

ARCHAEOLOGICAL INVESTIGATION OF A NINETEENTH CENTURY WATER FURROW IN CHURCH STREET, CENTRAL PRETORIA*

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ABSTRACT

Originally Pretoria was supplied with water by a system of furrows. An archaeological investigation was conducted of a section of one of these furrows, found in the course of construction work in Church Street, Pretoria. The investigation aimed to provide the Pretoria City Council with recommendations for the conservation and possible use of the furrow. Two sections of the furrow were examined in order to obtain more information on the building material and techniques used in its construction. From the investigation it was deduced that the furrow was primarily in use prior to 1910, to supply water to the eastern parts of the city. It is suggested that more detailed research should be carried out in order to understand the furrow system as a whole in an effort to anticipate similar problems and solutions in future development projects.

INTRODUCTION

During the pedestrianisation of Church Street in central Pretoria, the remains of what seemed to be a water furrow built of stone was found under the sidewalk paving. The furrow posed a major problem to the contractor as it was situated in line with the positioning of street lamps and trees, as proposed by the new design. After discovering the furrow the contractor contacted the landscape architects, who then contacted the City Council's department of urban planning. A group of advisors consisting of the landscape architects who did the design, an archaeologist from the Museum, an historical consultant, two town planners and an urban designer of the City Council, the contractor and representatives from the National Monuments Council were called in to assess the situation. At this stage, the possibility of turning a section of the furrow into a tourist attraction was also agreed upon, with adaptations to the original design.

The contractor was asked to stop construction work around the feature in order to provide the archaeologist with the opportunity to examine the furrow (Fig. 1). There was a need for speedy completion of the excavation, due to the fact that the contractor was contractually bound to hand over the project at a predetermined date, failing which a financial penalty for each day would be imposed. The Museum was given five days to complete the investigation and to submit a written report. In the meantime, the contractor undertook to work on a different section of the project.

DESCRIPTION OF THE SITE

The furrow was found on the southern side of Church Street, between Prinsloo and Van der Walt Streets in the central business district of Pretoria (Fig. 2). This area forms part of the core of Pretoria which originates in 1855 and is subject to continual development. The part of Church Street between Prinsloo and Van der Walt Streets today houses the State Theatre and Strijdom Square on the southern side. The Sammy Marks building and square and the Kynoch building are located on the northern side. The old Market building on the southern side was demolished in the early 1960's in order to make way for Strijdom Square.

The area in which the furrow was investigated was previously used as a market. Originally Church Square, situated to the west, was used for this purpose. In September 1882, however, it was decided to relocate the market to the area then used as the "uitspanningsplein" or camping site, *i.e.* the city block situated between Van der Walt, Kerk, Prinsloo and Pretorius Streets, as market activities conflicted too much with the activities of the people going to "nagmaal" (Communion). The "uitspanningsplein" then became known as Markplein (Market Square). Auctions were, however, still held on the church square until these were finally forbidden in 1889 (Pieterse 1942:23).

According to the contractor the remains of a similar furrow were also found on the northern side of Church Street. With the extension of the project by the contractor, some weeks after the conclusion of the



Fig. 1. The water furrow during excavation.

Museum's investigation, similar remains were also found in the block further to the west.

The contractor found another furrow at the intersection with Van der Walt Street, at right angles to the one in Church Street. This furrow had the same construction as the other, but was only about 0,20 to 0,25 m deep. It is possible that it was connected to the one in Church Street but was destroyed during the installation of traffic lights and other services in this location. No connection could be seen.

A brick stormwater drain was later found at a level lower than the furrows, in the middle of the street. According to the contractor it was below the cement bed put down in 1910 for the rails of the electric trams. This drain therefore appears to predate 1910.

HISTORICAL BACKGROUND

Since its early days Pretoria has been supplied with water by a system of furrows from the fountains area south of Pretoria. According to specifications these were 3 ft (0,92 m) wide and 18 inches (0,45 m) deep. The furrow continued through town to the southern or top side of Church Square where it split in two, going round the sides of the square. At this point the furrows were big, 18 inches (0,45 m) wide and 12 inches (0,30 m) deep. The two furrows met again at the bottom of the Square, continued through town and ran back to the Apies River. The government undertook to lead the water from the square to the rest of the town (Pieterse 1942:28). This project was started prior to 1860, but its completion date is uncertain. It is significant that the specifications indicated here are completely different to those found for the furrow under investigation.

