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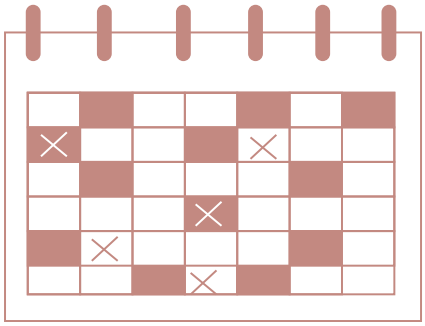
HOW TO INSTALL A RIDING ARENA

All-weather horse arenas need to be designed and constructed to manage the adverse weather conditions and preserve the properties of the riding surface. If you are looking to install a commercial, private outdoor arena or lunge arena, we can offer you a comprehensive range of products from fencing, gates, land drainage, membrane to full kits, windbreak and wheelbarrows. All at your one stop shop and all at competitive prices. We can offer various options to suit all budgets and locations. For repair or DIY use individual components can be purchased seperatley.

Plan

Check your local authority, planning permission may be required, extra consideration should be given to water discharge from drainage channels especially if depositing into local water courses.
Plan to do the works in the drier months to avoid heavy lorries making a mess of your paddocks. Plan your arena in a location that has good access to construction traffic, a good location could reduce your cost by up to 30%, saving in smaller machinery hire and labour.



Size v usage, this will be dictated by your budget and requirements, the larger the better, you can't build an arena too big but you can make it too small.

Standard sizes
40m x 20m Novice dressage (actual size 39.6m x 19.8m, using 3.6m rails)
60m x 20m Advanced dressage
min 25m wide for show jumping

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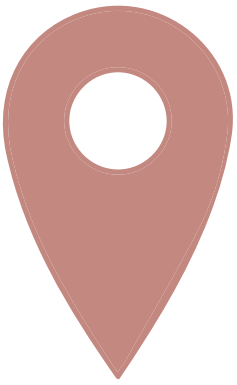
Site location



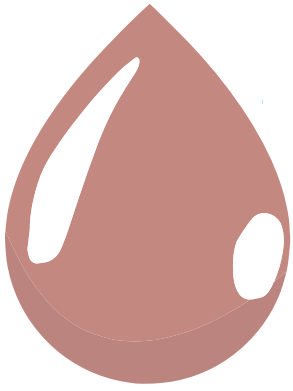
Time should be spent considering the best possible location, ideally a well-drained area that requires minimal soil movement. Avoid low level areas where drainage could be an issue. Examine the natural lie of the land and identify the direction for a suitable outfall.
Once you have chosen the site you want, the length of the arena should run, north to south, that way you have the maximum sun from east to west, allowing you more time to ride and more drying time for your arena. Try to avoid exposed areas, however if that is not possible we recommend using an MP windbreak (NET110) to prevent your valuable sand topping from being blown away.

Site preparation

In order to give contractors room for installation mark out a boundary one metre larger than the size of the arena required i.e. 40m x 20m arena would require 42m x 22m.
Install four corner pegs, run a string line between them, then check that it is square by measuring the diagonals, if they are identical then you have got it square.
To keep costs down, excavation should be kept to a minimum. Remove the top soil and vegetation to expose the subsoil which could be anything from 25mm to 300mm (Never build on topsoil as the organic matter is prone to water logging and has poor load bearing). The top soil can be kept for final landscaping.
Level the area with appropriate falls towards your drainage area, ideally using a dual grade laser level.

Drainage preparation

Important: Drainage and base layers are a key process to get right at this stage and should not be compromised, no matter how much you spend on a top surface, if you get this wrong it will not drain. Unless you have exceptional free draining soil, we recommend installing a 'Herringbone Pattern' style land drainage system to carry away surface water. These drainage channels should be dug as below guidelines before the base membrane and the land drainage are installed.



