

Technical Information

UNiPiPE

Unipipe Underfloor Heating
NIBE Heat Pumps
Wooden Flooring

Distributors for



uponor

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Multi-Layer Pipe by Uponor

STRENGTH & PEACE OF MIND

Unipipe's Multilayer construction means far greater strength than plain plastics which soften and get weaker as temperature increases. Unipipe will take a constant 95°C at 10 Bar and will even accommodate temporary rises in temperature to 110°C with no ill effect. This also means it can be directly connected to your boiler unlike most other plastics

TOTALLY OXYGEN PROOF

Oxygen in a heating system will cause corrosion. The overlapped (and welded) metal layer means Unipipe is guaranteed 100% oxygen proof. Absolutely no penetration of oxygen can occur due to diffusion, unlike barriers made from plastic, which only reduce the problem rather than totally eliminate it. Barrier coatings on the outside of a floor heating pipe can also be damaged during installation or degrade with age.

HIGH FLEXIBILITY

Even without tools Unipipe is easily bent by hand; if a really sharp bend is needed, springs and bending tools are available.

HOLD ITS SHAPE

Unipipe won't get you into a tangle when you lay it! The metal layer means the pipe is form-stable and will hold whatever position you lay it in. For Underfloor heating we can supply an un-winder (tubing dispenser) to make your installation really light work. Another plus (and large cost saving!) is that steel mesh is not necessary to secure the pipes in place.

NO HEAT KINKS

An ordinary plastic pipe can kink shut when warm water passes through it if it is left in a tightly radiused bend or strained position. If this occurs under a floor in an unknown location, the resultant problem will be a nightmare. Unipipe will remain in the same position you last saw it in!

SMALL HEAT EXPANSION

Most plastics expand and move greatly with heat; Unipipe's multilayer technology means a minimal expansion rate, around one tenth of a Pex pipe or about the same as metals such as copper.

APPEARANCES

Multilayer pipe technology means Unipipe is the only flexible pipe you would be proud to surface mount...it doesn't sag or soften with heat and droop between brackets. All sizes are also available in straight lengths.



COMPATABILITY

Unipipe can be adapted to fit ordinary metric 15, 22 and 28mm compression fittings using a simple insert.

RANGE OF FITTINGS Unipipe have a huge range of fittings both for press-type (using our hydraulic press-gun) and also compression type. A 50mm press type tee for instance, takes about three minutes to make off. No sparks, swarf, flux or glue...no mess! An equivalent welding or threading job would take around an hour...and that's after you have lugged welding bottles or a bench across your site!

CORROSION PROOF The metal layer is within the pipe and not in contact with the pipes contents. Unipipe is therefore highly corrosion proof and also will not allow deposits or scale from hard water to adhere to it.

Underfloor Heating & Wooden Flooring

THREE-LAYER WIDE PLANKS BY ADMONT OR RAPPGO FLOORING

These natural looking wide floor planks are engineered into three layers for stability and carry manufacturers warranties for use with floor heating and are even pre-finished in either Danish oil or lacquer. These types of floors may be simply glued on the tongue & groove and laid out as a 'floating floor' over concrete on a recycled paper underlay. This eliminates the need for battens or special fixings and speeds up your construction and acclimatisation necessary with solid floors is not required. Although they are usually more expensive than solid floor planks there are obvious savings in floor construction and time savings. Call for details or visit our showrooms in Bray.

PREVENTION OF MOVEMENT & SHRINKAGE IN SOLID FLOORS:

Lay out wooden floors over the floor heating loosely (usually for about five days) to dry out or 'acclimatise' the timber, before final fixing. This will help to stop gaps appearing in between the boards. Even though your timber supplier may tell you that the wood is kiln dried it can absorb moisture during storage and transportation, so the safest method is simply to allow the wood to acclimatise to its surroundings. Moisture content will be down to around 7% when right. Floor heating is a gentle heat, like sunshine in a room, and will not adversely affect wood once it is correctly dried. (Typical floor heating temperatures are only in the region of 25-28°C)

MOISTURE IN NEW CONCRETE FLOORS:

Be careful not to fit timber over a new concrete floor construction without first running the system to dry out the moisture still trapped in the structure.

WOODEN FLOOR THICKNESS:

Refer to our fixing details for fitting wooden floors. We can assure you of excellent performance with woods not exceeding ¾" or 22mm in thickness. I.E. don't cover a floor with plywood and then expect to add another layer for your boards! If what we have shown you does not suit or can't seem to fit, call us; we may have an easy solution that will work.

