Spiral Cellars

TECHNICAL MANUAL

CONTENTS/ INTRODUCTION

> “Their attention to detail, precision, and absolute professionalism were second to none.”

This manual provides a comprehensive summary of technical details and guidance for professional advisors, engineers and contractors acting on behalf of Spiral Cellar customers.

It covers all key aspects of the cellar installation and the main cellar components, with detailed drawings and specifications.

Whilst every care has been taken to present this information accurately and in a helpful format, readers should contact Spiral Cellars for any further details or clarification that may be required or for circumstances that are not included here.

This manual will be updated periodically to address changes in legislation or best practice and to include new or updated features or components as they are introduced. Please check with Spiral Cellars to confirm this is the most recent version.

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WHY CUSTOMERS WANT A SPIRAL CELLAR IN THEIR HOME

Sales of fine wine are increasing year on year in the UK and wine has always played a part in signifying status and a cultured lifestyle, and this continues. Entertaining family and friends at home is all part of the modern lifestyle and people want their wine collection close at hand for easy access.

The modern home is often required to reflect the owner's style, personality and position in life so functional additions that also double up as design features are an obvious choice — a home wine cellar is a wow factor, a great party piece that also stores wine in the ideal conditions. At the same time homeowners are interested in value–added features for their home.

Another incentive to store wine — it is a less volatile investment area than other traditional avenues such as property. It is also free of Capital Gains Tax.

Owners of an underground wine cellar

- Go on holiday to wine regions and have the option of shipping home several cases to store in their cellar.
- Save on external warehousing and delivery costs, and find it much more convenient to have a full range at home and have more to spend on wine!
- Enjoy browsing their cellar after a long day at work and selecting a bottle to go with dinner.
- Use the additional storage space as a larder, and is very useful at Christmas.

Why a Spiral Cellar is a good choice

Unlike wine cabinets or climate controlled above ground rooms, an underground cellar does not need mechanical cooling. Therefore there is no risk of mechanical failure and risk to the wine. Equally no energy is consumed.

By going underground, space is created rather than absorbing a room or space that could have other uses.

Concrete as a material has its advantages; it is very efficient at retaining temperature — which compliments the slow change of ground temperature from summer to winter, and further reduces any temperature spikes. It's structural integrity — it is capable of taking the weight of the wine and stacked modules.

Wine is a living product

Its ability to change with time is what makes it so interesting, but it also means that if it's kept in the wrong conditions its quality can quickly be affected.

Temperature is the most critical aspect in storing wine

Store wine somewhere too hot and it ages quickly, rapidly losing its vibrancy and becoming tired and stale. The ideal temperature for wine is about 13°C but 5°C or so either side of this is acceptable. The key is that there are no sudden fluctuations — wine likes things to change slowly — so while a gradual warming and cooling between winter and summer is not a problem. Insulated by the ground, an underground wine cellar keeps wine at a steady temperature, allowing it to age gracefully.

Humidity

Wine bottles need to be kept horizontal and in a slightly damp atmosphere to prevent the corks drying out. If corks do dry out they shrink, allowing air into the bottle and oxidising the wine. The recommended relative humidity is around 70% or more.

Clean, dark and quiet

Wine doesn't like direct sunlight, noise or constant vibrations from, say, traffic.

PRODUCT OVERVIEW

A Spiral Cellar is a watertight cylindrical concrete system sunk into the earth through the ground floor of a house. You do not need an existing cellar or basement.

It's designed to store wine at optimum humidity, temperature and darkness, and works by using the earth's natural attributes and a passive ventilation system. Spiral Cellars are not considered habitable spaces so planning permission isn't required.

KEY FACTS:

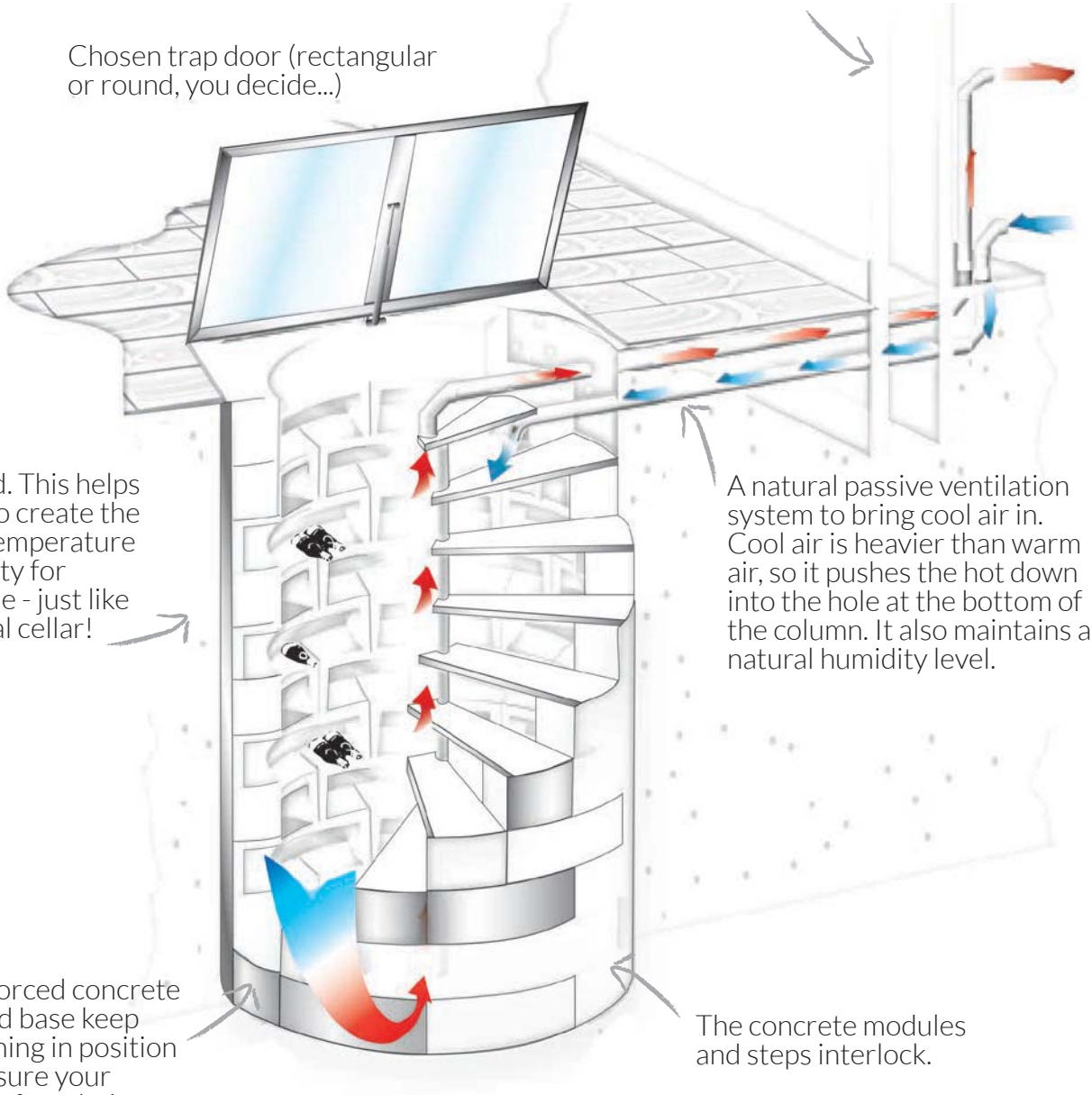
- It can be located in any ground floor room of a property.
- Planning permission is not usually required, just Building Regs.
- A Spiral Cellar requires no mechanical cooling and is maintenance free. Its position in the ground means the cellar remains at ideal temperatures and the simple passive–style ventilation system and concrete construction maintain a suitable humidity level.
- The external diameter of the excavation is 2300mm or 2500mm.
- There are depths from 2m to 3m, storing up to 1900 bottles.
- A Spiral Cellar can be installed in a high water table environment — our Butyl liner makes the cellar watertight.
- A common misconception is that the property needs to be underpinned or have piled foundations installed — this is not the case, see page 8.
- We have been trading for over 30 years in the UK and in that time we've installed over 3000 cellars.

