Field Drainage Tiles and Pipes

The Museum of English Rural Life has a substantial collection of field drainage tiles and pipes, donated by the Ministry of Agriculture Fisheries and Food Land Drainage and Water Supplies Division.

The following text comes from the original catalogue to the collection.

Since 1940 the Ministry, through the County Committees, has carried out a considerable amount of underdrainage work on behalf of farmers, and it is natural that a great many old drainage tiles of various shapes have been dug out. Some of the more interesting examples have been collected by Headquarters and are described and illustrated in this leaflet.

The period when clayware field drains came into use is obscure. The original common form of underdrainage channel was clearly the trench, part-filled with faggots or stones and as late as the middle of the 19th century some drainage experts were still advocating the use of this type of channel in preference to the clayware drain. On the other hand S. Johnson reporting on the ‘Elkington’ system of drainage about 1800, and other writings of that period, indicate that the clayware drain was in relatively common use by that date.

Nor is it possible to allocate specific dates to a pipe by reason of its design or shape. The manufacture of clayware field drains was mostly a matter for the local or estate brickyards and developments occurred locally rather than nationally. The only approach to possible dating of pipes are those stamped with the word ‘DRAIN’. In 1784 a tax was imposed on bricks and other clayware building material, and field drains were included. In 1826 after a great deal of protest and pressure, field drains were exempted from tax provided they had the word ‘drain’ impressed. In 1850 the tax was abolished altogether. Hence this type of drain dates from 1826 to 1850.

Although it is not possible to allocate definite dates to different designs of drains, it is possible to trace an overall pattern of development in design. The old stone filled trenches obviously tended to become overloaded in periods of heavy rain particularly when the drains were becoming old, and the first development was to copy the old bush drains and create an open space below the stones at the bottom of the trench through which the water could flow more freely. This was done by wedging flat slabs of baked clay (roofing tiles probably in the early days) above the trench bottom to support the stones. Hence the possible origin of the name tile drain. Later the flat slabs were used to form sides and bottom to the channel in the cross sectional shape of an inverted V or diamond.

It logically followed that somebody eventually bent the flat slab into a U shape before burning and laid it, inverted on the floor of the trench, thereby avoiding having to build the channel in flat slabs. Hence the horseshoe drain. A parallel development was the block of clay with a semi-circular indentation on one side – the draining brick. When the soil floor of the trench became saturated these tiles, particularly the slab horseshoe would tend to sink into the floor due to the weight above. Various attempts were made to overcome this, either by using an inverted tile or brick to form a base and superimposing another to form a roof, or by adding feet to the horseshoe tile, or by resting the tile on a flat base. Other alternatives were flat slabs bent to D or O shapes.

With the invention and use of the extrusion method of brick making it became possible to form complete drains in one piece, and it is natural that first extruded pipes should be in the
form of a horseshoe with a flat base, i.e. a D shape. With the passing of time, the centre opening became circular but the flat base remained. Ultimately, the width of the base was gradually reduced until the present round pipe was evolved.
The drain brick is an early form of channel used either singly or, as in this case, in pairs. The outside dimensions of the single brick are: length 10 3/2", width 6", depth 3 1/2". The inside has a 2" radius. Received from Essex.

This drain was probably used in conjunction with a stone filled trench. The side members are 16" long, 4 1/2" deep and 2" wide. The slab is 11" long, 7 1/2" wide and 1" thick. The perforations consist of circular holes 3/4" diameter and 3/4" deep penetrating halfway through the slab with four 1/2" diameter holes in each large hole piercing the other half of the slab. Received from Essex.

A small size plain horse-shoe drain 10 1/2" long 2 1/2" overall height and 2 5/8" overall width at the bottom. The thickness of the slab is 3/8". Received from Nottingham.

An interesting example of the plain horse-shoe with the word "Drain" and the date 1827 indented. The length is 12", overall depth 4", width across bottom 4" and slab thickness 3/8". Origin unknown.

Another example of a plain horse-shoe taken from a drain which passed beneath an oak tree reputed to be 100 years old at least. Some doubt was cast on this figure when the tree was ultimately felled. The length is 11", overall height 4", width 4 1/2" and thickness 3/8". Received from Worcester.
A tapered horse-shoe tile designed that the joints could be overlapped. The tile is 9" long. The larger end is 3 3/4" overall height and 3 1/2" across the bottom, whilst the smaller end 3" high and 2 1/2" across the bottom. Slab thickness is 3/8".

Received from East Sussex.

A development of the plain horse-shoe to prevent the tile sinking into the soft bottom of the trench. Length overall height 4", overall width 5 1/2" inside width 2 7/8" and slab thickness 3/8".

Received from Nottingham.

Another example of forming a broad base to the horse-shoe tile. Length 9", outside height 4 3/4" and width 3 1/2" inside height 3 1/4" maximum width 2 1/2".

Origin unknown.

An example of the horse-shoe tile on a flat tile base. The length is 12". The tile is 3 1/4" high overall, 4 1/2" wide overall and 3/4" thick. The base is 6 1/2" wide and 3/4" thick.

Received from Nottingham.

A horse-shoe tile with specially made base. The length is 12 3/4". The tile is 4 1/2" high overall, 4 1/4" wide overall and 7/8" thick. The slab is 5 1/4" wide and 3/4" thick.