Dig a central channel to take the 100mm diameter central collecting pipe (spine) which should run down the centre of the arena vertical or diagonally towards your discharge location, of either a ditch, pond, stream or soak–away. This channel should be 30cm wide and have a varying depth (minimum 40cm). Larger spine pipes can be supplied if drainage is an issue. The spur trench channels should be dug off the spine at 45 degrees at 5 metre intervals. The depth at which the drainage channels should be installed will be dictated to, by your discharge point. Start at the highest point and keep as shallow as possible whilst still retaining a fall. The spine pipe should be lower than the spurs. To retain a well-drained perimeter, in-order to protect the timber posts and provide a safe standing for pedestrians, we recommend installing a perimeter trench outside the arena to take any run off from adjacent land. (This is an extra to our standard kits, please ask at time of ordering)

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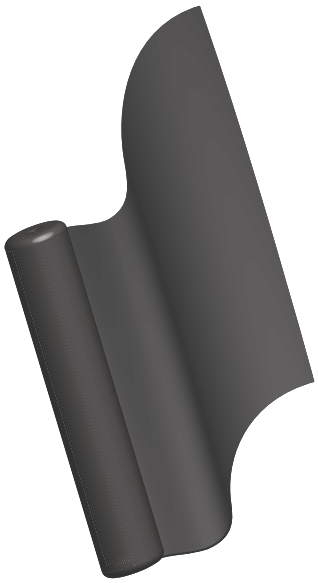
Installing drainage and base membrane

Once the above excavation and channels have been dug the whole arena should be covered in a strong MP woven geotextile membrane which is basically tapes of polypropylene woven together. Our membrane supplied has good permeability to strength ratio which enables good drainage without compromising strength. (Full specification sheet available).



This membrane layer will prevent the intermixing of existing subsoil and the new clean sub base stone, whilst allowing water to penetrate through the drainage channels.
The drainage channels should also be lined using either the full rolls or smaller rolls supplied in the kits. Push the membrane into the channels ready to take the flexible land drainage. Lining the trenches will reduce your drainage channels from silting or blocking up from the surrounding sub-soil. Joins in the membrane should be overlapped by a minimum of 30cm then sealed using a suitable strong tape, glue or heat sealed.

Before laying in the pipework put a bottom layer of clean washed 20-40mm shingle then add the drainage pipe. Connect the pipework in a 'Herringbone Pattern' above ground for ease, then gradually lower into the channels. Install the 100mm diameter central collecting pipe (spine) cutting the spurs in as you go. The 80mm land drainage spurs should be laid at 45 degree angles off the main spine, using the MP supplied Y junctions will make this job easier. Once the pipes have been installed in the trenches you can back fill the trenches with the remaining shingle so the site is now level again.

PRODUCT	USAGE	TYPICAL APPLICATION
Woven or Non-woven basic*	Base layer/Seperation	Standard useage
Non-woven basic	Top layer/Seperation Filteration	Ponies or light useage
Non-woven Medium	Top layer/Seperation Filteration	Jumping arenas/public arena/ gallops
Non-Woven Premium	Top layer/Seperation Filteration	Competition arenas/gallops/heavy useage

Standard stock range supplied *. Alternative specification available, full details on request.

Disclaimer: Purchasers must accept responsibility for satisfying themselves that the product is fit for their intended purpose and location.

Installing stone drainage sub base

The sub base layer is the foundation of your arena and will act as an important drainage system, coping with any excessive downpours, allowing your drainage system to cope.

Calculating your stone requirements, a standard 40m x 20m arena at a depth of 150mm would require approx. 220 tonne of stone, whereas a 60m x 20m arena would need nearly 50% more stone, 330 tonne. There are many aggregate/gravel calculators on line to assist with your calculations.

Create a 150mm (6") drainage base layer using a 40mm-75mm quality clean, washed, frost resistant angular stone. Avoid any stone that has not been washed or contains fine dust or soil, these will only end up clogging your new drainage. To test your stone is frost resistant simply knock together if it breaks, dusts or cracks it's not frost resistant. There are regional variations in the choice of sub base materials, the most popular options are limestone, ragstone, recycled railway ballast, granite or crushed concrete. All these materials will compact down whilst still being free draining.

A 250mm uncompressed surface will compress down to a working surface of approx. 150mm. The sub base layer should be compacted using a vibrating roller and laser level. The sub base drainage layer should exceed the arena size by approx. 50cm, to allow for water run off beyond your arena, especially if installing a perimeter drainage channel, this will help protect both the perimeter boundaries and fencing. The fencing can now be installed.

