THE EVOLUTION OF THE BLOCKHOUSE SYSTEM IN SOUTH AFRICA

A. INTRODUCTION

When the British army first reached Pretoria in 1900, Roberts increasingly realised that the railway was of great strategic importance and that its long lines of communication lay undefended (Map 1). This was further underlined by the destruction of the railway line and the detrimental effect this had on the transporting of troops and supplies to the front by train. Safeguarding the railway lines, therefore, became an urgent necessity. Orders were accordingly issued that all posts along the railways were to be fortified. By July 1st, 1900, defences consisting of trenches and stone-sangars had been prepared at most points, and their numbers and strength increased as the attacks of the Boer Commandos grew more frequent. The wrecking of the railroads reached its climax at the end of 1900. The most important points along the railway line were safeguarded first, namely the stations and the train bridges. The oversight and/or the inability of the British, as they penetrated the Boer republics, to occupy the area properly, together with the Boers' will to resist and the decision to resort to mobile or guerrilla warfare (the classic strategic principles of time vs. space) and to take the battle behind the British front, can be seen as the basic reasons for the erection of the line of blockhouses.

Robert's successor, Lord Kitchener, chose to counter the tactic of mobile warfare with a strategy based upon a "scorched earth" policy, exemplified by concentration camps, blockhouses and "drives". Lord Kitchener can therefore rightly be considered the father of the blockhouse system in South Africa during the Anglo-Boer War.

The blockhouse lines constructed were the following (Map 2):

Cape Colony: A blockhouse line extended from De Aar to Naauwpoort and through Rosmead to Cradock. A branch line, beginning at Middelburg, stretched through Steynsburg to Molteno. A line extended from Queenstown through Molteno to Burghersdorp, and further, beyond the Orange River through Bethulie to Springfontein. A branch line ran eastwards along the river to Aliwal North and Lady Grey. This region was the gateway for the republican invasions, and there were military posts and garrisons outside the lines at Bethulie, Venterstad, Stormberg, Lemoenfontein, Myburgh, Jamestown, Maraisburg, Dordrecht and Indwe. The formidable blockhouse line stretching from Naauwpoort to Colesberg and Norvalspont followed the railway to Bloemfontein and Kroonstad. This "backbone" stretched from Naauwpoort northwards through the O.F.S., Johannesburg-Pretoria, to Pietersburg (Polokwane).

A line stretched westwards from the main Beaufort West-Warrenton-Gaberones line, to Victoria West, Carnarvon to Williston, on to Calvinia and from there to Clanwilliam (a line which was still under construction in 1902); finally ending at Lamberts Bay on the west coast of the Cape Colony. A detached line extended from Wellington (where the blockhouse protecting the railway north of the station, is a proclaimed National Monument) northwards through Porterville to Modderfontein. Between Wellington and Beaufort West

there were scattered garrisons and constabulary posts everywhere with blockhouses at strategic points such as that at Tulbagh Road. These include the blockhouses to be visited at Wolseley.

Orange Free State: The main line followed the railway through Colesberg and Norvalspont to Bloemfontein and Kroonstad. To the north of Kroonstad it was strongly reinforced as far as Vereeniging, and this stretch (favoured by De Wet for breakthroughs) was also patrolled by armoured trains.

A line ran from Wolwehoek (north of Kroonstad) on to Heilbron, Frankfort, Tafelkop, Vrede, Botha's Pass and Mount Prospect in Natal. From Vereeniging a line ran eastwards on the Free State side of the Vaal River with a junction to Greylingstad. A third line ran eastwards from Kroonstad to Lindley, Bethlehem and Harrismith on to De Beer's Pass in the Drakensberg. The network in the northeastern Free State was completed by a line stretching from Bethlehem via Fouriesburg to Ficksburg, and another from Bloemfontein via Sannaspos to Ladybrand. Moreover, there were fortifications and military posts in the western Free State, extending from the railway to Kimberley all along the Modder River, and from Kimberley through Boshof and Bultfontein to Winburg Road, together with a blockhouse line to Winburg. From the Vaal River ran another line, through Hoopstad to Winburg Road.