A map of Pretoria dating to 1879 indicates the existence of these furrows (Map 3/209). The furrow under discussion here is, however, not indicated on the

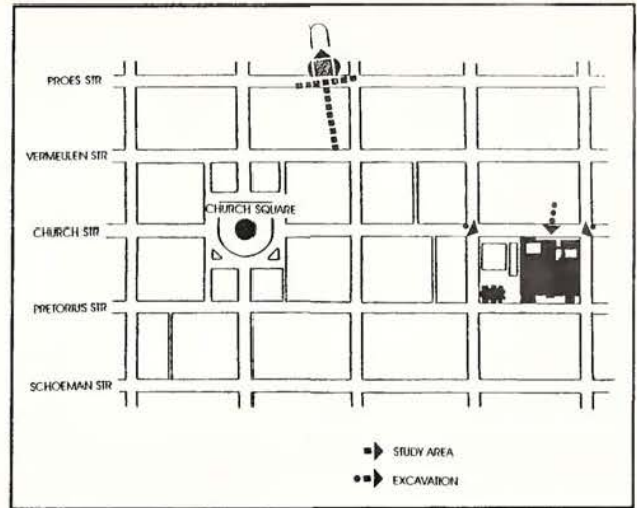


Fig. 2. Map showing the location of the section of the furrow that was investigated.

map. Furthermore, it seems as if not much development of the eastern side of Pretoria had occurred at the time the map was drawn. This raises the question as to why such a large furrow would be built in an area which appears, at this time, to have had no need for it. It therefore seems that either the furrow did not form part of the rest of the system of furrows or that it dates to the period after the map was drawn, *i.e.* after 1879. However, this is contradictory to the evidence presented below.

It is possible that the furrow was 'private' in origin, possibly supplying water to the mill belonging to Stephanus Meintjies. The mill was located on the corner of Church and Edward Street (Malherbe 1971:9) and was already in operation before 1880. This was Meintjies' original mill, not the one erected later and illustrated in FitzSimons (1951:10). An examination of the photograph by Gros (photograph HKF 195/16) east of Church Street shows the feasibility of this explanation. This photograph indicates a furrow in Church Street on the southern side. The original mill is also shown in a painting by W.H. Thorne in the collection of the National Cultural History Museum (HG 32670). This painting shows three buildings which are also indicated on the map of 1879. However, it still does not explain why the furrow was not indicated on the map. The possibility also exists that the mill could have obtained its water from a different source.

A search of contemporary photographs, especially those of H.F. Gros, was done. Gros lived and worked as a photographer in Pretoria from 1877 to 1895 (Cartwright & Cowan 1978:4-5) and took numerous photographs of street scenes. His photograph No. 383, showing a water furrow built of stone in a different part of Pretoria serves to confirm the existence and character of the furrows. One of the best indications of the existence of the furrow at this particular point in Church Street is found in his photograph No. 367 of Market Square. On this, a very well defined sidewalk can be



Fig. 3. Photograph of Church Street by H F Gros, showing the sidewalk over the furrow to the left.

seen as well as a curb (see the description in excavation 2 below) and a hole which might be the entrance to a drain. The same features can be seen on his photograph No. 384. It is thus possible that the furrow under discussion was located below the sidewalk (Fig. 3). The same can be said of photograph 20772 in the Transvaal Archives. On this photograph one can see what may be interpreted as inspection holes through the sidewalk. However, the overall quality of the photograph is not good enough to draw definite conclusions. Other photographs show that if the furrow were under the sidewalk it would, in time, have been covered by the stoep of the old Market building erected by 1879. The deduction made from this is that the furrow was built prior to 1879, *i.e.* before the map was drawn.

That the furrow was replaced by a system of pipes is deduced from the fact that a pamphlet, dating to 1891, gives an explanation of the rules and regulations concerning the supply and use of water in Pretoria. Water was supplied by means of pipelines that were to be installed (Pretoria Waterleiding Maatschappij Bepoort 1891). Exactly when these pipes were installed is still uncertain but photographs dating to the period 1900-1910 clearly show the existence of fire hydrants on the sidewalks, a definite indication of the existence of the water pipes.

