

Construction of a Cow Track for Access to Grazing

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Summary

- Cow tracks can lengthen the grazing season from reduced damage to pasture and improved field access in poor weather.
- Correctly constructed cow tracks can prevent lameness within the herd and increase milk quality from improved udder hygiene.
- Take time to plan the route of the track, ensuring that a considered route to the field is taken, where possible minimising the distance that the cattle have to walk as well as reducing construction costs.
- Ensure that no run-off from the cow track will enter a watercourse
- Set aside a financial budget annually for the maintenance of the track
- Monitor cow flow regularly on the track to ensure there are no hidden areas causing problems

Introduction

Grazing cattle in the summer is the most cost effective way of utilising forage across a farm. To do this effectively and efficiently stock need to be routinely moved around the grazing pastures to maximise offtake and encourage regrowth.

Farm cow tracks can save a business hundreds of pounds per grazing season if constructed and set up efficiently at the start. Effective cow tracks can lengthen the grazing season, through reduced damage to pasture and improved field access in poor weather.

A well designed and positioned track will also improve cow flow, allowing cattle to walk comfortably and confidently over significant distances from paddock to parlour, reducing the time spent moving the cattle, which would lead to reduced stress for both the cattle and the herdspeople.

Properly constructed cow tracks can also provide several health benefits to the herd. Lameness caused by claw horn lesions which develop as a result of injuries sustained moving across unsuitable ground, can be reduced by a properly constructed cow track. As well as this, cow tracks also improve udder hygiene, potentially reducing levels of mastitis in the herd.

Planning for cow tracks

Cow tracks are considered a private way, which means they are fall under Permitted Development Rights as listed in Class 18 of the Town

and Country Planning (General Permitted Development)(Scotland) Order 1992 (as amended) legislation.

Before beginning construction of any cow track within the farm, it is important to notify your local planning authority with a written description of the planned construction, including a plan to show the route(s) of the tracks and details of the materials to be used. There is no cost associated with this process and the Planning Authority should respond within 28 days to inform whether the construction can proceed, or if more information, or indeed planning permission is required.

Size & dimensions

Planning a track is crucial to ensure the successful use and ease of management of the track. The initial stage is to work out the width of the track; this can be achieved by calculating the number of cows which will be using the track. The incidence of bullying will be greatly reduced if the width of the track correlates to the number of cows using it. For a standard track, the minimum width should be between 4m to 5m for a 200 head herd, with 4m of this being surfaced. For every 100 head increase in the cow numbers the width of the track should also increase by 1m.



Route selection and siting

The track should be designed across the most practical route, minimising the distance that cattle have to walk. This will provide multiple benefits for the business e.g. reducing the volume of materials required for making the track, and reducing the distances cows need to walk from the parlour to the field.

Consideration to the route length is important to ensure there is an economical balance to the energy used by the cow for walking and that which is available for milk production. Track routes should avoid sharp turns and steep inclines. Known areas for bottlenecks should be avoided to reduce the stress of movement on the herd.

Under the General Binding Rules, no run-off from a cow track is allowed to enter the water environment and the track design should ensure that any drainage is shed into a field or directed to a swale for treatment. In addition, the track should be sited and built in a manner which prevents standing water. Siting the track in an area which is exposed to sunlight will allow the track to dry quicker than it would in a shaded area. Incorporating a camber/gradient will encourage rainfall and discharge to run off the track, preventing standing water which will cause the track surface to erode faster.

If a cow track is to be constructed within 10m of, or to cross a watercourse, advice and guidance should be sought from SEPA prior to starting work. Pipe culverts and wooden bridges may need to be added to the track to prevent any contamination from the track, and authorisation from SEPA may be required to permit installations along the riverbank.

Track Construction

Base layers

Ideally tracks should be laid in good weather to reduce the inputs and materials required and also to ensure the layers are compact and dry. There are several ways of constructing a track and the method used might be dictated by the soil conditions on site. New tracks can be built directly on top of the soil without any disturbance but with the addition of a geotextile fabric. Alternatively, the top soil can be removed to reveal firmer subsoil, at which point a geotextile fabric can be laid to further support the track construction. However, the use of geotextile fabric is not always necessary and can add a significant cost to the project, although it does allow the road to be constructed on top of lighter or looser soil which otherwise would need to be dug out, creating a deeper track to fill.

