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BUILDING REGULATIONS NOTES

for

A NEW RESIDENTIAL BUILDING CONTAINING 8 APARTMENTS

at

Seaton Beach
East Walk
Seaton
EX12 2NP

by

Seaton Beach Developments Ltd.

January 2018

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1. INTRODUCTION

The applicant's, Seaton Beach Developments Ltd, intend to erect a new residential building containing 8 apartments over five floors comprising of seven 2 bedroom apartments and one penthouse of 3 bedrooms with shared access via a central stair and lift core.

The client's desire to build exemplar environmentally friendly homes, designed to the highest standards of energy efficient design, led to the appointment of Gale & Snowden Architects. The Practice's expertise in developing low environmental impact projects has been gained through 25 years of specialism in this field and has included award winning affordable housing in Devon.

Gale & Snowden Architect's approach to sustainable construction is to rigorously employ passive design principles to ensure that, through simple design, the buildings use minimum amounts of energy and water, whilst being comfortable, easy to use and healthy for the occupants.

The primary design objectives are:

- to develop a high quality, sustainable and healthy housing scheme that meets Passivhaus standard.
- to provide an attractive, contemporary and functional design that is respectful of its location and residential context in terms of scale and massing.
- to minimise the building's energy demand and carbon footprint by meeting the highest levels of energy efficiency and ecological design standards. The building design is based on *'Passiv-Haus'* principles resulting in minimal CO2 emissions and greatly reduced utility bills for its future residents. The Passiv-Haus principle is explained below.

'Passiv-Haus' Principles

The building design is based on '*Passiv-Haus'* principles. A passive house is a building in which a comfortable interior climate can be maintained without active heating and cooling systems (Adamson 1987 and Feist 1988). The house heats and cools itself, hence "passive". The '*Passiv-Haus'* was developed in Germany over 30 years ago and now the term, as it is used here, describes the same general principles used to achieve the highest levels of energy efficiency and ecological design standards.

Increased insulation standards, exceptional levels of air tightness and a compact form are elemental components for this relatively new standard for the UK. Heat losses can be reduced to a minimum resulting in a requirement for space heating at 15 kWh/ m2/ year or lower. (Heating requirements for a standard new residential building are usually around 70-110 kWh/ m2/ year.) This leads to lower heating bills and reduced carbon emissions.

By choosing the best orientation for the building and by optimising solar gains, the energy performance of the proposed design has been improved so that a conventional heating system would not be required.

The key organisations involved with the project are as follows:

- **Architects:** Gale & Snowden Architects – Lead consultant.
- **Client:** Seaton Beach Developments Ltd.
- **Mechanical & Electrical Consultant:** Fords of Sidmouth Ltd.
- **Structural Engineer:** Structurehaus (Exeter)
- **Civil Engineer:** Structurehaus (Exeter)
- **Main Contractor:** Classic Builders (SW) Ltd.

2. GENERAL NOTES

a. This document has been prepared for the purpose of making a building regulation submission only. Information is not to be treated as a detailed specification.

3. FOUNDATIONS AND SUBSTRUCTURE

a. The foundations and footings including the concrete mix, detailed design, calculations and specifications to the Structural Engineer's design and to the Local Authority approved depths.

b. Actual depths of foundations to be determined on site after inspection. Adverse ground conditions during excavation and piling to be reported to Architect, Structural Engineer and Building Control before work proceeds.

c. Wall cavities to have weak concrete fill to not within 150mm below Damp Proof Course.

4. SUPERSTRUCTURE

a. Structural design. Refer to Structural Engineer's design, details and calculations. If appropriate, a conditional building regulation approval is requested subject to confirmation of approval of later structural matters to be supplied by both the Structural Engineer and Civil Engineer.
b. All steels supporting precast concrete plank flooring or acting as structural elements are to be protected with two layers of 15mm fire line to afford 60 minutes of fire resistance.

