance and reduction of risk.
2. A Health & Safety Plan is prepared before arrangements are made for a Principal Contractor to be appointed.
3. They are able to give advice, if required, to the Client on the competence and allocation of resources by designers and all Contractors, advise Contractors appointing Designers, advise the client on the adequacy of the Health & Safety Plan before the construction phase begins.
4. The project is notified to the Health & Safety Executive.
5. A Health & Safety File is prepared and delivered to the Client at the end of the project.

Designers:

The designer's key duties are, as far as reasonably practicable to -

1. Alert Clients to their duties.
2. Consider during the development of designs the hazards and risks which may arise to those constructing and maintaining the structure.
3. Design to avoid risks to Health & Safety so far as is reasonably practicable.
4. Reduce risks at source if avoidance is not possible.
5. Consider measures which will protect all workers if neither avoidance nor reduction to a safe level is possible.
6. Ensure that the design includes adequate information on Health & Safety.
7. Pass this information on to the Principal Designer so that it can be included in the Health & Safety Plan and ensure that it is given in drawings and the specification.
8. Co-operate with the Principal Designer and, where necessary, other designers involved in the project.

Principal Contractor:

The Principal Contractor's key duties are to -

1. Develop and implement the Health & Safety Plan.
2. Arrange for competent and adequately resourced Contractors to carry out the work where it is sub-contracted.
3. Ensure the co-ordination and co-operation of Contractors.
4. Obtain from Contractors the main findings of their risk assessments and details of how they intend to carry out high risk operations.
5. Ensure that Contractors have information about risk on site.
6. Ensure that workers on site have been given adequate training.
7. Ensure that Contractors and workers comply with any site rules which may have been set out in the Health & Safety Plan.
8. Monitor Health & Safety performance.
9. Ensure that all workers are properly informed and consulted.
10. Make sure only authorised people are allowed onto the site.
11. Display on site the notification of the project to the Health & Safety Executive.
12. Pass information to the Principal Designer for the Health & Safety File.

Special Attention

Building designed to assist the development of children with special needs in areas of home economics, daily tasks and to adjust them to standard living conditions. This scheme must include a boiler and heating controls, electrical consumer unit, telephone, broadband and a basic burglar alarm. The children using this facility will need an emergency panic pull cord installed in the bathroom. Client to advise if additional safety equipment is required.

No work is to be undertaken to the existing building structure without confirmation from the structural engineer. All new work to masonry panels only. Construction posts and their supports to remain unchanged.

New surface water drainage is a marginal increase. Site restrictions do not enable a soakaway to be installed therefore it is reasonable to continue the current system of allowing the surface water to run into the foul drains.

Existing foul drains are to be tested where extended to ensure they are water tight.

Emergency pull cord to client specification.

Retro fit new DPC where new floor abuts the existing if one is not present.

The two windowless rooms are to have 15 minute over run on extractor fans.

No access was provided during the survey to the Archive/ Art Store or Storage rooms. Stud walls have been assumed, if masonry use concrete lintels over new openings.

Bedroom used for training purposes only and is not to be slept in. Means of escape is via the main entrance door but as an open plan kitchen will be installed next to the main entrance door, a MOE window is to be installed by the bedroom.

All structural posts, windposts and steels to be confirmed by structural engineer as indicated on the plans.

Ramped access (1:12 and 900mm wide) to the new building and the front door minimum clear width is 775mm.

Facing brickwork to match existing building.

Pitched roof covered in flat roof membrane to match existing. Recommend Bauder roof felt.

Client to advise on the additional needs of the children.

The location of all underground drainage is assumed. Further investigation will be required by the contractor on commencement of works.

The windows shown adjacent to the boundary to be a maximum of $1m^2$.

A new condensing boiler is to be installed in the new kitchen area and the flue to go through the flat roof and continue to enter the new foul drain system.

A new individual consumer unit shall be installed for the newly created area. Location to be agreed by client.

