NATIONAL HISTORIC PARKS AND SITES BRANCH

MANUSCRIPT REPORT NUMBER 154

THE HALIFAX CITADEL, 1825-60: A NARRATIVE AND STRUCTURAL HISTORY, Part 2,

by

JOHN JOSEPH GREENOUGH

Volume 3

(SEPTEMBER 1974)
PARKS CANADA

DEPARTMENT OF INDIAN AND NORTHERN AFFAIRS

The Halifax Citadel, 1825-60:
A Narrative and Structural History,

by John Joseph Greenough

September 1974

Part 2

Volume 3

The Manuscript Report Series is printed in a limited number of copies and is intended for internal use by the Department of Indian and Northern Affairs/Affaires indiennes et du Nord. Copies of each issue are distributed to various public repositories in Canada, for use by interested individuals.

Many of these reports will be published in Canadian Historic Sites/Lieux historiques canadiens, and may be altered during the publishing process by editing or by further research.

The Halifax Citadel, 1825-60:

A Narrative and Structural History

by John Joseph Greenough

Part 2

Tables

Illustrations

Walls

1 The Escarps

Of all the individual features of the Citadel, the escarp walls caused the most grief. Designed to inadequate specifications, they were, from the first, likely to collapse. They were redesigned several times and were not entirely completed until the mid-1840s. Even then, substantial portions of the escarp wall were of dubious quality, and remained problematical right down to the completion of the work and beyond.

The origin of the problem is discussed more fully in Part 1. It should suffice to say that Colonel Nicolls proposed escarps of a thin profile in order to save money. His proposals were approved, and the first call for tenders for the construction of the escarp was issued on 12 November 1828[1] (see Section 6 and Fig. 54, below). The escarp to be built by contract included the two faces of both the western demi-bastions and the flank of the southwest demi-bastion. The walls were duly constructed in the summer and fall of 1829, and Nicolls pronounced himself satisfied with the work. Late in the fall of the same year, he called for tenders for another large portion of the

escarp[2] (see section 6, below). The work this time was on the northern and southern fronts and was virtually completed by the onset of the winter of 1830-31. Nicolls again issued specifications for another stretch of wall, and this time, having expressed his complete satisfaction with the work done by the two contractors during the preceding summer, allowed the contracts to be given without tenders to the same gentlemen.[3] In all, the three sets of contracts called for the construction of 2,120 feet of wall; and, had all gone well, almost all the escarp walls of the body of the Citadel would have been complete by the fall of 1831. Things did not, however, go well. On 9 December 1830, 51 feet of the escarp in the southwest demi-bastion collapsed.[4] A few weeks later, another 70 feet of escarp (this time in the northwest demi-bastion) also collapsed.[5] The consequences of these two events were extremely serious; they led to a questioning of the entire original design, and, ultimately, to many of the problems which delayed the completion of the Citadel for almost 15 years.

The difficulties encountered in building the escarps did not by themselves cripple the progress of the work. A second factor was involved. In September 1831, Nicolls proposed the substitution of a redan for a curtain and ravelin on the eastern front.[6] Even as he made the suggestion, the last of the escarp on the north, south and west fronts was being completed. By the fall of 1831, the escarp

was complete to the end of what would have been the east face of the eastern demi-bastion (in the original plan) which was now the eastern face of the salients. As long as there was uncertainty about the future of the eastern front, no more escarp could be built.

Two very different kinds of escarp were built in the summer of 1831. The last set of contracts was honoured and, for the last time, civilian masons laboured on the escarp walls. They built the curtain and parts of the salients (as they were to become). The escarp built in these areas, though somewhat more substantial than the work which had collapsed, was still very like it (see Fig. 56). But the escarp designs for the rebuilding of the breach in the northwest demi-bastion was entirely different. The replacement wall was designed and constructed by the Engineer department, and was a full three feet thicker at the base than the original wall had been. In addition, the new wall was buttressed up to its full height; the old buttresses had stopped at the top of the batter.

The condition of the walls in the fall of 1831 is set forth in Table 1 below (see also Fig. 55). The rebuilding of the failed right face of the northwest demi-bastion in the summer of 1831 led to a ridiculous situation, wherein part of the wall was almost immeasurably stronger than the adjacent sections - a fact which made it obvious that some major rebuilding was necessary. There was, however, neither

money nor authority for rebuilding, and the entire matter waited for the approval of a revised estimate for the completion of the work. This was not forthcoming until 1838. In the meantime, only the breach in the northwest demi-bastion was rebuilt.

The provisions of Colonel Jones's revised estimate (1836) finally settled the issue. The estimate definitely established the shape of the fort (the proposal for a redan was accepted) and estimated for the necessary repairs and renewals in the western bastions. The work in the western bastions was calculated to involve the following:

Right face N.W. Bastion ----- 62 feet
Left - d° --"- --d° -- 60 -"-
Flank in d° -"- -d°- 434 -"-
Right face S.W. Bastion ---- 200 -"-
Left d° -"- -d°- 63 -"-
Flank - d°- -"- -d° -- 35 -"-[7]

The estimate also provided for escarps to close up the eastern front. In all, Jones estimated for the construction or reconstruction of all of the redan, about 45 feet of the eastern faces of both the eastern salients at the redan ends, virtually all of the southwest demi-bastion (except for part of the flank) and about a third of the northwest demi-bastion (see Section 7 and Figs. 57-8, below). About another third of the northwest demi-bastion had already been rebuilt. With the execution of the provisions of Colonel Jones's

Table 1: The condition of the Citadel escarp walls in the fall of 1831

Location	Comments
Southwest demi-bastion	
Flank	Built in 1829; cracked.
Right face	Built in 1829; cracked, bulging and winding, with a 51-ft. breach beginning about
Left face	First 111 ft. 9 in. from salient built in 1829; large bulge about 35 ft. from salient; wall separation from arches of casemates of defence. Remainder of face built in 1830 and still good.
Southwest salient	
Right face	Built in 1830 and still good.
Left face	First 200 ft. built in 1830-31, still good; remainder not yet built.
Redan	Not begun.
Northeast salient	
Right face	Last 140 ft. before salient built in 1830-31, still good; remainder not yet built.
Left face	First 180 ft. beyond the salient built in 1831, good; remainder built in 1830, still good.
Northwest demi-bastion	
Right face	First 45 ft. after re-entrant built in 1830 and still good; remainder built in 1829; wall had separated from arches of casemates of defence and a bulge had appeared at the salient.
Left face	Entire wall built in 1829. In 1830, a 137-ft. breach developed which began almost at the salient. Breach had been rebuilt up to a height of about 15 ft. in 1831. Behind the rebuilt parts, "square wooden tubes" were installed to conduct water to 3 weepers in wall. Of remaining wall, a 15-ft. section at salient was "winding and bad" and a 45-ft. section at the other end was "winding".
Flank	Built partly in 1829, partly in 1830; still good. "Built against a natural bank of stiff blue clay".
Curtain	Built mostly in 1831; still good.

(Source: Plans 01-1832-2-1 and 14-1832-2-5.)

estimate, therefore, only a comparatively small portion of the escarp built before 1832 was left standing. This included the whole of the west curtain, about an eighth of the flank of the southwest demi-bastion, the south front escarp between the casemates of defence in the southwest demi-bastions (Nos. 59-60) and the salient, the corresponding stretch on the north front, and the eastern faces of the eastern salients from the salient to within about 45 feet of the redan.

Three sorts of escarp wall were proposed in the revised estimate. The type intended for the rebuilt sections was a modified version of the escarp used in the rebuilding of the breach in the northwest bastion. The escarp proposed for the redan was designed especially for a casemated rampart, and was therefore somewhat thinner than that proposed for the western bastions, which were to be uncasemated. At the salient of the redan, there was a short stretch of escarp (220 feet) which had no casemates behind it. Since this was also the highest escarp wall in the fortress, it required greater strength than the rest of the redan escarp and was designed accordingly.

The new escarp walls were completed by 1843. In that year, however, Colonel Calder decided that the old escarp in the northeast salient was no longer adequate, "the Climate having...so acted on the Masonry as to render it doubtful whether it will sustain the weight & pressure of

the Ramparts."[8] Part of the rampart in question had already been casemated, and Calder proposed to casemate the rest. He proposed to tear down the old escarp to its foundation (which would, he thought, be adequate to bear the weight of the new wall) and erect on it an escarp similar to that in the redan. Like the redan, two escarp sections were designed - a relatively thin one for the casemated sections and a thicker one for the salient and easternmost part of the right face of the northwest demi-bastion, which would have to bear the full weight of the rampart (see section 8, below, and Part 1, Fig. 8).

All of the Citadel escarps were completed in their final form by the end of 1847, and were little modified thereafter. The top of the escarp and its coping were altered in the casemated portions of the rampart to assist in the drainage and staunching operations (see "Casemates", above) but this had no visible effect on the shape of the wall.

The implementation of the provisions of the 1843 estimate left only small portions of pre-1832 masonry escarp standing, and these were left alone until the early 1850s. By then, most of the old masonry had begun to look exceedingly decrepit. Some of the junior engineer officers began to wonder whether it would not be necessary ultimately to rebuild, but, in the end, the old walls survived, and the only work undertaken on them was in repointing them.[9]

Even as the walls were being repointed, they attracted the attention of Major General Le Marchant, who, in drawing up the questions put to the 1856 committee investigating the state of the Citadel, put particular emphasis on the state of the masonry. There were no fewer than 20 questions on the subject, ranging from general queries to specific and pointed enquiries about the type of stone used and the wording of the contracts under which (as Le Marchant thought, erroneously) most of the old work had been done. In the end, the committee delivered itself of the opinion that the walls, though hardly all that they should be, could, with care, be expected not to fall down "for many years."[10]
(See section 10, below.)

2 The distribution of escarp types

The accompanying tables detail the various profiles used in the construction of the Citadel escarps. There are surviving examples of each type, with the exception of the thinnest of the contract escarps. As a general rule, the older escarps are faced with ironstone and the newer ones with granite. There are, however, exceptions; some of the rebuilt escarps in the western demi-bastions were faced with ironstone.

The escarp profiles in the Citadel at the end of the 1850s were distributed as follows:

West curtain

Built in 1830-31 according to the contract specifications and never rebuilt. See Table 2 and Figure 56.

Northwest demi-bastion

Flank: Built in 1829-30 and never rebuilt. See Table 2 and Figure 56.

Left face: Originally built in 1829-30 (Fig. 54); rebuilt beginning in 1831. See Table 3 and Figures 56 and 58.

Right face: Originally built in 1829-30 (Fig. 54). All but the last 47 feet before the salient taken down and rebuilt in the late 1830s (Table 3 and Figs. 56 and 58). The remainder was taken down and rebuilt in the mid-1840s (Table 5 and Part 1, Fig. 8).

Northeast Salient

Left face: Built in 1830-31 (Fig. 56); taken down and rebuilt in the mid-1840s (Table 5 and Part 1, Fig. 8).

Right face: Originally built to within 45 feet of the re-entrant in 1830-31 (Fig. 56); this portion taken down and rebuilt in the mid-1840s (Table 5 and Part 1, Fig. 8). The remaining 45-foot portion of the wall was constructed in the late 1830s (Table 4 and Fig. 57).

Redan

Built in the late 1830s and early 1840s (Table 4 and Fig. 57).

Southeast salient

Right face: Built to within 45 feet of the re-entrant in 1830

and never rebuilt (Table 2 and Fig. 56). The remaining 45-foot portion was built in the late 1830s (Table 4 and Fig. 57).

Left face: Built in 1830-31 and never rebuilt (Table 2 and Fig. 56).

Southwest demi-bastion

Left face: Originally built in 1829-30 (Table 2 and Figs. 54 and 56). The last 63 feet before the salient were ultimately rebuilt (Table 3 and Fig. 58); the remainder of the work built in 1830 was never rebuilt.

Right face: Originally built in 1829 (Table 2 and Fig. 54); entirely rebuilt subsequently (Table 3 and Fig. 58).

Flank: Originally built in 1829 (Table 2 and Fig. 54); all but an eighth of it subsequently rebuilt (Table 3 and Fig. 58).

Table 2. The Contract Escarps

Showing the minimum and maximum dimensions of escarps built under contract, 1829-31.

Escarps

Footing: 7 ft. 8 in. x 3 ft. deep to 8 ft. 6 in. x 3 ft. deep.

Height: 25 ft. (no variation).

Thickness (base): 7 ft. to 8 ft.

Thickness (top): 4 ft. to 6 ft.

Building material: Ironstone.

Counterforts

Placement: 13 ft. to 14 ft. apart.

Dimensions: 4 ft. x 5 ft. (no variation).

Height: 20 ft. to 25 ft.

Footing: None.

Table 3. The Rebuilt Escarps

Showing the variations in the standard design for rebuilding the defective escarps built to the contract specifications.

Escarps

Footing: 10 ft. 6 in. x 3 ft. deep to 10 ft. 8 in. x 3 ft.

Height: 25 ft. (no variation).

Thickness (base): 10 ft. (no variation).

Thickness (top): 7 ft. 6 in. (no variation).

Building material: Ironstone; faced with granite in at least one instance.

Counterforts

Placement: Not known.

Dimensions: 5 ft. x 5 ft. to 7 ft. x 5 ft.(?)

Height: 25 ft. (no variation).

Footing: None, to 3 ft. x 7 ft.

Building material: Ironstone.

Table 4. The Redan Escarps

Showing the mean dimensions of the escarp of the casemated section of the redan and the first 45 feet of the adjoining faces of both salients.

Escarp

Footing: 9 ft. wide x 9 ft. 6 in. mean depth.

Mean height: 30 ft. 6 in.

Mean thickness: 5 ft.

Counterforts: None (the casemate piers served the purpose).

Building materials: Ironstone faced with rough granite ashlar masonry.

Showing the mean dimensions of the escarp at the redan salient (the uncasemated part of the wall).

Footing: 9 ft. wide x 11 ft. deep.

Mean height: 38 ft.

Mean thickness: 9 ft.

Counterforts: 3 counterforts, each 10 ft. x 5 ft. x 38 ft. high with footings 10 ft. x 5 ft. x 11 ft. deep.

Building materials: Ironstone faced with rough granite ashlar masonry; counterforts of ironstone.

Table 5. The Northeast Salient Escarp

Showing the dimensions of the escarp for the casemated parts of the salient.

Footing: 8 ft. x 3 ft. deep.

Height: 25 ft.

Thickness (base): 7 ft. 8 in.

Thickness (top): 4 ft.

Counterforts: None (the casemate piers served the purpose).

Building materials: Ironstone faced with rough granite ashlar masonry.

Showing the dimensions of the escarp for the uncasemated part of the salient and the first 47 ft. of the adjoining face of the northwest demi-bastion.

Footing: 8 ft. x 3 ft. deep.

Height: 25 ft.

Thickness (base): 7 ft. 8 in.

Thickness (top): 6 ft.

Counterforts: Each 25 ft. high x 5 ft. thick, width not known; footing 5 ft. thick x 3 ft. deep, width not known.

Building materials: Ironstone faced with rough granite ashlar masonry; counterforts of ironstone.

3 The counterscarp

Work on the counterscarp was begun in 1829 and was not completed until 1848. Unlike some of the other elements in the Citadel, the long delay was not the result of faulty original design. The main reason was that the counterscarp, being one of the less important features in the fortress, was allowed to languish while the more essential elements were completed. Nonetheless, the design changes in the mid-1830s did result in a radical alteration in the shape of the counterscarp gallery, and the construction of it and the counterscarp was not without incident.

The counterscarp, gallery and mines served three seperate functions. The counterscarp covered the escarp from distant cannon fire; the gallery provided flanking fire for the ditch and access to the mines; the mines were intended as a defence against sapping operations by a beseiging army. The gallery also provided additional structural strength for the counterscarp. In the original design of the Citadel, the counterscarp was provided with a uniform, continuous-arch gallery running the entire circumference of the fortress. At regular intervals on all four fronts, countermines branched off the main gallery. At eight points the gallery widened, at each of the four demi-bastion salients and at each of the re-entrants on the eastern and western fronts. The four stretches of enlarged gallery at the re-entrants were opposite the sally ports, and it is

possible that they were intended as a sort of entrance hall to the rest of the gallery. Unfortunately, none of the surviving plans shows any access doors leading to the gallery at any of the re-entrants, so that there is no way of proving this hypothesis (see Fig. 68). The four stretches of enlarged gallery at the salients were the so-called casemates of reverse fire. They were intended to provide concentrated flanking fire for the ditch, and were particularly important on the north and south fronts, where there was no other source of flanking fire (see Fig. 63).

By the time of the wall failures and the subsequent crises of the early 1830s, about two-thirds of the counterscarp and gallery on the west front and about three-quarters of that on the north front were either completed or under construction (see Fig. 55). Indeed, when Colonel Boteler took over, the counterscarp was one of the few parts of the fortress which he felt he could proceed with without altering the original design.[11] He soon found that he was wrong. The ditch opposite the left face of the northwest demi-bastion deepened between the flank and the salient. This, in turn, meant that the loopholes would be 6 ft. 3 in. above the floor of the ditch at the west ravelin end of the counterscarp and 9 ft. 3 in. above it at the salient. Colonel Nicolls's plans were, as usual, ambiguous about his intentions for this particular stretch of gallery, and Boteler was forced to write London to request an opinion.[12] The correspondence on the

subject dragged on for months - also, as usual. At one point, Boteler dispatched a plan of the gallery as designed by Nicolls, showing the alternative arrangements (see Fig. 63).[13] At another point, Sir Alexander Bryce, the Inspector General, sent a plan showing his proposed alterations in the manner of construction (see Fig. 64).[14] The Inspector General's plan is interesting, since it provides a clue for the changes which were ultimately made in the shape of the gallery. General Bryce feared that those defending the gallery in case of attack would be vulnerable to grenades thrown by attackers in the ditch, and this, presumably, was the reason for the suggestion for a segmental or compartmentalized gallery contained in his plan. The proposal still envisaged a continuous arch, but it also envisaged dividing the gallery into sections, each one containing three loopholes. This proposal was not adopted, but it did provide the germ for the major alterations proposed for the gallery a few months later.

The casemate of reverse fire opposite the northwest demi-bastion continued to give trouble throughout the summer of 1832. The engineers soon discovered that the casemate was being constructed on "made ground" - that is, ground which had been built up with earth from elsewhere. This meant that the footings had to be sunk to relatively great depths in order to be secure.[15] As the counterscarp neared the salient, the problem got progressively worse. From a

standard 6 ft. 6 in. footing, the depth was increased to 9 ft. 9 in., to 11 ft. 9 in., and finally to a full 14 ft. (see Fig. 67). This added considerably to the expense, and seems to have absorbed most of the funds allotted for that particular stretch of gallery. It is not entirely certain, but it seems likely that, when the footings were completed, work on the counterscarp and gallery stopped and was not begun again for another six years.

In the meantime, the whole question of the shape of the fort was being thrashed out. In the winter of 1832-33 no fewer than seven different estimates for the completion of the Citadel were drawn up. All seven of them, in one way or another, were based on the assumption that economies had to be made, and one feature of the fortress which could be built relatively cheaply was the counterscarp gallery.

The various proposals put forward in the winter of 1832-33 mostly involved the elimination of elements of the original plan. In one of Boteler's estimates, a proposal was put forward to build the gallery and mines as planned on the west and north fronts and omit them entirely on the other two.[16] Boteler was, however, not very happy with this arrangement, and drew up a second estimate with the intention of showing the cost of (among other things) the entire gallery and mines as originally planned.[17]

Captain Peake's ideas were more radical. He wanted to leave out not only the gallery and mines, but also the

counterscarp itself on the eastern front.[18] This was a little extreme for anyone, and, in the end, a compromise was reached. In Colonel Jones's estimate, drawn up in the winter of 1833-34, the gallery was reinstated along the entire circumference of the fort, and only the countermines intended for the southern and eastern fronts were deleted.[19] (See section 9, below.) This proposal was accepted.

In the course of sorting out the extent of gallery required, the whole basic design was altered. The person most responsible for the changes seems to have been Captain Peake. His design for the gallery consisted of a series of linked arched cells with both counterscarp and rear wall of the gallery sharing a common footing (see Fig. 65). The design was adopted by Jones, who altered it somewhat by redesigning the dos d'anes and doors; in this modified form, the design was accepted (see Fig. 66). The reasons for the change are not easy to determine. One supposes that at least a part of the reason for Peake's design was its resemblance to General Bryce's suggestion. In addition to this, the new design was believed to be cheaper to build than the original.

After the revised version of Jones's estimate was approved in 1838, work was resumed on the counterscarp and gallery and continued for another ten years. Most, but not all, of the gallery constructed after 1838 was built to the new design (see section 4, below). A few portions were

built to the original specifications. The casemates of reverse fire were abandoned altogether, and the segmental design was used at the salients, with the addition of more loopholes.

The troublesome casemate of reverse fire at the north-west demi-bastion salient may well have been built as a hybrid. The footings, as we have seen, had been constructed in 1832 before the design for the gallery was changed. The gallery itself, however, was built to the new segmental pattern. Since the new pattern was designed with a different type of footing, one can only conclude that the gallery at the salient deviated somewhat from the standard plan. Either that, or the counterscarp has, at that point, the phenomenal footing of 14 ft. by 12 ft.

4 Distribution of counterscarp types

The accompanying tables detail the specifications of the two patterns of counterscarp wall in use at the Citadel. The text of the counterscarp items of the 1836 estimate (see section 9, below) gives some indication of the distribution of the two kinds of gallery, but it is not, apparently, entirely accurate. The following list is derived from a study of the 1847 ground plan of the Citadel,[20] and describes the gallery as finally constructed.

West front: All but about 80 ft. at the south end and about 70 ft. at the north end was constructed according to the original continuous-arch pattern (see Table 7 and Figs. 62, 66 and 68). There were two sections of gallery built wider (by about 2 ft.) than the rest at the re-entrants, and the purpose of these sections is unknown. The remaining portions of the west front were constructed according to the segmental design (see Table 6 and Figs. 66, 67 and 69). The section of the gallery at the salient of the northwest demi-bastion may well have been a hybrid (see section 3, above). The entire front was provided with countermines at 50-ft. intervals. These were of the regular "T" shape, with a 20-ft. main gallery leading to a gallery about 23 ft. long. There were two exceptions to this, the first countermines on each side of the re-entrants, each of which was "L"-shaped, with a short gallery running off the bottom of the "L".

North front: All of the gallery, with the exception of about 60 ft. on the west end and about 70 ft. on the east end, was constructed according to the continuous-arch pattern. The section at the salient of the northwest demi-bastion, constructed to the segmental pattern, may very well have been a hybrid, as described above. The section at the east end of the counterscarp was built to the segmental pattern.

East front: The entire front was built to the segmental pattern. The chambers at the salients and re-entrants deviated slightly from the standard design.

South front: The entire front, except for a short section at the west re-entrant, was built to the segmental pattern. The 30-ft. section at the re-entrant was built according to the old continuous-arch pattern.

Table 6. Variation in the Dimensions of the Counterscarp, Continuous-Arch Pattern

Counterscarp

Footing: 6 ft. to 6 ft. 2 in. wide; 3 ft. to about 5 ft. deep.

Height: 16 ft. to 18 ft. 3 in.

Thickness (base): 5 ft. 6 in. to 5 ft. 8 in.

Thickness (spring of arch): 3 ft. 10 in. to 4 ft. 6 in.

Thickness (top): 3 ft. to 4 ft. 6 in.

Gallery

Dimensions (interior): 4 ft. wide x 7 ft. high to crown of arch (no variation).

Arch: 1 ft. to 1 ft. 6 in. thick; 4 ft. span.

Dos d'ane: Masonry covering sloping from the counterscarp to the rear wall, covered with tiling laid in cement; some variation in the dimensions, but none in the basic shape.

Rear wall: 2 ft. thick (no variation).

There are two portions of gallery, one at each re-entrant on the western front, which are somewhat wider than 4 ft. No sections of this gallery (in the sense of plans) are known to exist, and there is no documentation for them. See Figure 68.

Table 7. Variation in the Dimensions of the Counterscarp, Segmental Pattern

Counterscarp

Footing: 12 ft. wide; depth varies from a minimum of 4 ft. 6 in. to a maximum of 12 ft.

Counterscarp: 2 ft. 6 in. thick; from 16 ft. to 18 ft. high.

Gallery chambers

Dimensions: 9 ft. long x 6 ft. 6 in. wide x 8 ft. 3 in. to crown of the arch (no variation).

Embrasures: 3 per chamber at all salients; 2 per chamber at the re-entrants; one per chamber for the remainder of the gallery.

Arch: 1 ft. 6 in. thick x 9 ft. span (no variation).

Dos d'anes: each arch covered with rubble masonry to form a regular roof sloping from the top of the counterscarp to the top of the rear walls; dos d'anes covered with tiling laid in cement.

Rear walls: 12 ft. 3 in. high x 2 ft. thick (no variation).

Piers: 10 ft. 6 in. high x 2 ft. 6 in. thick (no variation).

Doors: Each 6 ft. x 2 ft. 6 in. (no variation).

The above are the standard dimensions for most of the gallery chambers; those at the re-entrants and the salients of the ravelins display considerable variation in shape. For these, there is no detailed information available.

5 The rampart retaining wall

The first design for the rampart retaining wall was the work of Colonel Nicolls. As far as I have been able to determine, none of the retaining wall was ever built to Nicolls's specifications, but it seems likely that his design would have been as inadequate for the retaining wall as the escarp designs were for the escarps. When Boteler and Peake drew up their revised estimates in 1832-33, the retaining walls they proposed were substantially thicker than Nicolls's.[21]

It was Captain Peake who suggested the final design of the retaining wall for the uncasemated part of the rampart. The retaining wall was subject to the same stresses as the escarp, and there was some difficulty in designing a wall which could bear the weight of the ramparts without being excessively expensive. Peake's solution was to provide the wall with arched recesses for greater strength. This allowed the wall to have a thin profile (between $2\frac{1}{2}$ and 3 ft.). The similarity between the retaining wall designed in this manner and the segmental-pattern counterscarp gallery (also Peake's design) is striking; indeed, it seems likely that the one suggested the other (see Figs. 66 and 70).

Colonel Jones, in drawing up the version of the revised estimate which was finally accepted, borrowed Peake's design. Virtually all the documentary material we possess on the subject of the retaining wall is contained in Jones's estimate. He provided for an arched retaining wall for the west and

south fronts and for parts of the east and north fronts (see "Casemates", section 7, above, and Figs. 70 and 71). The remaining sections of the retaining wall were included in the estimate for casemates. The retaining wall for the redan, for example, was built as an integral part of the redan casemates (see "Casemates", section 7, above).

When additional casemating was proposed in 1843, no mention of the retaining wall was made in the estimate (see "Casemates", section 8). This leads to the supposition that the existing retaining wall was adapted to meet the needs of a casemated rampart. At the same time that the additional casemating was decided upon, it was found necessary to rebuild the retaining wall in front of casemates Nos. 3-4, 8 and 9, and the plans and estimates for this service are the best we possess for the type of retaining wall in use for casemated ramparts (see "Casemates", section 10, and Fig. 31).

The retaining wall was altered somewhat in the course of the staunching operations (see "Casemates", section 13 and Fig. 36). After this, no additional work was done on them until the committee examining the state of the Citadel investigated them in 1856, and reported that the walls in the southeast salient were slightly defective.[22] It was not until 1875, however, that the engineers felt it necessary to make any major repairs. In that year, a proposal was submitted for the reconstruction of the retaining wall in the southeast salient. The plan drawn up to accompany the pro-

posal is the only one available which gives accurate information about the dimensions of the retaining wall and recesses as they were actually built (see Fig. 72). The plan also shows something of the variety of uses to which the recesses were put.

The major provision of the rebuilding scheme was the addition of buttresses between every second recess. With the acceptance of the proposal and the construction of the buttresses, the retaining wall reached its final form.

6 The contract specifications, 1828, 1829 and 1830[23]

The walls built to the specifications issued in 1828 were the ones which collapsed in the winter of 1830-31. Specimens of walls built to the specifications issued in 1829 and 1830 are still standing.

> [12 Nov. 1828]
>
> Specification for building a stone Wall on Citadel Hill, 800 feet in length, with Buttresses 4 by 5 feet each, in every 14 feet, the Wall to be laid in courses as shewn on Plan.
>
> The foundation of the Wall to be 3 feet deep and 7 feet 8 inches thick, of good sound blue or iron building stone. The excavation will be performed by the Government.
>
> The Walls to be 25 feet high, 7 feet thick at the bottom and 4 at the top. - The three front feet of the Wall to be of good sound iron building stone, and the remainder of the Wall,

also the Buttresses to be of good sound iron or blue building stone. - The Buttresses to be 14 feet apart 4 x 5 feet each, and the height of the wall. -

Not any Stone to be used in the front of the Walls whose length may be less than its height.

No stone to run into the Wall less than 9 inches and every fourth stone not less than 18 inches.

In courses above 9 inches, the base of each stone to be at least equal to its height, and not any course in the front to be less than 5 inches.

If the courses be of 5 or 6 inches high, it [sic] must be formed of only one stone, but if it be 7 inches and upwards, one half of the stones used in it must be of the height of the course - the other half may be of two Stones provided neither be less than 3 inches in height - for instance if it be a 9 inch course, one half of the Stones must be of that height and the other half may be of two Stones, 3 and 6 inches or 4 and 5 inches each to make up the 9 inch course.

The bottom course next the offset not to be less than 8 inches high, formed of one stone in height.

Care must be taken to break the joints as shewn on the plan. -

The whole of the work to be performed in a workmanlike manner, to be properly bonded and well bedded in mortar. -

There will be granite stone Quoins for each Corner of the wall, which will be found and prepared by Government, and

set by the Contractor, they will be measured in the Wall to pay for the setting.

The mortar to be composed of one third of the best white Lime to two thirds of fresh Water sharp Sand.

The Contractor to find his own scaffolding and all materials except the Granite stone.

The work while in progress will be subject to the inspection and rejection of any part of it by the Commanding Royal Engineer or any person he may appoint, whose instructions and directions must be attended strictly to. -

Tenders will be received from any person wishing to contract for any part not less than 300 feet in length, to be completed before 30th October 1829. -

Payment will be made by the Ordnance Storekeeper for every hundred feet of the Wall when Completed.

Signed G. Nicolls

Comm^{g} R^{l} Eng^{r}

[15 Oct. 1829]

Specification for building a stone Wall on Citadel Hill, 1000 feet in length, with Buttresses 4 by 5 feet each, at every 14 feet. The Wall to be laid in Courses as shewn on plan, in the Royal Engineer Office.

[The specifications are identical to those quoted above, with the following exceptions:]

...In courses above nine inches, the base of each stone to be

at least equal to its height, and not any course in the front, to be less than 5 inches, and no part of the Wall, to be built more than 1 foot 3 inches high in a course....

The top and bottom courses next the offset, not to be less than 8 inches high, formed of one stone in height....

The whole of the Work to be performed in a Workmanlike manner, to be properly bonded front back and centre, and well bedded in mortar....

The work while in progress will be subject to the inspection and rejection of any part of it, by the Commanding Royal Engineer, or any person he may appoint, whose instructions and directions, must be strictly attended to and if it shews any cracks, more than a quarter of an inch, within a twelve month after being finished that part to be taken down, and made good at the expense of the Contractor, and the same if it shall bulge in any line, more than three inches....

Payments will be made by the Ordnance Storekeeper Monthly, on the proportion of the Wall being completed. -

[1 Nov. 1830]

Specification for building a stone Wall on Citadel Hill 320 feet in length with Buttresses 4 x 4 feet each at every 13 feet the Wall to be laid in courses as shewn on Plan in the Royal Engineer Office.

[Similar to the two preceding specifications, incorporating all the alterations in wording used in that dated 15 Oct. 1829.

The differences are in specification:]

[Paragraph 1:] The foundation of the Wall to be 3 feet deep and 6 feet 8 inches thick of good sound iron or blue building stone - The excavation will be performed by Government.

[Paragraph 2:] The Wall to be 25 feet high and 6 feet thick at bottom and 4 feet at top as per Plan, - The three front feet of the Wall to be of good sound iron building stone and the remainder of the Wall, also the Buttresses, to be of good sound iron or blue building stone, the Buttresses to be 13 feet apart 4 x 4 feet each, and of the height of the Wall.

7 The escarp items of the 1826 estimate[24]

Item 1 of the following estimate details the materials used in the construction of the redan escarp. The subject of the main drain included in this item is discussed in "Drainage".

The escarp estimated for in item 19 is the standard type for rebuilding uncasemated portions of the Citadel escarp. Walls of this profile had already been constructed when the estimate was drawn up. The sections of the escarp wall described in the preamble to the estimate were all reconstructed in the manner described here.

The west ravelin gorge, also treated in item 19, was never rebuilt in this manner (see "Ravelins", below).

Item 1: Escarp Eastern front, and Main Drain

This item provides for 600 feet of Escarp of the dimensions shewn in the Section plan N^{o}. 2 taken at the mean height. - The masonry to be iron stone faced with rough granite ashlar, which is worked at the same rate as iron stone, set alternately headers and stretchers, [?] from one foot to one foot six inches, joints 8 inches, and a draft of one and a half inch round the face of each stone as shown by the annexed sketch.
[Illegible comments, apparently added to the report in London. Sketch of wall; scale: 2 ft. to 1 in.]

The main drain to be built according to the dimensions shewn below, following a natural slope of the ground, to join on with the Main Town drains; the bottom of the drain to be laid with iron stone flagging procurred from the Government Quarries, as the cheapest mode. [Section of proposed drain. Scale: 2 ft. to 1 in. A marginal note appended to the sketch, probably in London, suggests a "concave floor", and the section is crossed out in pencil - see below.]

The excavation is for the foundation of the Escarp, 600 feet in length, 10 feet wide, and an average depth of 10 feet 3 inches. - The masonry for the foundation is for 490 feet in length, 9 feet wide and a mean depth of 9 feet 6 inches; also for 110 feet in length, 9 feet wide and 11 feet deep, for the portions near the Salient; and 3 Counterforts, 10 feet in length, 3 feet mean bredth [sic] and 11 feet deep: - The remainder of the Masonry is for the Escarp above foundation;

490 feet long, 5 feet mean breadth, and $30\frac{1}{2}$ feet mean height; 110 feet long, 9 feet thick, and 38 feet mean height for the portions near the Salient and 3 Counterforts 10 feet long, 5 feet mean breadth and 38 feet high. -

The workmanship on the face is for 600 feet in length, by an average height of 36 feet including the [girth?] of the coping. -

The main drain is to be 761 feet in length, the excavation is calculated at 8 feet wide for the convenience of building properly, and at a depth of 8 feet so as to keep the drain sufficiently deep as to be secure against the effects of the frost; two cess pits are also provided for 8' x 8' x 10 feet deep. It is proposed to build the whole of the drain with Iron stone masonry, the Government Quarries affording a quality of stone sufficiently good for rough arching. The floor may be constructed concave as suggested without increasing the expense by making a proportionate diminution in the depth of the foundation. - [Section of the proposed drain with a concave floor. Scale: 2 ft. to 1 in.]

[Estimate]

[Item 1]

Quantity	Detail	Rate	Amount
2276	cubic yards of earth excavated for foundations	10d	94.16.8
2453	perches of masonry in foundations	14/2	1737.10.10
7154	do. of do. in Escarp	11/2	5067.8.4

21600	supl. feet of workmanship on face of Wall	1/8	1800.0.0

Main Drain

1851	cubic yards of earth excavated	10d	77.2.6
1039	perches of masonry	14/2	35.19.2
448	lbs Iron work on Gratings	3d	5.12.0
20	cubic feet Oak in frame to Cess pits	2/11	2.18.4
			£9521.7.10
	Contingencies 1/10th		952.2.9
	[Total]		£10473.10.7

Deduct

5000	tons of Stone in hand	6/-	1500.0.0
6500	supl. feet workmanship	1/8	541.13.4
			2041.13.4
	[Total for Item 1]		£8431.17.3

Item 19 Pulling down and rebuilding defective Work

This Item provides for pulling down and rebuilding defective Masonry. -

Right face N. W. Bastion	62 feet
Left face do.	60 feet
Flank do.	34 feet
Right face S.W. Bastion	200 feet
Left face do.	63 feet
Flank do.	35 feet

Gorge of W. Ravelin 120 feet

North West bastion

It is proposed to take down and rebuild the part coloured orange on Plan N^{o}. 1, and to complete 11 feet of Escarp shaded over red, which is at present built only 14 feet high. - The new Escarp to be according to the Section annexed. -

[Two sections of the escarp, one as built and one as proposed. Scale: 10 ft. to 1 in. Signed by Lt. Wentworth.]

South west Bastion

It is proposed to take down and rebuild that part of the Escarp coloured orange on plan N$^{o}_{.}$ 1.

It is proposed to take down and rebuild the gorge of the West Ravelin as coloured orange and according to the Section annexed.

[Section of the gorge of the west ravelin as proposed to be rebuilt. Scale: 10 ft. to 1 in.]

This section is supposed to be taken through the thickest part of the wall, - the portions connecting the demigorges to the Escarp being 25 feet high; - the thickness of the wall immediately diminishes after this; - the remainder will be but 6.6 at the Base. - See Section of Gorge, Item 5. -

The portions of the wall proposed to be taken down and rebuilt remain in the same state as shewn by the Plans and Elevations transmitted with Lieut. Colonel Boteler's Report dated 14th February 1832: Although still standing they are quite unfit and too weak a profile to carry the weight of the Rampart and parapet. -

[Estimate]

[Item 19]

Quantity	Detail	Rate	Amount
North West Bastion			
2400	perches of masonry taken down and removed	1/-	120.0.0
3026	cubic yards of earth excavated	10d	126.1.8

4615	perches of masonry in new Escarp	14/2	3268.19.2
7982	supl. [feet] of Workmanship on face of wall	1/8	665.3.4
160	running feet of stone Coping to complete	6/-	48.0.0
237	do. do. resetting old do.	6d	5.18.6
250	supl. feet of Granite in coins[?]	2/5	30.4.2

South West Bastion

2864	perches of masonry taken down and removed	1/-	143.4.0
4500	cubic yards of earth excavated	10d	187.10.0
4300	perches of Iron Stone masonry in new Escarp	14/2	3045.16.8
7125	supl. feet of Workmanship on front of Wall	1/8	593.15.0
60	running feet of free stone to complete	6/-	18.0.0
225	do. do resetting old do.	6d	5.12.6
250	supl. feet of cut Granite in coins[?]	2/5	30.4.2

West Ravelin, Gorge

536	perches of masonry taken down and removed	1/-	26.16.0
876	yards of excavation	10d	36.10.0

999	perches of masonry	14/2	707.12.6
2400	supl. feet of Workmanship, on face of wall	1/8	200.0.0
660	do. of cut Granite Coping	2/5	79.15.0
			£9339.2.8
	Contingencies 1/10th		933.18.3
	[Total]		£10273.0.11
	Deduct		
8500	tons of Stone in old Escarp	4/-	1700.0.0
	[Total, Item 19]		£8573.0.11

8 Estimate for the rebuilding of the northeast salient escarp, 1843[25]

The escarp was rebuilt as described here.

Item 4 Pulling down and rebuilding North and East Fronts

This Item provides for taking down & rebuilding that part of the Scarp Wall of the North, and North East fronts not provided for in the Revised Estimate, but which is now necessary to be done, the effects of the Climate having since then so acted on the Masonry as to render it doubtful whether it will sustain the weight & pressure of the Rampart, when formed, during the Winter & breaking up of the frost in the Spring, which is the most trying part of the Season. -

The part proposed to be taken down & rebuilt is shewn on the Sketch annexed to Item 1, and the dimensions of the proposed

Wall are marked on the sections; - the part adjoining the proposed Casemates in the East front as well as those provided for in the Revised Estimate (Item 13) on the North front is the same as that approved for the Redan; the profile of the other parts is increased so as to sustain the pressure of Earth that will be against them

Quantity	Detail	Rate	Amount
4958	perches Masonry taken down and removed	10d	206.11.8
4553	perches of Masonry in new Scarp	14/2	3225.0.10
12250	supl. feet of Workmanship, on face of wall	1/8	1020.16.8
490	running feet of 6 inch Coping	6/-	147.0.0
	[Total]		£4599.9.2
	Added Contingent 10		459.18.11
	[Total]		£5059.8.1
	Deduct 1100 tons of Stone being one sixth of that in the old Wall supposed fit for use	4/-	220.0.0
	[Total]		£4839.8.1

9 Counterscarp estimates, 1836[26]

The specifications for the dimensions of the counterscarp given in the following estimates are accurate, but the lengths of each section, except the eastern front (item 7) are not invariably correct (see section 4, above).

Item 7 Counterscarp Eastern Front with Gallery, but without Countermines

This Item provides for building the Counterscarp of the Eastern front, with a loopholed gallery as shown on Plan [sic] N$\frac{os}{...}$ 1 and 2 and sketch annexed.

[Section and plan of counterscarp gallery. Scale: 10 ft. to 1 in.]

The masonry to be as follows. - The front wall 2 feet 6 ins thick of rough ashlar granite as described in Item 1. - The piers 2 feet 6 ins thick. - The brick wall 2 feet thick; arches 1 foot 6 ins with rubble filling in over them, and then tiled. -

The excavation is for the foundation of the Escarp and Gallery 1100 feet in length 12 feet wide and $4\frac{1}{4}$ feet deep. -

The Masonry as follows; - Foundation 1100 by 12 feet wide and $4\frac{1}{2}$ feet deep; - It is considered that by laying in the foundation the whole breadth of the Counterscarp wall and Gallery with substantial flags of Iron stone, which can be obtained of sufficiently large dimensions, the necessity of sinking to the great depth required for narrow[?] walls will be obviated. - Wall above foundations; - the height of the Counterscarp opposite the faces of the N.E. and S.E. Bastions is 16 feet, but its height increases opposite the faces of the Redan, until it reaches the Salient where it is 24 feet high, as shown on the Sections; - long[?] 1100 x $2\frac{1}{2}$ x 16 for front wall and 1100 x 2 x 14 for the back wall; 94 piers $6\frac{1}{2}$ x $2\frac{1}{2}$ x $10\frac{1}{2}$ in height; - extra height opposite the faces of the Redan 480 feet in length by 3.3 mean breadth and 4 feet

mean height for front wall; 1100 feet of dos d'ane by 7.9 mean breadth and 3 feet mean thickness. -

The workmanship on the face is 1100 x 17.6 including the coping and 480 x 4 mean for the extra height opposite the faces of the Redan. - 95 arches to Gallery 7 feet long by $1\frac{1}{2}$ foot thick and 9 feet span. - Tiling 1100 feet by 10 feet in breadth. -

Quantity	Detail	Rate	Amount
2200	cubic yards of earth excavated for foundations	10d	91.13.4
11024	perches of masonry in foundations, walls &c	14/2	7808.13.4
21170	supl. feet of Workmanship on face of Wall	1/8	1764.3.4
764	perches of Brickwork in gallery arches	30/-	1146.0.0
$110\frac{1}{2}$	squares of Tiling laid in Cement to Roof	62/-	342.11.0
			£11153.1.0
	Contingencies 1/10th		1115.6.1
	[Total, Item 7]		£12268.7.1

Item 8 Counterscarp North front to complete the East and West ends This provides for completing the Counterscarp on the north front in the manner detailed for Item 7, the front Wall being 18 feet high.

[Section and plan of the counterscarp and gallery, north front. Scale: 10 ft. to 1 in.]

A very small portion of the Counterscarp of the Northern front has been executed, as shewn by the Plan; - the excavation is for 250 feet in length by 9 feet mean breadth and $4\frac{1}{2}$ feet deep, a portion being already excavated. -

The Masonry is for the foundation 250 x 12 x $4\frac{1}{2}$ deep; front wall above foundation 250 x $2\frac{1}{2}$ x 18; - back wall 250 x 2 x 14; - 21 piers $6\frac{1}{2}$ x $2\frac{1}{2}$ x $10\frac{1}{2}$. Dos d'anes 250 x $8\frac{1}{2}$ x 2 mean thickness, and 4 Mines, length of walls 90 x 2 x 7. -

The workmanship on face is 250 feet in length by $19\frac{1}{2}$ feet including the coping: - 22 arches 7 feet long by 1.6 thick and 9 feet span. - Tiling 250 feet in length by 10 feet wide.

Quantity	Detail	Rate	Amount
375	cubic yards of earth excavated for foundations	10d	15.12.6
2600 [2338]*	perches of masonry	14/2	1841.13.4 [1156.1.8]*
4875	supl. feet of workmanship, on face of Wall	1/8	406.5.0
163	perches of Brickwork, in arches	30/-	252.0.0
$24\frac{1}{2}$	squares of Tiling laid in Cement	62/-	75.19.0
	[Total]		£2591.9.10 [2405.18.2]*

*[Numbers in brackets are altered in the text - Author's note.]

Contingencies 1/10th	259.2.11
	[240.4.9¾]*
[Total]	£2859.12.9
	[2646.9.11¾]*

Item 9 To complete the North Ravelin Counterscarp

This provides for completing the North Ravelin Counterscarp, as shown on Plan N°. 1, by a darkened shade. -

The circular part of the Counterscarp wall to be finished according to the original plan and section with a facing of iron stone to correspond with the work done in 1833. - The other shaded part requires still about 3 feet to complete its height, the gallery being already in a finished state, as shown on Plan N°. 1. [Section of "part to complete according to the original plan."]

The excavation is for the circular portion of the Counterscarp opposite the Salient 55 feet by 6 feet wide and 3 feet deep; - back wall of Gallery 70 x 2½ x 3 and 3 Mines 45 x 8 x 8.

The Masonry as follows, - foundation of circular part 55 x 6 x 3; backwall 70 x 2.6 x 3; front wall above 55 x 5.2 (mean) x 16; backwall above 70 x 2 x 6. - Dos d'ane 60 x 8 x 1. The part to complete is 170 feet in length by 4.8 wide and 3 feet high. 3 Mines, length of walls 90 x 2 x 5. - Workmanship on face 55 x 17½ including the coping & 170 x 3 for the part to complete, - the coping being already prepared this portion. Arch of Gallery to circular part 60 x 1: 1½ thickness and 4 feet [sic] span. - Tiling 60 x 8. -

*[Numbers in brackets are altered in the text - Author's note.]

Quantity	Detail	Rate	Amount
376	cubic yards of earth excavated for foundations	10d	15.13.4
755	perches of Masonry	14/2	534.15.10
1472	supl. feet of Workmanship, on face of Wall	1/8	122.13.4
23	perches of Brickwork, in arch	30/-	34.10.0
5	squares of Tiling laid in Cement	62/-	15.10.0
	[Total]		£723.2.6
	Contingencies 1/10th		72.6.3
	[Total]		£795.8.9

Item 10 Counterscarp South front with Gallery but without Countermines

This provides for completing the Counterscarp on the South front in the manner detailed in Item 7, the front wall being 18 feet high.

[Section and plan of counterscarp and gallery and "Counterscarp to complete on the original Section, - the dark red shewing the part already built".]

The Excavation is for the body of the wall and Gallery 284 x 12 feet wide and 10 feet high; - also for the foundation 248 x 12 x $4\frac{1}{2}$.

The Masonry is as follows; - 248 x 12 x $4\frac{1}{2}$ for foundation. 248 x $2\frac{1}{2}$ x 18 for front wall and 248 x 2 x 14 for back wall; 20 piers $6\frac{1}{2}$ feet long by $2\frac{1}{2}$ thick by $10\frac{1}{2}$ high, and dos d'ane 248 by $8\frac{1}{2}$

by 2 mean thickness. -

The workmanship is for the face of the wall 248 by $19\frac{1}{2}$ feet including the coping, and for the portions to complete 80 x $6\frac{1}{2}$ including the coping: - 21 brick arches 7 feet long by 1.6 thick and 9 feet Span:- Tiling 248 feet long by 10 feet. - The portion of the Counterscarp to complete according to the original Section is 80 feet in length by $4\frac{1}{2}$ feet thick and 5 feet high for the front wall; back wall of Gallery 80 feet long by $2\frac{1}{2}$ feet wide and 7 feet deep for foundation, and 80 feet long by 2 feet wide by 6 feet high above foundation: - Dos d'ane 80 x 8 x 1. - The brick arch of the Gallery is 80 feet in length by 1: $1\frac{1}{2}$ thick and 4 feet span. - Tiling 80 feet long by 8 feet wide. - ....

Quantity	Detail	Rate	Amount
1978 [1598]	cubic yards of earth excavated for foundations	10d	82.8.4 [66.11.8]
2402	perches of Masonry	14/2	1701.8.4
5356	supl. feet of Workmanship, on face of Wall	1/8	446.6.8
160	perches of Brickwork in arches	30/-	240.0.0
23	squares of Tiling laid in Cement	62/-	71.6.0
291	perches of Masonry to complete part already commenced on old Section	14/2	206.2.6
31	perches of Brickwork, in arch	30/-	46.10.0

*[Numbers in brackets altered in text - Author's note.]

$6\frac{1}{2}$	squares of Tiling laid in Cement	62/-	20.3.0
	[Total]		£2814.4.10 [2798.8.2]*
	Contingencies $1/10^{th}$		$281.8.5\frac{3}{4}$ $[279.16.9\frac{3}{4}]$
	[Total]		£3095.13.$3\frac{3}{4}$ $[3078.4.11\frac{3}{4}]$

Item 11 Counterscarp West front, to complete the North and South ends.

This provides for completing the Western Counterscarp in the manner before detailed, as shown on Plan N^{o}. 1. and Sketch Item 7, the front wall being 18 feet high.

[Section of counterscarp gallery. Scale: 10 ft. to 1 in.]

The North and South ends of the Western Counterscarp are yet to complete; - the excavation is for 188 feet in length, 12 feet wide and $4\frac{1}{2}$ feet deep, for the wall & Gallery. -

The Masonry is as follows; - Foundation 188 x 12 x $4\frac{1}{2}$: front wall above foundation 188 x $2\frac{1}{2}$ x 18, - back wall 188 x 2 x 14; 16 piers 6.6 x 2.6 x 10.6, and dos d'ane 188 x 8.6 x 2 mean thickness. - The workmanship on face is 188 x 19.6 including the coping. - 16 arches 7 feet in length, 1.6 thick and 9 feet span. - Tiling 188 x 10. - There are 5 Mines on this front to execute; - length of walls 90 feet by 2 feet thick, and 5 feet high. -

---

*[Numbers in brackets are altered in the text - Author's note.]

Quantity	Detail	Rate	Amount
376	cubic yards of earth excavated for foundations	10d	15.13.4
1822	perches of Masonry	14/2	1290.11.8
3666	supl. feet of Workmanship, on face of Wall	1/8	305.10.0
122	perches of Brickwork in arches	30/-	183.0.0
$17\frac{1}{2}$	squares of Tiling laid in Cement	62/-	54.5.0
273	perches of Masonry, in Countermines	14/2	193.7.6
	[Total]		£2042.7.6
	Contingencies $1/10^{th}$		204.4.9
	[Total]		£2246.12.3

Item 12 Counterscarp, South Ravelin, with Gallery but without Countermines

This item provides for building the Counterscarp of the South Ravelin with a loopholed gallery, as shown on Plan N^{o}. 1, and Sketch annexted to Item 7. -

The shaded part, already built 11 feet high, to be finished on the old section.

[Section of counterscarp, new type, and "Counterscarp to complete on the original Section, the dark red shewing the part already built."]

The excavation is for the body of the wall and Gallery 312 x 12 x 14 and for the foundation 312 x 12 x 3. -

The Masonry as follows; - 310 x 12 x 3 feet in depth, the soil

being a stiff blue clay here, it is not necessary to sink any deeper for the foundation; - 310 x 2.6 x 16 for front wall above foundation and 310 x 2 x 14 for back wall of Gallery; - 28 piers $6\frac{1}{2}$ x $2\frac{1}{2}$ x $10\frac{1}{2}$ and dos d'ane 310 x $8\frac{1}{2}$x 1.2. -

The workmanship on face is 310 x 17.6 including the coping, and 66 x $6\frac{1}{2}$ to complete the part already commenced. - 28 brick arches to Gallery 7 feet long 1.6 thick and 9 feet span. Tiling 310 feet in length by 10 feet wide. -

To complete the part left in an unfinished state according to the original Section, the Masonry will be 66 x 4.6 x 5 feet high for front wall, and 66 x 2.6 x 7 for foundation of back wall, and 66 x 2 x 6 for back wall of Gallery above foundation; dos d'ane 66 x 8 x 1. - Brick arch of Gallery 66 x 1. $1\frac{1}{2}$ thick and 4 feet span. - Tiling 66 x 8. -

Quantity	Detail	Rate	Amount
2357	cubic yards of earth excavated for foundations	10d	98.4.2
2431	perches of Masonry	14/2	1721.19.2
5854	supl. feet Workmanship, on face of wall	1/8	487.16.8
214	perches of Brickwork, in arches	30/-	321.0.0
31	squares of Tiling laid in Cement	62/-	96.2.0
240	perches of Masonry to complete part already commenced on old Section	14/2	170.0.0

$25\frac{1}{2}$	perches of Brickwork, in Arch	30/-	38.5.0
$5\frac{1}{2}$	squares of Tiling laid in cement	62/-	17.1.0
	[Total]		£2950.8.0
	Contingencies $1/10^{th}$		$295.0.9\frac{1}{2}$
	[Total]		£3245.8.$9\frac{1}{2}$

10 The state of the Citadel masonry, 1856[27]

The 1856 committee was chiefly concerned with the state of the escarps built under contract, but this is still the best discussion of the Citadel masonry as a whole which has come down to us.

Masonry. The Citadel.

1. - The present State of the Masonry?

1 - Answers to Questions 5. 6. 7. 8. 9. 10 and 11 describe the State of certain portions of the Masonry; the remainder is of a Substantial and Satisfactory character, though the pointing of all requires more or less attention, the preservation of the walls being very dependent upon it in this peculiar climate

2. What portion of the Masonry now remaining was built under the Contracts of 1828, 29, and 30?

2. - About $\frac{3}{4}$ of the Escarp wall of the South Face, East front; - $\frac{3}{4}$ of the South Front, - about $\frac{1}{8}$ of the Flank of the S. West Demi Bastion; - the whole of the West Curtain; - the flank of the N. West Demi Bastion and the two faces of the North Ravelin;-

also [sic] 140 feet of the Counterscarp in front of the left Face of the N. west Demi Bastion -

(see Appendix E. & G)

3. What has been the total expense of rebuilding and renewing works that have failed? -

3. - £17,585..11..2: - This sum cannot properly be considered a total loss, as the new work is of superior dimensions and quality to the old, which it replaces.

4. What portion of the Work has been entirely rebuilt, and which only partially so?

4. - About $\frac{1}{4}$th of the South Front has been entirely rebuilt; - also the whole of the right face of the S. West demi Bastion; - and about $\frac{7}{8}$ of the flank of d°; - the left Face of the N. West demi Bastion; - the whole of the North Front, and $\frac{3}{4}$ of the North Face of the East Front. -

Also the West Ravelin -

5 - Can the whole of the Work now remaining that was built under Contract be held to be in a Satisfactory Condition? [Marginal notes added to ms.; transcribed below.]

5 - The Committee having taken evidence and Carefully personally examined the Escarp Walls built under Contract, are of opinion that they are not in every respect well built; - the facing stones are in various instances unsuitable in dimensions for such Walls. -

They are of a weak profile being inferior to that which Vauban prescribes, and not in as satisfactory a state as the

remaining Escarp Walls built by the Dep^{t}; yet as they do not appear to have altered or bulged during the last 26 years, during which they have been under observation, having been reported on as doubtful by different Commanding Engineers, and recommended by them not to be rebuilt until the Completion of the Citadel, unless they shewed unequivocal signs of failure, and being perfectly covered from the foot of the Glacis, and only 3 feet of them being visible from an eminence called Windmill hill, 666 yards in front, and 43 feet lower than the Citadel, they could only be breached from the Counterscarp, from whence the difference of time to breach a good and a bad wall is a matter of only a few hours; - we therefore recommend that they should remain for the present being of opinion that with careful stopping and pointing which can be done at a trifling expense, and for which a sum is granted in the current annual estimate, they are likely to stand many years -

An opening made in the Escarp of the West Curtain and another in the left Face of the S. West demi Bastion shew that the backing and mortar are sound and good, the latter only, for about a foot inward, having been destroyed by the action of frost, owing to the neglect of pointing.

(See Appendix D. E. & G.)

[Marginal notes to question 5 - see above.]

Note - 16 April 1856

L^{t} Colonel LeMarchant must protest in giving his opinion on this point.

Lord Panmure having empowered His Excellency the Major General [Le Marchant] to employ M^r^ Forman to inspect the Masonry and whose views he would wish to obtain before registering his opinion: -

A Copy of Lord Panmures letter has been forwarded to Colonel Stotherd and read to the Court. -

Note. 3^rd^ May 1856

The answer to question N^o^ 5 had been made and assented to by all the Committee some days previously to that on which Lord Panmures letter was received -

Note. - 5 May 1856.