ARCHAEOLOGICAL FINDINGS

The archaeological investigation of the furrow was influenced by a number of factors;

Damage already caused due to the excavation of trenches for the installation of services such as electricity and telephone cables over the years contributed to the fact that large sections of the furrow were automatically excluded from the investigation.

The City Council of Pretoria decided to preserve a section of the furrow and incorporate it into the pedestrianisation of Church Street. A section of the furrow in front of the State Theatre was identified by the landscape architect for this purpose. Although this section is incomplete, no longer having a roof, it was decided to do an archaeological investigation of this particular area.

It was decided to investigate any other features that might come to light during further operations by the contractor.

With the above factors in mind a complete section further along the street was excavated to serve as a control for the first excavation.

The contractor had already exposed the furrow. It was, therefore, easy to decide where and how to excavate so as not to damage the structure. It was soon evident that the deposit, mostly very fine silt on the inside of the furrow, was to a large extent disturbed and that normal excavation procedures would not be possible. This, coupled with the fact that we were given only five days in which to complete the job, led to a decision to use pick and shovel to excavate but to leave sections in place in case any stratigraphy could be found. This proved not to be the case.

Excavation 1 (Fig. 4) consisted of a trench 25 x 2,3 m from east to west next to the entrance of the State Theatre. The purpose of this excavation was to establish the exact dimensions of the furrow as well as to gain

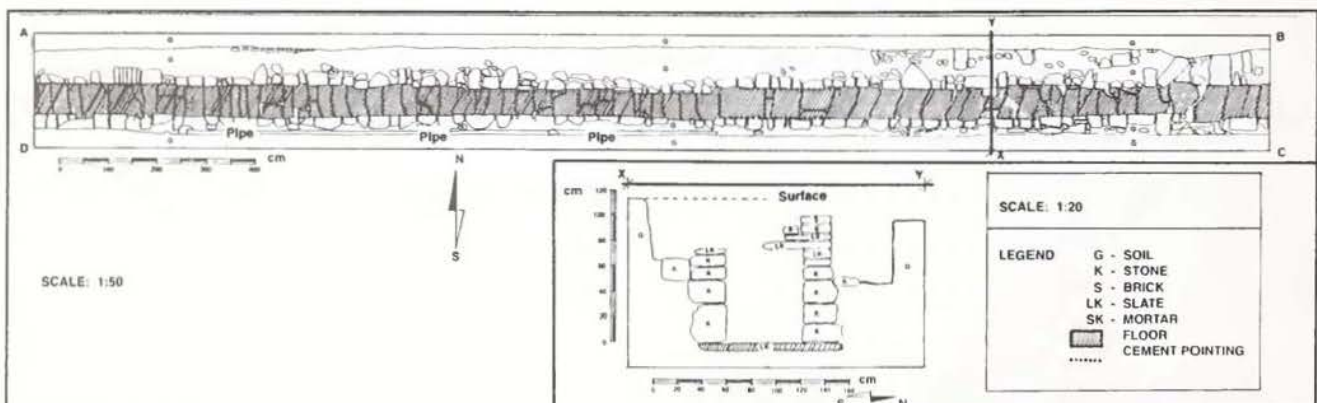


Fig. 4. Plan and section through the furrow, excavation No. 1.

