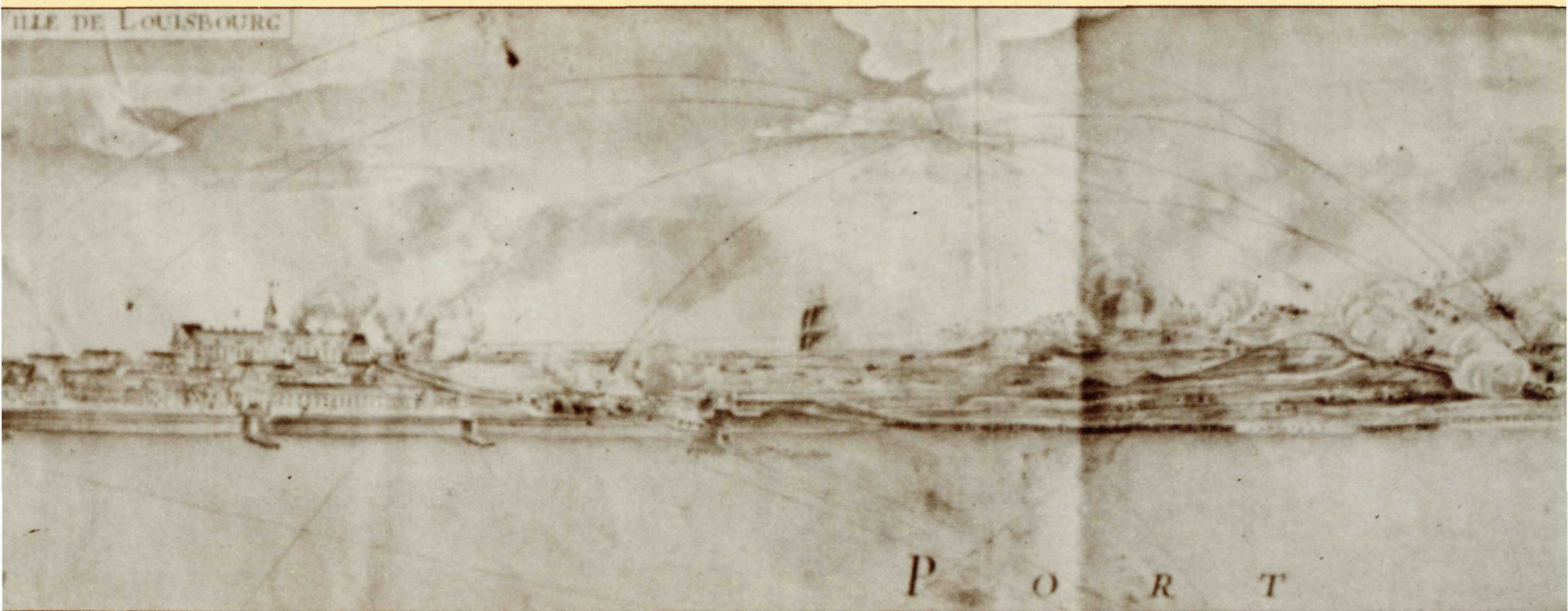


“An appearance of strength” The Fortifications of Louisbourg

Volume Two

Bruce W. Fry



Parks
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Cover: Louisbourg under siege, 1745. (Bibliothèque Nationale, Paris.)

**“An appearance of strength”
The Fortifications of Louisbourg**

Bruce W. Fry

Volume Two

**Studies in Archaeology
Architecture and History**

**National Historic Parks and Sites Branch
Parks Canada
Environment Canada
1984**

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Available in Canada through authorized bookstore agents and other bookstores, or by mail from the Canadian Government Publishing Centre, Supply and Services Canada, Hull, Quebec, Canada K1A 0S9.

La traduction française s'intitule "**Un air de fort**": **Les fortifications de Louisbourg** (n° de catalogue R61-2/9-11-1F-2F). En vente au Canada par l'entremise de nos agents libraires agréés et autres librairies, ou par la poste au Centre d'édition du gouvernement du Canada, Approvisionnements et Services Canada, Hull, Québec, Canada K1A 0S9.

Price Canada: \$23.00 a set

Price other countries: \$27.80 a set

Price subject to change without notice.

Catalogue No.: R61-2/9-11-2E

ISBN: 0-660-11552-2

ISSN: 0821-1027

Published under the authority
of the Minister of the Environment,
Ottawa, 1984.

Design: Jean Brathwaite.

The opinions expressed in this report are those of the author and not necessarily those of Environment Canada.

Parks Canada publishes the results of its research in archaeology, architecture and history. A list of titles is available from Research Publications, Parks Canada, 1600 Liverpool Court, Ottawa, Ontario K1A 1G2.

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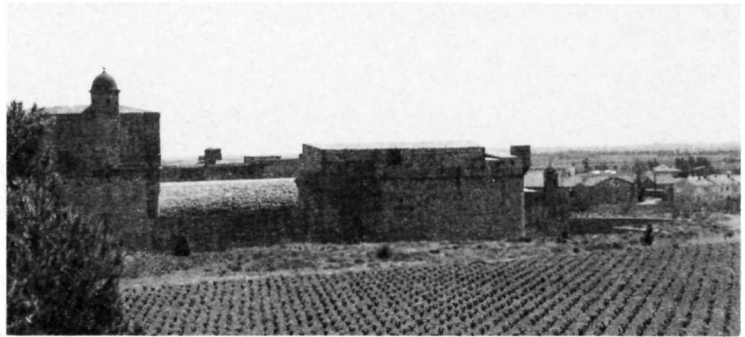


1 **Montmédy (Meuse).** The outer drawbridge, built in the 16th century. The small door to the right has its own

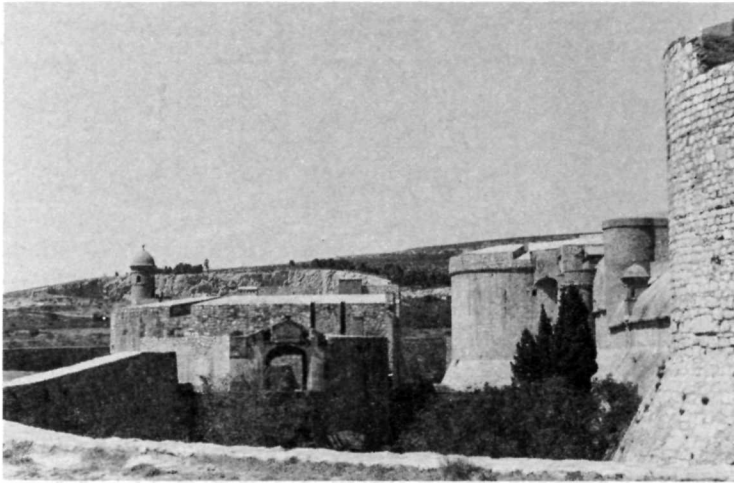
drawbridge, operated by a simple overhead beam. (Photo by author.)



2 Fougères (Ille-et-Vilaine). *Fer-à-cheval* gun tower (15th cent.) added to medieval *enceinte*. Note the machicolations on the curtains and the arrow-slits modified for firearms in the square tower. (Photo by author.)



3 Salses (Pyrénées — Orientales). General view of the castle from across the glacis, accentuating the sunken nature of the defences. Note the curved revetment of the parapet on the curtain. (Photo by author.)



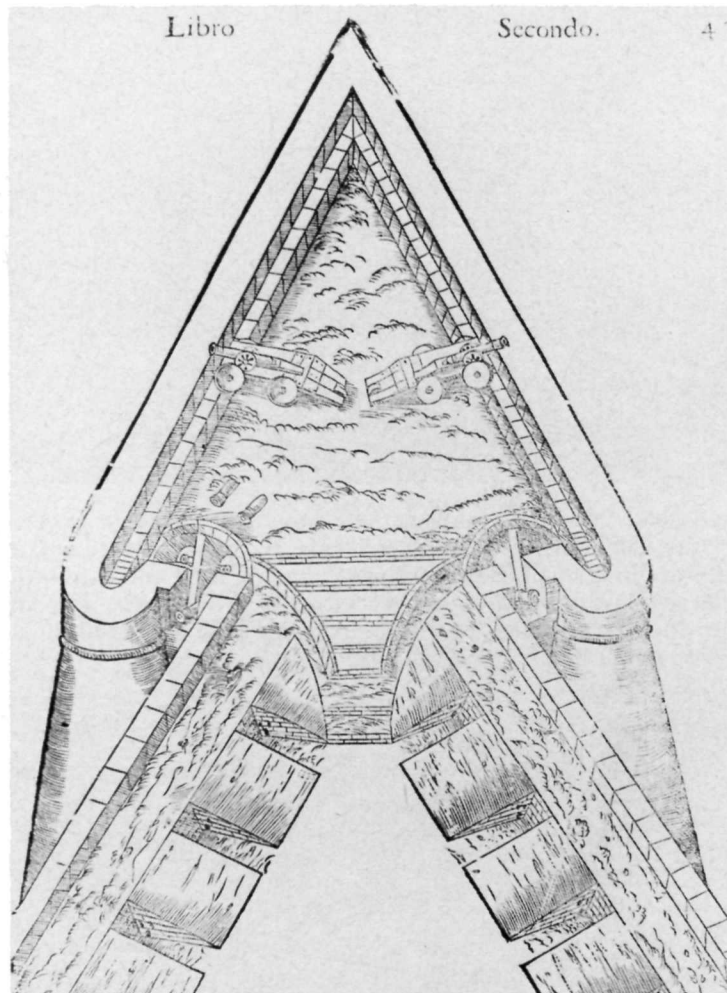
4 Salses. The main entrance, between the circular towers on the *enceinte*, is accessible only by passing through a gateway in a small, detached work (centre left) and then into a larger, D-shaped detached work. These two works, both in the ditch, mark the transition from barbican to *demi-lune*. (Photo by author.)



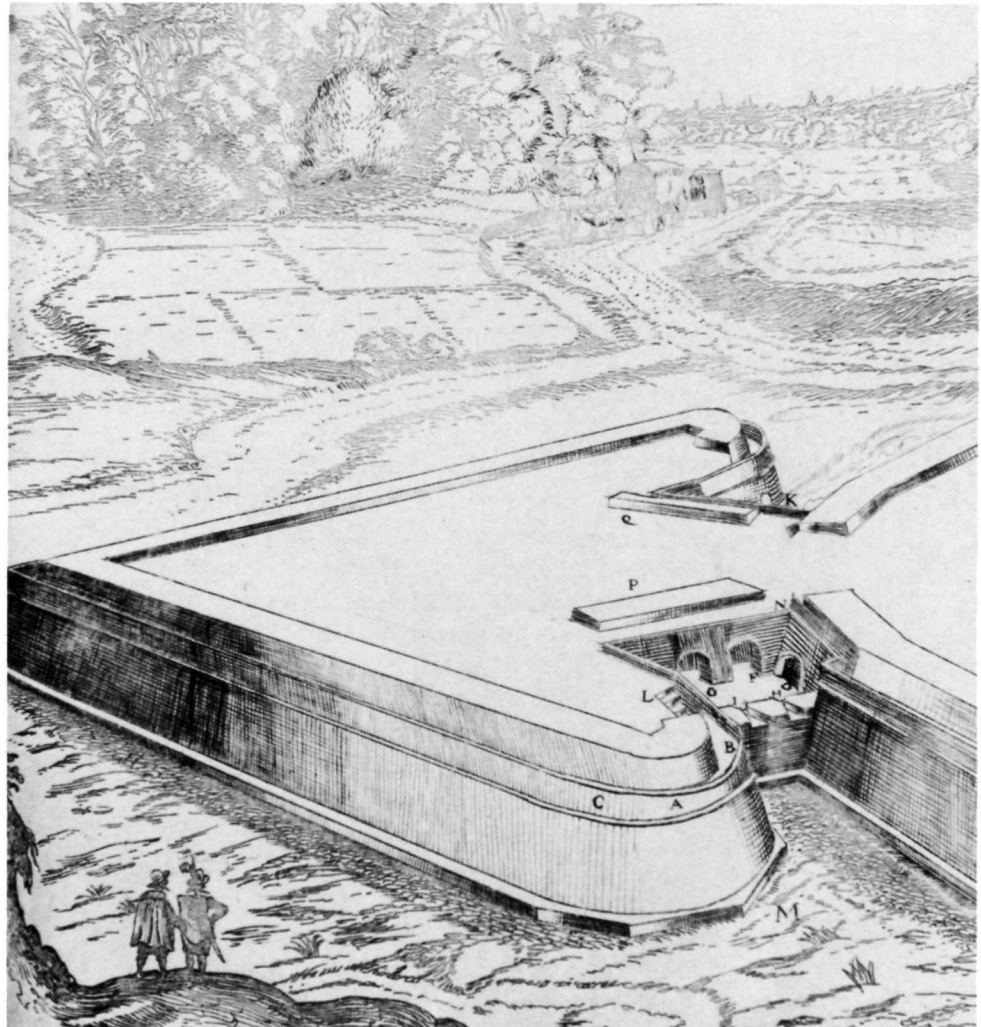
5 Bonaguil (Lot-et-Garonne). General view of the late 15th-century castle. Note rectangular slits for artillery near the bases of the towers. To the right, supported by buttresses or counterforts, is a wide terrace used for the deployment of artillery. (Photo by author.)



6 **Bonaguil.** The ditch defences. Artillery fire could be trained on an enemy in the ditch from concealed positions in the bridge pier (centre left) and the *moineau* (right foreground). (Photo by author.)



7 **Early Italian form of bastion.** Note the very restricted, concealed flanks with casemates for artillery hidden by the rounded *orillons*. (Girolamo Maggi and Iacomo Castriotto, *Fortificazione delle Città* [Venice, 1583].)

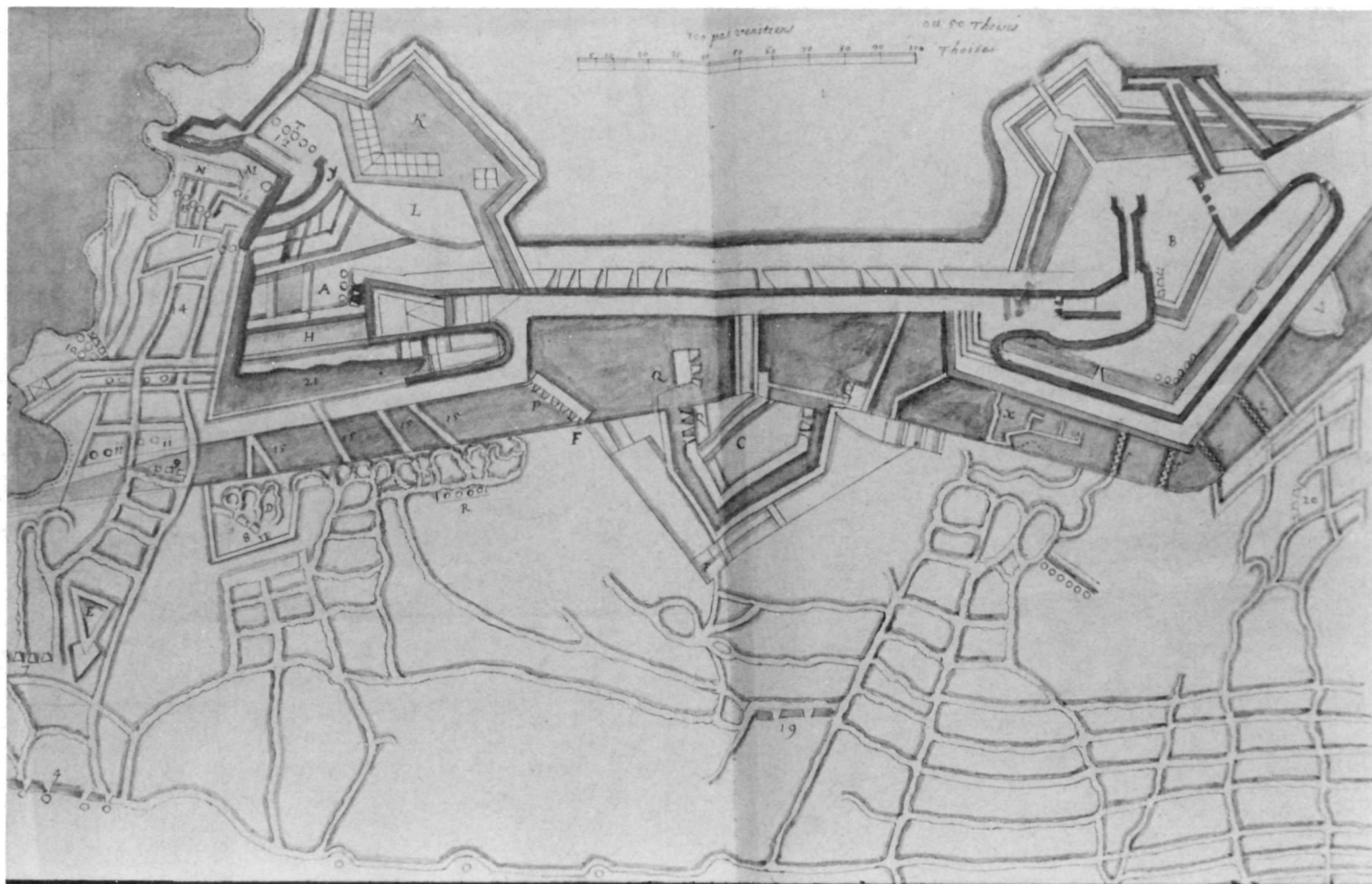


8 Early form of bastion as illustrated by de Ville. The Italian influence is evident in the slender, pointed form and the deeply recessed, casemated flanks. A *chemin de ronde*

surrounds the work at the base of the parapet. (Antoine de Ville, *Les fortifications, attaques & défenses des places...* [Lyon, 1628], p. 77.)

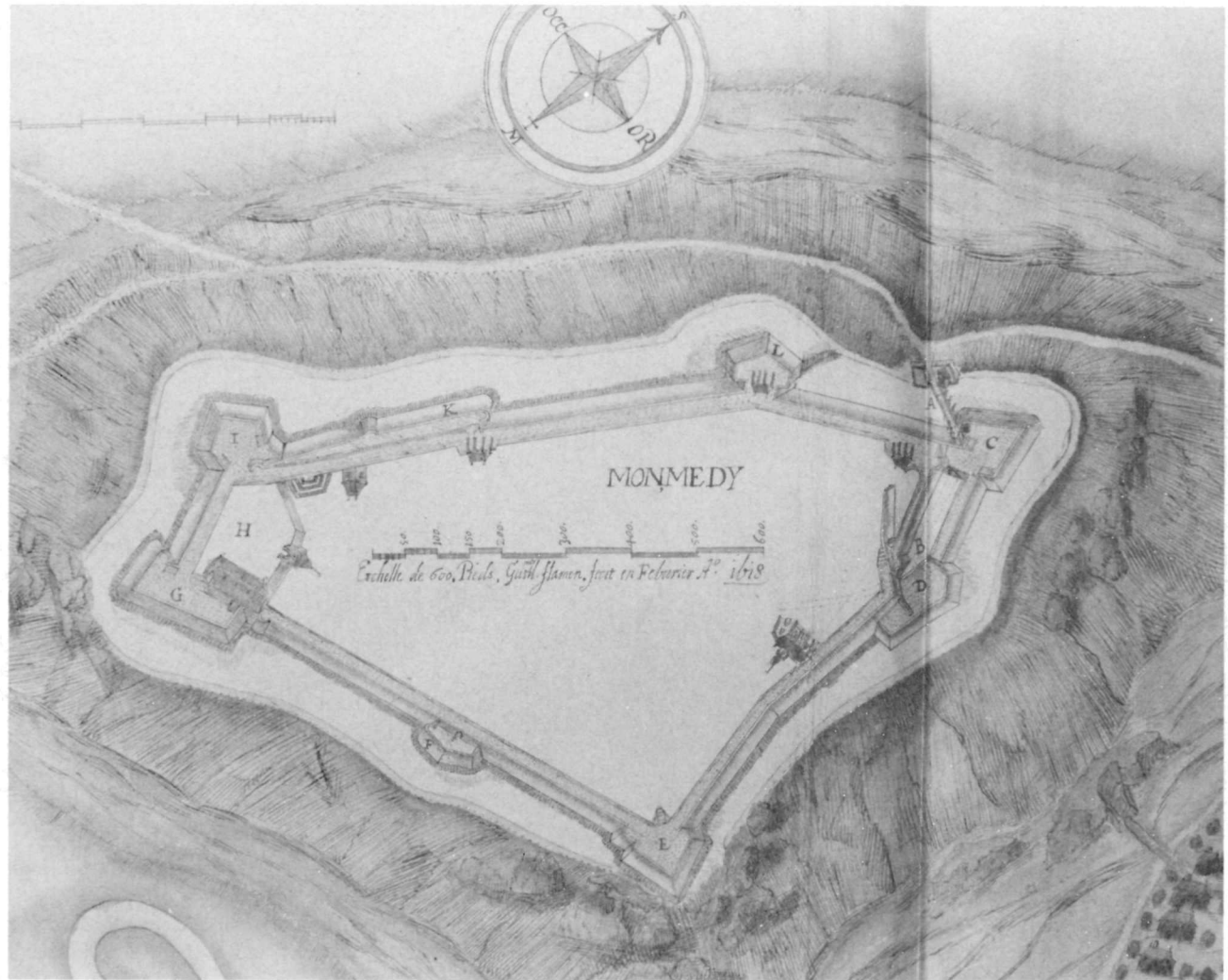
9 Candia (Crete). The island stronghold of the Venetian Republic in the Mediterranean, under siege by the Turks, 1667. The defences, designed in the late 16th century by Sanmicheli, are characterized by irregular bastions, with elongated *orillons* concealing casemated flanks. The protracted siege (1648-69) excited considerable interest and the experiences of various relief forces from several countries influenced military theory. The effectiveness of the casemated artillery in repelling mass onslaughts encouraged development of powerful flanks in bastioned systems, while the use of parallel trenches, almost as close together as plough furrows (on right, also lower left), supposedly inspired Vauban's method of attack. The siege was noteworthy, too, for the amount of mining and countermining that went on. Note the two lines of retrenchment within the walls of the town: one to contain an assault after the bastions at the northwest front had been breached, the other to isolate the northeast corner of the town once the rest had been overrun. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)