5. EXTERNAL WALLING

Note on U values

U values are a numeric value that show the heat loss from a building via the fabric. The lower the U value the better because, less heat loss, means lower heating bills. Technical definition of U value is "The heat flow through one square meter (1m2) of building fabric at a given temperature difference".

a. Depending on location, external walls are constructed from EITHER:

On ground floor:

436 mm wide solid wall with external wall insulation consisting of 215mm blockwork (to Structural Engineer's details, design and calculation) with 206mm proprietary EIFS system (external insulated wall and finishing system) by Alsecco. This system includes 200mm Polystyrene insulation with 6mm through coloured silicate render over.

Assembly no.		Interior insulation?
02ud	EWI	

Heat transmission resistance [m²K/W]

Orientation of building element	2-Wall	interior R_{si}	0.13
Adjacent to	1-Outdoor air	exterior R_{se}	0.04

Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Plaster	0.570					15
concrete blocks	2.000					215
insulation neopor	0.031					200
render	0.800					6

Percentage of sec. 1	Percentage of sec. 2	Percentage of sec. 3	Total
100%			43.6 cm

U-value supplement: W/(m²K)

U-value: 0.148 W/(m²K)

First to 3rd floor:

396mm monolithic (one skin) wall construction with 365mm wide Porotherm clay blocks with internal plaster finish and external render finish. Refer to Architect's drawings.

Assembly no.		Interior insulation?
03ud	Poroton	

Heat transmission resistance [m²K/W]

Orientation of building element	2-Wall	interior R_{si}	0.13
Adjacent to	1-Outdoor air	exterior R_{se}	0.04

Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Plaster	0.570					15
Poroton T10	0.095					365
Render	0.800					16

Percentage of sec. 1	Percentage of sec. 2	Percentage of sec. 3	Total
100%			39.6 cm

U-value supplement: W/(m²K)

U-value: 0.246 W/(m²K)

4th floor:

307mm timber frame wall with 230mm Timber Joist Ibeam (TJI) studs with cellulose fibre infill insulation, 38mm ventilation void with Aluminium Composite Material (ACM) metal cladding over to the outside and a 50mm mineral fibre filled service void on the inside with plasterboard and skim finish.

Assembly no.		Interior insulation?
04ud	TF wall	

Heat transmission resistance [m²K/W]

Orientation of building element	2-Wall	interior R_{si}	0.13
Adjacent to	1-Outdoor air	exterior R_{se}	0.04

Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Plasterboard	0.570					15
service void insulation	0.032	battens	0.130			50
TJI insulation	0.040	top bottom cord	0.130			50
TJI insulation	0.040			OSB web	0.130	180
OSB board	0.130					12

Percentage of sec. 1	Percentage of sec. 2	Percentage of sec. 3	Total
90%	8.0%	2.0%	30.7 cm

U-value supplement: W/(m²K)

U-value: 0.141 W/(m²K)

b. Ensure blockwork has fully dried out before rendering and provide shrinkage control joints as recommended by the block manufacturer and in accordance with Structural Engineer's information.

6. INTERNAL STRUCTURAL PARTITIONS

a. Party/separation walls between apartments. Above damp proof course (DPC) level to be a single leaf of 240mm Porotherm PFZ concrete filled blockwork to act as formwork and filled with concrete to achieve a minimum mass per unit area of 415kg/m2 to comply with separation wall requirements to Part E. The first course over DPC is to be insulating blockwork and all subsequent courses are to be Porotherm blocks filled with concrete. Internally (within the apartments) the wall construction is to have a lining of 15mm plaster and skim. Refer to Architect's drawing no. AA(0)304.

b. Partition wall within flats. Above DPC level to be one leaf of 115/175mm Porotherm Clay blocks. The first course is to be insulating blockwork and all subsequent courses are to be Porotherm blockwork, to Structural Engineer's details, design and specification. The wall construction is to have a lining of 15mm plaster and skim. Refer to Architect's drawing no. AA(0)306.