Timber species and quality

All our sawn timber is responsibly sourced from FSC certified producers. All our in-ground contact timber known as UC4 is supplied in kiln dried pine/larch only, pressure treated to BS8417 and identification branded for full traceability. Beware of cheaper spruce or poorly treated softwood timber that will not offer the same longevity.

Our in-ground contact timber conforms to the below specification

> Redwood (Pine/larch) only used
> Packs battened between layers for better drying and treatment penetration
> Slow grown timber
> Kiln dried to adequate moisture content in line with BS8417
> Pressure treated with market leading chemicals to BS8417
> Identification branded as proof of manufacturer and full traceability
> Guaranteed to give a desired service life of 15 years.
> Initially light green in appearance, weathering honey brown colour in external use situations, which will gradually fade to a silver grey.

Our standard kits use the most popular cost effective post, rail and board sizes; however, we can offer heavier, larger rails and longer and larger posts if required.

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Pressure creosoted pine post and rail

We can offer the same specification but in heat pressure creosoted timber finish. *(Note: It's the user's responsibility to comply with the restrictions on the use to which creosoted timber will be installed.) More detail can be found on www.hse.gov.uk/biocides/copr/creosote.html*

Fencing & gate installation

Subject to your size and layout this will dictate the quantity and size of products required. The most popular design is a three-rail sawn post and rail design with kick/retaining boards at the base, however there are many other combinations stocked. The kit from McVeigh Parker contains enough common materials for a standard 40m x 20m arena, these materials can be increased in size and performance to suit customer's requirements and arena size.

Post Installation

First install corner posts by concreting in and measuring to ensure posts are in the correct location. Intermediate posts should be spaced every 1.8m if using 3.6m rails as standard in our regular kits, or every 2.0m if using 4.0m rails

NOTE : If using half round or machined rounded half round rails instead of sawn rails, please make sure you double check the provided lengths as most half round rails come in 3.66m (12ft imperial) rather than 3.6m (11'10") which is what the sawn rails and retaining boards are supplied in. This is only a problem if the posts are installed to suit the rails, if they are installed to suit the retaining boards then the rails would have to be shortened.

If concreting we recommend you make sure they only have a concrete sleeve, not boot i.e. creating a boot will accelerate the rotting process, where-as a sleeve will allow the moisture to escape. In most cases subject to the soil conditions and length of post there may not be a requirement to concrete in every post.
Our standard stock length in our kits is 2.1m which will give you a fence height of 1.4m, that allows 450mm in the ground, plus 150mm in the sub base, then 100mm of top surface. If a taller perimeter fence is required or you require a stronger fence line, longer and larger profile posts can be supplied.

Rails

Rails should be nailed or screwed to the inside of the posts to provide a softer internal line which will reduce the potential of injury to horse or rider. Rails should not be butted up but allow an expansion joint between the rails to compensate for movement in variable climatic changes. Rail ends should be alternated between rails so the joints are not all on one post, this makes for a stronger fence.

Retaining/Kick boards

Retaining/kick boards should also be screwed or nailed to the internal face of the posts, these will help retain the top surface. Our standard kit has two 15cm deep boards providing 30cm depth, with three rails above, some customers prefer an extra board and one less rail, which can also be accommodated. As with the rails, kickboard joints should also be alternated to provide a stronger fence.



Gates

Our traditional five rail universal design softwood pressure treated gates come in a semi prepared finish. All gates are hand-made using responsibly sourced certified kiln dried joinery grade pine. Although, the most popular width supplied in our kits is 3.6m wide, we can supply alternative lengths. Our gate posts are all UC4 pine 175mm x 175mm with pyramid weathered tops, again you can upgrade to the heavier 200mm x 200mm posts. All the fittings are hot dip galvanized for longer life. Our standard kit comes with a traditional spring hunting latch, we can also offer alternative safe latches such as taller extended hunting latch, D striker and auto catch or Kitch catch. We also stock a range of different sized steel gates which we can offer as an alternative.

Top non-woven membrane installation

The top non-woven membrane is a different material to the base layer woven membrane. Non- woven membranes are spun bonded fibres of polypropylene, needle punched for water permeability, ours is also thermally bonded for added strength.