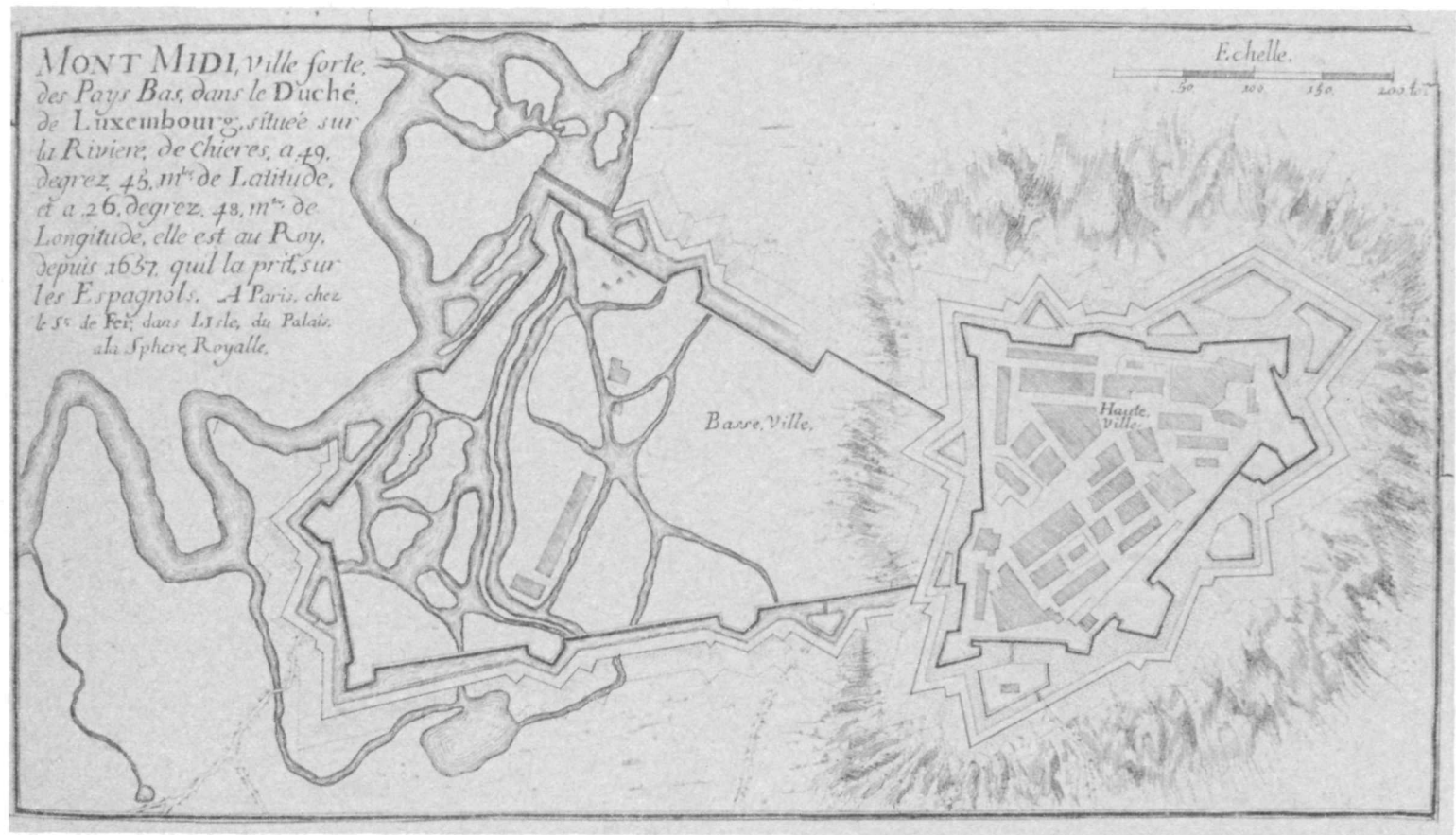
10 Siege of Candia. Detail. The attack on the northwest front toward the final stages of the siege. The network of Turkish trenches has reached the crest of the glacis and begun to advance across the ditch. The damaged bastions

have been strongly retrenched in anticipation of an assault. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



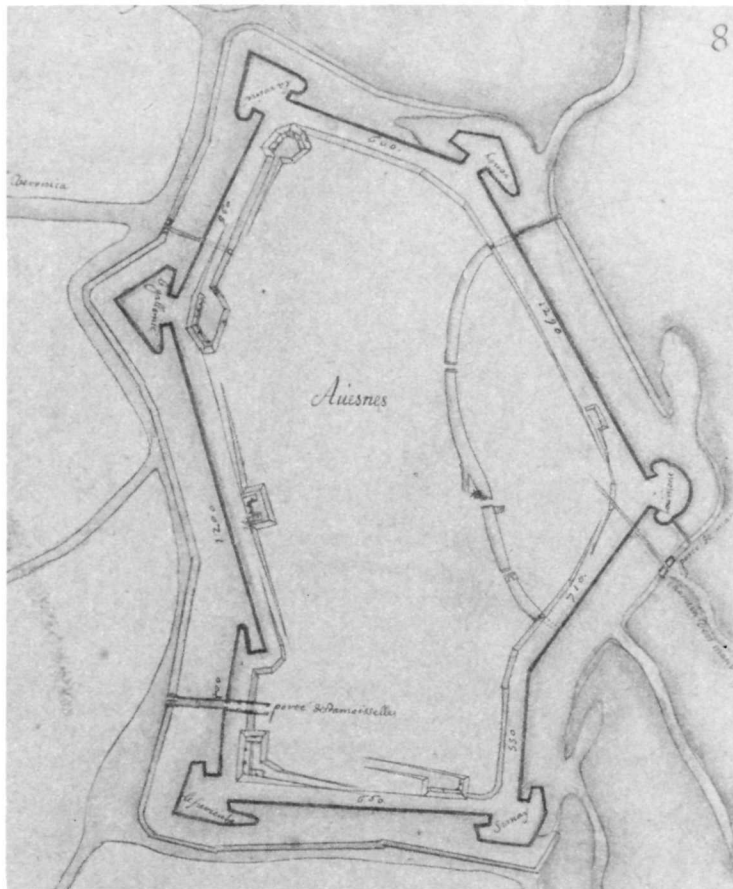
11 Montmédy. The earliest bastioned defences, built in the 16th century, when the town was part of the Spanish empire. The bastions are referred to on the accompanying legend as

"boullevarts." K: *orillon* providing flanking fire. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)

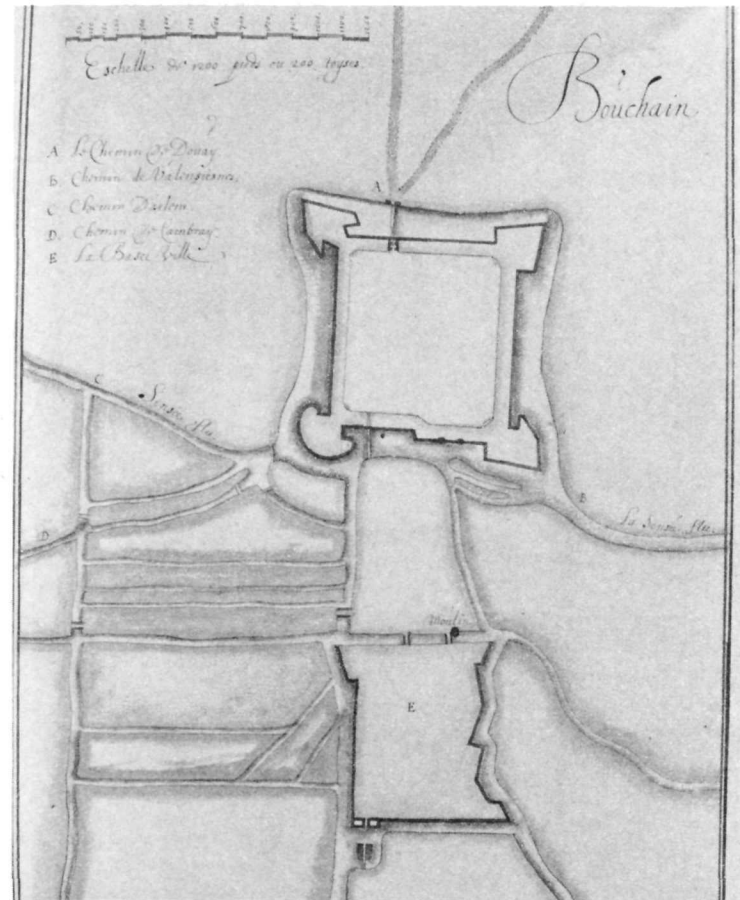


12 Montmédy. Taken by the French in a costly siege in 1657, the upper town was re-fortified by Vauban, who maintained the existing defences wherever possible. Plan shows

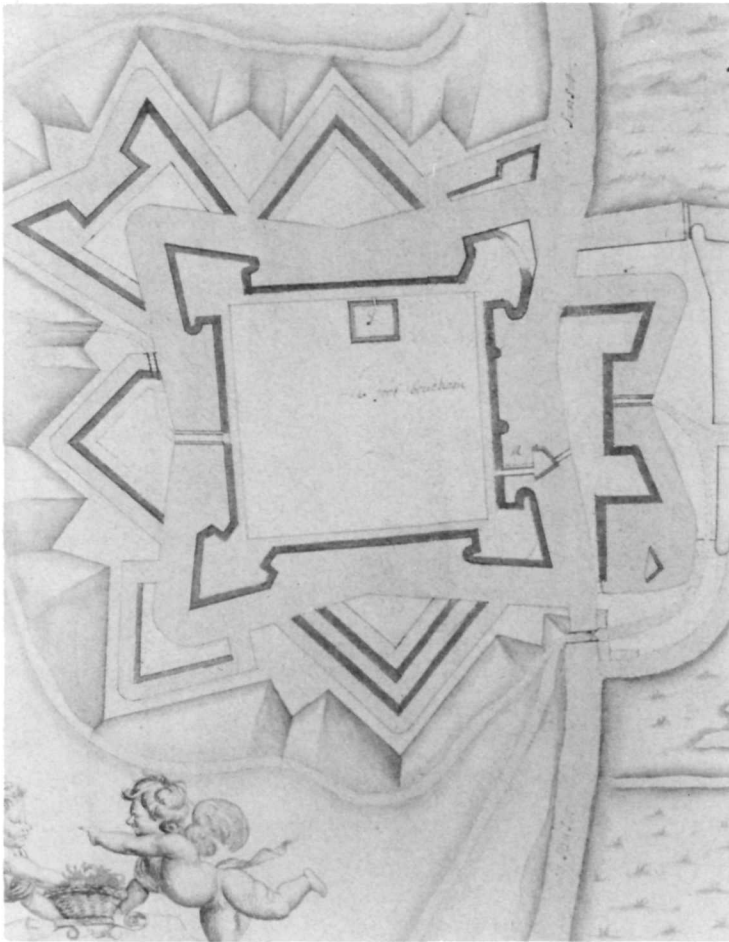
the modified defences and the new "enceinte" of the lower town. (De Fer, *Force de l'Europe: Introduction à la fortification* [Paris, 1695], p. 92.)



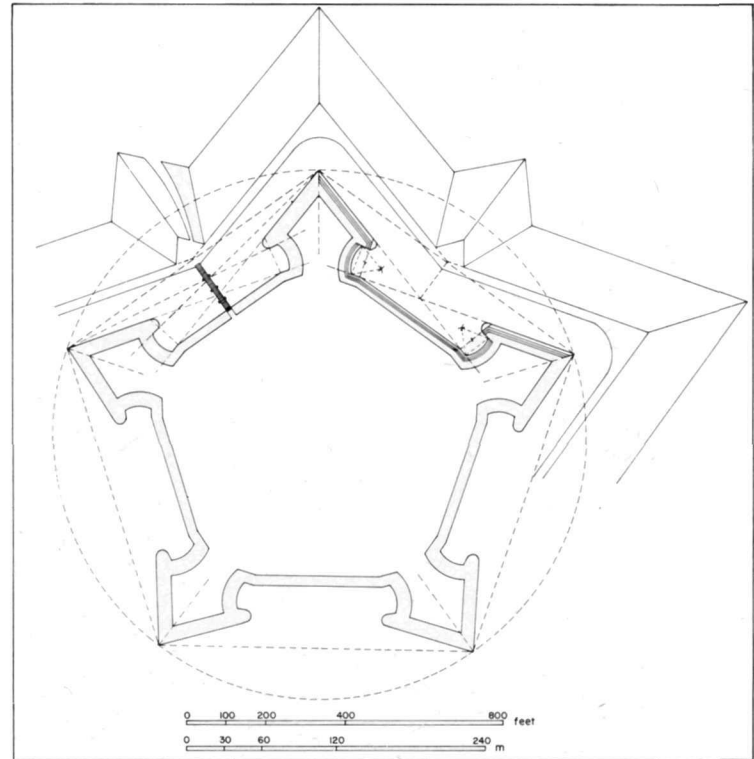
13 Avesnes-sur-Helpe (Nord). An early plan of defences using irregular Italianate bastions of 16th-century style. Only two conform to a regular bastion shape. No real application of co-ordinated flanking fire has been considered, the principal object being to sweep the curtains with fire from the casemates. The mushroom-shaped work is like a 15th-century boulevard. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



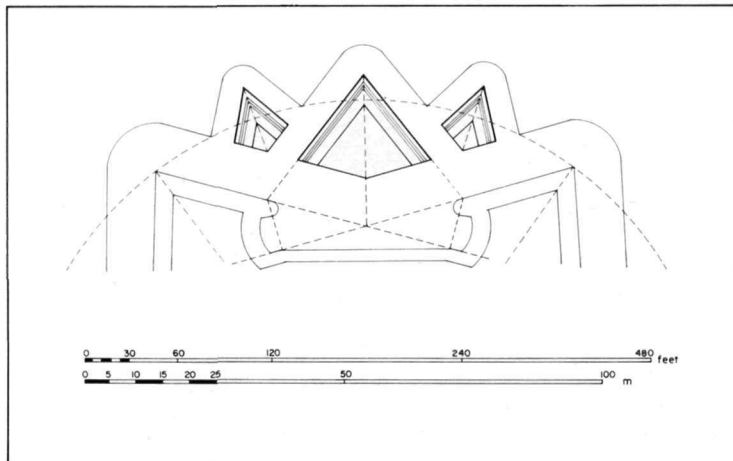
14 Bouchain (Nord). Late 16th-century defences: primitive boulevards and bastions. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



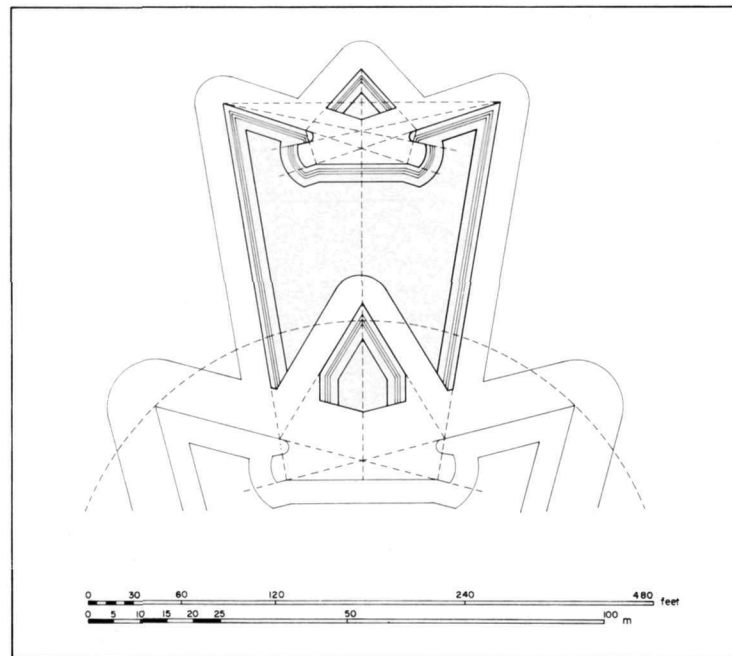
15 Bouchain. Defences in 1676. The bastions have been modified to more regular shapes although the disposition of the flanks is not uniform. Outworks have been added on all sides of the square. Note the *queue d'ironde* covering the bastion, upper left, and the unusual horn-work to the right. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



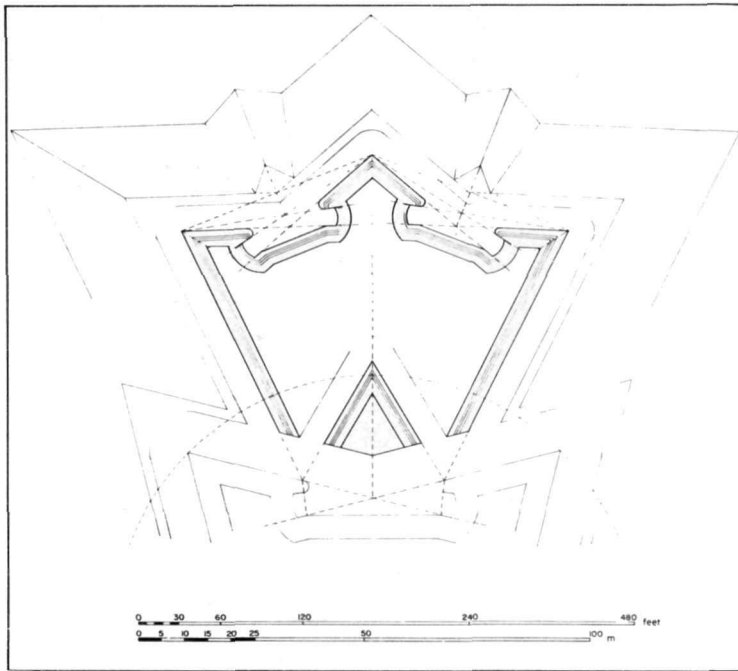
16 Trace of pentagonal fortification: bastions with orillons. (Drawing by T.M. Smith.)



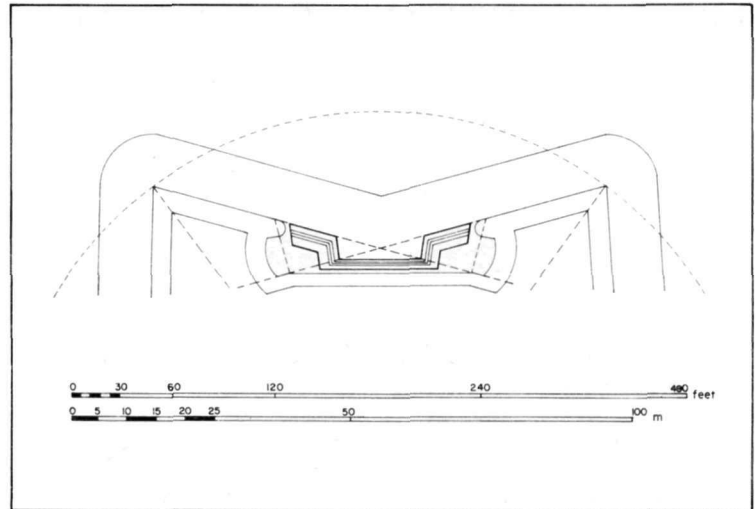
17 *Demi-lune* and lunettes. (Drawing by T.M. Smith.)