7. INTERNAL NON-STRUCTURAL PARTITIONS

a. Regularised timber stud partitioning. Horizontal and vertical centres of studs to be in accordance with lining board manufacturer requirements. Internal wind loading requirements and general sizing and design of stud walling to suit requirements of Structural Engineer.

b. All timber stud partitioning to have non-slumping full-fill acoustic insulation (minimum of 10kg/m^3 density) infill between studs, provisionally mineral fibre insulation.

c. Porotherm clay block partitioning. Above DPC level to be one leaf of 115mm clay blockwork to Structural Engineer's details, design and specification. The wall construction is to have a lining of 15mm plaster and skim.

8. LINTELS

a. For all lintels within the external wall envelope, refer to Structural Engineer's design, detail, specification and schedule.

b. For all lintels within internal walls, refer to Structural Engineer's design, detail, specification and schedule.

9. DAMP PROOF COURSES (DPCs) AND DAMP PROOF MEMBRANES (DPMs)

a. All horizontal and vertical DPCs are to be lapped and sealed to manufacturer's instructions.

b. All horizontal DPCs and radon barriers are to be pre-formed and linked to damp proof membranes (DPM).

c. Ensure all DPCs, DPMs and radon barriers (where required) are fully protected during construction. No punctures or rips will be acceptable.

d. Continuous floor DPM to be 300mu Visqueen polythene DPM or similar as approved, over suspended beam and block floor, with preformed Visqueen DPC and radon barrier sections at internal walls, taped and linked to DPM with 50mm structural topping over to act as airtight layer.

e. Services carried through the DPC and structural topping are to be sealed around with purpose-made preformed airtight collars, size to suit the size and diameter of the service.

10. GROUND FLOOR

a. Floor construction is to be suspended insitu reinforced concrete floor (details, reinforcement and design mix to Structural Engineer's design and specification). With Radon barrier/DPM over 200mm XPS flooring grade insulation over sand blinding.

b. Generally, all rooms are to be finished with 10mm thick ceramic floor tiles on 5mm adhesive bed with a minimum slip resistance value of R9 or engineered floorboards.

c. All bathrooms, shower rooms, wet areas, utility rooms and communal stairs to be finished with 10mm thick ceramic floor tiles on 5mm adhesive bed with a minimum slip resistance value of R10.

d. U-value:

Assembly no.	Building assembly description					Interior insulation?
01ud	Floor					

Heat transmission resistance [m²K/W]

Orientation of building element: 3-Floor — interior R_{si}: 0.17

Adjacent to: 2-Ground — exterior R_{se}: 0.00

Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
XPS	0.037					250
Concrete	2.000					200
Screed	1.150					65

Percentage of sec. 1	Percentage of sec. 2	Percentage of sec. 3	Total
100%			51.5 cm

U-value supplement: W/(m²K)

U-value: 0.141 W/(m²K)

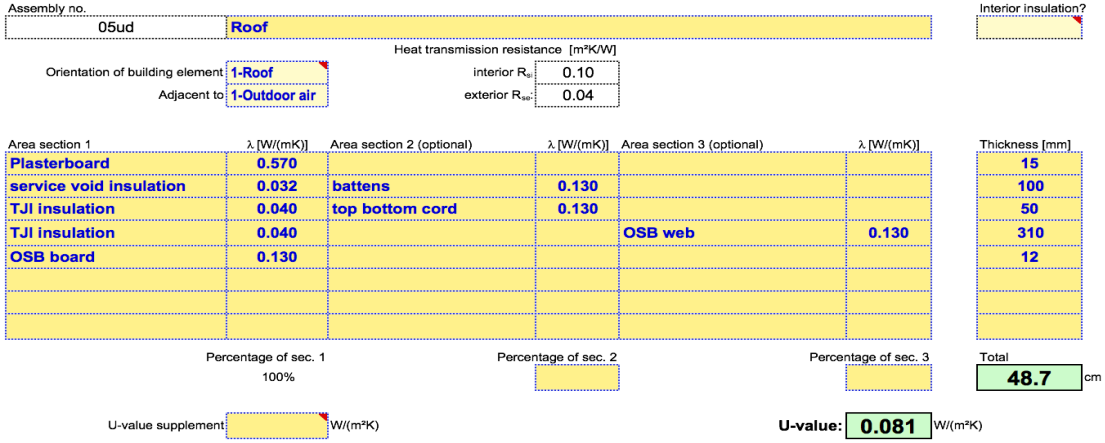
11. PITCHED ROOF

a. The roof rafters pitched at 5 degrees are TJI engineered rafters to Structural Engineer's details, design and specification. Insulation is to be provided as cellulose fibre infill insulation with a 100mm mineral fibre filled service void and plasterboard and skim below.