SUSPENDED TIMBER FLOORS:

Ensure that the insulation boards are set at the correct height on supporting battens (top of the board is usually 25mm from top of the joist) and properly sealed from the cold air below. The insulation type and heights will vary depending on whether the floor is at ground floor level (50mm) or an intermediate floor (25mm), and also whether an in-fill (8:1 sand & cement) material is to be used for increased output, soundproofing etc. Foil-faced polyurethane insulation is recommended as it 'reflects' heat if an in-fill is not used. If you don't wish to use an in-fill, Unipipe can also supply aluminium heat diffusion plates, which are nailed to the top of the joists. The pipes are then mounted in the grooves in the plates.



Floor Heating Control Set

Frequently Asked Questions - Floor Heating

What kind of a Boiler does Floor Heating Need?

- Any boiler that will heat water will do; so gas, oil, even solid fuel will work. As floor heating only needs around 45°C (I.E. only about the temperature of water in a bath), higher efficiencies can be also be attained from the use of condensing boilers and even more so with our Nibe heat pumps. Unipipe will gladly provide specialist guidance to you on boiler and heat pump selection

How Warm Does the Floor Surface Get?

- A comfortable 27°C on average...not hot enough to notice unless you are walking in your bare feet...what could be more luxurious!

How Difficult is Floor Heating to Install?

- It's not difficult at all! The pipe is really easy to handle because of its metal core and it is simply laid out as per the AutoCAD drawings Unipipe provide. There are no joints to be made in the floor and the manifolds, which the pipes are connected to, are pre-assembled and just need fixing to the wall. Unipipe will also provide schematic layouts showing interconnection to boilers, cylinders etc. to ensure compatibility.

Can our Regular Plumber Fit It?

- Yes, of course! Also Unipipe can usually recommend an installer in your area and we provide on-site training.

Can We Mix Floor Heating and Radiators?

- Yes, the control systems and design allow hotter water for radiators, towel rails, whilst cooler water flows to the floors.

Can You Control Each Room?

- Yes, individual stats are usually placed in each room or area for this purpose. In setting up the system there is also control (by flow-meters) over the speed of water down each circuit to control floor temperatures over each circuit, so areas needing more heat such as conservatories can be catered for.

What Kind of Floor Coverings Can We Use?

Almost anything including stone, tiles, wood, (not thicker than ¾" or 22mm), Carpet (do not use a really thick underlay such as the old brown felt type).

Is Floor Heating Suitable for Old Buildings or Restorations?

- Yes, if you are prepared to lift the floorboards or raise the floors in height a little (see our floor sections for details). Floor heating will not only preserve the look of an old building, but quite often has a huge advantage over radiator heating, where there are high ceilings such as is typical in period buildings.



Geothermal or Ground-Source Heat Pump F.A.Q.s

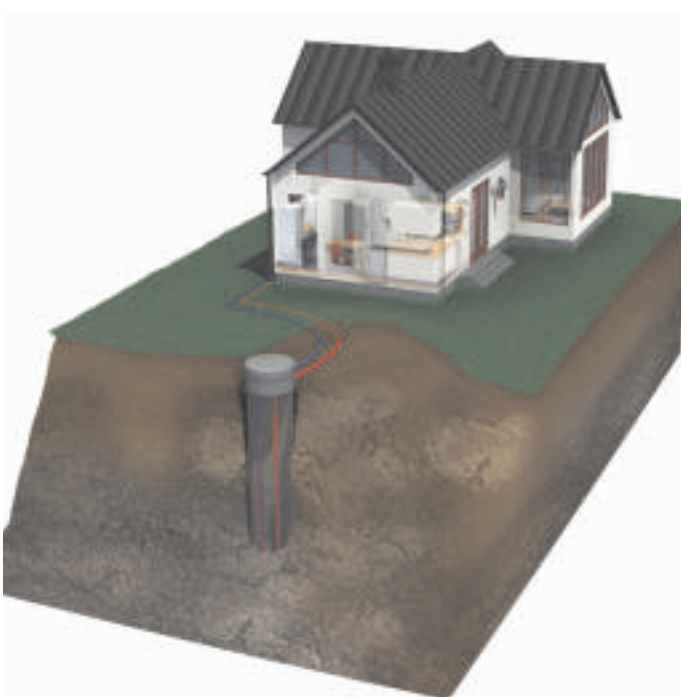
What is the C.O.P. of a Heat Pump and what has it to do with Efficiency?

This stands for the **Coefficient of Operating Performance**...the higher this number is, the lower your running costs will be. Nibe's Geothermal range have reassuringly high C.O.P.s – most of our single phase range are 4.8 @ 0°/35° (some of our three phase units have the world record for type at 5.03)

I.E. for each Kilowatt of energy (E.S.B. unit) used in the motor of the heat pump, it will deliver 4.8kW of heat at 0°C from the collector and 35°C to the heating system. The 0°/35° figures are a benchmark for a point of performance, just like when a motor dealer quotes the M.P.G. of a car at a constant 55MPH instead of what it might use going downhill at 30 with a tailwind!