Along the western boundary of the Republics, from Warrenton through Mafeking to beyond the Malopo, there was a series of military posts, and the railway was patrolled by armoured trains.

Transvaal: Most of the Transvaal lines were concentrated in the south and not always alongside the railway. A blockhouse line stretched from Mafeking through Lichtenburg to a point south of Ventersdorp. Then there was a quadrangular system of blockhouses extending from Ventersburg to Klerksdorp, on to Potchefstroom and a point north of Frederikstad. Another line stretched from Potchefstroom to Krugersdorp and on to Springs, and yet another from Potchefstroom to Rustenburg, along the Magaliesberg to Pretoria, and from there along the Delagoa Bay railway to Kaapmuiden where it was supplemented by an armoured train operating as far as Komatipoort. In the Eastern Transvaal and the Highveld (General Botha's field of activity) there were further lines from Machadodorp to Lydenburg; from Kaapmuiden to Barberton; from Wonderfontein (west of Belfast) to Carolina and Ermelo with a branch line to Amsterdam; from Ermelo to Standerton, and a line of fortifications stretching from south to north, from Greylingstad to Standerton and on to the Great Olifants River, west of Middelburg. Then too there was an important line stretching from Johannesburg along the railway (which was reinforced with armoured trains) to Volksrust and on through Wakkerstroom and Piet Retief eastwards to Derby.

Natal: Blockhouse lines stretched from Volksrust southward to Newcastle and from Vryheid to Dundee.

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Blockhouses can be divided into **two main types**, namely those (i) <u>built of stone and cement</u>, and those (ii) <u>built of corrugated iron</u>.

(i) Initially masonry blockhouses were usually erected at important points such as large bridges and/or stations. Multi-storey blockhouses were usually two or three storeys high and were either square or rectangular, and from the *machicouli* galleries incorporated into the roof structure, a machine-gun could be fired. They were solidly built and, because a fair number are still standing, they are the best-known blockhouses in South Africa. Entrance was by ladder: parapets supported by brackets projected from the upper angles and steel portholes/ loopholes in the lower part enabled the garrison to fire on the ground below. The *machicouli* galleries were battlements with openings in the floor and wall, through which the enemy could be bombarded if they succeeded in advancing up to the blockhouse.

The costs involved in building such a blockhouse amounted to between £800 and £1 000 and it took approximately three/five months to build. About thirty men were needed to build such a blockhouse. This type of blockhouse was based on the structures which had been erected by the police in Samana and other parts of Northwestern India. The war situation, however, was of such a critical nature that a solution more economical of time and material, urgently needed to be found.

(ii) Since by the end of 1900 there was still no peace in sight, there was a need for a type of blockhouse that was cheaper, quicker and easier to erect. Since the Boer Commandos had fewer guns at their disposal, it was clear that this type of blockhouse only had to offer protection against rifle fire. In order to increase the building tempo, a simple blockhouse was designed which consisted of two rows of corrugated iron walls with a gap between them. This gap was then filled with gravel or small stones (gravel being more effective than soil in stopping rifle bullets from penetrating the wall). After intensive testing in January 1901, this type of blockhouse was approved for use. These early iron blockhouses were square, structurally unsound and not wholly effective against rifle fire.

The need for a very simple, yet safe blockhouse, that could be erected more cheaply and speedily, led to the design the round corrugated iron blockhouse in March 1901. On 11 March 1901 the first of the new type of blockhouse was erected at Gun Hill, near Middelburg, Transvaal.

The blockhouse consisted of two cylinders of corrugated iron placed 15 cm from each other. One of the cylinders was smaller than the other, so that it could fit inside the other. Thereafter, the gap between the two layers of corrugated iron was filled with gravel and soil. In addition, wooden blocks measuring 15 cm x 15 cm x 7,5 cm were used to keep the two layers of corrugated iron the correct distance from each other. The only other wood used was at the point where the roof was attached to the sheets of corrugated iron.