The track should be built up in 150mm layers and be compacted between each layer with a vibrating roller to ensure a firm base at each addition. Taking time at the construction phase to ensure a tight and compact track will reduce future maintenance costs. Each layer should be added and compacted to create a track which sits above the ground on either side of the track to ensure free drainage.

Drainage

Ensuring that the track is built at a height above the normal field level will help to aid drainage from the track to the field. The cow tracks will sink over time and with regular use, so constructing a deep bed at the start of the project is a worthwhile investment.

Incorporating a camber into a track can aid drainage and prevent the pooling of water. Although a straight slope can be incorporated into a track to aid drainage, a proud crown type camber with a gradient of between 3-6% and no more than 10% is the ideal surface for cow comfort and ease of movement (Figure 1). If the track is constructed from concrete with an inbuilt slope to promote drainage, the gradient should not exceed 12% (Figure 2). Consideration must be given to the area where the concrete and the field meet to ensure that there is sufficient drainage to cope with run off without creating puddling or causing soil erosion.

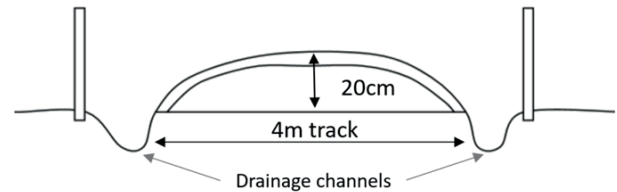


Figure 1. Creating a camber will aid track drainage.

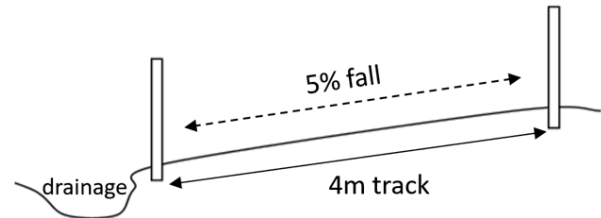


Figure 2. Creating a one-way incline of no more than 12% can aid drainage but is more difficult for the cows to walk on.

Gateways

Widening gateways at the point where cow tracks begin/end can help to prevent both a bottleneck in cow traffic and poaching at field boundary. Extending a cow track into a field at the gateway can help reduce the poaching. Alternatively, alternate field entry/exit points by using temporary or electric fencing along the side of the cow track.

Finishing

A well designed cow track should provide adequate grip for the cow to walk on but without being too abrasive. There is a wide variety of appropriate materials that can be used to build both the base layers and finish a track. The different materials have varied attributes and associated costs, which are dependent on local availability. For more information regarding the different materials see Table 1.

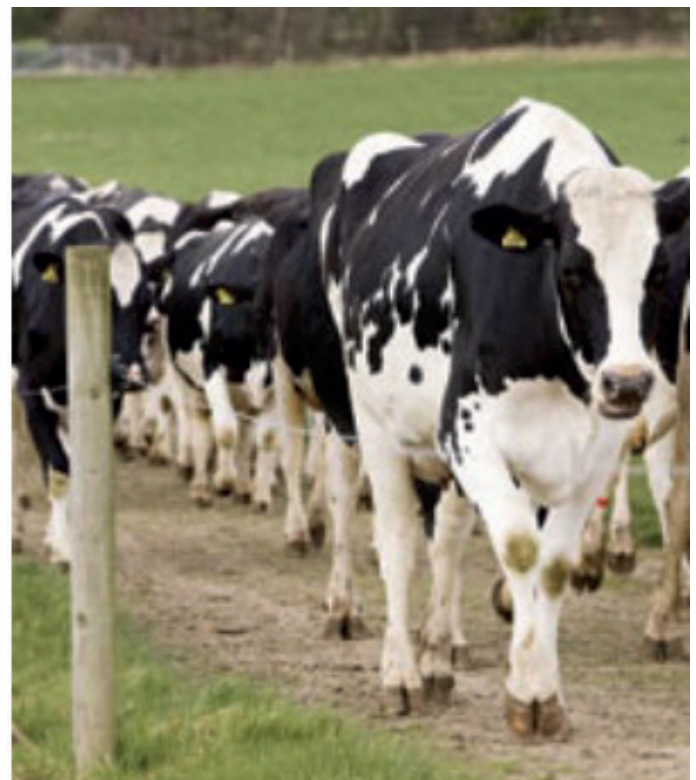


Table 1 – Points to consider when choosing materials for use in the construction of cow tracks.