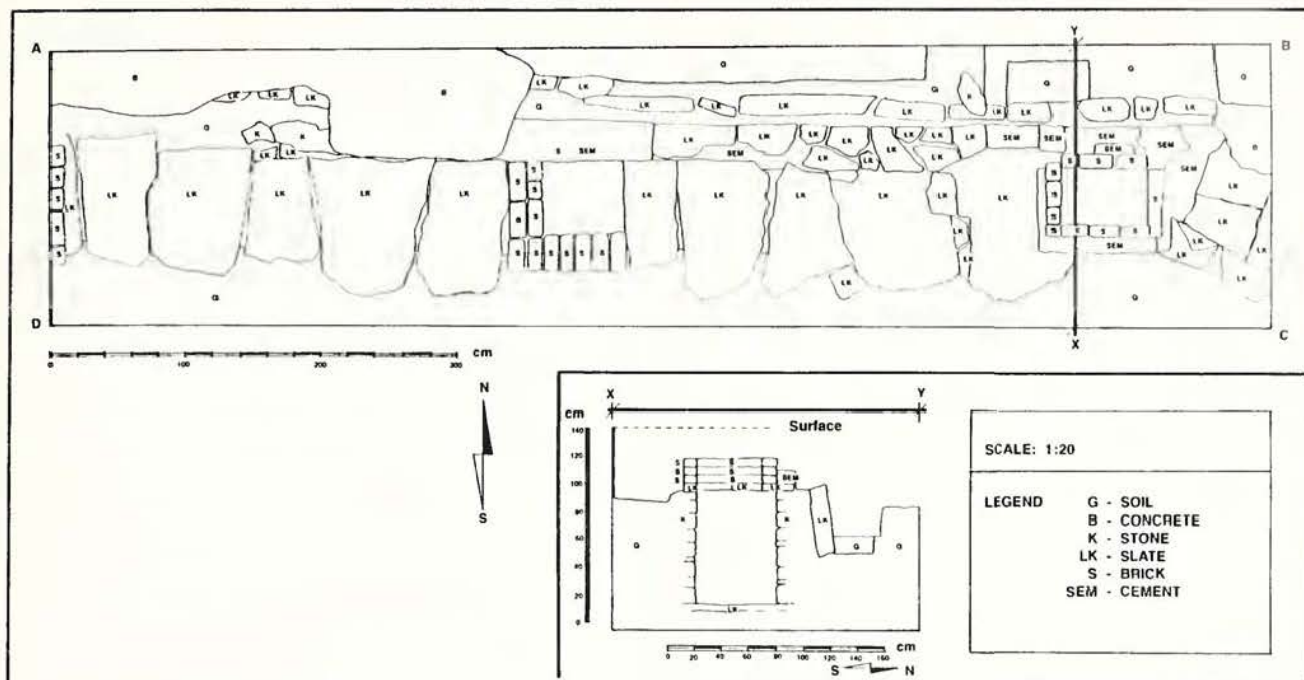


Fig. 5. Plan and section through the furrow, excavation No. 2.

information about the method of construction and materials used. Artefacts found during the excavation process could help to shed light on the use and dating of the furrow.

After removal of the topsoil, *i.e.* approximately 0,5 m, the walls of the furrow became clearly visible. The deposit on the inside consisted mainly of soft silt that could be removed very easily. In places it included stones fallen from the roof and sides and pieces of concrete. All the material was removed down to the bottom of the furrow. Bottles, nails and other pieces of metal were recovered from the silt.

The occurrence of artefacts of recent origin, *e.g.* 2 litre plastic soft drink bottles, were possibly the most significant finds, indicating that the furrow has been exposed during recent times. This was later confirmed by people from the Water Department and Electricity Section of the Pretoria City Council who claimed to have found sections of furrows when installing services. A number of metal and plastic water and sewerage pipes found in the furrow provided further proof of this.

Excavation 2 (Fig. 5) consisted of a block 9 x 2,25 m, close to the corner of Church and Van der Walt Streets which also runs in an east - west direction. In this area the furrow still had its original roof which also included two inspection holes. This section was investigated because it contained an undamaged section of the furrow. It was later decided not to remove the roofing from this section as it was one of the only sections where it was still intact and could be helpful in reconstruction of the furrow for exhibition purposes. Accordingly, this section of the furrow was excavated through the inspection holes.

Directly to the north of the furrow, in excavation 2, a line of rectangular stones was found. This seemed to

form part of the original curb stone structure. The stones were slightly higher than the roof of the water furrow. The excavation was extended over a further 2 m section to establish the significance of these stones. It was also explored downwards to establish the connection of these stones with the original roadbed (if the latter still existed).

Halfway down the depth of this stones layer the soil was compacted and covered with a layer of small stones. This was then followed by a yellowish layer before the bottom of the curb stones were found. This same profile was found in all places in the street where the contractor installed various services. By using a dumpy level the depth of these layers was correlated with those found in the excavation. As the depths were the same throughout, it was deduced that this was part of the old roadbed.