HOW THE CELLAR WORKS

Spiral Cellars are not considered habitable spaces so planning permission is not required.

We want the coolest air possible coming in as it gives your cellar the best chance of working at its optimum

Chosen trap door (rectangular or round, you decide...)



The ground. This helps the cellar to create the optimum temperature and humidity for storing wine - just like a traditional cellar!

A natural passive ventilation system to bring cool air in. Cool air is heavier than warm air, so it pushes the hot down into the hole at the bottom of the column. It also maintains a natural humidity level.

A reinforced concrete ring and base keep everything in position and ensure your existing foundations won't be affected.

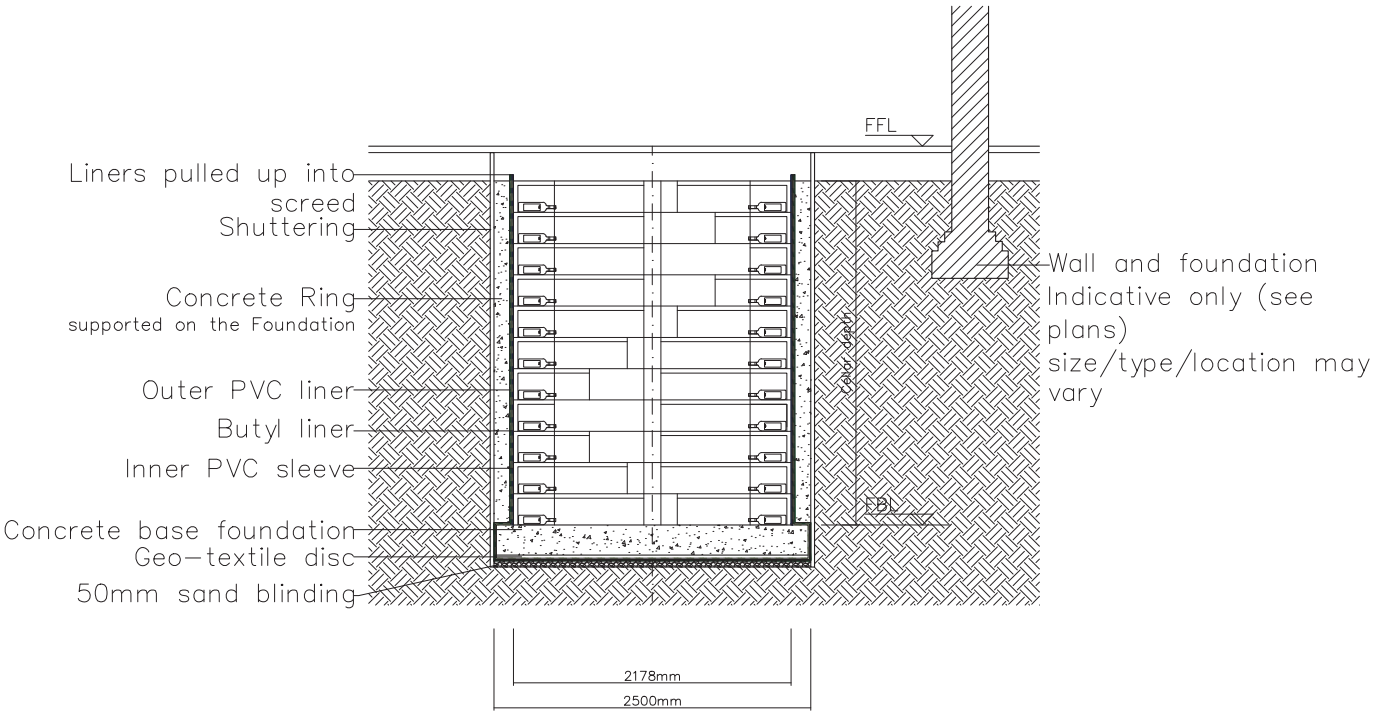
The concrete modules and steps interlock.

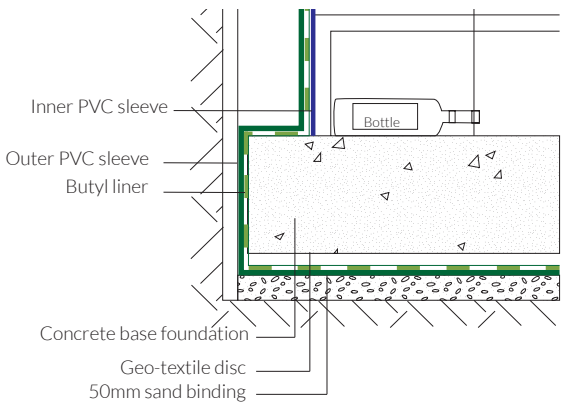
Warm air

Cold air

A DESIGN GUIDANCE FOR ARCHITECTS

A1 COMPONENTS





A1i WATER PROOF LINER DETAIL

The Spiral Cellar is a water tight construction

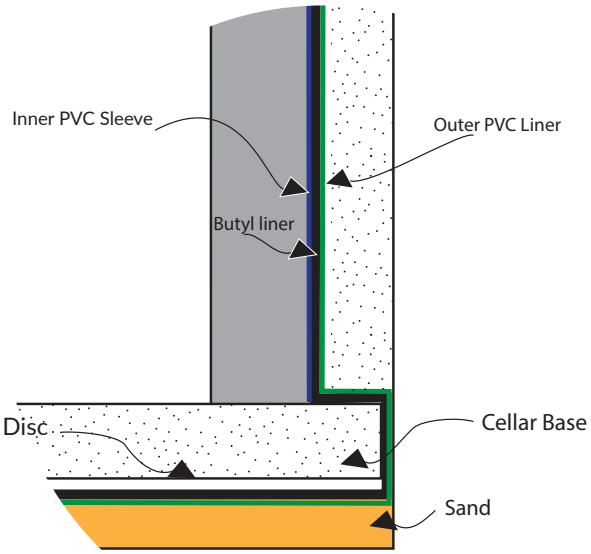
The construction of the Spiral Cellar includes a Butyl liner, which is protected from damage by a reinforced PVC outer liner and a reinforced PVC inner sleeve.