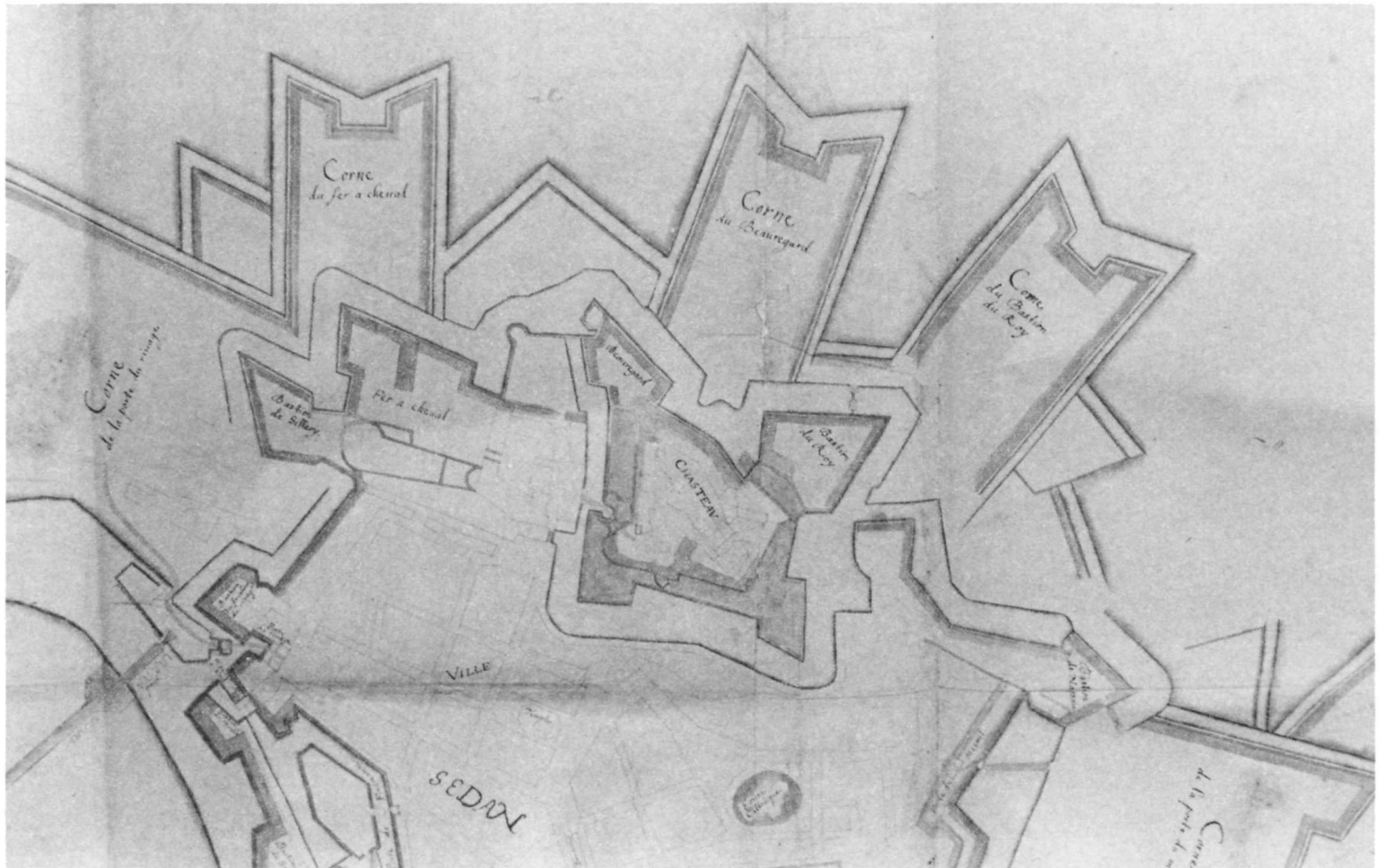
18 *Horn-work* with *demi-lune* and redoubt. (Drawing by T.M. Smith.)



19 **Crown-work.** (Drawing by T.M. Smith.)

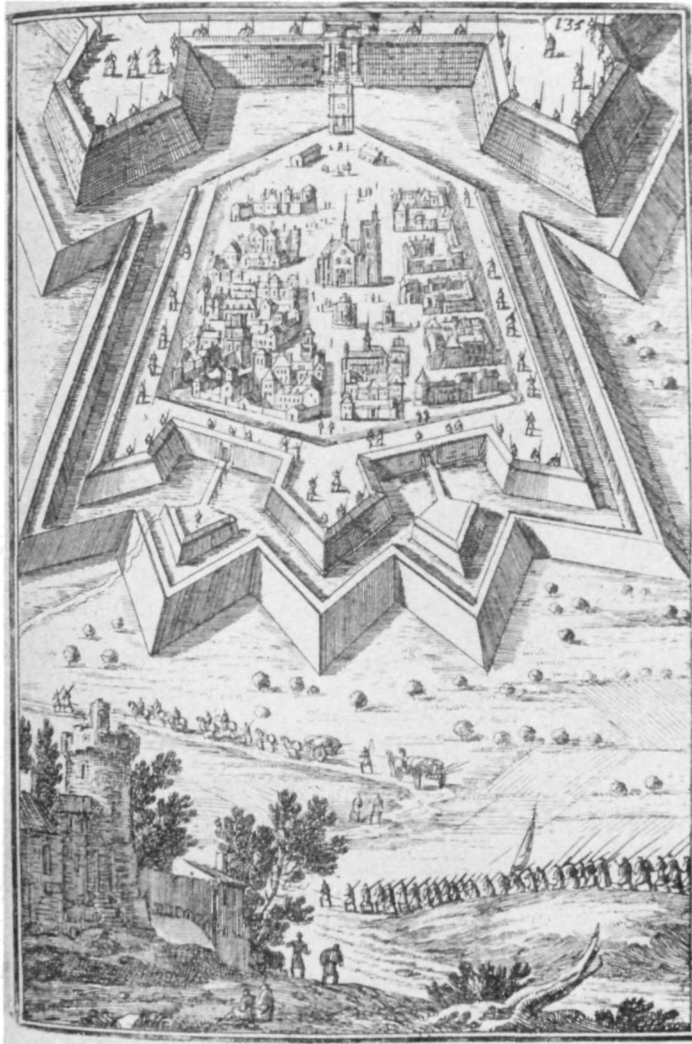


20 **Tenaille trace.** (Drawing by T.M. Smith.)

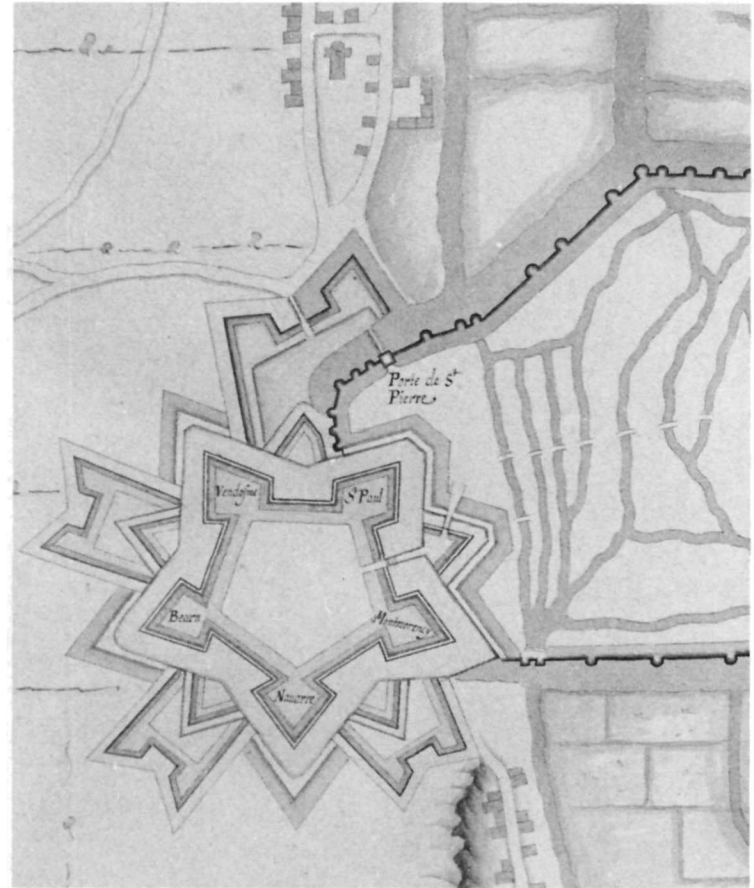


21 Sedan (Ardennes). The medieval château is surrounded by bastioned defences of the mid-16th century; the town was also provided with bastions at that time. Peculiar forked works create deep re-entrants in the Beauregard Bastion, the *fer à cheval* and the Bastion de Sillery. On the high ground overlooking the town and château, horn-works had to be added in the 17th century because the approaches were

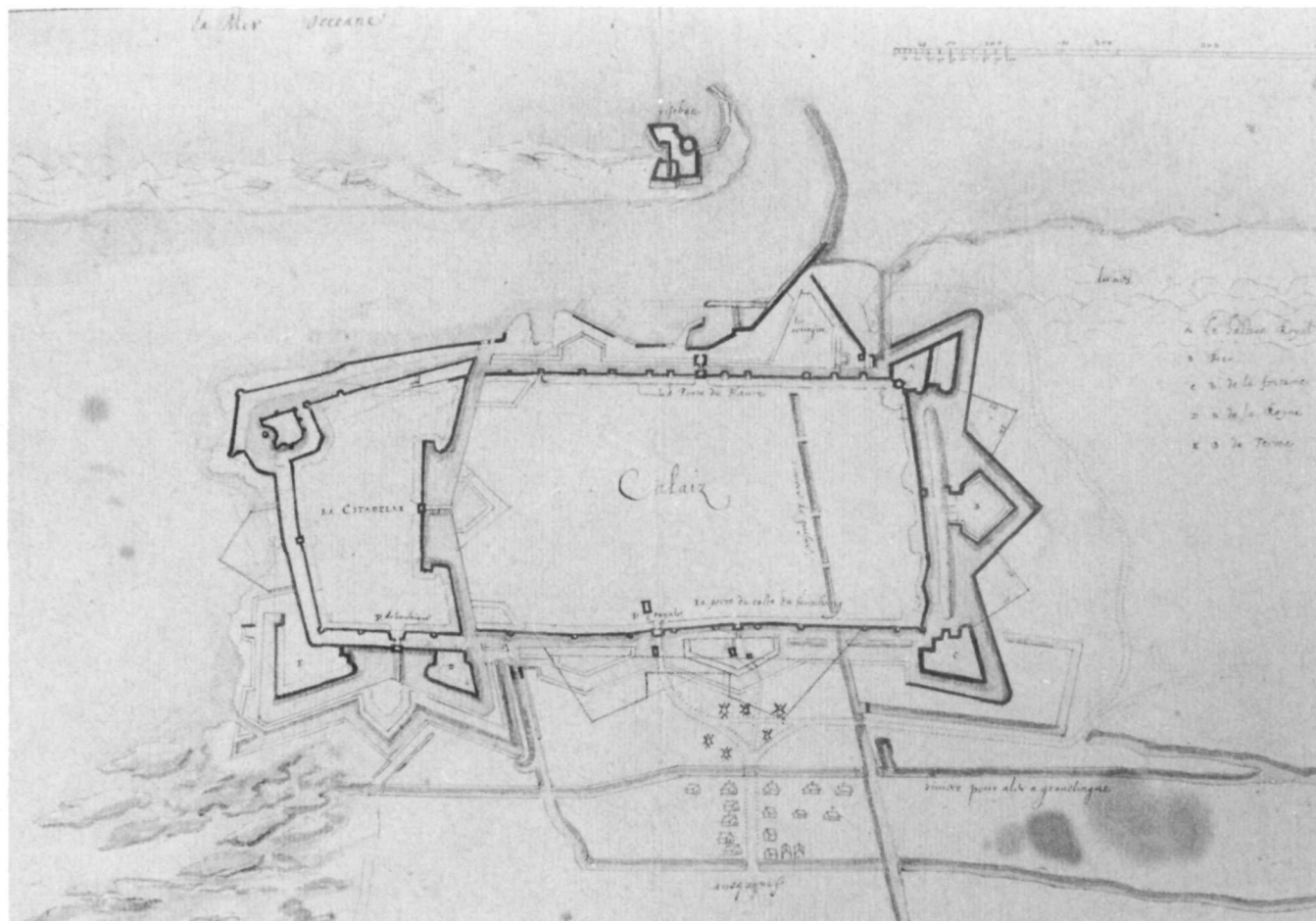
unprotected. Later plans show the extent to which Vauban strengthened the defences by retrenching the horn-works twice and sometimes three times, by adding *demi-lunes* and doubling the ditch and counterscarp on the town's weakest front. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



22 Crown-work. (Allain Manesson Mallet, *Les travaux de Mars ou l'art de guerre* [Paris, 1685], Vol. 1, p. 135.)



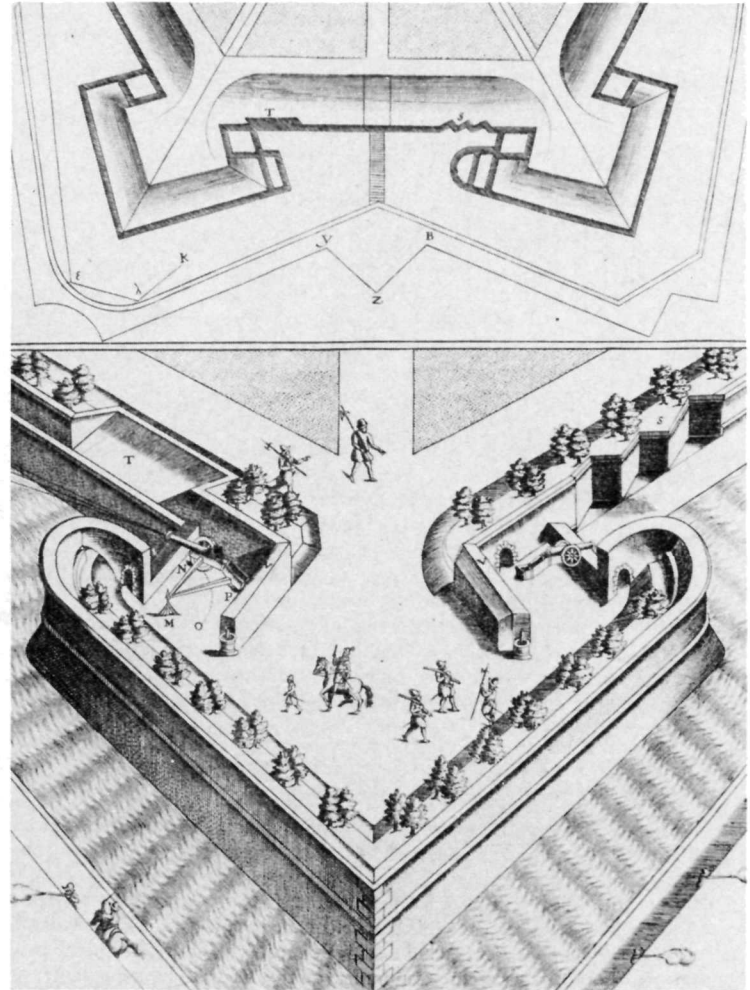
23 Amiens (Somme). The citadel built by Errard de Bar-le-Duc, ca. 1600. The town is on lower ground, surrounded by a medieval *enceinte* with round towers but no bastioned defences. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)

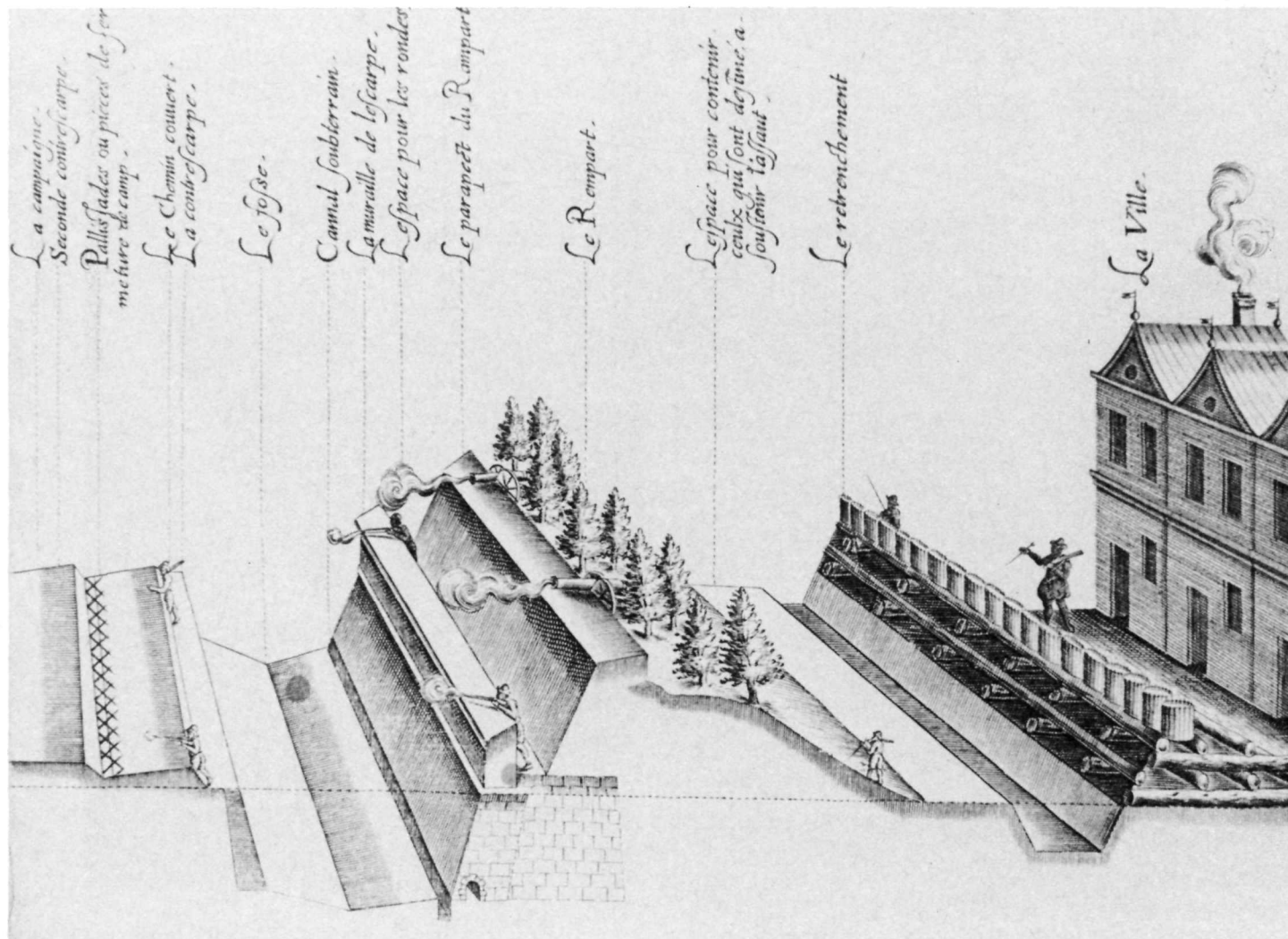


24 Calais (Pas-de-Calais). Early 17th-century defences. Calais was captured from the English by the French in 1558, at which time bastions were added. Held briefly by the Spanish (1595-98), the town was further improved by Errard de Bar-le-Duc after the French regained it. It is not possible

to determine precisely what work is attributable to him, but the front of the citadel facing the town conforms closely to his fortification concepts, as does the front comprised of bastions D and E (lower left). (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)

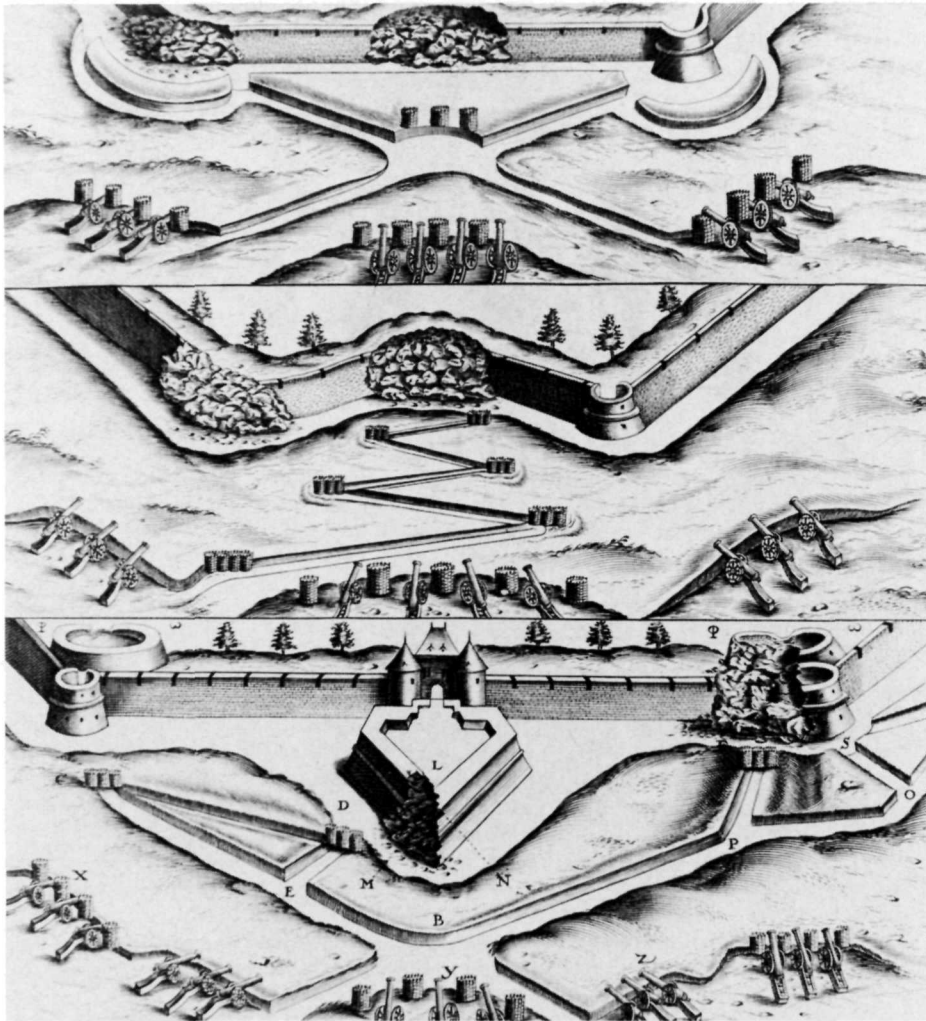
25 Bastion and front of fortification, according to Errard. Acute re-entrant angles, resulting in greatly obscured flanks, are characteristic of Errard's system as is the height of the parapets and covered way, sufficient to protect a man on horseback. (Jean Errard de Bar-le-Duc, *La fortification démontrée et réduite en art* [Paris, 1620], p. 43.)