b. The roof covering is to comprise a cold liquid applied seamless membrane system with standing seam profiles and ACM metal facia to eaves, verges and ridges and integrated gutters to eaves over plywood decking to Structural Engineer's specification, 75mm ventilated void and breathable roofing underlay. A proprietary specialist designed fall restrain system is to be installed to assist in future maintenance.

c. Eaves carriers and insect mesh are to be incorporated at the eaves. 25mm minimum continuous ventilation.

d. U-value:



Assembly no.						Interior insulation?
05ud	Roof					

Heat transmission resistance [m²K/W]

Orientation of building element: 1-Roof — interior R_{si}: 0.10

Adjacent to: 1-Outdoor air — exterior R_{se}: 0.04

Area section 1	λ [W/(mK)]	Area section 2 (optional)	λ [W/(mK)]	Area section 3 (optional)	λ [W/(mK)]	Thickness [mm]
Plasterboard	0.570					15
service void insulation	0.032	battens	0.130			100
TJI insulation	0.040	top bottom cord	0.130			50
TJI insulation	0.040			OSB web	0.130	310
OSB board	0.130					12

Percentage of sec. 1	Percentage of sec. 2	Percentage of sec. 3	Total
100%			48.7 cm

U-value supplement: W/(m²K)

U-value: 0.081 W/(m²K)

12. WINDOWS, DOORS AND SCREENS

a. The windows are to be timber frame aluminium clad Rational triple-glazed units, finished by manufacturer and fitted to manufacturer's instruction to comply with 'Secured by Design' accreditation.

b. Security locks to low-level windows. All low-level windows are to be key operated.

c. Where doors and windows have glazing less than 1500mm above finished floor level and where glazing is within 300mm of the edge of doors it is to be safety glazing up to a level 1500mm above finished floor level. Glazing is to be safety glazing as defined in BS6206. Kitemarks to be clearly but discretely displayed in the bottom right corner of the panes and must not be concealed beneath beading or decoration.

d. U-value for the windows is to be found in the SAP consultant's information. However, for information, the U-value for the windows has been calculated at less than (<)1.0W/m²K.

e. U-value for the roof windows is to be found in the SAP consultant's information. However, for information, the U-value for the roof windows has been calculated at <1.0W/m²K.

f. U-value for the doors is to be found in the SAP consultant's information. However, for information, the U-value for the doors has been calculated at <1.0W/m²K.

g. Entrance doors are to have accessible thresholds and are to comply with secured by design requirements.

h. Glazing up to 800mm above finished floor level in a window or 1500mm in a door or side panel is to comply with "BS6206:1981 specification for impact performance requirements for flat safety glass" for use in buildings.

13. MECHANICAL SERVICES

a. Mechanical services for the scheme have been kept as simple as possible and consist of the following:

Mains cold water system

Hot water is via a combi compact heat pump

Mechanical ventilation heat recovery (MVHR) system

Electric panel heaters & towel rails to meet minimal heat demand

b. The MVHR system provides ventilation needs for each apartment. The ventilation systems have been sized to provide a minimum 0.5 air changes per hour throughout the properties.

c. A compact heat pump will be fitted to each individual apartment to provide domestic hot water and heating will be provided via electric panel radiators. Further details on all mechanical systems can be made available on request.