A pitched roof was built over each blockhouse, while water tanks were placed outside. The round blockhouse soon became the standard blockhouse, but it was a while before wood ceased to be used. The blockhouses were generally built on stone bases. The roofs of the blockhouses also differed from the so-called "pepper-pot" roof, which was a popular variation on the standard roofing form. The original roofing form was that of a gable, and was prefabricated. It was then just attached to the walls.

A trench approximately 1,35 m deep was dug around the blockhouse. This relatively deep trench enabled the guard to see and hear better at night, as he was closer to the ground. In

addition, the trench could serve as an added defence measure, as extra troops could be placed in it during enemy attacks. For the further protection of the blockhouse a barbed-wire snare was added to the outside of the trench. The blockhouses were also erected in zig-zagged lines so that the troops did not end up in each other's firing line.

Kitchener was so impressed with the Rice blockhouses that he gave instructions for them to be erected alongside all the important railway lines. This resulted in the following railway lines having Rice blockhouses by the end of the war: Beaufort West-Warrenton; Orange River-Pietersburg, with branch lines to Winburg, Heilbron, Klerksdorp and Springs; Pretoria-Komatipoort, with a branch line to Barberton; and Johannesburg-Newcastle.

With the cessation of hostilities on 31 May 1902, according to most of the sources, a total of approximately 8 000 blockhouses over a distance of 6 000 km at an estimated cost of £1 000 000 had been erected. According to the table compiled by Captain R. Harvey on 12 May 1902, there were 441 stone blockhouses, at least 6 883 Rice-pattern and similar corrugated iron blockhouses and 555 so-called "works" (fieldworks), that is to say a total of at least 7 879 fortifications.

If one takes into account that on average there were twenty people in a stone blockhouse, seven in a Rice-pattern (corrugated iron) blockhouse and five in the fieldworks and posts, the total number of soldiers manning the blockhouse lines must have amounted to at least 60 000, because the multi-storey blockhouses sometimes housed 25 or more men. If there were an additional three or four black or coloured guards at each of the Rice Pattern blockhouses, approximately 25 000 black and coloured people were also involved.

Today there are only approximately fifty of the nearly 8 000 blockhouses which were erected by the British from the beginning of 1901 until the end of May 1902 still standing - that is, those in good condition. Together with a few other remaining fortifications, they are silent witnesses to one of the most remarkable fortification-building projects in the military history of South Africa, or, for that matter, the world.

B. TYPES OF BLOCKHOUSES

1. Corrugated Iron Blockhouses

The earliest rectangular examples in the eastern Transvaal (now Mpumalanga Province) were built in January 1901 by a civilian contractor from Lourenço Marques. After that, the octagonal and the final circular patterns were designed by Major Spring R. Rice, of the 23rd (Field) Company, Royal Engineers, manufactured in kit form at RE factories in Middelburg (Transvaal), Bloemfontein, Cape Town and other centres, sent by train to the station nearest to their final site and delivered to site by ox wagon. There they were erected by infantry soldiers who dug a sentry trench round each blockhouse and surrounded the site with a barbed-wire entanglement. After the war ended, most of these buildings were sold or given by the military authorities to the owners of the land on which they were built. The provisions of the Vereeniging Peace Treaty also stipulated that the blockhouses be removed as soon as possible after the cessation of hostilities. Consequently, very few examples of the corrugated blockhouses have survived.

2. Masonry (Mortared Stonework and Concrete) Blockhouses

The masonry blockhouses were designed by RE personnel using a variety of plan shapes and styles and built by civilian contractors, employing good quality mortared stonework or shuttered unreinforced concrete for the walls, timber upper floors, timber and corrugated iron roof and steel loopholes, window shutters and door. They were also usually surrounded by a sentry trench and barbed wire fence.