NOTE : Be aware of thermally bonded membranes which tends to be used in the furniture, bedding and automotive industries.

It has five main tasks

1. Prevent the sub base stone from migrating to the surface
2. Filter surface water efficiently and quickly, whilst retaining topping.
3. Prevent the upper surface from migrating downwards, clogging the drainage sub base.
4. Eliminates movement when horse's hooves apply pressure on the surface.
5. To rip if horses hooves make contact, reducing the possibility of injury which may occur if the main topping surface is not maintained

If a fine Silica sand topping is to be used, then we would recommend using our premium non woven for the top layer. This will prevent the finer particles of the sand filtering down through the drainage sub base layer, eliminating the loss of your surface and blocked drains. This soft yet strong sheet of polypropylene is provided in 4.5m widths in our standard kits, however wider and thicker material rolls can be purchased. Each roll is needle-punched, making it highly permeable, which provides excellent drainage. As with the woven membrane this membrane prevents the intermixing of your topping from the sub base. When installing, it is crucial to make sure there is adequate overlapping and ideally glued or taped to prevent any lifting, the slightest gap or hole will eventually allow the top surface through and lift your membrane. Make sure you have adequate overlap over the retaining boards, once top surface has been laid these can be trimmed back.

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Membrane specification

We offer a choice of membrane qualities; our standard kits come with a suitable membrane in 4.5m widths, however heavier and wider membranes can be purchased. Should you require a better performing, heavier membrane for arenas that will be used for jumping or will have constant use then we would certainly recommend upgrading to a heavier membrane, please enquire at the time of ordering.

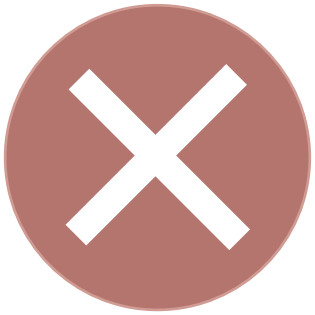
IMPORTANT: Since conditions of use and location are beyond our control, our products are sold, without guarantee, purchasers must accept responsibility for satisfying themselves that the product is fit for their intended purpose and location before purchase or installation

Surface installation

We don't supply the top surface but can direct you to a supplier in your area. There is so much choice and variable costs. Whichever type of topping you choose, consideration should be given to the depth required, this will be governed by the material chosen. Remember you need a suitable depth so that you do not expose the top membrane. When installing the topping, start at the gate and work backwards this will prevent the construction traffic running over the membrane.

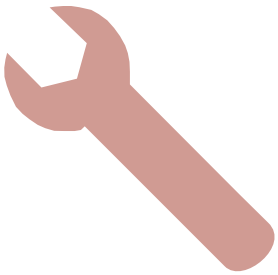
Mistakes to avoid

> Choosing the wrong location, such as poorly drained areas.
> Not installing adequate drainage or getting the correct fall.
> Using the wrong quantity and quality of stone.
> Using an unsuitable membrane
> Poor access for larger vehicles increases installation costs.
> Erecting the arena at the wrong time of the year, this could leave your ground irreparable.
> Avoid exposed areas especially if using silica sand topping, wind is prone to blowing your topping away.
> Make sure you order the correct length of post to suit requirement and conditions.
> Avoid buying spruce timber for in ground contact fencing or gate posts.



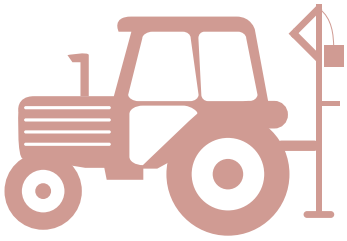
Future Maintenance

> Remove weeds quickly before they penetrate your membrane layers.
> Harrow regularly (once a week, subject to usage) to maintain a level surface and stop the topping from migrating to the edge or the centre.
> Allow surface water to clear before usage.
> Top up topping as and when required.