With reference to the remark of the Committee made on the protest entered by me on the subject of the Masonry...I wish to record the following explanation. -

That in the first instance as a non-professional man at the Inspection of the Masonry by the Committee, I was not cognisant of the defects which have since been suggested to me, both by the written report of M^r^ Forman and the personal explanation in full which I requested from and obtained from that gentleman to satisfy me on the point at issue -

I would wish to remind the Committee that on becoming aware that M^r^ F. was to inspect the Masonry under authority of Lord Panmure, I delivered the protest now in their possession, to the President of the Court, against recording any opinion until the report of that Gentleman had been received; and which was accepted and no observation appended by them at the time. - I now

record my full concurrence generally with the report of M^r F. and am strongly of opinion that considering their object, no work can be in a much worse state than the walls of the West Curtain, and a great part of the South Fronts - also that the arches of the open Casemates in the retaining walls of the interior of the Citadel and which I remarked on the very first time the Committee inspected the Works, are in many instances rent: - The water pours into them from above, having no artificial covering - the bricks are cracked in some places: - The whole in my opinion presenting a very unsatisfactory appearance. -

(Signed) T Le Marchant

L^t Col: Act^g Mil^y Sec^y.

6. In what state is the Western Curtain?

6 - See answer to question 5.

7. - Was not a great part of the South East Bastion only refaced with masonry and not entirely rebuilt, and if so, is that portion of the old Work still in existence in a satisfactory state?

7. No portion of the South East Bastion has ever been rebuilt -

8. Has not the more modern work in many places already bulged, and is not much of the South Side of the Fort in a generally unsatisfactory state?

8. - No bulges appear in the Modern Work in the Escarps or Counterscarps; - portions of the interior Revetment of the Rampart in granite, of the East, west and South Fronts appear to have slightly bulged by the action of the frost on the mass of Earth behind it, but they are of no consequence -

9. - The Major General would wish the point satisfactorily set at rest, whether the internal masonry within the stone facing both in the South west Curtain, South east Bastion and in the other parts of the Work is of that solid description that it should be, and of the consistency and workmanship contemplated in the specification of the Contracts?

9. - The openings made in the Escarp walls show that the internal masonry as far as examined is sound and good, and of a consistency and workmanship quite equal to the Specifications. -

(See Appendix D. E. & G)

10 - Whether the Counterforts are equal in dimensions and construction to the Specifications and Plans on that head?

Very conflicting reports have been made on this point, many by respectable persons, who watched the daily working of the Contracts, and who have even stated that in many parts the interior work may scarcely be found to be better than rubbish, and the Counterforts of reduced dimensions, and inferior masonry to the original Plans of the Contract. -

10 - The openings referred to in the answer to the preceding question enabled measurements to be taken which satisfied the Committee that the Counterfort partially laid open, rather exceeded the dimensions specified in the Contract and Plan. -

Some of the Plans in the R$^{1}_{-}$ Engineer Office show Counterforts at varying intervals; - if any deviations were made from the distances or dimensions given in the Contracts they were doubtless made under proper authority, the Contractors being paid

upon measurements of the work only actually done. -

The measurement Books exhibited to the Committee, appear to have been properly kept, and the Commanding Royal Engineer's Orderly books of the period direct that the Works should be constantly superintended by Officers of Royal Engineers in rotation, throughout the entire working hours, which if attended to would render such a fraud as is implied, impracticable. -

(See Appendix H)

11. Whether the walls of the Cavalier, irrespective of the arches, are not so absolutely rotten that they must be rebuilt to be of any service?

11. After a careful examination of the walls of the Cavalier, irrespective of the arches, the Committee is of opinion that the walls show no outward indications of defective construction. -

L^{t} Colonel Dick, Royal Artillery, a member of this Committee, in 1853 superintended the mounting of the 32 p^{r} guns of 56 cwt each, now on the building, and the shears for which were erected on the front wall which is 32 feet high; - there was on the occasion no indication of the masonry yielding, or of its showing any signs of weakness; - the Committee is of opinion that the walls do not require to be rebuilt.

(See Appendix E & F)

12 May not the following Specifications of Contract dated

R^{l} Engineer Office, Halifax. NS. 12 Nov^{r} 1828

D^{o} " " " " 15th October 1829

D^{o} " " " " 1st November 1830 -

be considered very loosely drawn up and ill defined.

(see Appendix I. M. & N)

12 - Some of the Clauses of the Specification might have been drawn up with greater precision and clearness.

Lieu^{t} Colonel Le Marchant, a member of the Commission [sic], does not concur in this opinion as he considers them decidedly ill defined.

(See Appendix L, J, & K.)

13. Would a practical and experienced person consider them sufficiently binding to ensure the work being properly executed.

13 - They are in our opinion sufficiently binding to ensure the walls being built according to the Specifications; and an examination of the walls has proved them to be fully equal to it. -

L^{t} Col Le Marchant does not concur in the opinion that they are sufficiently binding - although he thinks the walls as actually built quite equal to the Specifications. -

(See Appendix I, J, & K)

14. Are not the dimensions of the foundations in works where strength and durability are pre-eminently of great importance, usually specified. -

14. - A general dimension is usually given, with a clause enabling it to be increased or diminished as may appear necessary when the excavations are actually made, until which their depth cannot be safely determined. -

15. - Is it possible to See whether Specifications of the Contracts at the present period have been carried out in regard to

building the Walls, or can their strength be ascertained without pulling them down, or opening them in different places? -

15. - To a certain extent an opinion can be formed from external indications; - whatever further proof is necessary has been obtained by opening the walls.

16. - How far apart are the bonded stones placed?

16. - According to the Specifications every fourth Stone is to go not less than 18 inches into the wall, which seems, from the opening made, to have been fully carried out. -

(See Appendix I, M, & N)

17. - Do these bonding stones pass through the whole wall, or merely through the first part?

17. In one of the openings a bonding stone was found which entered the wall 5 feet, which is far beyond the obligations of the Contract.

(See Appendix G)

18. What means have been taken to tie the Walls and Buttresses together?

18. The Escarp Wall and Counterforts were built in one continuous mass and Bond. -

19. Are the Stones which are laid generally brought to anything like a fair bed?

19. They were, - as far as is usual in a wall of this description. -

20. - In contracts for building walls of great strength and durability is it not generally customary to specify the dimensions of the Stones?

20. - Yes. -

State of the Citadel

With reference to our instructions to report on the state of the Citadel, the most important feature to be noticed is the Glacis, for the prompt completion of which there do not appear to be any present available means without incurring the heavy expense of Civil labour; - but should the strength of the Garrison be increased, we have no doubt that such assistance might be afforded without prejudice to their Regimental duties, as would under sufficient grants of money, put this essential element of defence in a satisfactory condition in from two to three years -

The means taken to exclude damp from the Cavalier Barrack except by a roof, have failed: - the temporary roof that has recently been applied, and which is removable when the necessity arises, we believe to be the best course that could have been adopted, and calculated to keep the work in a perfectly habitable state.

The other Casemated buildings seem in a generally fair state, though in the neighbourhood of the down pipes conveying the water from the Ramparts to the Tanks, some of them, particularly the Officers Quarters, are very damp. -

There are 4 Casemates which are also very damp, independent of the down pipes; provision is made in the Year's estimates for remedying this defect. -

When the tanks shall be brought into operation, we have every reason to hope they will be efficient; the one now in use being so in all respects, and the supply of water will be abundant. -

With respect to the parapets and traverses, we are of opinion that no successful Substitute can be found for sodwork for the slopes; several traverses recently revetted with sods have the appearance of all the stability derivable from any material short of masonry, or brickwork, which are objectionable in such positions, especially in this rigorous climate.

The subject of the Escarps has been rigorously investigated in our replies to Queries $\overset{os}{N.}$ 1 to 20 on Masonry, from H.E. the Major General Commanding; - particular attention has been called to those of the Western Front, which were built by Contract in 1829-1830- and 31. -

From other portions of the walls so built having failed, doubt has always attached to these; but different Commanding Royal Engineers have recommended their being watched until they should exhibit unequivocal marks of failure; -

Having now stood the test of 26 years, and an examination of the interior having shewn that they are of sound, though of rough Construction, and being so covered by the Glacis, that they could only be breached from the Counterscarp, we are not prepared to recommend their re-construction, but simply stopping and pointing the exterior; with which precautions, they may, we think, last many years; provision for this service, has been made in the present year's estimate. -

The Ravelins are open to serious objections from their contracted dimensions, which have involved the adoption of masonry and brickwork to a considerable extent; - and the banquettes

encroach on the space necessary for working the guns: - these evils cannot be altogether overcome, but we consider them capable of amelioration; - and we attach much importance to their improvement: - the Brick Revetments of the North and South Ravelins, when inspected by the Committee, were in a dilapidated state from the effects of frost, but are about to be replaced by sod revetments under the current year's estimate -

With respect to the armament of the Citadel, it is in a serviceable state; but no artillery stores have been yet received, though ordered to be supplied by Board's order dated 24th August 1853 -

The existing Barrack accommodation, which is all casemated, is for 18 Officers and 762 men - There are also Six casemates appropriated to Ordnance, Engineers and Commissariat Stores: - allowing for the increased wants of the Commissariat in the event of a siege and for the Hospital accommodation that would be required, sufficient space could be found for the proposed temporary increase of Garrison, by the erection of Splinter proofs, and by other expedients usually resorted to, on [sic] such emergencies -

The Counterscarp Galleries with their Banches[?] and Returns, are in perfectly satisfactory state -

The Two bomb proof Magazines in the Citadel are in good order, and are each capable of containing 2170 barrels of Powder -

The temporary wooden Stairs, leading to the Gun Rooms in the S. West Demi-Bastion, are in an imperfect state, and should be completed of stone as soon as possible. - ....

Appendix D

Copy.

Royal Engineer Office

4th April 1856

Statement of Mr Gordon, Clerk of Works, with reference to the Masonry of the South and West Curtains of Citadel Halifax. N.S. -

1. I consider the South Curtain to be soundly and carefully built, the backing particularly sound, the bonding good, and the Mortar excellent; the bulging of the Wall appears to arise from damp behind it and not from any defect in the foundation or the bonding of the wall.

2 - I consider the West Curtain to be of a description of work fully equal to that provided for in the specification now read [emphasis his], the bonding, backing and mortar very good; the latter seems to have rather an excess of Lime in its composition, but both lime and sand were of the very best quality; - the perished[?] Mortar in the face of the wall is, without doubt, caused by the action of the Atmosphere, which in this Country is most destructive to common Mortar: - The bulging of the Wall seems to arise from damp behind it as in the former case.

(Signed) W Gordon

Clerk of Works.

To Colonel Stotherd

Commg Rl Engineer

Nova Scotia

(Appendix E)

25th March 1856

Mr William Macdowal resides in Halifax -

Examined

1. Were you formerly employed in the Royal Engineer Department, as Master Mason? -

1 - Yes. -

2 - Can you point out on the Plan the work that was performed at the Citadel by the two Contractors, Hays and Flinn? -

2 - Flinn built the half of the left Face to the Salient, the right Face and right Flank of the south west Bastion, amounting in all to about 400 feet, in 1829. Hays built the left Flank, left Face and about half the right Face from the Salient of the Nth W. demi-Bastion, amounting to about 400 feet, in 1829. -

3 - Was the right face of the South Bastion rebuilt? -

3 - Yes, in 1834, it was taken down and rebuilt as it now stands -

4 - Was the left Face of the North West Bastion rebuilt? -

4 - No, only the portion which fell down, about 70 feet -

5 - As a Master Mason do you consider the part of the Work built by Mr Metzler was [sic] well executed as a work of Fortification? -

5 - I consider it was as well built as Flyn's and Hay's [sic] which fell down, the latter work was loaded with earth long before Metzlers, which may account for Metzlers not coming down.

6. Did Metzler ever get stones of any extra size for the purpose of using them as headers in the Wall? -

6. He put some as headers and some as stretchers. -

7. Did any part of the Work which M^{r} Metzler built, fall? -

7. No. -

8. What was the quality of the work done by the Royal Engineer Department after the discontinuation of working by Contract? -

8. - It was of a better description -

9. Has any part of the Work done by the Department been taken down and rebuilt? -

9. Yes, the West Ravelin -

10. Do you consider [that] the Masonry in general, had time to set before the frost began?

10. They usually continued building until the end of October, it had not time to set. -

11. About what time should the building in Masonry and Brick-work cease in this climate? -

11. About the latter end of September, or beginning of October. -

12. Do you consider that the Mortar used by the Contractors, Flyn, Hay and Metzler, was of the proper description required? -

12. Yes. -

13 - Were you Master Mason at the time the Cavalier in the Citadel was built? -

13. Yes. -

14. Was it built by Contract or by the Department? -

14. By the Department. -

15. What was the quality of the Masonry of the front and rear Walls, and was it of a proper description? -

15 - It was rough rubble Masonry as you see it - I think the stones should have been of larger dimensions, and of a better description.

16. - What kinds of stone were used for the Cavalier? -

16. Iron Stone, and whin[?] stone (called also blue stone - [sic]

17 - Which was the best of those two kinds of stone?

17 - Iron stone, some of the ironstone was square and rubbly, and some was good beds; we had both; much of it was unfit for the work. -

18. - Did you not report in your capacity of Master Mason that the Material furnished was of inferior quality? -

18. - Yes; but the Colonel [Nicolls] thought it was good enough, and to insist on better was an unnecessary expense, he passed the whole of it himself. -

19. - Could stones of a larger and better description have been procured in 1830, to build walls? -

19. - Yes, as good stones as can be procured now, but would have cost more money -

20 - Was not Labour much cheaper in 1830 than at present? -

20. Yes, but there was no great difference until the Railway was commenced in 1854.

21. Do you consider the Arches, and Abutments of the Cavalier were well and securely built? -

21. The Arches were good and sufficient for any purpose, but I consider the Abutments as first built were insufficient, they have since been strengthened. -

(Appendix F)

5th April 1856.

Mr William Gordon, Clerk of Works in the Royal Engineers Department, examined on the state of Front and rear Walls of the Cavalier Citadel. -

1 - In what state do you consider the front and rear Walls of the Cavalier? -

1. I consider the Masonry not to be in a satisfactory state, although not dangerous, the front wall having suffered considerably from water which got into it, from the terreplein above, and separated the Arches from the walls by about $\frac{1}{2}$ an inch in some places; I think not in all the rooms.

I have observed water coming into the rooms through the rear wall and sides near to it, but the wall and arch do not appear to have been affected by it, and still appear sound, excepting that the mortar in the joints of the outer face of the walls was very much perished in places, not altogether throughout. -

2. What do you consider necessary to restore it to its original state, as regards its serviceable condition? -

2 - The present provision that has been made to preserve it from further damage by wet, by putting a roof over it, is the very best that could have been made together with carefully pointing with hydraulic Cement the exposed surfaces; the above observations apply to the state of the Cavalier 8 or 9 months since when I last saw it.*

*The Comm^{d} Royal Engineer informed the Committee that the pointing was done last autumn [note immediately beneath preceding paragraph]

3. With reference to the use of the Cavalier, as a battery, how far is its stability affected by the defects above mentioned? -

3. I do not consider that the danger is at all considerable, as the Arches which appear to be sound, and not springing from the defective walls, would have to bear the whole strain of the Guns. -

(Appendix G)

25th March 1856.

M^{r} John Metzler. of Argyle Street. Halifax -

Examined

1. Were you ever employed by the Royal Engineer Department at Halifax? -

1. Yes. -

2 - In what capacity. -

2. - As a Contractor for part of the Citadel in 1829 & 1830. -

3. Can you point out on the plan the work which you performed under your Contracts? -

3. Yes, the left Face of the South Front and the right face of the Eastern Front; also 186 feet of the S.W. Curtain and about 40 feet of the Counterscarp of the right Face of the S.W. Bastion - Under Contract dated 8th December 1829 and 8th November 1830.

4. Does any portion of the work you performed remain standing at the present time? -

4. - Yes, the whole of it -

5. - You were bound by specification that every fourth stone should go into the wall not less than eighteen inches; was there any deviation from this? -

5 - A great many stones went through the whole thickness of the Wall -

6 - Would there have been any difficulty at the time in obtaining sufficient stone of much larger dimensions for a work of this kind? -

6. - Yes. The Quarries did not yield larger stones at that time in sufficient quantity. -

(Appendix H)

31st March 1856. -

Mr Richard Creed, formerly a Clerk of Works in the Royal Engineer Department.

Examined

1. Were you employed to superintend the Works at the new Citadel? -

1. Not to superintend the Work, but only to measure it -

2. Did you measure the Masonry executed by Contract in 1829 - 30 - and 31? -

2. - Yes. -

3. Are the entries, in the Measurement Book now produced, in your handwriting? -

3. - Yes. -

4. - Was an Officer of the Royal Engineers always present at these measurements? -

4. - There was; - he always took the dimensions down in a separate book, which were compared to the entries in my measurement book. -

5. After the Bills were made out, was it your duty to compare the quantities charged with the quantities you measured.

5 - Yes -

6 - Can the entries showing the Dimensions of the Counterforts in the Measurement book now produced be under any circumstances incorrect? -

6. - He is positive that the entries are Correct. -

7 - Would you have measured work that you observed to differ from the Specifications and Plans? -

7 - I never compared the work with the Plans; - I measured what I found and entered it accordingly.

8. With whom did the responsibility for the correctness of the work rest? -

8 - With the Officer on duty, and the Foreman of Works -

9. Was an Officer of Engineers and Foreman of Works always on duty on the Hill? -

9. He supposes so, as they were appointed to be so -

10. - Up to what period was the Masonry by the Contractors carried on? -

10. - Until the frost came when the work was covered in, and we never resumed it until the frost was over -

(Appendix I)

7th April 1856

The Specifications (see Appendix L M, N.) dated as below, having been submitted to Mr Foreman [sic]. Civil Engineer, his written answers to the following questions are here given.

1. - May not the following Specifications of Contracts dated, Royal Engineer Office Halifax. N.S.- 12th Novr 1828 -

- Do " - 15th October 1829 -

- Do " - 1st Novr 1830 -

be considered very loosely drawn up and ill defined? -

(Copy)

1 - In defining Work to be let by Contract I have found it necessary to be more explicit in my Specifications. -

2 - Would a practical and experienced person consider them sufficiently binding to ensure the work being properly executed? -

2 - In understanding "properly executed" to be "executed according to the Specifications", I believe they would be binding to the extent of their obvious meaning and no further -

The following viva voce question was then put to Mr Foreman in reference to his written answers preceding -

3 - As a practical Man do you on reading the Specifications now produced, clearly understand their meaning? -

3. In clause 2, it does not appear clear what the 3 front feet of the wall refers to -

In clause 3 - it does not appear clear whether the front of the

wall stated refers to the 3 front feet in the previous clause, or to the whole front of the wall. -

In clause 4 it is not explained what is meant by nine inches "on the average". -

In clause 5: it is stated that the "base of each stone to be at least equal to its height:" - as the term base conveys the idea of a superficies[?], and the height of lineal measurement, no comparison can exist -

(Appendix J)

Copy

April 5th 1856

The opinion of Mr Gordon, Clerk of Works, Royal Engineer Department, respecting the provisions made in certain Specifications (Vide Appendences [sic] L, M & N.) as to whether they are of a sufficiently binding nature on the Contractor -

1. I consider the wording of the Specification dated 12th Novr. 1828, is quite sufficiently clear and explicit, although brief, for the duly binding of the Contractor to perform the Work according to the same.

2 - I consider the Specification dated 15th October 1829, equally binding as the above, together with the additional provision for enforcing the Contractor to make good any defects, that may appear within twelve months after the completion of the work.

3 - The provisions of the Specification dated 1st Novr. 1830 - appear to be exactly similar to that dated 15th October 1829 -

(signed) W^m Gordon

Clerk of Works

a true Copy

R.J.S.[?]

(Appendix K)

Copy,

The opinion of M.^r J.F. Shirras, Clerk of Works, Royal Engineer Department, as to whether the clauses in certain Specifications (Vide Appendences [sic] L, M, & N -) are sufficiently binding on the Contractor

(Copy)

Royal Engineers Office

Halifax, N.S.

April 5.^th 1856

Sir,

I have the honor to state in accordance with your order, with reference to the Specifications N.^o 3- 4- and 5, for the construction of Stone Walls in the Citadel, viz: -

N.^o 3. Referring to the binding clauses, it appears that the work while in progress was subject in every respect to the Inspection and rejection of the Commanding Royal Engineer and Superintending Officer of the Department -

I consider this clause alone to be sufficiently binding, and that by strict and due superintendence on the part of the

Department, that it would ensure the Works to be executed in Accordance with the meaning of the Specification, altho' the arrangements and provisions in its detail are very different to that which must be introduced at the present time -

N^{o}. 4. A similar clause is introduced equally binding; also provision is made in the event of the work being found to crack or bulge within twelve months of its completion, that the Contractor shall reconstruct it.

N^{o}. 5 may be said to include the same meaning throughout as N^{o}. 4

I have &c &c

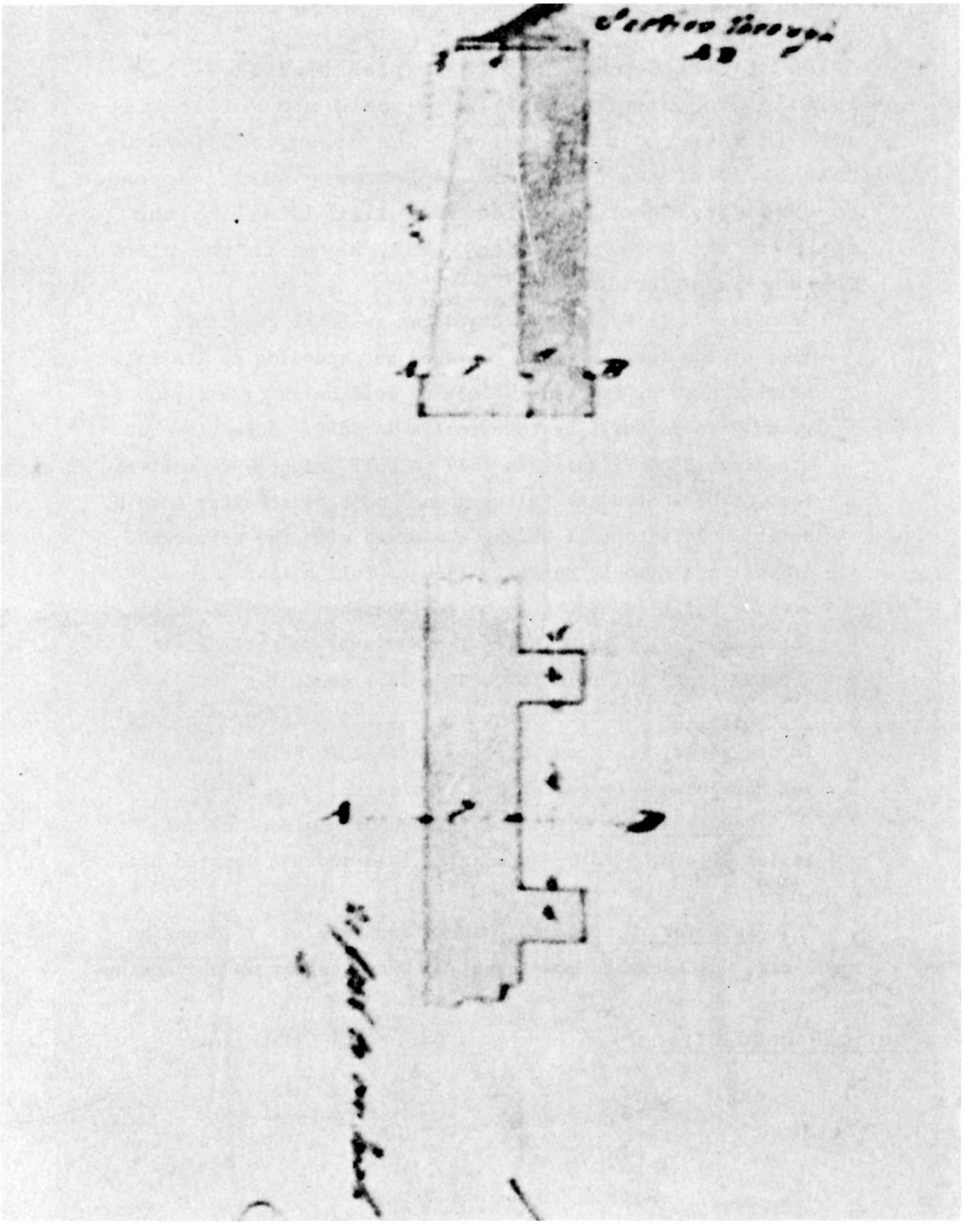
(signed) J F Shirras

Clerk of Works

a true Copy

R.J.S.

54 Section of an escarp, 1828 (plan 13-1828-10-3). The section shows the escarp in the western bastions, built to the specifications of the contracts let on 12 November 1828. Escarps built to this section collapsed in the winter of 1830-31. (Public Archives of Canada.)



55 "Plan of Fort George...", 1832 (plan 01-1832-2-1). This is probably the best large-scale plan of the Citadel in its original form, and was drawn to accompany Colonel Boteler's letter of 14 February 1832. Appended to this version of the plan is a list detailing the state of the work in January 1833, keyed to the plan. The key is as follows:

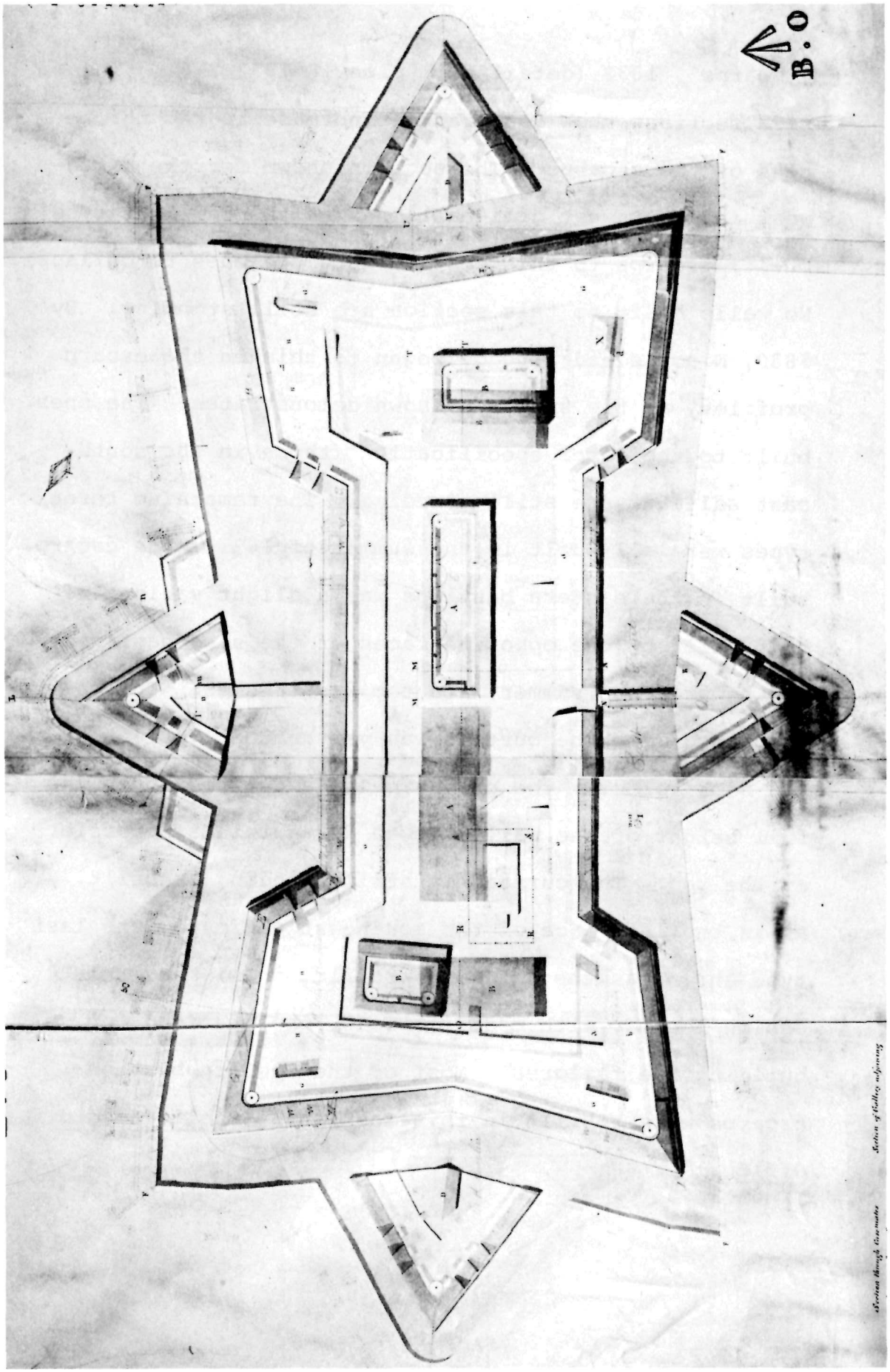
Escarps: A to B. Part damaged but re-built to within 6 feet of the top. B to C. Damaged but standing to its full height; C to D, Erected in 1831 to full height (25 ft.) good; D to E Built by Col Nicolls in 1829 - defective but standing; E to F, Built in 1829 to full height - defective; F to G, Defective and fallen down - must be rebuilt; G to H, Built in 1829 to full height - damaged with the appearance of falling; H to I, Built in 1830 to full height - good; I to K; built in 1830 & 31 to full height - good; K to L, not commenced; L to M, built in 1830 & 31 to full height - good; M to A, built in 1829, 30 & 31 - good.

Ravelins N, not commenced; O built in 1829 - damaged in the gorge; P, faces built to 18 feet in height; Q, not yet commenced - to be further considered.

Counterscarp R to S, completed with mines and galleries - good; S to T, foundation laid and the work in progress.

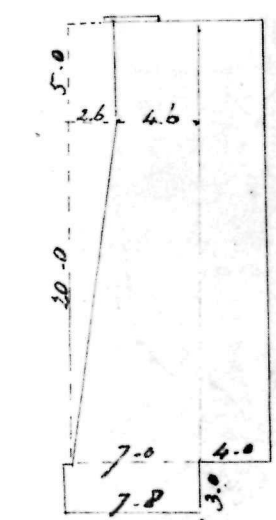
Interior U, Cavalier nearly complete...; V, Magazine - old; W, Casemates completed; X, Ditto as far as the springing of the arch.

(Public Record Office.)

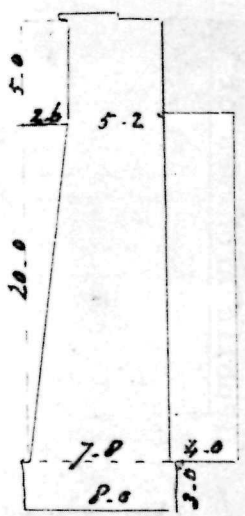

B. O

56 "Escarps", 1832 (detail from plan 13-1832-2-6). These five sections show the gradual increase in the thickness of the escarps. The section shown for the northwest and southwest demi-bastions was the earliest type built; escarps to this section were the ones to collapse. No walls built to this section are still standing. By 1830, Nicolls had already begun to thicken the escarp profiles, as the specimen shown demonstrates. The ones built to the later specification (those in the southeast salient) are still standing. The remaining three types were all built in the summer of 1831. The escarp built in the eastern bastions was a slight variant of that built on the opposite faces of the same bastions in the previous summer; its top was thicker. The escarp shown for the curtain was yet another variant of the same formula; the provision of a buttress over the full height of the wall allowed for a thinner profile at the top. The curtain is still standing as built, as is the left face of the southeast salient. The last type shown has the thickest profile of all, and this design became, with modifications, the standard for rebuilding the failures. Most of the western bastion escarps were rebuilt in this fashion. (Public Record Office.)

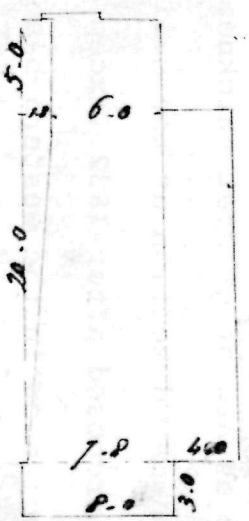
Escarps



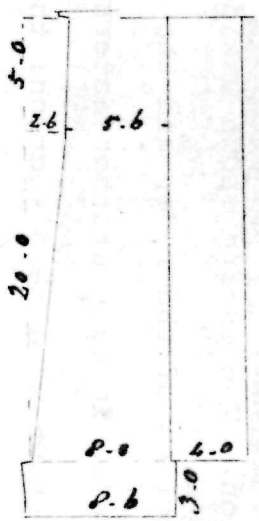
N.W. & S.W. Bastions
built in 1829 -



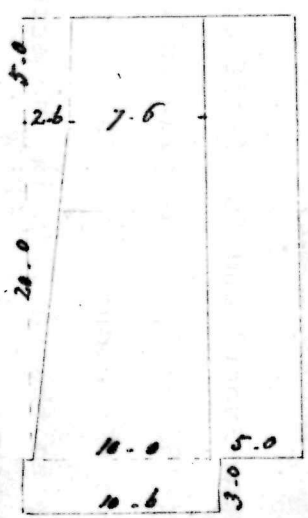
Left face N.E. &
right d° S.E. Bast^ns
830



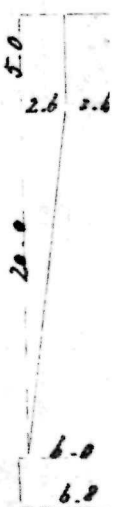
Right face N.E. &
left d° S.E. Bast^ns
1831



West Curtain
built in 1831.



Left face N.W. Bast^n
rebuilding 1831.

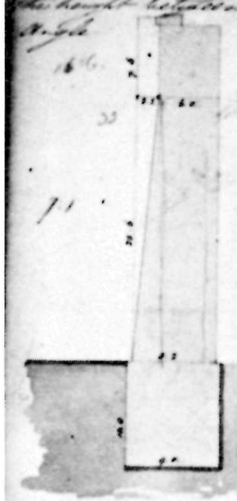


West
built

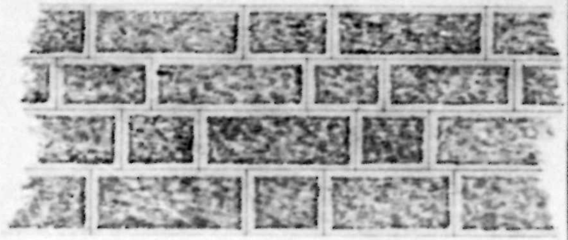
Counterforts, Work — ft 5 × ft 4
West Ravelin — 4 × 4
N.W. B^n breach rebuilding — 5 × 5

57 "Escarp Eastern Front" and "Style of Building proposed", 1834 (plan 14-1834-3-1). The plan is from the original (1834) version of Colonel Jones's revised estimate. It is preferable to the version in the second (1836) version of the estimate since, in the latter, there is no escarp section. The escarp shown was designed for the casemated section of the redan and the first 45 feet beyond the redan in each of the eastern salients. The section shown is a mean section; the escarp varies in height and (to a certain degree) in thickness. In addition, an escarp of greater thickness was designed for the uncasemated section at the salient. Like all the escarps proposed after 1832 (except for the rebuilding going on in the western bastions) the redan escarp was faced with granite in the manner shown in the elevation. (Public Archives of Canada.)

This Estimate provides for ... feet of Escarp of the dimensions shewn by the annexed Section, which is taken at the mean of the height between the salient angle of the Redan & the re-entering Angle



Escarp, Eastern front
Scale ... feet to an Inch

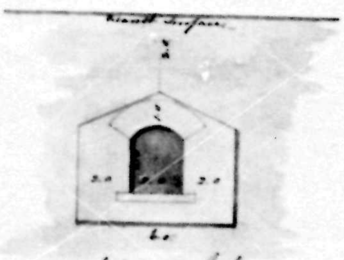


Style of Building proposed.

The Revetment to be of ... stone ... with rough ... which is ... at the ... [illegible] stone, set alternately headers and stretchers, ... from 1 foot to ... [illegible] joints ... and a draft of ... inch round the face of each stone as shown by the annexed sketch.

[illegible]

Main Drain



4 feet to an Inch.

[illegible]

No. 1. Escarp Eastern Front, and Main Drain

Quantities		Rate	Amount
2276	cubic yards of Earth excavated for foundation	10	[illegible]
2032	Perches of Masonry in ..., and ...	14/3 21/3	[illegible]
2000	super. feet of Workmanship on face of Walls	[illegible]	[illegible]

According to the Dimensions given this No. of Perches contd. only ... 15½ Cub. feet per perch, which it is presumed must be erroneous, for a Perch is 16½ feet lineal & if only taken as a foot ... & ... would give 16½ Cube – But in Masonry Perches are ... estimated usually at least 18 ... But, this gives nearly 25 feet – Cube per Perch – and the price would appear to be equivalent – ... the same calculation applies throughout

Main Drain

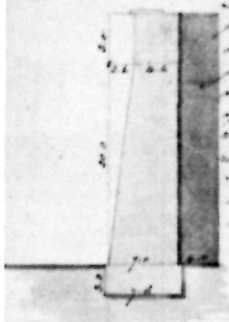
Quantities		Rate	Amount
385	cubic yards of Earth excavated	10	77 2 6
303	Perches of Masonry	14/2	215 ... 2
443	... of Ironwork in gratings	3	5 12 ...
20	cubic feet of Oak (framing to ...)	2/6	2 18 4
		£	[illegible]
	Add ... for Contingencies		[illegible]
			[illegible]
	Deduct		
5000	tons of Stone on hand @ ... £ ...		
6000	feet of Workmanship ...		204 ...
			£ 1,360 ...

58 "Escarp to be taken down" and "Escarp proposed", 1834 (plan 14-1834-3-8). The escarp to be taken down was built to the specifications of the 1828 contracts. The escarp proposed was the final variation on the standard escarp used to replace earlier failures (compare Fig. 56). (Public Archives of Canada.)

The Estimate provided for pulling down and rebuilding defective Masonry, viz.

Right face N.W. Bastion — — — 62 feet
Left do — — — do — — — 62 „ —
Flank do — — — do — — — 34 „ —
Right face S.W. Bastion — — — 230 „ —
Left do — — — do — — — 63 „ —
Flank do — — — do — — — 35 „ —
Gorge of West Ravelin — — — 120 „ —

Escarp to be taken down. — Escarp proposed. —



N.W. Bastion. It is proposed to take down and rebuild the part coloured yellow marked in Plan No. 1 and to complete 2 feet of Breast Height over and which is at present rebuilt only two feet high. The new Escarp to be according to Section annexed.

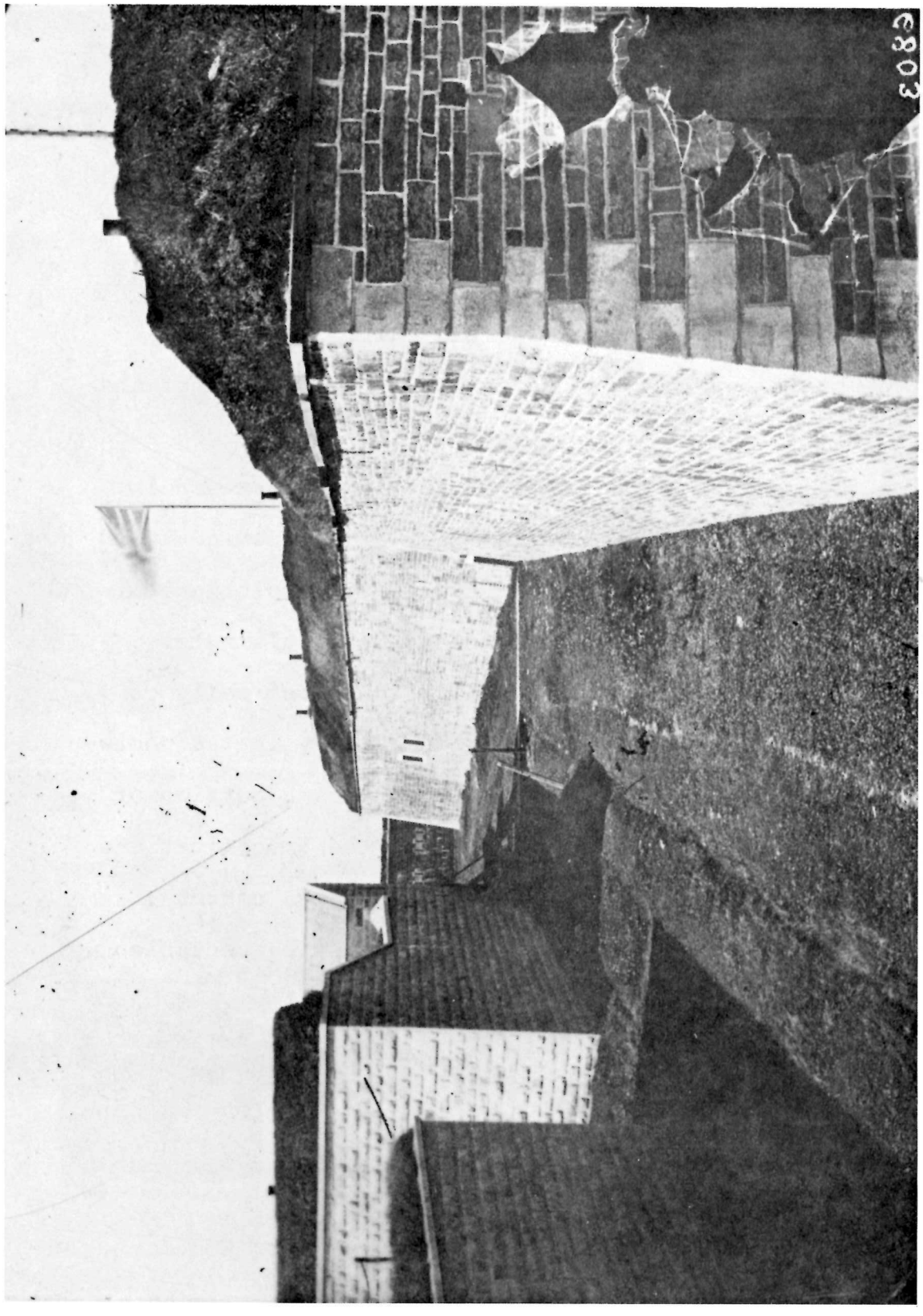
10 feet to an Inch — H.W.

South West Bastion. It is proposed to take down and rebuild that part of the Escarp coloured yellow marked in Plan No. 1.

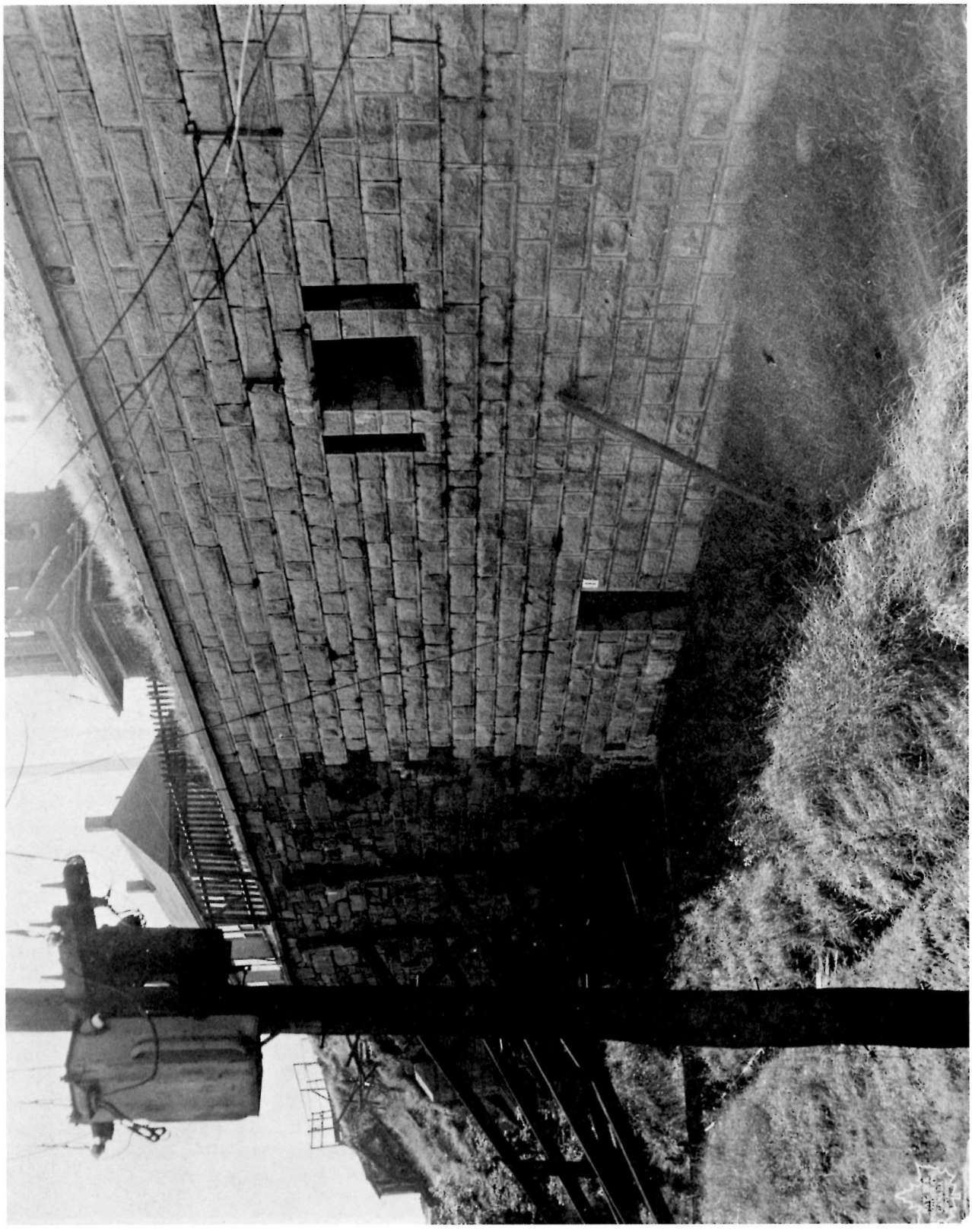
No. 19 Pulling down and rebuilding defective Work

Quantity		Rate	Amount £	s	d
	North West Bastion				
2400	Perches Masonry taken down and removed	1/	120	0	0
3026	cubic yards of Earth excavated	10d	126	1	8
4215	Perches Masonry in new Escarp	14/6	3063	11	2
7032	superl feet Workmanship face of wall	1/8	605	3	4
140	running feet Free Stone Coping to complete	6/	42	0	0
237	— „ — „ resetting old do —	6d	5	18	6
250	superl feet Granite in Cours — —	2/5	30	4	2
	South West Bastion				
2874	Perches of Masonry taken down and removed	1/	143	14	0
3300	cubic yards of earth excavated	10d	137	10	0
4200	Perches Iron Stone Masonry in new Escarp	14/6	3045	0	0
7125	superl feet of Workmanship on front of wall	1/8	593	15	0
50	feet running of free stone Coping to complete	6/	15	0	0
225	— „ — „ — „ old reset	6d	5	12	6
250	superl feet of cut granite in Cours	2/5	30	4	2
	Carried forward £		8288	[illegible]	2

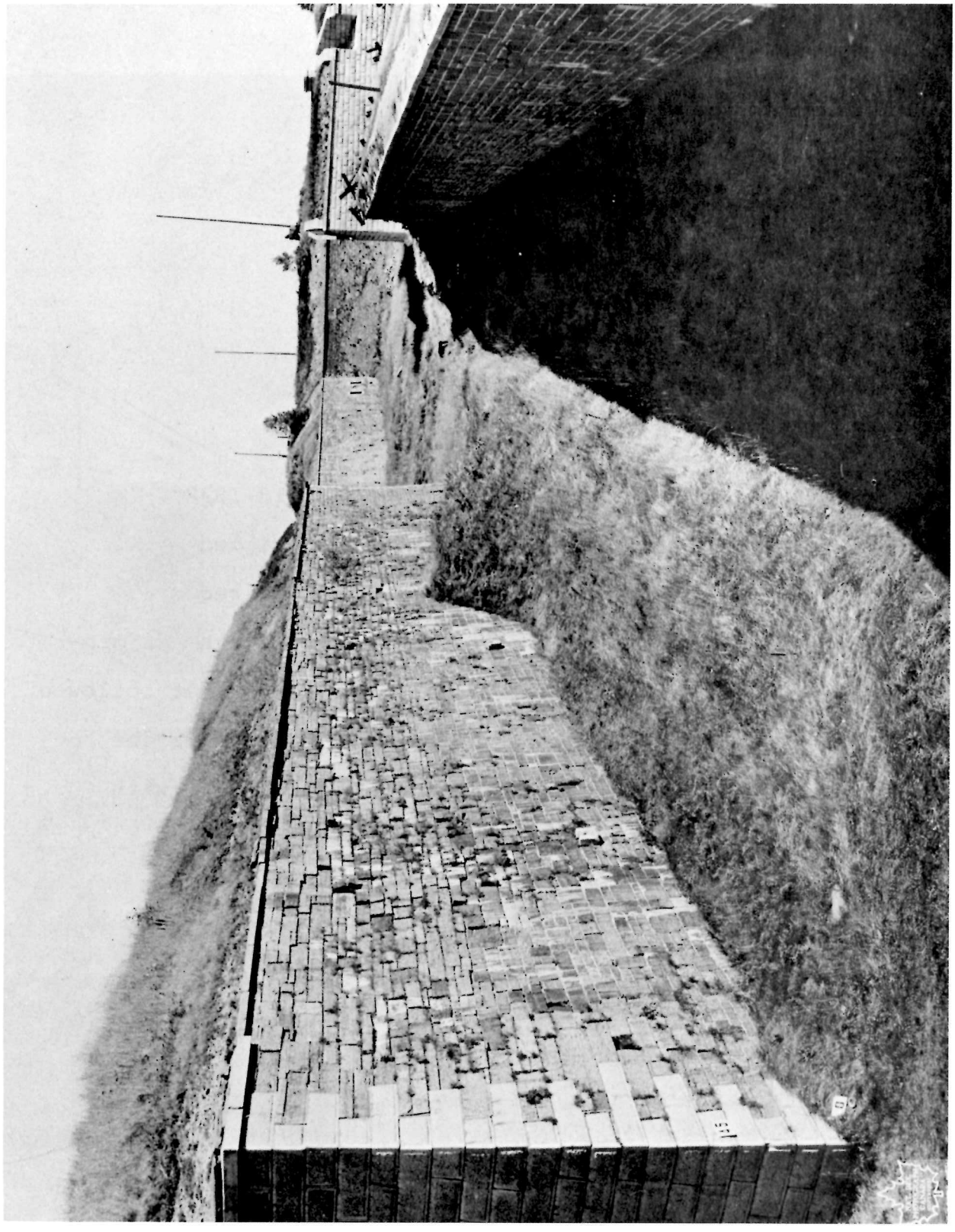
59 The south front, ca. 1875. Most of the escarp wall in this picture was built in 1830-31, including everything to the right of the embrasures of the two casemates of defence in the southwest demi-bastion, at centre. This was one of the walls about which General Le Marchant had his doubts in the mid-1850s. But, as the photograph demonstrates, the wall (when properly repointed) stood better than most of its critics ever expected.


3083

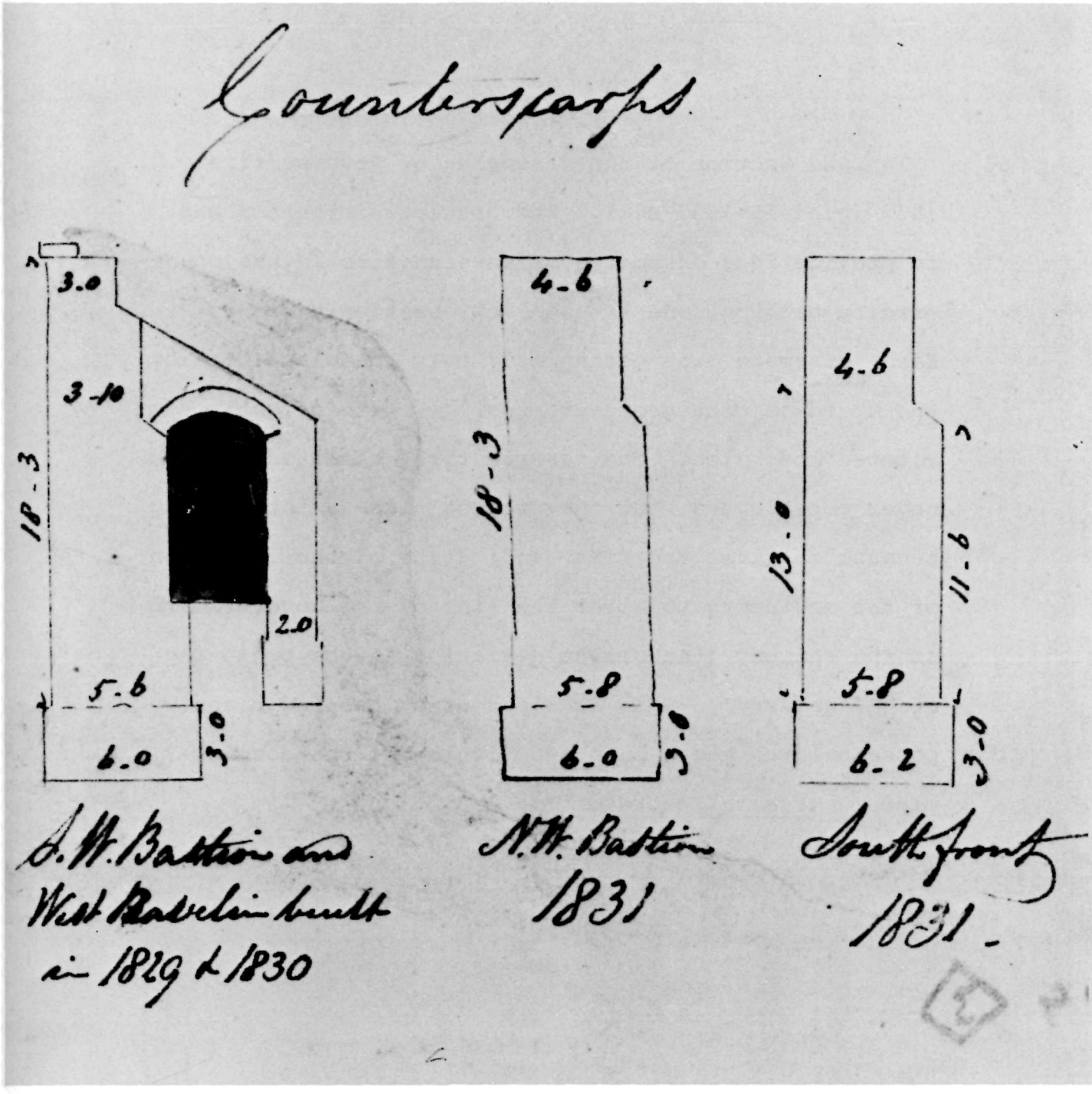
60 The east face of the southeast salient, 1950. The ultimate durability of the old walls is perfectly demonstrated in this photograph. To the left of the picture is a portion of the old ironstone-faced escarp built in 1830. Despite the provision of external masonry buttresses (one is visible just behind the second strut, to the left of the hydro pole) and of wooden struts, the old ironstone walls ultimately collapsed. The weakness of the ironstone walls compared to the granite ones shows clearly in the photograph. To the right of the picture is a portion of the granite-faced escarp built to the specifications of the 1836 estimate. After more than a century, the granite walls were still in fairly respectable condition. (Public Archives of Canada.)