26 Section across ramparts, as Errard envisaged. Note the chemin de ronde below the parapet. (Jean Errard de Bar-le-

Duc, *La fortification démontrée et réduite en art* [Paris, 1620], p. 22.)



27 Scenarios for a siege. The walls to be breached are in all cases simple medieval ramparts with little capacity to resist or produce effective flanking fire. Only one bastion-like work is shown, covering the twin-tower gate (bottom centre).

Note the crescent-shaped covers in front of the towers (top). (Jean Errard de Bar-le-Duc, *La fortification demonstrée et reduicte en art* [Paris, 1620], p. 25.)

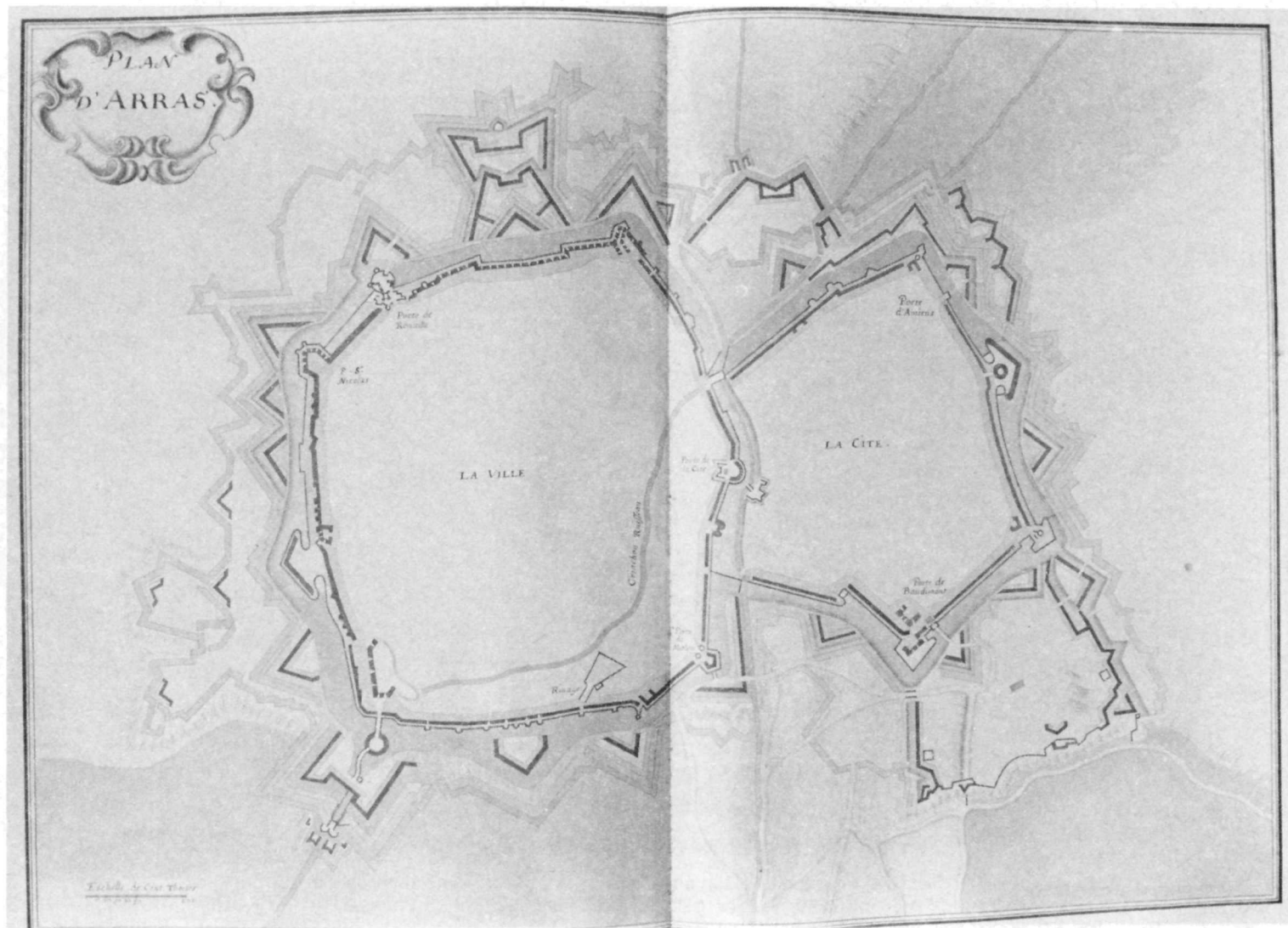


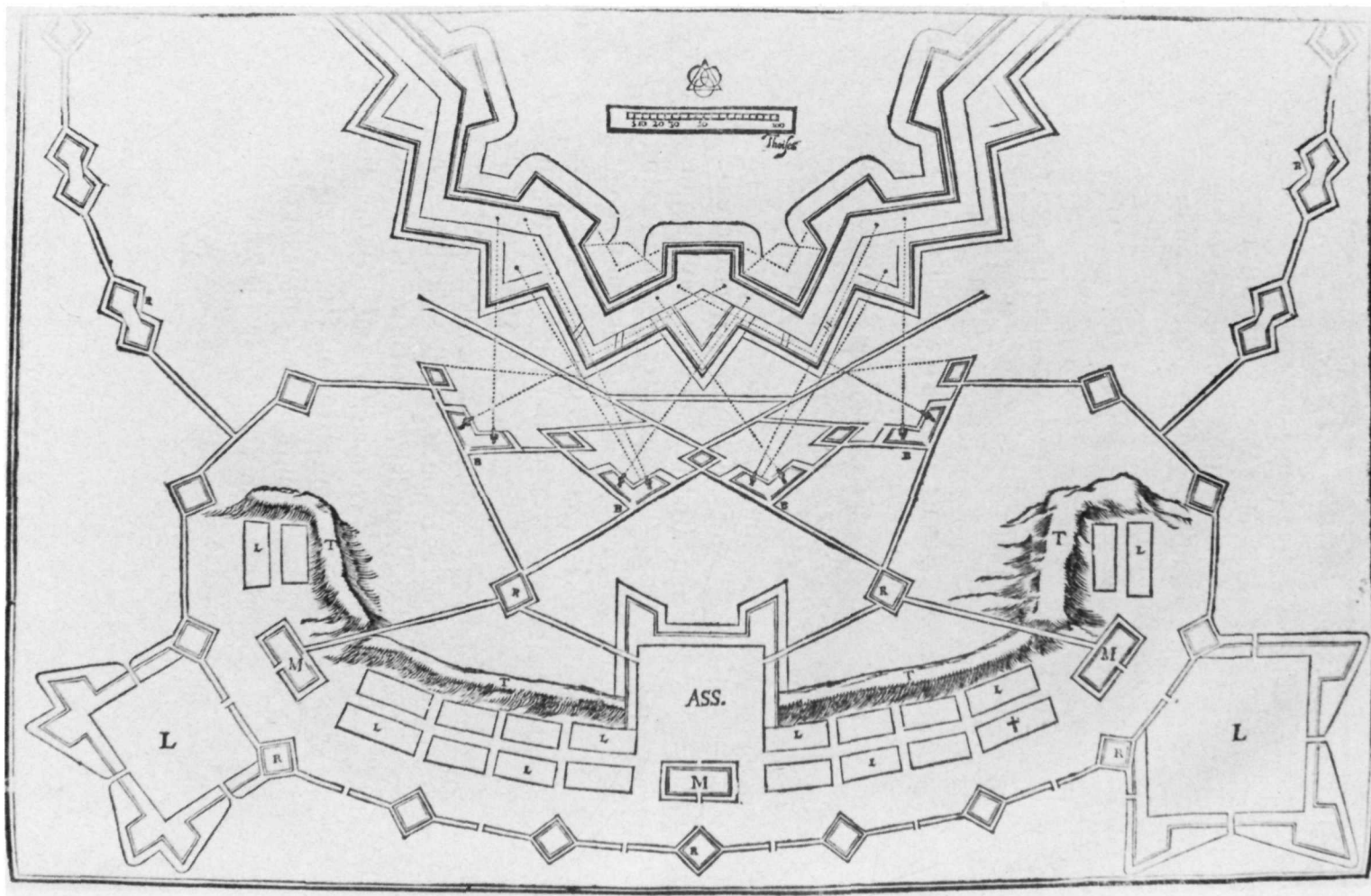
28 Montreuil-sur-Mer (Pas-de-Calais). Medieval *enceinte* serving as a retrenchment to the bastioned front added at a lower level (left foreground) in early 17th century. Note the

rectangular gun-port in the base of the round tower (upper right). (Photo by author.)

29 Arras (Pas-de-Calais). Fortifications of the town, early 17th century. The basic *enceinte* is a medieval wall defended with round towers, but the addition of several gun towers, prior to the development of bastions, is apparent in the circular and irregular shapes around the perimeter. Several bastions, with elongated *orillons* reminiscent of the early Italian school, have been incorporated in an outer *enceinte*, probably at a lower level. The most prominent feature is the array of outworks in masonry and earth located across the ditch on all fronts; some conform to recognizable fortifications such as horn-works and *demi-lunes*, but most are irregular works presenting a series of re-entrants to the country.

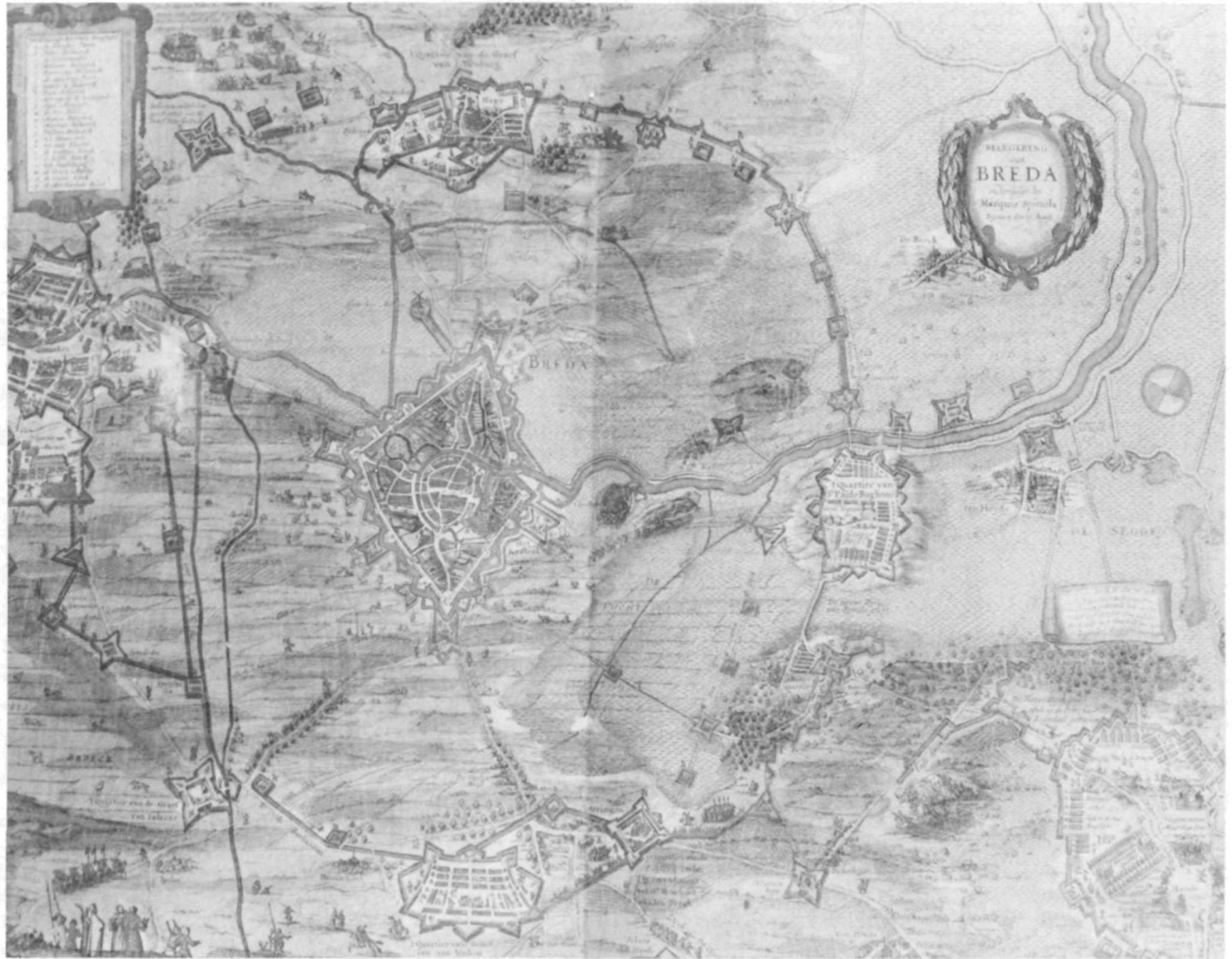
The town was taken from the Spanish by the French in 1640. The plan is undated but was part of a collection made by de Clerville, Vauban's immediate predecessor and may be placed in the period 1650-60. A similar plan, dated 1641, shows the same disposition of fortifications, which may therefore be attributed to Spanish rather than to French construction. The defences were strengthened and improved in the 1660s by Vauban, who added a citadel above the "Cité" as a means of controlling the populace. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)





30 Sophistication in siegecraft. Fortified camps and continuous lines of trenches surround the place under attack. Trenches with enlarged areas for positioning artillery batteries are pushed forward in stages towards the front under

attack. (Sieur de Fabre, *Les pratiques sur l'ordre et regle de fortifier, garder, attaquer et deffendre les places* [Paris, 1629].)



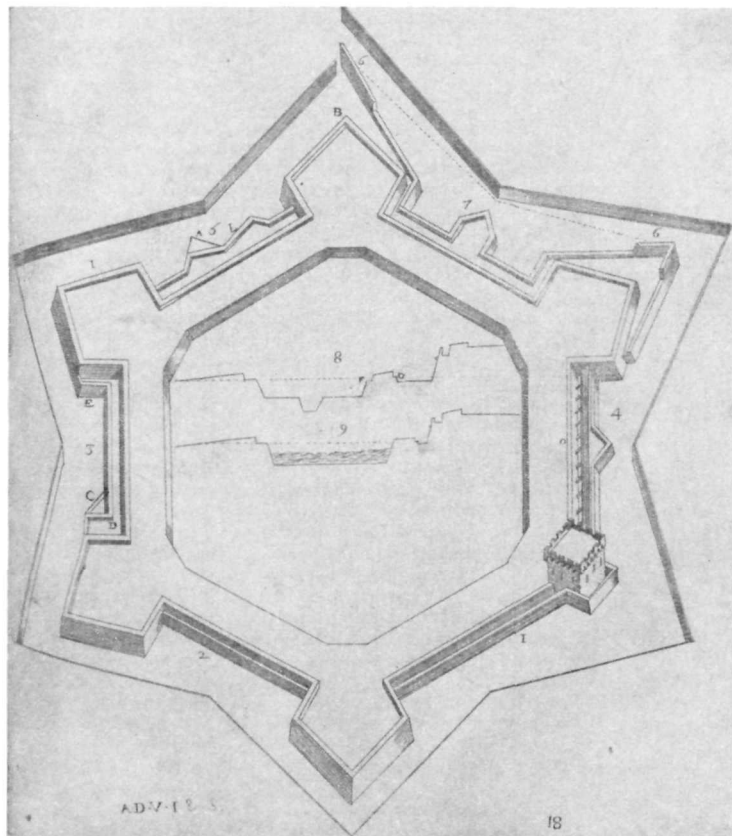
31 Breda (Netherlands). The celebrated siege of the Dutch town by Spanish forces under Spinola, 1624. The town, surrounded by a simple rampart from which bastions project, derives its main defence from the water-filled ditch and the

series of horn-works and covered way beyond. The besieging army's series of fortified camps dwarf the town they encircle. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)

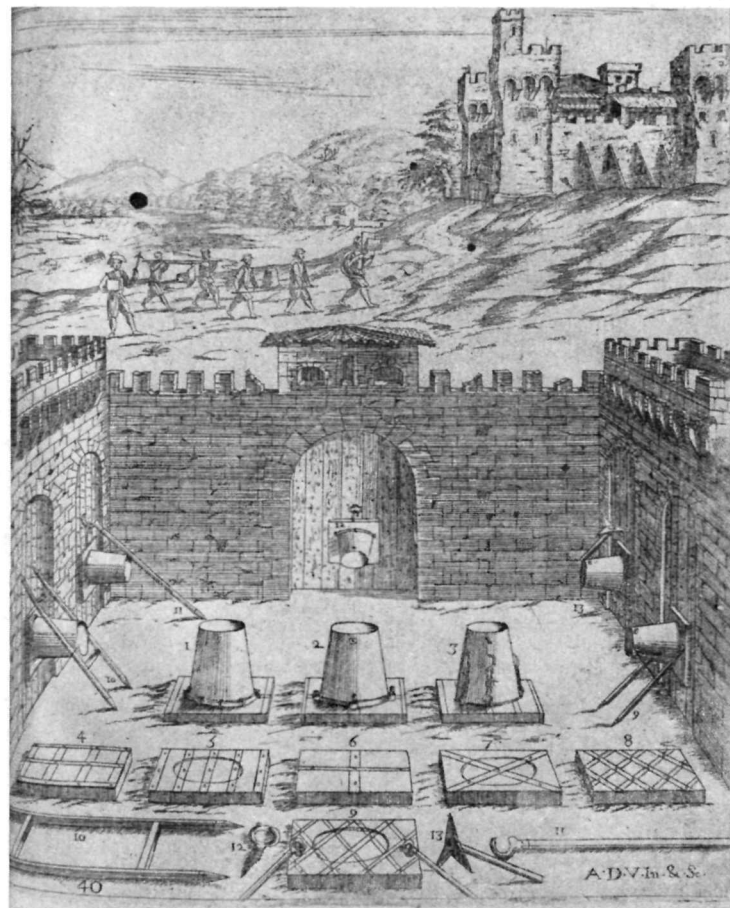


32 La Rochelle (Charente-Maritime). The siege of the Huguenot stronghold, 1627–28. The town, defended by a bastioned *enceinte* and outworks surrounding the medieval

walls, is encircled by a ring of interconnected redoubts and forts constructed by the royalists. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



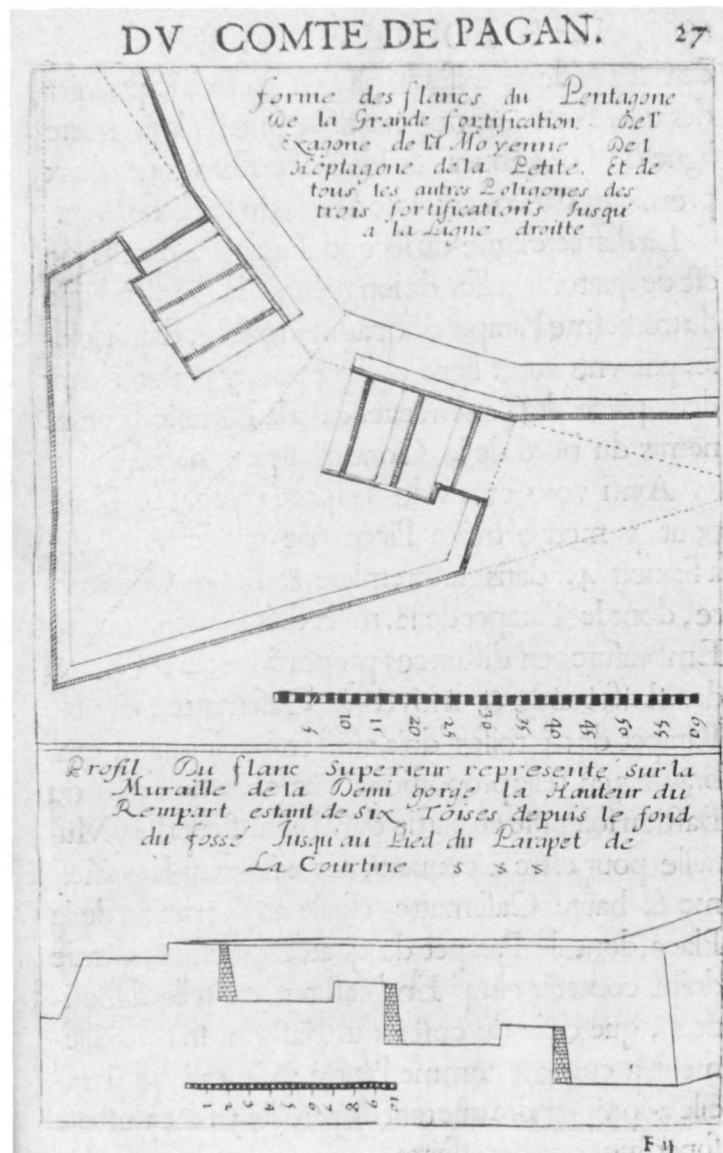
33 A typical bastioned fortification as envisaged by de Ville. The bastions flanks are at 90 degrees to the curtains. Variations of *fausse-brayes* are shown on each front and in section. That on front 3 in particular foreshadows Vauban's *tenaille*. (Antoine de Ville, *Les fortifications, attaques & défences des places....* [Lyon, 1628] p. 127.)