Tools required

> Roller – twin drum ride – these can be hired
> Post hole auger either manual petrol or tractor/mini digger mounted.
> Cement mixer
> Laser & spirit level
> String line
> Tape measure
> Mini digger (subject to location or requirements)
> Spade, shovels and rakes



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Products to be sourced elsewhere

(We have various contacts, please ask for ones in your area)

> Washed clean drainage shingle 20-40mm
> Base layer angular clean, washed, hard 45-75mm stone
> A topping of your choice

Additional products that may be required

> Windbreak
> Perimeter land drainage
> Plastic paver or rubber grass mat walkways
> Barrows and JFC trailers
> Grass protection mesh

Simple arena without post & rail

Photo courtesy of Mark Scott arenas

Important Note: All information in this leaflet is offered in good faith to enable reasonable assessment of the potential practical performance of the various materials required. Further technical information can be requested. However, since conditions of use and location are beyond our control, our products are sold, without guarantee, purchasers must accept responsibility for satisfying themselves that the product is fit for their intended purpose and location.

Other products of interest

> Cattle hurdles for lunge rings
> Feeders & troughs
> Electric fencing
> Stokbord
> Stable Mats

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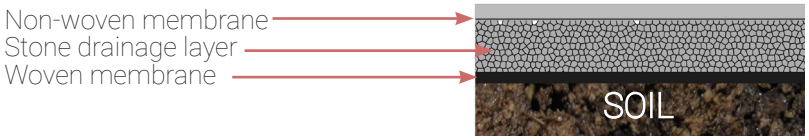
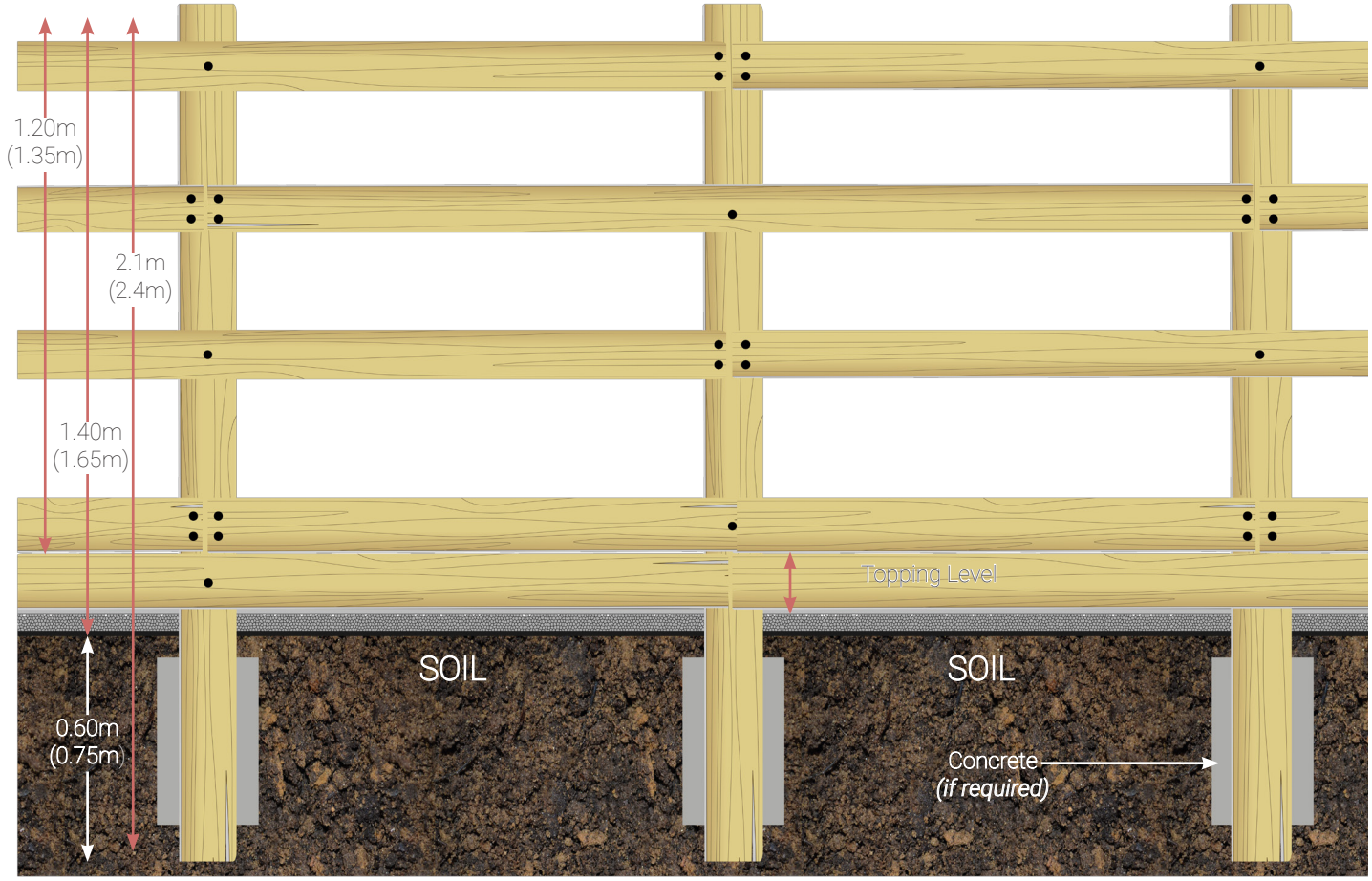
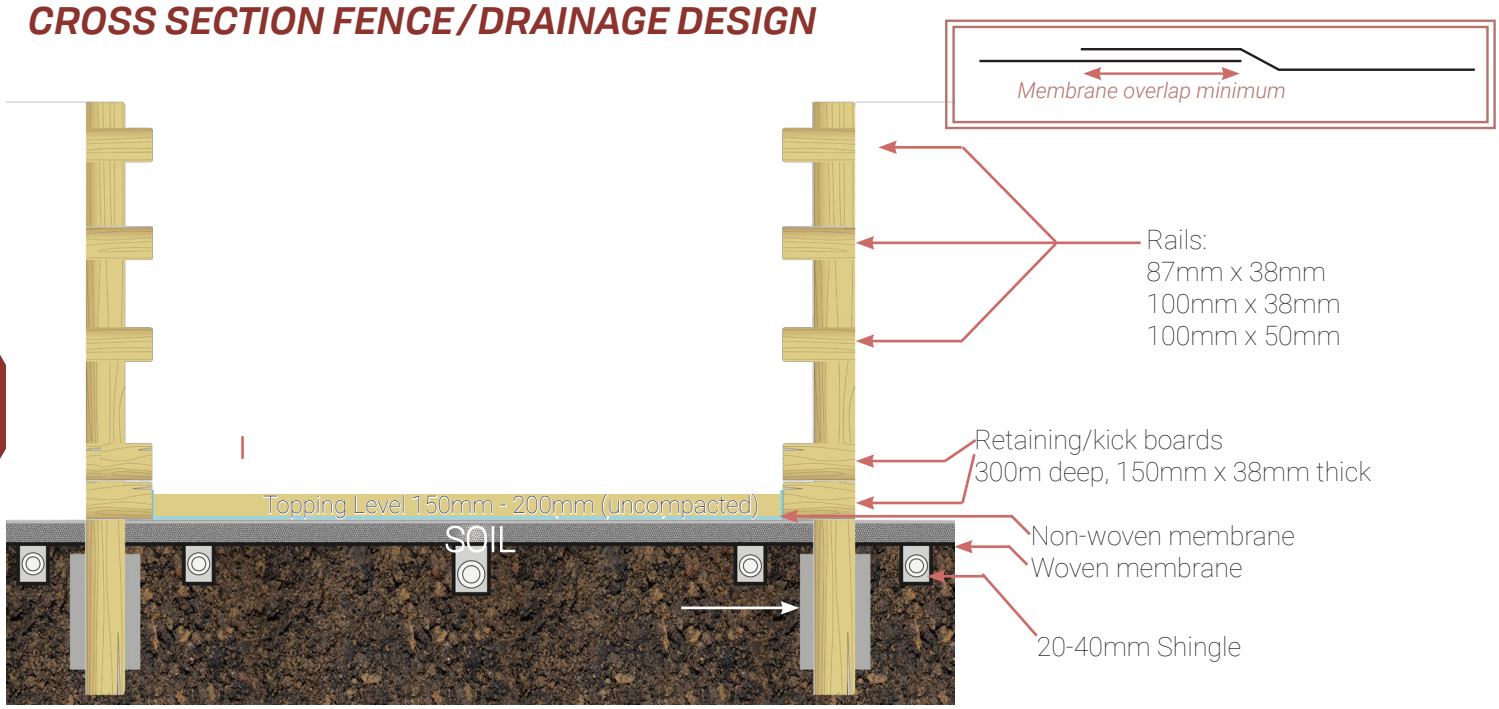