In Ireland, with our mild climate, it is usual with a properly dimensioned collector or borehole to see an average of about 7°C or more in the collector fluid in winter, with much higher temperatures again in summer. At 7°/ 35°, the COP of a Nibe 1120 or 1220 ground-source heat pump is 5.75 to 1....at 7°/50° it drops off to 4.0 to 1...still not bad though with many heat pumps just having COPs of just 3 to 1.

The lesson here is that the warmer the water your heating system will need, naturally enough, the higher your bills will be. Also the warmer you can get the collector fluid (or Brine as we call it) to the heat pump, the higher will be it's COP, and the lower the running costs.



Which Size Heat Pump do we Need?

A good rule of thumb is to work on around 50 watts per square meter for an average home, so for example a 200m² house will need 10kW (10,000watts) of heat. The ideal machine for this is a NIBE 8kW heat pump; remember it's rated output is 8kW at the European benchmark of 0°/35°, but in Ireland with our higher ground temperatures, it's output is just over 10kW and the perfect match for the above example.

Do not be tempted to oversize a heat pump installation no matter what well meaning advice you may get from your plumber, builder etc. An oversized heat pump will cost more to run, but worse still will not last as long because of the higher frequency of unnecessary starts and stops.

Borehole or Surface Collector?

The site of your project will usually determine this... if you are building a new home and perhaps have yet to landscape, surface loops of 40mm plastic pipe would be the most likely choice. They are placed in trenches about a meter deep and about a meter apart to collect the earth's heat. If your site is very tight for space, or rocky, or the job is a retrofit you will use a borehole. UnipiPE (Irl) Ltd will provide the depth of borehole dimensions for you. If you can't use a borehole, then you might consider using an Air-to-Water or Aerothermal heat pump!

What's in the Borehole or Energy Well?

There is a one-piece U-bend of 40mm plastic made by Uponor Energiesysteme, at the end of which is a concrete pilot weight to facilitate dropping the collector. Inside the well piping is a mixture of 33% Ethylene Glycol (anti-freeze) and water referred to as Brine. This is circulated by the heat pump and energy extracted from it and turned into high grade heat for your house, hot water swimming pool etc.

The boreholes are not lined all the way down, just the very top part through the top soil till the driller hits rock. The pipes are in water in the well, which when cooled, takes heat continuously from the surrounding rock. You may have more than one borehole in a bigger house or commercial property, and the boreholes should be at least 12m apart from each other.

Which Nibe Heat Pump - We have three types!

Ground Source (Geothermal)

- Lowest possible running costs, even at very low outdoor temperatures. They are ideal for large buildings and new-builds.
- A ground collector will be required or a borehole, so some outdoor room will be needed. Lake Water can be used also.
- All-In-One machines including hot water (1220 Range) are available which greatly cuts down on installation time of both the heating and plumbing job.
- Larger heatpumps are available in this range for bigger building - largest single phase unit is 12kW Output (@ 0°/35°)
- Three phase units available up to 40kW output – Also up to nine units may be docked together giving 360kW



Lake Collector in progress

Air to Water (Aerothermal)

- Ideal for retrofits, city homes or if boreholes are not possible.
- Minimum interference during installation. Can collect heat from air down to -7°C
- Usually fitted with some back-up system which automatically takes over in very low temperatures – this can be electric as this really happens very few hours in the heating season.
- Still very low running costs in the mild Irish climate; overall heating bill just about 10% higher than ground source
- Can be docked to existing gas or oil systems.



Nibe 2005 Air-to-Water

Exhaust-Air Heatpumps

- Primarily used in Air-Tight, low energy homes where correct ventilation is vitally important.
- For apartment developments and homes up to 180m²
- All in one solution for heating, Hot water and heat recovery ventilation – faster installation time, no outdoor work.
- Not for use in older homes or very large dwellings
- Ideal with special construction systems and used in Kingspan Dryform, Century, Viking and Huf-Haus Homes amongst many others.



Nibe Fighter 360

**FOR MORE DETAILED PRODUCT INFORMATION
GO TO WWW.NIBE.COM OR ASK FOR ONE OF
OUR PRODUCT SPECIFIC BROCHURES**

The Benefits of Underfloor Heating

Comfort -

The even feeling of comfort from radiant floor heating is the most common reason why people choose this form of heating over others. It just makes sense to have the heat coming from the floor, where it is most needed, giving you a warm body and cool head rather than the stuffy heat provided by radiators or other forms of convected or warm air heating. Warmth from the floor radiates evenly and gently upwards for ideal comfort, even in rooms with high ceilings. Compare this with radiators, which create convection currents drawing cold air across your feet and sending warm air up to the ceiling.