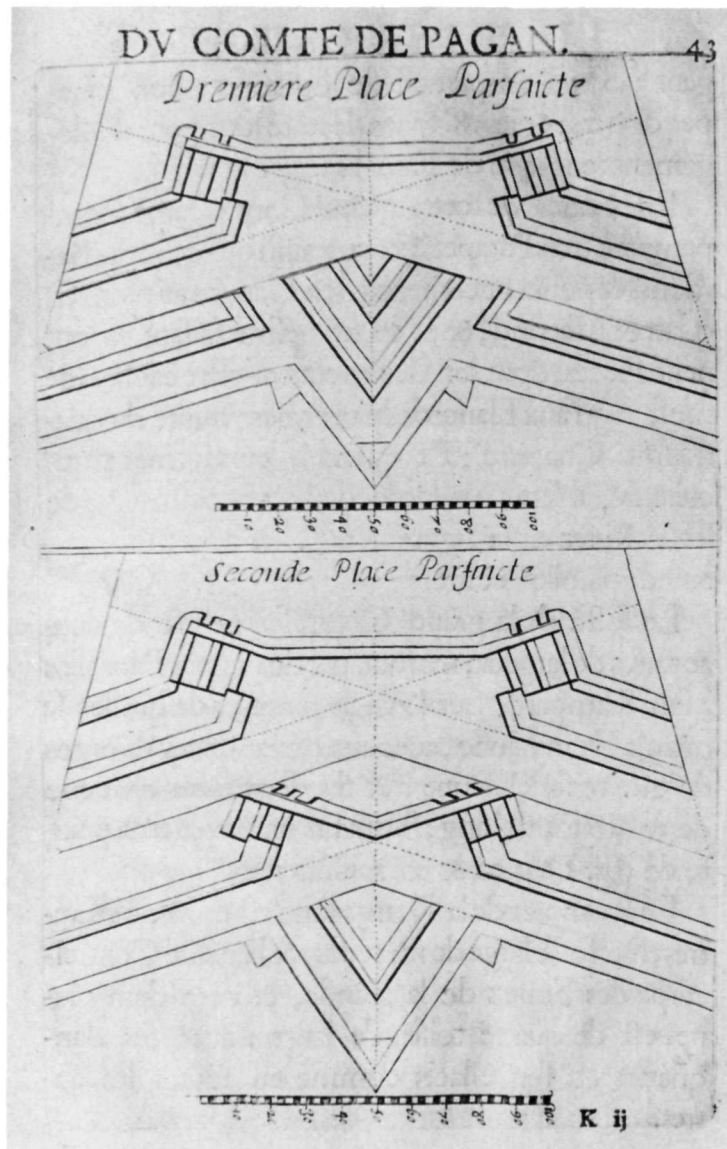
34 Petards. An essentially Renaissance device for removing a door. (Antoine de Ville, *Les fortifications, attaques & défences des places....* [Lyon, 1628], p. 255.)



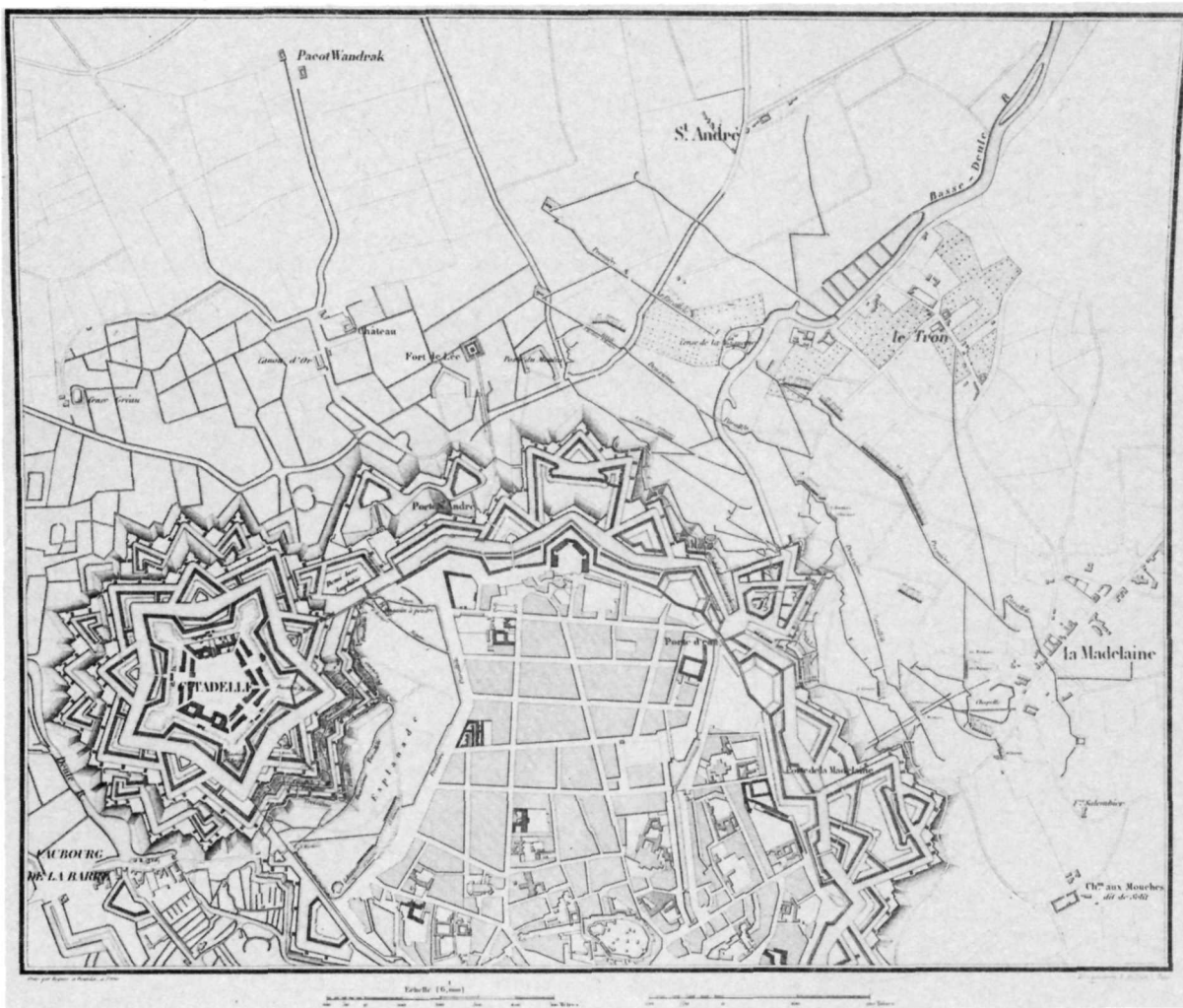
35 Saint-Martin-de-Ré (Charente-Maritime). Orgues: iron-tipped beams forming a barrier across the entranceway to the citadel. (Photo by author.)



36 Pagan's system, relying on concentration of artillery in the flanks. The multi-tiered effect is shown in section. (Blaise François Pagan, *Les Fortifications* [Paris, 1645], p. 27.)



37 Defence in depth. Pagan's improved system, showing counterguards in front of bastions, a concept Vauban later applied. Note the lines of defence prolonging the alignment of the faces into the re-entrant angles. (Blaise François Pagan, *Les Fortifications*[Paris, 1645], p. 43.)

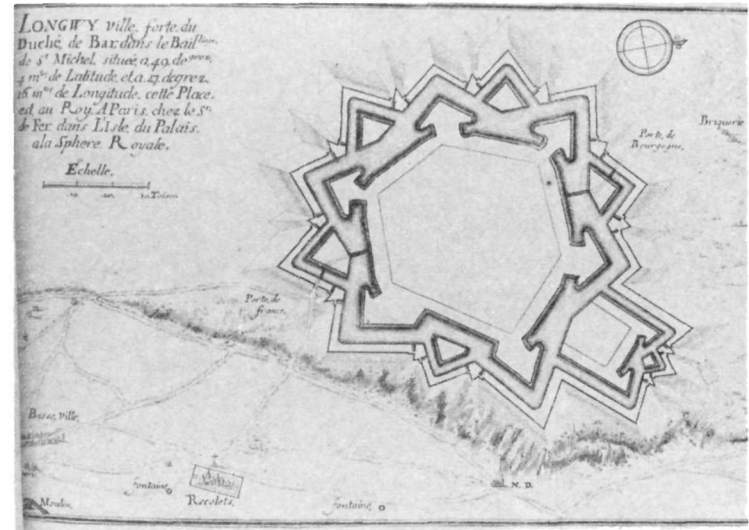


38 Lille (Nord). Siege of the town in 1708. The powerful pentagonal citadel, one of Vauban's finest (and earliest) creations, is depicted at left. Note the use of counterguards covering the bastions, *demi-lunes* with redoubts on each

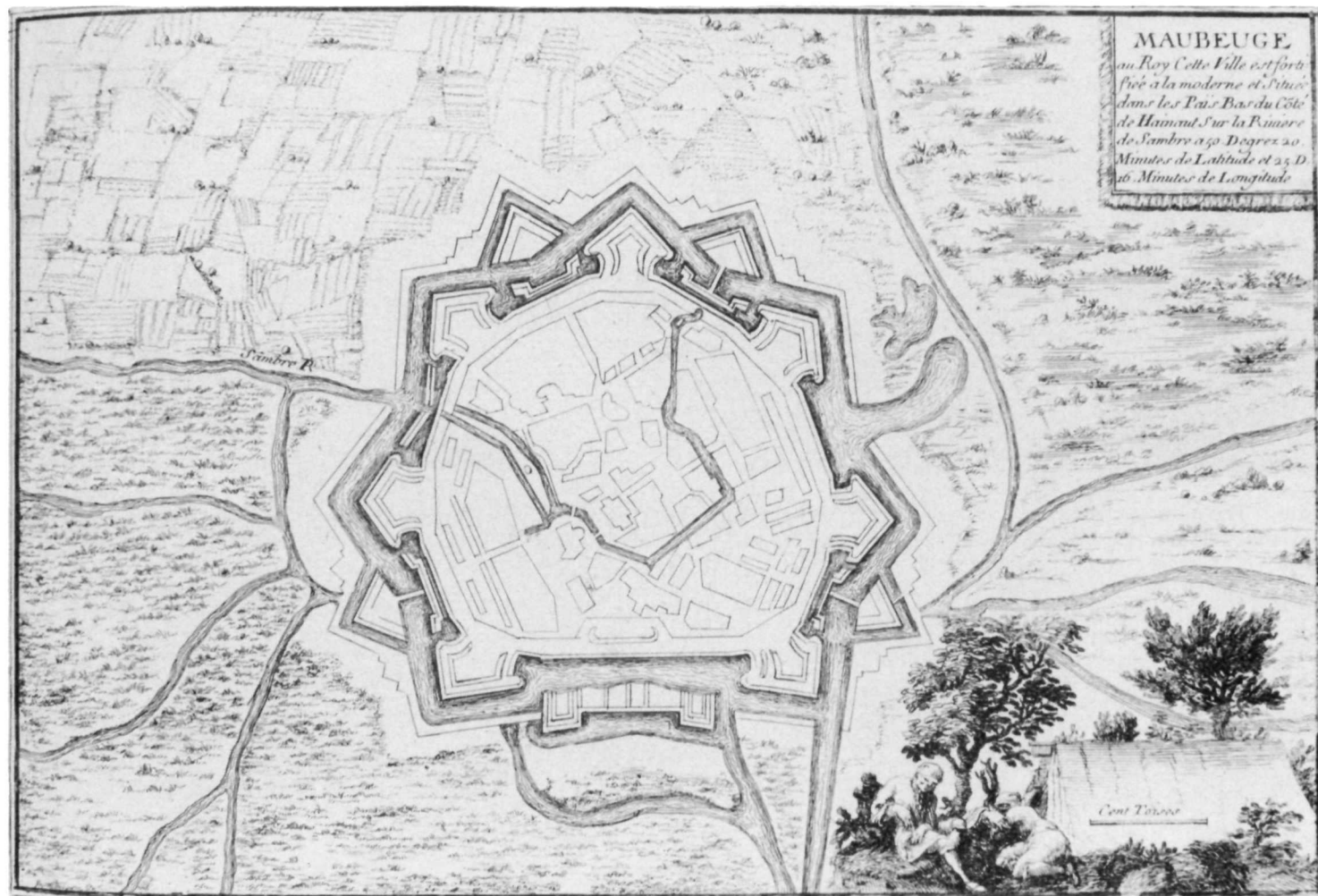
front, and *tenailles* in the ditch before the curtains. (J.J. Pélet, *Mémoires militaires relatifs à la succession d'Espagne sous Louis XIV* [Paris: 1861], Atlas.)



39 Lille. The citadel. Simple tenaille of earth masks the foot of the curtain. Face of bastion to left. (Photo by author.)

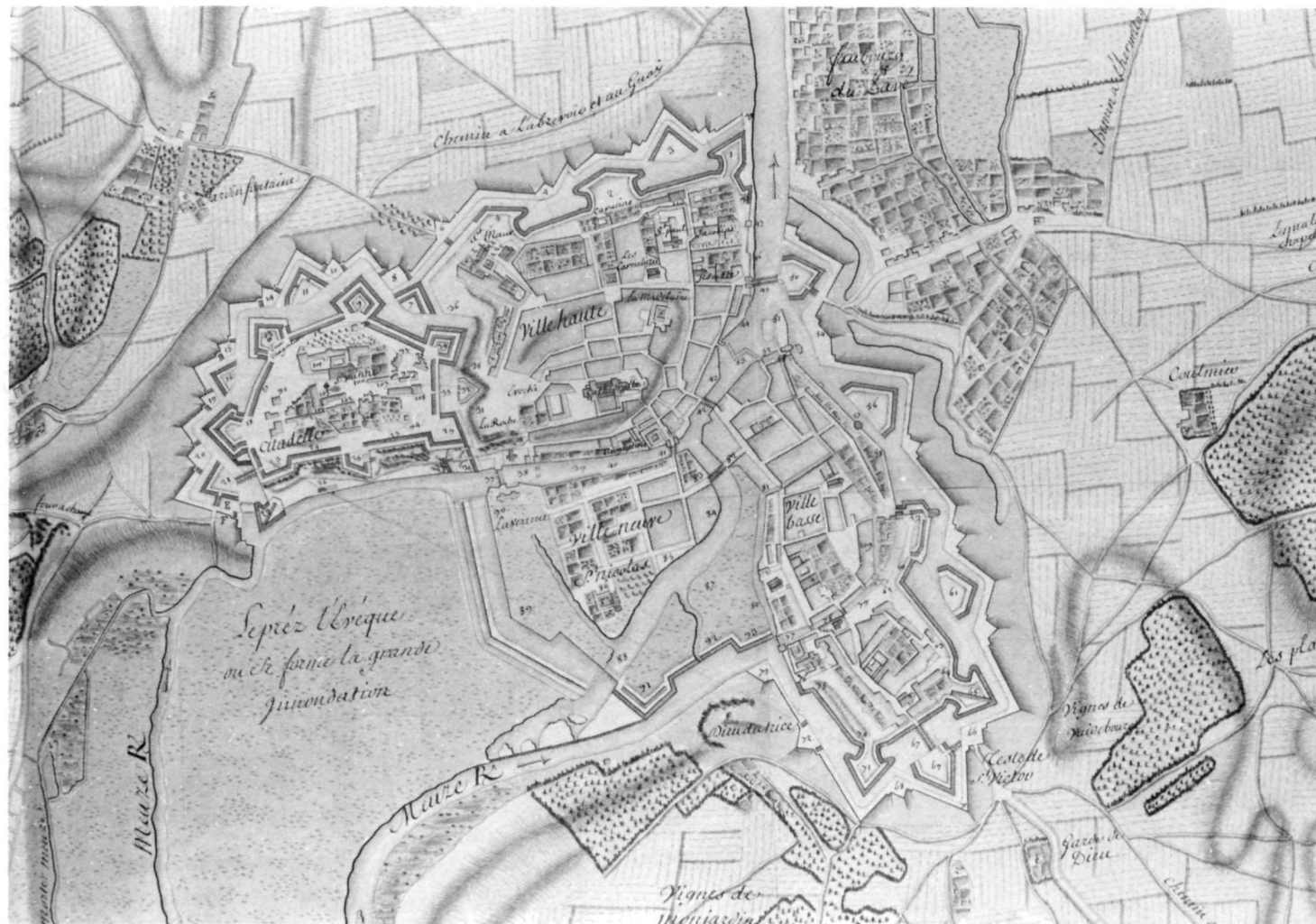


40 Longwy (Meurthe-et-Moselle). The fortified town built by Vauban. Orillons, curved flanks and brisures are used on the curtains on all fronts most susceptible to attack. The weakest front is covered by a massive horn-work. (De Fer, *Force de l'Europe: Introduction à la fortification* [Paris, 1695], p. 52.)



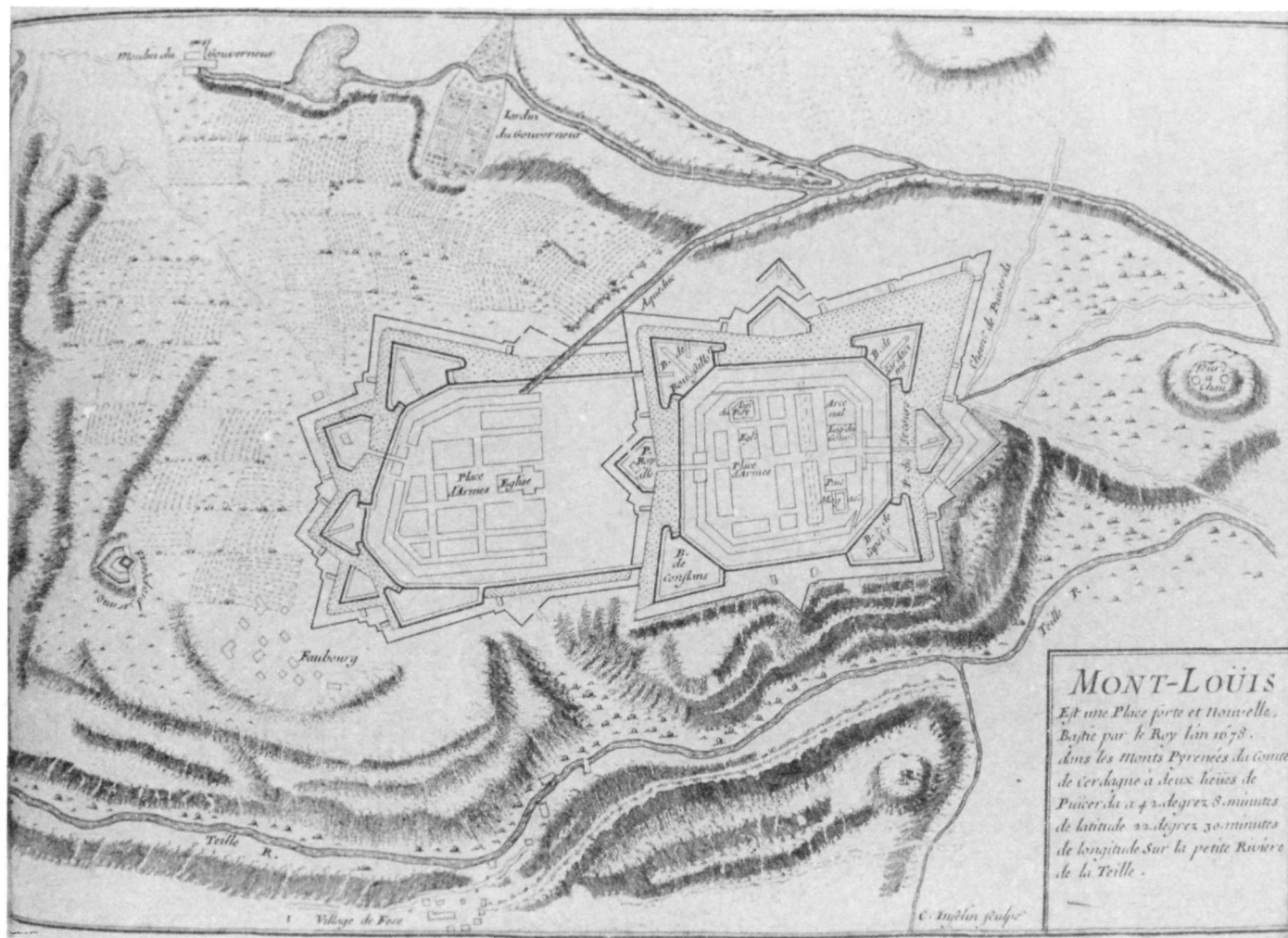
41 Maubeuge (Nord). The town as re-fortified by Vauban, 1679-85. The plan is an irregular heptagon relying on a wet ditch as the main outer defence. All bastions have *orillons* and curved flanks. *Tenailles* are used on all but one front where a natural expanse of water serves as adequate defence

and another where the elongated front is covered by an expanded *tenaille* or foreshortened horn-work. (De Fer, *Force de l'Europe: Introduction à la fortification* [Paris, 1695], p. 78.)