FENCING DESIGN



Standard 2.1m posts (longer 2.4m post option) Standard post section supplied 125mm x 75mm, also stocked 150mm x 75mm

CROSS SECTION FENCE/DRAINAGE DESIGN



Standard 2.1m posts (longer 2.4m post option) Standard post section supplied 125mm x 75mm, also stocked 150mm x 75mm

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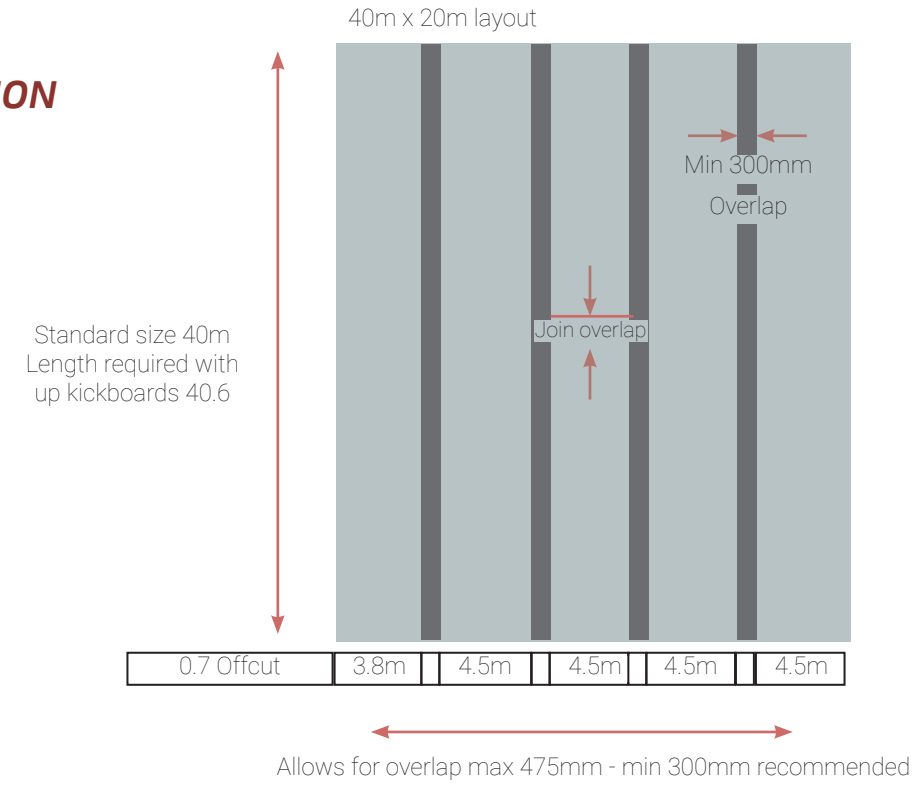
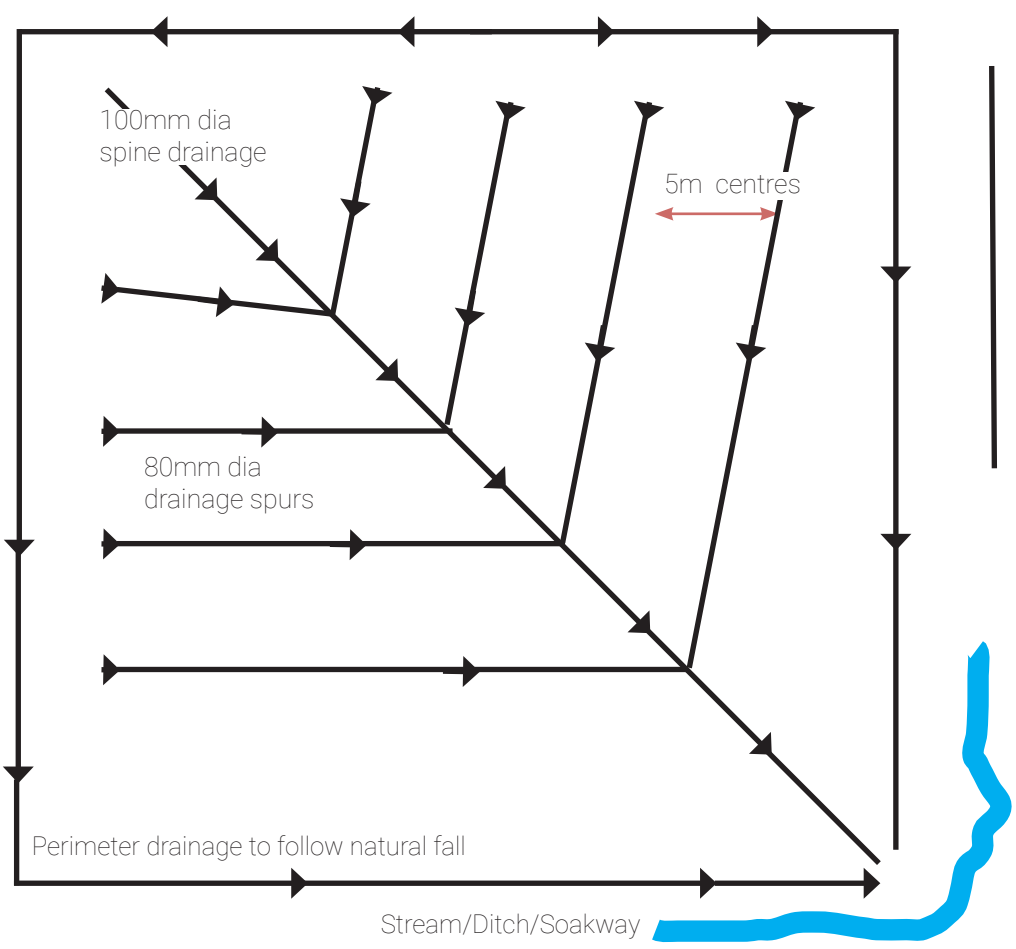
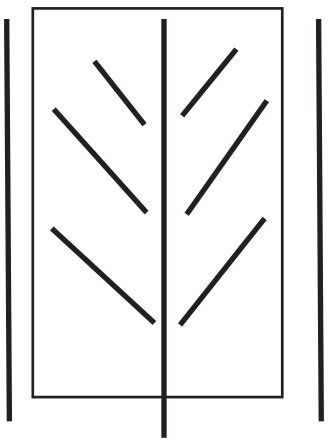
DRAINAGE LAYOUT OPTION