THE WATER FURROW

In this section of the road where the investigation took place the furrow runs from west to east at an incline of 1:600. This slight angle might be one of the reasons why it silted up very easily, necessitating the many inspection holes added for cleaning purposes. The inspection holes were built into the roof of the furrow at a later stage, approximately 6 m (\pm 20 ft) apart. As the level of the road and sidewalk was built up over the years and the furrow was covered. The opening of the holes also had to be built higher, as can be seen from the bricks which were added on. The inspection holes are an average 0,65 x 0,45 m in size.

The floor of the furrow consists of pieces of slate, placed horizontally without any binding material. The slate varies in thickness between 30 mm and 80 mm. It

extends beyond the sides of the furrow and therefore also serves as foundation for the walls. The inside dimension of the furrow is 0,6 m but, because it also serves as foundation, the slate varies between 0,9 m and 1,2 m. It therefore seems that the trench for the furrow was first excavated 1,2 m in width in order to lay the floor, after which the walls were added.

The walls of the furrow were constructed of sandstone and slate. The height of the walls vary from 0,74 m to 0,8 m and 0,6 m in width. In places the wall is made up of only one stone but in other places two or more were used, depending on the size of the individual stones utilised. Only the inner walls of the furrow were smooth. The stones were layed in the one-over-two and two-over-one technique. No particular preference in the choice of stone is visible and sandstone and slate are used irregularly. The top layer was finished with a flat surface on which the roofing could be added. A 2,0 m section of the wall, which had probably collapsed at some stage in the past, was found to be rebuilt in cement.

The roof was built in slate. The roofing slabs were generally larger than the ones used for the floor, although they are of the same thickness. Where the road crosses over the furrow, the roof is nearly twice as thick, possibly to accommodate the heavy traffic. The slabs were placed close to each other. A thin layer (10-20 mm) of mortar, consisting of a mixture of sand and lime, was used to cement the roofing slabs onto the walls. This was found to be the case in both excavations.

ARTEFACTS

Fourteen complete glass bottles and a number of pieces of glass were recovered from excavation 1. Five of these are of recent origin (1 litre Stoney gingerbeer bottle, 300 ml Coca Cola-bottle and a whisky-, gin- and a beer bottle). These were found approximately half way down in the furrow which possibly indicates that this section of the furrow had been opened sometime during the past 20 years.

Nine other bottles, dating to the period late 19th to early 20th century, were found on the floor of the furrow. They were all used for either wine or champagne. One glass bottle stopper dating to the same period was found.

A number of rusted nails, a horse shoe and metal bolts were found in excavation 1. Only one small piece of unidentifiable bone was found in excavation 2.

DISCUSSION

Even though the archaeological excavation did not shed much light on the exact function and dating of the furrow, much information regarding its construction was gained. This is deemed relevant as most of these furrows, which played such an important role in early Pretoria, have already been destroyed.

The investigation raised a number of questions relating to the origin and use of the furrow. The main water supply flowed from south to north and then in an



Fig. 6. Reconstruction of the furrow for public viewing.

easterly and westerly direction. It does not seem to make sense that the furrow in Church Street is so much deeper than the one in Van der Walt Street (flowing from south to north) unless this was to compensate for the original topography, which, with all the changes that took place over the years, is difficult to establish. Also puzzling is that if this was an irrigation furrow it should be located on the southern side of the road, as the slope increases to the south. In theory, an irrigation furrow for this block should be located in Pretorius Street which is on the upslope or southern side of the block. The indications are that the furrow under investigation was used to supply water to the eastern side of town, *e.g.* the Meintjies mill. For discussion of a comparative situation see Abrahams (1989).

It is highly unlikely that the furrow dates much before 1860 as it is known that the furrows were still under construction as late as 1863 (Pieterse 1944:28). However, it must have been completed before 1880 as the Market building was finished by then and this covered part of the sidewalk under which the furrow is located. Water pipes and other channels were in use by the turn of the century.

The finding of Coca Cola and Stoney bottles in the furrow indicates that its existence in recent times was not unknown. However, it seems as if people preferred not to mention it, possibly fearing either that it would interfere too much with their work or not realising its significance. The implementation of standard Integrated Environmental Management procedures, especially during the planning phase in urban design, will go a long way towards

preventing situations such as the one described in this paper arising. It is therefore believed that the decision made by the City Council to reconstruct a section of the furrow for public viewing (Fig. 6) will make people aware as to the importance of cultural resources and thereby increase the likelihood of receiving their cooperation in the future.

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