Approved Document A - Structure

Foundations

The foundations are to be 600mm wide for a cavity wall and to support block and beam floor. The minimum thickness of concrete for a foundation is 200mm, and shall be a minimum of a C20 concrete mix.

The absolute minimum depth of a foundation is 450mm below ground level in sand and gravels, 750mm in clay. The location of trees (within 30metres) and hedges in clay subsoil's will increase this depth (Specialist Design Foundation will be required).

Where variations in ground conditions, clay subsoil or a change of height occurs within the foundation it will need to be designed by an Engineer.

Where the new foundations are located near to drains ensure the depth of the foundations is at least equal to the depth of the bottom of the drainage pipe.

Walls below Ground Level

The cavity wall construction can be extended below ground level to the foundations. In areas of waterlogged sites or hard frosts the use low porosity (F2 classification) Class A engineering brick and/or 7N dense concrete block is recommended.

Where apertures are created in the brickwork below ground level, use prestressed concrete lintels to support the brickwork over. Maintain a 50mm gap around all pipework that extends through the external wall, fill the 50mm gap with an inert compressible material to allow for thermal movement.

In the external cavity wall ensure the cavity extends min. 225mm below the lowest d.p.c, after fill the cavities with concrete (lean mix) and trowel to slope toward the external wall.

Suspended Block & Beam Ground Floor

15mm floor finish to client spec, on 65mm fibre reinforced screed on, 500gauge DPM on, 100mm Recticel GP foil taped insulation on, 1200gauge DPM on, 150mm Block and beam floor beams with 7N infill blocks on, 150mm clear vented void with air bricks at 2.0m centres with cavity tray over, on all four sides.

Note:
DPC to be installed directly under block and beam floor beams, and one DPC above floor beams to lap and link with DPM.

Install 10mm screed expansion foam around the perimeter of all screeded floors.

Walls above Ground Level

Face Brick Cavity Wall - Full Fill Insulation

102.5mm Facing brick, 100mm Knauf Dritherm 32 full fill cavity insulation, 100mm 2.9N Celcon Solar inner insulation block, 10mm plasterboard adhesive dabs, 12.5mm wallboard plasterboard & 2.5mm skim plaster finish.

Lintels

The new cavity wall lintels are to be Catnic CH90/100 or CG90/100 (unless otherwise specified by the Structural Engineer) with a minimum of 150mm bearing at each end. Cavity wall lintels to be Catnic, IG or Keystone lintels

(with a minimum of 3 brickwork courses over) and a minimum of 150mm bearing at each end. Install cavity trays over with stop ends and weep holes at 450mm c/c minimum of two per aperture.

Internal Walls

Internal stud walls are to be constructed with a horizontal head and sole plate with vertical studs at 400mm centres in between. Noggin support is required at 600mm centres vertically. All timbers to be 97mm x 47mm, C24 graded regularised timber. A double 45 x 95mm or 45 x 145mm timber lintel is to be formed over the door openings. Install 100mm cavity batts in between the studs. Finish both sides with 12mm ply then screw 12.5mm plasterboard and

Vaulted Roof

AA double fire rated bituminous felt to match existing, on 18mm ply, on 120mm Kingspan Thermaroof TR26 insulation, on VCL, on 18mm ply, on 145x45mm C24 timber rafters at 400 c/c on 12.5mm plasterboard under and skim finish.

Flat Warm Roof-0.18 U value

AA double fire rated bituminous felt to match existing, on 18mm ply, on 120mm Kingspan Thermaroof TR26 insulation, on VCL, on 18mm ply, on 1:40 firring strip, on 145x45mm C24 timber flat roof joists at 400 c/c on 12.5 plasterboard and skim finish.