42 Verdun (Meuse). Fortifications as improved by Vauban in the 1670s. Citadel built by Errard de Bar-le-Duc is retained at left, with outworks added. The *faubourg* St. Victor is

defended by a horn-work consisting of two full bastions with *orillons*. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



43 Mont-Louis (Pyrénées-Orientales). A new fortified town and citadel created by Vauban in 1678 to controll the pass to Spain. The citadel, separated by a wide ditch and glacis from the town, is on the highest ground in the area. In all cases, the curtain is continued unbroken across the gorge of the

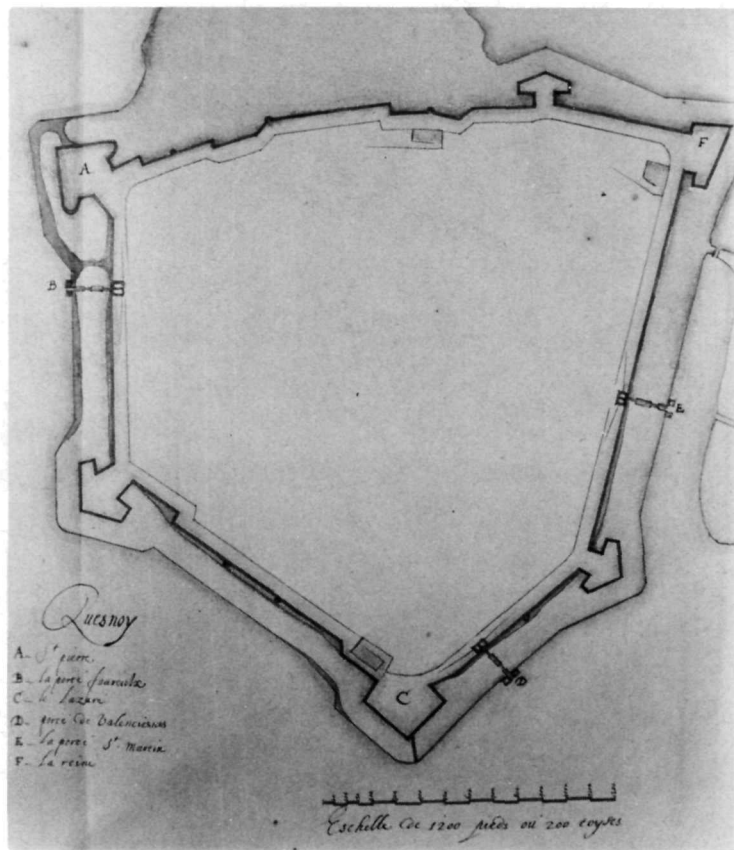
bastions to act as a retrenched inner line of defence and an added protection to the interior of the place. (De Fer, *Force de l'Europe: Introduction à la fortification* [Paris, 1695], p. 177.)



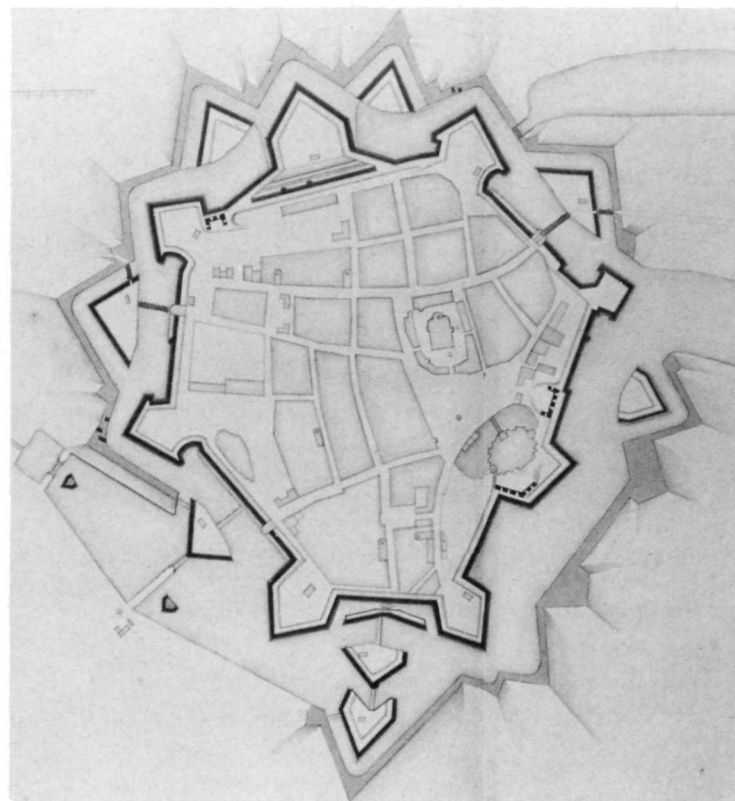
44 Mont-Louis. Bastion with *orillons* and curved flanks. Note the well-preserved covered way with traverses screening the *place d'armes* (lower right). (Photo by author.)



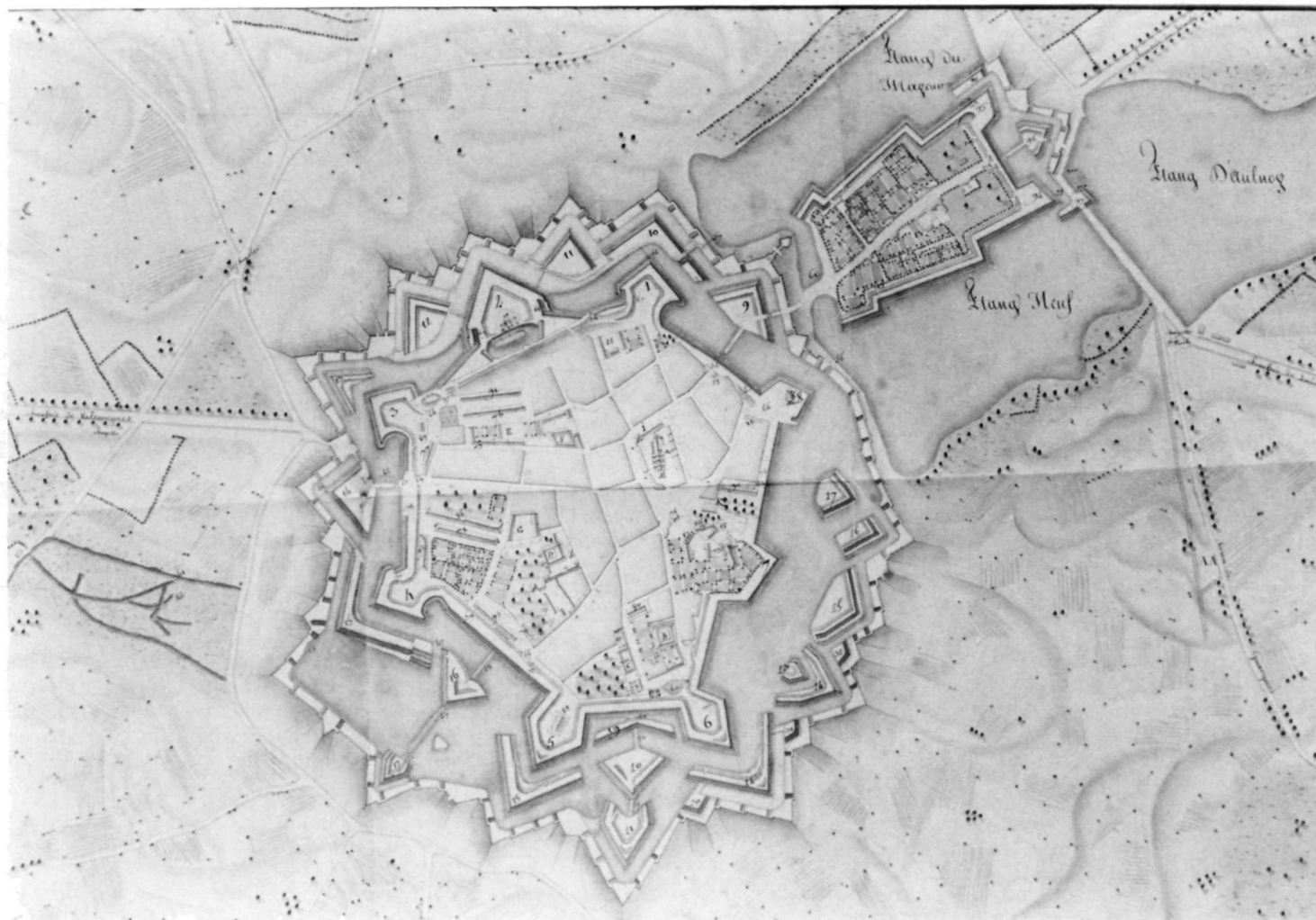
45 Mont-Louis. Curved flank with embrasures, covered by an *orillon*. (Photo by author.)



46 Le Quesnoy (Nord). A small town in the Spanish Netherlands, captured by the French in 1654. Plan shows the irregular, primitive, bastioned defences of the late 16th century. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



47 Le Quesnoy. The fortifications as improved by Vauban in 1679. The original pentagonal *enceinte* has been expanded to include eight irregular fronts, including one large, centrally located bastion with a retrenchment across the gorge. Two *demi-lunes* in line cover the constricted front (bottom). (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)

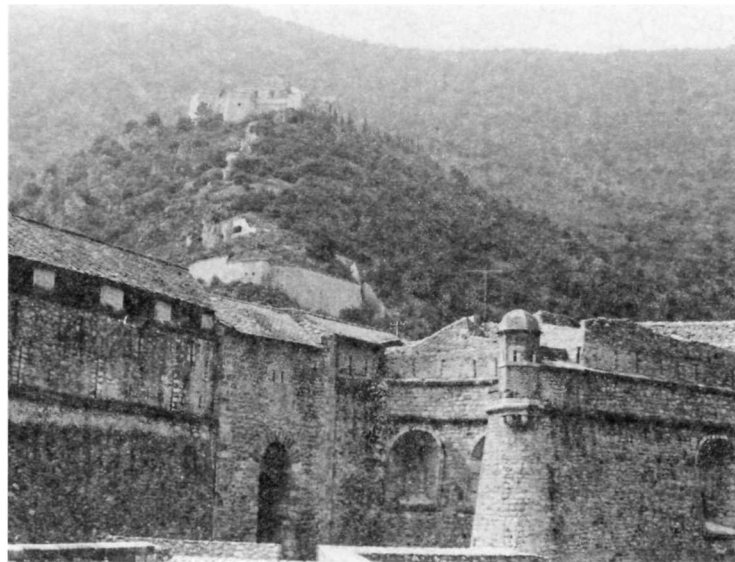


48 **Le Quesnoy.** Late 18th-century plan of fortifications. Outworks in the form of counterguards, *demi-lunes* and redoubts in the *place d'armes* have been added to Vauban's

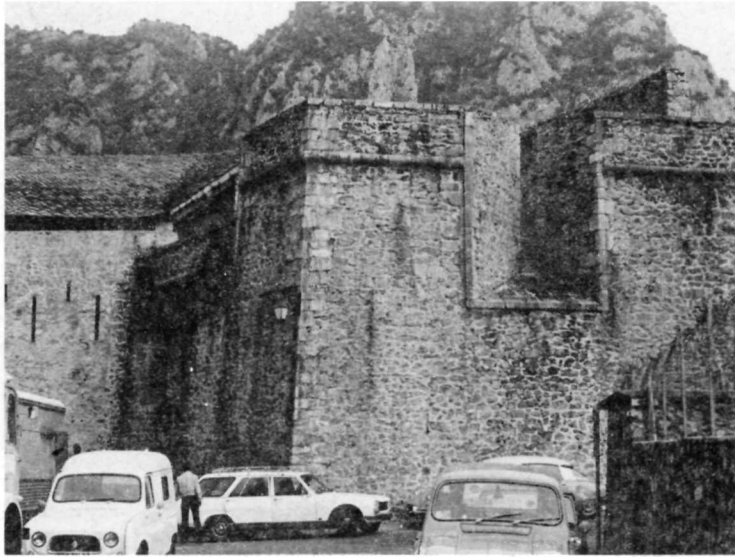
defences. The *faubourg* is enclosed in the horn-work (upper right). (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



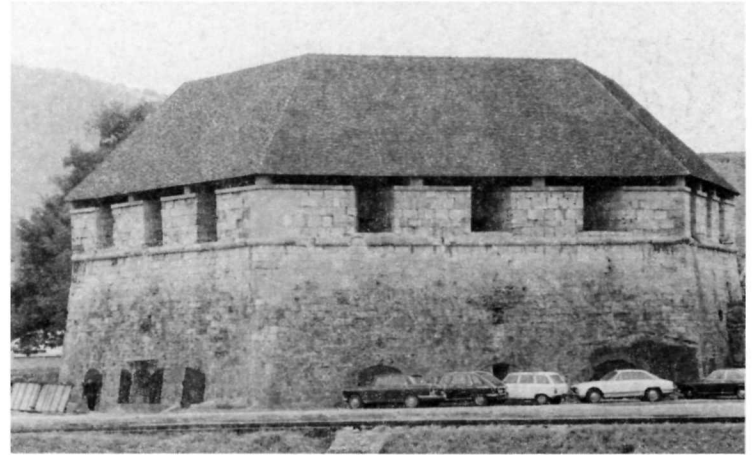
49 Le Quesnoy. Detail of bastion with *orillon* constructed by Vauban. Into the brick escarp are keyed long slabs of granite, the heads appearing as white dots interspersed on the face of the wall. Communication to the outworks is through a tunnel in the counterscarp (centre right). (Photo by author.)



50 Villefranche-de-Conflent (Pyrénées-Orientales). The east front, looking at the right face, *orillon* and flank of Bastion Dauphin. Note the masonry additions to the parapet for increased protection (part of Vauban's improvements to the 16th-century and earlier defences), also the tiled roof covering the rampart on the curtain at left. A series of intercommunicating artillery positions, also built by Vauban, culminating in the fort on top of the neighbouring height, command the town and defences from the rear in case an enemy succeeded in storming the ramparts. (Photo by author.)



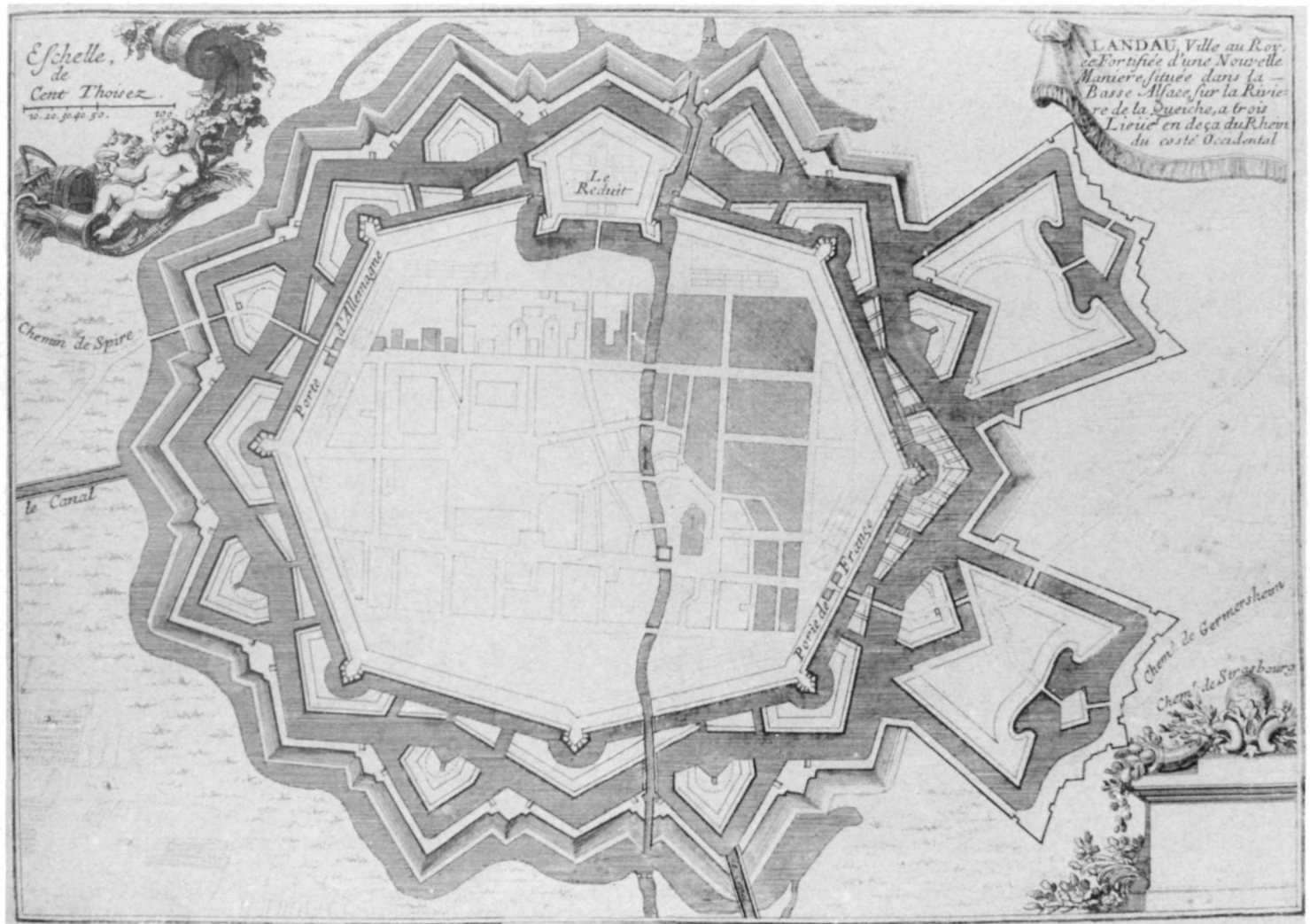
51 Villefranche-de-Conflent. Bastion de la Reine. Unusually high embrasures protected gunners. Note also masonry traverse screening interior of bastion (upper right) and covered rampart on left. (Photo by author.)



52 Besançon (Doubs). *Tour bastionnée* of Vauban's so-called "second system." (Photo by author.)

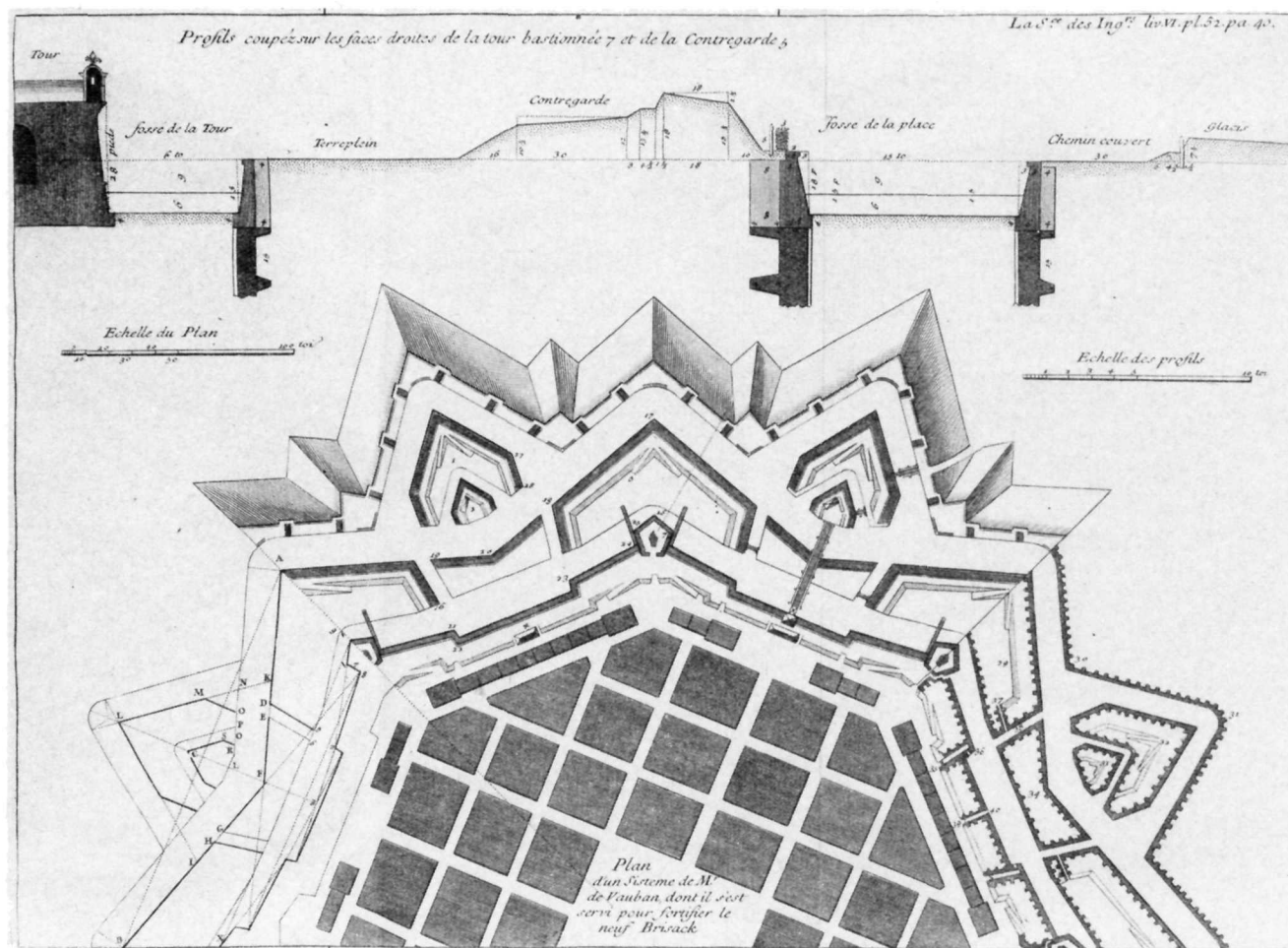
53 Entrevaux (Alpes-de-Haute-Provence). *Tours bastionnées* added by Vauban to the medieval wall at the river's edge. The zigzag, protected communication, interspersed with traverses, leads to the commanding height above the town. (Photo by author.)