Because of their solid and permanent method of construction, the masonry blockhouses are the most numerous class of Anglo-Boer War fortification to have survived in good condition. Major-General Elliot Wood, the Chief Engineer of the British Army in South Africa, produced a design for a three-storeyed masonry blockhouse (Annexures, Figure 1) which was widely used and is the archetypal and still the most easily recognised masonry blockhouse pattern. But a study of the structures has revealed a great deal of freedom given to Royal Engineers officers in designing masonry blockhouses and this in turn has created a number of different regional design types. These have been classified as follows:

2.1 Standard Pattern. This type is based on Major-General Wood's design and is found extensively along the Cape Town-Warrenton railway line (which include our study subjects at Wolseley), at Stormberg Junction [EC] and Burgersdorp [EC] (NM) on the East London-Aliwal North railway and defending the towns of Aliwal North [EC] (Buffelspruit Blockhouse NM) and Harrismith [FS]. Along the railway lines, these structures defended major river bridges and stations. The plan size is 6,1m square externally and they were built of mortared stonework (often quarried at the site) or, in a few cases, of unreinforced concrete. (Annexures, Plate 1). Entry to these buildings is by ladder to a first floor doorway into the main living level, from where ladders led down to the ground floor storage level and up to the observation level on the second floor. (The only exception to this arrangement is at Orange River Station [NC] which is only two storeys high, having omitted the storage floor.) The entrance has a stable door of thick steel, steel-shuttered windows in the other three walls at this level give extra light and the walls are loopholed at all levels, the loophole plates being 12mm steel and sometimes doubled in thickness. At two diagonally opposite corners of the 2nd floor, two cantilevered steel angle (*machi-couli*) galleries allowed the garrison to give flanking fire along the walls. The blockhouse is covered with a pyramid-shaped or gabled roof of corrugated iron and timber, with gutters and downpipes which collected rainwater into a tank at ground level; this often meagre supply was supplemented by the delivery of water by train or by water wagon from the nearest town, and food, mail and other necessaries were supplied in similar manner. Canvas *'drops'* were provided to close the gap between the wall top and the eaves of the roof on the 2nd floor and these could be rolled up in fine weather. (Figure 2,). Most Standard Pattern blockhouses are accessible for inspection on the outside but, because of the high-level entrance, access to the interior is difficult without a ladder. Examples which are readily accessible inside are to be found at the recently-restored ones at Beaufort West [WC], Modder River [NC] near Kimberley and the two at Burgersdorp [EC] (NM). Examples that can be visited in the Western Cape are at Wellington (NM) (Plate 3), Hermon (Plate 4), Tulbagh (Plate 5) two at Wolseley (Plates 6 & 7) and on the N1 a few km beyond Lainsberg (Plate 8). The ones at Hermon and Tulbagh are in a sad state of disrepair (there apparently are a number of blockhouses still in existence along the Worcester-Touws River-Beaufort

West line of which no information regarding the condition is currently available due to their remoteness/inaccessibility – comment: Maj Tony Gordon, SAMHS, Cape Town Branch).

Numerous variations of the multi-storey blockhouses, as designed by Major-General Wood, existed, and luckily, due to their sturdy construction, most are still in existence. Their condition varies: some are protected as National Monuments (NM), whilst others are preserved by tourist organisations and/or concerned individuals. Sadly, a number have fallen into disrepair or had been vandalised.

2.2 Magaliesberg pattern. A most distinctive design is to be found defending the passes and high points of the Magaliesberg to the west of Pretoria. These examples feature crenellated parapet walls (like a mediaeval castle) rising above a flat roof.

2.3 Daspoortrant pattern. This type is peculiar to the mountain ridges around Pretoria and is characterised by a regular rectangular plan (6,1 to 6,25m wide by 11,0 to 11,3m long externally) and timber ground floors. The pattern is mostly represented today only by foundations.