14. ELECTRICAL AND FIRE PRECAUTIONS

a. Fire precautions as Architect's General arrangements (GAs) drawings.

b. Fire precautions shown are advisory only and subject to Fire Officer's recommendations. All requirements of the Fire Officer will be implemented into the scheme.

c. The building shall be designed and constructed to provide facilities to assist fire fighters in the protection of life. Provision shall be made within the site of the building to enable fire appliances to gain access to the building. Where possible, within the confines of the site, access to within 45m of the building should be made available to fire pumps.

d. 30-minute fire-resistant solid-core fire doors (FD30S) with self-closing doors fitted with brush smoke seals and intumescent strips recessed into the door. For locations see Architect's GAs drawings.

e. Carbon Monoxide (CO) detectors to be installed in all kitchens.

f. Heat detectors are to be provided in kitchen areas and smoke detectors in hallways.

g. Self-contained emergency lighting shall be incorporated into the general lighting to provide an escape lighting installation in accordance with BS5266. Emergency lighting to be located where shown on plans and to be specified by the electrical engineer.

h. In the communal stairs an openable window has been allowed for at the highest point to act as a smoke vent in the event of a fire.

i. All switches, sockets, ventilation and service controls will be at a height of between 450mm and 1200mm from the finished floor level.

j. Socket outlets over the kitchen worktop. The top of the sockets will be 150mm above the top of the worktop.

k. All electrical systems and items raised in this sub-section are to be designed and detailed by the projects electrical engineer, and the electrical installation is to be undertaken by a person who is registered with an electrical self-certification scheme approved by the Secretary of State. On completion of works, the client is to receive a signed Building Regulations self-certificate and a copy is to be forwarded to Building Control. The Client is also to receive a duly completed Installation Certificate as the model, the certificate is to be made out and signed by the person/persons carrying out the design, construction, inspection and testing work.

l. Electrical installations are to be tested during and at the end of installation, before being put into service to ensure they are safe.

m. Adjacent to the lift shaft, a proprietary specialist designed mechanical smoke control shaft ventilation system is to be fitted. Details of this system are to be made available once a specialist subcontractor has been appointed.

15. VERTICAL ACCESS AND GUARDING

a. Stairs. All stairs within the scheme are communal stairs and comprise of a precast concrete stair (to manufacturer's details, design and specification), with 10mm ceramic tiles (minimum slip resistance value R10) on 5mm adhesive bed, with visually contrasting, non-slip nosing and insert. The rise of each step shall be between 150mm and 170mm and the going at least 250mm.

b. Handrails/balustrades. Handrails shall be provided to both sides of the stair with guarding on one side and comprise 40mm diameter powder coated, galvanised steel handrails with powder coated galvanised steel balustrade. Structural Engineer is to confirm dimensions and that these are adequate for 1100mm (to landings) and 900mm (to stairs) high guarding and will resist a horizontal line load of 1.50kN/m. All openings in guarding shall be such that a 100mm sphere may not pass through.

16. STEELWORK

a. Refer to Structural Engineer's primary design information.

17. REINFORCED CONCRETE WORKS

a. All reinforced concrete work to Structural Engineer's design and calculations.

18. UNDERGROUND DRAINAGE

a. Underground drainage exterior to the building will be designed by the Civil Engineer. See CE information for all invert and cover levels.

b. Foul water drainage will discharge to the existing public sewer.

c. Underground foul and surface water building drainage shall be vitrified clay or high density polyethylene (HDPE), constructed in accordance with Approved Document Part H of the Building Regulations.

d. Bedding for pipes to be in accordance with Building Regulation document specifications Section H2 designed by SE/CE.

e. Rainwater drainage shall be in accordance with BS EN 12056 Part 3.

f. Pipes under floor constructions, or within 1000mm of the building to be encased in concrete with movement joints at 3000mm intervals or at every joint if pipes are less that 3000mm long. All to SE/CE details.

g. Clay access points (100x260mm) with necessary raising pieces and alloy covers and proprietary rodding eyes with alloy covers when drainage is 600mm deep and less (Hepworth 'Supersleeve' or similar to Architect's approval).

h. Design of manholes/inspection chambers to Structural and Civil Engineers details and specification.

i. Rainwater downpipes are to discharge into clay/HDPE trapped gullies with separate inspection cover with rodding access.

j. Where underground pipes penetrate walls, relieving lintels will be installed with a minimum 50mm clearance all round, all sides of opening to be masked with slates (foundation at this point and lintel to be to Structural Engineer's design, detail and specification).