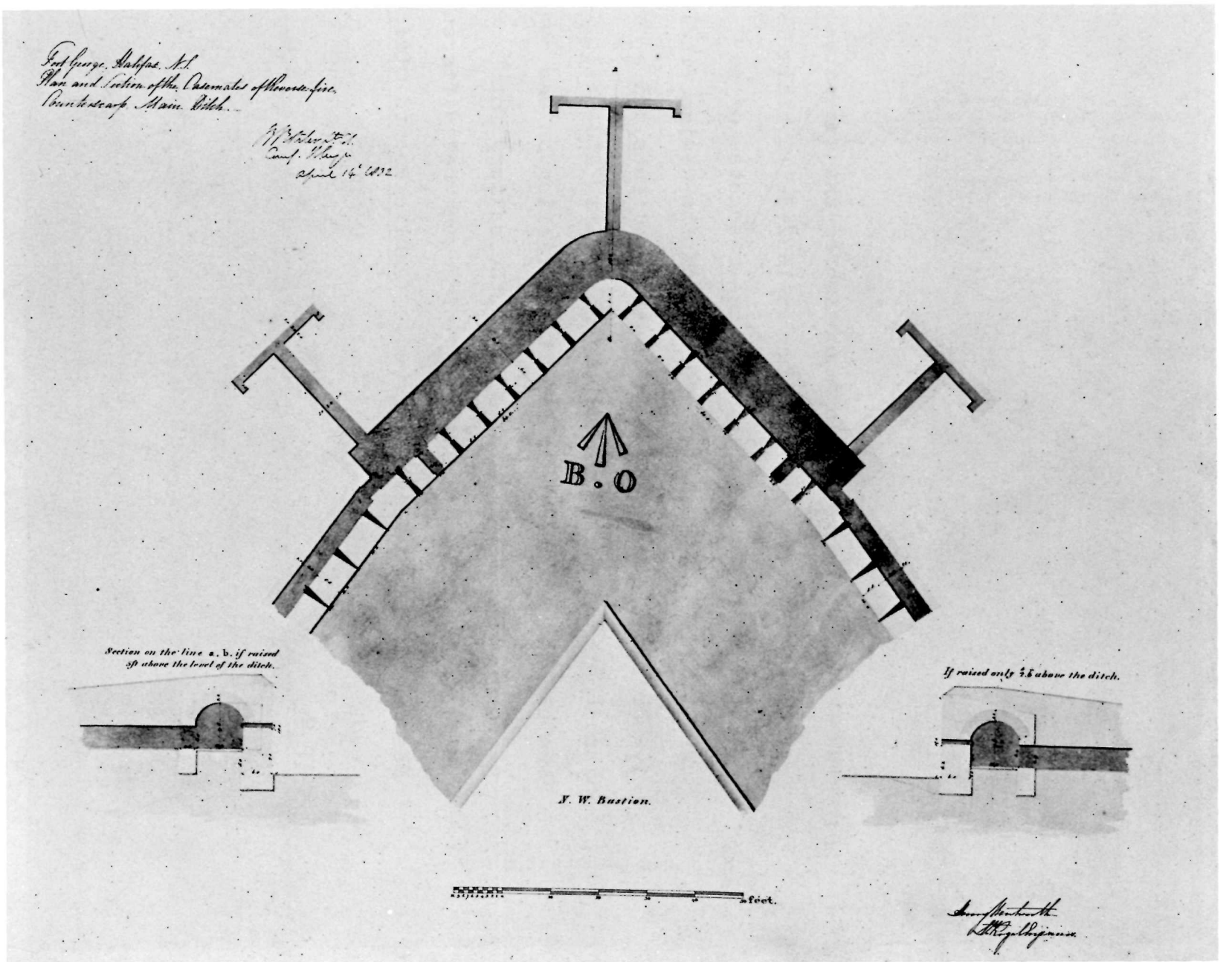
61 The west front, 1950. Some of the old ironstone escarps fared better than others. The face of the northwest demi-bastion in the foreground of the picture was rebuilt in 1831-32 and has the thickest profile of any wall in the Citadel. The gargoyles visible along the bottom of the wall (two are visible; a third is hidden behind the mound of earth) were installed in the course of rebuilding. In the original design of the wall "Square wooden tubes" running down the interior of the wall led surface water to the gargoyles. (Public Archives of Canada.)



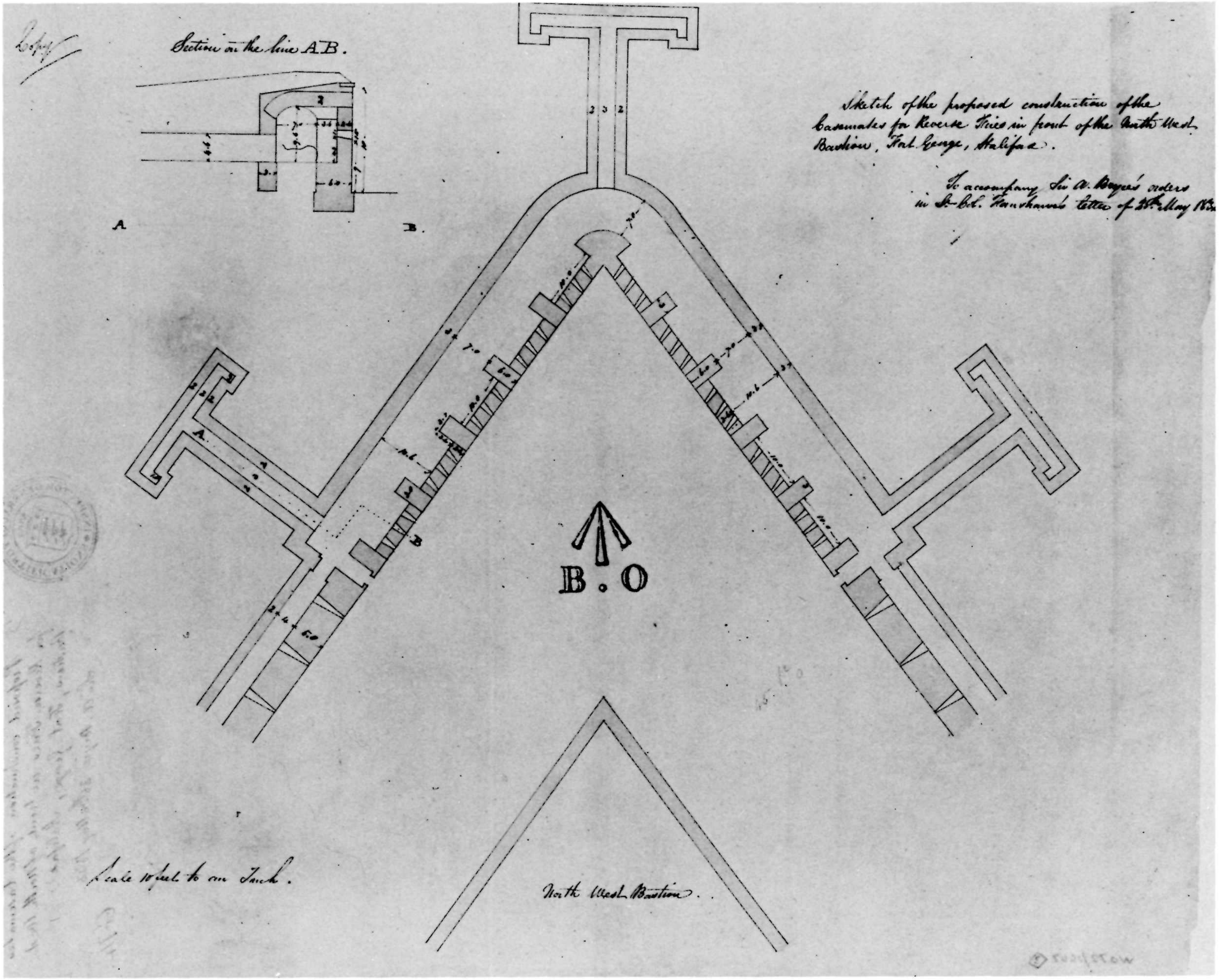
62 "Counterscarps", 1832 (detail from plan 13-1832-2-6). Unlike the escarps, the counterscarps designed by Colonel Nicolls were adequate for what was required of them. As can be seen in these sections, the original design was not much altered in the years that followed. The counterscarp design used in 1831 (right) was the standard for all subsequent counterscarps built with a continuous-arch gallery. (Public Record Office.)


Counterscarps.
3.0
3-10
18-3
2.0
5.6
6.0
3.0
4.6
18-3
5.8
6.0
3.0
4.6
13.0
11.6
5.8
6.2
3.0
S.W. Bastion and
West Rabelin built
in 1829 & 1830
N.W. Bastion
1831
South front
1831.

63 "Plan and Section of the Casemates of Reverse fire...", 1832 (plan 15-1832-4-1). The original intention was to provide four casemates of reverse fire in the counterscarp gallery, one at each demi-bastion salient. Each "casemate" was essentially only an enlargement of the standard continuous-arch gallery with slightly altered loopholes. The reverse fire casemates were never constructed, but the present plan is interesting because it gives the first indication of the intention of the engineers to alter the line of the counterscarp at the salient (the slight deviation at the beginning of the gallery). This is also one of the few plans we possess which has a plan and section of the countermines. (Public Record Office.)

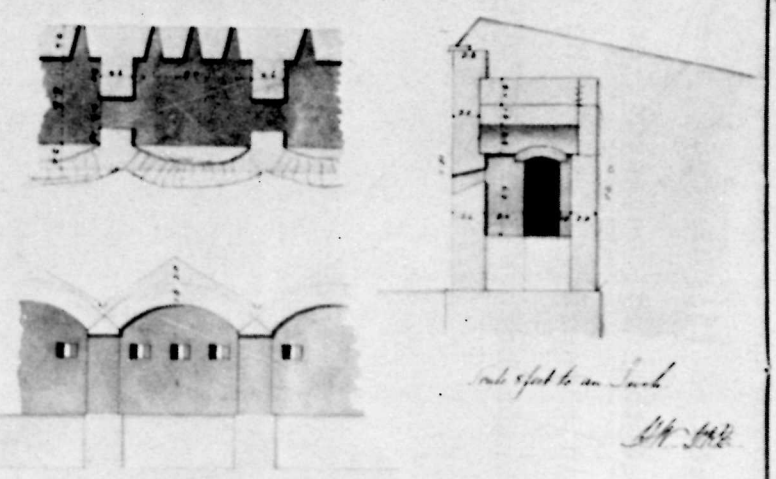

Fort George. Halifax. N.S.
Plan and Section of the Casemates of the west face.
Counterscarp. Main Ditch.
B. O
Section on the line a. b. if raised 8ft above the level of the ditch.
If raised only 7.6 above the ditch.
N. W. Bastion.
feet.

64 "Sketch of the proposed construction of the casemates of Reverse Fire...", 1832 (plan 15-1832-5-1). This is yet another rejected design for the casemates of reverse fire. It is also the origin of the design finally adopted for both the demi-bastion salients and a large part of the remainder of the gallery and wall. The plan proposed here is still a variation on the continuous arch, but the division of the gallery into small inter-connected chambers (of a somewhat different design) was ultimately approved. (Public Record Office.)


Copy
Section on the line A.B.
A
B.
Sketch of the proposed construction of the Casemates for Reverse Fires in front of the North West Bastion, Fort George, Halifax.
To accompany Sir A. Bryce's orders in Lt. Col. Henshaw's letter of 24th May 18
B. O
Scale 10 feet to an Inch.
North West Bastion.

65 Plan and section of the counterscarp and gallery as proposed by Lieutenant Peake, 1833 (plan 15-1833-6-15). This proposal was the next stage in the evolution of the final revised design for the counterscarp and gallery. The segmented design of the previous plan (Fig. 63) has been modified here so that each segment has its own arch. The final design was very close to this, with only two major differences: the arches were not provided with dos d'anes as shown here, and the doorways between the chambers were not arched. (Public Archives of Canada.)

Inland of the Counterscarp with Gallery and Mines as at present building or those described by Section attached to Lt Colonel Bolderis Estimate 1st Jan. This proposed to construct the part remaining to be built according to Plan and Sections as shown herewith. 1st Because less Masonry is required and a considerable reduction of Expence - 2d The Galleries will be lighted - 3. Better Musketry fire will be obtained and they will form a good substitute for the Casemates of Rivers fire at the Northwest Salient Angle, where a superficial Foundation is already laid & the Counterscarp has been turned from Pier to Pier. The Counterscarp wall is relieved from the thrust and a base of Wall is gained - 5th Grooving is avoided, which is very desirable with small quick arches and indifferent workmen -



Scale 8 feet to an Inch

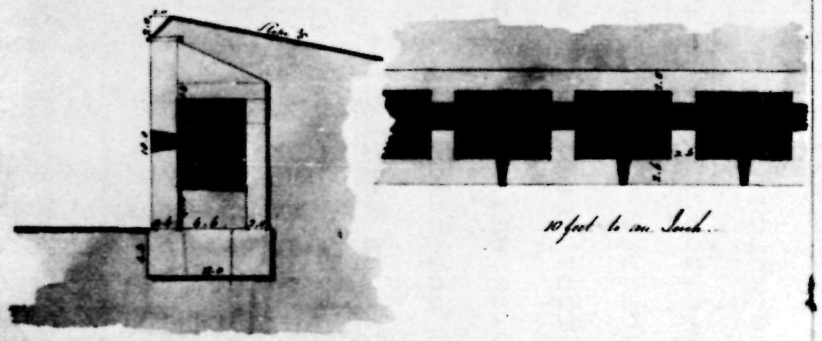
Lt Col Jebb

No 4 Counterscarp & Mines & North Front -

Quantities		Rate	Amount
3747	Cubic Feet of Ashlar Masonry	1/2	264 2 6
60	Square Yards Laid for Cement	6/-	18 0 -
436	Perches of Brick Work in arches	32/-	6 0 0 -
1300	Sup[e] Feet of Cut granite Coping	2/5	166 15 0
540	Sup[e] feet of Cut granite in Loop holes	2/5	69 5 0
12000	Sup[e] feet of Workmanship on front of Wall	1/-	1000 0 0
96	Perches of Rough Stone Masonry	1/2	6 0 0 0
240	Tons of Stone Flagging	5/-	60 0 0
			£ 5580 2 6
	Contingencies 10		558 0 3
			£ 6050 2 9

66 Two plans and two sections of the counterscarps, 1836 (plan 15-1836-2-9). The final versions of the two types of counterscarp are illustrated in this plan. The upper plan and section are of the segmental gallery. About three-quarters of the counterscarp was constructed to this design. The lower plan and section are of the old continuous-arch gallery. This was used only in those sections of the counterscarp where work had begun before 1832. (Public Archives of Canada.)

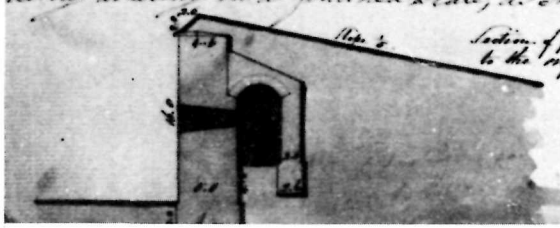
This provides for completing the Counterscarp on the Front in the manner detailed in Item 7, the Front Wall being 18 feet high.



10 feet to an Inch.

This provides for completing the North Carolina Counterscarp, as shown on Plan No 1, in a darkened shade.

The circular part of the Counterscarp wall to be finished according to the original Plan and Section with a facing of iron stone to correspond with the work done in 1850. The other shaded part requires still about 3 feet to complete to height, the gallery being already in a finished state, as shown on Plan No 1



Section of part to complete according to the original Plan.

Item 8. Counterscarp North front to complete the East and West ends—

A very small portion of the Counterscarp of the Northern front has been excavated, as shewn by the Plan; the excavation is for 35 feet in length by 9 feet mean breadth and 4½ feet deep, a portion being already excavated.

The Masonry is for the foundation 250 × 12 × 4½ deep; front wall above foundation 250 × 2½ × 18; back wall 250 × 2 × 14; — 21 piers 6½ × 2½ × 13½; Cordons 250 × 8½ × 2 mean thickness, and 4 Steps, length of walls 90 × 2 × 7.—

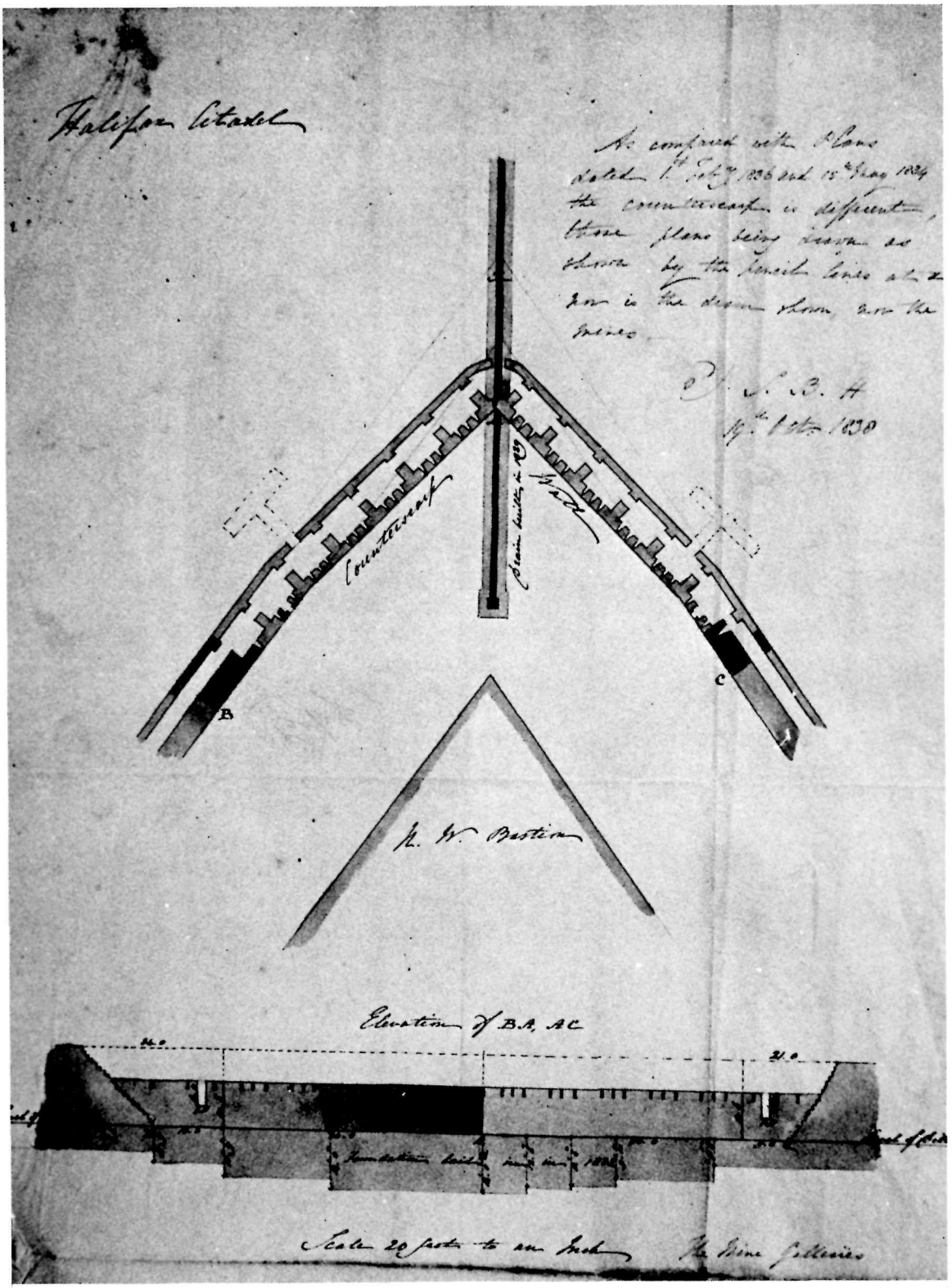
The workmanship on face is 250 feet in length by 19½ feet including the cabions; — 22 arches 7 feet long by 2.6 thick and 9 feet Span. — Sills 250 feet in length by 1 foot wide

Item 9. To complete the North Carolina Counterscarp.—

The excavation is for the circular portion of the Counterscarp opposite the Cabions 55 feet by 6 feet wide and 3 feet deep; — Back wall of Gallery 70 × 2½ × 3 and 3 Piers 4.5 × 2 × 2.

The Masonry as follows, — Foundation of Circular part 55 × 6 × 3; back wall 70 × 2.6 × 3; front wall above 55 × 5.2 × 16; back wall above 70 × 2 × 4. Cordons 60 × 8 × 1. The part to complete is 170 feet in length by 4.9 wide and 3 feet high. 3 Steps, length of walls 90 × 2 × 5. Workmanship on face 55 × 17½ including the cabions + 170 × 3 for the part to complete, the coping being already prepared for this portion. Back of Gallery to circular part 60 × 1.8 thick and 8 feet Span. — Sills 60 × 8.

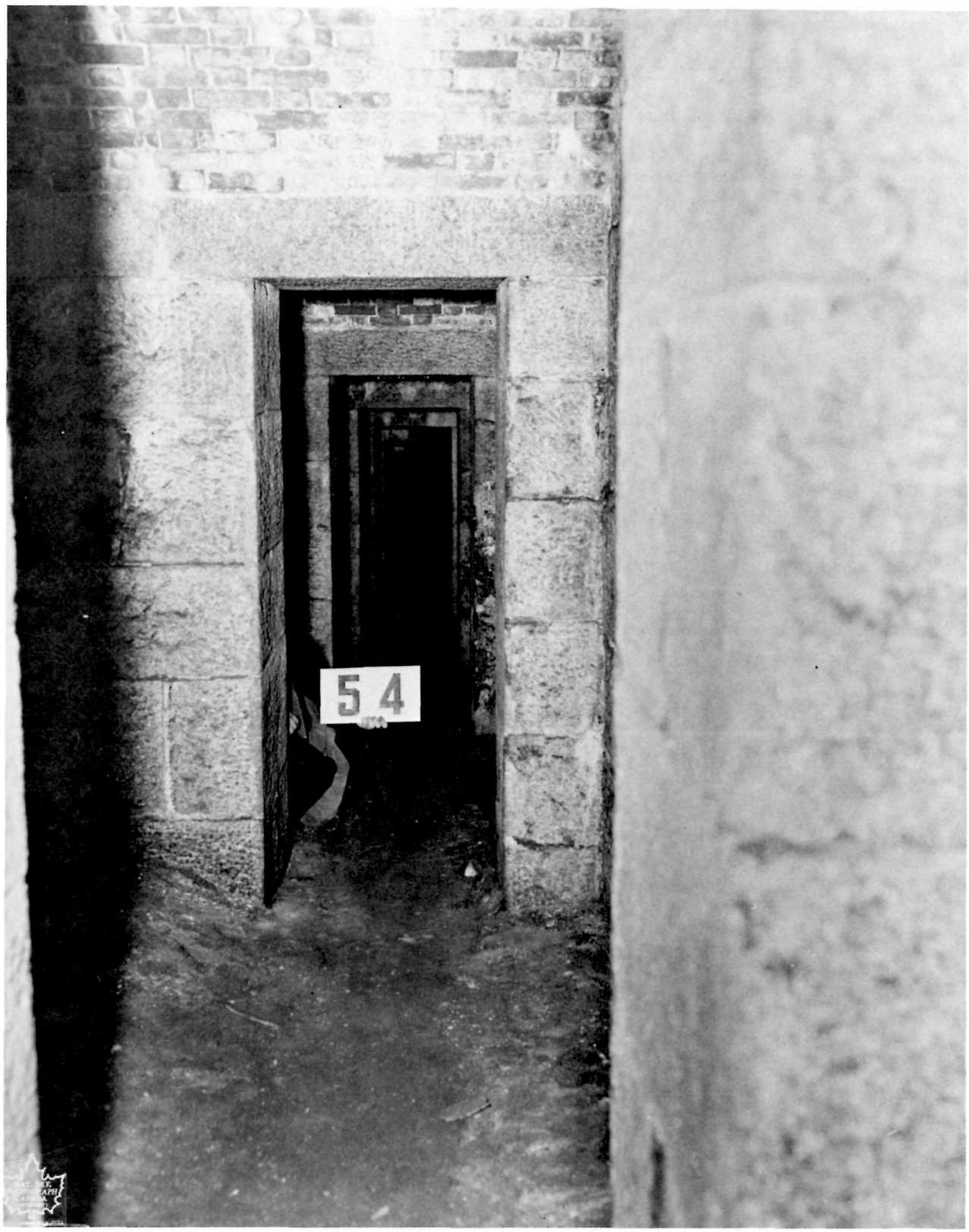
67 Plan and elevation of the counterscarp and gallery opposite the northwest demi-bastion, 1838 (plan 15-1838-13-1). This particular section of the counterscarp had been begun as far back as 1831 and was still in the course of construction. Difficulties encountered in its construction resulted in the change of design of the counterscarp and the abandonment of the casemates of reverse fire. The chief problem lay in the fact that the counterscarp at this point was being built on "made ground" - that is, ground which had been built up with earth excavated from the ditch. This meant that the foundations had to be excavated to an unusual depth, and accounts for the 14-foot footing at the salient. The drain shown on the plan was for conducting water out of the ditch. It is uncertain where the drain led to. (Public Archives of Nova Scotia.)


Halifax Citadel
As compared with Plans
dated 1st July 1836 and 15th May 1834
the counterscarps is different,
those plans being drawn as
shown by the pencil lines a b c
&c. but the drawn shown are the
lines
Counterscarp
B
C
N. W. Bastion
Elevation of B A, A C
Scale 20 feet to an Inch

68 The counterscarp gallery, west front, 1950. This photograph was taken at the counterscarp re-entrant on the south side of the ravelin, and shows the gallery opposite the south side of the ravelin. The type of gallery shown here is the old continuous-arch variety. There is no documentation for the wide corridor in the foreground of the picture. (Public Archives of Canada.)

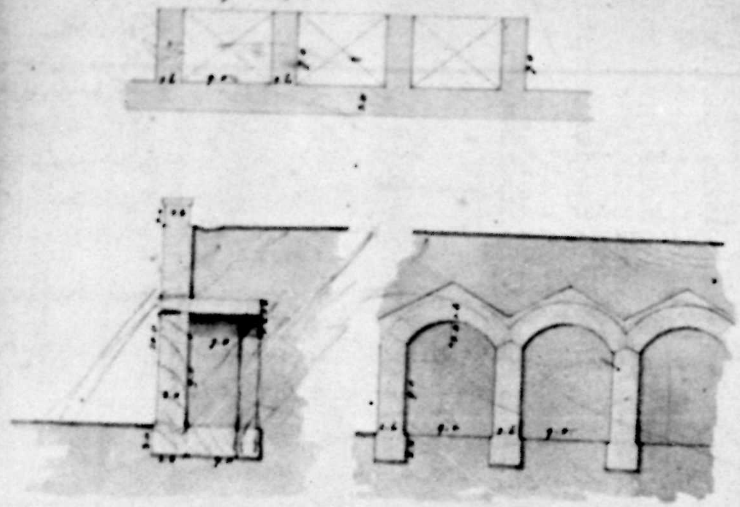

55

69 The counterscarp gallery opposite the south face of the redan, 1950. This photograph was taken in the part of the gallery which runs under the gate. It shows the portion of the gallery which goes downhill to the redan salient - a good example of the segmental type. (Public Archives of Canada.)


5 4

70 "Proposed method of building the retaining wall of the Rampart", 1834 (plan 11-1834-3-2). The standard pattern for the retaining wall intended for the uncasemated portions of the ramparts. The similarity between this and the segmental-pattern counterscarp gallery (Figs. 64 and 65) is obvious. The retaining wall was not constructed exactly as described here (see Figs. 71 and 72). (Public Archives of Canada.)

This Estimate provides for joining the Redan to the faces of the North east and South east Bastions including eight Casemates of defence, Two Sally ports, the main Entrance and the retaining wall of the Rampart of the Eastern Front with the steps of communication.



Proposed method of building the retaining wall of the Rampart.
Scale 10 feet to an Inch. AW

The walls and piers of the Casemates are of the same thickness as [illegible] in No. 2. The piers to the retaining wall of Rampart 2 feet [illegible] thick, the retaining wall 3 feet thick. The arches are 1.6. The Casemates [illegible] 10 feet wide, [illegible] arches are 2 [illegible] thick. The Sally port arches are [illegible] thick. There are [illegible] cut Granite steps, [illegible] [illegible] [illegible] [illegible] Granite [illegible]. The [illegible] and 30 Sally ports [illegible].
The floors of the Casemates are to be brick on edge [illegible] [illegible] 5 feet [illegible] [illegible] doors & frames [illegible]. [illegible] hinges, [illegible] to be detailed when it becomes necessary to demand them.

[illegible] the Guard room Casemate [illegible] to be [illegible] with [illegible] [illegible] [illegible] and 2.

The [illegible] should [illegible] the doors, frames, and the [illegible]

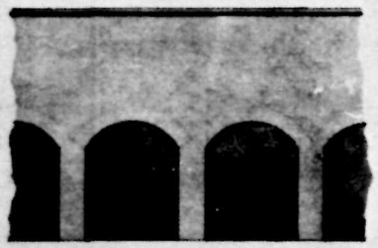
No. 3. Casemates of Defence, Casemated Guard room, Sally ports, main Entrance, and retaining Wall of Rampart. East Front

Quantity		Rate	Amount		
1033	cubic yards of earth excavated for foundation	1d	55	2	6
668¾	perches Masonry in walls & foundation	14/2	4044	2	6
1178	perches Brick work in arches	30/	1767	10	0
806	squares Tiling laid in Cement	60/	2418	0	0
15390	sup. feet workmanship on face of wall	1/8	1282	10	0
2422	sup. feet cut Granite steps &c.	2/6	316	10	6
4500	square yards brick on edge floors	5/6	124	17	0
54	cubic feet of oak in door frames	2/11	7	17	6
195	sup. feet 2 inch oak in doors	1/5	13	16	3
405	... [illegible] & frames complete	1/10½	37	19	[illegible]
327½	lbs wrought iron hinges, bolts &c.	3	40	19	6
5	cwt Lead for the above	32/6	8	2	6
	Privy				
30	cubic feet Pine Scantling joists	1/1	1	12	6
2	squares 2 inch Plank	32/2	3	4	4
3	iron rimmed Locks	4/6	0	13	6
	Guard Room				
50	perches Brick Work Partitions	30/	75	0	0
4	strong Padlocks for Cells	4/	0	16	0
100	yards of 2 coat Oil Paint to doors &c.	7	4	7	6
	Carried forward		3676	13	5½

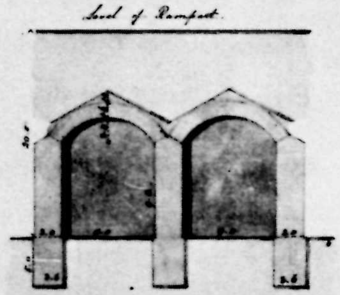
71 Elevation and section of the rampart retaining wall, 1836 (plan 11-1836-2-5). The retaining wall detailed here was intended for the north, south and west fronts. No retaining wall of this description was ever built on the north front (the ramparts were casemated instead) and we possess a plan for the south front retaining wall as constructed (Fig. 72). This is, however, our only plan of the west front retaining wall. Note how this plan differs from the preceding one in its description of the wall footings. (Public Archives of Canada.)

This Item provides for completing the retaining wall of the Rampart of the North, South and West fronts – two Sally ports, two Casemates at the Well, North front, two Casemates of defence and a Soldier's Privy

The construction of the retaining wall of the Rampart is shown in the last Item, and on Plan No. 1. – The piers, arches, dos d'anes, front walls &c. of the Casemates are the same as those detailed in Item 2. –



Front elevation of retaining wall



Longitudinal Section of retaining wall. –

Scale of 10 feet to an Inch. –

H. Wentworth
F. Ch.

There are 20 granite steps to communicate to the Rampart and 10 for the Sally ports. – The flooring of the Casemates and Sally ports to be of brick on edge – 3 oak doors and frames complete – 3 Sashes and frames do. The Iron is for gratings, hinges, bars, bolts &c. – The lead for gutters as before described

Item 4. – Retaining wall of Rampart, North, South & West fronts, including Sallyports, Ramp, Steps, Casemate over well, and Casemate for Stores &c. – under Rampart, North front. –

The excavation is for the foundation of the retaining wall 1000 feet in length by 3½ feet wide, and 5 feet 9 mean depth, piers to retaining wall 64 (7 × 3 × 5 mean depth). 2 Sallyports 45 feet long 13 feet wide & 21½ feet deep through old Ramparts; also for Ramp 33 × 10 × 9; for Steps 17 × 12 × 8½ and Privy 23 × 19 × 30 excavated from old Ramparts of West front, and for the foundation of the piers of the Casemates at the well 4 (50 × 4 × 8). –

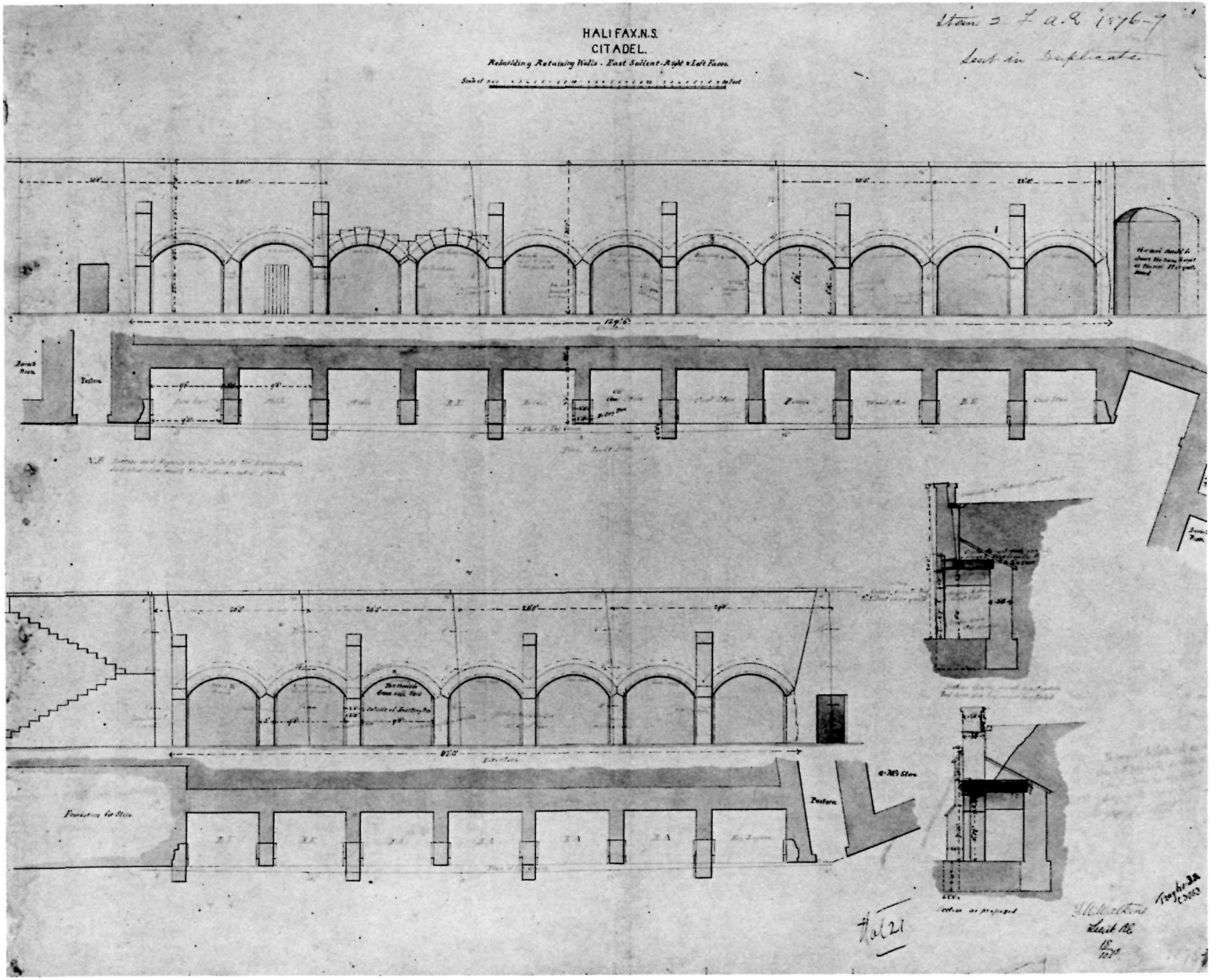
The Masonry is as follows, retaining wall foundation 1000 × 3½ × 5 mean: – foundation of 64 piers to retaining 7 × 3 × 5 mean; 4 Sallyport piers 45 × 3½ × 3; – 2 Ramp walls 25 × 4 × 9 mean. Cheeks to Steps 15 × 3 × 9 mean. Casemate over well 2 (50 × 5 × 12) for foundation of piers, and 2 (50 × 4 × 7) for piers above foundation.

Retaining wall above foundation – 1000 × 3 × 20 and 1000 × 2½ × 2 for dwarf wall of Rampart; 64 piers to retaining wall 7 × 2½ × 9½; – dos d'anes to arches 60 (7 × 14 × 1); 4 Sallyport piers 45 × 3 × 7 and dos d'anes 2 (45 × 14 × 1) and dos d'anes to Casemates at well 2 (50 × 23 × 1) and walls to privy and pit &c.

The workmanship is for the face of the wall including the coping 1000 feet in length by 27 feet, the 63 openings of cells 9 × 10 being deducted.
The brickwork is for the arches to retaining wall 60 in number 1.6 thick and 9 feet span. 2 Casemates of defence 30 by 2.3 thick and 15 feet span; 2 Sallyports 45 by 1.6 thick and 6 feet span; 2 Casemates at well 50 by 2.3 thick 15 feet span; as also for arches of Privy, dust hole, Steps and Ramp. –
The tiling is for the above arches, excepting the arches of the cells of the retaining wall, which have a dos d'ane only, to be laid so as to turn off the wet sufficiently.

The Granite Steps to the Rampart and Sallyports are 6 feet by 1.6
The door frames 8 × 6 and the doors of 3 inch oak plank: 10 joists to privy 11 feet long 8 × 4.

72 "Halifax, N.S. Citadel. Rebuilding Retaining Walls - East Salient - Right & Left Faces," 1875 (plan 11-1875-10-3). This is our only plan of the retaining wall as built. It was drawn to illustrate a proposal for rebuilding. The proposal was accepted, and the features shown (notably the buttresses) were added to the wall. The plan is also interesting for the information it provides on the various uses of the recesses. (Public Archives of Canada.)


HALIFAX.N.S.
CITADEL.
Rebuilding Retaining Walls - East Saillent - Right & Left Faces.
Postern
Postern
Postern
Section as proposed

Plan Bibliography

A Escarps

1 02-1825-12-2: Sections through Nicolls's original plan for the Citadel.

2 02-1825-12-6: Similar to No. 1, above.

3 02-1825-12-8: Similar to No. 1, above.

4 14-1828-10-3: Section of the escarp built in the western bastions in 1829 (Fig. 54).

5 13-1831-5-1: Plan of the north ravelin revetments, showing the escarps of the north front and the date of construction (Fig. 80).

6 14-1831-13-1: Three sections of escarps, location uncertain.

7 14-1831-13-2: Section of west curtain escarp.

8 02-1832-2-2: Sections through a general plan of the Citadel (01-1832-2-1) showing the escarps proposed by Colonel Nicolls.

9 14-1832-2-5: Elevations of the western demi-bastions showing the state of the masonry.

10 13-1832-3-6: Five sections of escarp as built (Fig. 56).

11 02-1832-4-2: Two sections detailing alternative redan proposals and showing the curtain as built.

12 14-1833-6-6: Boteler's proposed escarp for the eastern front.

13 14-1833-6-14: Section of the escarp as built (west

front) and Boteler's proposal for a replacement.

14 14-1833-6-17: Peake's proposed escarp for the redan.

15 14-1834-3-1: Jones's proposal for the redan escarp; section and elevation (Fig. 57).

16 14-1834-3-8: Section of northwest bastion escarp as built, and section of proposed replacement (Fig. 58).

17 28-1836-2-3: Elevation of the redan escarp (Fig. 42).

18 14-1836-2-15: Same as No. 16, above.

19 04-1843-5-1: Two sections of escarps proposed for the northeast salient (Part 1, Fig. 8).

20 04-1848-2-1: Proposed alteration in the escarp coping (Fig. 32).

21 02-1852-4-2: Several small-scale sections of the escarps as built.

22 04-1854-6-1: Plan and section showing, among other things, the escarp coping as altered in the course of the staunching operations (Fig. 36).

B Counterscarps

1 15-1828-10-2: Section of counterscarp and gallery opposite west ravelin.

2 15-1828-10-4: Section of counterscarp and gallery, west front.

3 01-1832-2-1: Section of a casemate of reverse fire, section of the counterscarp and gallery, and plan of a loophole, all appended to a ground plan of the

Citadel (Fig. 55).

4 13-1832-2-6: Two sections of counterscarp and one of counterscarp and gallery, all as built (Fig. 62).

5 15-1832-4-1: Plan of proposed casemates of reverse fire, opposite the northwest demi-bastion, with two sections showing proposals for the location of the gallery. Plan also shows the countermines (Fig. 63).

6 02-1832-4-2: Sections showing, among other things, two alternative proposals for the counterscarp and gallery opposite the redan.

7 15-1832-5-1: Plan and section of a proposal for the casemate of reverse fire opposite the northwest demi-bastion (Fig. 64).

8 15-1833-6-7: Boteler's proposal for a counterscarp without gallery or mines.

9 15-1833-6-8: Boteler's proposal for a counterscarp with gallery.

10 15-1833-6-9: Boteler's proposal for a counterscarp with counterforts.

11 15-1833-6-11: Boteler's proposal for a counterscarp with gallery and mines for the eastern front.

12 15-1833-6-12: Boteler's proposal for a counterscarp with gallery and mines for the southern front.

13 15-1833-6-13: Boteler's proposal for a counterscarp with gallery and mines for the south ravelin.

14 15-1833-5-15: Peake's proposal for a segmental counter-

scarp gallery; this was the origin of the scheme finally adopted for much of the gallery (Fig. 65).

15 15-1834-3-4: Section of the counterscarp and gallery, eastern front.

16 15-1836-2-8: Same as No. 15, above.

17 15-1836-2-9: Two sections of the counterscarp and gallery, northern front (Fig. 66).

18 15-1836-2-10: Two sections of the counterscarp and gallery, south front.

19 15-1836-2-11: Section of counterscarp and gallery, west front (south end).

20 15-1836-2-12: Two sections of counterscarp and gallery, south front.

21 15-1838-13-1: Plan and elevation of the counterscarp and gallery opposite the northwest demi-bastion, showing it in the course of construction (Fig. 67).

22 28-1846-3-7: Plan and section of counterscarp and gallery opposite the northeast salient.

C Retaining Wall

1 11-1833-6-4: Boteler's proposal for a retaining wall.

2 11-1833-6-5: Another Boteler proposal.

3 11-1833-6-10: A third Boteler proposal.

4 11-1833-6-16: Peake's proposal for a retaining wall with arched recesses. This was the origin of the scheme finally adopted.

5 14-1833-6-17: Another Peake proposal.

6 11-1834-3-2: Jones's version of Peake's proposal.

7 11-1836-2-4: Same as No. 6, above.

8 11-1836-2-5: Elevation and section of retaining wall with arched recesses (Fig. 71).

9 11-1849-4-6: Small section of the top of the retaining wall.

10 04-1854-6-1: Section showing the top of the retaining wall as altered in the course of the staunching operations (Fig. 36).

Miscellaneous Structures

1 The redan cellars

In January 1843, Colonel Calder drew up a list of the alterations and additions he proposed for the Citadel. Among the subjects he considered was the problem of storage for the officers' quarters in the redan casemates:

> The officers Quarters and Mess accommodation constructed in the Redan having no conveniences beyond the walls of the Rooms, the necessity of constructing in rear of the area wall three small vaults in each face...is submitted, to serve as Cellerage for the mess, for use of the messmen, and places for fuel during the winter.[1]

The proposal was accepted by the Fortifications department, and an item for the service was included in the estimate drawn up in May of the same year (see section 4, below).[2] The cellars were constructed a few years later.

Structurally the cellars resemble small casemates. Each of the rooms is 10 ft. by 24 ft. by 6 ft. 6 in.

ing to the area (see Fig. 73).

2 The gate and bridge

The gates, entrance tunnel and bridge were all provided in item 3 of the 1836 revised estimate (see "Casemates", section 7).[3] The entrance tunnel was constructed at the same time as the redan casemates in the late 1830s, but the bridge was not built until 1850. It is not known when the gates were constructed.

In addition to the description of the bridge as proposed, we also possess a set of plans for both the standing and drawn portions of the bridge as finally constructed (see Figs. 74 and 75). These are entirely reliable for information on the method of construction employed, and in any differences between the written description in the estimate and the plans, the former should be disregarded. The estimate does, however, give some idea of the type of timber used.

The plan and sections drawn to illustrate the proposal for installing a water tank under casemate No. 50 (Fig. 77) also give some information on the south wall of the gate tunnel and the doors leading to the guardroom (casemate No. 49).

3 The sally ports

In the original plan of the Citadel, seven sally ports were envisaged, including three in the west curtain (one leading to the caponier), one in the north front re-entrant,

one in the south front re-entrant, and two in the east curtain. Of these, three were abandoned (the one leading to the caponier and the two in the east curtain) and two were added, at the redan ends of the east faces of the eastern salients, for a final total of six sally ports.

Of these six, the two in the west curtain were built to Colonel Nicolls's original design; since the surviving documents for much of the building during the early period are sketchy, we know little about them. A plan and sections drawn to illustrate alterations in the privy drainage in 1856 has two sections of the south sally port (see Fig. 37).

The four remaining sally ports were provided in the 1836 estimate; the east ones in item 3 and the re-entrant ones in item 4 (see "Casemates", section 7). In 1857, an item providing for the construction of doors for the ditch ends of the sally ports was inserted in the Ordnance annual estimate. Because of an administrative error made in London, funds were authorized for only one of the six doors, and the item had to be included again in the following year's estimate.[4] As so often and so discouragingly happens, the text of the estimate for 1858-59 has not survived, and we no longer possess the detailed specifications for the doors. A plan and section of them has, however, been located (see Fig. 78).

4 Estimate for the construction of the redan cellars, 1843[5]

The cellars were built as described in this estimate.

Six Cellars for the Officers Barracks and Mess

Item 7

This Item provides for the construction of Six Cellars for the Officers Barracks and Mess as shown on the annexed Sketch. -

The masonry is in the foundation of the back and pier walls, in the walls above foundation and dos d'anes, - foundation of back walls 41 x 4 x 1, - 2 pier walls 24 x 4 x 1, - 2 pier walls above d^{o} 24.0 x 6..0 x 3..6, - 2 d^{o} 24..0 x 6..0 x 3..0, - 24.0 x 2.6 x 1..0, - rear Wall above foundation 41 x 6 x 3..6, - dos d'anes 6/21..0 x 8..0 x 0..9. - The Brick work in the arches 25..0 x 14..0 x 1..2. - The Lead for the 2 gutters 29..0 x 1..6 - 8 lbs to the foot; - door frames 6 x 4 ins: - $1\frac{1}{2}$ inch ledged doors, grooved & tongued

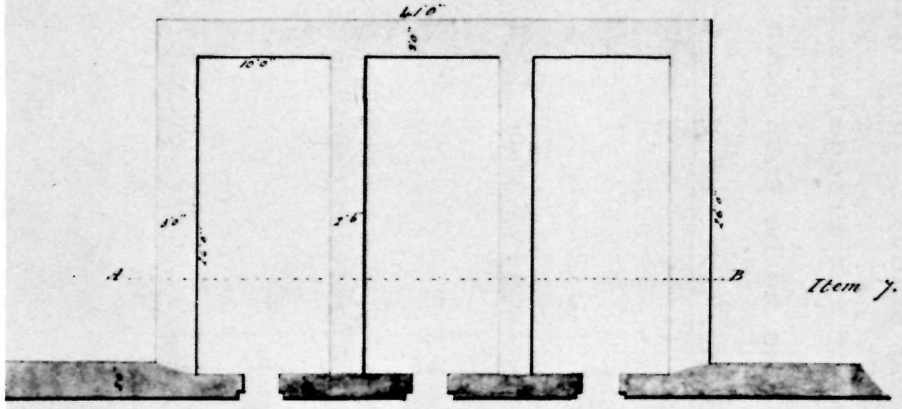
(feet; f f f ins)

[Estimate]

Quantity	Detail	Rate	Amount
190	perches masonry in foundation walls & dos d'anes	14/2	134.11.8
74	perches Brickwork in arches	30/-	111.0.0
$12\frac{1}{2}$	squares Flag Covering to dos d'anes	40/-	25.0.0
$5\frac{1}{2}$	do. do for floors	35/-	9.12.6
$6\frac{1}{4}$	cwt Sheet lead, 8 lbs per foot, in Gutters	32/6	10.3.$1\frac{1}{2}$

$7\frac{1}{2}$	cubic feet Pine timber, in door frames	1/6	0.11.3
54	supl. feet $1\frac{1}{2}$ inch Pine ledged doors	5d	1.2.6
3	pairs 18 inch hook & eye hinges	3/-	0.9.0
3	12 inch Stock locks	4/-	0.12.0
	[Total]		£293.2.0$\frac{1}{2}$
	Add Contingent 1/10		29.6.2$\frac{1}{4}$
	For three		322.8.2$\frac{3}{4}$
			2
	For six		£644.16.5$\frac{1}{2}$

73 "Sketch of Vaults or Cellars...", 1843 (plan 09-1843-5-4). The cellars were located under the parade in the redan and were entered through the redan area. They were constructed in the manner described in the plan. (Public Archives of Canada.)



Item 7.

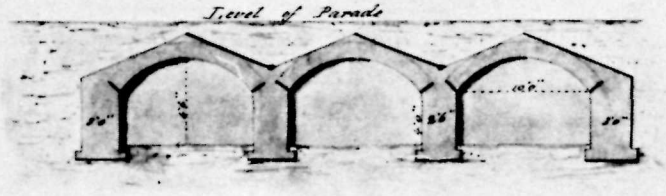
Sketch of Vaults or Cellars

for Officers Barracks

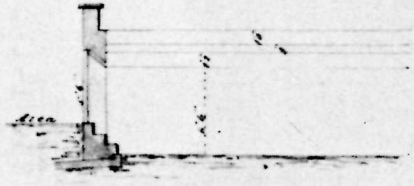
To accompany Estimate dated

22 May 1843

Section on AB.



Scale of 10 feet to an Inch.



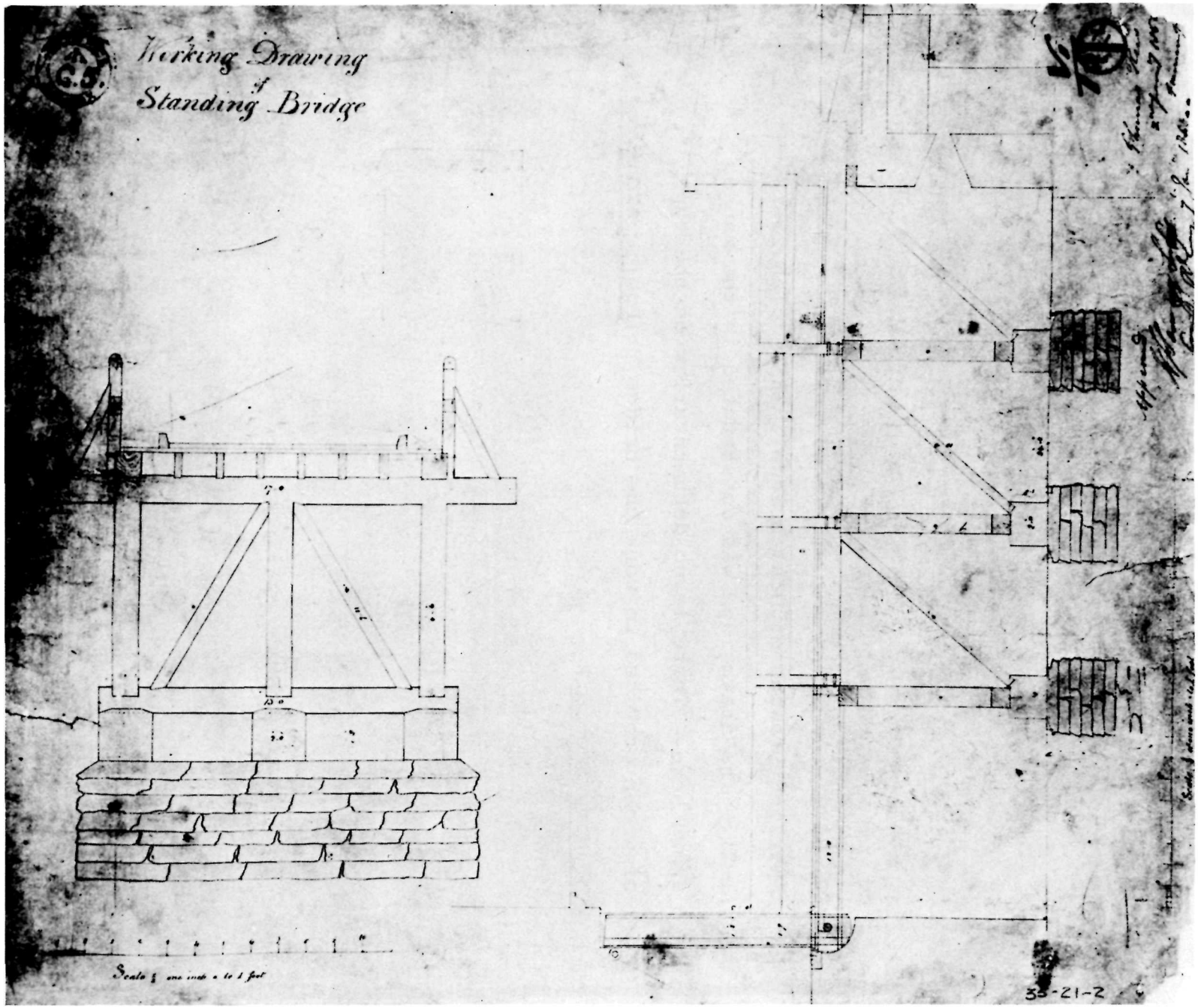
Section showing the entrance to the Cellars, & the drainage from thence to the Sewer under the Area, should any water get into them by accident.

Bern.d H. Willingham Lt R.E.