2.4 Vereeniging pattern. This very distinctive design was restricted to the main Cape Town-Pretoria railway line between Vereeniging and Elandsfontein (present-day Germiston), but is now represented by the sole example at Witkop.

2.5 Orange River Octagonal pattern. This type is square with the four corners cut off, three-storeyed with a shallow-pitched corrugated roof rising to a central ventilation turret. The entrance is at 1st floor level, reached by a steel ladder against the wall to a landing outside the door.

2.6 Aliwal Hexagonal pattern. This pattern is two-storeyed under a corrugated hexagonal 'umbrella' roof, with a similar gap between the parapet and the eaves as in the Standard pattern.

2.7 The *'one-offs'*. In addition to the 'series patterns' already described, there is a wide variety of masonry blockhouses - there appears to be only one example: Warmbaths [NP] is a curious hybrid. Its plan of 6,15m square, 1st floor entrance facing the railway and regular ground floor loopholes accord with the Standard pattern, but the irregular window and loophole arrangement on the 1st floor make it a Standard Pattern variant. At Krugersdorp, Fort Harlech Blockhouse [G] is inside the town boundaries. It is 2-storeyed, rectangular in plan with the corners cut off and is flanked by two angle bastions which are larger in plan and height than those at Witkop. It has lost its upper floor and the roof has been altered, but it retains its steel door and loophole plates at both levels. The blockhouse at Prieska [NC] (NM) is hexagonal in plan and its most memorable feature is the bulbous profile of its walls, which are built of mortared tiger's eye quartz. At Jacobsdal [FS] the blockhouse is single-storeyed, 6,2m square and is remarkable for the internal wall thickening or firing step which probably gave access to the loopholes, which are placed 2,2m above the floor. Noupoort [EC] blockhouse gives the impression of a converted windmill. Circular in plan and tapered, the whitewashed stone tower is about 7m high with the entrance in a small gabled extension to the corrugated umbrella roof. The well-known small fort perched high on a rock above the R62 road at Cogman's Kloof [WC], 3km south

of Montagu, is included in this category because of its mortared stonework construction and the presence of an internal stonework platform for a water tank, which seems to indicate that the building originally had a roof from which the rainwater was collected. Lastly, there are two large forts in Pretoria [G] which were built by the Royal Engineers, namely Quagga Redoubt on the ridge north of the suburb of Laudium and East Fort on Strubenkop in Lynnwood. Both incorporated blockhouses in the circuit of their walls and both have been damaged by the construction of reservoirs.

3. Drystone Infantry Forts

These structures were irregular in plan, often incorporating natural features such as rock outcrops or followed the contours, were built in dry unmortared stonework by infantry regiments, sometimes for occupation by the regiment for a limited period until it moved on, whilst others were garrisoned for longer periods. It should be borne in mind that a large proportion of the soldiers who took part in the Anglo-Boer War were civilian volunteers who came from all walks of life, including rural men who were used to building stone walls in their civilian jobs and would form the nucleus of fort-building crews in their regiments. The temporary rock sangars constructed in the early phase of the construction of the blockhouse line between Lamberts Bay and Calvinia can also be included in this category.

Examples still in existence are:

3.1 Fort Cornwall, Irene [G], has a small drystone structure with steeply battered outer wall faces on the crown of Cornwall Hill, surrounded further out by trenches and dugouts cut into the rock of the hilltop. They were constructed by the Duke of Cornwall's Light Infantry Brigade who garrisoned the hill after Lord Roberts' army captured Pretoria in June 1900.

3.2 Pienaarspoort [G], where the Delagoa Bay railway cuts through the eastern extremity of the Magaliesberg 25km east of Pretoria, has a series of at least 6 forts south of the poort and a further 2 to the north of all shapes and sizes.

3.3 Eagles Nest Fort, Meredale, Johannesburg [G], is a boot-shaped fort nearly 50m long by 6 to 13m wide.

3.4 Rustenburg [NW] has a series of 6 forts on the south-eastern outskirts of the town, and a concentric circular fort still surrounded by its sentry walk defending the pass at Olifantsnek on the R30 road 16km south-east of the town.