Butyl Rubber is the original geomembrane liner material used for water containtment in drought and war zones, as well as numerous prestigious tanking projects, reservoirs, roofing and decking solutions.

Spiral Cellars specify a 1.5mm thick Butyl, which is manufactured to cellar specific bag shape to fit the excavation perfectly.

Butyl has an extremely high tensile strength and can be stretched to up to 3.5 times before tearing.

The Butyl liner and PVC liner are factory vulcanised and seamed. Each liner is pressure tested as part of a rigorous quality control before being dispatched to each project.



Order of component installation

- Green/blue reinforced PVC liner
- Butyl liner
- Blue reinforced PVC sleeve

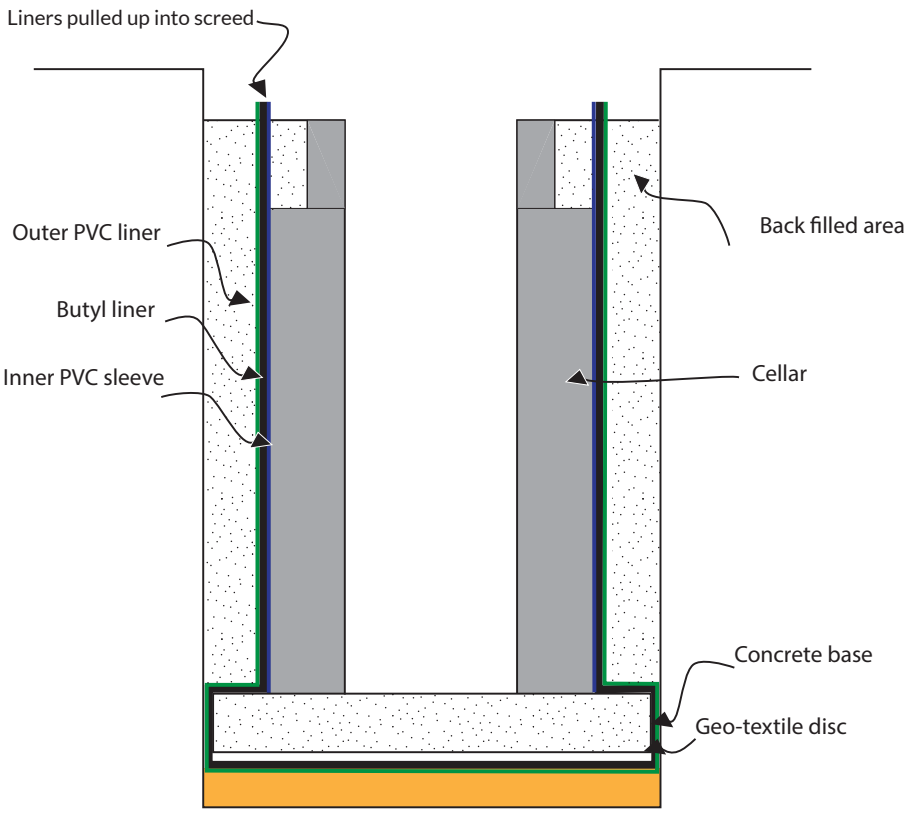


Illustration showing the position of liners and PVC protection sleeve

A1ii WATERPROOF BUTYL LINER PRODUCT SPECIFICATION

BUTYL LINER

BP landflex BR150 1.50mm Butyl Rubber

Typical Properties	Test Method	Specification (Typical Values)
Gauge (mm)		1.5 ± 10%
Tensile Strength (MPa)	BS 903 Part A2	10.0
Modulus at 300% (MPa)	BS 903 Part A2	7.0
Elongation at Break (%)	BS 903 Part A2	350
Tear Strength (N/mm)	BS 903 Part A3	40
Ozone Resistance 7 days/50pphm/30 °C	BS 903 Part A43	50% extension No cracks
Heat Aging (Retentions) 7 days @ 100 °C	BS ISO 188	8.0 MPa 250%
Flex Cracking	BS ISO 132	200.000 Cycles No cracks
Specific Gravity	BS 903 Part A1	1.24 +/- 0.03
Operating Temperature Range	BS903	-40 °C to + 130 °C

The information herein is based upon data obtained by the manufacturer and is considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data. This information is furnished upon the condition that the person receiving it shall evaluate its suitability for the specific application.

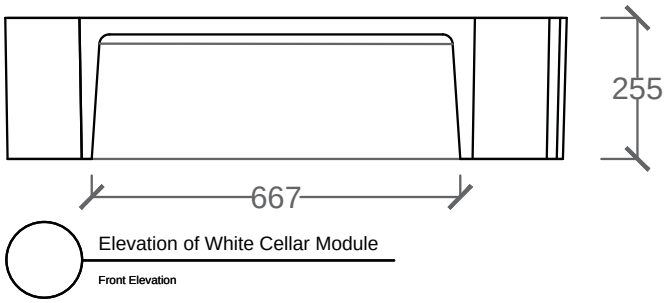
PROTECTIVE LINER

BP landflex PVC 610B/PVC 610G 610g/m² Reinforced PVC

Typical Properties	Test Method	Specification (Typical Values)
Width/Finish		150 / 205cm / Sateen
Colours available		Blue / Green
Base fabric		High tenacity polyester
Coating		Flexible plasticised PVC - both sides
Total weight	BS3424/5A	610g/m² +/- 25g/m²
Tensile Strength N/50mm (ave.)	BS3424/6B	Warp 2400 / Weft 2100
Tear Strength N (ave.)	BS3424/7B	Warp 500 / Weft 325
Coating adhesion N/50mm (ave.)	BS3424/9B	100

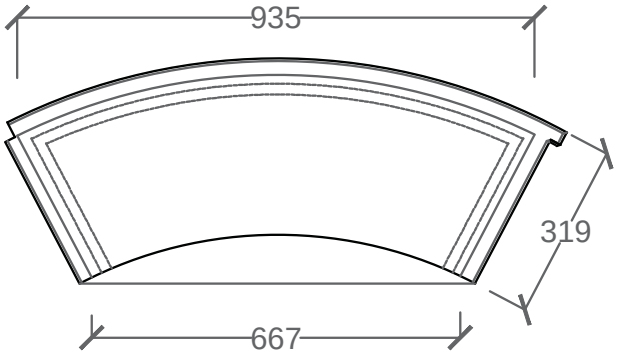
The information herein is based upon data obtained by the manufacturer and is considered accurate. However, no warranty is expressed or implied regarding the accuracy of this data. This information is furnished upon the condition that the person receiving it shall evaluate its suitability for the specific application.