19. ABOVE GROUND INTERNAL DRAINAGE

a. See Architect's drainage GAs drawings.

b. All pipes to be HDPE or Polypropylene (PP) plastics (not PVC) or metal.

c. Showers, sinks and basins to have 40mm diameter pipe for runs of less than 3000mm and to have 50mm diameter pipe for runs up to 4000mm length. 75mm deep seal anti-vac bottle traps throughout, cleaning eyes at range ends and at stack.

d. Stacks to have a rodding eye at the base.

e. Vent pipes to terminate through tile terminals or tile vents on the main roof, minimum 900mm above any opening in building where within 3000mm.

f. Drains shall be constructed to prevent vermin entry to building.

g. Where the soil vent pipe (SVP) pipework passes through the compartment floors, surface mounted 60 minute fire resistance (FR) collars are to be installed. Pipework is to be insulated/enclosed for its full height with insulation having a mass per unit area of at least 15kg/m² lined with 25mm un-faced mineral wool. The plasterboard ducts are to be fully filled with insulation.

20. RAINWATER DISPOSAL

a. See Architect's roof plan drawings.

b. Gutter and downpipes to be Alumasc. Gutters integrated into eaves detail, 250mm wide, membrane lined, galvanised pressed steel box gutters with 100-150mm (depending on location) diameter downpipes. (Alumasc is the brand name, considered a leader in this field).

21. SOLID WASTE DISPOSAL

a. Waste containers awaiting refuse lorries to be stored on concrete/tarmac pickup point. Individual waste containers for refuse storage for the building to have capacity appropriate to volume of waste produced and frequency of collection, sized in conjunction with the collection authority.

b. Waste containers are to be located in fully enclosed refuse store, please refer to architect's site plan for details.

22. VENTILATION

a. Refer to Section 13, Mechanical Services.

23. LIGHTNING

a. If required, to be designed by the protection services engineer following a predicted lightning strike exercise.

24. Water Use

a. All fittings provided by the contractor are to comply with table 2.1 of Approved Document Part G to ensure a water use of less than 125 litres per person per day using the fittings approach.

25. AIR-TIGHTNESS OF BUILDING

a. The building is designed to achieve a very high standard of air-tightness. The building is to achieve a volumetric air change rate not exceeding of 0.6 m^3/hour/m^3 net internal volume or an air permeability of 0.40m^3/hour/m^2 total envelope area at 50PA when tested to ATTMA Standard TSL1 Testing dwellings for Air Leakage. The building is to be air pressure tested by an independent specialist. ATTMA (Air Tightness Testing & Measurement Association) is the trade association for setting standards in the UK for air testing.

b. All gaps between building fabric and an element i.e. window, door and roof light, and services elements such as vents or stacks will be sealed with air-tight tapes and sealants including, but not exclusively, ProClima Contega PV tape, propriety butyl tape, ProClima Orcon F sealant, Tayfire expanding grout, and ProClima air-tight collar.

c. Refer to Architect's drawings for all such details and the location of the primary air-tight membrane.

26. SAFE CLEANING OF WINDOWS MAINTENANCE

a. With the exception of balcony and roof terrace glazing which can be reached from level ground for cleaning, all windows to be side guided, tilt and turn or fully reversible to facilitate cleaning from inside.

27. DISABILITY DISCRIMINATION ACT (DDA) COMPLIANCE

a. Provisions regarding colour contrast for doors and electrical socket/outlets and the design of entrances, external and internal routes, stairs and sanitary facilities will be made for people to gain access to and use the building and its facilities to comply with Building Regulations Approved Document Part M.

b. Tactile signage will be installed by contractor where required.

This document has been compiled in support of the Building Regulations submission to East Devon District Council Building Control Department by Gale & Snowden Architects. It has been edited by Seaton Beach Developments to avoid abbreviations on technical matters and to make for ease of reading. The specifications above are as the design intent and as contracted for at the tender stage however as with all construction projects is subject to change due to product availability or client choice during the construction phase of the scheme. It is therefore not contractually binding.