Floor heating Pipes prior to screeding

Aesthetics -

Keep your interior designer happy! The only part of your heating system on view is a thermostat discreetly located in each room. The manifold, which distributes the water to all the circuits, is usually hidden in a cupboard or press. No radiators invade your space; your furniture and furnishings can be placed exactly where you want.

Lower Running Costs -

Your rooms feel warmer at lower thermostat settings. This coupled with the lower water temperatures of floor heating, results in running cost reductions up to

25%. As less fuel is needed, the choice of underfloor heating is kinder for the environment. For even bigger reductions in operating costs, floor heating makes an ideal partner for geothermal heat pumps.

Control -

Heat in rooms is individually, and accurately regulated by their own thermostats. Other options for control include programmable room thermostats, which give even more precise control over comfort levels with the additional convenience of a timing function. Both the standard stat and the digital programmable stats require 'hard wiring' back to the manifolds. If preferred, we now also have a wireless radio controlled system with an optional central control panel for zone control of groups of rooms.

Hygienic Heating -

By nature of the way in which floor heating works, less air is moved about and therefore there is less dust is deposited. There are no dirt traps behind radiators or heaters. The low surface temperature of the underfloor system does not dry out the air in the same way as high surface temperatures from radiators or stoves. Dry air can lead to nasal and respiratory problems such as asthma.

Silence -

Unlike the constant background hiss of water passing through radiators, floor heating is totally silent.

Adding Value To Your Property -

Fitting floor heating will make your property more desirable for re-sale. Proof of this is the fact that builders of quality homes and apartments are now using Unipipe floor heating to command higher prices in the marketplace. Add in a Nibe heat pump and you will have the lowest possible running costs and ZERO emissions from site!



Luxury Homes, Malahide

Frequently Asked Questions - Heat Pumps

How deep is a typical Borehole?

A 200m² property with an 8kW heat pump will usually have a 150M deep energy well. A 12kW heat pump for a 300m² house will need 180 to 220 M depth, which could be two 110 deep holes if your drilling contractor won't go so deep.

The deepest holes we have used to date are 240M (790 ft) deep !



How Much Ground Will We Need?

About 2 1/2 times the floor area of the house - A 200-300 M² home's collector will take up an area a little bigger than a tennis court.

Can I use our Ordinary Water well?

No!...it won't be deep enough, we could freeze the water in it, and the submersible water pump could damage the collector pipes just to name a few of the reasons!

Can we use any type of Hot Water Cylinder?

No, you must use a NIBE VPA type cylinder with it's specially dimensioned accumulator in it's outer jacket, or else use a 1220 model heat pump with integrated cylinder.

May we integrate Solar heating to the heat pump system?

Yes, we have a few different ways of doing this; please consult us for further design help to ensure good results.

How Much Electricity Does The Heat Pump Use?

Annual energy use will vary of course from home to home given different insulation values, air-tightness of building and preferences of occupants. A 12kW Nibe 1220, heating a 300m² home will use just under 3kW whilst heating a floor heating system, but will be delivering around 15kW of heat.

The official figures – According to test data standard ENN255, Brine in 7°C and heating out at 35°C, 2.6kW used by the compressor and 14.98kW to the heating system, resulting in a C.O.P. of 5.75. Typically you can expect a 70% saving on traditional heating methods such as oil.

Should we get a Night-Rate E.S.B. Meter?

Yes, as electricity is less than half-price during the night, so unless you are in a very small property it would be mad not to! Also as our machines are linked to the weather outside, and it is usually colder at night, they naturally 'farm in' heat at the cheaper rate when it's most needed. Also, if you have floor heating in concrete, you can take further advantage of storing heat in the floors which can last all through the day with the heat pump at rest.

If the building is an office or school for example, and you have floor heating in a heavy concrete slab of 150mm or so, you may never need to use the more expensive day rate at all.



No boiler house - Nibe 1220

Frequently Asked Questions - Heat Pumps

Do we need a Single or Three Phase E.S.B. Supply?

If your home is up to about 340m², a single phase Nibe heat pump can heat this and provide all your hot water, with a single phase 220v supply. Bigger homes or buildings that require more heat can use our larger three phase machines which will of course need a three phase supply from the E.S.B. If that is not available, and in country areas it often isn't, then you can either dock together two single phase machines for your mansion! We will of course provide specialist design advice. Another popular option is to dock a heat pump to a small oil or gas boiler to heat bigger houses. Here the Nibe1120 or 1320 models will control the additional heating, firing it only when necessary on exceptionally cold days etc.