A2i WHITE SPIRAL CELLAR DIMENSIONS



Elevation of White Cellar Module

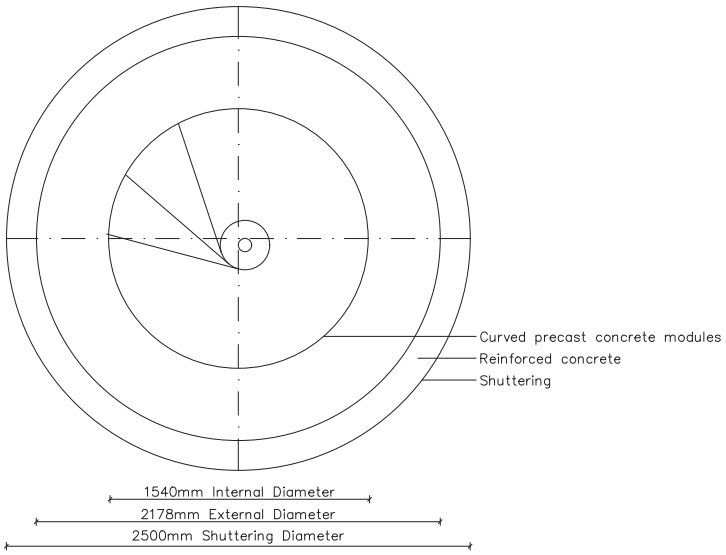
Front Elevation



Plan Layout of White Cellar Module

Unit viewed from above.

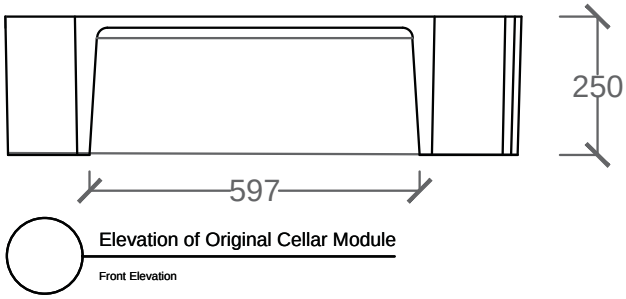
Each module has a solid back and an open side front.



Cellar depth is measured from the FFL to top of cellar base slab

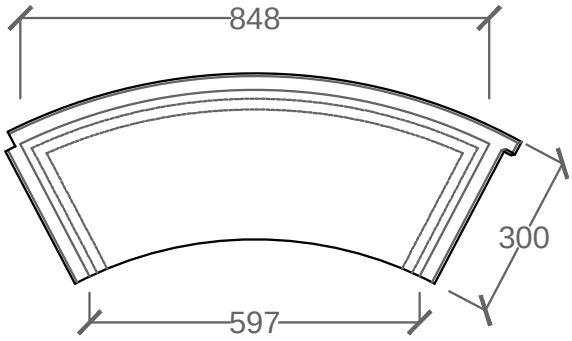
	2000mm depth	2500mm depth	3000mm depth
Number of bins	42	54	66
Maximum number of bottles	1130	1450	1780
Excavation depth	The excavation depth is determined by our structural calculations and confirmed by the Project Manager		
Internal diameter	1540mm	1540mm	1540mm
Cellar diameter	2178mm	2178mm	2178mm
Shuttering diameter	2500mm All diameters are +/- 10mm tolerance	2500mm	2500mm

A2ii ORIGINAL SPIRAL CELLAR DIMENSIONS



Elevation of Original Cellar Module

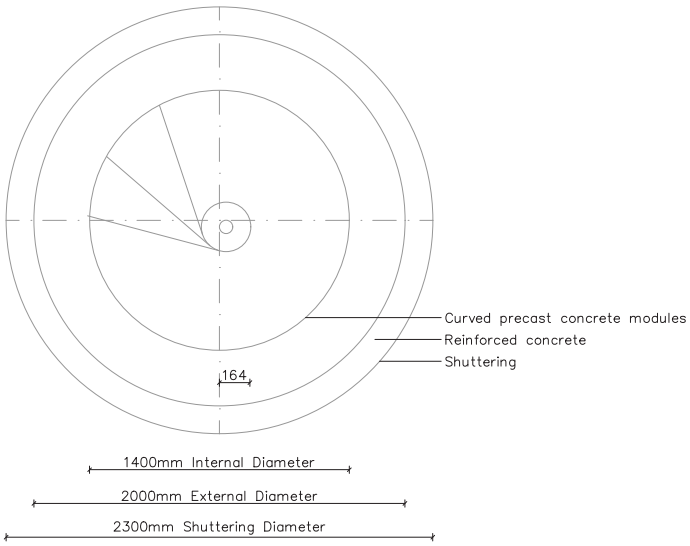
Front Elevation



Plan Layout of Original Cellar Module

Unit viewed from above.

Each module has a solid back and an open side front.



Cellar depth is measured from the FFL to top of cellar base slab

	2000mm depth	2500mm depth	3000mm depth
Number of bins	42	54	66
Maximum number of bottles	1000	1250	1580
Excavation depth	The excavation depth is determined by our structural calculations and confirmed by the Project Manager		
Internal diameter	1400mm	1400mm	1400mm
Cellar diameter	2000mm	2000mm	2000mm
Shuttering diameter	2300mm	2300mm	2300mm
	All diameters are +/- 10mm tolerance		

A3 BUILDING REGULATIONS, PLANNING PERMISSION & LISTED BUILDINGS

Building regulations

Building Regulations Approval is required when installing into a habitable space such as in the home or an attached garage. It is not required if the cellar is to be installed in most single detached garages or outbuildings.

Our consultant engineer will create the project specific calculations and prepare all information for the Building Regulations Approval application.

Spiral Cellars will manage the application for Building Regulations Approval.

The cellar is not a habitable space, therefore the cellar does not need to comply with Part K of Building Regulations, such as requirements for a handrail and the 'going' and 'rise' of the staircase treads.

Planning permission

Planning permission is not normally required.

Listed buildings

For listed properties a Listed Buildings Application will need to be made to the Local Authority for approval. It can take 8–10 weeks from the application being accepted until approval is received. Spiral Cellars can manage this application if required.

Building warrants for Scotland

Whilst the actual process from initial enquiry to final sign off is the same across the UK, we have a tailored solution for Scotland's Building Regulations. A Building Warrant is normally required for any structural changes to your property (extensions/demolition/alterations etc). The installation of a Spiral Cellar falls into this category.

Spiral Cellars will manage the whole process on your behalf, preparing structural calculations, submitting the application and managing any queries raised.

The lead time from submission to approval is typically 8–12 weeks. Spiral Cellars can manage this application if required.

A4 PARTY WALL AGREEMENTS

Party wall agreements are applicable to a Spiral Cellar installation if the excavation is planned to be within 3000mm of a neighbouring owner's building or structure. You must inform the adjoining owner or owners by serving a notice.