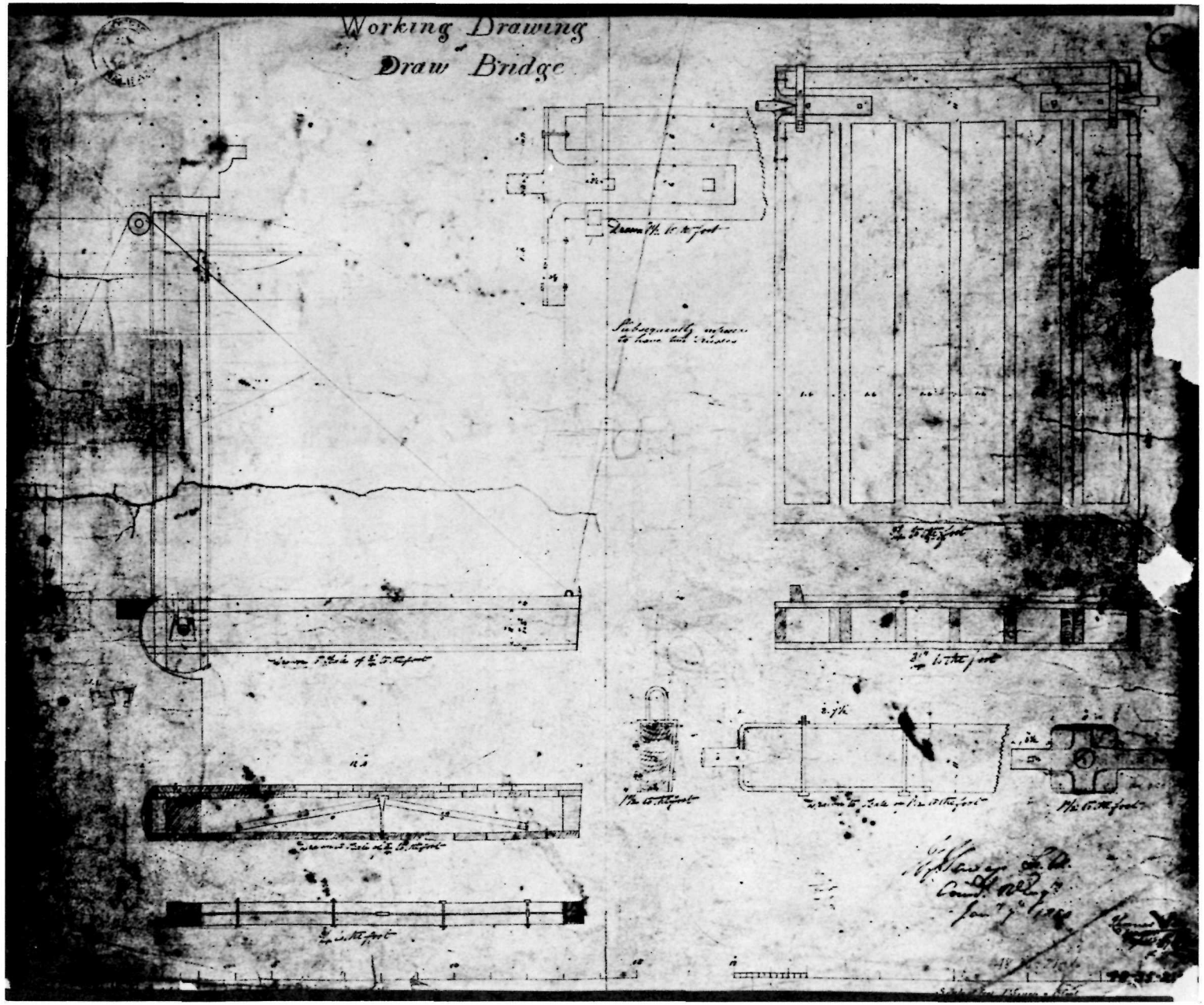
Pat.k Calder Lt Colonel Commanding Royal Engineers

22. May 1843.

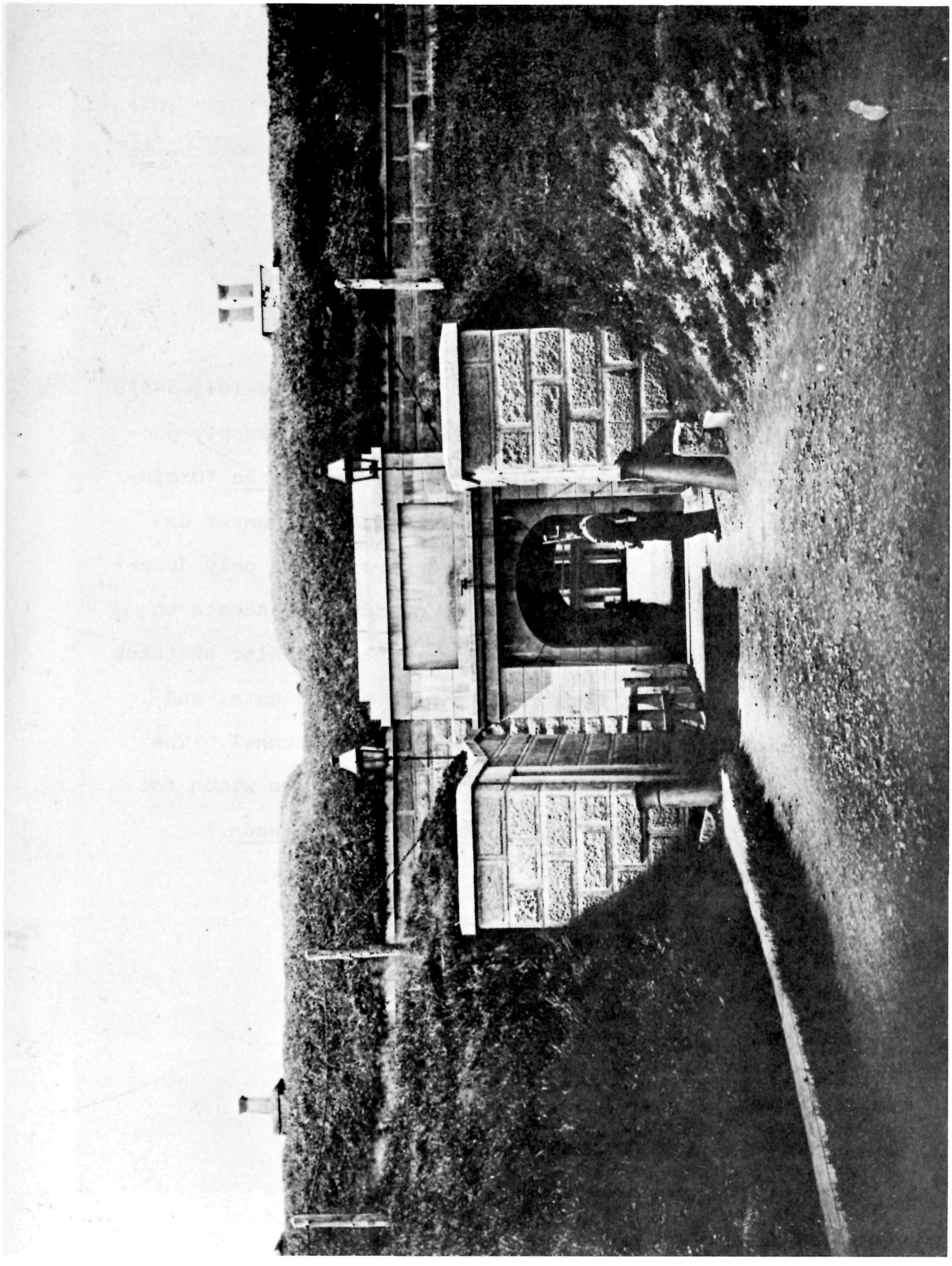
74 "Working Drawing of Standing Bridge", 1850 (plan 24-1850-1-1). Only a part of the bridge was meant to be raised. The remainder was to be torn down in the event of a siege. (Public Archives of Nova Scotia.)


Working Drawing
of
Standing Bridge
Scale 1 one inch = to 1 foot
33-21-2

75 "Working Drawing of Draw Bridge", 1850 (plan 25-1850-1-2). The drawbridge was constructed in the manner shown here. There is no documentation on the type of winch provided to work the bridge. (Public Archives of Nova Scotia.)


Working Drawing
of
Draw Bridge

76 Photograph of the gate and bridge, ca. 1870. There is no documentation at all for the guardhouses in the foreground of the picture. The post-and-chain fence along the top of the counterscarp was installed in order to prevent people (drunken soldiers being the worst offenders) from falling into the ditch. (Public Archives of Canada.)



77 "Plan and section of Tanks...", 1846 (plan 04-1846-3-6). This plan was drawn to illustrate the water supply provisions of the 1846 supplementary estimate (see "Drainage"). The provisions of the estimate were never executed, but the plan is included here as our only documentation for the layout of the guardroom casemate on the south side of the main gate. The plan also sketches the doors leading from the casemate to the gate, and the niches in the south side of the gate tunnel. The last niche before the gate portal housed the winch for working the bridge. (Public Archives of Canada.)

Item 4

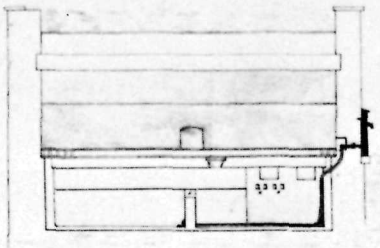
Plan and Sections of Pumphouse
a Water Supply of Water provided
to be Constructed under Com Regu-
marked A Red Print

To accompany the Supplementary
Estimate Dated 3rd March 1851

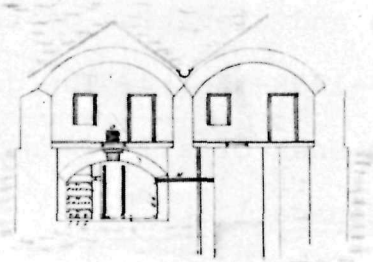
Halifax Nova Scotia
Citadel

No 4

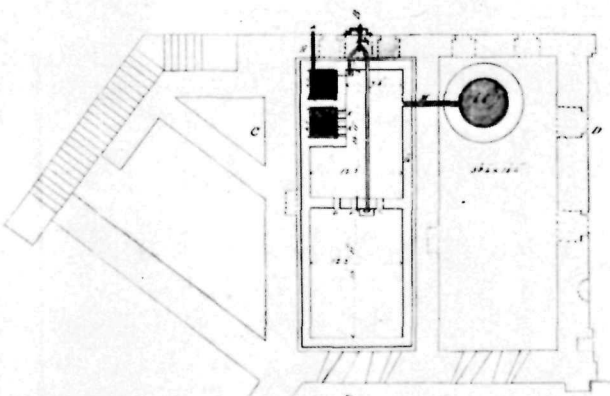
95



Longitudinal Section on A B



Transverse Section on C D

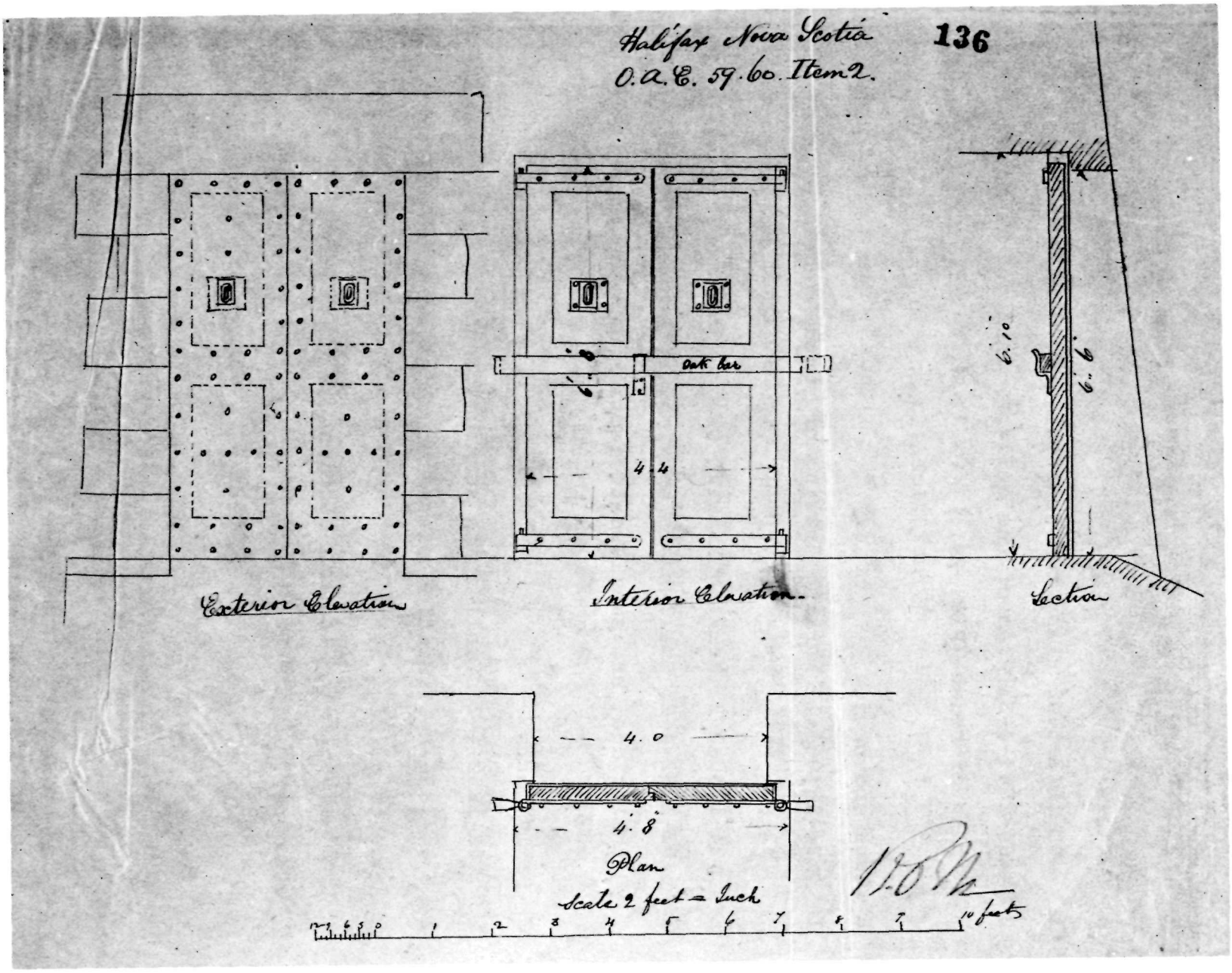


Plan

Scale 16 Feet to One Inch

78 Plan, section and elevation of the sally port gates, 1858 (plan 27-1858-13-1). The gates were intended for the ditch ends of all six sally ports. (Public Archives of Canada.)

Halifax Nova Scotia 136
O.A.C. 59.60. Item 2.



Plan Bibliography

A Cellars

1 09-1843-5-4: Plan, two sections (Fig. 73).

2 04-1844-4-3: Plan of the cellars, included in basement plan of redan (Fig. 29).

B Gate and bridge

1 24-1850-1-1: Working drawing of standing bridge (Fig. 74).

2 24-1850-1-2: Working drawing of draw bridge (Fig. 75).

3 02-1852-4-2: Small-scale section of the gate tunnel and the bridge, and small-scale section of gate portal.

C Sally ports

1 02-1852-4-2: Small-scale section of north sally port.

2 04-1856-1-1: Section of the south sally port, west curtain (Fig. 37).

3 27-1858-13-1: Plan and sections of the sally port doors (Fig. 78).

Ravelins

1 General discussion

In the original plan of the Citadel, four ravelins were provided for, one on each front. The north and south ravelins were identical, and each had a single-storey casemated guardhouse in the centre of the gorge. The west ravelin was approached by a caponier leading from a sally port in the west curtain. It was a two-storey affair, with the caponier connecting with the lower storey and the upper storey providing access to the terreplein of the ravelin. The east ravelin contained the entrance gate and differed from all the others. It also had a guardhouse, but one which was a single-storey, asymmetrical structure, set beside the parapet on the left side of the gorge. The north, south and west ravelin guardhouses were provided with ditches separating them from the terreplein of their ravelins, but the surviving plans are contradictory about the ditches' extent and function.[1]

In the course of the building of the Citadel, this basic outline was much altered. Like everything else, the ravelins were the subject of controversy in the discussion of the future of the Citadel which continued through the

1830s. In the end, three out of the four were built, but only after almost every major feature of the original design had in some way been changed.

The west ravelin was begun in the summer of 1829 and the work was more or less complete by the end of the following summer. In 1831 the north ravelin was begun. By then, Nicolls had altered the line of the north front trace to include the well on the north side of the northeast salient. This resulted in an alteration to the position of the re-entrant and was responsible for the off-centre re-entrant in the gorge of the ravelin which is still its most notable characteristic (see Fig. 80). By the end of the summer of 1831, the escarp wall of the north ravelin had been carried up to a height of 20 feet, and the prospects for completing the work in another season were excellent. In fact, the ravelin was destined not to be finished for another eight years.

The problem with the ravelins, as with so much else, was the inadequacy of Colonel Nicolls's original design. The west ravelin had been built with the thinnest escarp wall in the entire Citadel (see Fig. 79; compare Fig. 80). The north ravelin, which was not begun until the escarps in the western bastions had collapsed, was, as a result, provided with rather thicker escarps (see Fig. 80), but even these were of uncertain durability. The uncertainty was amplified by the proposal to construct a redan on the

eastern front, which, of course, would render the eastern ravelin superfluous. The result of all this confusion was that all work on the ravelins stopped in the fall of 1831.

In the winter of 1831-32, Colonel Boteler inspected the work at the Citadel. The west ravelin was already in a sorry state:

> I do not think the gorge (only four feet thick) especially at the south end would bear to be carried up to the full height - the escarp also on the left face of this ravelin towards the salient angle is slightly bulged.[2]

For the moment, however, the problem was not the condition of the west ravelin but the ultimate disposition of the other three. Captain Peake, for example, wanted to do away with the south one, and all the engineers concerned with the problem wanted to replace the east one with a redan. In the end, the north, south and west ravelins were retained and the east ravelin was abandoned.[3]

The final version of the revised estimate for the completion of the Citadel (1836) contained three provisions relating to the ravelins. Colonel Jones, who drew up the estimate, decided that, in spite of its obvious deficiencies, the west ravelin could be expected to stand, and provided only for the rebuilding of the gorge wall (see "Walls", section 6). Provision was also made for completing the north ravelin - the escarp already built up to 20 feet was left standing - and for building the south ravelin from

scratch. This last item gave Jones a certain latitude in matters of design. He provided the south ravelin with a thicker escarp than either of the others and allowed for its construction in rough granite ashlar facing (see Figs. 81 and 82 and section 2, below).[4]

It was at this time that the final form of the guardhouses was settled. The old one-storey designs were discarded and two-storey guardhouses, similar to the one already built in the west ravelin, were substituted. Unfortunately, the two items for ravelins in the 1836 estimate are remarkable only for their brevity, and we know little about Colonel Jones's design for the guardhouses.

By the early 1840s, the three ravelins were complete. Nothing more was done to them until 1843, when London authorized the renewal of the roofs of the north and south guardhouses. The old arrangement of slates laid in cement had been found wanting, "the severe frosts removing a considerable portion of them each winter,"[5] and a system of tiles set with boards and rafters was substituted (see "Magazines", section 5).

By 1846, however, the west ravelin was clearly in extremis. In the supplementary estimate drawn up in March, Colonel Calder provided for the reconstruction of the entire ravelin.

> In the Revised Estimate of 1836 provision was made for taking down and re-building the gorge of this work,

> the remaining part being "expected to stand". Since that estimate was prepared the gorge has fallen down carrying with it part of the guardhouse, and the faces [have]...cracked from the foundations upwards in several places.[6]

Calder proposed to rebuild the ravelin along the lines of the north and south ravelins (see section 3 and Fig. 83, below).

The Inspector General offered a few suggestions for the improvement of the rebuilding scheme:

> The necessity for rebuilding this part of the work is made more apparent in the Report of the Estimate and is entirely discreditable to the execution of the Engineer Department under whom it was built within the last 20 years. It would be better if the form of the guardhouse were revised so as to throw its fire more into the Ravelin and that it be separated by a ditch if possible with a view of its being more effectually a Redoubt and it would then be a more wholesome building.[7]

The Inspector General's criticism is interesting for the light it casts on the structure of the north and south guardhouses as constructed. As we have seen, they were originally designed with their own ditches, and it would seem from the above that the ditch was omitted from the 1836 design.

Colonel Calder replied on 21 July:

> The form of the Guardhouse is that of the old one as well as that of those in the North and South Ravelins rebuilt[*] under the authority of the Revised Estimate of 1 Feb^{y} 1836; - but in furtherance of the Inspector General's suggestion the loopholes are revised so as to throw its fire into the Ravelin....Its separation by a ditch would be an improvement as a work of Defence was the interior space sufficiently large, and it would render the building more wholesome in some situations, but in this climate where a deep narrow ditch is liable to be filled with snow, which in a few hours becomes so hard as to preclude its removal excepting by subsequent thaws, it is apprehended the walls might receive more injury and the building [be] less fit for occupation than at present.[8]

Despite his reservations, Calder accepted the proposal for a ditch, and included an item in the revised version of the estimate for the construction of one in all three of the ravelins (see section 3 and Fig. 84, below).

With the acceptance of the revised version of the 1846 estimate, the final form of the ravelins was decided. There remained the slight matter of rebuilding the entire west ravelin. In the spring of 1847, Calder had had the old (1812) magazine blown up. In his letter reporting the de-

---

*Author's note: Colonel Calder was wrong. The north and south ravelins were not, as we have seen, re-built under the provisions of the 1836 estimate.

molition, he asked permission to use the same method to deal with the ravelin.[9] It was some time before he got a reply (London succeeded in losing his letter),[10] but in the end permission was refused on the grounds that the stone from the old ravelin might be used in building the new.[11] The ravelin was finally torn down by conventional means in the summer of 1848, and the new ravelin was completed by the end of the following summer. (Note: For more information on the ravelins, see "Armament", below).

2 Estimate for the completion of the north ravelin and the construction of the south ravelin, 1836[12]

The ravelins were completed as described in this estimate. Unfortunately, the estimates are very brief. For more information on the structure of the guardhouses, see section 3, below.

Item 5

This Item provides for completing the north Ravelin, together with its defensible Guardhouse according to the original Project, as shewn on Plan N^{o} 1.

The Escarp of the Ravelin has been built to the height of 20 feet, leaving 5 feet to complete it. The gorge and defensible Guardhouse, coloured yellow on Plan N^{o} 1, are still to be built, and are herein provided for. The arch of the Guard house is 28 feet long, 12 feet span, and 2 feet 3 ins

thick, with a dos d'ane of one foot average thickness covered with Tiles laid in Cement.

Joists 12 x 4 with floor of 2 inch plank. - 2 oak doors and frames $8\frac{in}{---}$ x $6\frac{in}{---}$ - doors 6 x 3. - 2 sashes and frames 4 feet by 2:9. - and shutters. - Gratings, hinges, bars, bolts &c as before described.

A brick on edge floor for the lower story of the Guard-house.

The excavation is for the foundation of the Gorge yet to be built 103 feet in length by 8 feet wide and 4 feet deep, and for the defensible Guard House. 33 x 22 x 8.

The Masonry is for completing the Escarp 305 feet length of the two faces by 5'.6" x 4'.6"; - Gorge 49 feet x 7 feet mean thickness by 4 feet high; - remainder of Gorge foundation 81 x 7 x 4; - wall above 81 x 5.6 x 10 and 4 Counter-forts 6.6 x 3.9 x 20. Guard House foundation 103 length of wall by 5 feet in thickness and 7 feet deep; - walls above 103 x 5 x 10 and dos d'ane 37 x 25 x 1.9 mean thickness: - Retaining wall of Rampart 240 x 2 x 7.

The workmanship is for the face of the walls above specified, as also for the coping, loopholes of Guard house &c. and 6 Embrasures. - [space and erasure in ms.] joists 13 feet long by 12" x 14" and 3 bearers to steps 12 feet long by 8" x 4". - The 2 inch plank is for the flooring 28 x 12 and a flight of 12 steps 3 feet wide, 12 inch head and 8 inch rise.

["Section of Gorge remaining to be built" in Ms.]

[Estimate]

Quantity	Detail	Rate	Amount
369	cubic yards of earth excavated	10^{d}	15.6.7
2033$\frac{1}{2}$	perches of Masonry	14/2	1440.7.11
6325	feet sup.^{1} of Workmanship, on face of Walls	1/8	527.1.8
61	perches of Brickwork in arch	30/	91.10.0
9$\frac{1}{4}$	squares of Tiling laid in cement roof of Guardhouse	62/	28.13.6
105 [78]*	cubic feet of pine Scantling in joists, bearers to steps, &c	1/1	5.13.9 [4.4.6]
4$\frac{1}{2}$	squares of 2 inch pine Plank flooring & steps	32/2	7.4.9
20	cubic feet of Oak in door frames	2/11	2.18.4
58	sup.^{1} feet 3 inch Oak plank, doors & shutters	1/5	4.2.2
22	_"_"_ sashes and frames complete	1/10$\frac{1}{2}$	2.1.3
308	lbs wrought Iron, hinges, bars, bolts, &c	3^{d}	3.17.0
1	cwt Lead for the above Iron work	32/6	1.12.6
37	square yards of brick on edge Paving, floor of Guardhouse	5/6	10.3.6
	[Total]		£2140.13.0 [2139.4.7]

*[Numbers in brackets altered in ms. - Author's note.]

Contingencies 1/10th	214.1.4½
	[213.18.5½]
[Total]	£2354.5.2½
	[2353.3.0½]

Item 6. South Ravelin

This provides for completing the South Ravelin with a defensible Guardhouse according to the original Project, as shewn on Plan N°. 1 and accompanying Section. -

[Section of ravelin wall in ms.]

This Ravelin has not been commenced the detail the same as Item 5. -

The excavation is for the ditch 340 feet by 25 feet wide and 14½ feet deep: - Escarp 307 feet in length by 9 feet in width by 17½ feet deep including for foundation; - 14 Counterforts 7.4.17. - Foundation of Gorge 150 x 8 x 4; - Interior and Guard House 72 x 6 x 5 and 120 x 12 x 3 and 112 x 4 x 6. -

The masonry is as follows, - Foundation of Escarp 296 x 9 x 3 and gorge 144 x 7.8 x 3. Escarp above foundation 296 x 7½ x 25; 14 Counterforts 6½ x 3.9 x 26½: Gorge 24 x 6½ x 25 and 40 x 5.9 x 22 and 80 x 5.6 x 19: - Guard House walls 94 x 5 x 15 including the foundation; Dos d'ane 37 x 25 x 1.9.

Retaining wall of Parapet 240 x 2 x 7. The Masonry to be of Iron stone faced with rough Granite Ashlar as described in Item 1. - The workmanship is for the face of the above walls including the coping of Escarp and Gorge; loopholes of Guard House and 6 Embrazures. -

The remaining detail is the same as [in] the last Item. -

[Estimate]

N^{o} 6 South Ravelin

Quantities	Detail	Rate	Amount
7085	cubic yards of earth excavated for ditch and foundation	10^{d}	295.4.2
6337	perches of Masonry in Escarp and foundations	14/2	4488.14.2
13977	sup^{1}. feet of workmanship on face of walls	1/8	1164.15.0
61	perches of Brickwork in arch to Guardhouse	30/-	91.10.0
9$\frac{1}{4}$	Squares of Tiling laid in cement, roof of d^{o}.	62/-	28.13.6
37	square yards of brick on edge Paving floor of do.	5/6	10.3.6
105 [78]*	cubic feet of pine Scantling in joists & steps	1/1	5.13.9 [4.4.6]
4$\frac{1}{2}$	squares of 2 inch pine Plank, upper floor of d^{o}.	32/2	7.4.9
20	cubic feet of oak timber in door frames	2/11	2.18.4
58	sup^{1}. feet of 3 inch oak plank, in doors and shutters	1/5	4.2.2

*[Numbers in brackets altered in ms. - Author's note.]

22	-"-"- of sashes & frames complete	1/10½	2.1.3
308	lbs. of wrought Iron, in hinges, bars, bolts, &c.	3d	3.17.0
1	cwt of Lead for the above Iron	32/6	1.12.6
	[Total]		£6106.10.1 [6105.0.10]
	Add contingencies 1/10th		610.13.10 [610.10.1]
	[Total]		£6717.3.1 [6715.10.11]

3 Estimate for the reconstruction of the west ravelin and the construction of the guardhouse ditches, 1846[13]

The ravelin was reconstructed as described in this estimate. The ditches were constructed in all three ravelins.

Item 3

This Item provides for taking down & rebuilding the entire Ravelin & guardhouse, in the revised Estimate of 1836. Item 19, provision is made for taking down and rebuilding the Gorge of this work, the remaining part being "expected to stand". Since that Estimate was prepared the Gorge has fallen down carrying with it part of the Guard house, and the faces being cracked from the foundations upwards in several places it becomes necessary to renew the whole agreeably to the accompanying Plan N.o 3.

The entire masonry of the work to be taken down, such quantities as may be necessary to be removed, and afterwards filled in as the masonry advances.

The old ["q^{y} new" - marginal note] masonry is of so bad a quality that it is presumed not more than one eighth of its cubical contents will be available in rebuilding. The work to be taken down is about 5118 yards cubic of which about 3029 cubic yards is masonry & brick work. It is computed that it will take 20 men 60 days to clear the site for the new work, two thirds of whom to be military working parties, the remainder civil labour.

It is considered that the plans being so definitely figured a recapitulation of the dimensions in this report is not necessary. All the masonry to be of iron stone set in lime and sand mortar, except where otherwise described. -

Escarp West Ravelin. The foundation to be of rubble masonry 9'..6" wide and 4 feet deep. The counterforts $\frac{\text{feet}}{7 \times 5 \times 4}$, and the footings of the gorge 7'..6" wide with counterforts as above specified. -

Carry up the walls above foundation with rubble masonry in horizontal courses & vertical joints. The exposed faces to be random punched, rustic granite work, chisel drafted bedded & jointed 6 inches in the face of wall with roman cement and coped with 9 inch chiselled granite coping 3 feet wide, weathered and throated. -

Embrazures. - The quoins to be carried up with chiselled granite start and block courses. The inside quoins to be splayed off,

& the filling in of the cheeks to be faced with stock brick work in roman cement, 2 ft. 3 in: thick. (2/4 10' x 5' 2".). The soles to be of chiselled granite, this being the mode of construction of the embrazures of the Ravelins already completed. -

Revetment of Parapet. Foundation of rubble masonry the upper or retaining part, stock brick work in roman cement 210 feet 4'.6" x 2'.0" all the brick work hereafter described to be similarly set except when otherwise directed. -

Curbs for Traversing Platforms. Foundation of rubble masonry 3 x 2 feet, and chiselled granite circular curbs 12' square cramped with 4 in: square wrought iron cramps 10 ins: long, run with lead: The pivots to be cast iron of the approved pattern built in with rubble masonry $\frac{\text{feet}}{3 \times 3 \times 3}$, capped with 12 inch chiselled granite 3 feet square cramped with 2 iron cramps, and run with lead. The Curbs & platforms the same as those of N & S Ravelins.

Gun Platforms. These to be laid with rubble masonry in horizontal & vertical courses, the exposed sides & ends rubble random punched granite ashlar work, chisel drafted, & the face of the platforms plain chiselled granite work with sunk or checked ends. The cheeks of banquette to be brick in cement - 2/4. 4'.0" x 3'.6" x 9. - 2/4. 8'.0" x 1.9" x 9.

Guard House. Foundation of rubble masonry, the superstructure to be carried up with horizontal & vertical joints, the exposed surface of the walls above the ground to be faced as the escarp

of the Ravelin & the chimney shaft similarly built. The saddle kneelers, plinth & capping of chimney to be of chiselled work properly splayed and the plinth course checked out all round for loss of slating. The eaves (2 f^{t}. wide & 7 ins: thick,) kneeler & saddle board to be of chiselled granite, weathered and throated. - All the reveals and soffits to the doors and windows to be chisell dressed 9 ins: deep, chisel check out the sides & soffits for the reception of doors and sashes, and chisel dress the start and block bond stones where they show on the inside of the openings. The window sill to be properly chisel dressed, weathered and throated, and the seats inside plain chiselled granite. The door steps or landings to be 9 inch chiselled granite morticed for door frames, and properly weathered on the outside. sink 3 mortice holes in each door jamb for the accepting of wrought iron. screw bolt & nut run with lead to secure the door frame.

The steps leading to the terre plein from Guardhouse to be chiselled granite, 8 inch risers and 13 inch treads.

The retaining walls to be of rubble masonry 2 feet thick, in horizontal & vertical courses, & coped with 8 inch chiselled granite 2'.8" wide, weathered & throated, all the loopholes to be of chiselled granite, properly sunk, weathered & throated - and the ends of the bond stones on the inside of the building to be plain chiselled. - Chiselled granite hearths $\frac{\text{feet}}{5 \times 2}$ and brick hearths 4'.0" x 1'.9". - The skirting to be chiselled and chamfered granite 6 in: wide with a projection of $1\frac{1}{2}$ in: Chimney jambs (2/2. 3'0." x 1'.2" x 1'.0") and heads (2/4'.0" x

1'.2" x 1'.0") to be chiselled granite with 9 inch brick discharging arches turned over the opening: the fireplace to be lined with $4\frac{1}{2}$ in: stock brick work in lime mortar and the flues carried up with $4\frac{1}{2}$ inch brick lining, the grate to be set with fire bricks and fine clay. The walls to be lined with $4\frac{1}{2}$ inch brick work in lime mortar, ever fourth course being headers bonded into the masonry. - the vaulting to be turned in two 14 inch brick rings in mortar, with proper skew bricks cut in the masonry for the abutment of chiselled granite showing 6" on face of wall. The dos d'anes to be of rubble masonry average thickness 1 foot. -

It is proposed to ventilate under the floor to the lower rooms through the openings a.a on elevation, the current of air after passing under the floor to escape through the brick flues b.b in section into the room through the apertures c.c. The openings to be chisell dressed and prepared for cast iron ventilating grates 12 x 9 inches $\frac{1}{2}$ inch thick, each perforated with 154 holes, the ventilators at c.c. are set in a chiselled granite block or frame built into brick work.

All the plates, door frames and those of the sashes to be bedded and ranged.

The Body of the Ravelin, terre plein, banquette & rampart to be properly filled in, levelled and formed. -

All the woodwork to be of fir, viz.

Upper Floor. Rough, wall plate (2/32' x 4" x 3") and Joists 12" middle to middle 17(12' x $9\frac{1}{2}$" x 2") and Trimmers rough

framed (2/12' x 9½" x 3") 1 hose[?] to the stairs (10' x 9½" x 3) trimmer Joists 10/.10 x 9½" x 2) [sic] Plates round hearth (2/.5 x 9½ x 3). Creeper[?] joists (2/3.4 x 9½ x 2). -

Lower Floor. Wall plates (2/30' x 4" x 3") Joists 12 inch from center to center (25/.11' x 9½" x 2"). Trimmer to hearth (11 x 9½ x 3) 2/.5 x 9½ x 3) [sic] and creeping[?] Joists (2/3/3'.6" x 9½" x 2"). -

Roof. Rafters & collar braces rough framed 6 x 2 ins: 12 ins: from middle to middle. - Ridge 6 x 1½ ins. & wrought & rounded ridge roll 2 x 1½ ins: properly secured with wrought Iron ridge pole irons. - Cover in with inch rough boarding edges shot for slating 2/.29 x 12 & 2/12'.0" x 6'. 6" and lay the floors with 2 inch wrought, rebated, and filleted deal.

The ceiling of the lower room, and soffits of stairs to be inch rough, rabbeted deal sheeting.

Wrought, framed, rabbeted & chamfered door frames 6 x 4 ins: secured to masonry with wrought iron bolt and nuts, run with lead, with 2 inch, wrought, framed, and braced deal doors 6'.0" x 2'.6" filled in front with inch wrought & rebated sheeting herring boned back and hung with 24 inch hook & eye hinges with screw bolts and nuts, secured with 10 in: iron rimmed dead Lock and thumb Latches. -

Prepare & fix deal cased window frames (for the end of Guardhouse) for 2 inch single hung bevelled bar sashes 4 x 2 feet, with brass faced pulley boxes, patent lines iron weights & spring sash fastenings. - The window frames for the loop holes to be wrought, framed, rebatted [sic], & beaded out of the solid

4 x 4 ins: secured to the masonry with wrought iron holdfasts & screws run with lead, the sashes to be 2 inch bevelled bar hung with 2" cast iron butt hinges & secured with brass buttons, all the sashes to be glazed with common glass - Staircase. Rough frame 2 deal carriage pieces $\frac{\text{in}}{6 \times 4}$ notched for steps framed to floor & wall piece. The risers & treads to be 2 ins: thick housed & framed into the wall & outer string [sic] which are to be 2 in: wrought deal 14 in: deep. - The hand rail to be wrought & framed $\frac{\text{ins}}{3 \times 3}$ square with rounded top, & 3 in: wrought & framed newels, the middle rail to be 3 ins: square wrought & framed, the hand rail to be continued round the opening of the stairs on the landing. -

The [facia?] to trimmers to be inch wrought deal with rounded nosing. The rails to be returned round the opening of the well hole.

The access to the Guardhouse from ditch to be by an open step Ladder with 3 in: wrought & framed sides 12 in: wide & 2 in: wrought & framed deal steps 3 f.^{t} wide & 12 ft., deep.

The hand rail to be wrought & framed 3 ins x 3 ins & 3 wrought & framed upright stays on each side: - the latter to have moveable stay of wrought iron securing it to the masonry.

The roof to be slated with dutchesses laid with a 2 inch lap, and composition nails. - The ridge roll to be covered with milled sheet lead 2 feet wide 8 lbs per foot superficial.

The walls of the rooms to be Lime whited 2 coats, and all the wood work usually painted to have 4 coats common color, in oil.

[Estimate]

[Item 3] - West Ravelin. Take down and rebuild.

800	days military Labourers in throwing out earth, and taking down, & removing old masonry &c.	10d	33.6.8
400	days civil d.o - d.o - "-	2/3	45.0.0
2043	cubic yards filling in and ramming down earth behind walls	4d	34.1.0
1417	perches rubble masonry in foundations	14/2	1003.14.2
4938	perches d.o above - d.o -	15/-	3703.10.0
107	perches of stock brick work in mortar	23/5	125.5.7
173	d.o " - in roman cement	32/-	276.16.0
1057	cubic feet of granite blocks laid in mortar in steps, kneelers, barge coping & chimney jambs & heads	1/-	52.17.0
11576	sup.1 feet of punched granite rustic work, chisel drafted, work only	1/6	868.4.0
2889	supl. feet plain chiselled work straight on granite	1/4	187.5.4
650	d.o half plain d.o -"-	8d	21.13.4
686	d.o sunk chiselled work d."-	1/8	57.3.4
12	d.o half sunk d.o -"-	10d	0.10.0
106	d.o circular d.o -"-	2/-	10.12.0
152	lineal feet chiselled granite skirting 6' wide, chamfered on edge	1/8	12.13.4

63	running feet rabbeting cut in granite for slating	6^{d}	1.11.6
476	$d\frac{o}{.}$ throating on Granite	$2\frac{1}{2}^{d}$	4.19.2
42	$d.^{o}$ chamfering on edge	2^{d}	0.7.0
100	$d\frac{o}{.}$ bedding and pointing in hair mortar (in door & window frames)	$1\frac{1}{2}^{d}$	0.12.6
196	$d\frac{o}{.}$ bedding and ranging wall plates	1^{d}	0.16.4
6	holes jumped & shaped for cramps in platforms, & run with lead	1/6	0.9.0
1	hole cut in stone, for cast iron pivot	10/-	0.10.0
36	mortice holes in granite, run with lead for securing frames to door & to windows in loop holes	8^{d}	1.4.0
4	mortice holes in granite sills (door frames)	6^{d}	0.2.0
2	holes cut in Granite ashlar to receive ventilating plates	12/-	1.4.0
2	chiselled granite frames for ventilators including fixing	16/-	1.12.0
2	Grates set in fire bricks & mortar	12/-	1.4.0
190	cube feet rough fir fixed in joists, rafters &c.	1/-	9.10.0
32	$d\frac{o}{.}$ rough framed fir in trimmers $\&.^{c}$	1/4	2.2.8
4	cube feet wrought framed fir, in newels & middle rails	2/-	0.8.0

20	d^{o}. wrought framed, rabetted & chamfered fir, in door & window frames	2/-	2.0.0
21	sup^{l}. feet inch deal, wrought on one side and shot in facia	$3\frac{1}{2}$d	0.6.1$\frac{1}{2}$
100	d^{o}. 2 inch wrought & framed deal in treads, risers & strings to stairs	7^{d}	2.18.4
70	d^{o}. 2 in: wrought & framed deal, edges shot, in steps of d^{o}.	7^{d}	2.0.10
30	d^{o}. 2 inch wrought framed amd sheeted deal doors, braced, herring boned back	10^{d}	1.5.0
21	sup^{l}. feet deal cased sash frames prepared for 2 ^{in}.. sashes, single hung	6^{d}	0.10.6
17	d^{o}. 2 in: deal bevel bar sashes, single hung, with line & weights	1/6	1.5.6
6	d^{o}. 2 inch deal bevel bar sashes hung with 2 inch butt hinges	8^{d}	0.4.0
26	d^{o}. 3 in: wrought & framed deal in sides of step Ladder	8$\frac{1}{2}$d	0.18.5
8$\frac{1}{2}$	Squares inch rough deal slate boarding edges shot	10/7	4.9.11$\frac{1}{2}$
4	squares rough rabbeted deal sheeting to ceilings, &^{c}.	16/-	3.4.0
40	lineal feet wrought & rounded ridge roll 2$\frac{1}{2}$ x 2$\frac{1}{2}$ ins:	2^{d}	0.6.8

6	squares 2 inch wrought, rabbeted & filleted deal flooring	31/-	9.6.0
78	lineal feet wrought framed and rounded hand rail 3 x 3 ins: and fixing	4^{d}	1.6.0
59	lineal feet of rounded nosing to facia and treads	2^{d}	0.9.10
35	$d^{o}_{.}$ of housings cut for steps and riser	1^{d}	0.2.11
48	$sup.^{1}_{.}$ feet of filleting with roman cement	3^{d}	0.12.0
$9\frac{1}{4}$	Squares dutchess slating with composition nails	69/-	31.18.3
30	Squares of Limewashing	1/-	1.10.0
78	yards painting in oil, 4 coat, common colours.	10^{d}	3.5.0
24	panes Glass 7 x 9 and glazing	4^{d}	0.8.0
18	-"- $d^{o}_{.}$ - 3 x 9 & -$d^{o}_{.}$ -	3^{d}	0.4.6
2	lb wrought Iron, in ridge pole Irons	5^{d}	0.0.10
40	lb wrought iron 24 in: Hook & eye hinges, with bolt & nuts, & fixing	6^{d}	1.0.0
36	lb wrought iron bolts & nuts to secure loop hole frames	6^{d}	0.18.0
16	cwt cast iron pivot of approved pattern	16/8	13.6.8

7	cwt cast iron in grates, 3 feet wide	20/-	7.0.0
644	lb milled sheet lead laid on ridge, including laying	34/16	9.15.6
42	lb cast iron ventilating plates 12 x 9 inches	20/cwt	0.7.6
2	10 inch Iron rimmed dead Locks and fixing	7/-	0.14.0
2	strong Thumb latches, and d.^o	1/3	0.2.6
18	pairs 2 inch butt hinges & d.^o	9d	0.13.6
18	brass Buttons and fixing	6[d]	0.9.0
			£6562.3.3

Deduct

For 380 tons of stone in old wall at 5/ 95.0.0

Am.^t provided in Estimate of 1.^st February 1836, for rebuilding gorge of W. ravelin 1155.14.0

1250.14.0

£5311.2.11

Add Contingent 10.^th 531.2.11

[Total] £5842.12.2

Item $3\frac{1}{2}$

Report

This Item is introduced on the suggestion of the Inspector General

of Fortifications in his remarks of the 28th Ap1 last on Item 3 of this Estimate; it provides for forming an area round the Guard houses, North and South Ravelins, as that proposed and submitted for the West Ravelin in Item 3. -

The ground to be thrown out for area and retaining Wall is averaged at 93 feet x 9 ft 6 in and 93.0 ft x 2 ft 6 in x 15 ft 0 in.

The retaining wall of area to be built with iron stone rubble masonry of the thickness figured in the drawing to Item 3. The superstructure to be laid in horizontal courses and vertical joints faced with rustic granite ashlar work chisel drafted, beded [sic] and jointed 6 inches on the face with roman Cement and Coped with 9 inch Chiselled Granite Coping 3 feet wide weathered and throated. - the above is provided. - as measured work, but the following is taken up in time and materials, not being measurable. - to point club[?] and dress the masonry of Guard and gorge walls that will be exposed by forming the area to take up the present steps leading to the Guardhouse and reset, and break through the Gorge wall at d.d and dress and set chiselled granite gargoyles to carry off the water from the area by the surface channel which is to be formed.

Estimate

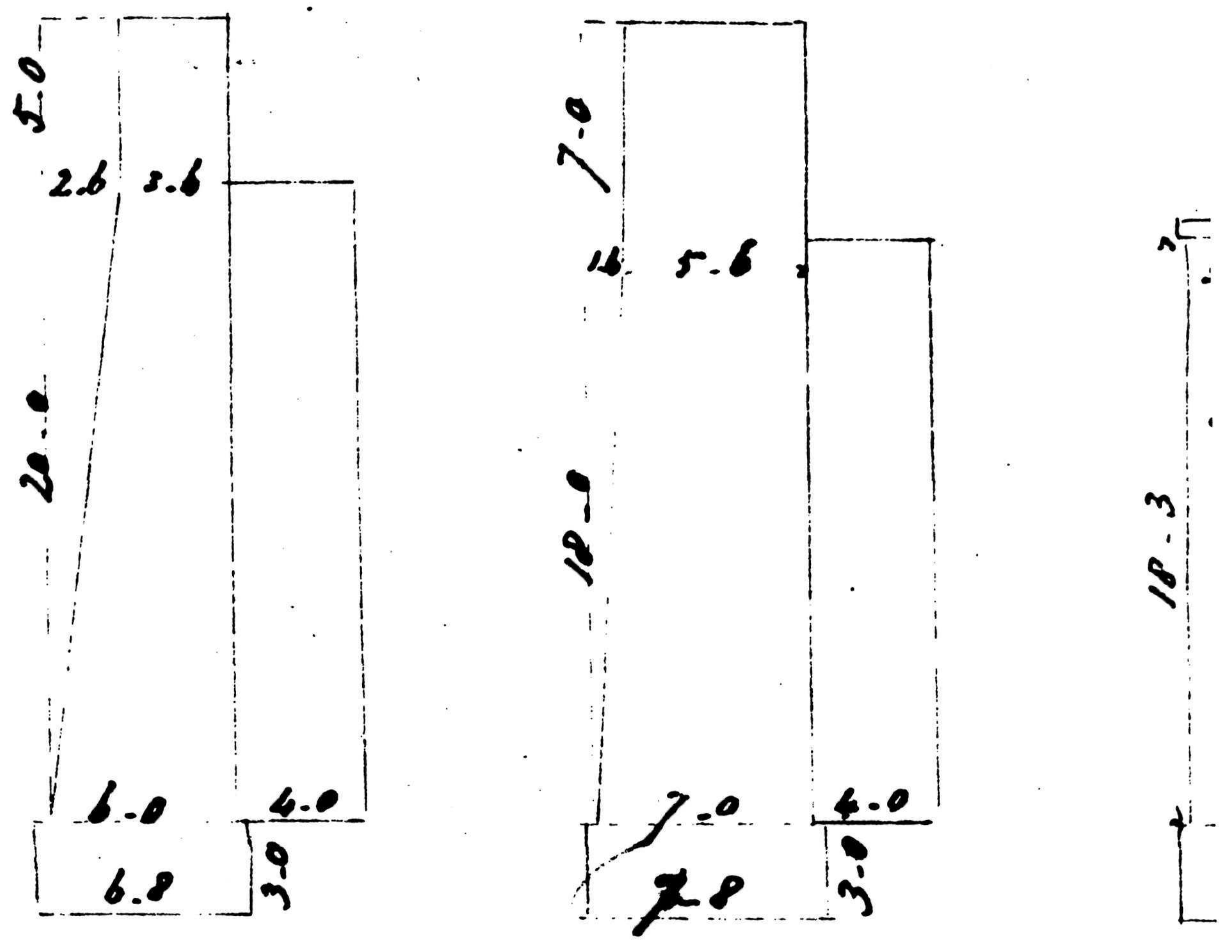
(Additional Item)

Area Walls and Ditches to Guardhouses, North & South Ravelins.

Quantity	Detail	Rate	Amount
639	Yards Cube excavating and removing	10d	26.12.6
48	perches of rubble masonry in found-		
	ations	14/2	30.0.0
294	perches do. above do.	15/-	220.10.0
36	feet Cube of Granite Stone blocks		
	laid in mortar	1/-	1.16.0
48	feet Sup^{1}. plain chiselled work		
	on do.	1/4	3.4.0
8	Do. half plain do.	8d	0.5.4
1170	" do. punched rustic granite work		
	chisel drafted	1/4	87.15.0
40	days Civil Masons	5/-	10.0.0
40	do - " Labourers	2/3	4.10.0
4	hhds white Lime	10/-	2.0.0
96	Bushels fresh water sand	2d	0.6.0
	[Total]		£391.8.10
	Add Contingent 10$\frac{th}{..}$		39.2.10$\frac{1}{2}$
	[Total]		£430.11.8$\frac{1}{2}$
			2
			£861.3.5

79 "Escarps Ravelins", 1832 (detail from plan 13-1832-2-6). The west ravelin escarp was built by the Engineer department, and it was, therefore, all the more embarrassing when it proved defective and had to be torn down. The present ravelin escarp was constructed 20 years later. The north ravelin escarp was completed according to the specifications of the section. (Public Record Office.)

Escarps Ravelins



West Ravelin
built in 1829

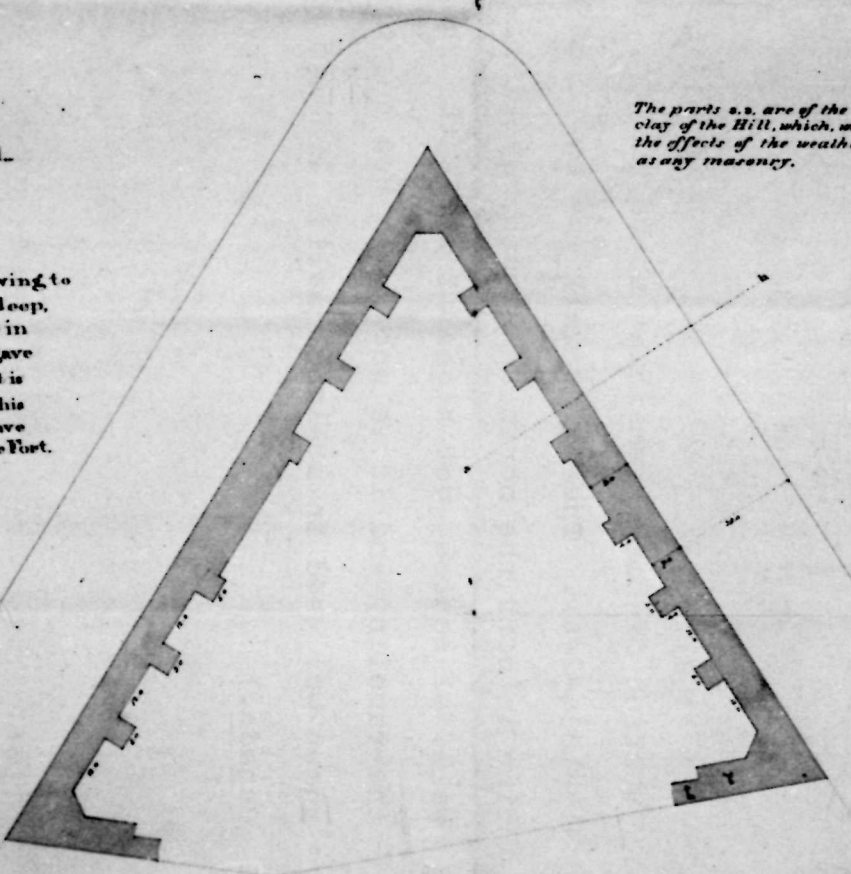
North Ravelin
building 1831.

ft ft

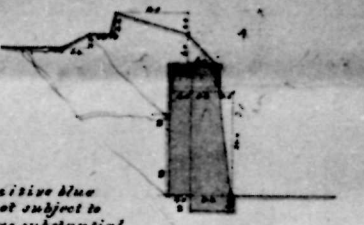
80 "Plan shewing the Revetment of the North Ravelin...", 1831 (plan 13-1831-5-1). The north ravelin was begun in 1831, and the escarps were carried up to the height of 20 feet by the end of the working season. No further work was done for at least seven years. It was not until the 1836 revised estimate was approved in the summer of 1838 that any funds were authorized for its completion. Nonethless, the original work was not altered, and this plan accurately shows the dimensions of the escarps and the placement of the counterforts. (Public Archives of Canada.)

Plan shewing the Revetment of the North Ravelin, & section of the same, as proposed to be built on Citadel Hill.

These faces are not of equal length owing to the Well interfering; but as it is very deep, and afforded more than 50ft. of water in the driest seasons, when other wells gave none, it was thought worth preserving. It is proposed when the rampart is forming, this well should be covered with an arch. & have a communication with the interior of the Fort.

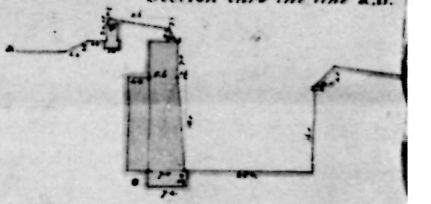


Section thro' the West Curtain, Fort George, as proposed to be built.



The parts a.a. are of the primitive blue clay of the Hill, which, when not subject to the effects of the weather, is as substantial as any masonry.

Section thro' the line a.b.



Genl. Nicolls Colonel
Com.g R. Engineer

R. Engineer Office
Halifax 2d May 1831

81 "Section of Gorge remaining to be built", 1836 (plan 13-1836-2-6). The gorge wall was built to this section in both the north and south ravelins. The gorge wall, of course, got higher towards the shoulder of the ravelin, and it is uncertain how the profile shown was used in a higher wall. (Public Archives of Canada.)

This Item provides for completing the North Ravelin, together with its defensible Guardhouse according to the original Project as shown on Plan No. 1.—

The Escarp of this Ravelin has been built to the height of 25 feet leaving 5 feet to complete it. The gorge and defensible Guardhouse, coloured yellow in Plan No. 1, are still to be built, and are herein provided for. The arch of the Guardhouse is 23 feet long, 12 feet span and 2 feet 3 in thick, with a dos d'ane of one foot average thickness covered with tiles laid in Cement.

Deck 12 × 4 with floor of 2 inch Plank.

2 oak doors and frames 8ft × 6ft — doors 6 × 3 —

2 sashes and frames — 4 feet by 2:9. — and Shutters.

Grating hinges bars, bolts &c. as before described.

A brick on edge floor for the lower Storey of the Guardhouse

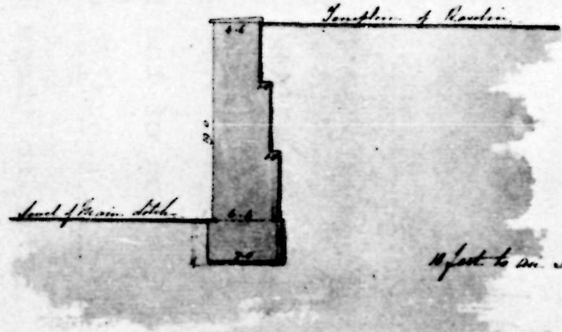
Item 5. Completing the North Ravelin —

The excavation is for the foundation of the Gorge yet to be built 103 feet in length by 8 feet wide and 4 feet deep, and for the defensible Guard House 33 × 22 × 8.

The Masonry is for completing the Escarp 305 feet length of the two faces by 5.6 × 4.6; — Gorge 49 feet by 7 feet mean thickness by 4 feet high; — remainder of Gorge foundation 81 × 7 × 4; — wall above 81 × 5.6 × 19 and 4 Counterforts 6.6 × 3.9 × 20. Guard House foundation 103 length of walls by 5 feet in thickness and 7 feet deep; — walls above 103 × 5 × 10 and dos d'ane 37 × 25 × 1.9 mean thickness: — Retaining wall of terreplein 240 × 2 × 7. —

The workmanship is for the face of the walls above specified, as also for the coping, loopholes of Guard House &c. and 6 Embrasures. ~~There are 16~~ joists 13 feet long by 12" × 4" and 3 bearers to Steps 12 feet long by 8" × 4". The Timber plank is for the flooring 28 × 12 Deck & a flight of 12 Steps 3 feet wide, 12 inch tread and 8 inch rise. —

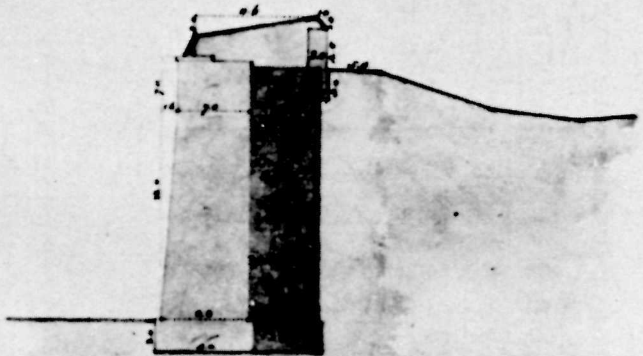
Section of Gorge remaining to be built.



11 feet to an Inch. —

82 Section of the escarp wall, south ravelin, 1836 (plan 13-1836-2-7). The escarp wall for the ravelin was built to these specifications. Note that the profile is somewhat thicker than that used in the north ravelin, or indeed in most parts of the body of the fort. A similar profile was ultimately adopted in the rebuilding of the west ravelin. (Public Archives of Canada.)

This provides for completing the South Pavilion with a defensible Guardhouse, according to the original Project, as shown on Plan No. 1 and accompanying Section—



Scale of 10 feet to an Inch—

This Pavilion has not been commenced the detail the same as Item 5—

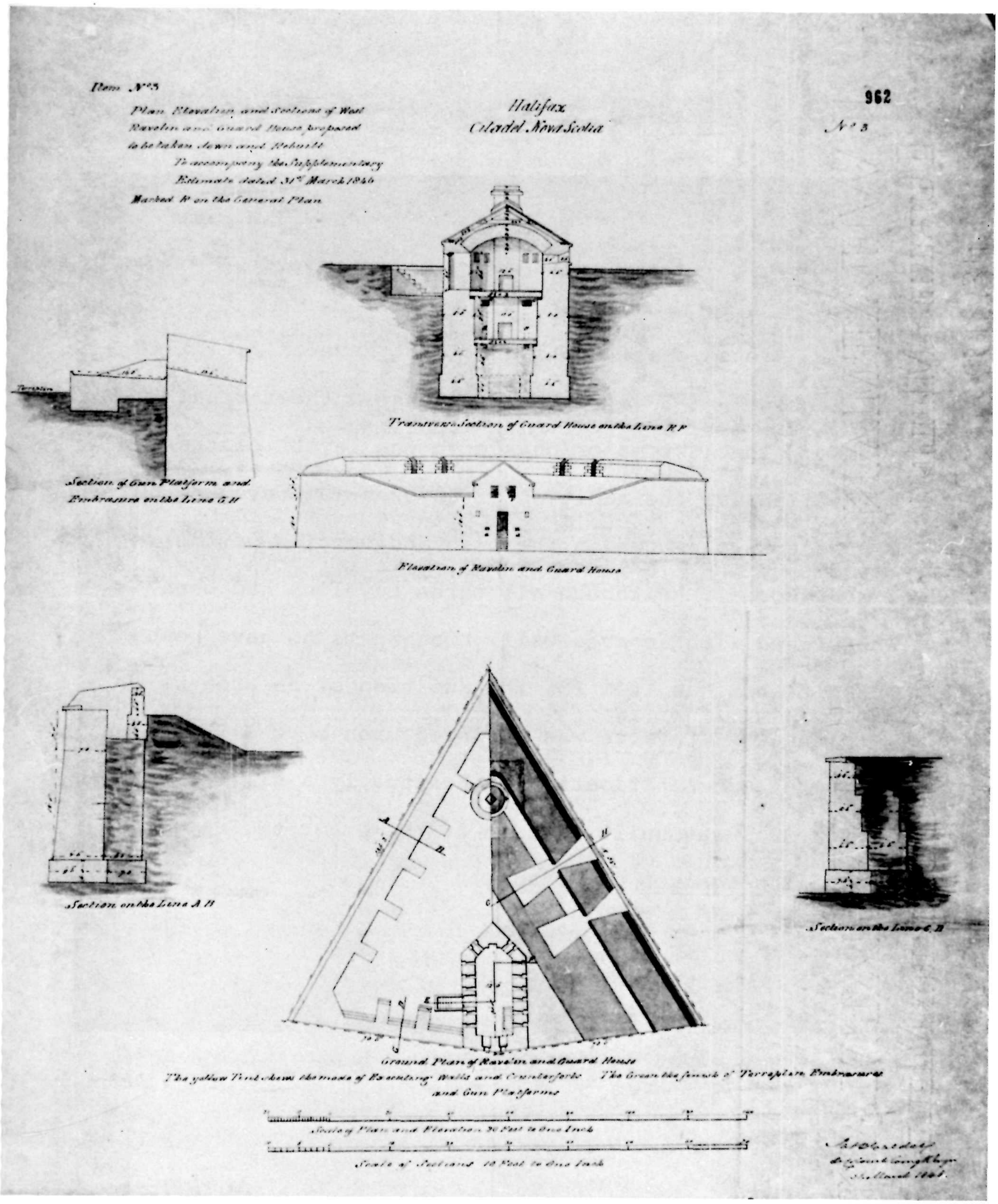
Item 6. South Paulin.