Why do Nibe Heatpumps not need a Buffer Tank?

The intelligent control systems in our heat pumps require the compressor to run hot only for the relatively short periods for domestic water heating (usually set to stop at 55°C). Once this task is completed, the controls take into consideration the outside temperature via a small sensor outdoors and the temperature produced by the machine will match the building's needs. No energy is wasted, and at all times we minimise the amount of heat created.

So, on a day where the temperature outside is say 5°C, the heat pump will deliver just 30°C to the floor heating, giving a very high COP. If the weather cools to -1°C, that temperature will automatically increase to about 38°C. The varying temperature output is referred to as Floating Condensing Technology. When the outside temperature is sufficiently high the machine shuts down production of heat and runs only to replenish domestic hot water.

If we used a buffer tank, we would have to make higher temperatures, have a lower COP and higher running costs. Not to mention extra equipment, more space required etc.

Life Expectancy and Servicing

We are told that the expected lifespan of a NIBE heat pump's compressor is around 80,000hrs. We see annual averages of 2500 – 3000 hrs running times on most of our customer's machines, this should give an expected lifespan of twenty seven years, by which

time the machine will have saved its owner many times its purchase cost!

There is no servicing required – no ashes to clean out! Just like a fridge or freezer, the machines are simply left to their own devices, but the pressure in your heating and collector systems should be checked and topped up if necessary from time to time. If there should be a breakdown, the machines log their running data at the time of the fault, giving useful information to our engineers or your installer.

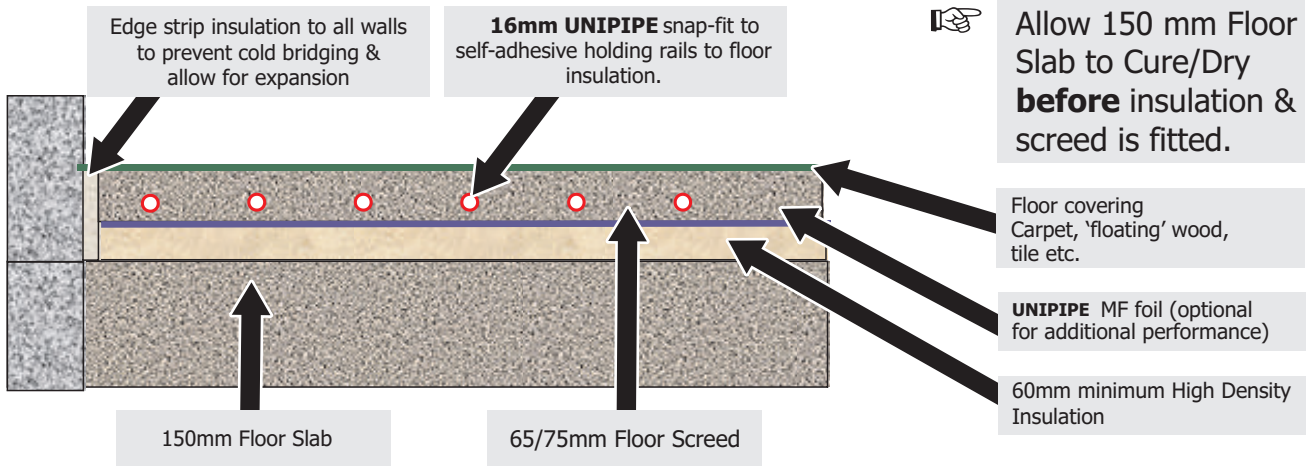
Will our Hot Water be Hot Enough?

Any of our machines will heat your domestic hot water to about 55°C or even a little more; you will only tolerate about 38°C on your skin! The cylinders we use are generally much larger than those in ordinary heating systems which may be at 60° or so. A popular cylinder that we use is the 300/200 VPA – this has 300 Litres of water in it surrounded by an outer jacket of 200 litres of heating water. Our heatpumps also can raise this temperature by immersions or built-in electric boilers; this is automatically done every ten days on most types to prevent the occurrence of Legionella.