54 Landau (Germany). Vauban's "second system": *tours bastionnées* with detached bastions covering them. Conventional bastion forms are used in the horn-works at right. (De

Fer, *Force de l'Europe: Introduction à la fortification* [Paris, 1695], p. 127.)



55 Neuf-Brisach (Haut-Rhin). Vauban's "third system" of *tours bastionnées* set in a curtain which itself has re-entrants to provide flanking fire. The towers are covered by counter-guards or detached bastions; *demi-lunes* retrenched with redoubts are on every front, with *tenailles* screening the

curtains. The escarp of the counterguard is demi-revetted, the top of the masonry being crowned with a hedge of thorns, behind which is a palisade. (Belidor, *La science des ingénieurs dans la conduite des travaux de fortification et d'architecture civile* [Paris: Jombert, 1729], Bk. 6, p. 40.)



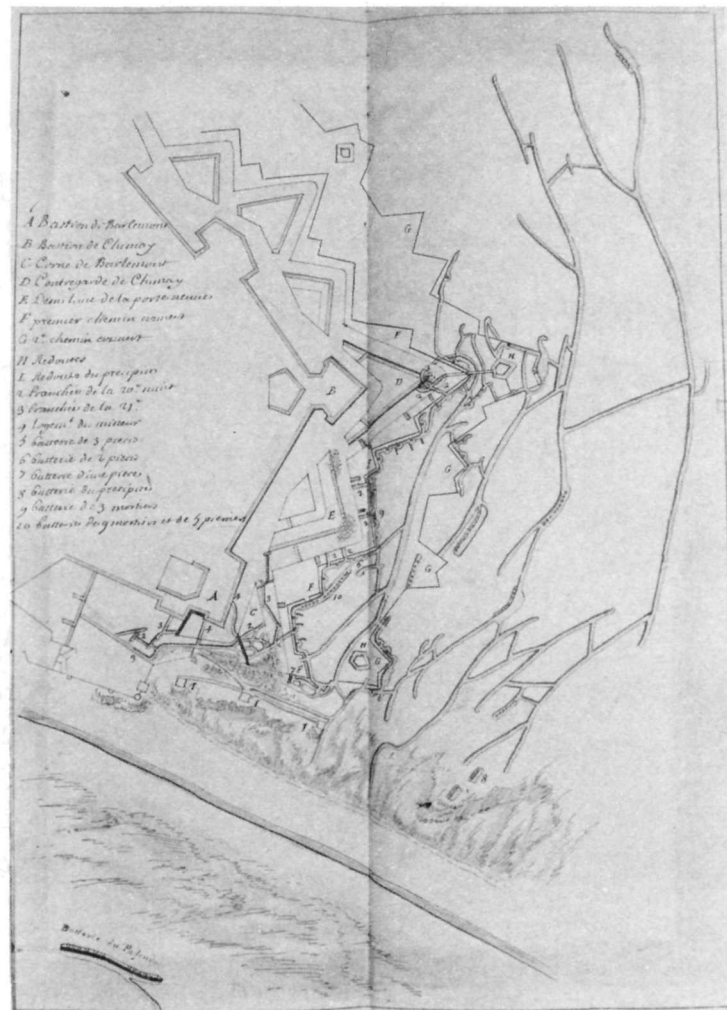
56 Neuf-Brisach. Increased flanking fire. The re-entrant in the curtain, with its casemated artillery position, is in left foreground; the *tour bastionnée* with additional embrasures is upper centre; counterguard at right. (Photo by author.)



57 Neuf-Brisach. Defence in depth: *demi-lune* in foreground, with *tenaille* revetment appearing above it (centre left); face and flank of counterguard at right. At rear, the curtain of the main *enceinte*; roof of barracks on skyline. (Photo by author.)

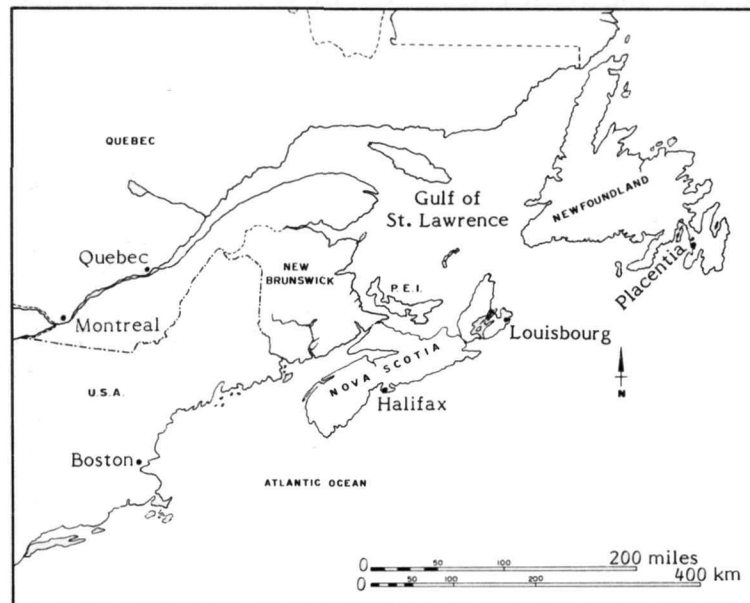
58 Philippsburg (Germany). The siege of 1688, directed by Vauban. The town occupied a powerful position overlooking the Rhine, passage of which was guarded by a bridgehead on the opposite bank. The inset shows the approach to the town covered in turn by a horn-work and a crown-work on the rising ground. Once the bridgehead had been taken, the French crossed the river and spread out on both sides of the approach in order to take first the horn-work, then the crown-work. At the same time, another attack was opened on the defences of the town itself. Note the positioning of the artillery batteries used to silence flanking fire at long range and to breach the walls at close range. The upper attack shows the use of batteries in conjunction with the classic "three parallels" approach, the third parallel being at the foot of the glacis. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)

59 Luxembourg (Duchy of Luxembourg). Detail of the siege of 1684, conducted by Vauban. The largest and most powerful fortress of the Spanish Netherlands, Luxembourg was situated on high ground with rocky ravines on three sides. All approaches were difficult, and only the northwest one offered sufficient open ground for extensive siegeworks. Vauban coordinated attacks on five fronts simultaneously to prevent the defenders from being able to concentrate their forces. The main attack was on the northwest, supported by artillery on the Pasendal heights across the river. The three parallels, communicating trenches and battery locations enveloped the front in a wide arc. Note also the saps pushed forward to crown the glacis and the mines at the salient of the counter-guard D. After the siege, Vauban considerably strengthened the defences of the town and added detached works on all neighbouring heights. Covering the ground over which he had been able to advance the main attack, he established a ring of powerful redoubts in the *places d'armes* of the pre-existing outer glacis. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)

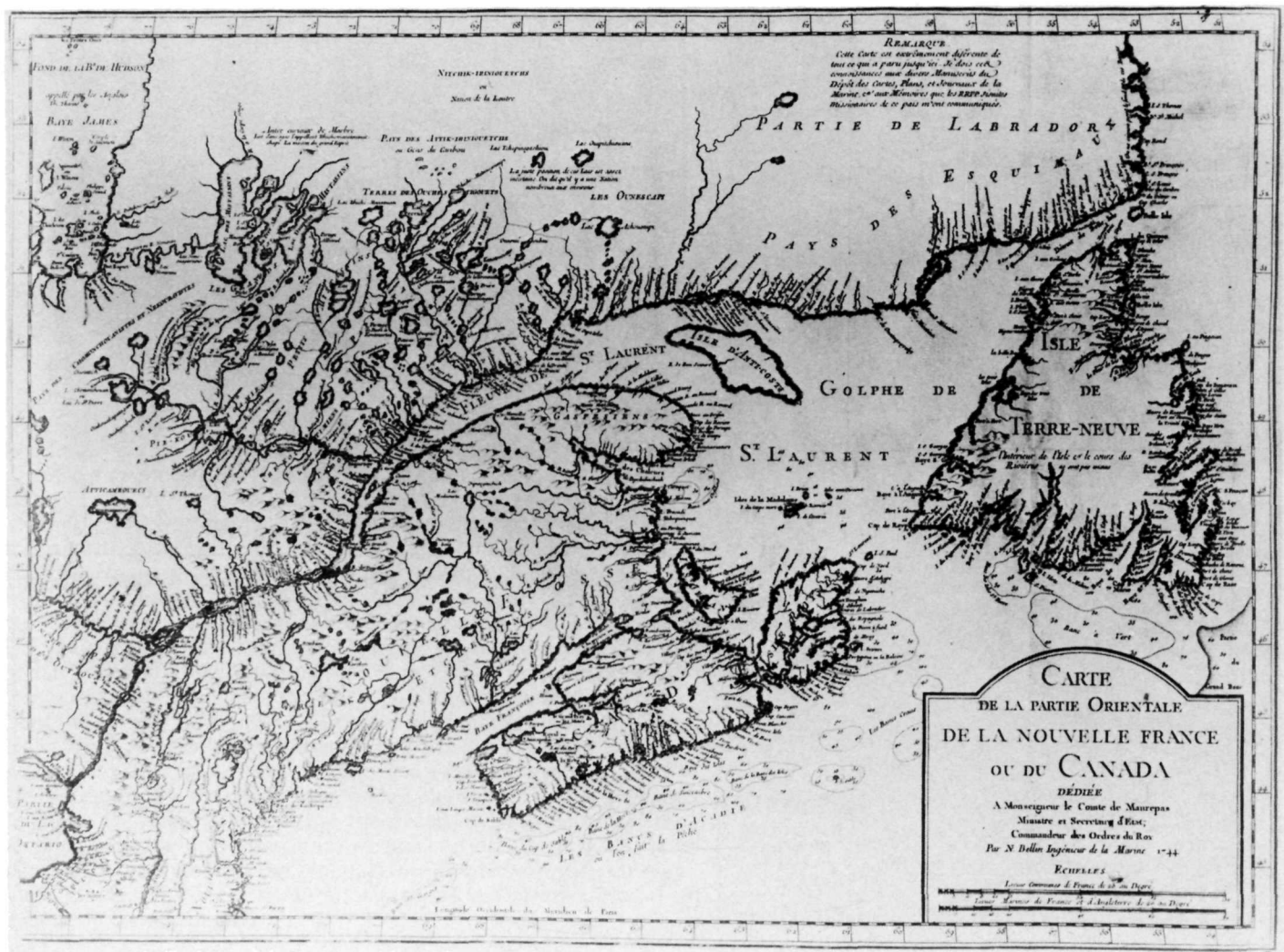




60 Montmédy. Traverses on the covered way to provide protection against enfilade, especially *tir à ricochet*, from the commanding ground beyond the ramparts. (Photo by author.)

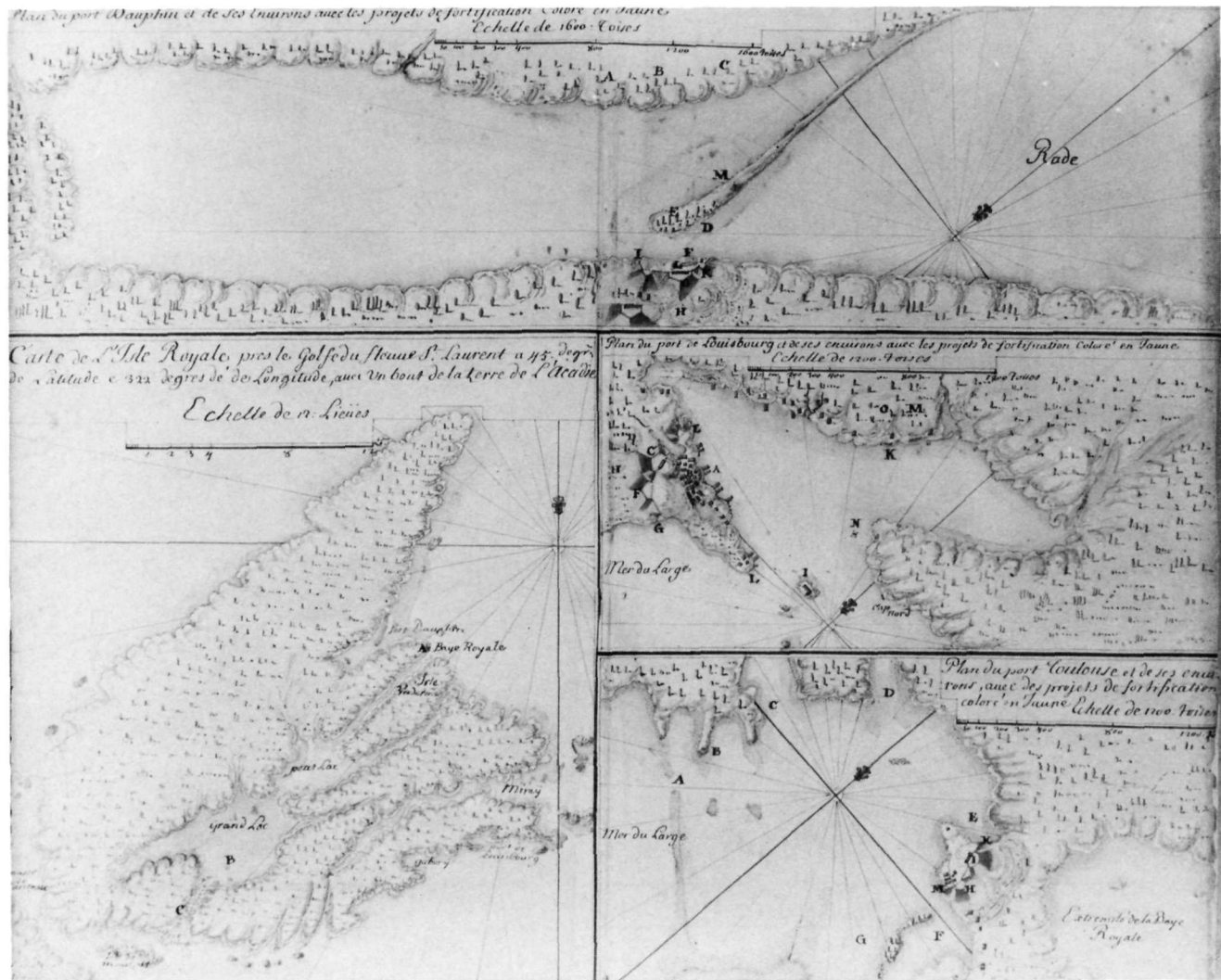


61 Eastern Canada and the Northeast United States. (Drawing by T.M. Smith.)



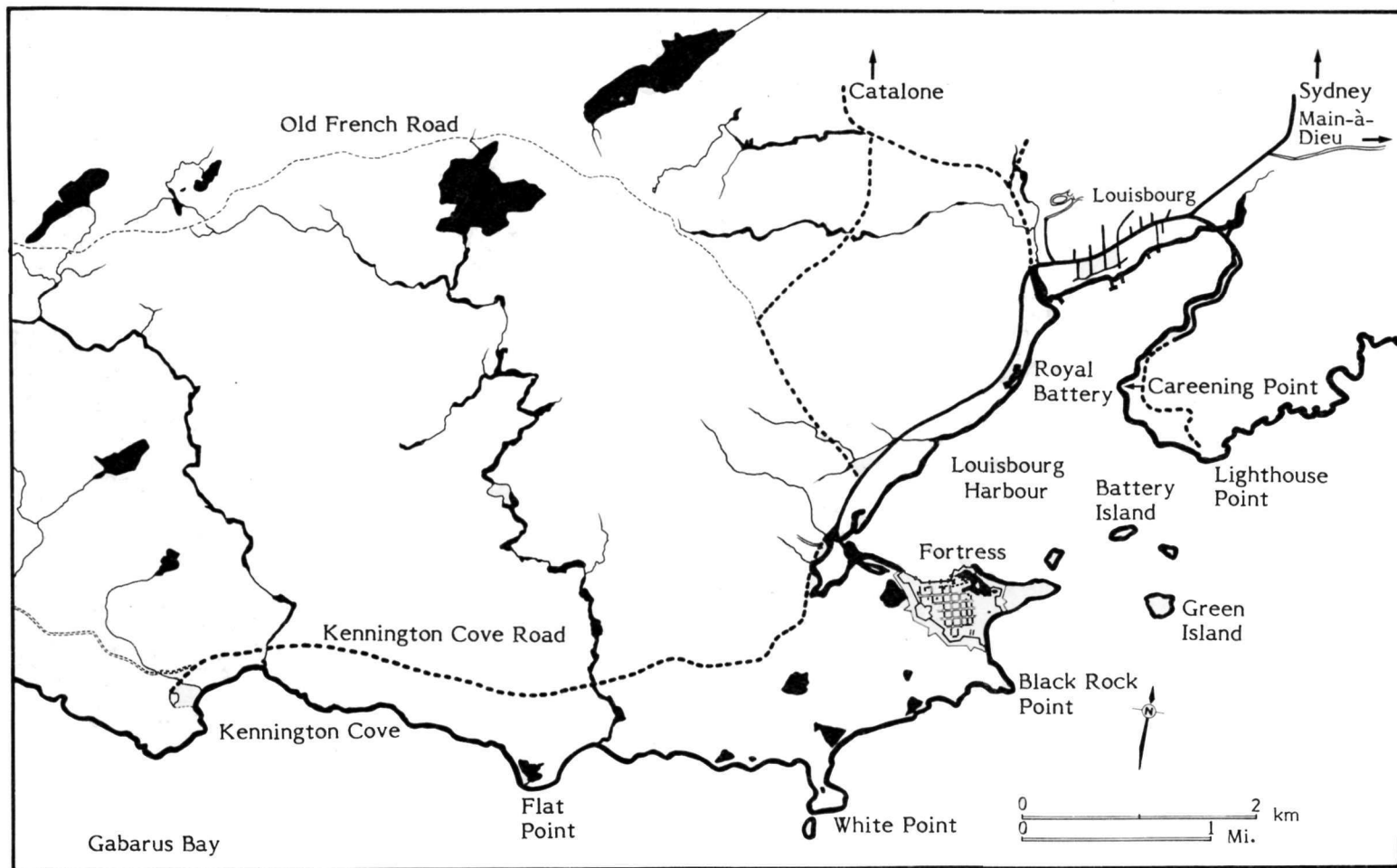
62 New France, 1744, the Gulf of St. Lawrence. The Acadian Peninsula and Cape Breton (Ile Royale) are located

bottom centre. Principal fishing banks are also shown. (Public Archives Canada, H3/900.)

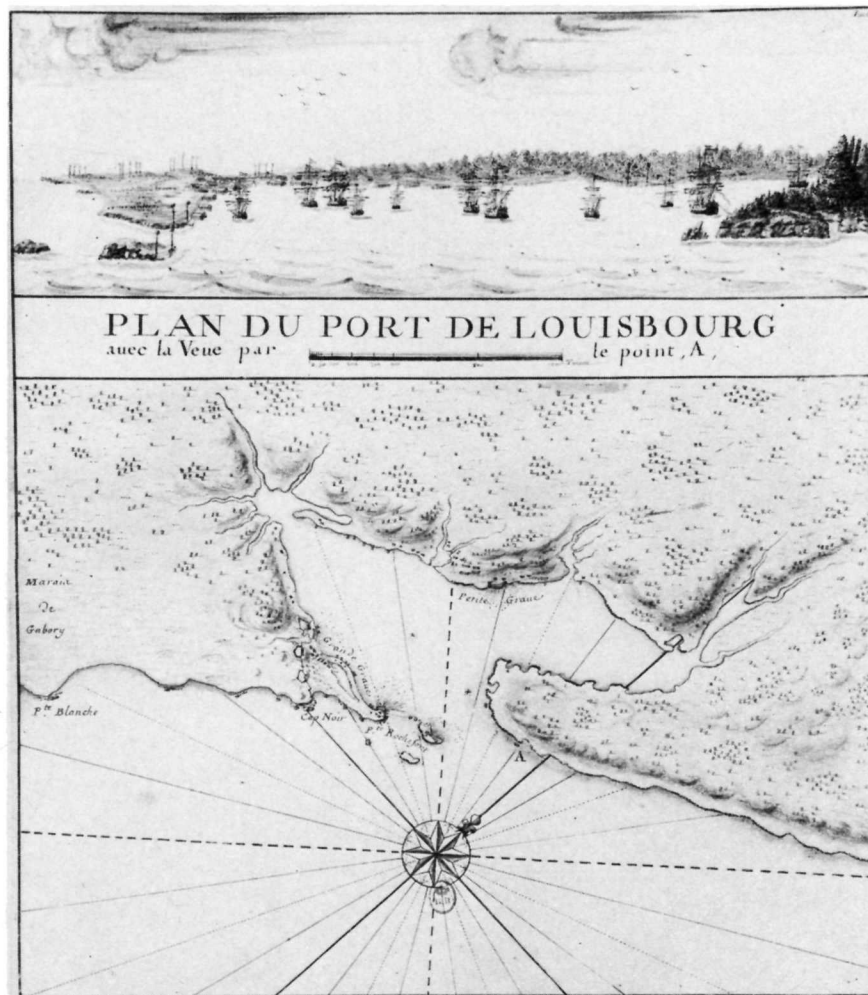


63 Ile Royale. Unsigned plan of 1717 accompanying Verville's report on his survey of the island. Proposals for fortifications at Port Dauphin (top), Louisbourg (centre) and

Port Toulouse (bottom) are shown. (Archives du Génie, Vincennes.)