Party wall awards

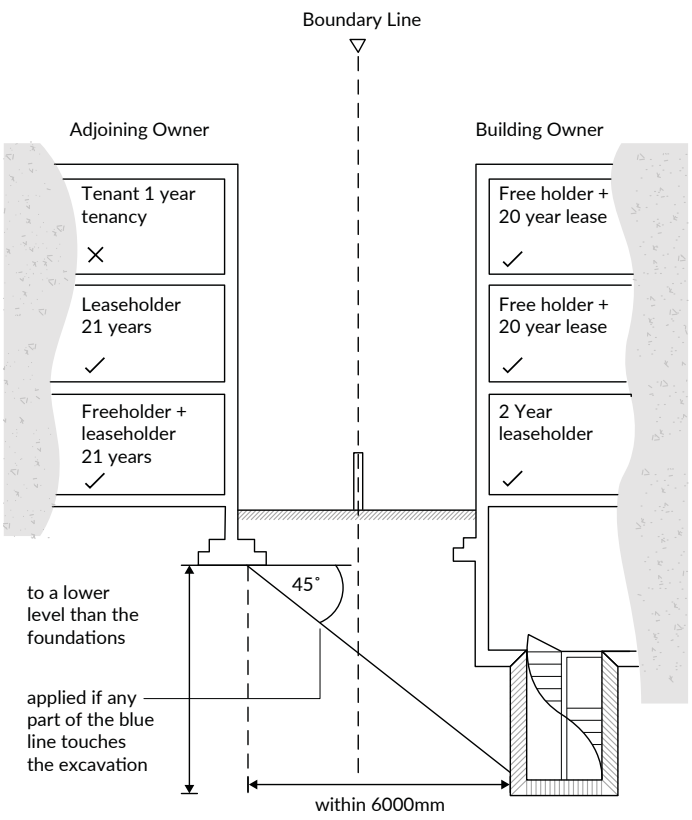
Party wall awards are applicable to a Spiral Cellar installation if the excavation is planned to be within 3000mm of a neighbouring owner's building or structure. This is a very straight forward process, and is not comparable to obtaining planning permission.

You must inform the adjoining owner or owners by serving a notice. The notice must state whether you propose to strengthen or safeguard the foundations of the building or structure belonging to the adjoining owner. Plans and sections showing this detail and the location and depth of the proposed Spiral Cellar are detailed in our engineer's structural package. This package should be included with your notice. Excavation or foundation and the location of any proposed building must also accompany the engineer's structural package.

The notice should be given at least one month before work starts. The neighbour has the right to request a Party Wall Award to be completed by a Party Wall Surveyor. The property owner for where the installation will be carried out is responsible for the cost of the award.

Spiral Cellars offers a service to arrange this agreement on your behalf.

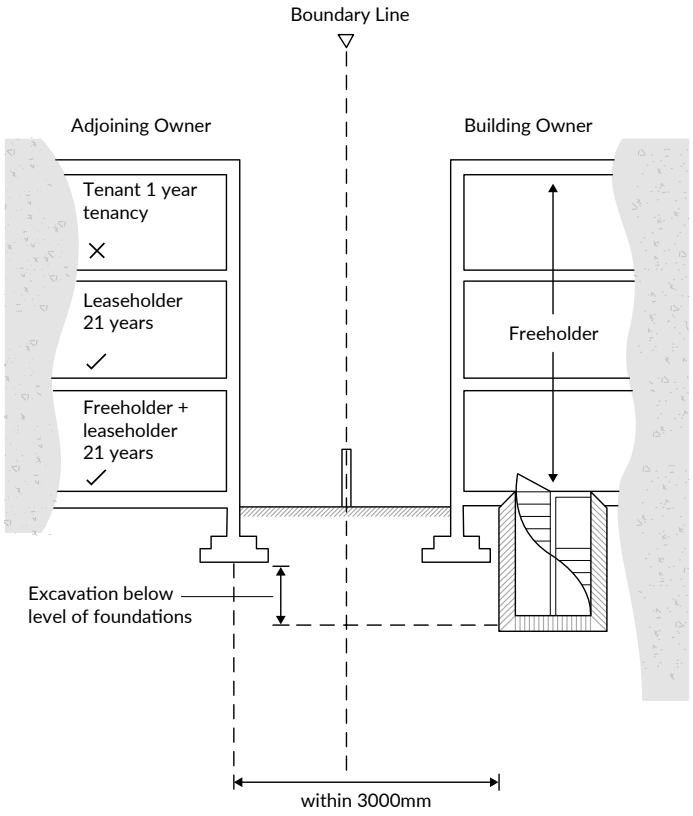
NOTICE OF ADJACENT EXCAVATION
SECTION OF THE PARTY WALL ACT 6(2)

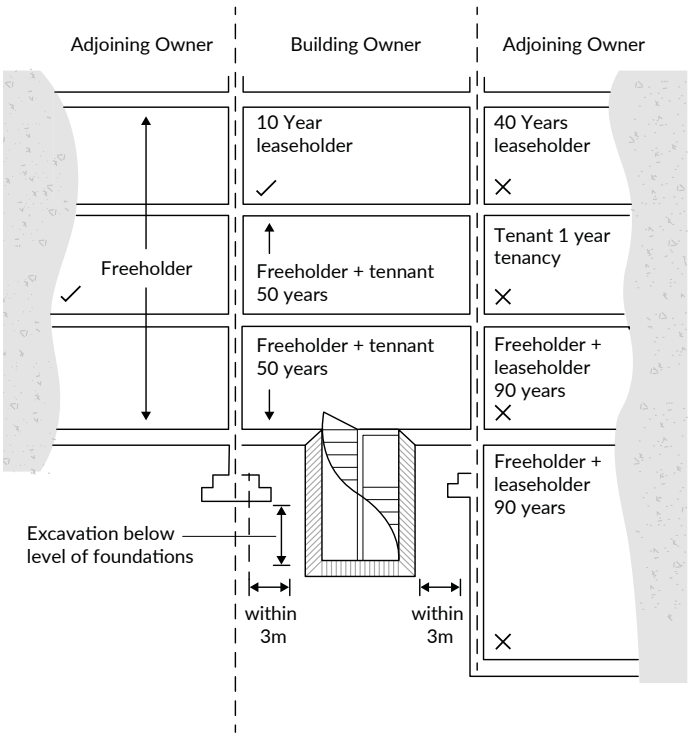


✓ Requires notice

✗ Does not require notice

NOTICE OF ADJACENT EXCAVATION SECTION OF THE PARTY WALL ACT 6(1)





✓ Requires notice

✗ Does not require notice

✓ Requires notice

✗ Does not require notice

A5 HEATING PIPES & UNDER FLOOR HEATING

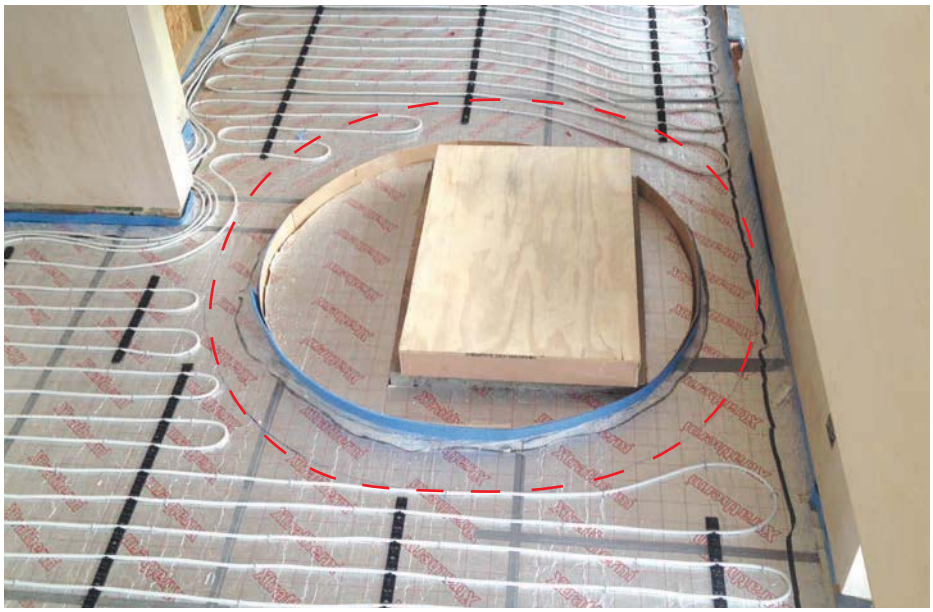
For your Spiral Cellar to perform efficiently, the under floor heating must be no less than 300mm from the outside edge of the Spiral Cellar excavation.