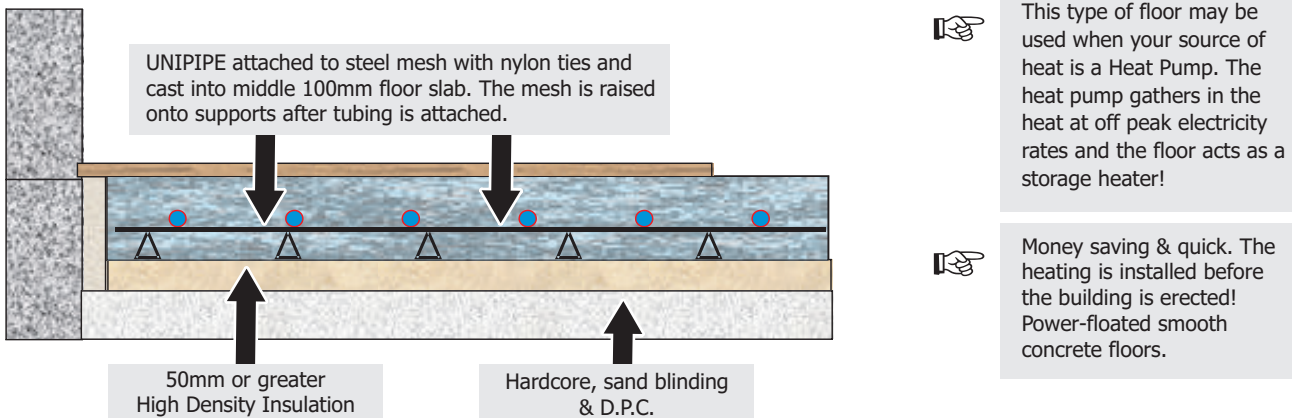


Installation Options

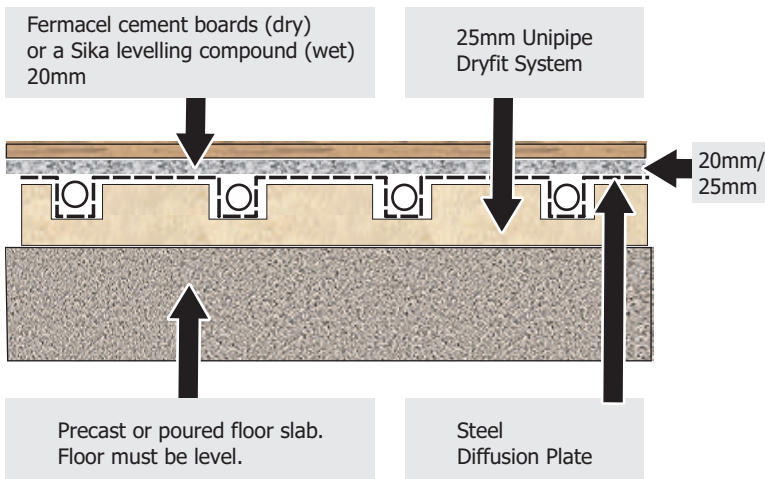
1 Typical Solid Floor



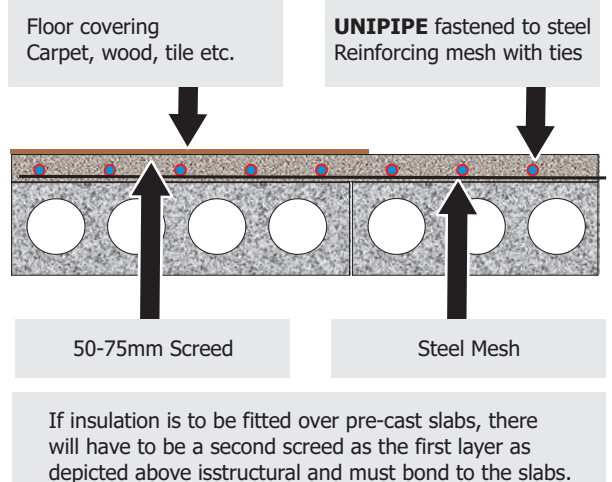
2 Solid Floor-Single Pour