The excavation is for the ditch 240 feet by 25 feet wide and 14½ feet deep:— Escarp 307 feet in length by 9 feet in width by 17½ feet deep including for foundation; 14 Counterforts 7 × 4 × 17 Foundation of Gorge 130 × 8 × 4;— Interior and Guard House 72 × 6 × 5 and 120 × 12 × 3 and 112 × 4 × 6.

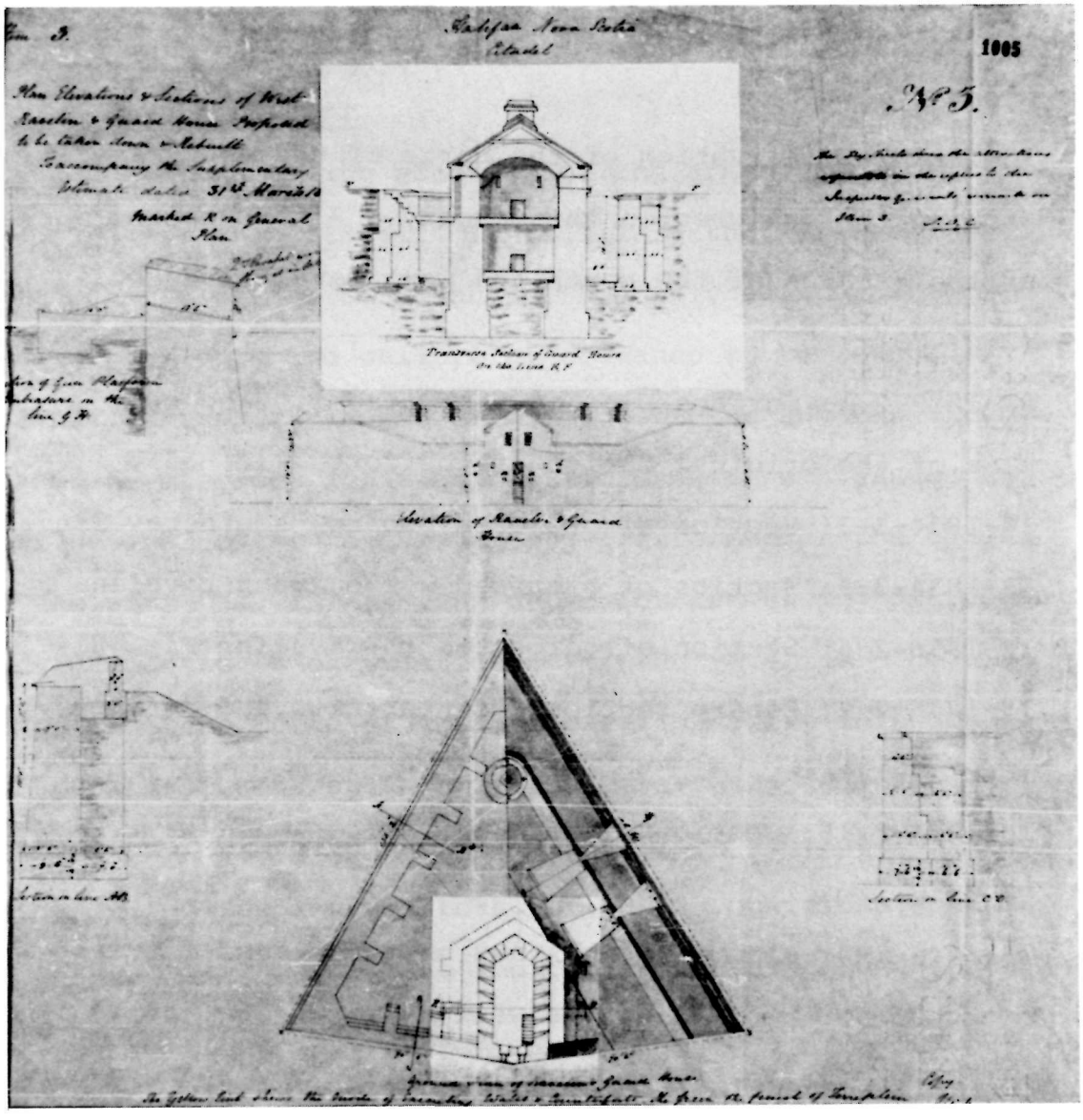
The Masonry is as follows,— Foundation of Escarp 296 × 9 × 3 and gorge 144 × 7.8 × 3. Escarp above foundation 296 × 7½ × 25; 14 Counterforts 6½ × 3.9 × 26½: Gorge 24 × 6 × 25 and 40 × 5.9 × 22 and 80 × 5.6 × 19:— Guard House walls 94 × 5 × 15 including the foundation; Dos d'ane 37 × 26 × 1.9 Retaining wall of Parapet 240 × 2 × 7. The Masonry to be of Iron Stone faced with rough Granite Ashlar as described in Item 1.— The workmanship is for the face of the above walls including the coping of Escarp and Gorge; loopholes of Guard House and Embrazures.—

The remaining detail is the same as the last Item.—

83 "Plan Elevation and Sections of West Ravelin...", 1846 (plan 13-1846-3-4). This is the best set of plans of any of the ravelins and should be used to fill in any missing information on the other two (especially as regards the structure of the guardhouses). Note that in elevation the ravelin was virtually identical to its failed predecessor (compare Part 1, Fig. 6). It differed in the increased strength of its escarps and in the use of granite facing on the masonry. (Public Archives of Canada.)


Item No 3
Plan Elevation and Sections of West
Ravelin and Guard House proposed
to be taken down and Rebuilt
To accompany the Supplementary
Estimate dated 31st March 1846
Marked R on the General Plan
Halifax
Citadel Nova Scotia
962
No 3
Transverse Section of Guard House on the Line E F
Section of Gun Platform and
Embrasure on the Line G H
Elevation of Ravelin and Guard House
Section on the Line A B
Section on the Line C D
Ground Plan of Ravelin and Guard House
The yellow Tint shews the mode of Executing Walls and Counterforts The Green the finish of Terreplein Embrasures
and Gun Platforms
Scale of Plan and Elevation 20 Feet to One Inch
Scale of Sections 10 Feet to One Inch

84 "Plan Elevations & Section of West Ravelin...", 1846 (plan 13-1846-3-4A). The ravelins in their final form. The last major change in the layout of the ravelins was the addition of an area wall around the guardhouses (shown in the plan and section of the guardhouse). Although all three ravelins had been designed with an area wall, none seems to have been built until an item for the addition of an area wall to the west ravelin was insisted upon by the Inspector General of Fortifications. Eventually a similar area wall was built in each of the other two ravelins. (Public Archives of Canada.)


Halifax Nova Scotia
Citadel
1005
No 5.
Plan Elevations & Sections of West Traverse & Guard House Proposed to be taken down & Rebuilt
Transverse Section of Guard House
Elevation of Traverse & Guard House
Section on Line A B
Section on Line C D

Plan Bibliography

1 01-1825-12-1: Nicolls's 1825 surface plan, showing the four ravelins as originally designed (Part 1, Fig. 5).

2 13-1831-5-1: Plan of escarps and counterforts, north front (Fig. 80).

3 13-1832-2-6: Elevation of the gorge of the west ravelin, showing the failures in the masonry. Also sections of the escarps of the north and west ravelins as built (Fig. 79).

4 01-1832-2-1: Surface plan of the Citadel. The best plan of the original design of the fort (Fig. 55).

5 14-1834-3-3: Section of proposed escarp, south ravelin.

6 13-1834-3-9: Section of proposed gorge, west ravelin.

7 13-1836-2-6: Section of gorge, north ravelin (Fig. 81).

8 13-1836-2-7: Escarp section, counterforts and parapet (Fig. 82).

9 13-1836-2-16: Section of proposed gorge wall, west ravelin.

10 13-1846-3-4: Plan, sections and elevations of initial proposal for rebuilding the west ravelin (Fig. 83).

11 13-1846-3-4A: No. 9, above, altered to show the guard-house ditch. A similar ditch was ultimately constructed in all three ravelins (Fig. 84).

12 02-1852-4-2: Small-scale section and elevation of the north ravelin, with sections of the west and south ravelins.

Ramparts and Armament

1 The first armament

There are no surviving accounts of the armament originally proposed for the Citadel. It is likely that Colonel Nicolls, in the early stages of planning, had only an approximate idea of the type and calibre of ordnance to be mounted on the new fortress. In his original estimate and his first plans, he provided for eight platforms with embrasures and four sets of curbs for traversing platforms for the body of the work, as well as four curbs for traversing platforms and 17 embrasures and platforms for the ravelins. He also noted that the roofs of the two cavaliers were intended as gun positions for fourteen 24-pounders.[1] In addition to these, each of the 16 casemates was to be provided with a gun. This gives a grand total of 63 gun positions, and may be taken as an approximate indication of the amount of armament intended.[2]

Seven years later, Colonel Boteler drew up a list of the type and calibre of gun intended for the Citadel, and appended it to his general plan of the fort (see Fig. 55 and Table 8). This list reveals that the chief type of weapon to be mounted was the 24-pounder carronade; no fewer

than 17 were intended for the fort. The heaviest gun contemplated was the 24-pounder. It is interesting to note that, in the beginning, the heavy ordnance was to be concentrated almost entirely on the cavaliers and ravelins.

The 1832 list also reveals some of the difficulties inherent in trying to foresee the armament requirements. No fewer than 18 of the proposed 69 guns were to be mounted on structures which had not yet been built and were the subject of some controversy. The list briefly noted the changes which would have to be made in the ordnance if the proposed redan was approved. But the list cannot cover all contingencies, and it is too sketchy to be really useful as a guide to the armament if the design of the fortress was altered. In fact, the entire question of ordnance was left in abeyance for almost a decade while the fundamental questions concerning the shape of the fortress were being settled. (Strangely enough, questions of armament and gunnery seem to have had little bearing on the decisions which were finally reached.) It was not until the work was substantially complete that any attempt was made to provide it with guns.

The most important document in the history of the Citadel's ordnance is the supplementary estimate of 1846. In the first version of the estimate, Calder provided for the curbs and pivots for the cavalier platform (see "Cavalier", section 5), the embrasures, revetment, gun

platforms and curbs for the west ravelin (see "Ravelins", section 3) and specimen estimates for segmental curbs and pivots, circular curbs and pivots, and ground platforms for the remainder of the fort (see section 4, below).[3] The specimen estimates were for one of each kind of platform. Calder could not have been more specific about the numbers of each type required, since there was no approved armament proposal.

The Inspector General commented on the specimen estimates:

> Items 15, 16 & 17 will have to be provided but the first step is the joint report of the Comm[g] Officer of Artillery and the C.R.E. approved by the Commander of the Forces of the Armament necessary.[4]

The CRE and CRA together drew up the necessary report in the early summer of 1846 and dispatched it to London on 21 July.[5] In early September, the Director General of Artillery communicated his satisfaction with the scheme,[6] and a few weeks later it was approved by the Board of Ordnance.[7]

The proposal called for 94 guns (see Table 9). The most common type was the 32-pounder smoothbore which formed the main armament on all fronts. The remaining types provided in the proposal were mostly for specific purposes. The 24-pounders were intended for the casemates of defence, to defend the ditch; the 8-inch guns were intended only for

the salients of the body of the work, and the howitzers and mortars were apparently only to be mounted in the event of a siege.

The acceptance of the ordnance proposal set the final form for the type and variety of gun positions on the Citadel ramparts. Unfortunately the documentation for the construction of the gun positions is fragmentary and contradictory. The only two structures in the entire fort where the types of gun position and their dimensions are absolutely certain are the cavalier and the west ravelin (see "Cavalier", section 5, and "Ravelins", section 3). We know from photographic evidence that the south ravelin was provided with ground platforms on its faces and a circular curb and pivot at its salient (see Fig. 92), but the exact dimensions of the ground platforms remain a mystery. They might have been like those provided for the west ravelin (see "Ravelins", section 3, and Fig. 83) or they might have been similar to the ground platforms provided in item 17 of the 1846 estimate (see section 4, below, and Fig. 87).

The surviving documents about the armament of the north ravelin are even more scanty. We know what guns were mounted, but not the type of gun positions used. Presumably the north ravelin's positions were similar to the south ravelins's - the 32-pounders on the faces mounted on garrison carriages on stone ground platforms and the 32-pounder at the salient mounted on a traversing platform on

a circular curb and pivot.

The difficulties encountered in trying to determine the nature of the gun positions in the body of the work are even greater. To begin with, we have two entirely contradictory memoranda on the subject. The first, appended to the initial version of the 1846 estimate (see below, section 4, end of item 17), suggests that it was Calder's intention to build eight stone ground platforms on the ramparts of the body of the fort. The second, appended to the formal armament proposal, reads as follows:

> The guns on all the Salient angles and the Cavalier to be mounted on ordinary Traversing Platforms.
>
> Those on the faces of the Redan, North, South, East and West Fronts to be mounted on block Traversing Platforms.
>
> Those in the Flanks of the Demi-Bastions as well as all Mortars on L^{t} Co^{l} Alderson's Siege Platforms, when required to be mounted, at which time the Embrazure may be cut through the Parapet, - the Platforms to be kept in store for their preservation and the guns &c[?] to be skidded in position.
>
> Stone Platforms and Curbs are laid in the North and South Ravelins. -
>
> Long 32 pounder guns are proposed for the flank of the South West Demi-bastion in consequence of the length of range seen over the Counterscarp North of the West Ravelin. -[8]

To complicate matters still more, there is some evi-

dence that the acceptance of the armament proposal led Calder to change the provisions for curbs and platforms in the revised version of the 1846 estimate. Unfortunately this evidence is also contradictory. It would seem that the only copy of the revised version of the estimate available in Canadian archives is incomplete. In the abstract of this copy, item 15 (the item for segmental curbs and pivots) has been altered to show a total cost of £299 7s. 6d., the cost of five curbs. In addition, three new items have been added to the abstract:

> Item 18 - 19 Curbs for Dwarf platforms at £30..0..0 each - £570..0..0.
>
> Item 19 - 12 Wooden Ground Platforms at £12..0..0 each, £144..0..0
>
> Item 20 - 12 D^{o} --- Mortar --- D^{o} --- at £6..0..0 each, £72..0..0.[9]

When one turns to the text of the estimate, however, one finds no further mention of the three new items, and the items for circular curbs and pivots (items 15 and 16) and for ground platforms (item 17) are left unaltered (see section 4, below).

The last major piece of evidence is the surface plan drawn in April of 1852 (see Fig. 90). This purports to show all the gun positions, embrasures and traverses on the ramparts. The plan is called "record Plans from actual measurement," and there would be little reason to doubt such a

statement were it not for the fact that the ramparts were still unfinished in 1852. Nevertheless, one must accept the plan as accurate, at least in essentials.

The contradictory mass of evidence described above cannot, without the discovery of fresh information, be made to yield definitive answers to questions about the Citadel's armament. It is possible to draw some conclusions, but they must be considered extremely tentative.

In the first place, there is no reason to doubt that the armament listed in the 1846 estimate was ultimately procured for the Citadel. Every bit of evidence points to this being the case. It also seems fairly certain that the guns were mounted, or were intended to be mounted (a distinction which will become important later in this discussion) in the locations indicated in the proposal. The 1852 plan, for example, shows positions and embrasures in all the locations proposed. The difficulty lies in discovering what types of carriage and platform were used to mount the guns.

The problem of the 8-inch guns at the salient is the easiest to solve. They were almost certainly mounted on garrison carriages (there is no indication of the type - wood or iron) on traversing platforms on circular curbs (see Fig. 86). The 1852 plan shows circular curbs in the appropriate places, and there is no good reason to doubt its accuracy.

The question of the carriages and platforms for the rest of the 32-pounders intended for the body of the work is a little more complicated. The fundamental question is whether they were mounted on segmental curbs (Fig. 85) or on "curbs for Dwarf Platforms", which are mentioned in the partly revised version of the 1846 estimate. My own opinion is that the latter was the case. The positions shown on the 1853 plan are the wrong shape for segmental curbs (Fig. 90). But the same revision of the estimate contains an item for five of the segmental curbs, which indicates that both types may conceivably have been used.

As we have seen, Colonel Calder intended to mount the four 32-pounders in the flanks on "L^{t} Co^{l} Alderson's Siege Platforms" - or, rather, he intended to construct the platforms and keep both them and the guns in storage until they should be needed. There is, again, no reason to question this intention.

But there is some doubt whether the Alderson platforms were ever built to mount the 12 mortars provided for in the armament proposal. A photograph taken in the late 1870s clearly shows the two mortar platforms (see Fig. 90), and they differ considerably from plans of both the Alderson siege gun platforms and the Alderson siege mortar platforms (Figs. 88 and 89). It would seem, therefore, either that the original Citadel mortar platforms were replaced with ones of a different pattern sometime between 1850 and 1870,

or that the Alderson platforms were never constructed for the mortars. Without more evidence, one cannot be more specific than that.

Finally, there are problems concerning the ground platforms and the howitzers. None of the documents mentioned above makes any mention of carriages or platforms for the howitzers. The 1852 plan, however, shows enough gun positions to account for both the guns and howitzers intended for the body of the work. It shows, moreover, 12 positions which are clearly occupied by ground platforms. Four of these are in the flanks and were obviously for the 32-pounders which were intended for those locations. The distribution of the other eight parallels the proposed distribution of the howitzers on the various fronts. This begs two questions: What sort of ground platforms were they, and were they intended for the howitzers?

In answer to the first question, there are three alternatives: stone ground platforms as provided in the 1846 estimate (see Fig. 87 and section 4, below); wooden platforms of the Alderson pattern (see Fig. 88 and section 5, below), or wooden ground platforms of another type. The first alternative seems most unlikely. One modern writer has calculated the weight of a 32-pounder mounted on a garrison carriage on a stone platform at 65 tons. On the basis of this, he concludes that stone ground platforms were used only on the ravelins, and that the platforms for

the body of the work were of wood.[10] It is difficult to disagree with this conclusion. It seems unlikely that any of the engineers responsible would have risked placing such a heavy platform on top of a work with escarps as doubtful as those in the Citadel. It seems far more probable, then, that the ground platforms were wooden.

Were they of the Alderson pattern? We know that platforms of this pattern were ordered at one point,[11] so it seems likely. On the other hand, the ground platforms shown on the 1852 plan are the wrong shape (the Alderson platforms were rectangular). This discrepancy may be the result of a draughtsman's error, for, as we shall see, it is exceedingly unlikely that wooden platforms of any description were ever actually put in position on the ramparts.

The final question is whether or not the ground platforms shown were ever intended for the howitzers. There is no definite answer to this question either, but the coincidence of numbers of howitzers and number of positions makes it likely that they were.

A final word on the 1852 plan. It shows the positions and embrasures for the 32-pounders in the flanks, despite the fact that the engineers never intended to cut embrasures or to mount the guns until it was necessary to do so. This suggests that the 1852 plan shows the intended - not the actual - position of the guns. The fact that the plan was drawn before the ramparts were completed may be taken as

further support for this assumption. I would suggest, in addition, that the remaining eight ground platforms were also shown in their intended, not their actual, positions. If we accept the fact that the other positions were intended for howitzers, then it is reasonable to assume that the howitzers and ground platforms were kept in storage, and the embrasures shown on these positions were not cut. The 1856 report supports this hypothesis (see Table 10 and section 6, below).

None of the documentation cited above provides any information about the type of carriage intended for the 24-pounders mounted in the casemates of defence. Until more evidence comes to light, this subject will remain a mystery.

The report of the 1856 committee on the state of the Citadel (section 6) sheds light on some of the specific problems of the armament and ramparts. The report also contains recommendations for the reconstruction of the parapet revetments in the ravelins. The parapet of the north and south ravelins was originally revetted with brick. The committee noted that the Commanding Royal Engineer already had permission to remove the brickwork, and went on to recommend that the masonry and brickwork in the interior of the ravelins be reduced "as far as possible".[12] The brick revetments in the north and south ravelins were removed (see Fig. 92). It is impossible to tell whether those in

the west ravelin were likewise removed. Certainly the masonry embrasures (unique in the Citadel) were not altered. (See Fig. 98.)

2 The ramparts and armament, ca. 1857

The following list is an attempt to summarize the location, type of carriage and type of platform of the Citadel guns. Readers of the preceding section will not have to be reminded that these conclusions are tentative.

The 8-inch guns

Location: At each of the salients in the body of the fort.
Probable carriage: Wooden or iron garrison.
Probable platform: Common traversing, circular curbs and pivots (Fig. 86).
Total number: 5.

The 24-pounders

Location: One in each defence casemate.
Probable carriage: Not known.
Probable platform: Not known.
Total number: 20.

The long 32-pounders (1)

Location: At the salient of each of the ravelins.
Probable carriage: Iron garrison (Figs. 92 and 94).

Probable platform: Common traversing, circular curb and pivot (Figs. 86 and 92).

Total number: 3.

The long 32-pounders (2)

Location: Body of the work. Distributed as follows: 4 in the redan, 3 in the southeast salient, 4 in the southwest demi-bastion, 4 in the northwest demi-bastion, 4 in the northeast salient.

Probable carriage: Iron or wooden garrison.

Probable platform: Dwarf traversing.

Total number: 19.

The long 32-pounders (3)

Location: Intended for the flank of the southwest demi-bastion; not mounted.

Probable carriage: Wooden or iron garrison.

Probable platform: Wooden, Alderson pattern. The platforms were kept in storage (Fig. 88).

Total number: 2.

The long 32-pounders (4)

Location: At each end of the cavalier roof.

Probable carriage: Wooden or iron garrison.

Probable platform: Traversing, circular curbs (see "Case-mates", section 5, and Fig. 8).

Total number: 2.

The long 32-pounders (5)

Location: Cavalier roof.

Probable carriage: Wooden or iron garrison.

Probable platform: Traversing on segmental curb (see "Casemates", section 5, and Fig. 8).

Total number: 5.

The short 32-pounders (1)

Location: The faces of the three ravelins, distributed as follows: north and south, 3 in each face; west, 2 in each face.

Probable carriage: Wooden garrison (Fig. 92).

Probable platform: Stone ground (Fig. 83) for the west ravelin. The ones in the other two ravelins may have been similar, or they may have been constructed in the manner shown in Figure 87.

Total number: 16.

The short 32-pounders (2)

Location: Intended for the flank of the northwest demi-bastion. Kept in storage and not mounted.

Probable carriage: Wooden or iron garrison.

Probable platform: Wooden ground, Alderson pattern (Fig. 88). The platforms were also kept in storage.

Total number: 2.

The 8-inch howitzers

Location: Intended for use on the ramparts of the body of the work at the following locations: 2 on the curtain, 2 on the redan, 1 on the northwest demi-bastion, 1 on the southwest demi-bastion, and 1 each on the eastern faces of the salients. The guns were kept in storage and not mounted. In time of war, it was intended to cut embrasures for them in the positions shown in the 1852 plan (all positions for ground platforms in the body of the fort, shown in Fig. 90, except for the four in the flanks).

Probable carriage: Not known.

Probable platform: Wooden ground, Alderson pattern (Fig. 88).

Total number: 8.

The 13-inch mortars

Location: Kept in storage; to be mounted on the curtain ramparts in time of war.

Probable carriage: --

Probable platform: Either a siege mortar platform of the Alderson pattern (Fig. 89) or a mortar bed similar to the one shown in Fig. 96.

Total number: 2.

The 8-inch mortars

Location: Kept in storage. To be mounted in time of war as follows: 3 in each of the salients and 2 in each of the demi-bastions.

Probable carriage: --

Probable platform: As for the 13-inch mortars, above.

Total number: 10.

Traverses

Number: 8.

Distribution: The re-entrant of the south front; the east face of the southeast salient; the south face of the redan; the east face of the northeast salient (2); the mid-point of the north front; the mid-point of the curtain; and the south face of the southwest demi-bastion (Fig. 90).

Revetments

Body of the fort: Sod.

North ravelin: Brick (in course of being removed).

South ravelin: As in north ravelin.

West ravelin: Brick, possibly in course of being removed.

3 A note on the rearmament

The original armament of the Citadel had not been entirely installed when talk of its rearmament began. Such talk continued intermittently for almost 20 years until finally,

in the late 1870s, new armament was installed. This topic, of course, goes beyond the field of this study. While the topic is not one which I have covered in the research for this report, it seems inappropriate to end a discussion of the Citadel armament without giving some explanation for the remains of the gun positions presently on the ramparts, most of which date from the second armament. Some of the visual materal collected in the course of my research for this report and which has some bearing on the subject is included below. It can be summarized as follows:

1 Table II summarizes two rearmament proposals of the 1860s and early 1870s. Neither proposal was accepted, but the table gives some idea of the variety of ordnance considered.

2 Figure 91 shows a rearmament proposal dating from 1874, which was also not accepted.

3 Figures 52, 93, 95, 96 and 97 all show the Citadel in the process of being rearmed.

Table 8. The Earliest Surviving Armament Proposal, 1832

Ordnance proposed to be mounted in the first instance, and for which Platforms and Curbs for traversing Platforms are Provided in the Estimate.

Body of the Place	Mortars	24 pdr. Carronade	24 pdr.
On traversing platforms at Salient	--	--	4
N.W. Demi-Bastion	2	--	--
S.W. Demi-Bastion	2	--	--
Four flanks	--	8	--
In casemates of defence	--	16	--
North Cavalier	--	--	4
South Cavalier	--	--	3
West Cavalier	--	--	7
Ravelins			
North	--	3	4
South	--	3	4
West	--	4	1
East	--	3	1
Total	4	37	28
East front if altered [to redan]	--	--	7
Casemates to flank ditches,	--	4	--

Table 9. Citadel Armament Proposal, 1846

	Guns				Mortars		Howitzers
	8-in.	32-pdr.	32-pdr.	24-pdr.	13-in.	8-in.	8-in.
Position	9'0"	9'6"	6'6"	6'0"			
East front							
Salients (3)	3	--	--	--	--	--	--
Northeast face	--	2	--	--	--	1	1
North face, redan	--	2	--	--	--	--	1
South face, redan	--	2	--	--	--	--	1
Southeast face	--	2	--	--	--	1	1
South front							
East face	--	1	--	--	--	2	--
West face	--	2	--	--	--	2	--
West front							
Southwest salient	1	--	--	--	--	--	--
Southwest demi-bastion	--	2	--	--	--	--	1
Flank of same	--	2	--	--	--	--	--
Curtain	--	--	--	--	2	--	2
Flank, northwest demi-bastion	--	--	2	--	--	--	--
Northwest demi-bastion	--	2	--	--	--	--	1
Salient of same	1	--	--	--	--	--	--

Position	Guns				Mortars		Howitzers
	8-in. 9'0"	32-pdr. 9'6"	32-pdr. 6'6"	24-pdr. 6'0"	13-in.	8-in.	8-in.
North front							
West face	--	2	--	--	--	2	--
East face	--	2	--	--	--	2	--
North ravelin							
Salient	--	1	--	--	--	--	--
Faces	--	--	6	--	--	--	--
West ravelin							
Salient	--	1	--	--	--	--	--
Faces	--	--	4	--	--	--	--
South ravelin							
Salient	--	1	--	--	--	--	--
Faces	--	--	6	--	--	--	--
Cavalier	--	7	--	--	--	--	--
Casemates	--	--	--	20	--	--	--
Total	5	31	18	20	2	10	8

Table 10. Armament Returns, 1856 and 1863

Type	Number 1856	1863	Comments
8-inch gun	5	5	None.
32-pounder, 9 ft. 6 in.			Both lists do not differentiate the types of 32-pounder in use.
32-pounder, 6 ft. 6 in.	45	49	
24-pounder, 6 ft. 0 in.	20	20	None.
13-inch mortar	2		In storage, not mounted (1856).
8-inch mortar	8	8	In storage (1856). The 1863 list does not differentiate between mortars and howitzers.
8-inch howitzer	6		In storage (1856).
12-pounder	1		Signal gun.

Note: The 1856 list includes the following guns which had not, at that time, been provided:

Four 32-pounders

Two 8-inch mortars

Two 8-inch howitzers

Table 11. Rearmament Proposals, 1863 and 1874

Type	Number 1863	1874
110-pounder Armstrong	10	--
10-inch gun	5	--
9-inch gun	--	1
8-inch gun	5	--
7-inch gun	--	7
68-pounder	10	--
64-pounder	--	29
32-pounder	45	--
24-pounder	--	20

4 Specifications for curbs and platforms, 1846[13]

These three items provide the specificatons for circular curbs and pivots, segmental curbs and pivots, and stone ground platforms. Of the three, only the circular curbs were definitely used at the Citadel. It is fairly likely that no segmental curbs were used, and the only established use of ground platforms was on the three ravelins. As there are no surviving specifications for the stone ground platform on the north and south ravelins, the specifications given here may be of some use.

Item 15

This and the two following Items provide for the expense of one segmental curb & pivot for a traversing platform, one circular curb & pivot for a d$^{o}_{r}$ and one platform for a garrison carriage; from which the amount required for these services can be made up but which cannot be inserted at the station, the proposed arrangement not being known, vide accompanying drawing N$^{o}_{r}$ 10, for traversing platform.

The ground thrown out $\frac{\text{feet}}{40 \times 4 \times 4.}$, & $\frac{\text{feet}}{8 \times 6 \times 6}$ for foundation of iron stone rubble Masonry in Lime mortar $\frac{\text{feet}}{37 \times 3 \times 2}$ and $\frac{\text{ft.}}{7 \times 5 \times 3}$. The curb to be of chiselled Granite 12 ins: square, wrought out of 4 blocks $\frac{\text{ft.}}{(4/- \ 10 \times 3)}$ & secured with wrought Iron cramps, run with Lead.

The chiselled granite flagging round the pivot wrought out of 2 blocks 12" thick cramped with wrought Iron, and run with

lead. The pivot to be of solid cast Iron of the prescribed pattern painted 4 oils lead. -

Item 15

[Estimate]

Curbs and platforms for armament, viz: Segmental Curbs for one Traversing platforms [sic]

31	cubic Yards digging and throwing out earth	10d	1.5.10
21	perches rubble masonry in foundations	14/2	14.17.6
155	cubic feet granite stone blocks set in mortar	1/-	7.15.0
75	sup.^{1} feet plain chiselled work straight.	1/4	5.0.0
96	d$\frac{o}{.}$ - " - circular d$\frac{o}{.}$ - " -	2/-	7.12.0
95	d$\frac{o}{.}$ - " - half plain d$\frac{o}{.}$ - " -	8^{d}	3.3.4
5	holes jumped and shaped for cramps in platform, run with lead	1/6	0.7.6
2	holes cut in stone for cast iron pivots	10/-	1.0.0
16	cwt solid cast iron pivot -	16/8	13.6.8
1	yard, 4 oils, common color	10^{d}	0.0.10
			£54.8.8
	Add contingent 10$\frac{th}{..}$		5.8.10$\frac{1}{4}$
	Total for Segmental Curbs		£59.17.6$\frac{1}{4}$

Item 16

The ground to be thrown out for curb 42 x $\frac{\text{ft.}}{4}$ x 3, and for pivot 5 x 4 x 4, and filled in with iron stone rubble masonry in lime mortar 39 x 3 x 2 and 3'.6" x 3'.6" x 3'.0" The curb to be chiselled granite 12 ins: Square wrought out of 4 blocks (9 x $\frac{\text{ft.}}{3}$ x 1) and secured with 4 wrought iron cramps run with lead. The chiselled granite flagging round the pivot to be 12 ins: thick and 3 feet square set in 2 pieces of 2/- 3'.6" x 1'.9" x 1.0, and cramped with wrought iron run with lead. The pivot to be of solid cast iron of the prescribed pattern painted 4 oils lead. vide drawing N^{o}. 14.

[Estimate]

16 Circular curb for one Traversing Platforms [sic]

22	cubic yards digging & throwing out earth. -	10^{d}	0.18.4
16	perches of rubble masonry in foundations	14/2	11.6.8
120	cubic feet granite stone blocks set in mortar	1/-	6.0.0
48	sup^{1}. feet plain chiselled work straight	1/4	3.4.0
66	sup^{1}. feet of circular chiselled work. -	2/-	6.12.0
66	d$\frac{o}{.}$ - " - half plain d$\frac{o}{.}$ -	8^{d}	2.4.0

2	holes cut in stone for cast iron pivots	10/-	1.0.0
6	holes jumped & shaped in cramps in platform, & run with lead	1/6	0.9.0
16	cwt cast iron solid pivot	16/8	13.6.8
1	sup.^{l} yard 4 oils, common color	10^{d}	0.0.10
			£45.1.6
	Add contingent $10.^{th}$		$4.10.1\frac{3}{4}$
	Total for circular Curbs		£49.11.$7\frac{3}{4}$

17 The ground to be thrown out 18'.0" x 12'.0" x 3'.8", for foundations of Iron stone rubble masonry, in lime mortar 17', x 11' x 2'.6 and platform 16' x 10" x 1',9". -

The ends and sides of platforms showing above ground to be of random punched rustic granite ashlar work, chiselled drafted 2/.16'.0" x 1'.6" & 12' x 2'.3". -

The face of platform to be of plain chiselled work 12 $\frac{ft.}{x}$ 10, and chiselled or checked[?] sunk work at front & rear 12'.0" x 2'.6" and 8'.0" x 2'.6". -

The rampart is to be cut through to form an embrasure, and the sodwork made good.

vide drawing $N.^{o}$ 15

[Estimate]

17 Ground Platform for a Garrison Carriage

$29\frac{3}{4}$ cubic yards digging and throwing

	out earth	10[d]	1.4.5$\frac{1}{4}$
28$\frac{1}{4}$	perches rubble masonry in foundations	14/2	20.0.2$\frac{1}{2}$
17	d^{o}. - " - over foundations	15/-	12.15.0
75	sup.^{1} feet random punched granite ashlar work chiselled drafted	1/6	5.12.6
120	d.^{o} " plain chiselled work on granite	1/4	8.0.0
50	d.^{o} - " - " - d.^{o} sunk[?] work	1/8	4.3.4
1	cutting and forming embrazure and sodding. -	13/6	0.13.6
			£52.8.11$\frac{3}{4}$
	Add contingent 10.th		5.4.10$\frac{3}{4}$
	Total for platforms		£57.13.10$\frac{1}{2}$

[Signed] Pat D Calder

Lt Colonel Comg Rl Eng

31. March 1846.

Duplicate

Mem: to aid in filling up the amount for curbs and Platforms.

Suppose one Traversing Platform to be mounted on each angle of the Work - 5

- " - Two Garrison platforms for each flank of the N.W. and S.W. demi Bastions. - 4

- " - On the North front, - 3 west & 3 East of the Ravelin. - 6

- " - On the East front, 2 north and 2 South of the Redan. - 4

- " - Two Mortar platforms on each of the demi Bastions West front, equal in expense to Garrison Platforms - 4

18.-

[Initialled] P.D.C.

31. March 1846.

5 Alderson siege gun platforms, 1845[14]

Platforms of this type were probably constructed for the four 32-pounders intended for the flanks of the western bastions, and for all eight of the howitzers. Platforms of this type may also have been constructed for the mortars, although this seems very unlikely.

Gun Platform.

The Gun platform now to be described has therefore been made to consist of baulks of uniform length & Scantling[s] which serve both for sleepers and planking.

Each baulk is a piece of Timber 10 feet long, $3\frac{1}{2}$ inches thick, and 5 inches wide; weighing about 41 lbs sufficiently light to be carried to the spot by one man, besides his arms, and ammunition and being universal it will fit into any part of the platform, this is the minimum size, but if made on the spot, or in the Field the principle may be equally adapted to

any other increased dimensions, and thus render suitable such Timber as may be procured at the time with the greatest economy of material and labor.

If constructed of baulks of the minimum dimensions above stated a Gun Platform 18' x 10' will consist of, viz.t

	Cwt.	q.r	lbs.
58 Fir baulks with 58 Oak trenails 10 ins. long and $\frac{3}{4}$ in. diameter, each of which makes 4 dowels 2 $\frac{1}{2}$ in long	21.	0.	26
10 Round Iron pins 11 in long including the eyes.	-.	-.	20
15 Iron Shoes with 30 in Screws	-.	1.	7
Total	21.	3.	7

A Gun platform 15' x 10' which may be used when materials are scarce will consist of

	Cwt.	q.r	lbs
46 Baulks with 47 Trenails as above	16.	3.	10
9 Round Iron pins	-.	-.	18
10 Iron Shoes with 20 in Screws	-.	1.	2
Total	17.	1.	2

The trail of a 24 P.r with a service charge will recoil off a platform of these dimensions at each discharge about

ft.	ins
2.	6 -

Figs 1 & 2 Plate 1 represent a baulk of the above named dimensions, with eight holes bored $1\frac{1}{4}$ inch deep and $\frac{3}{4}$ inch diameter, at the distances specified, four on each side, both

sides being alike when taken from opposite ends.

Oak dowels $2\frac{1}{2}$ inches long and $\frac{3}{4}$ inch diameter (four of which are obtained from each trenail) are then introduced half their length into the holes on one side of each baulk: - a. b. c. d. represent the dowels, and e. f. g. h. the holes. - The baulk is now complete.

Fig. 3 - represents three of these baulks (with their dowels and shoes complete) shewing the mode of forming a sleeper for the platform 18' x 10'. -

Fig. 4 consists of only two baulks shewing the mode of forming the sleeper when the platform is only to be 15' x 10'. -

Into the end of the dowel which enters the baulk, a fox wedge (Fig. 5) is introduced to prevent the dowel dropping out; the dowel is then $1\frac{1}{4}$ inch within the baulk and projects the same distance beyond it, and this projection fits into the holes of the next baulk.

Note. - When baulks are made as Articles of Store or to be sent from England for use, it may be advisable to dip the end of the dowel with the Fox wedge attached into the Glue pot before driving it, to prevent the chance of its becoming loose by the shrinking of the Timber.

In order to lay a Gun platform 18' x 10' take any 15 of the baulks and dowel them together 3 and 3 as shewn in Fig. 3 to form the five sleepers, add the shoes as shewn in Fig. 10 screwing them to the sleeper by the Screws as shewn in Fig. 11, where the Screws are shewn as driving each other without re-

quiring either gimblet [sic] or Screw driver: these sleepers must then be laid in the space of 10 feet, the width of the intended platform. As these sleepers are 20 feet in length and the platform is only required to be 18 feet, the ends must necessarily project beyond the platform; take therefore any one of the Baulks and bore 5 holes thro' it at the distances shewn in Fig. 8 plate 1, place this Baulk transversely across the 5 sleepers one foot from their ends, each hole in the baulk being over the centre of each Sleeper, then bore the sleepers thro' these holes made in the baulk and pin both Sleepers and Baulk together, as shewn in Fig.r 8, this is for the front of the platform and the space will allow a fascine as a Hurter[?] to rest on the projecting ends of the sleepers at the foot of the interior revetment as shewn in Fig. 6, Plate 1.

Next take any other Baulk and bore thro' it 5 holes as before and place it over the ends of the sleepers in the rear, bringing those ends under the holes in this transverse baulk.

The holes thro' the sleepers in the rear must not, however, be bored, as the exact place for them cannot be determined, until the flooring of the platform is laid.

The position of the Sleepers being thus determined, it is marked off on the ground, they are then removed and the platform is laid in the usual manner by excavating trenches to receive the sleepers, which being laid at the proper slope of $\frac{1}{2}$ an inch to a foot from rear to front, are firmly embedded by filling in the trench on both sides of the sleeper and ramming it well taking care not to injure the Sleeper.

The floor is then laid, the last piece being the baulk previously bored, holes are then bored in the sleepers, thro' those in the baulk and the pins being inserted as in front, the platform is fit for use.

The platform thus laid (Fig^{r}s 6 & 7) is a clear uninterrupted surface (with the exception of the heads of the pins in front and rear) of 18 ft x 10 ft - or, if laid with Sleepers as Fig^{r} 4, it will be 15 ft x 10 ft. -

It will be evident that in the construction of this kind of Platform the holes in each Baulk must be bored at precisely corresponding distances and this it is proposed to effect by the construction of a dowel box (Fig^{r} 9) which may easily be made in the following manner.

If the Carpenters' bench be long enough, no bottom piece will be required; if not, a bottom piece or plank (k.k.k.) and upon it an end plank placed transversely (l) a front piece (m,m) and a rear piece or cleat (n n) with four wedges (o,o, o,o,) laid longitudinally. The front piece must be bored at the required height and distances 1, 2, 3, 4.

The Baulks being then made to the required thickness and squared are placed, one at a time, into the dowel box, and pushed home to (1) the Baulk (P) is then tight up to the inner side of the front piece, and is bored with a $\frac{3}{4}$ centre bit thro' the holes before mentioned to the depth of $1\frac{1}{4}$ inch; after one side is thus bored it must be cut to the proper length by sawing the end (g) to the guage [sic] shewn by the Saw kerf[?]

on the dowel box; the baulk is then taken out turned over and end for end refixed as before and again bored, in this way every baulk must be similar in every respect, with the exception of their width which may vary according to the size of the timber to be obtained, 5 inches being the minimum.

Iron pins and shoes have been introduced in the construction of these platforms to enable them to be easier relaid [sic] during the siege; but for all the purposes of strength the Oak trenails will answer, instead of Iron pins; and the Shoes excepting in very bad ground, may be dispensed with or made of thin battens nailed to the under side of the sleepers.

In taking to pieces a platform thus laid, the wooden trenails must be driven or bored out and fresh provided; if the platform is to be relaid, the Iron pins are therefore to be preferred.

An additional supply both of Iron pins, Shoes and Oak trenails should accompany every Siege Equipment - as the small sized Scantling required for the platforms will almost always be found on the spot.

6 Report on the state of the Citadel armament, 1856[15]

The first proposal for rearming the Citadel is one of the more striking features of this report. It is also one of the most complete accounts we possess of the auxiliary features intended for the Citadel armament.

The Citadel Armament

1. - The number of Guns mounted on the Citadel according to the present Armament are [sic] as follows. -

Now mounted on the Ramparts

5 - 8 inch Guns at Salients

45 - 32 $p^{r}_{\cdot}$ Guns

20 - 24 p^{r}_{-} $d^{o}_{\cdot}$ - in gun rooms -

1 - 12 p^{r}_{-} Signal gun

2. At present in the Ordnance Yard and forming a part of the armament of the Citadel -

6 - 8 inch Howitzers

2 - 13 inch Mortars

8 - 8 inch - d^{o}_{-}

the Platforms for the above are prepared and can be laid down when required

3. - Required to complete the armament of the Citadel -

4 - 32 p^{r}_{-} Guns -

2 - 8 inch Mortars-

2 - 8 - " - Howitzers

[The following section is composed of alternate questions and answers. Question 1 is missing in the manuscript. Answer 1 comes first in this section, therefore, and is followed by question 2, answer 2, and so forth.]

1. - That part of the Citadel armament not mounted is in depôt,

namely -

	feet ins
2 - 32 p^{r} Guns-	9..6.-
2 - 32 p^{r} d^{o} -	6..6.

8 - 8 inch Howitzers.

2 - 13 - " - Mortars.

10 - 8 - " - Mortars. -

The proposed armament for the Citadel was approved by the Director General of Artillery, under date 17th September, 1846, and by the Master General and Board of Ordnance, by order dated 2nd October, 1846, E/1457. -

2. - Would not a greater number of mortars, and more especially 13 inch, be most essential to the Service? -

2. - The Committee is of opinion that Two 13 inch, and Ten - 8 inch Mortars are quite sufficient to be permanently mounted on the Works. -

3. - Are there not a heavier Calibre of Ordnance now laid down for a fortress, which later experience in the present war would dictate as being decidedly advantageous to adopt?

3. - The heaviest Calibre of Ordnance is doubtless often most advantageous. -

Two 63 p^{r}. Guns of 95 cwt. to command the Sea approach might be advantageously substituted on the S.E. and S.W. Salients of the Body of the Place, for the Two 8 inch guns of 95 Cwt, now mounted there. -

4. - Are there any small Stores whatever for the armament of the Citadel?

4. - Small Stores in the Artillery Service is a term applied to Tube boxes, linstocks, priming Wires, and other small articles used in working a gun: - of these there are sufficient as a temporary measure for 7[?] - 32 p^{r} Guns.

There are in the Ordnance Depôt at this Station as many side arms, and small Stores as would be required for the Citadel armament, but a special provision of artillery stores of all kinds, shot, shells, ammunition, &c. for the Citadel armament, has been ordered to be supplied from England by order dated Woolwich 24th Aug^{t} 1853.

5. - What provision has been made for Shot, Shell, Garlands, Shot furnaces, &c.

5. - As regards shot & shells the question has been answered to question 4.

No provision has been made for Shot furnaces, and there are none in the Citadel. Garlands have been demanded by the Com^{g} Officer R^{l} Artillery. -

6. - Are Addison's travelling Shot furnaces capable of heating the largest description of Shot[?]

6. - Addison's Shot furnaces will heat any Shot. - 15 - 32 lb. shot may be made red hot in it in an hour and a quarter, from first lighting the fire, and a succession of 15 shot may be made ready every 20 minutes afterwards.

7. - Are there any of these furnaces in Store at the present period to replace the want of Hot shot furnaces of any kind within the Citadel? -

7. - There are none of Addison's Furnaces in Store at Halifax.

8. - It having been reported to the Major General Commanding that the Expense Magazines on the Ramparts are a dangerous and cumbersome appendage to a Battery; are there a sufficient quantity of water proof rectangular boxes in store to meet the necessary demands of a Siege? -

8. - Moveable expense Magazines were here meant: - expense Magazines are however very necessary in a fortress, and there should be one to each Bastion or Battery, to contain a small supply of made up ammunition; - unless constructed of masonry, they should not be made until a Siege is apprehended, as they are usually damp, being excavated under the rampart, or a traverse; - if the latter is large enough.

A supply of metal lined Cartridge cases will be sent with the other Stores for the Citadel. -

9. - Are the Ordnance Stores disposable equal to a Six Weeks Siege? -

9. - Certainly not. -

10. What strength of Garrison, Comprising all branches of the Service, would be requisite to efficiently Garrison the Citadel for a Siege of at least Six weeks?

10. Artillery. - 340.

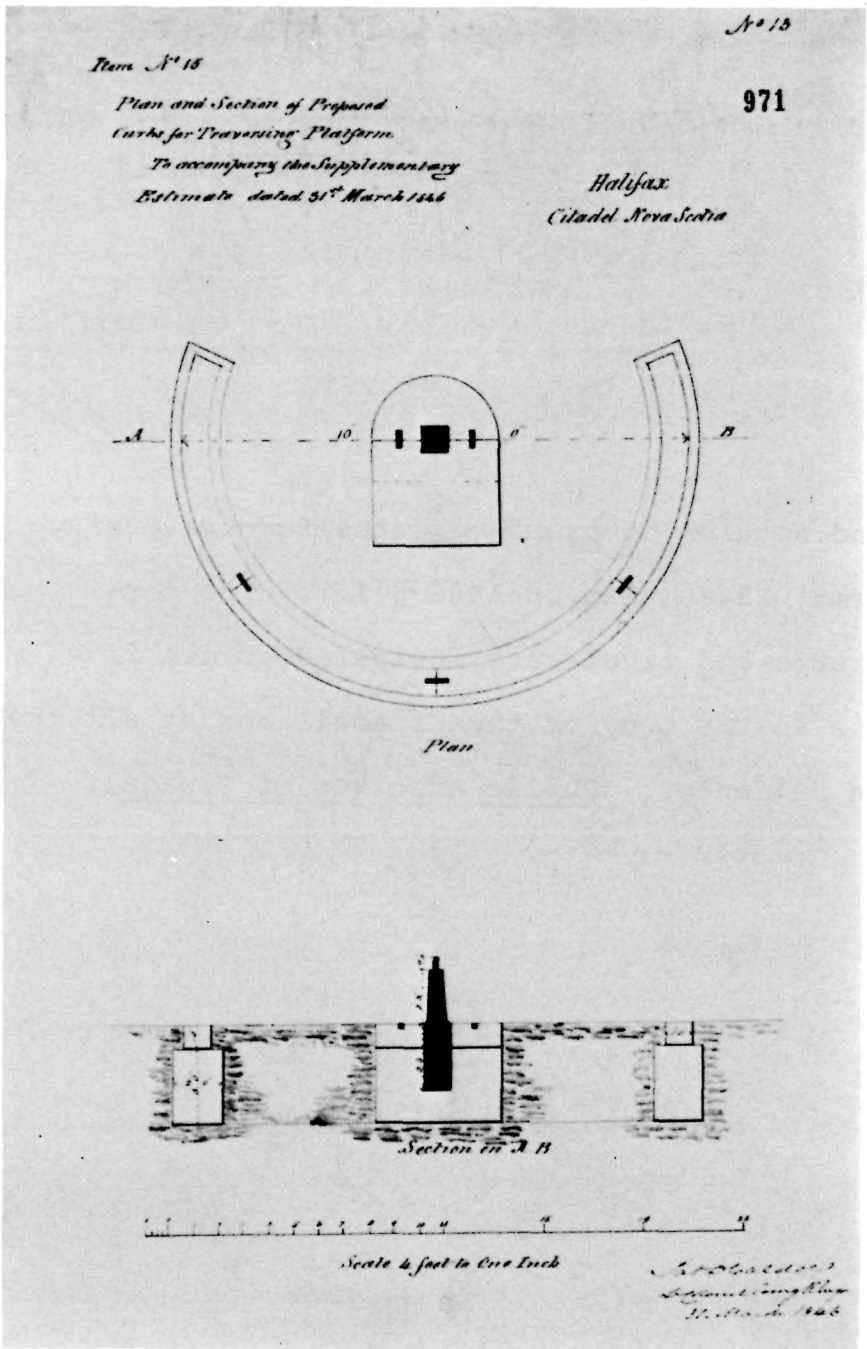
Sappers. - 120. -

Infantry. - 900. -

Total - 1360. -

allowing One Infantryman for every Two feet of Banquette.

85 "Plan and Section of Proposed Curbs for Traversing Platform...", 1846 (plan 26-1846-3-14). The curbs and pivot described here were the most common form of gun platform in use in the body of the Citadel. (Public Archives of Canada.)


Item N° 15
Plan and Section of Proposed
Curbs for Traversing Platform
To accompany the Supplementary
Estimate dated 31st March 1846
971
Halifax
Citadel Nova Scotia
A
10
0
B
Plan
Section on A B
Scale 4 feet to One Inch

86 Plan and section of proposed curbs for traversing platforms, 1846 (plan 26-1846-3-15). The circular curbs and pivot were installed at all five salients in the body of the Citadel, and at all the ravelin salients. (Public Archives of Canada.)

Item No 16

972

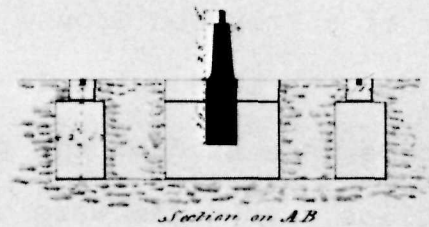
No 14

Plan and Section of Proposed Curbs for Traversing Platforms } For an Angle

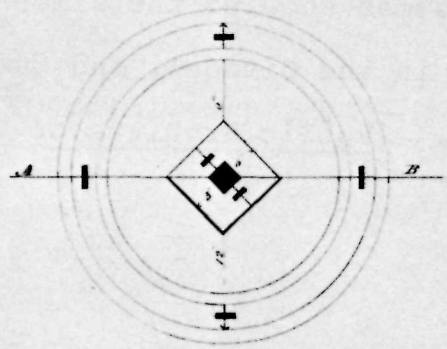
To accompany the Supplementary Estimate dated 31st March 1854

Halifax

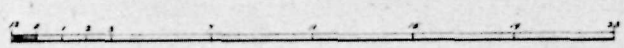
Citadel Nova Scotia



Section on AB



Plan



Scale 4 feet to One Inch

Lt Colonel Commanding Royal Engineer

Halifax March 1854

87 "Plan and Section of a Proposed Ground Platform for a Garrison Carriage...", 1846 (plan 26-1846-3-16). The ground platforms were used on the faces of all three of the ravelins, and a few were also used on the ramparts of the body of the fort. This is the only plan we possess showing the dimensions of a typical parapet in the Citadel, and the only section of an embrasure. (Public Archives of Canada.)

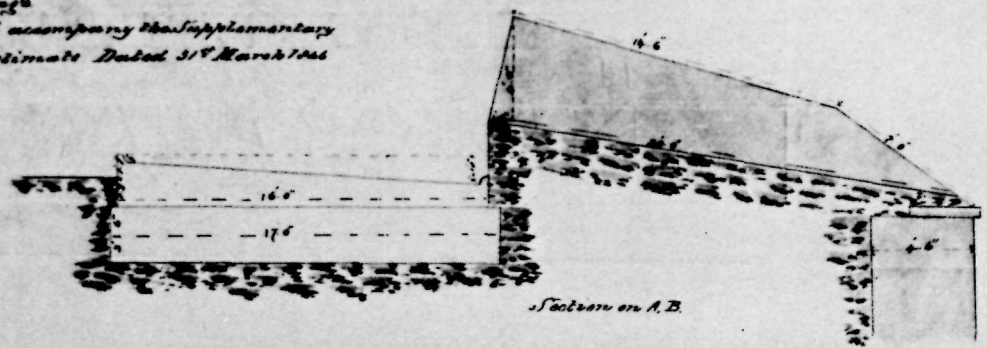
Item N°11

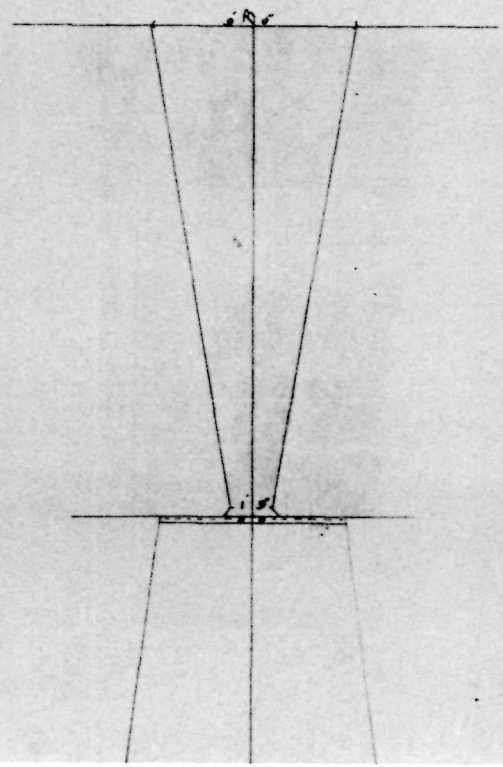
Halifax
Celadot Nova Scotia

973

N° 15.