Material	Comments
Stone dust/quarry by-products	Quality dependant on source, may be abrasive and increase risk of injury. Adding clay or a sand/cement mix could aid stabilisation of the surface. Can get washed away in wet weather and may need topped up annually depending on track use.
Clay	Tendency to turn muddy in wet weather, stabilising with cement can counteract this.
Crushed clean stone	Extracting and crushing stone from an on-farm quarry is the cheapest method to obtain crushed, clean stone. Crushed stone is free draining, and the surface layer could be stabilised with cement. If quarrying at an on-farm site it is important to ensure that no drainage from any quarrying operation reaches a watercourse. This may require water from the area of operation to be appropriately treated before being applied to land. When considering a site for quarrying, certain planning regulations may apply, particularly if there is any excavation within 25m of the "metalled portion of a trunk or classified road or a railway line" ¹ .
Rubble/crushed rubble	This material is readily available. Metal and other contaminants will need to be removed. The surface area can be stabilised with cement. The use of this material may require an "exemption from waste management licence" registration to be made with SEPA. Contact your local SEPA office for advice. May need topped up if/when hard loose stones move to cause potholes.
Woodchip	Readily available, commonly used on a free draining stone base, could require more maintenance in areas with high rainfall. A good sub base material is essential. May need topped up at least annually. Can lodge between cow claws causing injury.
Chalk and sand mix	Sand increases traction in wet weather. This can be stabilised with cement.
Limestone/sandstone	Durable soft stone that compacts well with a vibrating roller, however it is unsuitable for use in areas with high rainfall or for carrying traffic. Top can be stabilised with stone dust. May need regular topping up or patching if rutting or potholes develop.
Reclaimed astroTurf	Low cost. Must be laid on a firm base. Potholes must be filled with gravel and stones must be rolled to prevent bumps. A slight camber will ensure that the track will remain free draining. Correct preparation can ensure a uniform surface across the track. The use of this material may require an "exemption from waste management licence" registration to be made with SEPA. Contact your local SEPA office for advice. Annual maintenance should include applying sharp sand at a rate of 1 tonne/500m to the surface and brushing in. This helps weight the astroturf down and prevents movement, wear and tear.
Concrete	High costs to install, but can be laid to prevent water pooling and can be scraped/brushed which is of benefit for areas of high use. It is an abrasive surface which can lead to thinning in cow soles and any loose stones can impact within cow claws causing injury.

¹ Town and Country Planning (General Permitted Development)(Scotland) Order 1992 (as amended)

Using local materials can help to keep transport costs down but the key is to ensure the material type and size being used is sufficient to meet requirements. Figure 3, is an example of a poorly finished track which will result in sole bruising and ulcers as well as compromised cow flow. The larger stones will be uncomfortable for cows to walk on causing more dominant cows to push to the centre of the track where the covering is of stones less than 5mm in size. This track surface will also cause cows to walk in a single file, despite the track being 4 metres wide cows will stick to 2 lines, heavily compromising cow flow.



Figure 3. An example of a poorly finished track, note the variety of stone size and lack of compaction on the top layer.

If the track is to be finished with stone, then the final layer should be a minimum depth of 40mm of a fine material, with very few pebbles or small stones. This layer should still be compacted, ideally with the vibrating roller, which will give the track a smooth hard wearing surface which is easier on the cows hoof, reducing claw-horn lesions and injury.

For cow foot health and lameness, the use of road planings or road grit should be avoided. These materials increase the likelihood of punctured soles and associated injuries and losses in production (Figure 4).