3 Unipipe Dryfit System

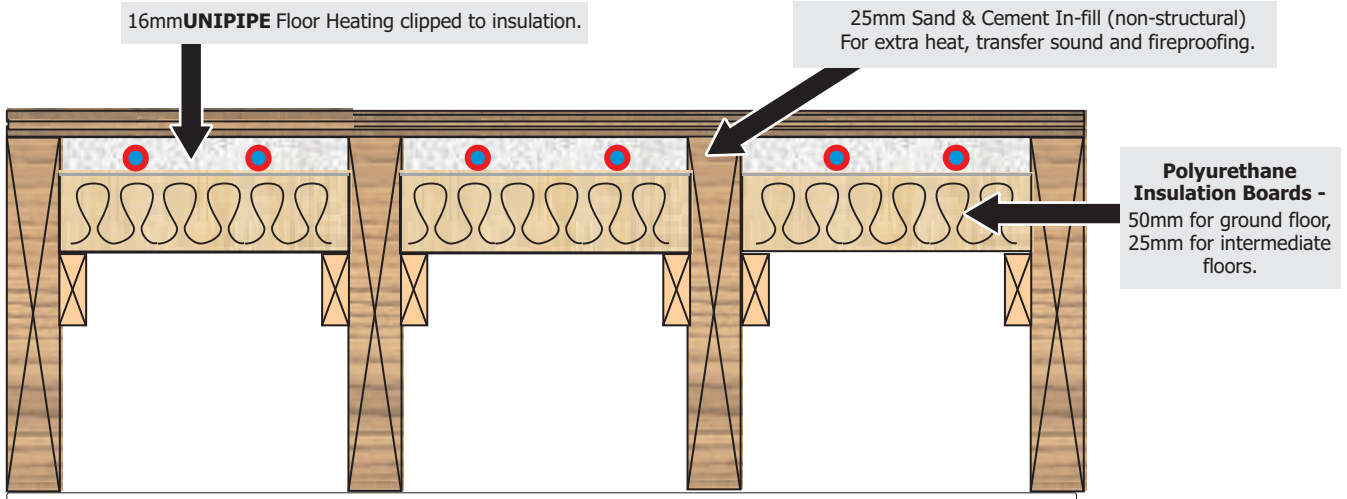


4 Intermediate Floor Hollow Core Pre-Cast Units

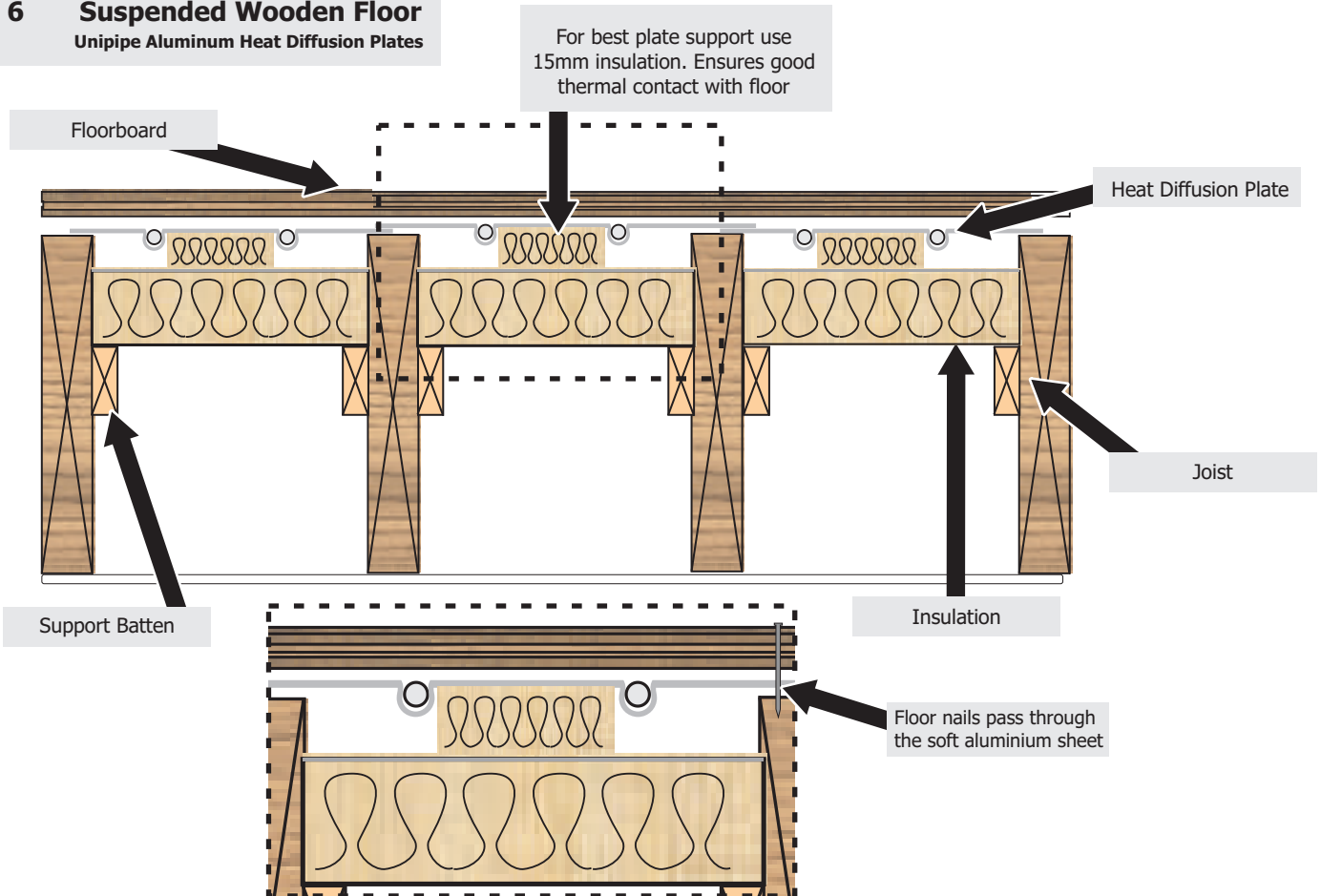


Typical wooden floor sections:

5 Suspended Wooden Floor

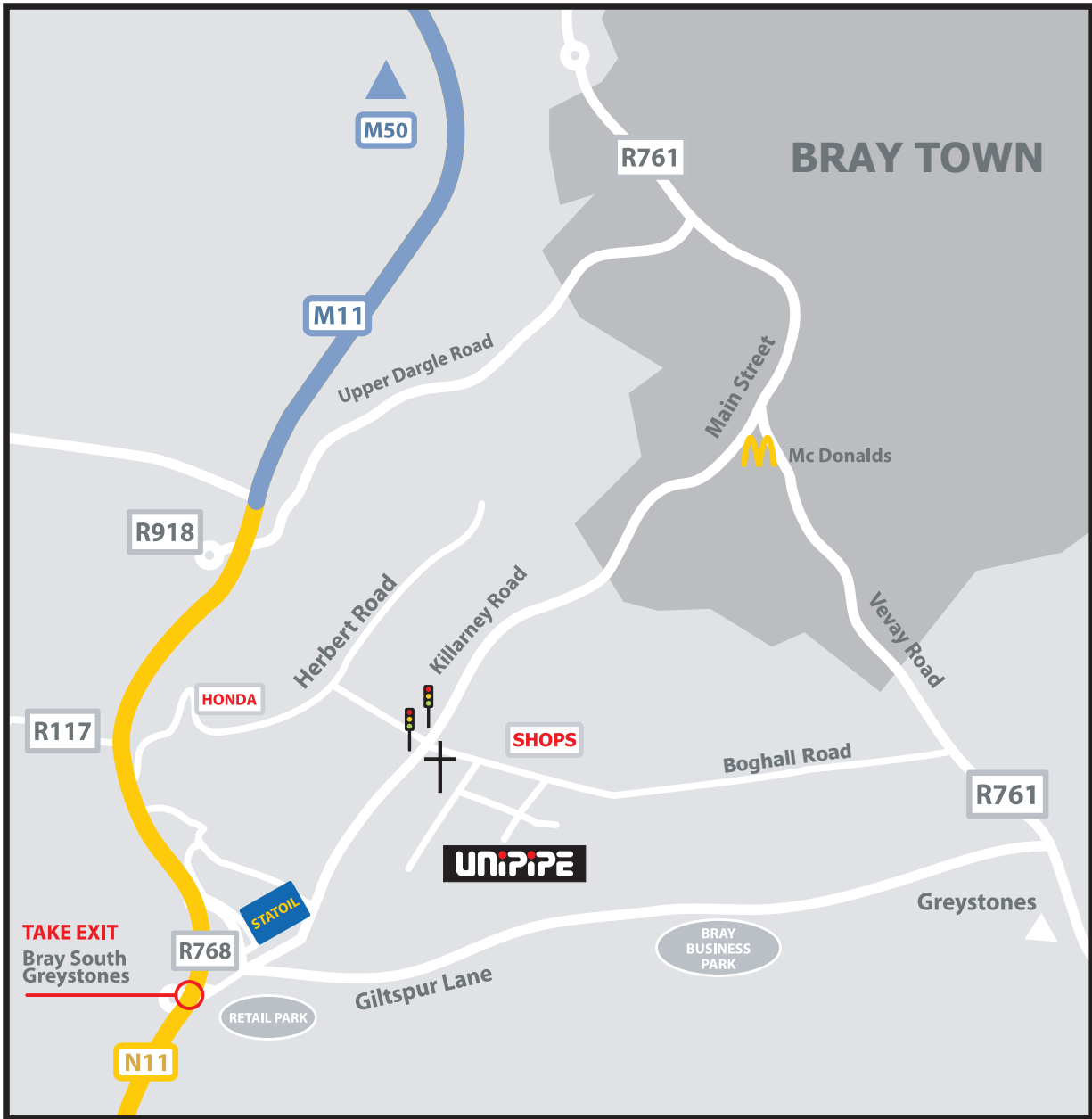


6 Suspended Wooden Floor Unipipe Aluminum Heat Diffusion Plates



Trays must be in good contact with floor above for effective heat transmission

Maps and Directions



If calling to discuss your project, please call to make an appointment before hand.

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