Plan and Section of a Proposed
Ground Platform for a Garrison
Carriage
To accompany the Supplementary
Estimate Dated 31st March 1846



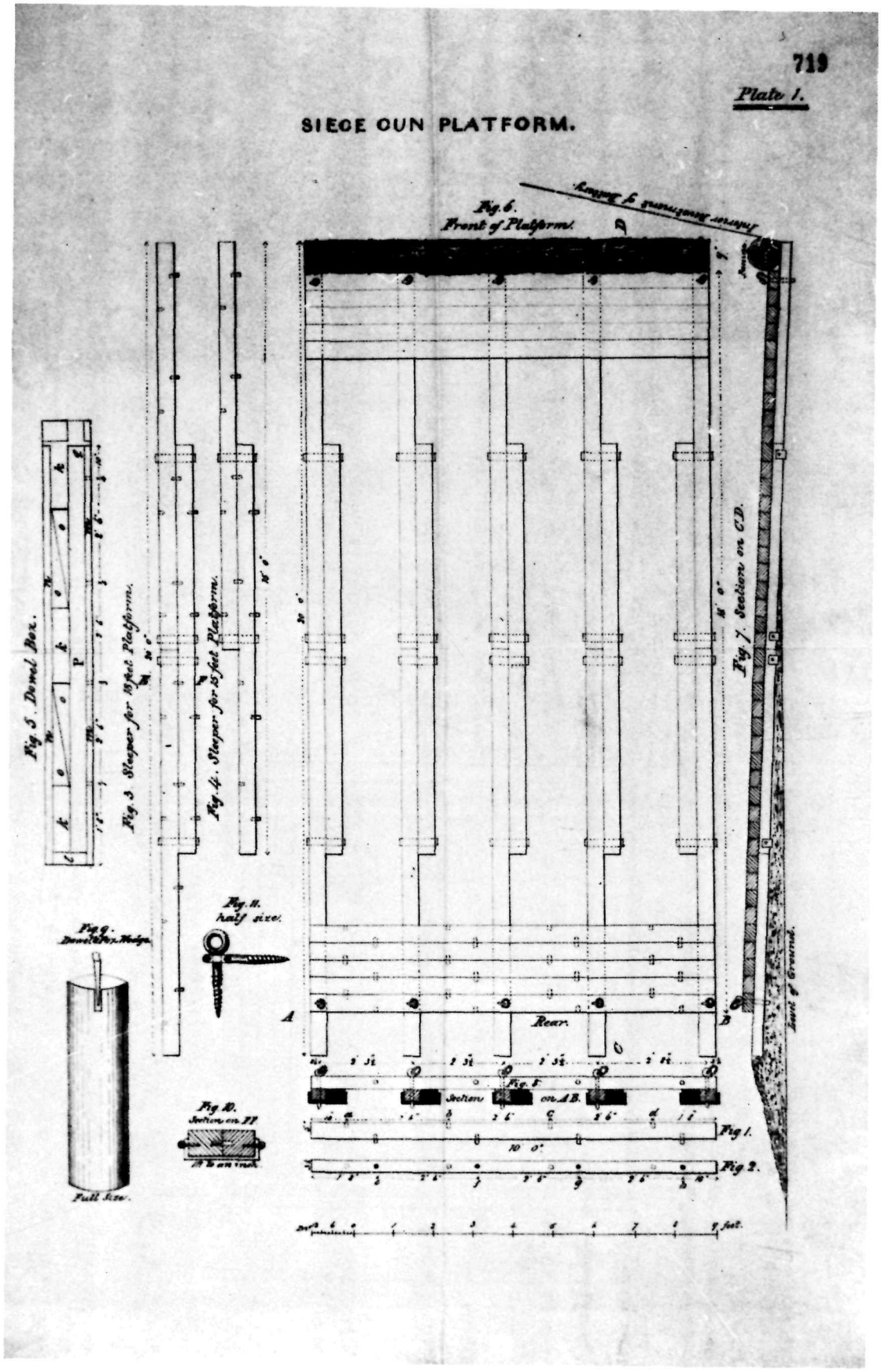


88 "Siege gun Platform," 1849 (plan 26-1849-13-1). Platforms of this type were, apparently, used to mount the howitzers and four of the 32-pounders. (Public Archives of Canada.)

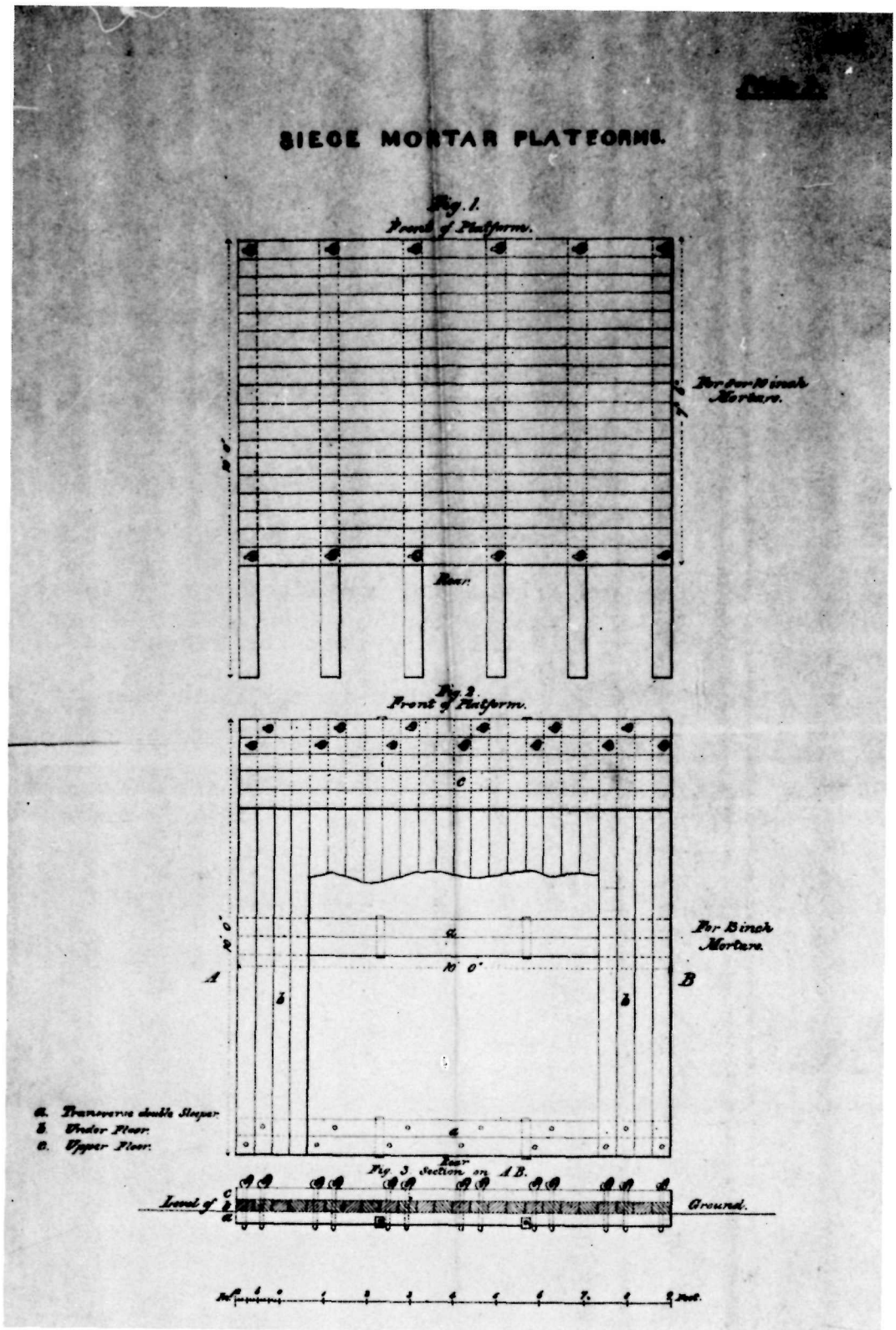
719

Plate 1.

SIEGE GUN PLATFORM.



89 "Siege Mortar Platform," 1849 (plan 26-1849-13-2). Platforms of this type may have been constructed to mount the 12 mortars included in the Citadel's main armament. (Public Archives of Canada.)


SIEGE MORTAR PLATFORMS.
Fig. 1.
Front of Platform.
For 10 inch Mortars.
Rear.
Fig 2
Front of Platform.
C
For 8 inch Mortars.
A
B
Rear
a. Transverse double Sleepers
b. Under Floor.
c. Upper Floor.
Fig 3 Section on A B.
Level of
Ground.

90 "Gun Positions Halifax Citadel..." (plan 1852-4-1A)。
A redrafted version of the 1852 armament plan. The legend for the original plan states that it is a record plan "from actual measurement". As the process of staunching the casemates was still going on at the time the original plan was drawn, and continued for at least another two years, it is unlikely that the legend is strictly true. Nevertheless, this is our best plan of the ramparts as they appeared in the 1850s.

GUN POSITIONS
HALIFAX CITADEL

FROM RECORD PLAN OF 1852
IN PUBLIC ARCHIVES OF CANADA
REFERENCE D 250
SCALE: 1" = 65' APPX.

(1) IN RESEARCHING WEIGHTS OF ARMAMENT AND EQUIPMENT MAXIMUM WEIGHTS WERE USED TO ENSURE SAFETY FACTOR. EXCESS AMOUNTS TO ONE TON AT MOST AND SOME LESS AT LEAST.

(7) A) GUN PLATFORMS ON RAVELINS (V) WERE OF GRANITE. EACH PLATFORM (APPROX 10'×18'×4') WEIGHED CLOSE TO 60 TONS. PLATFORM + HEAVIEST GUN AND CARRIAGE = 65 TONS

B) WEIGHTS OF TRAVERSING GUN ASSEMBLIES AT SALIENT POINTS OF RAVELINS (I) ARE MORE DIFFICULT TO DETERMINE PRECISELY, BUT DID NOT EXCEED 35 TONS

MAXIMUM WEIGHT OF ANY GUN ASSEMBLY BETWEEN THESE POINTS IS 6.5 TONS

(4) EACH GUN ASSEMBLY MOUNTED ON A MOVEABLE PLATFORM (INDICATED BY ▽) IS MUCH LIGHTER THAN A TRAVERSING GUN ASSEMBLY. TOTAL WEIGHT OF 32 PDR. + CARRIAGE + WOODEN PLATFORM = 9.2 TONS

(2) MAXIMUM WEIGHT OF ANY GUN ASSEMBLY (SMOOTH BORE) ON THE INNER RAMPARTS WAS 14 TONS

(3) ALL GUNS OVER CASEMATES ARE 32 AND 24 POUNDERS. 32 PDR GUN + HEAVIEST CARRIAGE + HEAVIEST PLATFORM = IRON RACER + PIVOT + GRANITE BLOCKS + GRADED GRAVEL = 14 TONS. THIS DOES NOT INCLUDE WEIGHT OF EARTH PARAPET.

(5) WEIGHT OF 8" GUN + SLIDE PLATFORM (WOOD) + IRON RACER + PIVOT + GRANITE BLOCKS + GRADED GRAVEL = 14 TONS. THIS DOES NOT INCLUDE WEIGHT OF EARTH PARAPET

(6) ROYAL ENGINEER MANUALS OF THE 19TH CENTURY STATE THAT RAMMED EARTH WAS USED FOR FORTIFICATION RAMPARTS, @ 100 LBS PER CUBIC FOOT

91 "General Plan of the Citadel...", 1874 (plan 01-1874-1-1). One of several plans submitted for the rearmament of the Citadel in the 1870s. The key is as follows:

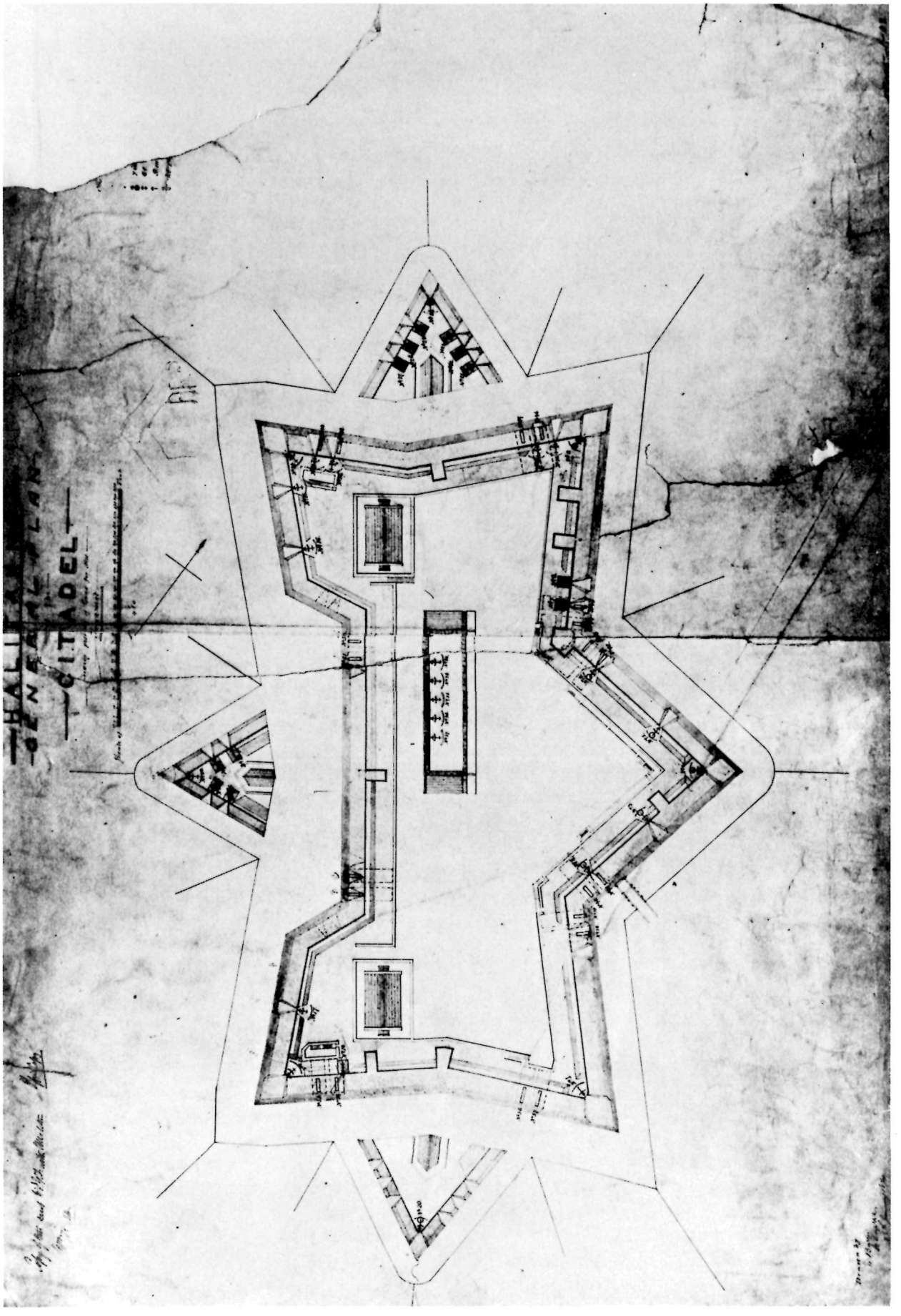
 - 7-inch gun

 - 64-pounder

 - 9-inch gun

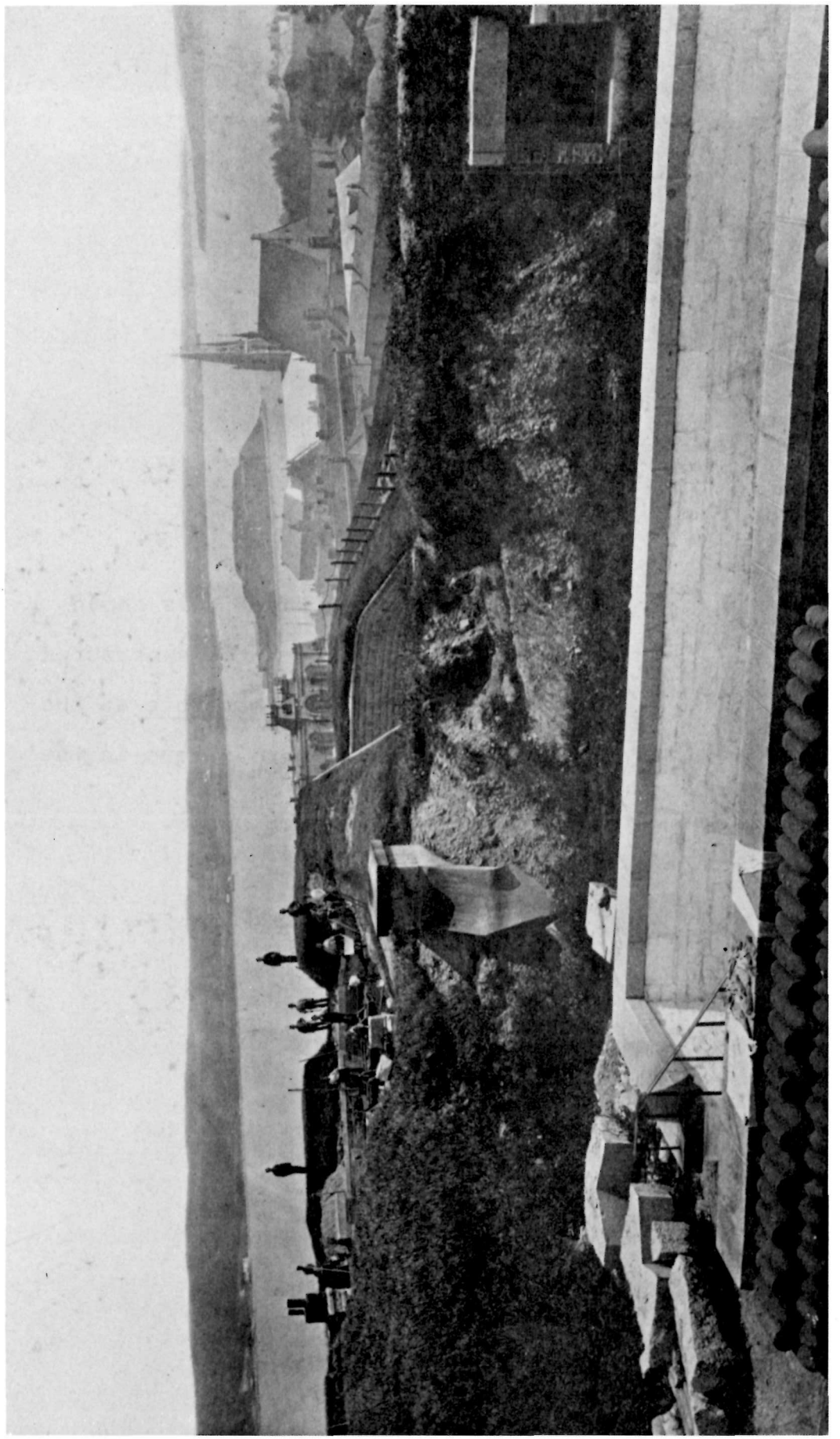
 - 24-pounder

Photographic evidence suggests that the guns installed in the rearmament were not placed as shown on this plan, but the plan does give some idea of the type of weapon proposed. (Public Archives of Canada.)

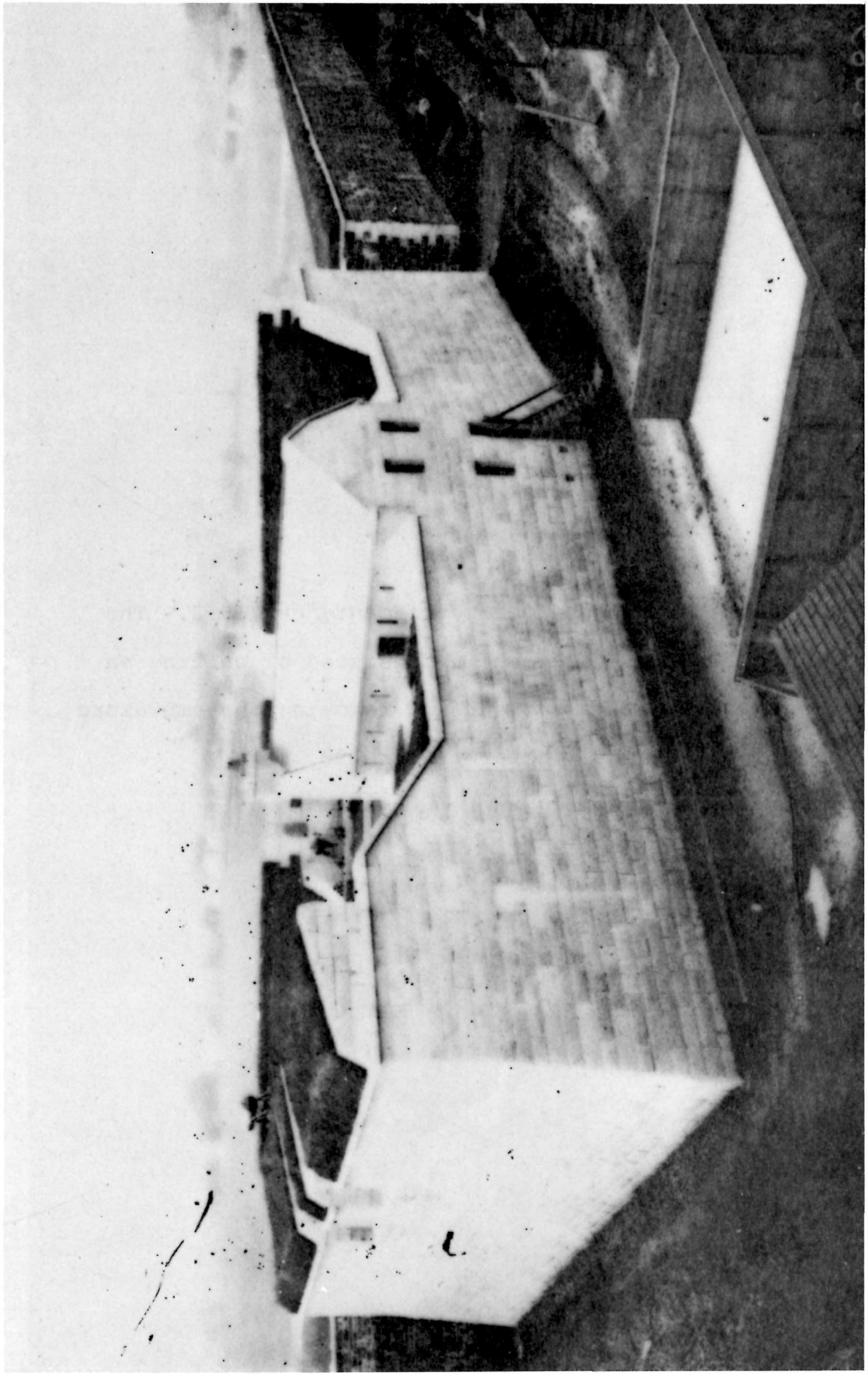

CITADEL

92 Photograph of the south ravelin ramparts, ca. 1870. This is our one surviving photograph showing the original armament of any part of the Citadel. The guns on the face of the ravelin are 6 ft. 6 in. 32-pounders on garrison carriages, and the ground platform is of the type provided for in the 1846 estimate (see Fig. 86). The gun mounted on a traversing platform at the salient is a 9 ft. 6 in. 32-pounder. (Public Archives of Canada.)

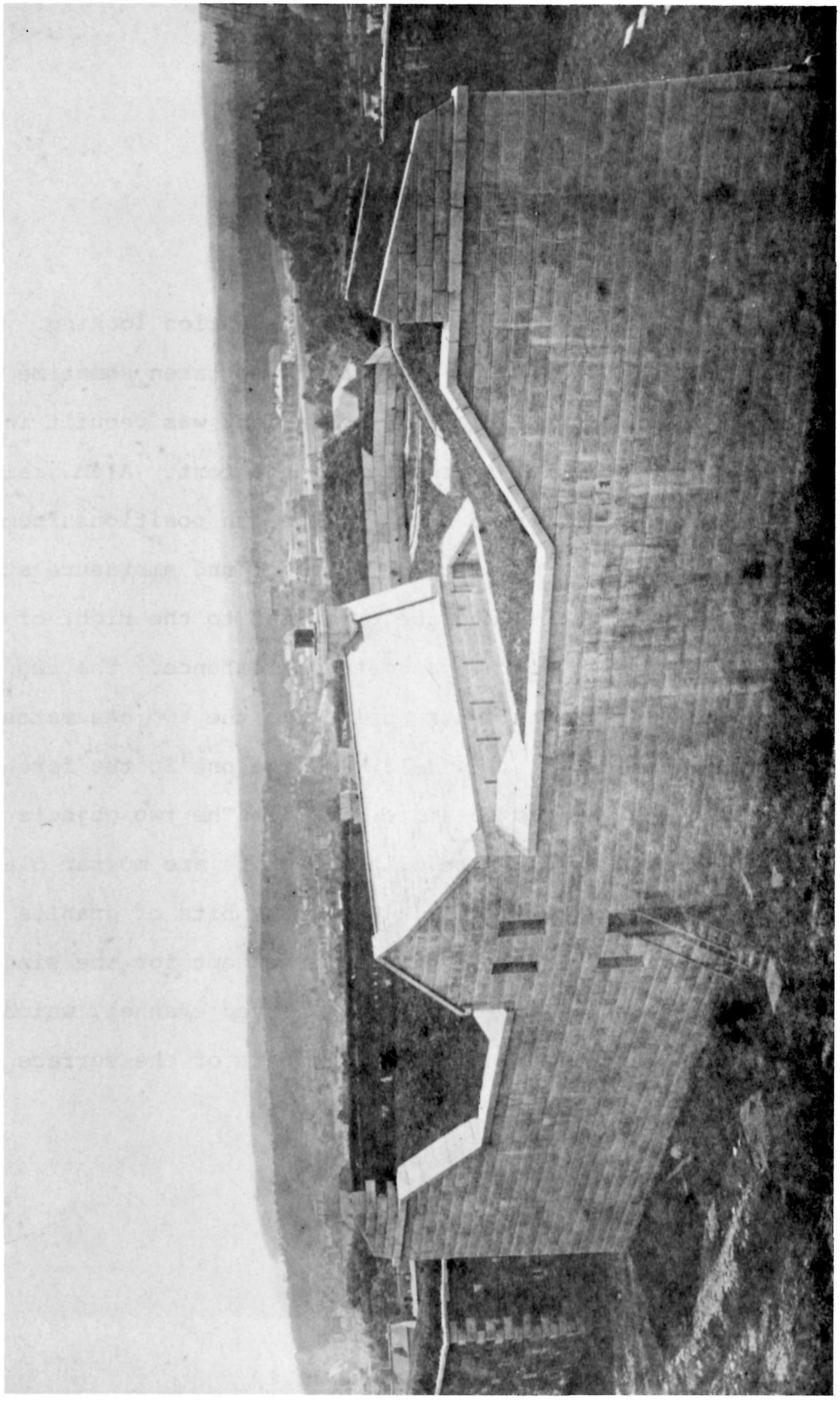
93 Looking south from the southwest demi-bastion, ca. 1875. The masonry in the foreground is the top of the area wall of the casemates of defence. This photograph was taken in the course of the Citadel re-armament. The soldiers in the background are working on a new gun position at the salient of the south ravelin (compare Fig. 92). The collapsed part of the parapet in the centre of the picture is the ruins of an embrasure from the original armament. Note that the picture suggests that the rearmament proposal set out in the 1874 plan (Fig. 91) was not followed; the 1874 plan shows a gun position where the parapet is, at the extreme right of the picture. Note also the extreme steepness of the south glacis. Only a small part of it could be seen from the demi-bastion. (Public Archives of Canada.)



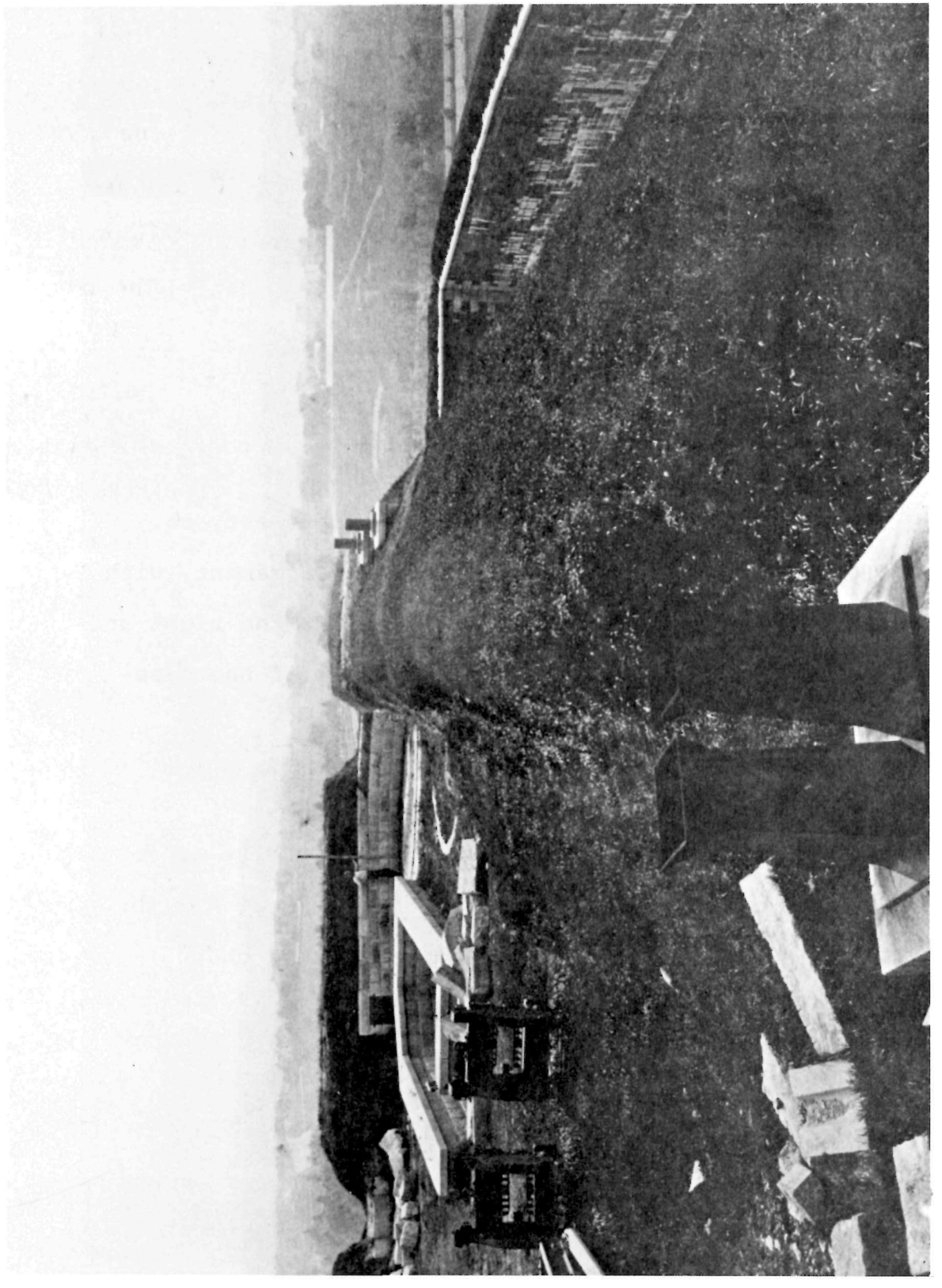
94 The west ravelin, ca. 1870. The ravelin is shown here in its original form. Note the two embrasures on the faces and the gun mounted en barbette at the salient. The masonry embrasures were unique in the Citadel.



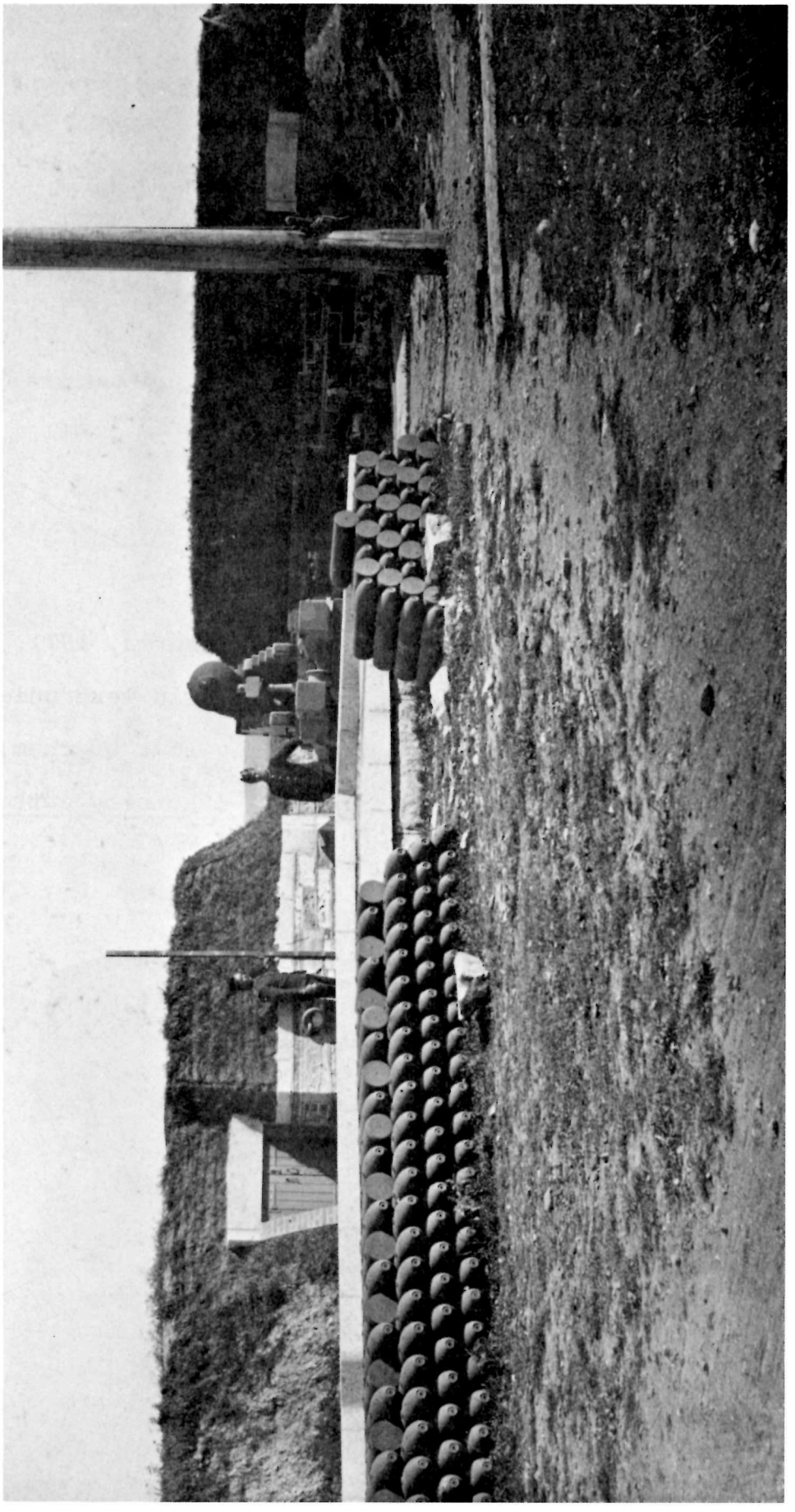
95 The west ravelin after rearmament, ca. 1875. The rearmament of the ravelin consisted of cutting an embrasure at the salient and removing one embrasure from each face. Compare Figure 93.



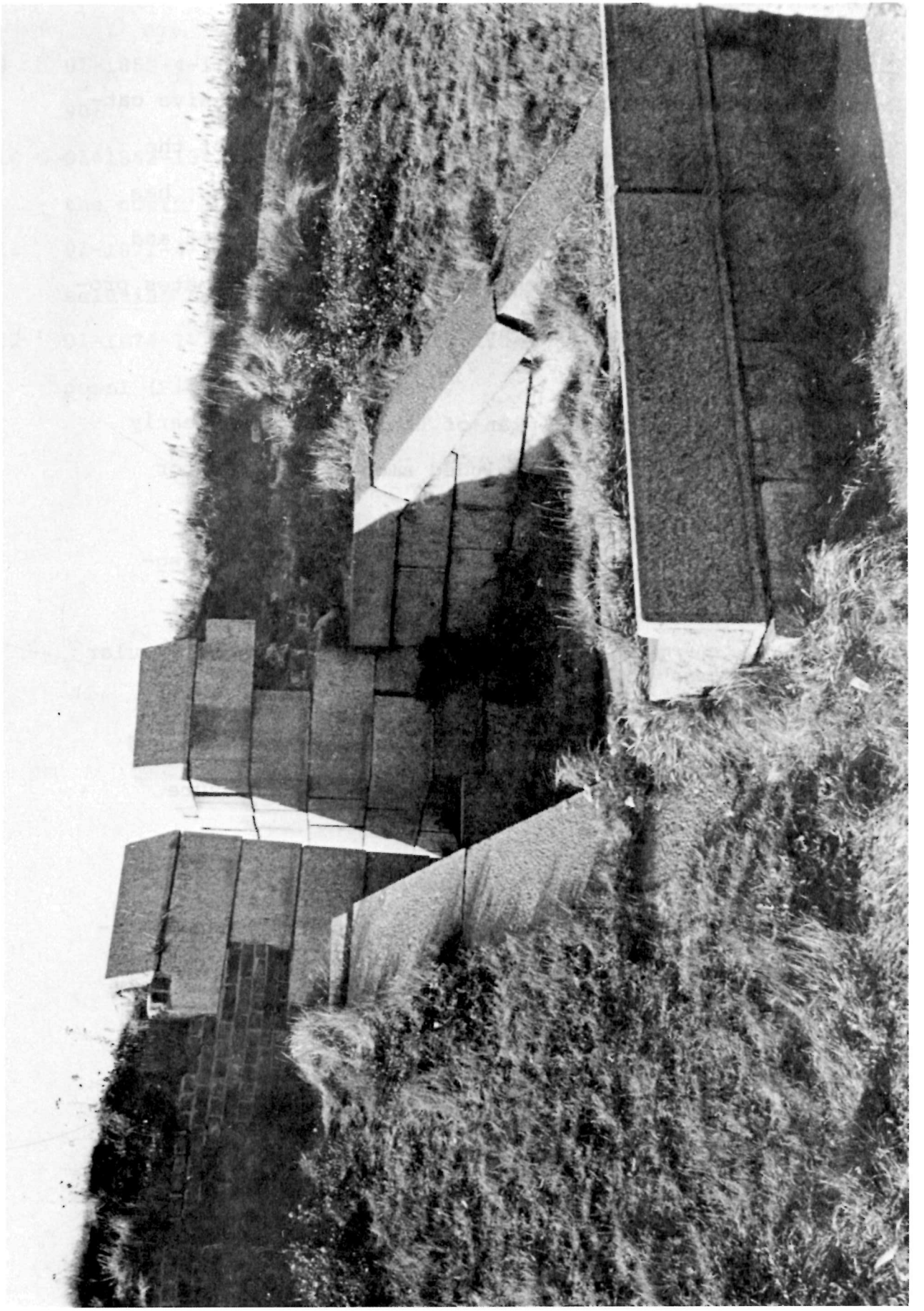
96 The salient of the northwest demi-bastion looking west, ca. 1875. This photograph was taken sometime after the gun position at the salient was rebuilt in the course of the rearmament of the fort. Also visible in the picture are two of the gun positions from the original armament, the ruins of the embrasure at the extreme left, and the curb just to the right of the area wall of the casemates of defence. The two chimneys at right centre belong to the two casemates of defence (Nos. 12 and 13) and the one in the foreground belongs to casemate No. 15. The two objects standing in the centre of the picture are mortar platforms (compare Fig. 89). The stray bits of granite lying around are unidentifiable, except for the single piece in the foreground with a curved channel, which appears to have been originally part of the surface gutter.



97 The southwest demi-bastion looking southwest, ca. 1875. This shows the salient after rearmament, with the gun mounted. Note the flagstaff at the right and the shells piled against the area wall of the case-mates of defence.



98 Detail of one of the west ravelin embrasures, 1971. The granite embrasures in the west ravelin were unique in the Citadel. There were originally four of them, two in each face. Two now survive. (Photo by author.)



Plan Bibliography

Note: This list does not attempt to be a comprehensive catalogue of every section which includes a profile of the ramparts. Every set of general sections, of course, has some information about the dimensions of the parapet and terreplein, as do many of the sections of the casemates produced in the course of drawing the staunching plans.

1 01-1832-2-1: Surface plan of the Citadel. An early armament proposal is included among the notes for this plan (Fig. 55).

2 26-1846-3-14: Plan and section of a pivot and segmental curb for a traversing platform (Fig. 85).

3 26-1846-3-15: Plan and section of a pivot and circular curb for a traversing platform (Fig. 86).

4 26-1846-3-16: Plan and section of a proposed ground platform. Also plan and section of an embrasure (Fig. 87).

5 13-1846-3-4: Plan and section of the west ravelin, showing, among other things, the masonry ground platform and embrasures (Fig. 83).

6 03-1846-3-11: Plan and section of curbs, racers and pivots for the cavalier (Fig. 8).

7 26-1849-13-1: Plan of a siege gun platform (Fig. 88).

8 26-1849-13-2: Plan and section of a siege mortar platform (Fig. 89).

9 01-1852-4-1: Surface plan showing gun positions (Fig. 90).

10 01-1862-13-1: Surface plan showing the embrasures in the north and south ravelins.

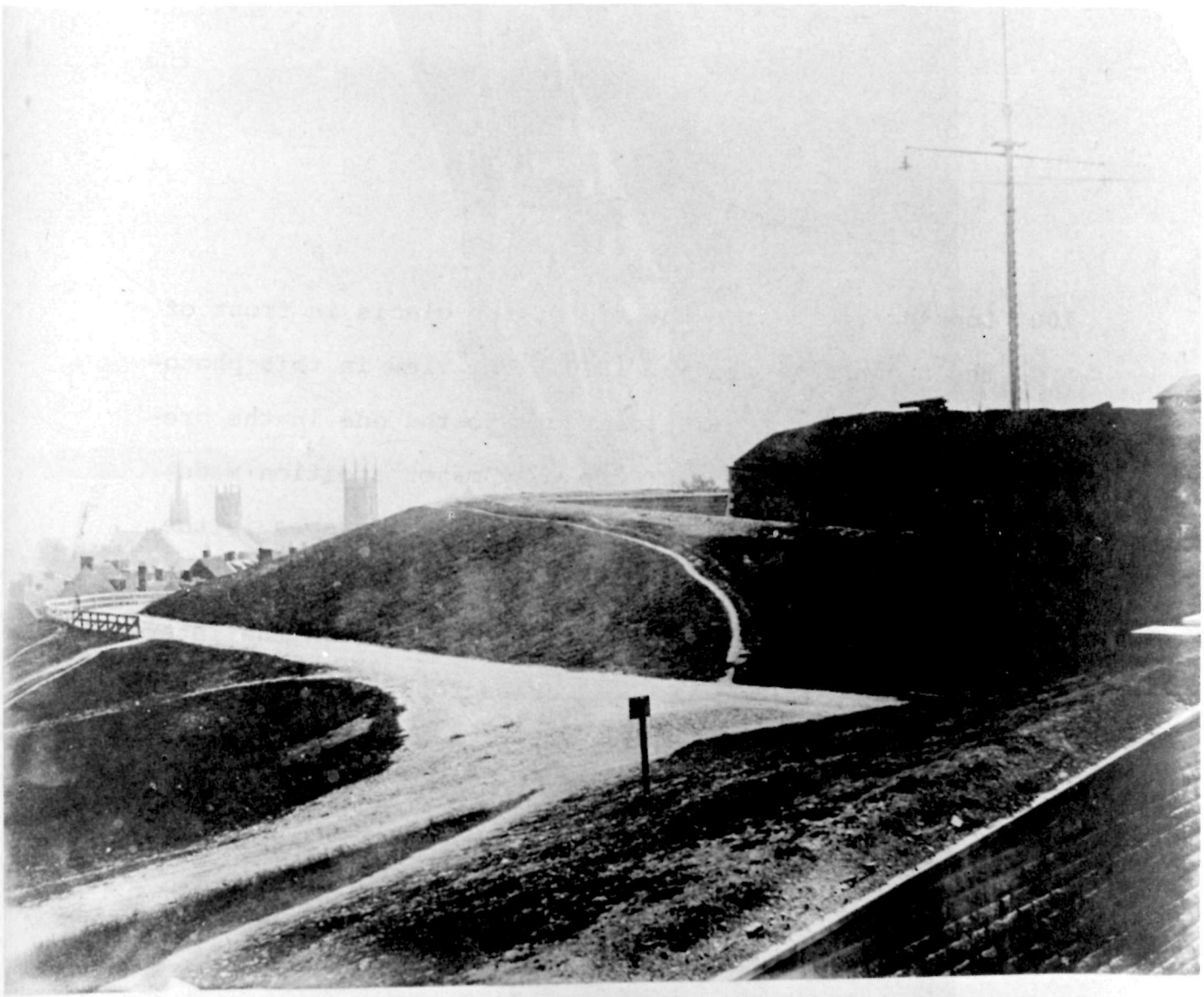
11 01-1871-4-1: Surface plan showing gun positions and saluting battery.

12 01-1874-1-1: Surface plan detailing a rearmament proposal (Fig. 91).

The Glacis

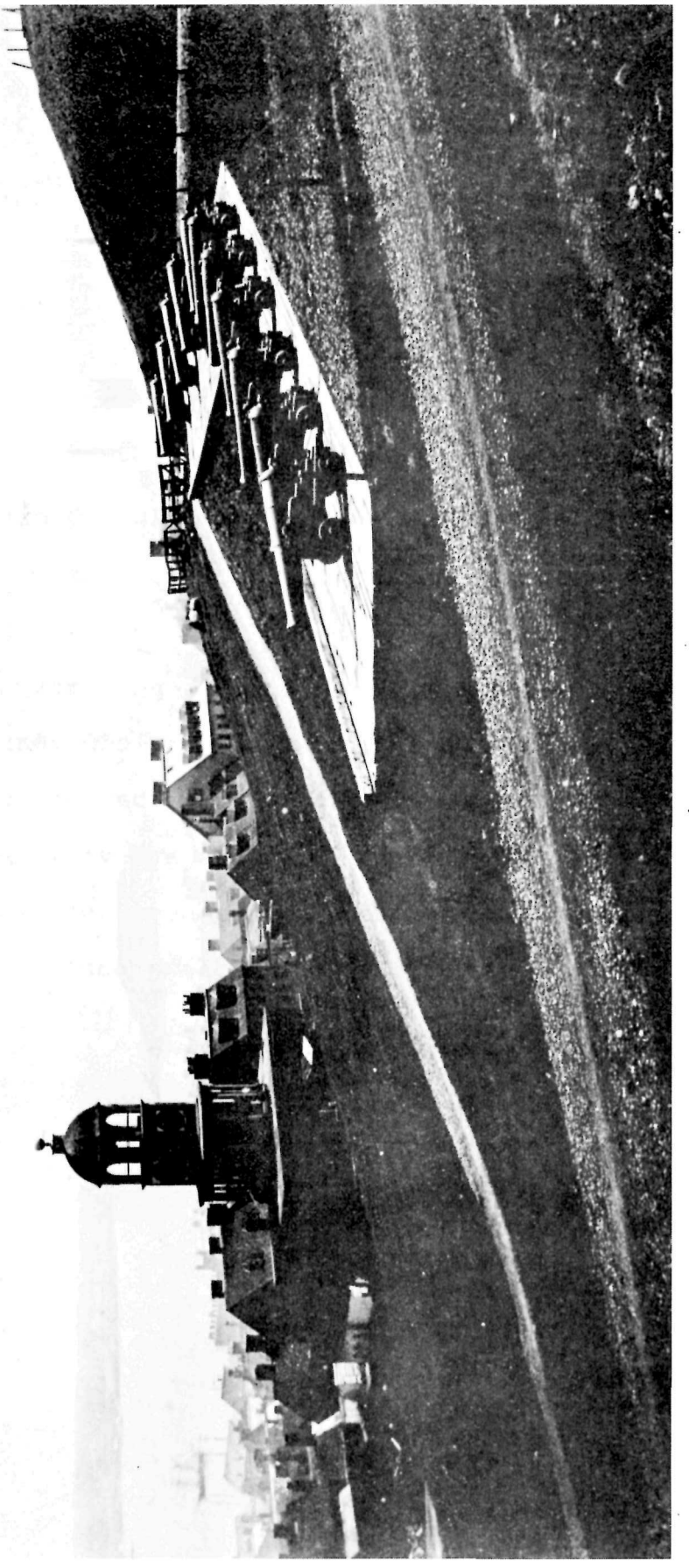
The Citadel glacis was never properly finished. At most the surfaces of the eastern and southern faces were smoothed off to make them look respectable. Even at that, the citizens of Halifax, who regularly used the glacis as a shortcut to get from one part of the city to another, quickly established footpaths and generally did minor damage. The following illustrations (Figs. 99-101) are offered as a way of showing the condition of the glacis in the late 1860s and early 1870s, and also to show the steepness of the slope on the eastern side of the fort. Figure 100 is also the earliest photograph located of the saluting battery. The remaining illustrations (Figs. 102 and 103) are aerial views of the entire fortress.

99 Looking south from the south face of the redan, ca. 1865. This is probably the earliest surviving photograph of the Citadel. Note the gun mounted en barbette at the salient of the southeast salient, and the signal mast to the right of the picture. The glacis was never entirely completed, as this photograph shows. Note the footpaths and the loose gravel near the counterscarp in the right foreground. Note also that the view from the redan face was severely restricted by the steepness of the ground and the existence of the road. (Public Archives of Canada.)

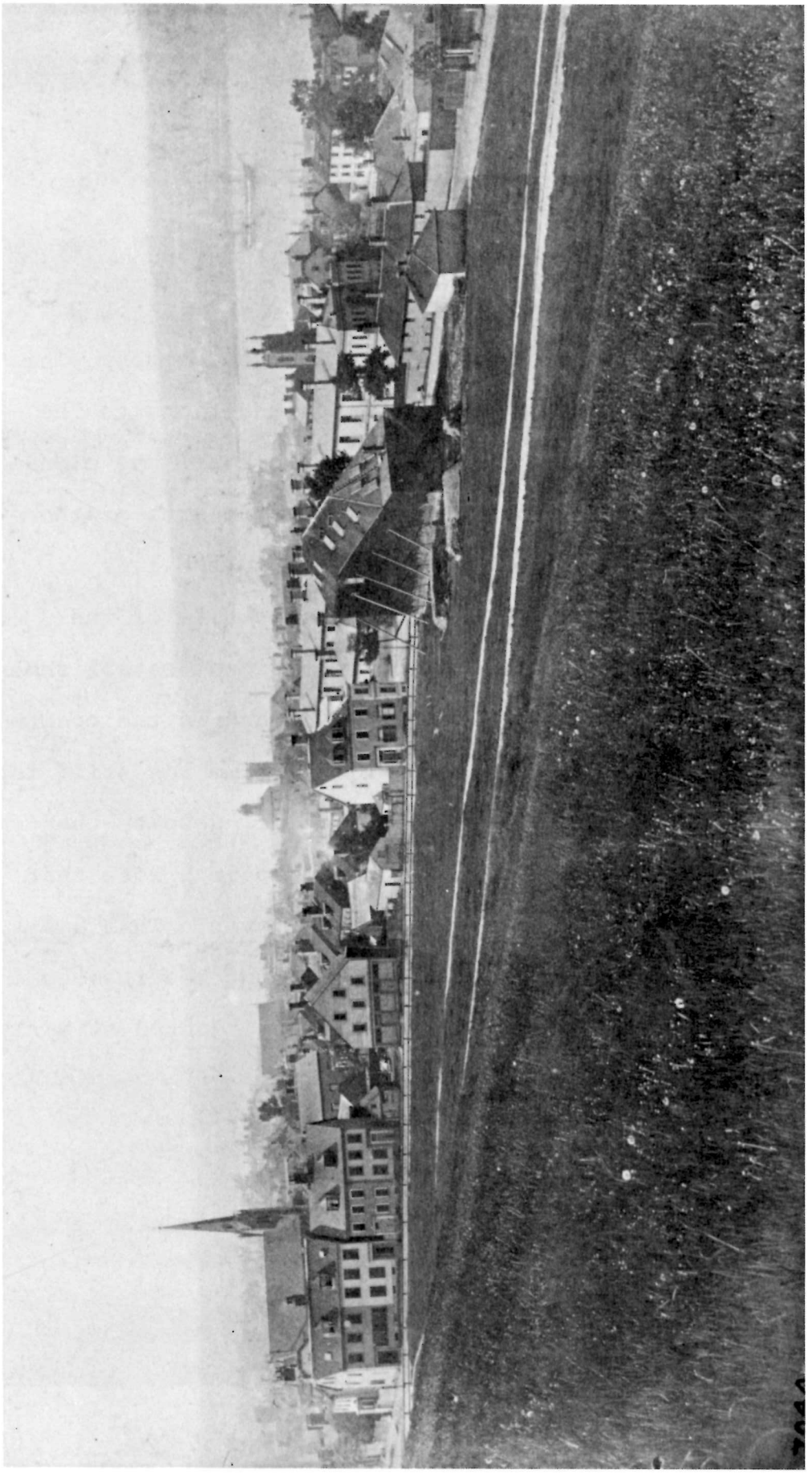


Views from the Citadel Halifax. N.S.

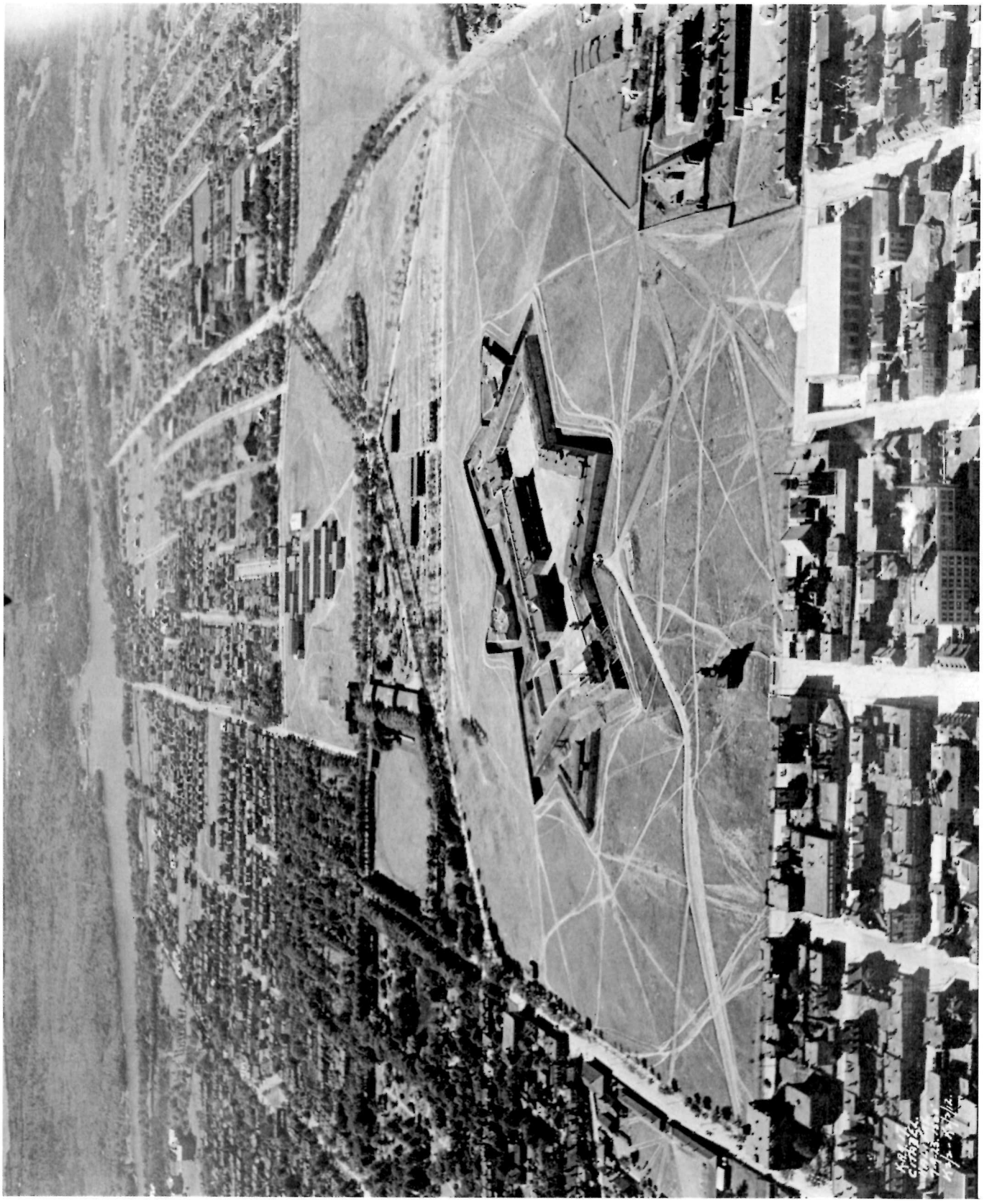
100 Looking south from the top of the glacis in front of the redan salient, ca. 1870. The view in this photograph is very nearly identical to the one in the preceding (see Fig. 99). The only major addition made in the five years between the two photographs is the saluting battery to the right of the picture. Note that no work had been done on the glacis in the interval, and that it was still crisscrossed with footpaths. Georges Island is visible in the distance, at centre. (Public Archives of Canada.)