Ventilation pipes should be run under the floor construction. Where this is not possible, the under floor heating must be kept 300mm from the ventilation pipes.

NOTE

No other services such as hot water pipes to run across cellar area or vent pipe run.

UFH 300MM FROM EDGE OF SHUTTERING

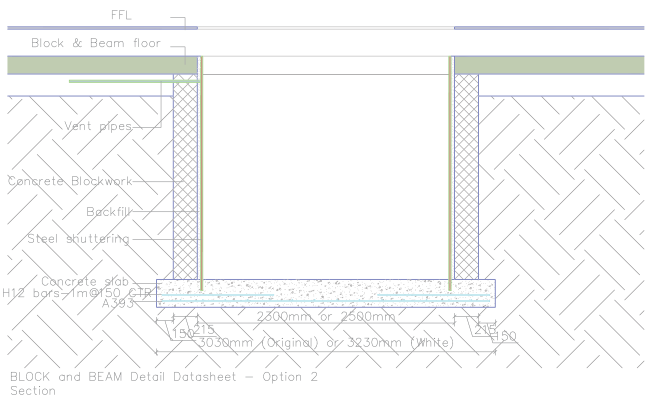


A6 STRUCTURAL IMPACT OF THE SPIRAL CELLAR

Reinforced concrete ring & base

The Spiral Cellar's reinforced concrete ring and base enables the Spiral Cellar to be located very closely and sometimes even up against the foundations. The reinforced concrete ring is designed to withstand surcharges from the footings and other forces, this prevents the need to specify under-pinning or deeper footings.

Reinforced polymer fibres, 'Strux', are mixed with cement to form a C30 reinforced concrete. The reinforced concrete base is cast on site once the liner system has been installed. The reinforced concrete ring is cast on site during the build-up on the concrete bins which form the Spiral Cellar wall.



Structural calculations

Spiral Cellars consult with an independent engineering practice to produce a structural calculations package for each individual project. The calculations package will demonstrate and confirm that the Spiral Cellar location is achievable, without impacting the foundations.

The following types of loadings are key consideration when producing the structural calculations and confirming the Spiral Cellar location, reinforced concrete ring thickness and reinforced concrete base depth:

a. Foundations (planned/existing)

b. Soil surcharge, heave and shrinkage

c. Surcharge from vehicles

d. Ground water pressure

Shuttering and propping

During the excavation the Spiral Cellar's corrugated steel shuttering system must be installed. Each row is comprised of a number of curved sections, when bolted together they create a ring, forming the correct diameter for the chosen Spiral Cellar.

As the excavation commences, the ring of shuttering moves further down, the next ring should then be fitted on top. This process is continued until the excavation is completed, ensuring that the excavation is kept secure at all times.

Propping must be installed to protect the integrity of the excavation and surrounding structure. These guidelines have been designed and approved by our consultant engineers:

See propping guidelines on page 30.

A7 OUR STRUCTURAL ENGINEER'S METHODOLOGY

These notes outline a design method used by our consultant structural engineers to cover various scenarios, which can occur while installing a Spiral Cellar within close proximity to an existing structure.

Type of loadings

The Spiral Cellar, located below soil surface and in close distance to buildings, is subject to different types of surcharge loadings, which have to be resisted by the proposed concrete structure. The surcharge loads can be caused by:

Adjacent foundations of existing or proposed buildings

Spiral Cellars are usually placed in residential buildings where the footprint of the foundations is relatively small in relation to the cellar diameter. This means that in most cases there is going to be certain pressure from the foundations on the new underground structure.

The quick check if the cellar is subject to the foundation loads can be estimated from 45° load spread under the footing. In reality the resultant pressure from applied force to the surface of soil varies within depth and distance from applied force, and can be illustrated by Soil Pressure Bulbs.

Surcharge loads from soil

The purpose of structurally analysing of the Spiral Cellar ring is to calculate the highest bending moment under present surcharge loadings. The analysis shows that the bending moment can increase when uniform loadings (soil and water) are reduced and mainly foundation surcharge pressure is taken into account. In the calculations we have used active pressure coefficient Ka instead of passive pressure coefficient Ko to evaluate higher bending moment.

Surcharge live loads (vehicles etc.)

Depending on the location, the cellar can be subject to additional surcharge live loads applied to the ground bearing slab within the area where the cellar is located. The estimation of the vehicle load is transferred on to the cellar structure can be easily done by 45° load spread assumption.

Ground water pressure

In the scenario of a high water table in the specific location, the cellar structure can be subject to hydrostatic water pressure acting on the cellar walls and base. The main concern is the pressure acting on the base of the cellar, which can cause uplift of the structure; therefore the flotation check is essential and advised in every case.

Heave or shrinkage of cohesive soils

If the cellar is placed in the cohesive soil there could be potential risk of movement caused by heave or shrinkage occurring around the cellar structure. In cohesive soils the cellar should be kept independent from the floor structure e.g clay.

Design approach

The design approach has been modified in recent years from a traditional reinforced concrete structure to the structure reinforced with polymer fibres, without traditional steel bars. The aim of the design is to save time and cost during the construction process.

A7 OUR STRUCTURAL ENGINEER'S METHODOLOGY

The structure has been analysed as a circular model instead of a simplified retaining wall; this approach allowed for analysis of a structure very closely behaving as a real model. For this purpose finite element analysis software was used, where a three dimensional model was created. The following parameters were considered:

Structure

A Spiral Cellar is a retaining structure resisting surcharge loadings from the foundations, soil, and surface live loads. The circular shape of the structure with, more than 2000mm in diameter, gives huge stiffness and moment of inertia. The structure is cast from normal concrete reinforced with polymer fibres.

Material

Given the analysis results in various loading scenarios it was concluded that the required moment of resistance can be achieved with fibre reinforcement additive to the normal concrete. The new approach had been introduced purely because of the time and cost, which could be saved on standard installation of steel bars in circular structures. The fibre reinforcement has been available on the European market for a few years and has been widely used mostly in the design of ground bearing slabs, but the product has been tested for structural applications such as short beams or slabs.

For the design of the concrete structure the polymer fibres STRUX 90/40 have been used. For the structure, C30 normal concrete is used with mix design recommended by a manufacturer. In the case of contaminated soil the suggestion is to use 70% GGBS (Ground–granulated blast–furnace slag) instead and 30% Portland cement in the concrete mix.

Loadings

The shape of the structure means that the cellar under uniform load from soil, water or surface live loads becomes a compressive ring with uniform membrane stresses at certain depths of the ring. The ring, being made of concrete, can easily resist the compression occurring from the given forces. The design limits are given by bending moments along the perimeter of the cellar, which can be caused by variable surcharge loading from the adjacent foundations.