Structure General

a. Double drip, double triangle stainless steel wall ties are to be installed at a maximum of 450mm c/c vertically & 750mm c/c horizontally. Wall ties to be installed at maximum 225mm c/c vertically around all wall openings. Where new opening are created in the existing structure retro-fit wall ties are to be installed at the same 225mm c/c vertically.

b. The new to existing wall connections are to be brick and block bonded or a Furfix stainless steel wall connectors are to be used.

c. Provide movement joints to BS5628 Part 3. Typically - Movement joints are normally 10mm wide and increased to 16mm wide when installed in clay bricks. The movement joint is filled with flexible cellular polyethylene and finished with a minimum of 12mm thick sealant. Movement joints are normally installed every; 6m in concrete brick and block, 7.5m in calcium silicate brick and 12m in clay brickwork. (Half the spacing for the first joint from wall returns.)

d. Ensure double rafters are installed either side of the Velux windows.

e. All multiple timber members shall be bolted at 800mm c/c with galvanised M12 coach bolts and square washers in a zig zag fashion, or fixed in accordance with manufactures engineered joist detail.

f. Noggins to be installed at every third of the joist span (noggins are to be in a line, perpendicular to the joists and have the lateral restraint straps at the end).

g. Lateral restraint straps are to be installed at 2.0m c/c. The restraint straps must be connected to at least three floor joists (or rafters/flat roof joists) and with noggin infill placed between. The lateral restraint straps are 30mm x 5mm x 1200mm (bent 100mm).

h. Lateral restraint straps are required to all external walls (that are perpendicular to the built in joists) at each floor level and at ceiling joist level. Lateral restraint is also required along the top of all gable walls and support is provided by the rafters.

i. Vertical restraint straps are to be installed onto all wall plates at 2.0m c/c to all new walls. Vertical wall restraint is provided by 30mm x 5mm x 1200mm (bent 100mm) steel straps.

j. To withstand live loads and prevent roof spread ensure rafter to floor joist connections at eaves and floor joists over central loadbearing wall are bolted with M12 galvanised coach bolt and square washer.

k. Firring strips where perpendicular to the flat roof joists are to be a minimum of 38mm wide and in the case of flat roof joists at 400mm centres 38mm deep, at 600mm centres 50mm deep.

Approved Document B - Fire Safety

Single Storey Means of Escape

At least one main's powered (with battery backup) smoke detector will be required in the hall/circulation space and not more than 7.5m to any door provided to habitable rooms. Ensure a minimum of 300mm flat unobstructed space (includes lights, changes of directions, walls etc) around all smoke detectors.

Means of escape (MOE) windows will be installed in all new first floor habitable rooms. These MOE windows shall have an unobstructed openable area of 0.33m^2 (i.e. 750mm x 450mm= 0.33m^2) and at least 450mm high and 450mm wide. The bottom of the openable window should be located between 800mm and 1100mm above finished floor level. Window locks with or without removable keys and stays may be fitted to egress windows.

Fire Safety General

a. All internal finishes will have a National Class 1 or better "surface spread of flame" classification. BS476
b. The elements of structure (load bearing walls and floors) are to achieve 30minutes fire resistance.
c. Flat roof covering shall have A-A, A-B or A-C surface spread of flame classification.
d. All stud walls are to be lined with 1 x 12.5mm wallboard on each side, achieving 30minutes fire resistance.
e. All metal lintels and steel supports (beams and columns) are to be encased by one layer of 12.5mm Fireline plasterboard and skimmed to achieve 30minutes fire resistance, alternatively 2 layers of 12.5mm plasterboard can be used to achieve the same.
f. External fire spread assessment - The elevations do not exceed the unprotected area requirements of Approved Document B1 Diagram 22 or BRE Report 187 - External Fire Spread: Building Separation & Boundary Distances 1991.
g. Access and Facilities for the Fire Service Assessment – Within 45m