101 The glacis, looking north, ca. 1870. Once again one sees the footpaths used by the citizens of Halifax to get from one part of the city to another. Eventually the footpaths shown in this photograph were made legal, and a road was built eighty-odd years later in the 1950s. The beginnings of the barrack establishment on the lower glacis slopes are visible at the right, and the dockyard may be seen just to the right of the church steeple in the background.



102 The Citadel, September 1923: aerial photograph. This photograph shows most of the later additions to the Citadel. The three major ones visible are the signal establishment and time ball (on the ramparts of the southeast salient), the brick block to the left of the cavalier, and the canteen, on the site of the north magazine. The weight of the signal establishment was probably responsible for the breach in the escarp, visible below it. The fort at this time was still in use as a military base, and was still, despite the breaches, kept in reasonably good repair. Note that the redan ramparts had been boarded over. This was the ultimate solution to the problem of keeping the casemates dry, and had initially been adopted as early as the late 1870s.



103 The Citadel, 1950: aerial photograph. This photograph was taken just before the army finally gave the Citadel up. The fort had come to look like a tumble-down anachronism in the centre of modern Halifax. (Public Archives of Canada.)

Endnotes

Introduction

1 Most of the estimates for the completion of the Citadel are located in several different collections of documents. The following list cites all the available sources for each estimate:

a) Colonel Jones's estimate:
First version (1834): PAC, MG12, WO44, Vol. 227, fols. 248 ff., "Estimate", 15 March 1834.
Second version (1836): PAC, MG12, WO55, Vol. 873, fols. 637-77, "Revised Estimate for completing Halifax Citadel...", 2 Feb. 1836. Another copy may be found in PANS, RE56, unpaginated.

b) Colonel Calder's first estimate (1843): PAC, MG12, WO55, Vol. 878, fols. 514-22, "Estimate for Alterations & Renewals...", 2 May 1843. Copy also in PANS, RE56, unpaginated.

c) Colonel Calder's second estimate (1846): PAC, MG12, WO55, Vol. 880, fols. 935-58, "Supplementary Report and Estimate...", 31 March 1846. A partly revised copy of the same estimate is in ibid., fols. 978-99. Yet another copy of the unrevised version

is in PANS, RE56, unpaginated.

d) The 1856 committee: PAC, MG12, WO55, Vol. 1558, Pt. 7, "Observations on the defence of Nova Scotia," 1856.

Cavalier

1 PANS, RE54, pp. 61-4, Jones to Pilkington, 15 March 1834.

2 PANS, RE56, unpaginated, "Estimate of the Alterations and Renewals for the Citadel...", 22 May 1843.

3 Ibid., "Supplementary Report and Estimate of Works for Completing the Citadel...", 31 March 1846.

4 PANS, RE33, p. 99, report of Lts. Barry and Grain, 24 Feb. 1855.

5 PAC, RG8, C series, Vol. 1445, pp. 51-62, "Report and Estimate for roofing over the Cavalier...", 21 June 1855.

6 PAC, MG12, WO55, Vol. 1558, Pt. 7, "Report of the Committee on the State of Citadel and Harbour Defences...", 5 May 1856.

7 Ibid., Vol. 887, fols. 434-5, "Report and Estimate for altering the position of the Stoves...", 14 Sept. 1854.

8 PANS, RE13, pp. 187 ff., No. 723, Stotherd to Burgoyne, 17 July 1856, enclosing tabular statement dated 17 June 1856.

9 PANS, RE54, pp. 6-11, "General Estimate of the Expense

of Reconstructing in Masonry...Fort George...", 20 Dec. 1825.

10 NHPS, plans 03-1825-12-3 and 03-1825-12-4.

11 PANS, RE56, unpaginated, "Revised Estimate for completing Halifax Citadel," 2 Feb. 1836.

12 Ibid., "Estimate of Alterations and Renewals...", 22 May 1843.

13 Ibid., "Supplementary Report and Estimate...", 31 March 1846.

14 PAC, MG12, WO55, Vol. 887, fols. 434-5, "Report and Estimate for altering the positions of Stoves...", 14 Sept. 1854.

15 PAC, RG8, C series, Vol. 1445, pp. 56-62, "Report and Estimate for roofing over the Cavalier...", 21 June 1855.

16 PANS, RE33, pp. 86-97, tabular statement, 27 Nov. 1854, and PANS, RE13, pp. 187 ff., No. 723, Stotherd to Burgoyne, 17 July 1856, enclosing tabular statement dated 17 June 1856.

Magazines

1 PAC, MG12, WO55, Vol. 869, fols. 473-5, Boteler to Bryce, 14 Feb. 1832.

2 PAC, MG12, WO44, Vol. 227, fols. 287 ff., "Estimates for the Completion of Fort George...", 12 June 1833.

3 Ibid., fols. 323 ff., "Comparative Estimate", 12 June 1833.

4 Ibid., fols. 339 ff., "Estimate N^{o} 1...", 12 June 1833.

5 Ibid., fols. 248 ff., "Estimate," 15 March 1834.

6 PANS, RE54, pp. 146-8, Pilkington to Couper, 4 June 1834.

7 PANS, RE56, unpaginated, "Revised Estimate for completing Halifax Citadel," 2 Feb. 1836.

8 PANS, RE54, pp. 119-22, No. 399, Fanshawe to Jones, 14 July 1836.

9 PANS, RE56, unpaginated, "Estimate of the Alterations and Renewals for the Citadel...", 22 May 1843.

10 Ibid., "Supplementary Report and Estimate of Works for Completing the Citadel...", 31 March 1846.

11 PANS, RE26, unpaginated, remarks of the IGF, 28 April 1846.

12 PANS, RE12, pp. 162-3, No. 394, Savage to Burgoyne, 16 May 1850.

13 PAC, RG8, C series, Vol. 1653A, pp. 622-3, "Civil Building Estimate...1859-60," 16 Oct. 1858.

14 PANS, RE33, p. 67, Savage to Respective Officers, 23 Oct. 1852, and PANS, RE12, pp. 416-8, No. 546, Savage to Burgoyne, 23 April 1853.

15 PAC, RG8, C series, Vol. 1653A, pp. 235-45, "Fortifications Annual Estimate...1861-62," 24 Oct. 1860.

16 H. Piers, op. cit., p. 34.

17 H. Philpotts, op. cit., pp. 214-6.

18 PANS, RE56, unpaginated, "Revised Estimate for com-

pleting Halifax Citadel...", 2 Feb. 1836.

19 Ibid., "Estimate of the Alterations and Renewals for the Citadel...", 22 May 1843.

20 Ibid., "Supplementary Estimate of Works for Completing the Citadel...", 31 March 1846.

21 PAC, RG8, C series, Vol. 1653A, pp. 622-4, civil buildings estimate, 1859-60, 16 Oct. 1858.

Casemates

1 PANS, RE56, unpaginated, "Revised Estimate for completing Halifax Citadel...", 2 Feb. 1836.

2 PANS, RE54, pp. 175-60, Calder to IGF, 6 Jan. 1843.

3 Ibid., pp. 162-4, Matson to Calder, 3 March 1843.

4 PANS, RE56, unpaginated, "Estimate of the Alterations and Renewals...", 22 May 1843.

5 Ibid., "Report & Estimate of Works & Repairs...1844-5," 20 Oct. 1843.

6 Ibid., "Supplementary Report and Estimate...", 31 March 1843.

7 PAC, MG12, WO55, Vol. 878, fols. 528-9, Jones to Mulcaster, 9 Aug. 1842.

8 Ibid., Vol. 877, fols. 707-8, Calder to Mulcaster, 12 July 1842.

9 PANS, RE11, pp. 254-7, Calder to Burgoyne, 5 Feb. 1848.

10 See for example, PANS, RE22, pp. 51-6, No. 900, Matson to Calder, 27 March 1848, enclosing Oldfield to

Burgoyne, 23 March 1848 and memorandum of 22 March 1848; ibid., p. 62, Matson to Calder, 23 May 1848.

11 PAC, RG8, C series, Vol. 1825, pp. 108-19, report of Lt. Burmester, 30 Nov. 1848.

12 Ibid., No. 288, Savage to Burgoyne, 22 Dec. 1848.

13 PAC, MG12, WO55, Vol. 883, fols. 843-54, "Special Estimate for Staunching the Casemates...", 30 April 1849.

14 PAC, RG8, C series, Vol. 1449, pp. 271-80, abstract of the barracks annual estimate for 1863-64, 24 Dec. 1862.

15 PANS, RE56, unpaginated, "Revised Estimate for completing the Halifax Citadel...", 2 Feb. 1836.

16 Ibid., "Estimate of the Alterations and Renewals...". 22 May 1843.

17 Ibid., "Report & Estimate of Work & Repairs...", 20 Oct. 1843.

18 Ibid., "Supplementary Report and Estimate...", 31 March 1843.

19 PAC, MG12, WO55, Vol. 882, fols. 479-80, "Special Report and Estimate...", 5 Feb. 1848.

20 PAC, RG8, C series, Vol. 1825, pp. 108-19, report of Lt. Burmester, 30 Nov. 1848.

21 PAC, MG12, WO55, Vol. 883, fols. 843-54, "Special Estimate...", 30 April 1849.

22 Rivington's Notes on Building Construction Arranged to Meet the Requirements of the Syllabus of the Science and Art Department of the Committee of Cultural Education, South Kensington, 2d ed. (London: Rivington's, 1889), Vol. 3, pp. 251-2.

23 J. Oldfield, op. cit., pp. 132-48.

24 PANS, RE12, pp. 498-502, report of Lt. Parsons, 13 Feb. 1854.

25 PAC, RG8, C series, Vol. 1825, pp. 108-19, report of Lt. Burmester, 20 Nov. 1848.

26 PANS, RE33, pp. 86-97, tabular statement, 28 Nov. 1854.

27 PANS, RE13, pp. 187 ff., No. 723, Stotherd to Burgoyne, 17 July 1856, enclosing tabular statement dated 17 June 1856.

28 PAC, MG12, WO55, Vol. 887, fols. 656-8, "Report and Estimate...", 15 Jan. 1856.

29 PAC, RG8, C series, Vol. 1653A, pp. 164-230, Fortifications annual estimate, 1860-61, dated 29 Dec. 1859.

30 Ibid., civil buildings estimate, 1862-63, dated 18 Nov. 1861.

Drainage

1 "The small supply of water that can be obtained from the two wells within the Citadel renders this service ...necessary"; Colonel Calder on the water supply provisions of the supplementary estimate. See PANS,

RE56, unpaginated, "Supplementary Report and Estimate of Works...", 31 March 1846.

2 Ibid., "Revised Estimate for completing Halifax Citadel...", 2 Feb. 1836.

3 Ibid., "Supplementary Estimate...", 31 March 1846.

4 PAC, MG12, WO55, Vol. 883, fols. 843-54, "Special Estimate for Staunching the Casemates...", 30 April 1849.

5 Ibid.

6 H. Piers, op. cit., p. 42, n. 5.

7 PAC, MG12, WO55, Vol. 1558, Pt. 7, "Report of Committee on State of the Citadel...", 5 May 1856.

8 PAC, RG8, C series, Vol. 1346, pp. 386-8, Burnaby to AQMG, 1 Sept. 1869.

9 PANS, RE56, unpaginated, "Supplementary Report and Estimate...", 31 March 1846.

Walls

1 PAC, MG12, WO55, Vol. 1558, Pt. 7, "Observations on the Defence of Nova Scotia," App. L.

2 Ibid., App. M.

3 Ibid., App. N; PANS, RE8, pp. 168-9, Respective Officers to Byham, 11 Nov. 1830.

4 PANS, RE54, pp. 67-71, Nicolls to Bryce, 28 Jan. 1831.

5 Ibid.

6 Ibid., pp. 27-8, Nicolls to Bryce, 3 Sept. 1831.

7 PANS, RE56, unpaginated, "Revised Estimate for Completing Halifax Citadel...", 2 Feb. 1836.

8 Ibid., "Estimate of Alterations and Renewals for the Citadel...", 22 May 1843.

9 PANS, RE33, p. 99, report of Lts. Barry and Grain, 24 Feb. 1855.

10 PAC, MG12, WO55, Vol. 1558, Pt. 7, "Observations on the Defence of Nova Scotia...", 1856.

11 Ibid., Vol. 869, fols. 473-5, Boteler to Bryce, 14 Feb. 1832.

12 Ibid., Fol. 514, Boteler to Bryce, 13 March 1832.

13 Ibid.

14 PANS, RE54, pp. 46-7, Fanshawe to Boteler, 25 May 1832.

15 PAC, MG12, WO55, Vol. 869, fol. 520, Boteler to Bryce, 4 Aug. 1832.

16 PAC, MG12, WO44, Vol. 227, fols. 287-309, "N^{o} 1 Estimate for the completion of Fort George...", 12 June 1833.

17 Ibid., fols. 323-31, "N^{o} 2 Comparative Estimate...", 12 June 1833.

18 Ibid., fols. 339-56, "Estimate N^{o} 1...", 12 June 1833.

19 Ibid., fols. 248-92, "Estimate for Completion...", 15 March 1834.

20 NHPS, plan 01-1847-12-1.

21 See, for example, NHPS, plans 11-1833-6-4, 11-1833-6-5, 11-1833-6-10 and compare plan 02-1825-12-2.

22 PAC, MG12, WO55, Vol. 1558, Pt. 7, "Observations on the Defence of Nova Scotia...".

23 Ibid., App. L, M and N.

24 Ibid., Vol. 873, fols. 637-77, "Revised Estimate for completing Halifax Citadel...", 2 Feb. 1836.

25 Ibid., Vol. 878, fols. 514-22, "Estimate for Alterations and Renewals...", 22 May 1843.

26 Ibid., Vol. 873, fols. 637-77, "Revised Estimate...", 2 Feb. 1836.

27 Ibid., Vol. 1558, Pt. 7, "Observations on the Defence of Nova Scotia...", 1856.

Miscellaneous Structures

1 PANS, RE54, pp. 157-60, No. 1, Calder to IGF, 6 Jan. 1843.

2 PAC, MG12, WO55, Vol. 878, fols. 514-22, "Estimate for Alterations and Renewals...", 22 May 1843.

3 Ibid., Vol. 873, fols. 637-77, "Revised Estimate...", 2 Feb. 1836.

4 PAC, RG8, C series, Vol. 1653A, pp. 129-63, Ordnance annual estimate, 1859-60.

5 PAC, MG12, WO55, Vol. 878, fols. 514-22, "Estimate for Alterations and Renewals...", 22 May 1843.

Ravelins

1 See, for example, NHPS, plans 01-1825-12-1 and 01-1832-4-1; the former is Figure 5 in Pt. 1 of this

report, and the latter is Figure 55, above.

2 PAC, MG12, WO55, Vol. 869, fols. 473-5, Boteler to Bryce, 14 Feb. 1832.

3 For a full discussion of the process by which the decision was arrived at, see Pt. 1. Most of the material relating to the changes in design and the various proposals made in the early 1830s is in PAC, MG12, WO44, Vol. 227, the entries for July 1843.

4 PAC, MG12, WO55, Vol. 873, fols. 627-77, "Revised Estimate...", 2 Feb. 1836.

5 Ibid., Vol. 878, fols. 514-22, "Estimate for Alterations and Renewals...", 22 May 1843.

6 Ibid., Vol. 880, fol. 939, "Supplementary Estimate...", 31 March 1846.

7 PANS, RE26, unpaginated, No. 792, Matson to Calder, 6 May 1846, enclosing remarks of the IGF.

8 PAC, MG12, WO55, Vol. 880, fols 1019-24, No. 155, Calder to IGF, 21 July 1846.

9 Ibid., Vol. 881, fol. 847, No. 193, Calder to Burgoyne, 12 May 1847.

10 Ibid., Vol. 882, fol. 485, Calder to Burgoyne, 12 May 1847.

11 PANS, RE22, p. 63, No. 911, Matson to Calder, 25 May 1848.

12 PAC, MG12, WO55, Vol. 873, fols. 637-77, "Revised Estimate for Completing Halifax Citadel...", 2 Feb. 1836.

13 Ibid., Vol. 880, fols. 940-3, "Supplementary Estimate...", 31 March 1846.

Ramparts and Armament

1 PAC, MG12, WO44, Vol. 227, fols. 102-7, "Estimate of the Expense...", 20 Dec. 1825.

2 There is no entirely accurate way to determine the number of gun positions intended in the original plan of the Citadel; the best figure one can really arrive at is between 60 and 70. See, in addition to ibid., NHPS, plans 01-1825-12-1, 01-1825-12-5, 01-1825-12-7, 01-1828-10-1 and 10-1A and 01-1832-4-1.

3 PAC, MG12, WO55, Vol. 880, fols. 935-58, "Supplementary Report and Estimate...", 31 March 1846.

4 PANS, RE26, unpaginated, No. 792, Matson to Calder, 6 May 1846, enclosing IGF's remarks.

5 PAC, MG12, WO55, Vol. 880, fols. 912-3, "Armament Proposal for Fort George...", 21 July 1846.

6 Ibid., fol. 914, Director General of Artillery (DGA) to Burgoyne, 15 Sept. 1846.

7 Ibid., fol. 912, Butler (for Byham) to Burgoyne, 2 Oct. 1846.

8 Ibid., fols. 912-3, "Armament Proposal...", 21 July 1846.

9 Ibid., fols. 978-99, partly revised version of the supplementary estimate, n.d.

10 John Rippengale, "Gun Equipment - Installed Weights, Halifax Citadel, 1855," manuscript on file, National Historic Parks and Sites Branch, Parks Canada, Ottawa, p. 4.

11 Ibid., Vol. 1558, Pt. 7, "Observations on the Defence of Nova Scotia...", 1856.

12 Ibid.

13 Ibid., Vol. 880, fols. 935-58, "Supplementary Report...", 31 March 1846.

14 Ibid., Vol. 883, fols. 714-7, extract from committee report, 1 Oct. 1845.

15 Ibid., Vol. 1558, Pt. 7, "Observations on the Defence of Nova Scotia...", 1856.

Plan Bibliography

Code: 01-1795-5-1.

Title: "A General Plan / of the Works on Citadel Hill shewing in Yellow the relative Situation of the / New Works with respect to the Old Ones which are Coloured Red."

Signature and date: Straton, "Col. Col. [sic] N.S. / Vol. / 25 p. 201 / .Enclosed in letter of 19th May 1795 / H R H Prince Edward / to / Dundas."

Scale: "'700' being the length of the exterior side A:B".

Comments: Plan of Straton's citadel (the third) superimposed over a plan of the second citadel. This plan shows the outlines only and contains few details.

Source: Public Archives of Canada.

Plans 01-1800-1-1 to 02-1800-1-3 (three plans).

These plans show Captain Fenwick's proposal for a work for Citadel Hill comprising a masonry keep surrounded by earth-works. The plans were never carried out.

Code: 01-1800-1-1.

Title: Not entirely included on photocopy in National Historic Parks and Sites Branch files.

Signature and date: Fenwick, 20 Jan. 1800.

Scale: 1 in. to ca. 75 ft.

Comments: Outline plan keyed for sections. The plan also shows the relationship between Fenwick's proposed scheme and Straton's third citadel.

Source: Public Record Office, London (WO78, No. 1670, MPH489).

Code: 28-1800-1-2.

Title: "Plan, Sections & Elevation of a / work proposed to be erected on Citadel Hill, Halifax."

Signature and date: Fenwick, 20 Jan. 1800.

Scale: 1 in. to ca. 15 ft.

Comments: Plan, elevation, section and reference notes. The plan shows Fenwick's proposed towers and casemated cavalier.

Source: Public Record Office, London (WO78, No. 1670, MPH489).

Code: 02-1800-1-3.

Title: "Sections of Citadel Hill".

Signature and date: Fenwick, 20 Jan. 1800.

Scale: 1 in. to 30 ft.

Comments: Four sections. The sections are keyed to the general plan of the work (plan 01-1800-1-1).

Source: Public Record Office, London (WO78, No. 1670, MPH489).

01-1825-12-1 to 02-1825-12-8 (eight plans).

These plans contain Nicolls's original design for the Citadel. There are three series, the second of which (plans 01-1825-5-1

and 6-1) shows some variation from the other two.

Code: 01-1825-12-1.

Title: "Plan N^{O} 1".

Signature and date: Nicolls, 20 Dec. 1825.

Scale: 1 in. to 100 ft.

Comments: Outline plan with reference notes, showing ramparts; the subterranean features are indicated by dotted lines. The plan shows the relationship between Nicolls's design and Straton's third Citadel, as well as a large stretch of the surrounding countryside. It is keyed for sections (see below).

Source: Public Record Office, London (WO78, No. 1786, MR947).

Code: 02-1825-12-2.

Title: "Plan N^{O} 2".

Signature and date: Nicolls, 20 Dec. 1825.

Scale: 1 in. to 30 ft.

Comments: Two sections, both showing Nicoll's proposal and the ruins of the third Citadel. The east-west section includes the west ravelin, the caponier, a section of the west cavalier, the gate, the bridge and the east ravelin. The north-south section includes the north ravelin, a section of the north cavalier, elevations of the west cavalier, the old (1812) magazine, and the south ravelin. The sections are keyed to plan 01-1825-12-1.

Source: Public Record Office, London (WO78, No. 1786, MR947).

Code: 03-1825-12-3.

Title: "Plan N^{o}3".

Signature and date: Nicolls, 20 Dec. 1825.

Scale: 1 in. to 10 ft.

Comments: Plan, two sections, elevation and reference notes. The first plan of the west cavalier. It shows, among other things, the proposed curbs and carriages for the armament.

Source: Public Record Office, London (W078, No. 1786,MR947).

Code: 03-1825-12-4.

Title: "Plan, Elevation & Section of a / Casemated Cavalier proposed / to be erected in Fort George / Citadel Hill".

Signature and date: Nicolls, 20 Dec. 1825.

Scale: 1 in. to 10 ft.

Comments: Plan, elevation and two sections. This plan is virtually identical to the preceding (plan 03-1825-12-3) and differs only in small matters of detail. It provides some detail of the layout of the chimneys.

Source: Public Record Office, London (W078, No. 1786, MR947).

Code: 01-1825-12-5.

Title: "Proposed plan for Fort George, Citadel Hill".

Signature and date: None. Noted as being transmitted by Nicolls, 20 Dec. 1825.

Scale: 1 in. to 100 ft.

Comments: Outline plan of the ramparts. This is a simplified version of plan 01-1825-12-1. It differs from the latter in some matters of detail, notably the arrangement of the ravelin guardhouses. This plan also shows evidence of alteration in London. Unidentified buildings are shown in the gorges of three of the bastions. These were apparently intended to illustrate General Bryce's proposal to relocate the cavaliers (see Part 1, "The Bureaucratic Process").

Source: Public Record Office, London (W078, No. 1786, MR947).

Code: 02-1825-12-6.

Title: "Fort George, Citadel Hill".

Signature and date: None. Noted as having been transmitted by Nicolls, 20 Dec. 1825.

Scale: 1 in. to 30 ft.

Comments: Two sections. These are keyed to 01-1825-12-5, and the same considerations outlined in the discussion of the latter apply here. There is, however, no sign of the proposed relocation of the cavaliers in the section.

Source: Public Record Office, London (W078, No. 1786, MR947).

Code: 01-1825-12-7.

Title: "Fort George, Citadel Hill, as proposed / by Colonel Nicolls, Royal Engineers, December, 1825."

Signature and date: Nicolls, 20 Dec. 1825.

Scale:

Comments: Outline plan. This plan is nearly identical to plan 01-1825-12-1.

Source: Public Record Office, London (WO78, No. 1786, MR947).

Code: 02-1825-12-8.

Title: None.

Signature and date: Lieutenant Blakiston, RE, 20 Dec. 1825.

Scale: 1 in. to 30 ft.

Comments: Two sections, keyed to plan 01-1825-12-7.

Source: Public Record Office, London (WO78, No. 1786, MR947).

Code: 01-1828-10-1.

Title: General plan, Fort George, Citadel Hill, showing "...the Work in progress, and on which / the £15,000 granted by Parliament / in 1828 is supposed to be expended. / That coloured blue is included / in the Supplementary Estimate for 1829."

Signature and date: Nicolls, 7 Oct. 1828, and Nightingale (copyist), 24 Dec. 1831.

Scale: Not given.

Comments: Outline plans of ramparts and surrounding country, with reference notes. This plan shows the work proposed for the parliamentarly grants of 1828-29, and also the proposal

for splitting the north cavalier. In addition it shows all four bastions as being hollow.

Source: Public Archives of Canada (MG12, W055, Vol. 865, fol. 580-1).

Code: 15-1828-10-2.

Title: None.

Signature and date: Nicolls, 7 Oct. 1828.

Scale: 1 in. to 20 ft.

Comments: Section of counterscarp, gallery and mine opposite west ravelin.

Source: Public Archives of Canada (MG12, WO44, Vol. 203, fol. 296).

Code: 14-1828-10-3.

Title: None.

Signature and date: Nicolls, 7 Oct. 1828.

Scale: 1 in. to 20 ft.

Comments: Plan and section of escarp wall. The location of the escarp is not given, but it was intended for the western bastions. It was the escarp built to this specification which collapsed in December 1830.

Source: Public Archives of Canada (MG12, WO44, Vol. 203, fol. 297).

Code: 15-1828-10-4.

Title: None.

Signature and date: Nicolls, 7 Oct. 1828.

Scale: 1 in. to 20 ft.

Comments: Section of counterscarp, gallery and mine, main ditch (presumably western front).

Source: Public Archives of Canada (MG12, WO44, Vol. 203, fol. 297).

Code: 01-1830-8-1.

Title: "Plan shewing the Common belonging / to the town of Halifax / Nova Scotia."

Signature and date: Three signatures. (1) Nicolls, 30 Aug. 1830; (2) J. Nightingale (copyist) 20 Oct. 1830; (3) C. Pettigrew, (copyist, PRO) Aug. 1920.

Scale: 1 in. to 600 ft.

Comments: General plan showing surrounding country to west and south, with reference notes. This plan details property ownership in the surrounding area, and shows the relationship of the Citadel to Fort Massey and Windmill (Camp) Hill.

Source: Public Archives of Canada, National Map Collection (H4/250, from CO217, Vol. 151, fol. 109).

Code: 01-1830-9-1.

Title: "Plan shewing Fort George on the /Citadel Hill, with the common, roads &c. / as existing at present."

Signature and date: Three signatures. (1) Nicolls, 7 Sept. 1830; (2) J. Nightingale (copyist), 9 Oct. 1830; (3) copied at PRO, Sept. 1920.

Scale: 1 in. to 500 ft.

Comments: General plan showing surrounding country; reference notes.

This plan is nearly identical to plan 01-1830-8-1.

Source: Public Archives of Canada, National Map Collection (H4/250, from CO217, Vol. 151, fol. 99).

Code: 13-1831-5-1.

Title: "Plan shewing the Revetment of the /North Ravelin, & Section of the same / as proposed to be built on Citadel Hill."

Signature and date: Nicolls and Wentworth, 2 May 1831.

Scale: 1 in. to 15 ft.

Comments: Plan, two sections, reference notes. The plan shows the state of the north ravelin and the adjoining escarp wall. The sections are of proposals for the west curtain, and of the north ravelin escarps.

Source: Public Archives of Canada (MG12, W055, Vol. 868,fol. 498).

Code: 01-1831-9-1 (9-1A).

Title: "Plan of Fort George, Citadel Hill / shewing the work in Progress.- approved / and those estimated for the year 1832."

Signature and date: Nicolls, 3 Sept. 1832.

Scale: 1 in. to 100 ft.

Comments: 9-1 contains a plan, one section and reference notes. Despite its date the plan not only details construction down to 1832, but also has a section of the escarp of the southwest demi-bastion as built in 1834. The plan shows the three cavaliers which are labelled No. 1, West Cavalier, No. 2, South Cavalier, and No. 3, North Cavalier.

9-1A: This variation is the first plan showing the proposed redan. It is uncertain whether or not the proposal shown is Colonel Nicolls's work or that of his successor, Lieutenant Colonel Boteler. The plan also contains notes about the parapet, signed by Boteler in April 1832.

Sources: For 9-1, Public Archives of Canada (MG12, WO55, Vol. 862, fol. 330); for 9-1A, Public Record Office, London (WO78, No. 1667, MPH486).

Code: 14-1831-13-1.

Title: Section of escarps.

Signature and date: No signature. Dated 1831.

Scale: Not given.

Comments: Three sections.

Source: Public Archives of Canada (MG12, WO55, Vol. 868, fol. 497).

Code: 14-1831-13-2.

Title: "For the West Curtain. / Fort George", "For the North Ravelin".

Signature and date: None.

Scale: Not given.

Comments: Two sections of escarp to accompany Nicolls's supplementary estimate of 2 May 1831.

Source: Public Archives of Canada (MG12, WO55, Vol. 868, fol. 496).

Code: 01-1832-2-1.

Title: "Plan of Fort George / Halifax N.S. / as supposed to be when finished agreeably / to the documents on the spot."

Signature and date: Boteler, 14 Feb. 1832.

Scale: 1 in. to 40 ft.

Comments: Plan, three sections, reference notes. The plan was dispatched by Colonel Boteler in explanation of the points covered in his letter of 14 Feb. 1832 (see Part 1, "Truth and Consequences").

It is the best large-scale plan of the original design of the Citadel and shows all three cavaliers. The sections are,

as follows:

1) Through a casemate of reverse fire (with plan of a loophole).

2) Through the counterscarp gallery.

3) Through the caponier.

Appended to this plan is a memorandum drawn up by Colonel Ellicombe detailing the state of the work in November 1832. The reference notes also detail an armament proposal.

Source: Public Record Office, London (WO78, No. 1679, MPHH205).

Code: 02-1832-2-2.

Title: "N^{O} 3 /Sections through Fort George / Halifax N.S. / as supposed to be when finished / agreeably to the documents on the spot."

Signature and date: Boteler, 14 Feb. 1832.

Scale: 1 in. to 30 ft.

Comments: Seven sections, keyed to plan 01-1832-2-1. The seven are, as follows:

1) An east-west section through the entire fort, showing the west ravelin, the caponier, an elevation of the northwest bastion, a section of the west cavalier, a partial elevation of the north cavalier, the gate and bridge, an elevation of the northeast bastion, and the east ravelin and guardhouse.

2) A north-south section through the entire fort, showing the south ravelin, the south sally port, an elevation of the south cavalier, an elevation of part of the retaining

wall of the curtain, a section of the west cavalier, a section of the north cavalier, the north sally port and the north ravelin.

3) A section of the right face of the northeast demi-bastion.

4) A section through the west ravelin.

5) A section through the left face of the southeast demi-bastion.

6) A section throught the right face of the southwest demi-bastion.

7) A section through the left face of the northwest demi-bastion.

Source: Public Record Office, London (WO78, No. 1679, MPHH205).

Code: 03-1832-2-3.

Title: "N^{O} 4. Fort George Halifax / Sketch of South Cavalier or Officers Quarters as inserted in the annual estimate for 1832 / to be covered with a shingle roof."

Signature and date: Boteler, 14 Feb. 1832.

Scale: 1 in. to 10 ft.

Comments: Two plans, two sections. The south cavalier was, of course, never built.

Source: Public Record Office, London (WO78, No. 1679, MPHH205).

Code: 03-1832-2-4A (2-4B)

Title: "N^{O} 5 Fort George, Halifax / Shewing a proposed South Cavalier or officers Quarters with a central corridor / to be

covered with a shingle roof."

Signature and date: Illegible signature (possibly Lieutenant Wentworth's).

Dated 14 Feb. 1832.

Scale: 4A, 1 in. to 20 ft.; 4B, 1 in. to 10 ft.

Comments: Three plans and section. Despite the title, the building shown may well have been the north cavalier. In any case, neither the north nor the south cavalier was ever built.

Source: Public Record Office, London (WO78, No. 1679, MPHH205).

Code: 14-1832-2-5.

Title: "Elevation of South West Bastion N^{O} 7"; "Elevation of North West Bastion N^{O} 6."

Signature and date: Boteler, 14 Feb. 1832.

Scale: 1 in. to 10 ft.

Comments: Two elevations and a site plan. The elevations show the cracks and failures in the masonry and the notation on the plan gives the dates of construction.

Source: Public Record Office, London (WO78, No. 1679, MPHH205).

Code: 13-1832-2-6.

Title: "N^{O} 8 / Elevation of Gorge of West Ravelin".

Signature and date: Boteler, 14 Feb. 1832.

Scale: 1 in. to 10 ft.

Comments: Elevation and ten sections. The elevation shows

the state of the west ravelin gorge. The ten sections are as follows:

1) Escarp, northwest and southwest bastions as built in 1829.

2) Escarp, left face, northeast and right face, southeast bastions as built in 1830.

3) Escarp, right face, northeast and left face, southeast bastions as built in 1831.

4) Escarp, west curtain, as built in 1831.

5) Escarp, left face, northwest bastion, as rebuilt in 1831.

6) Escarp, west ravelin, as built in 1829.

7) Escarp, north ravelin, as built in 1831.

8) Counterscarp and gallery, southwest bastion and west ravelin, as built in 1829 and 1830.

9) Northwest bastion counterscarp (without gallery or coping) as built in 1831.

10) South front counterscarp (without gallery or coping) as built in 1831.

There are also dimensions given for the counterfort.

Source: Public Record Office, London (W078, No. 1679, MPHH205).

Code: 15-1832-4-1.

Title: "Fort George, Halifax N.S. / Plan and section of the casemates of reverse fire / Counterscarp main Ditch."

Signature and date: Boteler, 14 April 1832.

Scale: 1 in. to 10 ft.

Comments: Plan and two sections, showing countermines. The sections detail two alternative arrangements for the level of the gallery. The gallery was ultimately constructed in a different manner (see plan 15-1838-13-1). The bend in the counterscarp wall shown in this plan was ultimately incorporated into the final plan.

Source: Public Record Office, London (WO78, No. 1667, MPH486).

Code: 02-1832-4-2

Title: "Transverse Section of Fort George shewing the elevation of the / alteration proposed to the eastern front by Colonel Nicolls' Letter of 5th Sept. 1831, as also if carried only to the extent of the Ravelin / of the original Plan. Both constructed on the same plane as the Eastern half of the work."

Signature and date: Boteler, 19 April 1832.

Scale: 1 in. to 30 ft.

Comments: Two sections detailing alternative proposals for the redan. Neither section is entirely like the redan as it was actually constructed, but the first (Nicolls's proposal) is closer. The counterscarp was not constructed in the manner described, and neither the countermines nor the glacis coupé was ever built. This plan is interesting for the light it throws on the problems involved in the formation of a glacis on the eastern front.

Source: Public Record Office, London (WO78, No. 1667, MPH486).

Code: 15-1832-5-1

Title: "Sketch of the proposed construction of the / Cassemates for reverse fire in front of the North West / Bastion, Fort George, Halifax."

Signature and date: "To accompany Sir A. Bryce's orders in Lieutenant Colonel Fanshawe's letter of 25 May 1832."

Scale: 1 in. to 10 ft.

Comments: Plan and section. A proposal to complete the counterscarp gallery in a series of arched compartments. This method of construction was ultimately adopted, but the line of the gallery opposite the northwest demi-bastion was eventually altered (compare plans 15-1832-4-1 and 15-1838-13-1).

Source: Public Record Office, London (W078, No. 1667, MPH486).

Plans 04-1833-6-1 to 15-1834-6-9 (nine plans).

These nine plans are all from Lieutenant Colonel Boteler's first estimate for the completion of the Citadel, transmitted on 12 June 1833. The originals went down with the Calypso; these are copies. As none of the works was approved, these plans are interesting only for their descriptions of work already constructed and for their illustration of the extent to which Boteler influenced his successors.

Code: 04-1833-6-1.

Title: "Longitudinal Section through the Casemates proposed / for the North, South and West Fronts".

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section with reference notes. The escarp wall shown had already been constructed.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 289).

Code: 04-1833-6-2.

Title: "Transverse Section through two of the Casemates proposed for / the North and South fronts."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section with reference notes.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 290).

Code: 06-1833-6-3.

Title: "Transverse Section through one of the Magazines / proposed to be placed in the N.W. & S.W. Bastions."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in to 10 ft.

Comments: Section with reference notes. The magazine proposed was to be composed of two linked subterranean casemates. A similar scheme was put forward in the initial

version of Jones' revised estimate (see plan 06-1834-3-6).
Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 292).

Code: 11-1833-6-4.
Title: "Retaining Wall of Rampart, West Front."
Signature and date: No signature. Dated 15 March 1834.
Scale: 1 in. to 10 ft.
Comments: Section. No retaining wall of this description was ever built.
Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 293).

Code: 11-1833-6-5.
Title: "Retaining wall of Rampart / Eastern front."
Signature and date: No signature. Dated 15 March 1834.
Scale: 1 in. to 10 ft.
Comments: Section. No retaining wall of this description was ever built.
Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 295).

Code: 14-1833-6-6
Title: Section of escarp, eastern front, and section of main drain.
Signature and date: No signature. Dated 15 March 1834.

Scale: Escarp, 1 in. to 10 ft.; drain, 1 in. to 4 ft.

Comments: One section of each.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 297).

Code: 15-1833-6-7.

Title: "Counterscarp for the Eastern front without Gallery or Mines."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section. No counterscarp of this type was ever constructed.

Source: Public Archives of Canada (MG12, WO55, Vol. 227, fol. 305).

Code: 15-1833-6-8.

Title: "Counterscarp and Gallery to complete North front."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 306).

Code: 15-1833-6-9.

Title: "Counterscarp, South front, with Counterforts."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section. No counterscarp of this description was ever built.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 307).

Plans 11-1833-6-10 to 15-1833-6-13 (4 plans.)

These four are from Boteler's second estimate (12 June 1833).

Code: 11-1833-6-10.

Title: "Retaining Wall of Rampart for North, South & West / fronts, if no new Casemates."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section. No retaining wall of this description was ever built.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 325).

Code: 15-1833-6-11.

Title: "Counterscarp, Eastern Front / with Gallery and Mines."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 328).

Code: 15-1833-6-12.

Title: "Counterscarp, South Front / with Gallery and Mines."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 329).

Code: 15-1833-6-13.

Title: "Counterscarp, South Ravelin / with Gallery and Mines."

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section.

Source: Public Archives of Canada (MG12, WO44, Vol.227, fol. 330).

Code: 14-1833-6-14.

Title: "Present Escarp to be taken down" and "Escarp proposed".

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Two sections from Boteler's third estimate for repairs (transmitted 12 June 1833). The first section is of an already completed escarp, apparently in the west curtain.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 334).

Plans 15-1833-6-15 to 28-1833-6-18 (4 plans).

These four plans are from the first of Lieutenant Peake's estimates for alterations and repairs (6 June 1833). Like Boteler's estimates, they were never approved.

Code: 15-1833-6-15.

Title: Plan, sections of counterscarp.

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 8 ft.

Comments: Plan, two sections of a segmental counterscarp gallery. Compare Colonel Jones' plan of same (plan 15-1834-3-4).

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 344).

Code: 11-1833-6-16.

Title: Section of retaining wall, west ramparts.

Signature and date: No signature. Dated 15 March 1834.

Scale: 1 in. to 8 ft.

Comments: Plan and section of retaining wall with arched recesses. This was the origin of the scheme finally adopted.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 346).

Code: 14-1833-6-17.

Title: "Retaining Wall of Ramparts proposed for the Redan," and "Escarp proposed for the Redan."

Signature and date: No signature. Dated 15 March 1834.

Scale: Not given.

Comments: Two sections. No retaining wall was ever built to this specification. The redan counterscarp was altered by the addition of casemating.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 351).

Code: 28-1833-6-18.

Title: "Main Drain...proposed to be built according / to [this] section. - and in the lines / & manner shewn upon Plan N^{O} 1."

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 4 ft.

Comments: Section.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 353).

Code: 01-1833-13-1.

Title: "Part of the Common & Citadel Hill, / Shewing the Position of Fort George / and in yellow the new line of Road."

Signature and date: Wentworth, no date.

Scale: 1 in. to 200 ft.

Comments: Details a scheme to relocate the roads on the Common. The Citadel is shown in outline only. The east front is not shown at all.

Source: Public Archives of Canada (MG12, WO44, Vol. 213, fol. 39).

Plans 14-1834-3-1 to 13-1834-3-9 (nine plans).

These nine are from the first version of Lieutenant Colonel Jones's revised estimate. Some were approved; others were deleted, changed, or not carried out. Comparison should be made with the plans from the approved version of the estimate (see plans 06-1836-2-1 and following).

Code: 14-1834-3-1.

Title: Section of escarp, eastern front, and section of main drain.

Signature and date: Wentworth, 15 March 1834.

Scale: Escarp, 1 in. to 10 ft.; drain, 1 in. to 4 ft.

Comments: Section and elevation of proposed redan escarp and section of proposed main drain. Compare plan 28-1836-2-3.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 251).

Code: 11-1834-3-2.

Title: Plan, section and elevation of retaining wall, east front.

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: The title is self-explanatory.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 254).

Code: 14-1834-3-3.

Title: "Escarp, South Ravelin".

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: The title is self-explanatory.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 258).

Code: 15-1834-3-4.

Title: "Counterscarp with Gallery, Eastern Front.-"

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 259).

Code: 29-1834-3-5

Title: "Section of Caponnieres."

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section. The caponiers were, of course, never built.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 264).

Code: 06-1834-3-6.

Title: "Section through one of the Magazines".

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section. The magazine shown here consists of two linked subterranean casemates (compare plan 06-1833-6-3). This proposal was not accepted, and the present magazines were substituted in the revision of this estimate (see plan 06-1836-2-1).

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 265).

Code: 03-1834-3-7.

Title: "South End of Cavalier, Fort George, Halifax / shewing proposed addition as recommended / in Lieutenant General Pilkington's Report to the Master General / 4th June 1834".

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Plan, two sections and elevation.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 266).

Code: 14-1834-3-8.

Title: "Escarp to be taken down.", "Escarp proposed".

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: The escarp to be taken down was in the northwest bastion.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 271).

Code: 13-1834-3-9.

Title: "Gorge proposed for West Ravelin."

Signature and date: Wentworth, 15 March 1834.

Scale: 1 in. to 10 ft.

Comments: Section.

Source: Public Archives of Canada (MG12, WO44, Vol. 227,

fol. 272).

Code: 01-1835-11-1.

Title: "Plan of the ground in the vicinity of the Citadel / of Halifax Nova Scotia shewing the relative / situation of the portions proposed to be exchanged for a public cemetary."

Signature and date: Two signatures. (1) Jones, 28 Nov. 1835; (2) Wm. Blackman (copyist), 13 July 1921.

Scale: 1 in. to 200 ft.

Comments: The title is self-explanatory. The plan shows the Citadel site but not the Citadel itself.

Source: Public Archives of Canada, National Map Collection.

Plans 06-1836-2-1 to 13-1836-2-16 (16 plans).

These 16 are from the revised (1836) version of Jones's estimate. Most are similar to the first set of plans submitted with the earlier version (1834). With the exceptions noted, most of the works described were actually constructed to these specifications.

Code: 06-1836-2-1.

Title: Two sections of magazine.

Signature and date: Wentworth. No date.

Scale: 1 in. to 10 ft.

Comments: Two sections. These show the magazine as designed after London had rejected the first proposal for the building (see plan 06-1834-3-6). The first section shows the first revised proposal, in which the magazine is shown as having external buttresses. The second section shows the magazine without buttresses, and it was this version which was finally accepted. Both sections show the adjoining retaining wall and area wall.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 666).

Code: 03-1836-2-2.

Title: "Plan and Sections for completing the present Cavalier as a Soldier's Barrack / according to the Original Project and Estimate / and also for adding cooking houses on the North and South / ends, in the manner shown on Plan No. 1 /..."

Signature and date: Wentworth, 1 Feb. 1836.

Scale: 1 in. to 10 ft.

Comments: Plan and section of additions as finally approved.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 668).

Code: 28-1836-2-3.

Title: Two sections, main drain, and elevation of escarp.

Signature and date: Wentworth, 1 Feb. 1836.

Scale: 1 in. to 2 ft.

Comments: Two sections of drain and elevation of escarp. The sections show two different versions of the drain. The version with the curved floor was the one accepted.
Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 639).

Code: 11-1836-2-4.
Title: Rampart retaining wall.
Signature and date: Wentworth, no date. [Jones, 1 Feb. 1836].
Scale: 1 in. to 10 ft.
Comments: Plan and section of rampart retaining wall, eastern front.
Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 644).

Code: 11-1836-2-5.
Title: "Front elevation of retaining wall" and "Longitudinal Section of retaining wall".
Signature and date: Wentworth, no date. [Jones, 1 Feb. 1836].
Scale: 1 in. to 10 ft.
Comments: Elevation and section of retaining wall, north, south and west fronts. On the north front, casemating was ultimately used.
Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 647).

Code: 13-1836-2-6.

Title: "Section of Gorge remaining to be built."

Signature and date: None. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Section of the gorge wall of the north ravelin.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 649).

Code: 13-1836-2-7.

Title: Escarp section, counterforts and parapet.

Signature and date: None. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Section of south ravelin escarp with counterforts, parapet wall.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 651).

Code: 15-1836-2-8.

Title: Counterscarp and gallery.

Signature and date: Wentworth, no date. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Plan and section of counterscarp and gallery, eastern front.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 653).

Code: 15-1836-2-9.

Title: None, and "Section of part to complete according / to the original plan".

Signature and date: None. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Plan and section of counterscarp and gallery, north front. The gallery described here is of the segmental type. In addition, there is a section of the old continuous arch gallery, apparently also intended for the northern front.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 655).

Code: 15-1836-2-10.

Title: None, and "Counterscarp to complete on the original Section, - the dark red / shewing the part already built."

Signature and date: None. [Jones, 1 Feb. 1836.]

Scale: Not given. [1 in. to 10 ft.]

Comments: Plan and section of counterscarp and gallery, southern front, to be constructed according to the segmental pattern. Also, plan and section of a portion of the counterscarp and gallery, southern front, to be constructed according to the original continuous arch pattern.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 657).

Code: 15-1836-2-11.

Title: Section of counterscarp and gallery.

Signature and date: None. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Section of counterscarp and gallery (segmental) for western front.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 659).

Code: 15-1836-2-12.

Title: None, and "Counterscarp to complete on the original Section, the dark red / shewing the part already built."

Signature and date: None. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Section of counterscarp and gallery (segmental) for opposite the south ravelin. There is also a section of the counterscarp and gallery (continuous arch) for the same front, to be completed according to the original plan.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 661).

Code: 04-1836-2-13.

Title: "F, F, F, Casemates for Stores, - see Plan N^{O} 1. -"

Signature and date: Wentworth, no date. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Longitudinal section of Nos. 18-20.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 664).

Code: 03-1836-2-14.

Title: Section of cavalier casemates.

Signature and date: Wentworth, no date. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Longitudinal section of the south end casemates of the cavalier, showing ovens, chimneys, etc.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 670).

Code: 14-1836-2-15.

Title: "Escarp Proposed" and "Present Escarp".

Signature and date: Wentworth, no date. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Section of the escarp as built in the western bastions, and of the escarp proposed for its replacement.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 674).

Code: 13-1836-2-16.

Title: Gorge wall, west ravelin.

Signature and date: None. [Jones, 1 Feb. 1836].

Scale: 1 in. to 10 ft.

Comments: Section of gorge wall proposed for the west ravelin.

For the west ravelin gorge wall as finally reconstructed, see plan 13-1846-3-4.

Source: Public Archives of Canada (MG12, WO55, Vol. 873, fol. 676).

Code: 15-1838-13-1.

Title: Plan and elevation of counterscarp.

Signature and date: No signature. Dated 1838.

Scale: 1 in. to 20 ft.

Comments: Plan and elevation of counterscarp opposite the northwest demi-bastion. This shows the foundation and the drain. It also shows the counterscarp in the course of erection, and is a plan of it as built.

Source: Public Archives of Nova Scotia (RE20, unpaginated).

Plans 04-1843-5-1 to 03-1843-5-5 (five plans).

These five are from Calder's 1843 estimate. All five were approved and constructed.

Code: 04-1843-5-1.

Title: "Sketch of the North East and North Fronts of the Citadel shewing the / additional casemates proposed in the Comm^{dg}. Engineer's letter dated / 6th January 1843; the part of the Scarp it is necessary to take down and / rebuild; and

the area wall of the Casemates of Defence in North / West Bastion which it was necessary to take down..."

Signature and Date: Calder, 22 May 1843.

Scale: 1 in. to 40 ft. and 1 in. to 10 ft.

Comments: Plan, three sections and reference notes. The plan shows the casemates proposed or built in the northeast salient and adjoining demi-bastion. The sections are as follows:

1) Section of right face, northwest demi-bastion.

2) Section of left face, northeast salient, showing the escarp proposed for a casemated rampart.

3) Longitudinal section of three casemates.

Source: Public Archives of Canada (MG12, WO55, Vol. 878, fol. 516A).

Code: 06-1843-5-2.

Title: "Plan of one of the Magazines shewing the proposed / Porches, Ventilators and Shifting Room..."

Signature and date: Calder, 22 May 1843.

Scale: 1 in. to 10 ft.

Comments: Plan of magazines, area and shifting room; section of shifting room.

Source: Public Archives of Canada (MG12, WO55, Vol. 878, fol. 517A).

Code: 08-1843-5-3.

Title: "Plan and Section of the proposed Retaining Wall of the

Area of the Casemates / of defence N.W. Bastion, the steps to be of wood as in the S.W. Bastion."

Signature and date: Calder, 22 May 1843.

Scale: 1 in. to 10 ft.

Comments: Plan, showing part of adjoining casemates; section of wall.

Source: Public Archives of Canada (MG12, WO55, Vol. 878, fol. 519A).

Code: 09-1843-5-4.

Title: "Sketch of Vaults or Cellars / for Officers' Barracks."

Signature and date: Willingham and Calder, 22 May 1843.

Scale: 1 in. to 10 ft.

Comments: Plan, two sections.

Source: Public Archives of Canada (MG12, WO55, Vol. 878, fol. 520A).

Code: 03-1843-5-5.

Title: "Sketch of the room over the South Cooking / Casemate shewing how it is intended to / appropriate it," and "Sketch of the room over the North Cooking Casemate / shewing how it is proposed to fit it up for Cells / for solitary confinement."

Signature and date: Calder, 22 May 1843.

Scale: 1 in. to 10 ft.

Comments: Plan of rooms over south casemate; plan and section of cells.

Source: Public Archives of Canada (MG12, WO55, Vol. 878, fol. 521A).

Code: 04-1844-3-1.

Title: "Plan of Upper Floor of Redan, Halifax Citadel / shewing the Partitions proposed in the Officer's / Rooms."

Signature and date: Calder, 29 March 1844.

Scale: 1 in. to 10 ft.

Comments: Plan only. This was the proposal adopted.

Source: Public Archives of Canada (MG12, WO44, Vol. 227, fol. 65).

Code: 04-1844-3-2.

Title: "Plan of the basement floor / of the Redan Halifax Citadel / shewing the partitions proposed / in the Servants Rooms &c."

Signature and date: Calder, 29 March 1844.

Scale: 1 in. to 10 ft.

Comments: Plan only. This was the proposal adopted.

Source: Public Archives of Canada (MG12, W044, Vol. 227, fol. 66).

Code: 04-1844-4-1.

Title: "Redan - Halifax Citadel. / Tracing from Lieutenant

Colonel Rice Jones' Plan / dated 1.st Feb.y 1836."

Signature and date. None, but noted as being transmitted with IGF's letter of 7 May 1844.

Scale: 1 in. to 40 ft.

Comments: Plan of upper floor of redan casemates. This arrangement was not adopted.

Source: Public Archives of Nova Scotia.

Code: 04-1844-6-1.

Title: "Copy of a sketch by the late Captain Wentworth R.E.", "Plan of Officers Casemates".

Signature and date: Calder, 15 June 1844.

Scale: Not given.

Comments: Plan only. This shows an arrangement which was superceded by that shown in plan 04-1844-3-1.

Source: Public Archives of Canada, (MG12, WO44, Vol. 227, fol. 69).

Code: 04-1845-11-1.

Title: "N.o 1[?] / Plan of the Casemates in the Citadel at Halifax N.S. / used as a strong room & guard house." "To accompany the C.R.E.'s / memorandum dated 24 Nov. 1848."

Signature and date: None. See date above.

Scale: 1 in. to 10 ft.

Comments: Plan showing fitments of casemates 54-5.

Source: Public Archives of Canada (RG8, C series, Vol. 1825, p. 13).

Code: 01-1845-11-2.

Title: "Ground Plan of the Interior of the Citadel of Halifax N.S. / To accompany CRE's Mem^{o} dated Nov. 24th/1845."

Signature and date: None.

Scale: 1 in. to 40 ft.

Comments: Outline plan of parade. No detail.

Source: Public Archives of Canada (RG8, C series, Vol. 1825, p. 14).

Plans 01-1846-3-1 to 26-1846-3-16 (16 plans).

These 16 plans illustrate the items of the 1846 supplementary estimate.

Code: 01-1846-3-1 (3-1A).

Title: "General Plan shewing the Relative / Positions of the Services brought forward in / Supplementary Estimate / To Accompany the Supplementary Estimate / Dated 31st. March, 1846."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 40 ft.

Comments: Block plan. Title is self-explanatory (see below).

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fols. 1002, 1018).

Code: 08-1846-3-2.

Title: "Plan, Elevation and Section of / Retaining Wall to two Casemates / of Defence North West Bastion..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 10 ft.

Comments: Plan, elevation and section. The elevation shows the doors, windows and ventilators of casemates 12 and 13.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 960).

Code: 11-1846-3-3.

Title: "Plan, Elevation and Section of / Retaining Wall to be rebuild to 4 / Casemates of Defence West Face..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 10 ft.

Comments: Plan, elevation and section. The section shows the ventilation system of the casemates behind the retaining wall (the casemates involved are Nos. 3, 4, 8 and 9). The elevation shows the doors, windows and ventilators of the casemates.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 961).

Code: 13-1846-3-4 (3-4A).

Title: "Plan Elevation and Sections of West / Ravelin and Guard House proposed / to be taken down and rebuilt..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 10 ft. and 1 in. to 20 ft.

Comments: 3-4 has a plan of the ravelin, showing both ramparts and escarp and gorge walls, a section of the guardhouse, a section of a gun platform, a section of the escarp, a section of the gorge wall, and an elevation of the gorge. In addition to the above, 3-4A has inserts showing the area wall in section. These two are our best plans of any of the ravelins.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fols. 962, 1005).

Code: 28-1846-3-5.

Title: "Plan and Elevation shewing the proposed method / of supplying the Water Tank with the surface water / from Terreplein .../ also Plan and section of Hopper and Pipe to be inserted in / surface drain to convey Water to main pipe..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 40 ft. and 1 in. to 1 ft.

Comments: Plan, elevation and section of hopper head and drawing of pipe elbow. The elevation shows the entire rampart retaining wall from casemate No. 15 to No. 50 (i.e., from the north magazine to the south redan re-entrant). The water system proposed here was later much modified (see plan 01-1858-8-3).

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 964).

Code: 04-1846-3-6.

Title: "Plan and Sections of Tanks / for a better supply of Water proposed / to be constructed under Gun Room / marked A East Front..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 10 ft.

Comments: Plan, two sections. This details a proposal for the installation of water tanks under casemate No. 50. The proposal was never adopted. The plan and section show casemates 49 and 50 and the well in No. 49.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 963).

Code: 28-1846-3-7.

Title: "Plan and Section of Proposed Underground / Communication from the Gallery North Front / to the Well on the Glacis..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 10 ft.

Comments: Plan and section. The proposed passage was never built. The plan does provide some detail of the counterscarp and gallery at the northeast salient.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 965).

Code: 08-1846-3-8 (3-8A).

Title: "Plan of the proposed flagging / to Areas of North & South / Magazine..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 20 ft.

Comments: Plan. Shows magazine, area and shifting room. The flagging was never applied; instead asphalt was substituted. 3-8A is slightly different in some details.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fols. 996, 1009).

Code: 06-1846-3-9.

Title: Plan and Elevation showing the / Situation of Proposed Lightning / Conductors to the Magazines..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 10 ft. and 1 in. to 20 ft.

Comments: Plan and elevation. Plan is of magazine, area and shifting room. Elevation shows steps to ramparts. The lightning conductors proved a failure when applied in this manner, and a different arrangement was substituted (see plan 06-1858-8-1).

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 967).

Code: 28-1846-3-10 (3-10A).

Title: "Elevation and Section of Proposed / Hopper Heads to

enclose Weepers..."

Signature and date: Calder, 31 March 1846.

Scale: 3 in. to 1 ft.

Comments: Elevation and section: 3-10A differs slightly in detail.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fols. 968, 1011).

Code: 03-1846-3-11.

Title: "Plan and Section of the top of the Cavalier shewing the proposed / arrangement of Seven Guns also the Flagging and Counter-flagging / of Arches over the existing Tiles..."

Signature and date: Calder, 31 March 1846.

Scale: 1 in. to 10 ft.

Comments: Plan and section. The section shows the foundations for the pivots and racers of two of the guns. The method of flagging and counterflagging was later tried in the ramparts casemates.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 969).