On top of the structural analysis the minimum sizing has to provide adequate dead weight against uplift forces which can occur. The dead weight of the cellar consists of the ring (150mm thick), the base slab (minimum 200mm thick) and internal concrete blocks used as wine storage shelves.

For the worst case design purpose the following assumptions were introduced:

- Pressure under foundation 150kN/m^2
- Minimum distance from the edge of the foundation to the face of the ring — 100mm
- Width of the foundation 600mm
- Distance from the wall to the centre of the cellar — 1400mm
- Foundation outstand — Bc = 0.1500mm
- Cellar depth 3000mm
- The one quarter of ring has been considered to calculate the loading on the ring surface

Analysis and results

Finite element analysis was used to calculate the resulting stresses in the structure under the varying load pattern. A 3D model of the circular structure has been created in FEA software where appropriate parameters for geometry, materials, supports and loadings have been assigned.

General results have been created for the different load case scenarios, from the analysis it was concluded that the worst situation occurs when there are two parallel walls situated on opposite sides of the cellar squeezing the ring.

In the situation of three or four walls around the cellar located at similar distances from the centre, the bending moment in the ring is reduced by the fact that the surrounding forces are at approximately similar magnitude, which brings the structure into compression.

The two following cases can be taken as an illustration for worst case scenarios in most of the situations:

Two parallel walls (2800mm apart)

a. 150kN/m^2 — assumed foundation pressure
b. 1400mm — distance to the centre
c. Analysis for all types of cellars

Two parallel walls (2800mm apart) + vehicles

a. 150kN/m^2 — assumed foundation pressure
b. 1400mm — distance to the centre
c. Analysis for all types of cellars

The following loading was included:

- Vertical stress from the foundation
- Soil surcharge loads
- Hydrostatic water pressure
- Vehicles surcharge loads

Design conclusions

- Due to the geometrical properties of the structure the surcharge forces acting on the cellar will cause mainly compression in the ring. The bending moment, which may occur along the perimeter, is minor in magnitude and any tensile stresses in the section can be resisted by polymer fibre reinforcement Strux 90/40.
- The bending moment in the base slab of the cellar due to water pressure can be resisted by polymer fibre reinforcement Strux 90/40.
- The main concern in the design of the cellar is the water uplift which has to be restrained by dead weight of the concrete base and concrete ring. The concrete structure has to be provided, even if the foundations lay beyond 45° influence line.

SAND AND GRAVEL (LOW RISK INVOLVED)

Standard construction as per the Spiral Cellars Ltd method statement and the suggested excavation procedure is illustrated on page 18.

SAND AND GRAVEL — HIGH WATER TABLE (MEDIUM RISK INVOLVED)

A high water table can cause certain difficulties during excavation and casting of the concrete structure. It is recommended to use an experienced contractor who is confident and can provide adequate equipment for such conditions.

It is suggested to use lower water content in the concrete mix and use a concrete plasticiser for better workability. It is recommended to contact a local concrete supplier for product specification.

SAND AND GRAVEL/BASEMENTS/HIGH WATER TABLE (HIGHER RISK INVOLVED)

For installations in basements a national guidance should be used to justify the water uplift in the calculations. British Standards require an assumption of 0.75 depth of the basement for the water table.

The weight of the cellar in these conditions is generally not satisfactory and the basement slab has to be used to provide adequate dead weight. The basement slab should be cast on top of the cellar ring. The proposed or existing basement slab should be justified by a Structural Engineer. Also, see notes in point 2.

STRUCTURE ON PILES AND COHESIVE SOILS (HIGH RISK INVOLVED)

With piled structures the main risk involves potential settlement of the cellar positioned in non load bearing strata.

Furthermore, in cohesive soils the risk of heave and shrinkage is present. An allowance for the possible movement has to be made.

A8 INSTALLATION OPTIONS

We offer two options, 'full' where we complete the excavation and installation or 'fit' where the contractor completes the excavation and we install the cellar.

EXCAVATION AND INSTALLATION (FULL)

We are able to undertake the full installation into existing buildings, even when the property is fully occupied. We can also carry out a full installation on refurbishment and new build projects if the contractor prefers not to do the excavation. We dig and remove the spoils by hand, and as such we are able to install in most ground floor rooms or basements regardless of construction build up.

The Original Spiral Cellar, takes between 5 and 6 working days. The White Spiral Cellar is more likely to take 8 working days. Access for materials and skip positions is considered carefully by Spiral Cellars at site survey stage.

The Spiral Cellars team will also organise skips for removal of waste, gain the necessary permits from your local authority, and supply all building materials, waterproof liner, Spiral Cellar modules, door and lighting.

INSTALLATION INTO A PREPARED EXCAVATION (FIT)

We recommend that any demolition work is undertaken, and once new foundations have been set, the circular hole for the cellar should be excavated. The contractors will probably already have a mechanical excavator on site, and the hole can be dug in less than one day, whilst site access is at its easiest.

NOTE

Excavation takes on average 3 days by hand or ¾ day with mechanical excavator.

3–5 days for the Spiral Cellars team to fit the cellar.

6 weeks later After Sales Visit and the cellar is ready to use.

The hole should be shuttered with our hole protection rings and the rest of the build programme can continue. The slab should be poured to the outside of the shuttering and the contractor will be required to provide an electric supply to the cellar and to fit two ventilation pipes (50mm UPVC pipes) within the floor construction to the nearest external wall. This will be agreed in advance by Spiral Cellars and guidance notes will be provided.

The Spiral Cellars team then supply, deliver and install the cellar. The construction method for the cellar involves: installing the Butyl liner, PVC bag and sleeve and casting the base, constructing the cellar modules, casting a reinforced concrete ring in–situ, if required.

The door and ventilation pipes are connected and the installation is complete. On a well prepared site, this process will take 3–5 days. The final electrical connection should be completed by the contractors' certified electrician, or Spiral Cellars' own electrician.

Scheduling

Spiral Cellars should be booked to install the cellar between first and second fix stage of the build. Our schedule is normally booked 4 weeks ahead. To re–schedule the installation date we require 28 days notice as per our Terms and Conditions.

A9 WHAT A CONTRACTOR WILL BE REQUIRED TO DO

The Fit Installation of a Spiral Cellar has a number of critical elements that must be executed as per our specification. These elements will be checked ahead of our attendance. Any variances will become chargeable.

1. The contractor should excavate a hole as per the structural calculations package, on average 2300–2500mm diameter and up to 3600mm deep (depending upon cellar size selected — the exact dimensions would be confirmed by Spiral Cellars once the engineering calculations have been prepared, which are project specific). Any larger excavation will result in additional backfill and incur additional costs to the client or contractor.

2. The hole should be protected with our steel shuttering rings. These will be delivered to site at one week's notice, prior to the excavation date. All fixings are supplied. See page 28.

3. ***Ventilation Pipes:*** Once the excavation is complete and made safe, it is critical that the preparation for the vent pipes is given consideration. 2 x 50mm internal diameter UPVC pipe with solvent welds must be installed in line with Spiral Cellars' designs. Where possible 90° bends must be minimised. At the external end the 50mm pipes can be terminated 100mm beyond the brickwork if they are contained within the cavity.