3.5 Heidelberg [G] was defended by two large forts on hills to the north-east and southeast of the town.

4. Town Guard Forts

This type of fort was built usually in unmortared stonework by part-time troops who served in the local Town Guard, and these forts are generally situated close to the town concerned.

4.1 Upper Van Stadens Dam Forts, Port Elizabeth [EC]. These small structures are situated 35km west of the town, on the hill overlooking the dam.

4.2 Jansenville [EC] has a fine rectangular fort measuring some 15m by 21m on a hill north of the town, unique for its "protection" by "noorsdoring" (a spiny cactus) which deterred the Smuts Commando assaulting it as they bypassed the town in September 1901.

4.3 Knysna Fort (Thomson's Folly) [WC] has a plan like a small mediaeval castle, with a drystone perimeter wall following the contour of the hilltop and enclosing an area about 35 x 32m.

4.4 Uniondale Fort [WC] (NM), to the south of the town, has a circular loopholed wall about 8m in outside diameter with an external entrance passage, all built of stone with mud "dagha" (mortar), but the building has been considerably restored.

CONCLUSION

The fortifications of the Anglo-Boer War represent the end of a British tradition in building castles and forts in stone which stretches back a 1 000 years and covers a large part of the world. The mortared masonry blockhouses and some of the drystone forts are fine specimens of the stonemason's art, and the variety of designs by the Royal Engineers' officers reflect the freedom for initiative which was the hallmark of previous centuries, which was largely eliminated by centralised design in the 20th century. The blockhouses are an important contribution to the built environment and to our historic heritage and remain a highly visible reminder of the war. The Western Cape is extremely blessed in that some of the finest examples of the surviving 50-odd blockhouses, mostly constructed of mortared stone or concrete, are accessible by main road only a daytrip away from Cape Town.

C. THE WELLINGTON & WOLSELEY BLOCKHOUSES

1. The Blockhouse at Wellington

Some of the historical monuments in the Berg River Valley link the history of the area with that of the far interior of the country. This is especially true of the blockhouse on the farm Versailles just north of Wellington railway station, which was proclaimed as a National Monument in 1937. It guarded the railway bridge over the Berg River and is reached from the road to Hermon (R44). (Plate 3, Map 2)

The Wood/Standard Pattern blockhouses were more massive and permanent in structure than the Rice Pattern corrugated iron blockhouses, and were erected to defend key positions like bridges, entrances to towns, and so on. Proof of their value is the fact that during Kitchener's command not a single important bridge was destroyed by the Republican forces. Many of them can still be seen along the main South African railways and the blockhouse at Wellington belongs to this type.

Although these blockhouses were built for specific purposes, they were integrated in the

network of thousands of blockhouses that by 1902 criss-crossed the two Boer Republics, Natal, Bechuanaland (Botswana) and the Cape Colony.

Not much is known about the construction date or details, but investigation into the local church-, newspaper-, state archives or the SA Library should turn up more information.

2. The Blockhouses at Wolseley

As above, with the exception that the Wolseley blockhouses were never declared as National Monuments. They served to protect the railway bridge over the Breede River that flowed south-eastwards to discharge into the Indian Ocean. The blockhouses are accessible off the R46 route, but are located on privately-owned land. (Plates 6 & 7)

D. REFERENCE

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Collated & arranged from the above-listed sources by JOHAN VAN DEN BERG, April 2009.

E. ANNEXURES

Figure 1: 'Type of two-story masonry blockhouse' (actually three-storeyed). This is Plate XIV from 'The Blockhouse System in the South African War' by Bt-Col. E H Bethell (Professional Papers of the Royal Engineers, Occasional Series, 1904, Paper XII).