Approved Document C - Resistance to Moisture Egress

a. All leadwork is to be code 4 in thickness and quality and installed as per the Lead Sheet Association Guidance and BS 5250 and BS 6229. Patination oil must be applied after installation on the same day before rain to avoid lead leaching and staining.
b. Ensure that the new airbricks are sited at 2.0m centres and on all sides of the building. 75x225mm cranked sleeved air bricks to provide 1500 mm^2/m run ventilation to void, with cavity trays installed over.
c. Cavity trays, lead abutments, soakers, and upstands providing waterproofing shall be a min. of 150mm high measured perpendicularly. Cavity trays are to be installed over all elements which bridge the cavities. Install cavity trays and weep vents over all lintels. Ensure the ends of the cavity trays are turned up to direct the water through the external wall.
d. Stainless steel screws, pins, and fixings are to be used for fixing fascia, soffit, weatherboarding, and external finishes avoiding corrosion staining.
e. All new (and existing) verges shall be covered with a coloured (mortar free) continuous dry verge system such as the Manthorpe Smartverge or similar.
f. Flat roofs shall be laid on a fall of 1:40 to 1:80, and in installed accordance with the flat roof felt manufacturer recommendations. Stepper falls of 1:40 are required around trees.
g. Cavities are to be maintained between new and existing cavity walls or vertical d.p.c installed.
h. The external DPC is to be installed 150mm above ground level.

i. The DPC shall not be bridged, otherwise capillary action will transfer the water into the structure. Where external render is installed use a specific plastic stop end at the DPC to ensure DPC is not bridged.
j. Wherever a rafter, ceiling joist, flat roof joist, soffit or fascia timber is in contact with the outer leaf of the external wall ensure DPC is installed to prevent premature timber decay.
k. Ensure the new 1200g DPM links with all existing DPM's and over sails all new and existing DPC's.

Approved Document E - Resistance to the Passage of Sound

a. Internal stud walls - Face each side of the studwork with a single layer of 12.5mm plasterboard (min. mass 10kg/m^2). Place 90mm mineral wool batts or quilt (min. density 10kg/m^3) in between the studs.

Approved Document F - Ventilation

a. Purge Ventilation. All habitable rooms are to have external windows or a door to provide purge (rapid) ventilation equal to 1/20 of the room's floor area (m^2).
b. Background Ventilation. All new external windows and doors (excludes front door) are to have trickle vents to provide background ventilation. Background ventilation equal to 700-900mm^2/m^2 of floor area created in all rooms.
c. In the windowless rooms with the mechanical fans ensure the fans are operated with the light switch and has a 15min overrun. The mechanical fan to the windowless room shall be oversized to overcome the negative pressures from the windowless environment. Install a larger surface mounted central fugal fan or inline fan. This shall prevent mould growth in the cold months of winter
d. Mechanical Ventilation. All wet room locations are to have mechanical ventilation.

Kitchen	30 litres/sec adjacent to hob.	60 l/s if sited elsewhere in room.
Bathroom	15 litres/sec	
Toilet & sink	6 litres/sec	

e. Ensure that all mechanical extractor pipes are insulated (where outside the insulation envelope) to prevent condensation forming.
f. All ventilation pipes are to be ridged and insulated where practical. This is to prevent crushing and condensation.

Approved Document G - Hygiene & Water Efficiency

a. Hand washing facilities and washbasins shall be installed in Or in an adjacent room providing direct access to a water closet
b. The installations of unvented hot water storage vessels shall be designed, installed and tested by a competent person (Gas Safe Qualified Engineers).
c. Ensure the Hot Tap is installed on the left at all sinks, showers.

Approved Document H - Rainwater Drainage

a. Install a rodding eye (R.E) or inspection chamber (I.C) at every change in direction and change of gradient to allow rodding of any blockages. All ground level drainage entry points (back inlet gully B.I.G) are to be roddable.110mm underground rainwater drainage pipe should be laid at not less than 1:100 ideally 1:80 and shall be surrounded (100mm around) in granular material no larger than 10mm.
b. Gutters should be laid to a fall.
c. Rainwater downpipes should be a minimum of 89mm, and gutter diameter is to match the existing.
d. Rain water to match existing system by entering the foul water drainage system.