Received from Nottingham.

An example of a flat slab bent before baking to form a D shaped tile. Holes 1" square have been punched in the upper part. Length 12", outside height 3 1/4" and width 3 1/2" inside height and width 2 7/8".

Presented by the London Brick Co. Ltd.
A D shaped pipe made from a horse-shoe tile with a flat slab elayed to the inside of the bottom. The pipe has holes along the top. It is a broken pipe and would probably have been 12" long. The outside height is 3½" and width 3" and the thickness ½". Origin unknown.

An extruded D shaped pipe with holes punched along the side. Length 1½". Overall height 4" and width 3¼". Thickness ½". Origin unknown.

A circular tile formed from a flat slab, with four holes punched in. It has the word "Drain" indented. Length 11", outside diameter 2½", inside diameter 1". Received from East Sussex.

A circular pipe made from two semicircular slabs elayed together with two rows of holes diametrically opposite. Length 12", outside diameter 2½", inside diameter 1½". Received from Yorkshire.

A tapered circular tile made from a flat slab, and forming a spigot and socket drain. Length 10½", socket 4" outside diameter and 2½" inside diameter spigot 2½" outside and 1½" inside. Received from East Sussex.

An extruded pipe with flat base Length 12½", outside 2½" high and 3" wide, inside 1½" high and 2" wide, flat base 1½" wide. Origin unknown.

An extruded pipe with flat base Length 13", outside diameter 2½" inside diameter 1½", width of base 2½". Origin unknown.
A similar pipe to No. 18 but slightly larger. Length 12¼", outside diameter 2¾", inside diameter 1¼", width of base 2½". Origin unknown.

Another pattern of extruded pipe with circular opening and flat base. Length 12¾", outside height and width 3", inside diameter 1¾". Received from Nottingham.

A further pattern of extruded pipe with flat base. Length 12¾", outside height 5" and width 4½", inside height 3¾" and width 3¼", width of base 4". Received from Nottingham.

A circular pipe with ribs instead of flat base. Length 12½", outside diameter 2½", inside diameter 1¾". Received from Nottingham.

A circular pipe with flat base. Length 12½", outside diameter 2½", inside diameter 1½", width of flat 1". Received from Nottingham.

A "pencil" pipe, so called because of its small diameter. This example has a flat base. Length 12", outside diameter 1½", inside diameter 1½", width of flat 3⁄₄". Origin unknown.

A circular bore with square outside shape. Length 13½", outside 2½" x 2½", inside 1½" vertically and 1½" horizontally. Origin unknown.
A further example of square pipe with circular bore. Length 12"; outside 5 3/4" x 2 3/4"; inside diameter 1 1/4".
Origin unknown.

An ingenious pipe with a D section. The example is broken and the lettering difficult to decipher. The date is thought to be 1848. Length probably about 10". Outside height 23/4" and width 23/8"; inside height 1 1/4" and width 1".
Received from the Belvoir Estate, Leicester.

A circular pipe with four longitudinal ribs on the inside of the pipe forming a bore shaped like a melon. It was found in land reclaimed from the Wash and the system is thought to have been designed by Telford. The example which is broken is thought to have been 24" long. Outside diameter is 3 3/4" and inside 2 3/8". The ribs protrude 3/4" and are 3/8" wide.
Received from the Kolkham Estate, Norfolk.

A double bored pipe in the shape of a figure eight. The length is 11 1/4". The larger bore has an outside diameter of 2" and an inside diameter of 1 1/2". The smaller bore is 1 1/2" and 3/4" respectively.
Received from Hertfordshire.

A circular spigot and socket pipe obviously formed on a potter's wheel. Length 6". Outside diameter 3 1/2"; inside diameter 3".
Received from Derby.

An example of "collar" pipe drain which has a short length of larger diameter pipe to form a collar over the joints. The example is broken but the pipes are probably 12" long with an outside diameter of 2 1/2" and an inside diameter of 1 1/2".
The collar is 3" long, diameter 3 1/4" outside and 2 3/8" inside.
Origin unknown.

An example of spigot and socket pipe with one end enlarged to form the socket. This example has two rows of holes diametrically opposite. Length 12 1/4". Outside diameter 2 1/4"; inside diameter 1 1/4".
Another similar example of spigot socket without holes. Length 18'. Outside diameter 3\(\frac{1}{8}\)", inside dia. 2\(\frac{3}{4}\)". Origin unknown.

A tapered spigot and socket pipe. Length 19\(\frac{1}{4}\)'. Diameter at small end 2\(\frac{1}{2}\)" outside and 1\(\frac{3}{8}\)" inside. Diameter at large end 2\(\frac{1}{2}\)" and 2\(\frac{3}{4}\)" respectively. Received from Hertfordshire.

A clayware hollow partition block used as a drain. Length 10", outside width 6", outside depth 4\(\frac{1}{4}\)", thickness 2\(\frac{1}{8}\)". Origin unknown.

A pipe with gothic arch top and flat base used in peat. Length 12\(\frac{3}{4}\)'. Outside height 4", outside width 2\(\frac{1}{8}\)". Bore 2\(\frac{3}{4}\)" high and 1\(\frac{3}{8}\)" wide. Received from Lancashire.