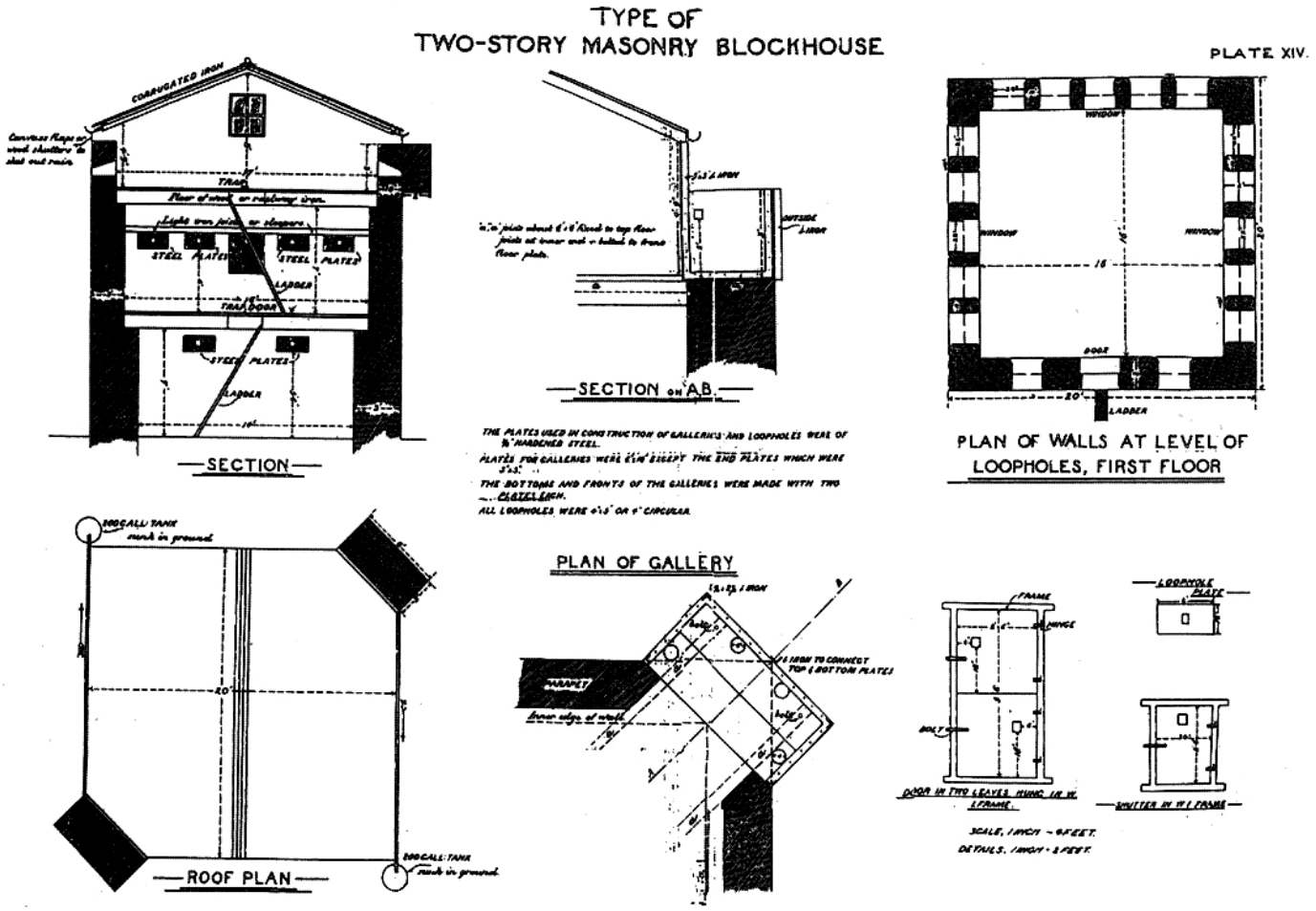

Figure 2: A typical Standard pattern blockhouse, plans and section (Modder River Bridge NC).