Code: 27-1846-3-12.

Title: "Plan, Elevation and Section of / Proposed Cast Iron Cantilever Shelving..."

Signature and date: Calder, 31 March 1846.

Scale: 3 in. to 1 ft.

Comments: Plan, elevation, section and reference notes.
Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 1013).

Code: 28-1846-3-13 (3-13A).
Title: "Plan, Elevation and Section / of Proposed Fence with Gate to / enclose the Glacis..."
Signature and date: Calder, 31 March 1846.
Scale: 1 in. to 5 ft.
Comments: Elevation, section, elevation of gate, site plan, reference notes. The fence was never constructed. 3-13A is slightly different.
Source: Public Archives of Canada (MG12, WO55, Vol. 880, fols. 970, 1014).

Code: 26-1846-3-14.
Title: "Plan and Section of Proposed / Curbs for Traversing Platforms..."
Signature and date: Calder, 31 March 1846.
Scale: 1 in. to 4 ft.
Comments: Plan and section of segmental curb. The section shows the foundations.
Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 971).

Code: 26-1846-3-15.
Title: "Plan and section of Proposed / Curbs for Traversing

Platforms..."

Signature and date: Calder, 31 March 1846.

Scale: not given.

Comments: Plan and section of circular curb.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 972).

Code: 26-1846-3-16.

Title: Plan and Section of a Proposed / Ground Platform for a Garrison / Carriage..."

Signature and date: No signature. Dated 31 March 1846.

Scale: Not given.

Comments: Plan and section; both show the parapet and embrasure.

Source: Public Archives of Canada (MG12, WO55, Vol. 880, fol. 873).

Code: 05-1847-4-1.

Title: "Plan to accompany the Report on the Demolition of the old Magazine in the Citadel at Halifax, Nova Scotia."

Signature and date: Phillpotts, 7 April 1847.

Scale: Not given.

Comments: Plan, section and two views of the ruins. The plan and section show the method of placing the charges. One of the views shows the end of the cavalier and establishes that

the cavalier, in 1847, had a hipped shingle roof.

Source: Public Archives of Canada (MG12, WO55, Vol. 881, fol. 855).

Code: 01-1847-8-1.

Title: "Plan shewing the Relative Situation of Proposed / Cells for Solitary Confinement..."

Signature and date: Calder, 7 August 1847.

Scale: 1 in. to 40 ft.

Comments: Plan of entire south end of fort. Despite the title, this version of the plan does not show the location of the proposed cells.

Source: Public Archives of Canada (MG12, WO55, Vol. 882, fol. 405).

Code: 28-1847-8-2.

Title: "Halifax Citadel / Nova Scotia / Solitary Cells".

Signature and date: Calder, 7 August 1847.

Scale: 1 in. to 10 ft. and 1 in. to 8 ft.

Comments: Two plans, two sections, elevation and reference notes. This shows the first version of the design intended for the south side of the southeast salient (see plan 28-1847-11-1, below).

Source: Public Archives of Canada (MG12, WO55, Vol. 882, fol. 860).

Code: 28-1847-11-1.

Title: "Halifax Citadel / Solitary Cells".

Signature and date: Calder, 15 Nov. 1847.

Scale: 1 in. to 10 ft.

Comments: Two plans, two sections and elevation. This shows a slightly more elaborate version of the preceding plan, intended for the east side of the southeast salient. Neither this nor the preceding was ever built.

Source: Public Archives of Canada (MG12, WO55, Vol. 882, fol. 406).

Code: 01-1847-12-1 (12-1A).

Title: "Ground Plan / of / Fort George or the Citadel / Halifax N.S. / from actual measurement / shewing the state of the work / Dec. 31. 1847 / (Fort George) Halifax Citadel".

Signature and date: 12-1, Calder, 10 March 1848. 12-1A, J.R. LaPlante (copyist), October 1961.

Scale: 1 in. to 40 ft.

Comments: Ground plan with reference notes. This is probably the best-known of all the Citadel plans and also one of the best. It shows the subterranean features as they existed in 1847. 12-1A is a modern retracing with some information interpolated from other sources. The original plan is very faded.

Source: 12-1; Public Archives of Nova Scotia. 12-1A; original

in Public Archives of Canada, National Map Collection.

Code: 04-1848-2-1.

Title: Plan and section of counterflagging in dos d'anes.

Signature and date: No signature. Dated 1848.

Scale: Not given.

Comments: Plan and section sketched in the blank half-margin of a letter. See plan 01-1848-12-1 and following for further information.

Source: Public Archives of Canada (MG12, WO55, Vol. 882, fol. 475).

Plans 01-1848-12-1 to 11-1848-12-5 (5 plans).

These five were sent with Colonel Savage's letter of 28 December 1848 reporting on the state of the casemates. They contain the first clear indicationof the materials used on the dos d'anes, and are important sources for the history of the casemate waterproofing. They should be compared with plans 01-1849-4-1 and following, and with plan 04-1854-6-1. (See also Part 1, "the necessity of remedying the leakage".)

Code: 01-1848-12-1.

Title: "Ground Plan Shewing the Casemates Numbered 1 to 54 / and the situation of the Proposed Down Pipes and Drainage / to carry off the Water from the Vallies between the / Dos d' Anes..."

Signature and date: Savage, 28 Dec. 1848.

Scale: 1 in. to 40 ft.

Comments: Plan. This plan shows the proposed drainage system and the contemporary numbering system for the casemates. The former was much altered in the course of installation (see plan 01-1858-8-3).

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 835).

Code: 04-1848-12-2

Title: "Plan and Sections shewing Casemates / Flagged, Hipped and Piped; Flagged / and Hipped; and Flagged Only..."

Signature and date: Savage, 28 Dec. 1848.

Scale: 1 in. to 8 ft.

Comments: Plan and section. Plan shows dos d'anes, and section shows entire casemate (a block of six is shown). No fewer than three different drainage systems are illustrated.

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 836).

Code: 04-1848-12-3.

Title: "Longitudinal Section...shewing Casemates / Flagged Hipped and Piped; Flagged and Hipped; and Flagged only..."
Signature and date: Savage, 28 Dec. 1848.
Scale: 1 in. to 8 ft.
Comments: Three sections keyed to plan 04-1848-12-2.
Source: Public Archives of Canada (MG12,WO55, Vol. 883, fol. 837).

Code: 04-1848-12-4.
Title: "Plan and section shewing the Method / Improvised by Colonel Savage../to prevent the Casemates from Leakage/ at this Station..."
Signature and date: Savage, 28 Dec. 1848.
Scale: 1 in. to 8 ft.
Comments: Plan, two sections. The title is self-explanatory. The interior drainage system illustrated involved cutting a hole through the haunch of the casemate arch and taking the pipe down one of the outside corners of the casemate.
Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 838).

Code: 1-1848-12-5.
Title: "Section of the Redan, Officers Quarters / shewing the Coping of the Retaining Wall as executed / and the dotted lines as Recommended / to be carried up..."
Signature and date: Savage, 28 Dec. 1848.

Scale: 1 in. to 10 ft.

Comments: Section of entire casemate on a very small scale. Few details.

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 839).

Code: 01-1849-1-1.

Title: "Citadel / Halifax N S. / to accompany Return / shewing the Proposed Appropriation..."

Signature and date: Savage, 9 Jan. 1849.

Scale: 1 in. to 40 ft.

Comments: Large-scale ground plan showing casemate numbering. Similar to plan 01-1847-12-1 and somewhat clearer.

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 781).

Code: 01-1849-1-2.

Title: General plan.

Signature and date: Savage, 9 Jan. 1849.

Scale: 1 in. to 200 ft.

Comments: A small-scale site plan. No detail.

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 782).

Plans 01-1849-4-1 to 01-1849-4-8 (eight plans).

These eight plans were drawn to accompany Colonel Savage's staunching estimate of 30 April 1849. They should be compared with plans 01-1848-12-1 and following, and with plan 04-1854-6-1. (See Part 1, "...the necessity of remedying the leakage...").

Code: 01-1849-4-1.

Title: "Ground Plan / Fort George or the Citadel / Halifax N.S. / Shewing the position of the Proposed Pipes and Drains with respect / to the Mode proposed for Staunching the leakage in / the Arches of the Casemates and / for providing against a similar contingency in the Cavalier..."

Signature and date: Savage, 30 April 1849.

Scale: Not given.

Comments: Plan and reference notes. The title is self-explanatory. The system detailed here was later much altered. See plan 01-1858-8-3.

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 856).

Code: 01-1849-4-2.

Title: "Plan shewing the mode proposed for staunching / the leakage in the Arches of the Casemates /..."

Signature and date: Savage, 30 April 1849.

Scale: 1 in. to 40 ft.

Comments: Plan and reference notes. The plan shows the ramparts cut away to reveal the dos d'anes of the casemates underneath. It is the only one of its kind. Only the shifting rooms (Nos. 14 and 58) and the privies (Nos. 6, 7A and 42) and Nos. 1-2, 10-11 and 56-7 are not shown. The cavalier casemate dos d'anes are also shown.
Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 857).

Code: 04-1849-4-3.
Title: "Sections...shewing the / mode proposed for staunching the leakage in the / Arches of the Casemates...."
Signature and date: Savage, 30 April 1849.
Scale: 1 in. to 10 ft.
Comments: Seven sections, two figures, reference notes and pencil annotations. The seven sections are Nos. 47, 57, 60, 3, 20 and 27 (of which there are two sections). All of the sections are very detailed and show doors, windows, fireplaces, chimneys, etc. The two figures show details of the drain pipes. The pencil annotations, made in London, show some of the alterations later made in this scheme.
Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 858).

Code: 03-1849-4-4.
Title: "Sections of Cavalier showing the mode proposed for /

rendering the arches secure against / leakage by the introduction of pipes and drains..."

Signature and date: Savage, 30 April 1849.

Scale: 1 in. to 10 ft.

Comments: Two sections of the cavalier casemates. In addition to the drainage system, the sections show doors, windows, fireplaces, etc. They are especially good as regards the veranda and veranda staircase.

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 859).

Code: 01-1849-4-5.

Title: "Plan shewing the position of the proposed granite / Surface Gutters / with reference to the project for / Staunching the Casemates..."

Signature and date: Savage, 30 April 1849.

Scale: 1 in. to 40 ft.

Comments: General plan, reference notes. The gutters were built in the manner described here.

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 860).

Code: 11-1849-4-6.

Title: Sections of gargoyles and plan of surface gutter.

Signature and date: None. [Savage, 30 April 1849.]

Scale: Not given.

Comments: Two small sections of a gargoyle and one small plan showing the surface gutter behind the rampart retaining wall and the upper portion of the wall. These are included in the text of Savage's staunching estimate of 30 April 1849.
Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol 854).

Code: 28-1849-4-7.
Title: Sections of gutter and hopper heads.
Signature and date: None. [Savage, 30 April 1849].
Scale: Not given.
Comments: Small section of gutter and hopper heads given in the text of the estimate.
Source: Public Archives of Canada (MG12, WO55, Vol. 883).

Code: 28-1849-4-8.
Title: Gutter for casemate.
Signature and date: None. [Savage, 30 April 1849].
Scale: Not given.
Comments: Small section of casemate gutter within the text of the estimate.
Source: Public Archives of Canada (MG12, WO55, Vol. 883).

Code: 26-1849-13-1.

Title: "Siege Gun Platform."

Signature and date: No signature. Dated 1849.

Scale: 1 in. to 12 ft.

Comments: Plan, section and details.

Source: Public Archives of Canada (MG12, WO55, Vol.883, fol. 719).

Code: 26-1849-13-2.

Title: "Siege Mortar Platform".

Signature and date: No signature. Dated 1849.

Scale: 1 in. to 12 ft.

Comments: Two plans, one of a platform for 10-inch mortars, the other for 13-inch mortars.

Source: Public Archives of Canada (MG12, WO55, Vol. 883, fol. 720).

Code: 24-1850-1-1.

Title: "Working Drawing / of / Standing Bridge".

Signature and date: Savage, 7 Jan. 1850.

Scale: ½ in. to 1 ft.

Comments: Two sections. The bridge was built to this specification.

Source: Public Archives of Nova Scotia.

Code: 24-1850-1-2.

Title: "Working Drawing / of / Draw Bridge".

Signature and date: Savage, 7 Jan. 1850.

Scale: Varies.

Comments: Plan, sections and detail. The bridge was built to this specification.

Source: Public Archives of Nova Scotia.

Code: 01-1851-11-1.

Title: "Halifax. N.S.".

Signature and date: Savage, 13 Nov. 1851.

Scale: 1 in. to 200 ft.

Comments: Plan showing barrack accommodation in the Citadel and vicinity, and table detailing accommodation in each building.

Source: Public Archives of Canada (National Map Collection, H4/250).

Code: 06-1852-1-1.

Title: "Halifax N.S. / Plan and Section of the Gunpowder Magazine / at the / Citadel".

Signature and date: Savage, 21 Jan. 1852.

Scale: 1 in. to 20 ft.

Comments: Plan, two sections and reference notes. The

sections show the arrangement of the powder racks as then in use and as proposed.

Source: Public Archives of Canada (MG12, WO44, Vol. 235, fol. 188).

Code: 01-1852-4-1 (4-1A).

Title: "Surface Plan / of Fort George or the Citadel / Halifax N.S. / Record plan from actual measurement / in compliance with the CRE's order 12th April 1852". Title of 4-1A: "Gun Positions / Halifax Citadel / From Record Plan of 1852 / in Public Archives of Canada / Reference D250."

Signature and date: 4-1; none (see above.) 4-1A; none.

Scale: 4-1; 1 in. to 40 ft. 4-1A; 1 in. to ca. 65 ft.

Comments: Surface plan, showing armament positions. Despite the legend, the latter could not conceivably be "from actual measurement" since the ramparts were not yet complete in 1852 (see "...and keep your powder dry!"). 4-1A is a modern redrawing.

Source: 4-1 and 4-1A: Public Archives of Canada, National Map Collection.

Code: 02-1852-4-2 (4-2A, 4-2B)

Title: 4-2: " Section and Elevations / of / Fort George or the Citadel / at Halifax N.S. / Record Plan from actual measurement / In compliance with the C.R.E.'s order

12 April 1852". 4-2A; "Halifax Citadel / Rampart Profiles / from Record Plan, 1852..." 4-2B: "Citadel (Fœrt George) / Halifax N.S. / Section & Elevations in 1847".

Signature and date: 4-2: none. 4-2A: none. 4-2B: retraced by J.M. Laplante, October 1961.

Scale: 4-2: 1 in. to 40 ft. 4-2A: 1 in. to 20 ft. 4-2B: 1 in. to 40 ft.

Comments: 4-2 contains eight sections and elevations, including the following: 1) East-west section through the fort, showing sections of counterscarp gallery, redan casemates, rainwater tanks, cavalier, west curtain, ravelin guardhouse, west ravelin escarp, etc.

2) North-south section of south ravelin, south sally port, two casemates in the south front, shifting room; elevation of south magazine (without area wall), elevation of south end of curtain, section of cavalier, elevation of north magazine (with area wall), sections of north front, north ravelin, counterscarp gallery and countermines opposite the north ravelin salient.

3) Section of north ravelin.

4) Section of bridge and gate tunnel.

5) Elevation of gate from ditch.

6) Elevation of cavalier.

7) Elevation of north ravelin.

8) Section of rainwater tanks.

4-2A is a modern redrawing of several portions of sections

Nos. 1, 2, and 4 of the above. Despite the title, 4-2B is a modern redrawing of sections Nos. 1-4 of the above.
Source: 4-2, 4-2A and 4-2B: Public Archives of Canada National Map Collection. The original source for 4-2 is unknown.

Code: 04-1854-6-1.
Title: "Fort George / Halifax N.S. / A Sketch of the covering of Casemates / with Asphalte..."
Signature and date: R.M.P., 12 June 1854.
Scale: 1 in. to 15 ft.
Comments: Plan, two sections and notes. This small plan is the best source for information about the method of water-proofing finally adopted for the casemate dos d'anes, although this scheme was subsequently altered in the light of continuing experience. The plan shows the top of the dos d'anes. The two sections show the interior of the casemate, down pipes, chimney, etc.
Source: Public Archives of Canada (MG12, WO55, Vol. 887, fol. 498).

Code: 27-1854-8-1.
Title: "Citadel, Halifax N.S. / Plan & Elevation of proposed / Ball Court."

"To accompany the B.A.E. 1855-6 / Item 27".

Signature and date: No signature. Dated 29 Aug. 1854 and 30 Aug. 1854.

Scale: 1 in. to 10 ft.

Comments: Plan, two sections, reference notes, detail of timber.

Source: Public Archives of Canada, National Map Collection.

Code: 03-1854-9-1.

Title: Plan of ground floor "shewing the proposed alteration in the position of / the Stoves in Soldier's Rooms..."

Signature and date: Stotherd, 14 Sept. 1854.

Scale: 1 in. to 20 ft.

Comments: Plan of ground floor and notes. The title is self-explanatory. The proposal this illustrates was accepted.

Source: Public Archives of Canada (MG12, WO55, Vol. 887, fol. 435A).

Code: 03-1855-6-1.

Title: "Halifax - Nova Scotia. / Citadel, Fort George. / Plan and section shewing the Proposed / Roof for Covering over the Cavalier..."

Signature and date: Stotherd, 21 June 1855.

Scale: 1 in. to 10 ft.

Comments: Plan, section and reference notes. Very detailed, and probably the best plan of the cavalier roof.

Source: Public Archives of Nova Scotia.

Code: 04-1856-1-1.

Title: "Plan and sections showing the work described / in improving the Soil Pits at the /Soldier's Privies / at the / Citadel..."

Signature and date: Stotherd, 1 Jan. 1856.

Scale: 1 in. to 10 ft. and 1 in. to 4 ft.

Comments: Plan and five sections. The privies were in casemates 6 and 7A, and this is the only plan extant of either of them. It also shows the sally port between the two casemates, as well as cesspools, drains, etc.

Source: Public Archives of Canada (MG12, WO55, Vol. 887, fol. 659).

Code: 01-1856-5-1

Title: "Plan / of / Fort George or the Citadel / Halifax, N.S. / To accompany the Report of the Commissioners on the Defences / Dated 5th May / 1856."

Signature and date: Stotherd, 5 May 1856.

Scale: Not given.

Comments: Ground plan of the Citadel.

Source: Public Archives of Canada (MG12, WO55, Vol. 1558, part 7, fol. 32).

Code: 06-1858-8-1.

Title: "Halifax / Projection [?] shewing the mode of arranging the lightning conductors to the existing / Powder magazines / in accordance with Circular N° 260 / To accompany the Ordnance Annual Estimate 1859-60 Item 4".

Signature and date: Dawson, 2 Aug. 1858.

Scale: 1 in. to 20 ft.

Comments: Three perspective drawings, showing the following:

1) The north magazine.

2) The ammunition store (not in the Citadel).

3) The naval magazine (not in the Citadel).

The method described here was altered slightly - the conductors were not used on the porches - but otherwise this was the way in which the lightning apparatus was installed.

Source: Public Archives of Canada (RG8, C series, Vol. 1653A, p. 627).

Code: 01-1858-8-2.

Title: "Halifax N.S. / Plan & section shewing in yellow the proposed cunette / To accompany the Ordnance Annual Estimate 1859-60 Item 3".

Signature and date: Lieutenant Dawson, 7 July 1858.

Scale: 1 in. to ca. 90 ft.

Comments: General plan showing connecting drains and cess pits, with reference notes. It is not certain whether the cunette was actually built; it probably was.

Source: Public Archives of Canada (RG8, C series, Vol. 1653A, p. 137).

Code: 01-1858-8-3.

Title: "Fort George / shewing position of tanks & drains for supplying them."

Signature and date: Gordon, 11 Aug. 1858.

Scale: 1 in. to ca. 75 ft.

Comments: Ground plan. The earliest surviving plan of the water system as finally constructed.

Source: Public Archives of Canada, National Map Collection, H4/250.

Code: 27-1858-13-1.

Title: "Halifax Nova Scotia / O A E 59.60 Item 2".

Signature and date: None.

Scale: 1 in. to 2 ft.

Comments: Plan, section and two elevations of the sally port doors.

Source: Public Archives of Canada (RG8, C series, Vol. 1653A, p. 136).

Code: 01-1859-4-1.

Title: "Perambulation Plan N^{O} 1 / Halifax / Nova Scotia / Plan shewing W.D. Property."

Signature and date: Locock, 2 April 1859.

Scale: 1 in. to 200 ft.

Comments: Property plan of Citadel and vicinity.

Source: Public Archives of Canada, National Map Collection.

Code: 04-1859-11-1.

Title: "Halifax N.S. / Plan and sections of Proposed / Drainage of the Ramp in the Citadel in order to / the Prevention of Dampness in the Artillery Store / Adjoining." "Fortifications A.E. 1860-61 / Item 3."

Signature and date: Signature illegible. Dated Nov. 1859; day of month illegible.

Scale: 1 in. to 10 ft.

Comments: Plan, section and sectional elevation. This proposal was never adopted.

Source: Public Archives of Canada (RG8, C series, Vol. 1653A, p. 172).

Code: 01-1860-9-1.

Title: "Plan / of the / Citadel Glacis / Halifax N.S. / Reduced from the survey by Lieutenant Locock R.E."

Signature and date: Dirom, 18(?) Sept. 1860.

Scale: 1 in. to 150 ft.

Comments: The only surviving contour plan of the Citadel glacis. Unfortunately it is so faded as to be virtually useless. In any event, the glacis was never entirely completed as planned.

Source: Public Archives of Canada, National Map Collection; original source unknown.

Code: 01-1860-10-1.

Title: "Citadel / Halifax N.S. / Sketch shewing at a, a, the relative positions of the two proposed splinter proof magazines scale 200' - 1"."

Signature and date: Nelson, 24 Oct. 1860 and Dirom, 5 Oct. 1860.

Scale: 1 in. to 200 ft.

Comments: Small general location plan.

Source: Public Archives of Canada (RG8, C series, Vol. 1653A, p. 240).

Code: 07-1861-11-1.

Title: "Halifax Nova Scotia / Citadel / plan and sections

shewing the mode / proposed for staunching leakage / and ventilating / the shifting rooms of the / North and South / magazines / to accompany the Civil Buildings An[1] Estimate 1862-3 / Item 6."

Signature and date: Westmacott, 18 Nov. 1861.

Scale: 1 in. to 10 ft.

Comments: Plan, two sections and reference notes. It is uncertain whether this scheme was ever adopted; it probably was. The method proposed provides an interesting contrast to the earlier staunching schemes.

Source: Public Archives of Canada (RG8, C series, Vol.1653A, p. 706).

Code: 06-1862-7-1.

Title: "Halifax, Nova Scotia / Citadel / Plan sections and Elevation / of proposed / new splinter proof magazine in traverses / 54 [illegible]".

Signature and date: Drawn by Corporal Scott, RE, 7 July 1862; initialled Sp [encer] W [estmacott] 7 July 1862.

Scale: 1 in. to 5 ft.

Comments: Plan and three sections.

Source: Public Archives of Canada, National Map Collection, H4/250.

Code: 01-1862-13-1.

Title: "Fort George or the Citadel / Halifax, N.S."

Signature and date: "Lithographed at the Topographical Department of the War Office", no date.

Scale: 1 in. to 40 ft.

Comments: Surface plan of ramparts. Does not show the west ravelin, but details the embrasures in the other two. Shows only the salient gun positions in the body of the work.

Source: Public Archives of Canada, National Map Collection, (A/202, 1862).

Code: 20-1868-11-1.

Title: "Halifax N.S. / Citadel / Plan Section & Elevation shewing proposed Side Arm Shed". "To accompany Item - F.A.E. 69/70".

Signature and date: Burnaby, 20 Nov. 1868.

Scale: 1 in. to 4 ft.

Comments: Plan, elevation, section. Marginal notation indicates that the building was erected in 1870-71.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1871-4-1.

Title: "Halifax N.S. / Plan of / Citadel..." [remainder of legend obscured.]

Signature and date: George, April 1871.

Scale: 1 in. to ca. 125 ft.

Comments: An armament plan showing the saluting battery. Very faded.

Source: Public Archives of Canada, National Map Collection. Original source unknown.

Code: 01-1874-1-1 (1-1A).

Title: 1-1; "Halifax N.S. / General Plan / of the / Citadel / Shewing the position of Guns for next / Armament." 1-1A; "Gun positions / the Citadel or Fort George / Halifax N.S."

Signature and date: 1-1; G. Bastide, Lieutenant, RE, dated 28 Jan. 1874. 1-1A; F.M.F., 25 July 1950.

Scale: 1-1; illegible on Public Archives copy; 1-1A, 1 in. to 40 ft.

Comments: 1-1 is a ramparts plan showing traverses, gun positions, platforms, embrasures. 1-1A is a modern retracing.

Source: 1-1 and 1-1A: Public Archives of Canada, National Map Collection. Original source unknown.

Code: 25-1875-9-1.

Title: "Citadel / Sketch of Proposed / new / Armourers Shop." ("B.A.E. Item 19, 1876-7.")

Signature and date: No signature. Dated 10 Sept. 1875.

Also signed F.W. Waters, Lieutenant RE, 17 Sept. 1875.

Scale: 1 in. to 4½ ft.

Comments: Plan, elevation, section, site plan. The armourer's shop was a wooden lean-to attached to the rear of the cavalier.

Source: Public Archives of Canada, National Map Collection, (H4/250).

Code: 03-1875-10-1.

Title: "Halifax, N.S. / Citadel / Proposed conversion of the top of the cavalier into a barrack / to contain 90 men".

Signature and date: Watkins, 4 Oct. 1875.

Scale: 1 in. to 5 ft. and 1 in. to 2 ft.

Comments: Two sections, six details. Concentrates on rafters, plates, joists, staircases, windows, etc. The addition of the new barrack storey greatly altered the shape of the cavalier (see below).

Source: Public Archives of Canada, National Map Collection. Original source unknown.

Code: 03-1875-10-2.

Title: "Halifax, N.S. / Citadel / Coversion of the top of the cavalier into a barrack Room / to contain 25 men." "Item 14, Part 2, B.A.E. 1876-7."

Signature and date: Watkins, 4 Oct. 1877.

Scale: 1 in. to 10 ft.

Comments: Two sections, two elevations.

Source: Public Archives of Canada, National Map Collection. Original source unknown.

Code: 11-1875-10-3 (10-3A).

Title: 10-3: "Halifax, N.S. / Citadel / Rebuilding Retaining Walls - East Salient - Right & Left faces." "Item 2, F A E 1876-7 / sent in Duplicate." 10-3A: "Halifax, N.S. / Citadel / East Salient - Right & Left faces / sketch of Proposed method of rebuilding Retaining wall".

Signature and date: 10-3; Watkins, 18 Oct. 1875; 10-3A; Watkins, retraced by RE Sergeant, 30 Oct. 1875.

Scale: (Both) 1 in. to 7½ ft.

Comments: Two plans, two elevations, two sections. Shows the retaining wall of both sides of the salient. One of the sections shows the state of the wall before reconstruction.

Source: Public Archives of Canada, National Map Collection. Original source unknown.

Code: 03-1877-7-1.

Title: "Halifax, N.S. / Plans of / Cavalier in Citadel."

Signature and date: Drawn by RE Sergeant, 25 July 1877.

Scale: 1 in. to 200 ft.

Comments: Three floor plans, three sections, one sketch, site plan and reference notes. This is a record plan showing the cavalier as reconstructed. Compare plans 03-1875-10-1

and 10-2.

Source: Public Archives of Canada, National Map Collection. Original source unknown.

Code: 06-1882-8-1.

Title: "Halifax, N.S. / Citadel / Main Magazines / Plans, sections and Photographs."

Signature and date: Ellsdale, 18 Aug. 1882.

Scale: 1 in. to 15 ft.; 1 in. to 10 ft.

Comments: Two plans (one of each magazine), longitudinal section of south magazine, transverse section of north magazine, site plan, two photographs and reference notes. This is a record plan showing the buildings as they stood in 1882. The plans show the arrangement of the powder racks in the magazine, the drainage system in the area, and the shifting rooms.

Source; Public Archives of Nova Scotia.

Code: 07-1882-8-2.

Title: "Halifax, N.S. / Citadel / main magazines / Plans sections and Photographs".

Signature and date: Ellsdale, 18 Aug. 1882.

Scale: Original scale is 1 in. to 15 ft. and 1 in. to 10 ft., but this is reduced-size photocopy.

Comments: A second copy of plan 06-1882-8-1 (see preceding) filed under this heading because it supplies a plan and section of the shifting rooms.

Source: Public Archives of Canada, National Map Collection. Original source unknown.

Code: 01-1886-1-1.

Title: "Halifax, N.S. / W.D. Property."

Signature and date: Cunningham, 8 Jan. 1886.

Scale: 1 in. to 100 ft.

Comments: Property plan of the Citadel and vicinity.

Source: Public Archives of Canada, National Map Collection.

Code: 12-1891-2-1.

Title: "Citadel / Halifax, N.S. / Working Drawing / of Tank."

Signature and date: Sapper Sutherland, Feb. 1891.

Scale: 1 in. to 10 ft.

Comments: Plan, two sections. The best plan of the 66,000 gallon tank.

Source: Public Archives of Nova Scotia.

Code: 01-1891-10-1.

Title: "Halifax, N.S. / The Citadel or Fort George. /

Ground Plan."

Signature and date: Lieutenant Colonel Hill, 19 Oct. 1891.

Scale: 1 in. to 10 ft.

Comments: Ground plan with inserts of the redan basement, the upper floors of the cavalier and the signal establishment. This is the first version of Colonel Hill's plan. It shows the casemate appropriation.

Source: Public Archives of Canada, National Map Collection, (H4/250).

Code: 01-1891-11-1.

Title: "Halifax, N.S. / The Citadel or Fort George / Block Plan".

Signature and date: Hill, 21 Nov. 1891.

Scale: 1 in. to 10 ft.

Comments: Plan, site plan, tables, and reference notes. This is the second version of Hill's plan (see preceding). It details casemate appropriation and the water and drainage system. The plan also shows the new barracks (the "Brick Block") which, at the time the plan was drawn, was not yet built. The two tables detail the water tanks' capacities and accommodation.

Source: Public Archives of Canada, National Map Collection. Original source unknown.

Code: 28-1897-3-1.

Title: "Halifax, N.S. / Citadel Laboratory & Flag Staves / Plan of Lightning Conductors".

Signature and date: Jones, 25 March 1897.

Scale: 1 in. to 15 ft. and 1 in. to 40 ft.

Comments: Site plan, plan and section of laboratory, plan of south end of fort, and reference notes.

Source: Public Archives of Canada, National Map Collection.

Code: 27-1898-4-1.

Title: "Halifax, N.S. Citadel. Cavalier Barracks. B.A.E. 1898-9 Item 13 / Proposed enlargement of windows & renewal of roof covering."

Signature and date: CRE, 29 April 1898.

Scale: ¼ in. to 1 ft. and 1 in. to 40 ft.

Comments: Site plan, three plans, section and two elevations. The plan details proposed alterations to the cavalier windows.

Source: Public Archives of Canada, National Map Collection.

Code: 17-1899-5-1.

Title: "Halifax, N.S. / Proposed barrack for 105 men in Citadel / Plan of site shewing Drains, Levels &c."

Signature and date: Various signatures. Dated 1 May 1899.

Scale: 1/10 in. to 1 ft.

Comments: Site plan showing existing and proposed drains.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1900-9-1.

Title: "Halifax, N.S. Citadel. / Proposed Canteen on site of North Magazine / Site Plan Etc. Etc."

Signature and date: Wilkinson, 20 July 1900.

Scale: 1 in. to 10 ft.

Comments: Plan, section and site plan of magazine before alteration.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1900-9-3.

Title: "Halifax, N.S. Citadel. / Proposed Canteen on site of North Magazine".

Signature and date: CRE, 20 Sept. 1900.

Scale: 1/8 in. to 1 ft.

Comments: Two plans, four sections, and four details. Shows room allocation, chimneys, rafters, etc.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1900-9-4.

Title: "Halifax, N.S. Citadel. / Proposed Canteen on site of North Magazine."

Signature and date: Wilkinson, 20 Sept. 1900.

Scale: 1/8 in. to 1 ft.

Comments: Four elevations, roof plan and partial section of wall.

Source: Public Archives of Canada, National Map Collection.

Code: 17-1901-5-1.

Title: "Halifax, N.S. Citadel. / Record Plans of Barracks for 105 men."

Signature and date: CRE, [1 May] 1901.

Scale: 1 in. to 8 ft.

Comments: Five plans of the "Brich Block". The building has since been demolished.

Source: Public Archives of Canada, National Map Collection.

Code: 17-1901-5-2.

Title: "Halifax, N.S. Citadel / Record Plans of Barracks for 105 men."

Signature and date: Lissel, May 1901.

Scale: 1 in. to 8 ft.

Comments: Five sections, three elevations (see preceding).

Source: Public Archives of Canada, National Map Collection.

Code: 23-1902-2-1.

Title: "Halifax, N.S. / Citadel / New Gun Shed."

Signature and date: Lieutenant Colonel RE [?], 13 Feb. 1902.

Scale: ¼ in. to 1 ft. and 1/8 in. to 1 ft.

Comments: Plan, two elevations, section, and detail of roof.

Source: Public Archives of Canada, National Map Collection.

Code: 23-1902-2-2.

Title: "Halifax, N.S. Citadel. / Record Plan of [New]Gun Shed. for 6 15 pr. B.L. Guns & Limbers."

Signature and date: Lissel, 11 Feb. 1902.

Scale: 1 in. to 4 ft. and 1 in. to 8 ft.

Comments: Plan, two elevations, section and detail of roof truss. Essentially similar to plan 23-1902-2-1 with a few variations.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1902-8-1.

Title: "Halifax, N.S. / .Citadel. / .Record. Plans. of. Canteen."

Signature and date: No signature. Dated 26 Aug. 1902.

Scale: 1 in. to 8 ft. 1 1/2500.

Comments: Site plan, roof plan and four elevations. A record plan of the canteen showing the building as constructed.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1902-8-3 (8-3A)

Title: "Halifax, N.S. / Citadel./ Record Plans of Canteen."

Signature and date: Lissel, 25 Aug. 1902.

Scale: 1 in. to 8 ft.

Comments: Two plans, four sections and notes. This plan details the building as constructed. The notes detail dates, costs and material. 8-3A is slightly different.

Source: Public Archives of Canada, National Map Collection.

Code: 23-1904-13-1.

Title: "Halifax N.S. Citadel. / Record Plan of Gun Shed.for 6 15 PR. B.L. Guns and Limbers."

Signature and date: No signature. Dated 1904.

Scale: 1 in. to 4 ft. and 1 in. to 8 ft.

Comments: Site plan, plan, two elevations, section and notes. The plan shows the building as constructed, (compare plan 23-1902-2-1). The notes detail costs, dates and building materials. The building has since been demolished.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1907-13-1.

Title: "Halifax, N.S. / The Citadel or Fort George / Block Plan."

Signature and date: Ward, 1907.

Scale: 1 in. to 40 ft.

Comments: Block plan showing position and allocation of buildings, casemate numbering, etc. (See plan 01-1908-8-1).

Source: Public Archives of Canada, National Map Collection.

Code: 01-1908-4-1.

Title: "Halifax, N.S. / The Citadel or Fort George / Block Plan."

Signature and date: Dalton, April 1908.

Scale: 1 in. to 40 ft.

Comments: Site plan, block plan and reference notes. Shows casemate usage (see plan 01-1908-8-1).

Source: Public Archives of Canada, National Map Collection.

Code: 01-1908-8-1.

Title: "Halifax, N.S. / The Citadel or Fort George. / Ground Plan."

Signature and date: James, 18 Aug. 1908.

Scale: 1 in. to 40 ft.

Comments: A very detailed ground plan with inserts showing the following:

1) The redan basement.

2) The upper storeys of the cavalier.

3) The upper storey of the canteen.

4) The upper storeys of the brick block.

The plan shows room layout and allocation. Much more detailed than either of the preceding.

Source: Public Archives of Canada, National Map Collection.

Code: 04-1910-7-1.

Title: "Halifax, N.S. / Proposed Alterations / to / W.O.'s Quarter's [sic]/ Citadel."

Signature and date: Parker, 19 July 1910.

Scale: 1 in. to 8 ft.

Comments: Two plans, two sections and two elevations. It is not entirely clear whether the casemates in question were in the redan or the cavalier, but the former seems most likely.

Source: Public Archives of Canada, National Map Collection.

Code: 22-1911-8-1.

Title: "Halifax, N.S. / The Citadel / Proposed Cookhouse & Dining Rooms."

Signature and date: Marshall, 15 Aug. 1911.

Scale: 1 in. to 8 ft.

Comments: Plan, three elevations.

Source: Public Archives of Canada, National Map Collection.

Code: 18-1911-8-2.

Title: "Halifax, N.S. / Citadel / Proposed Recreation Establishment."

Signature and date: No signature. Dated 8 Sept. 1911 and 29 Sept. 1911.

Scale: 1 in. to 16 ft.

Comments: Elevation only.

Source: Public Archives of Canada, National Map Collection.

Code: 18-1911-9-1.

Title: "Halifax, N.S. / The Citadel / Proposed Recreation Establishment."

Signature and date: A.M., Corporal, R.C.E., 12 Sept. 1911, and Captain RCE, 29 Sept. 1911.

Scale: 1 in. to 16 ft.

Comments: Section showing ditch.

Source: Public Archives of Canada, National Map Collection.

Code: 18-1911-9-3.

Title: "Halifax, N.S. / Citadel Ramparts / Site for / Proposed Recreation Establishment."

Signature and date: No signature. Dated 29 Sept. 1911.

Scale: 1 in. to 8 ft.

Comments: Plan and section of southwest demi-bastion.

Source: Public Archives of Canada, National Map Collection.

Code: 04-1911-9-4.

Title: "Halifax N.S. / Citadel Casemates Blocks E & F / Proposed conversion of Recreation Establishment into Serg^{ts} Mess."

Signature and date: Captain, RCE, 29 Sept. 1911.

Scale: 1 in. to 8 ft.

Comments: Two plans and two sections of casemates 45-8.

Source: Public Archives of Canada, National Map Collection.

Code: 26-1912-13-1.

Title: "Halifax, N.S. / Citadel / 4.7 gun mounted for Drill Purposes."

Signature and date: RE 1912.

Scale: 3/8 in. to 1 ft.

Comments: Plan, section and elevation.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1913-4-1.

Title: "Ground Floor Plan / Citadel Canteen."

Signature and date: Traced by D.F. Saxton, 9 April 1913.

Scale: 1 in. to 8 ft.

Comments: Plan showing room use.

Source: Public Archives of Canada, National Map Collection.

Code: 23-1913-5-1.

Title: "Halifax, N.S. / Citadel / Gun Shed".

Signature and date: Knight, 30 May 1913.

Scale: 1 in. to 8 ft. and 1 in. to 4 ft.

Comments: Three plans, three elevations, two sections. Record plan.

Source: Public Archives of Canada, National Map Collection.

Code: 04-1913-6-1.

Title: "Halifax, N.S. / Citadel, Sgt's mess / Proposed installation of W.C. / Urinals & Lavatory Basin."

Signature and date: Signature illegible. Dated 27 June 1913.

Scale: 1 in. to 10 ft.

Comments: Plan of casemates 45-8 and section of No. 47.

Source: Public Archives of Canada, National Map Collection.

Code: 17-1914-7-1.

Title: "Halifax, N.S. / Citadel / New Barracks". ("Record Plan").

Signature and date: Young, 21 July 1914.

Scale: 1 in. to 8 ft.

Comments: Five plans.

Source: Public Archives of Canada, National Map Collection.

Code: 16-1914-10-1.

Title: "Record Plan / Halifax, N.S./ Citadel / Signaling Station."

Signature and date: Hechler, 23 Oct. 1914.

Scale: 1 in. to 8 ft. and 1 in. to 4 ft.

Comments: Three plans, four elevations, three sections.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1915-2-1.

Title: "Halifax, N.S. / Citadel Glacis Barracks, Pavilion / Hospital, RA Park, South Barracks & Belle Vue / Perambulation plan."

Signature and date: Young, 5 Feb. 1915.

Scale: 1/152064 (12.672 in. to 1 mile).

Comments: Plan showing military property.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1916-2-1.

Title: "Site Plan".

Signature and date: No signature. Dated 26 Feb. 1916.

Scale: 1/2500.

Comments: Site plan showing glacis contour and building use. Shows prisoner of war enclosure within the Citadel.

Source: Public Archives of Canada,National Map Collection.

Code: 01-1916-3-1

Title: "Halifax, N S / Citadel, Glacis Barracks, Pavilion / Hospital, R.A. Park, South Barracks & Bellevue."

Signature and date: Young, 22 March 1916.

Scale: 1 in. to 208.33 ft.

Comments: Property plan.

Source: Public Archives of Canada, National Map Collection.

Code: 16-1916-10-1.

Title: "Proposed Accommodation / For Signal Station Citadel."

Signature and date: Major, RCE, 25 Oct. 1916.

Scale: 1/8 in. to 1 ft., 1/4 in. to 1 ft. and 1/2 in. to 1 ft.

Comments: Two plans, two sections, three elevations.

Source: Public Archives of Canada, National Map Collection.

Code: 14-1920-5-1.

Title: None.

Signature and date: Hart, 22 May 1920.

Scale: Varies.

Comments: Plans, elevations and sections of proposals to deal with a collapsed escarp wall in the southeast salient.

Source: Public Archives of Canada, National Map Collection.

Code: 04-1921-3-1.

Title: "Halifax, N.S. / Citadel / Casemates / Sergeants Mess."

Signature and date: R.V. Hart, 19 March 1921.

Scale: 1 in. to 8 ft.

Comments: Plan of casemates 26-9.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1921-3-2.

Title: "Halifax, N.S. / Citadel / (Canteen Bldg.) / Recreation Room."

Signature and date: Hart, 22 March 1921.

Scale: 1 in. to 8 ft.

Comments: Floor plan showing room use.

Source: Public Archives of Canada, National Map Collection.

Code: 03-1921-3-3.

Title: "Halifax, N.S. / Citadel / (Cavalier) / Grocery Bar."

Signature and Date: Hart, 21 March 1921.

Scale: 1 in. to 8 ft.

Comments: Plan of ground floor of one of the cavalier casemates.

Source: Public Archives of Canada, National Map Collection.

Code: 19-1921-9-1.

Title: "Department of Militia & Defence. / M.D. N^{O} 6 / office

of S.E.O. / Halifax, N.S. Citadel / Miniature Rifle Range / Sketch. "

Signature and date: Hart, 30 Sept. 1921.

Scale: 1 in. to 20 ft.

Comments: See title.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1922-1-1.

Title: "Department of Militia and Defence - M D N^{O} 6/ Office of S.E.O. / Halifax, N.S. / The Citadel or Fort George / Ground Plan."

Signature and date: M.(?) Benoit, Lieutenant Colonel RCE, Jan. 1922.

Scale: 1 in. to 40 ft.

Comments: Very detailed ground plan showing building use, with inserts of

(a) the upper storeys of the brick block;

(b) the signal establishment;

(c) the upper storey of the south ravelin guardhouse;

(d) the redan ramparts;

(e) the redan basement;

(f) the upper storeys of the cavalier, and

(g) the upper storey of the canteen.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1923-2-1.

Title: None. Notation in one corner: "Enlarged from Ordnance Sheet, 1/2500."

Signature and date: R.V. Hunt, 10 Feb. 1923.

Scale: 1 in. to 60 ft.

Comments: Contour plan of the glacis.

Source: Public Archives of Canada, National Map Collection.

Code: 03-1924-10-1.

Title: "Citadel / Cavalier Barracks / Department of National Defence / M.O.,N^{O} 6 / Office of D.E.O. / Halifax, N.S. / Proposed New Roof / to Replace Roof destroyed by Storm October 9th 1924."

Signature and date: No signature. Dated 17 Oct. 1929.

Scale: 1 in. to 10 ft. and 1 in. to 15 ft.

Comments: Two plans, three sections.

Source: Public Archives of Canada, National Map Collection.

Code: 03-1925-5-1.

Title: "Cavalier / Citadel / Attic Plan showing proposed Accommodation".

Signature and date: Benoit, 29 June 1925.

Scale: 1/8 in. to 1 ft.

Comments: Cutaway plan of roof.

Source: Public Archives of Canada, National Map Collection.

Code: 03-1925-6-1.

Title: "Citadel / Cavalier Barracks."

Signature and date: Benoit, 29 June 1925.

Scale: 1 in. to 15 ft. and 1 in. to 10ft.

Comments: Three plans, two sections, showing room use.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1925-7-1.

Title: "Halifax, N. S. / Citadel / R A Park & South Bks."

Signature and date: H. (?) J. Knight, 3 July 1925.

Scale: 1/2500.

Comments: Plan showing underground cable.

Source: Public Archives of Canada, National Map Collection.

Code: 28-1928-1-1.

Title: "Citadel / Property Plan".

Signature and date: Lt. Col., RCE, 5 Jan. 1928.

Scale: 1 in. to 100 ft.

Comments: Property plan showing site but not works.

Source: Public Archives of Canada, National Map Collection.

Code: 17-1930-3-1.

Title: "R.C.A. New Barracks / & / Recreations Esta[b] / Citadel."

Signature and date: Russell, 10 March 1930.

Scale: 1 in. to 8 ft.

Comments: Four plans of brick block.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1933-6-1.

Title: "Halifax, N.S. / Citadel / Unemployment Relief Project / Plan to Accompany Progress Report...."

Signature and date: Lieutenant Colonel RCE, 30 June 1933.

Scale: 1 in. to 60 ft.

Comments: General plan of Citadel.

Source: Public Archives of Canada, National Map Collection.

Code: 17-1938-10-1.

Title: "Citadel / Brick Block / Halifax, N.S. / Proposed Accommodation for RCAF."

Signature and date: Lieutenant Colonel, RCE, 4 Oct. 1938.

Scale: 1/8 in. to 1 ft.

Comments: Three floor plans.

Source: Public Archives of Canada, National Map Collection.

Code: 28-1940-1-1.

Title: "Foundation Plan of Mess / 300 men / Citidal [sic] Hill."

Signature and date: No signature. Dated 5 Jan. 1940.

Scale: 1/8 in. to 1 ft.

Comments: Shows sills, joists and posts.

Source: Public Archives of Canada, National Map Collection.

Code: 28-1940-1-2.

Title: "Officers Living Quarters / Citadel - Hill - Halifax".

Signature and date: No signature. Dated 11 Jan. 1940.

Scale: 1/8 in. to 1 ft.

Comments: Three plans, section and elevation.

Source: Public Archives of Canada, National Map Collection.

Code: 28-1942-5-1.

Title: "Mess 20 NCO's & 70 O.R.S. / AC Signals Citadel Hill / Halifax, N.S."

Signature and date: No signature. Dated 15 May 1942.

Scale: 1/8 in. to 1 ft.

Comments: Plan and elevation.

Source: Public Archives of Canada, National Map Collection.

Code: 08-1943-7-1.

Title: "Lavatories G.O.R. / Citadel Hill".

Signature and date: No signature. Dated 12 July 1943.

Scale: 1/4 in. to 1 ft.

Comments: Plan of lavatories in south magazine area.

Source: Public Archives of Canada, National Map Collection.

Code: 06-1943-7-2.

Title: "G.O.R. in 'B' Magazine / Citadel Halifax N.S."

Signature and date: No signature. Dated 17 July 1943.

Scale: 1 in. to 4 ft.

Comments: Plan and two sections of magazine and shifting room.

Source: Public Archives of Canada, National Map Collection.

Code: 10-1943-8-1.

Title: "Citadel / Moat Profile".

Signature and date: Wallace, 8 Aug. 1943.

Scale: 1 in. to 80 ft. and 1 in. to 20 ft.

Comments: See title.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1944-12-1.

Title: "Plumbing, Heating & / Electrical Layout. / Canteen Building / Citadel."

Signature and date: No signature. Dated 23 Dec. 1944.

Scale: 1/8 in. to 1 ft.

Comments: Three plans.

Source: Public Archives of Canada, National Map Collection.

Code: 21-1945-7-1.

Title: "Revisions & Detail / Officer's & Sgt's Messes / Citadel / Halifax N.S."

Signature and date: No signature. Dated 7 July 1945.

Scale: Varies.

Comments: See title.

Source: Public Archives of Canada, National Map Collection.

Code: 27- 1945-11-1.

Title: "Storm Sash / Citadel Hill".

Signature and date: No signature. Dated 19 Nov. 1945.

Scale: 1 in. to 1 ft.

Comments: See title.

Source: Public Archives of Canada, National Map Collection.

Code: 03-1945-12-1.

Title: "Cavalier Block / Citadel Hill / Halifax N.S."

Signature and date: Queen, 20 Dec. 1945.

Scale: 3/32 in. to 1 ft.

Comments: Plan and front elevation.

Source: Public Archives of Canada, National Map Collection.

Code: 03-1945-12-2.

Title: "Cavalier Block / Citadel Hill / Halifax N.S."

Signature and date: Queen, 14 Dec. 1945.

Scale: 3/32 in. to 1 ft.

Comments: Three elevations.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1950-7-1 (7-1A)

Title: 7-1: "The Citadel / or / Fort George". 7-1A: "Code Plan for Restoration / of / Halifax Citadel."

Signature and date: No signatures. 7-1 is dated 21 July; 7-1A is dated Sept. 1951.

Scale: 1 in. to 40 ft.

Comments: 7-1 is a ground plan. 7-1A is a ground plan with notes and references. The plan was drawn for submission to the Massey Commission.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1951-4-1.

Title: "Citadel / Halifax N.S."

Signature and date: Traced by R.O., 30 April 1951.

Scale: 1 in. to 40 ft.

Comments: None.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1951-9-1.

Title: "Halifax Citadel / or / Fort George."

Signature and date: No signature. Dated Sept. 1951.

Scale: Varies.

Comments: Ground plan.

Source: Public Archives of Canada, National Map Collection.

Code: 01-1955-3-1 (3-1A).

Title: 3-1: "Compiled Plan of / Halifax Citadel National Historic Site / City of Halifax / Province of Nova Scotia..."
3-1A: "Halifax Citadel National / Historic Site, Halifax N.S."

Signature and date: No signature. There are various dates, but this version of the plan was drawn 17 April 1955.

Scale: 1 in. to 80 ft.

Comments: Site plan showing property boundary but not the Citadel itself.

Source: Public Archives of Canada, National Map Collection.

Code: 26-1962-1-1.

Title: "Record Plan / Halifax Citadel / Nat'l Historic Sites / East Redan Rampart / Cross section of Rampart."

Signature and date: No signature. Dated January 1962.

Scale: Not given.

Comments: See title.

Source: Public Archives of Canada, National Map Collection.

Code: 26-1962-1-2.

Title: "Record Plan / Halifax Citadel / Nat'l Historic Site / East Redan Ramparts / Cross section of Rampart."

Signature and date: No signature. Dated January 1962.

Scale: Not given

Comments: See title.

Source: Public Archives of Canada, National Map Collection.

Code: 26-1962-3-1.

Title: " Record Plans / Halifax Citadel / Nat'l Historic Site / East Redan Rampart / surface Plan".

Signature and date: Initialled A.L.R. Dated 9 March 1962.

Scale: 1/8 in. to 1 ft.

Comments: See title.

Source: Public Archives of Canada, National Map Collection.

Code: 01-0003-13-1.

Title: "Halifax, N.S. / Basement Plan of Fort George / shewing the Tanks and underground Drains."

Signature and date: None.

Scale: 1 in. to 60 ft.

Comments:

Source:

Code: 12-0003-13-2.

Title: "Halifax, N.S. / Citadel / Plan & Sections of Rain Water Tanks."

Signature and date: None.

Scale: 1 in. to ca. 8 ft.

Comments: Plan and five sections, ca. 1880.

Source: Public Archives of Canada, National Map Collection. (H4/250).

Code: 21-0004-13-1.

Title: "Citadel - Halifax N.S. / Canteen / Plan & Section of proposed Cellar."

Signature and date: Signature illegible. No date.

Scale: 1 in. to 10 ft.

Comments: Plan and section of a proposed cellar under an unidentified casemate. Never built.

Source: Public Archives of Canada, National Map Collection.

Code: 01-0004-13-2.

Title: "Halifax N.S. / Citadel, Glacis Barracks, Pavilion, Garrison Chapel, Hospital / R.A. Park, South Barracks & Bell Vue House / Perambulation Plan."

Signature and date: None.

Scale: "25.344 inches to a mile".

Comments: Property plan and reference notes, ca. 1900.

Source: Public Archives of Canada,National Map Collection.

Code: 01-0004-13-3.

Title: "Halifax, N.S. / the Citadel or Fort George / Water & Drainage Plan."

Signature and date: None.

Scale: 1 in. to 40 ft.

Comments: Ground plan showing drainage, ca. 1900.

Source: Public Archives of Canada, National Map Collection.

Code: 04-0005-13-1.

Title: "Halifax, N.S. / Citadel Guard Room / Heating System."

Signature and date: None. My dating of post 1906 is conjectural.

Scale: 1/4 in. to 1 ft.

Comments: Plan of two unidentified rooms, possibly casemates 49 and 50, ca. 1910.

Source: Public Archives of Canada, National Map Collection.

Code: 17-0005-13-2.

Title: "Halifax N. S. / Men's Block / Citadel / Ground Floor Plan."

Signature and date: None.

Scale: 1/8 in. to 1 ft.

Comments: Floor plan of the brick block, ca. 1910.

Source: Public Archives of Canada, National Map Collection.

Code: 16-0005-13-3.

Title: None.

Signature and date: None.

Scale: Not given.

Comments: Plan of signal station and time ball.

Source: Public Archives of Canada, National Map Collection.

Code: 17-0005-13-4.

Title: "New Block / Citadel."
Signature and date: None.
Scale: 1/2 in. to 1 ft.

Comments: Plan, section and elevation of lavatory.

Source: Public Archives of Canada, National Map Collection.

Code: 14-0005-13-5.

Title: "Detail of Struts"; "to be placed at various positions / around wallas shown in red / on attached blue print."

Signature and date: None.

Scale: 1 in. to 8 ft.

Comments: Plan and section of struts to hold up a collapsing escarp wall, ca. 1930.

Source: Public Archives of Canada, National Map Collection.

Code: 01-0005-13-6.

Title: "Halifax N.S. / Citadel, Common, R.A. Park, South Barracks, Etc."

Signature and date: None.

Scale: 1/2500.

Comments: Plan of Citadel and vicinity, ca. 1915.

Source: Public Archives of Canada, National Map Collection.

Code: 16-0005-13-7.

Title: "Signal Station / Citadel."

Signature and date: None.

Scale: Not given.

Comments: Three plans, four elevations, two sections.

Source: Public Archives of Canada, National Map Collection.

Code: 01-0005-13-8.

Title: "Citadel / Proposed Drain."

Signature and date: None.

Scale: 1 in. to 40 ft.

Comments: Plan of north end of the fort.

Source: Public Archives of Canada, National Map Collection.

Code: 23-0005-13-9.

Title: "Gun Shed / Citadel Hill / Halifax - Nova Scotia".

Signature and date: None.

Scale: Varies.

Comments: Plan, two elevations, sections and detail of roof truss.

Source: Public Archives of Canada, National Map Collection.

Code: 01-0005-13-10.

Title: None.

Signature and date: None.

Scale: None.

Comments: General plan of the Citadel showing the building layout, ca. 1945. Not to scale.

Source: Public Archives of Canada, National Map Collection.

References Cited

For a full bibliography, see Part 1.

Canada. Public Archives.
MG12, WO44, Vol. 227.
MG12, WO55, Vols. 869-87, 939, 1558.
RG8, C series, Vols. 1346, 1445, 1449, 1653A, 1825.

Nova Scotia. Public Archives.
Royal Engineers Papers, especially RE8, RE11, RE12, RE13, RE22, RE26, RE33, RE54 and RE56.

Oldfield, John
"Memoranda on the Use of Asphalte," Papers on Subjects Connected with the Duties of the Corps of Royal Engineers, n.s., Vol. 3 (1853), pp. 132-48. London.

Philpotts, Henry
"Copy of a Report on the Demolition of the Old Magazine in the Citadel of Halifax, Nova Scotia, on the 7th of April 1847...", Corps Papers, and Memoirs on Military Subjects; compiled from Contributions of the Officers of the Royal

Engineers and the East India Company's Engineers, 3rd series, Vol. 1 (1849-50), pp. 214-6. London.

Piers, Harry
The Evolution of the Halifax Fortress; 1749-1928. Rev. ed. Public Archives of Nova Scotia, Halifax, 1947.

Rippengale, John
"Gun Equipment - Installed Weight, Halifax Citadel, 1855." Manuscript on file, National Historic Parks and Sites Branch, Ottawa.

Rivington's Notes on Building Construction Arranged to Meet the Requirements of the Syllabus of the Science and Art Department of the Committee of Cultural Education, South Kensington. 2d ed. Rivington's, London, 1889. 3 vols.