Alternative layout



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Technical Data: Woven & Non Woven

			Base Layer		Top Layer	
			Woven	Non-Woven	Non-Woven	Non-woven
			LDP700	LDP710	LDP726	LDP723
Tensile Strength (kN /m)	EN10319	MD	16	6	12	18
		CD	13	6	12	18
Elongation at max. load (%)	EN 10319	MD	17	36	45	50
		CD	14	42	45	50
CBR Puncture Resistance (N)	EN ISO12236		1500	1050	2000	2900
Cone Drop Penetration (mm)	EN 13433		19	48	26	18
Poly Size 90% finer than (microns)	EN ISO 12956		250	128	90	70
Water Permeability (l/m²/s)	EN ISO 11058		17	144	130	80
Effect of UV Light	The Polypropylene used contains a UV inhibitor					
Weight (g/m²)			75	80	140	200
Roll Size (m)		Width	4.5	4.5	4.5	5.25
		Length	100	100	100	100

DISCLAIMER

The information contained herein is to the best of our knowledge accurate in all material aspects, however since the circumstances and conditions in which this information and the products mentioned herein can be used may vary and are beyond our control, no representation or warranty, express or implied of any nature is or will be made and no responsibility or liability will be accepted by us, or our affiliates or our or their respective directors, officers, employees, or agents in relation to the accuracy or completeness or use of the information contained herein or any such products and any such liability is expressly disclaimed.

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