Foul Drainage

a. 110mm Foul drainage pipe is to fall toward the main or shared drainage. The minimum fall 1:80 ideally 1:40 and shall be surrounded (100mm around) in granular material no larger than 10mm.
b. Insert a rodding access to the base of all new SVP's.
c. Install a rodding eye (R.E) or inspection chamber (I.C) at every change in direction and change of gradient to allow rodding of any blockages. All ground level drainage entry points (back inlet gully B.I.G) are to be roddable.
d. Suspended drainage pipes are to be securely suspended every 1.5m max, with fixing at (and 100mm either side of) all connections.
e. Use 100mm grey (solar degradation resistant) waste pipes above ground and 100mm brown (contaminant resistant) waste pipes below ground.
f. Where the drainage passes through walls below ground ensure 50mm space around the pipes for movement. This space must be packed with a compressible material to prevent vermin entering the building.

Approved Document J - Combustion Appliances & Fuel Storage Systems

a. A new condensing boiler will be installed in the kitchen.
b. Gas Fired Boiler - Gas Safe (previously Corgi) has a number of membership levels. Ensure the installer is sufficiently qualified for your specific application as they are required to self-certificate their own work. A copy of all Certificates will need to be submitted to your Building Control Surveyor. There are many restrictions and regulations that apply to the positioning of flue outlets. The position of the boiler flue must achieve the distances set out in Approved Document J, unless the manufactures test data supersedes this guidance. Use a "dry trap" when discharging condensing waste into the foul water system as long period un-use can dry out water traps.

Glazing Notes

a. All glazing in the critical locations is to be constructed of toughened glass. Critical locations are 800mm above finished floor level everywhere and 1500mm at a door (includes 300mm either side of the door.)

Approved Document L - Conservation of Fuel & Energy

a. 100% of the new lighting to the newly created floor area must be energy efficient. The lights can be compact fluorescent lamps, but must have a socket that can only be used by lamps that have an efficiency that achieve 45 lumens per circuit-Watt or greater. The light fitting is a purpose built product and shall not have a standard bayonet cap or Edison screw fitting. Energy efficient lamps must be fitted
b. All pipes located outside the insulated building will be insulated with insulation with a thermal conductivity of 0.035W^2/m.K and an insulation thickness equal to the outside diameter of the pipe up to a maximum of 40mm. Pipes carrying warm air must comply with BS5422. Ensure all hot and cold water pipes are insulated to prevent freezing
c. All new radiators are to have thermostatic radiator valves TRV's
d. Ensure all insulation junctions overlap. Ensure the wall insulation meets the floor and roof insulation to prevent cold bridging and condensation.
e. Insulated cavity closers are to be used around all openings in the external cavity wall.
f. All new glass is to achieve 1.6 W/m^2K

Approved Document M - Access To & Use of Buildings

a. The front door is to have a clear unobstructed width of 775mm or greater, and a level threshold with no singular upstand being greater than 15mm
b. All internal doors are to have a clear width of 800mm or greater.

c. The ground floor w/c door will open outwards, and a clear unobstructed space measuring 900mm wide and 750mm long must be maintained directly in front of the toilet.
d. All switches and sockets will be sited between 450mm and 1200mm above finished floor level.

Approved Document P - Electrical Safety

a. All of the electrical works are to be undertaken by an Approved Document Part P Qualified Electrician. The electrical installation is required to be in accordance with BS7671 and current IEE Regulations.
b. All works are to be undertaken by a self-certificating electrician and a copy of the test certificates are to be submitted to Building Control on competition of works.
c. The requirement for high levels of insulation may cause electric cables to overheat. Ensure the electrician is aware of the insulation values being installed.
d. Ensure down lighters have safe space around them from flammable insulation or combustible materials as they reach temperatures of up to 200 °C. LED and energy efficient bulbs produce much less approx. 80°C.
e. Ensure insulation is not removed to install down lights in the external envelope.
f. Electrical consumer unit should be positioned at a height of between 1350-1450mm from finished floor height.

Approved Document R - Electronic Communications

a. The building will be equipped with a router and broadband.