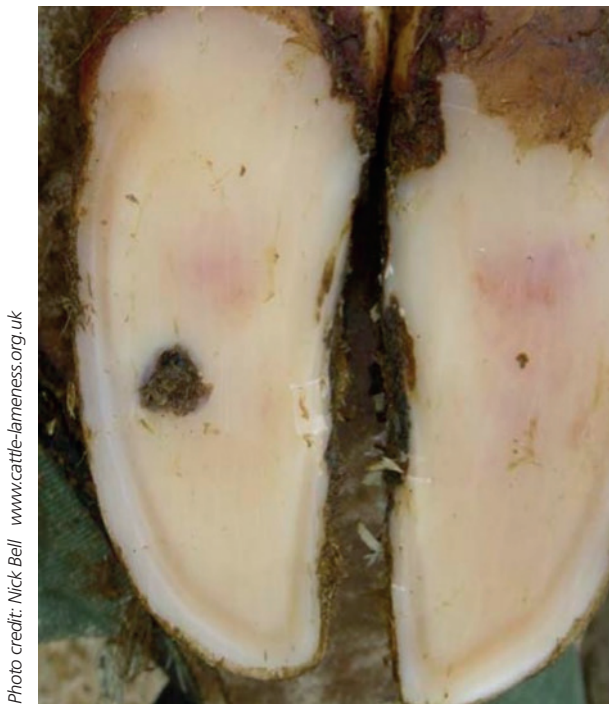


Figure 4. Tar planings can cause punctured sole injuries from the fine stones.



Figure 5. An example of a concrete track. These can be brushed or scraped regularly to keep clean and to prevent the collection of small stones which can cause sole bruising and other injuries.

Fencing the track

The final stage of creating a track is to fence it to ensure that cows do not stray from the track while being moved. When erecting the fence around the track, there should be a 0.3m gap from the edge of the track to the fence line, this will allow the cows to utilise the full width of the track without encroaching onto the grass area. If the gap is wider than 0.3m, cows will start to walk on the grass margin and bring debris onto the track, if the gap is less than 0.3m, cows are unable to utilise the full width of the track which may hinder cow flow.

Costing

The costs involved in building a cow track are highly dependent on the farm location and the availability of materials for construction. The cost of hauling stone from a quarry will be much greater than if stone from an on-farm quarry is available. The use of a geotextile fabric, if required will be an additional cost of construction and the track location may determine if cambers or additional run-off areas such as swales are required.

Maintenance

There should be a budget set aside every year for track maintenance to ensure the track works efficiently and to its full capacity without causing injury or distress to the cows. A regularly, well maintained track will last longer and cause less problems than a track which is repaired only once problem spots become evident. If maintenance is carried out regularly then it should only be the top layer of the track which will need attention.

Concrete tracks or those with a bound surface should be scraped or bucket swept regularly to keep them clean and free from small stones which can cause hoof injury.

Assessing the behaviour of cows walking on the track is also a good indication of the condition of the track and if any maintenance is required. The main indicators to look out for are:

- Cows walking at a slow pace (less than 3 mph)
- Bottlenecks in cow flow;
- Cows fighting for position on the tracks;
- Cows walking in single file;
- Cows walking along the edge of the track;
- An increasing incidence of lameness in the herd
- Increased soil bruising, or stone damage in the foot after using the track

If any or all of these symptoms are noticed during the grazing season then there are areas of the track requiring attention. Maintenance of the track is important to ensure that the grazing system works efficiently and effectively.

Track use

To increase the longevity of the cow track, it should only be used for cattle access. Vehicular access (e.g. tractor, trailer or harvester) should be carried out on a different track to prevent the track sinking in particular areas or rutting. Deterioration of the track surface increases the risk of hoof damage to the cattle using the track and the maintenance costs.

Cattle should be allowed to walk along the track at their walking pace and not pushed along by force with the use of a dog or ATV.

Cross compliance

Farm tracks are an ineligible feature for claiming Basic Payment. Therefore if a track is created on eligible claiming land, then this land must be removed from basic payment application to avoid any financial penalties.

References and further reading

- The Healthy Feet Website – www.cattle-lameness.org.uk
- AHDB Dairy, (2017), Healthy Feet Cow Tracks - <https://bit.ly/2kmwSHE>
- NADIS 'Lameness control in dairy herds: Part 8 – Cow Tracks - <https://bit.ly/2kwbkly>
- Farm Health Online – Lameness in Cattle - <https://bit.ly/2m3YYb3>
- The Town and Country Planning (General Permitted Development) (Scotland) Order 1992- <https://bit.ly/2lGMrtI>
- SEPA – www.sepa.org.uk
- Farming & Water Scotland – www.farmingandwaterscotland.org

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