   If the vents are to be outside the external wall, the 2 x 50mm pipes can be terminated side by side and protected. The low level 'cold — in' pipe will be 525mm above hard landscape, the high level 'warm — out' pipe will be at 2025mm height, unless agreed differently at survey stage. All pipe ends to be taped up. Vents to be marked 'upper' & 'lower'. See page 35.

   Please note, the vent pipes must not have hot water pipes for radiators or under floor heating set over. The vent pipe run must be executed as per our specification. Services must be kept 300mm away from vent pipes.

4. ***Electrical Supply:*** The cellar requires a power supply for lighting and for the motorised door (if applicable). Electrical feeds to the cellar will need to be installed within the floor construction in conduit, with no junctions. Leave approximately 3500mm of cable within the cellar. Tape ends. Provide a 5Amp fused spur for cellar supply and to make final connections outside the cellar. See page 37.

5. ***Finished Floor Level Datum:*** A datum level mark on a wall (or similar) indicating Finished Floor Level (FFL) is to be provided within 3000mm of the cellar location on Day 1 of our installation — this cannot be changed thereafter.

6. The Project Manager will be in touch in the run up to the installation to agree a suitable start date for the installation and answer any queries that may arise. A pre–installation visit may be conducted to confirm the site and excavation are ready for our team's arrival. We will expect to be able to arrive at the site on the agreed date, remove the protection and fit the cellar, pour reinforced concrete ring, make final connections to the ventilation pipes and then finally fit the door. Any delays/incomplete works which cause the project to run beyond the scheduled programme will be charged in accordance with our terms and conditions.

   If there are any doubts concerning the installation procedure and requirements the contractor should contact the main office for direct referral to our Project Manager for technical guidance, or to arrange a site meeting.

7. We will expect good, clear, safe site access and an area for materials in line with the discussions and agreements at site survey stage.

   The Health and Safety Executive does not consider other teams working overhead or obstructing scaffold to be a safe working environment.

A10 OUR METHOD STATEMENT: HOW WE FIT A SPIRAL CELLAR

NOTE

The door must be left open for a minimum of two weeks to allow the cellar to dry out.

Do not allow rubbish and site debris to fall into the cellar — this increases the risk of the cellar being damaged.

The door should remain protected until the After Sales Visit is complete.

1. The team will check site datum, in particular the finished floor level and that the hole is at the right depth and shape.

2. Upon completion of the excavation a heavy duty PVC liner and Butyl tanking liner will be fitted inside the shuttering. Both will be clamped/supported at the top of the hole, using scaffolding planks as a safe working platform, to keep the bags taut.

   A geotextile base disk will be laid in the base of the liner, and a further reinforced PVC sleeve will be installed into the liner.

3. A base slab of concrete, specified by the engineer, will be poured into the bags and left to set.

4. The modules are lowered into the bag via supports and one man will be at the bottom setting out/fitting the modules and step modules. The top ring is fitted just below finished floor level and one half of the ring is covered by soffit boards, unless a round glass door is specified.

5. The ring/void outside the bag is then back filled with wet concrete and Strux fibre reinforcement (refer to Strux engineering bulletin for Strux technical specification).

6. The plastic ventilation pipes are fitted. One length of pipe is fitted down the centre column and one pipe is fitted through a pre cast hole in the flat soffit board. Both pipes are then directed to the nominated outside wall (In a fit only project, the pipes are already channelled beneath floor level to this wall by the contractor).

   The pipes will rise up either on the inside or outside of the wall with any joints being solvent welded. The pipe will exit the wall via a hole prepared with a 55mm core drill. This is then sealed and made weather tight. One pipe will be raised to 525mm height and the other pipe will be raised to a minimum height of 2025mm. The pipes will be clipped to the wall and the open pipes will have rodent guard covers fitted.

7. Electric bulk head lights or LEDs will be fitted in the cellar. They will be linked and a switch fitted at the head of the cellar. A feed for connection to an existing ring main will be linked from a socket to the cellar light switch and all cabling will be routed in conduit underground. A fused spur may be fitted where applicable.

8. The door is fitted onto the open half side of the cellar. It is set on a 25mm bed of mortar and the finished detail inside is haunched to leave a smooth finish.

9. The door is tested for opening and closure.

10. Thereafter the floor area around the cellar is reconstructed as directed and in accordance with the order specification.

11. The site is then cleared of waste and cleaned/washed down as required.

12. All protective coverings are removed and disposed of. The sequence for point 5, 8, 9 differs for a round glass door.

The Spiral Cellars team leader will fill in a job completion form illustrating any differences to the pre order requirements, risk assessment variations, incidents/ accidents, snags required, difficulties, incomplete items or other. At stages through the construction process the Project Manager will have visited the site. We will have also requested that the Local Authority Building Inspector visits the site to ensure approval of the construction method.

A11 ORDERING & INSTALLATION TIMELINE

Fit Installation	Stage	Full Installation
Combination of Spiral Cellar package is discussed and agreed, an estimate is issued.	1	Combination of Spiral Cellar package is discussed and agreed, an estimate is issued.
If required Site Surveyor visits the property to confirm the Spiral Cellar location access, logistics and price.	2	Site Surveyor visits the property to confirm the Spiral Cellar location access, logistics and price.
10% deposit is paid to place the order and secure an installation date. Lead times can be up to 8 weeks.	3	10% deposit is paid to place the order and secure an installation date. Lead times can be up to 8 weeks.
Spiral Cellars instruct their engineers, structural calculations are prepared and the building regulations application is drafted.	4	Spiral Cellars instruct their engineers, structural calculations are prepared and the building regulations application is drafted.
Shuttering is delivered to site along with the confirmed site-specific excavation dimensions.	5	
Contractors prepares the hole.	6	
The excavation is completed. A Spiral Cellars Project Manager visits site to access the excavation and discuss the pending Spiral Cellars installation.	7	
80% payment due 14 days before installation date.	8	80% payment due 14 days before installation date.
The Spiral Cellar Installation takes place in 1 or 2 phases (dependant on site conditions and programme).	9	The Spiral Cellar Installation takes place in 1 or 2 phases (dependant on site conditions and programme).
The After Sales Visit (scheduled for 6-8 weeks post installation) takes place; additional extras such as treads are fitted at this point. The final 10% payment is due.	10	The After Sales Visit (scheduled for 6-8 weeks post installation) takes place; additional extras such as treads are fitted at this point. The final 10% payment is due.
5-year warranty is issued, which is effective from the date of practical completion.	11	5-year warranty is issued, which is effective from the date of practical completion.

A12 WARRANTY

All our fully–installed cellars come with a five year warranty. If during the first five years a cellar is found to be defective in any way, under normal use and service, we guarantee to repair or replace the cellar free of charge. Full information can be found within our Terms and Conditions.

What if something goes wrong in the future?

At Spiral Cellars we don't believe that our service finishes once the cellar is built. We will always give free advice on how to get the most out of the cellar, and should you have concerns over its functionality, we will visit once again to assess and remedy any problems.

What maintenance is necessary on my part?

Moving parts of doors might occasionally need oiling. The cellar may also need vacuuming and vents checking from time to time.