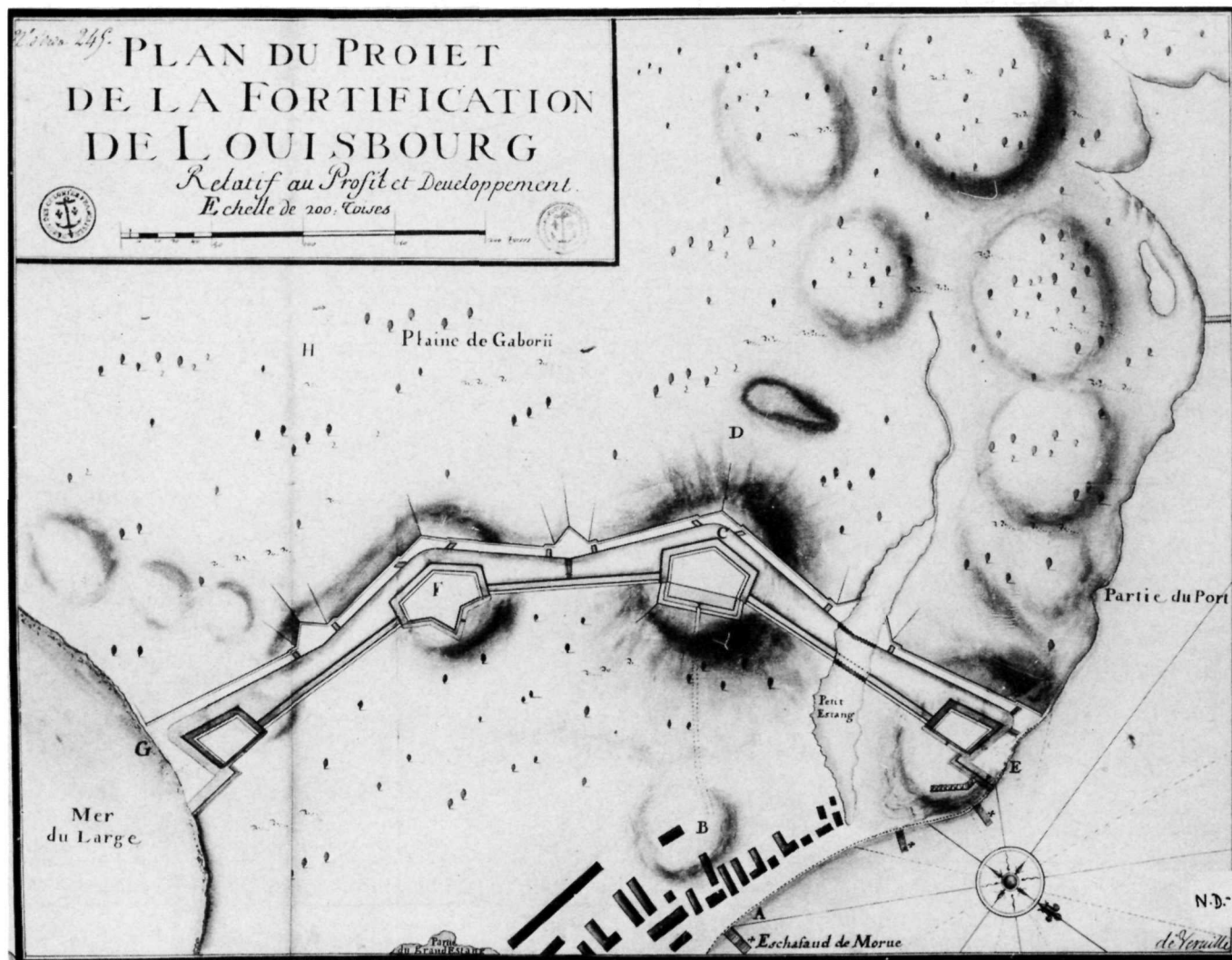


64 Louisbourg and environs. (Drawing by S. Epps.)



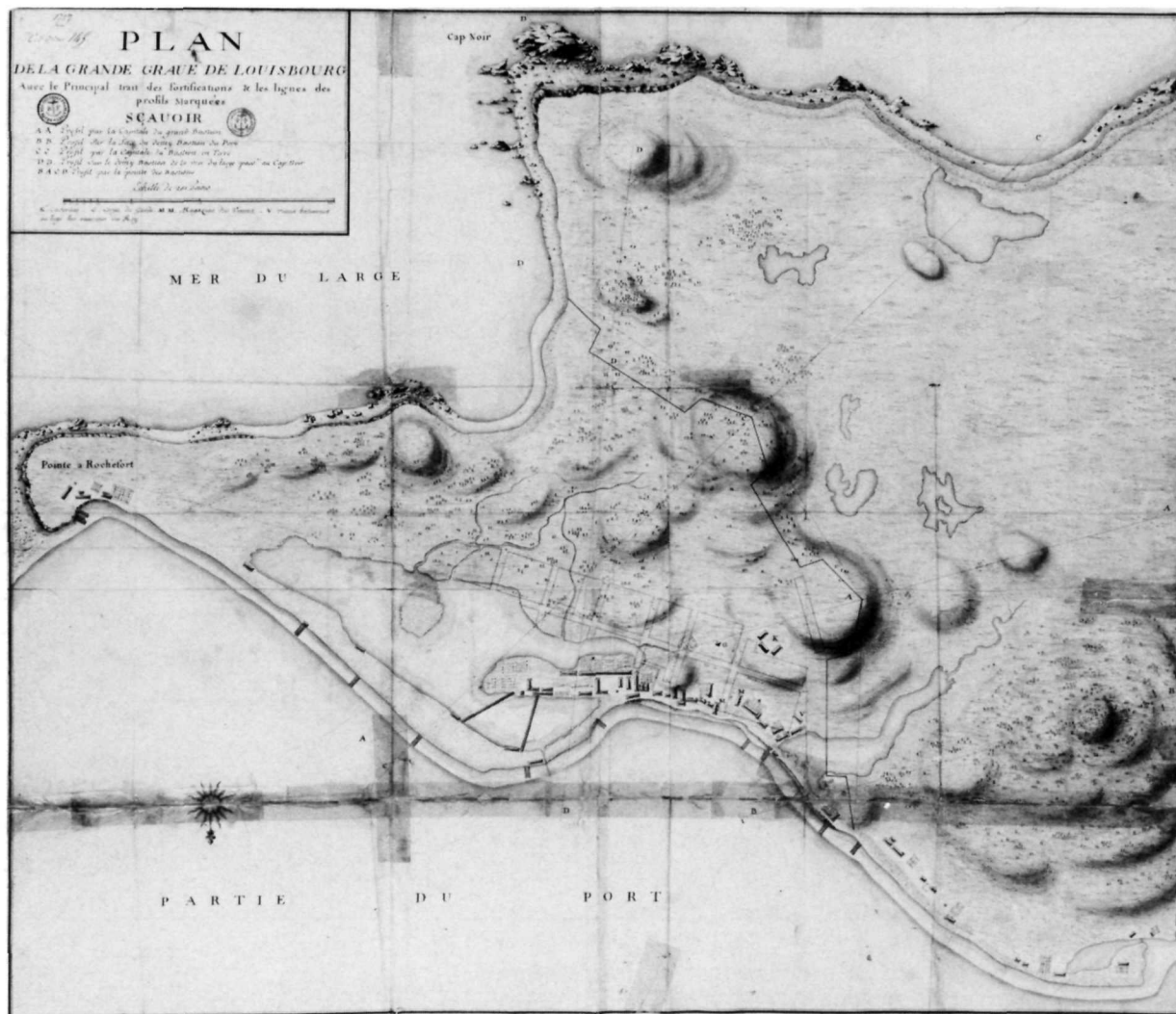
65 Louisbourg. One of the earliest proposals for defending the port. The plan is unsigned and undated, but the view above is virtually identical to one dated 1717 (BN, CP, SH, 131-11-2D). Location of the bastions and batteries is indi-

cated by the posts on the shore and skyline. In plan, the central *redoute bastionnée* and the other landward defences are already represented. The crudely drawn plan is inaccurate in detail. (Bibliothèque Nationale, Paris.)

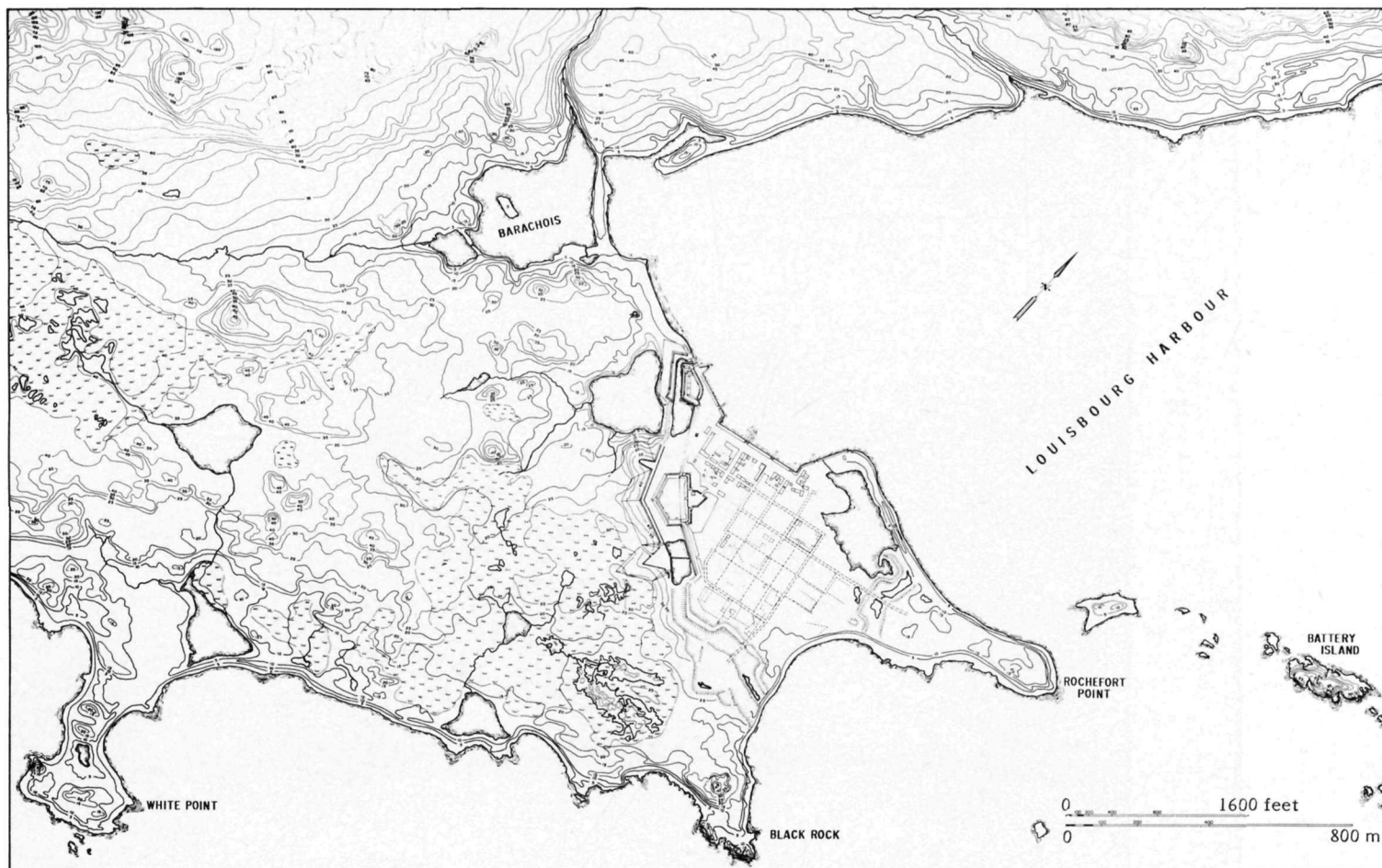


66 Louisbourg defences. Verville's first detailed proposal. The plan is undated, but does not relate to what was actually built and must have been drawn at the time the engineer

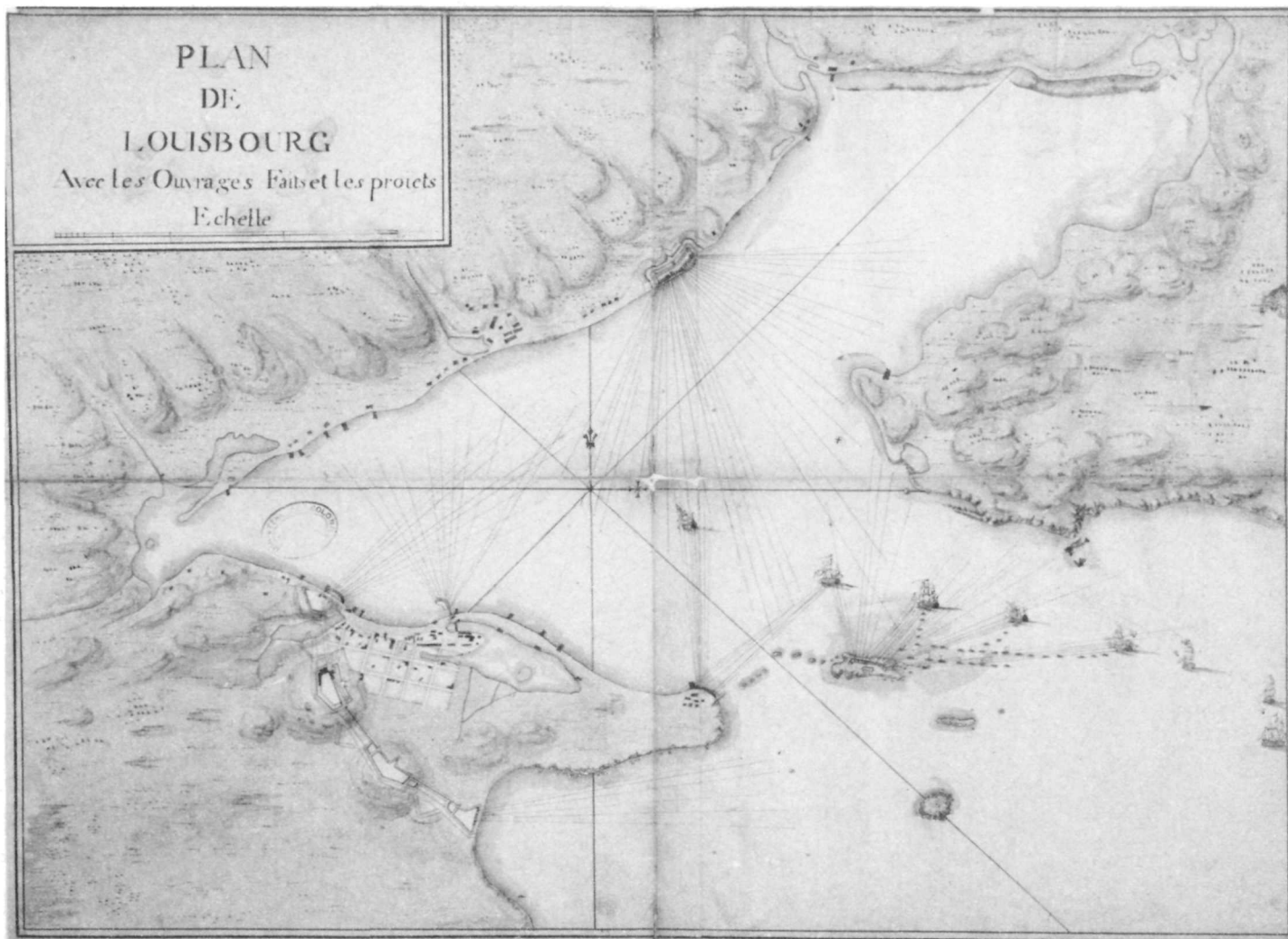
prepared the first *devis*: 1716-18. (Archives Nationales, Paris.)



67 The first trace of the *enceinte* to which the bastions were built. The partial polygon from which the bastions were developed and the capitals of the two principal bastions are

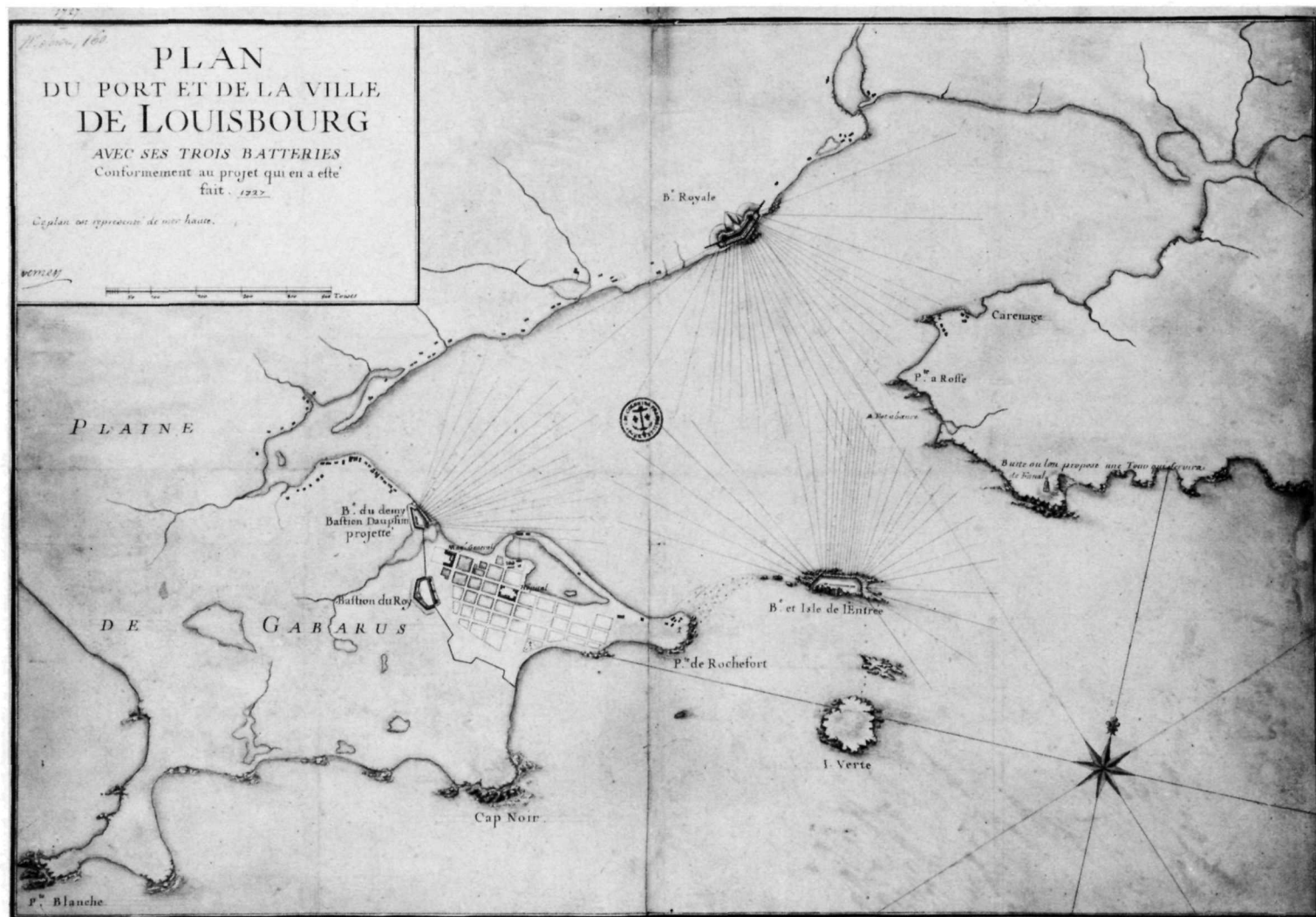


68 Fortress area contour plan. Five-foot contour intervals based on 1962 survey. (Drawing by T.M. Smith.)

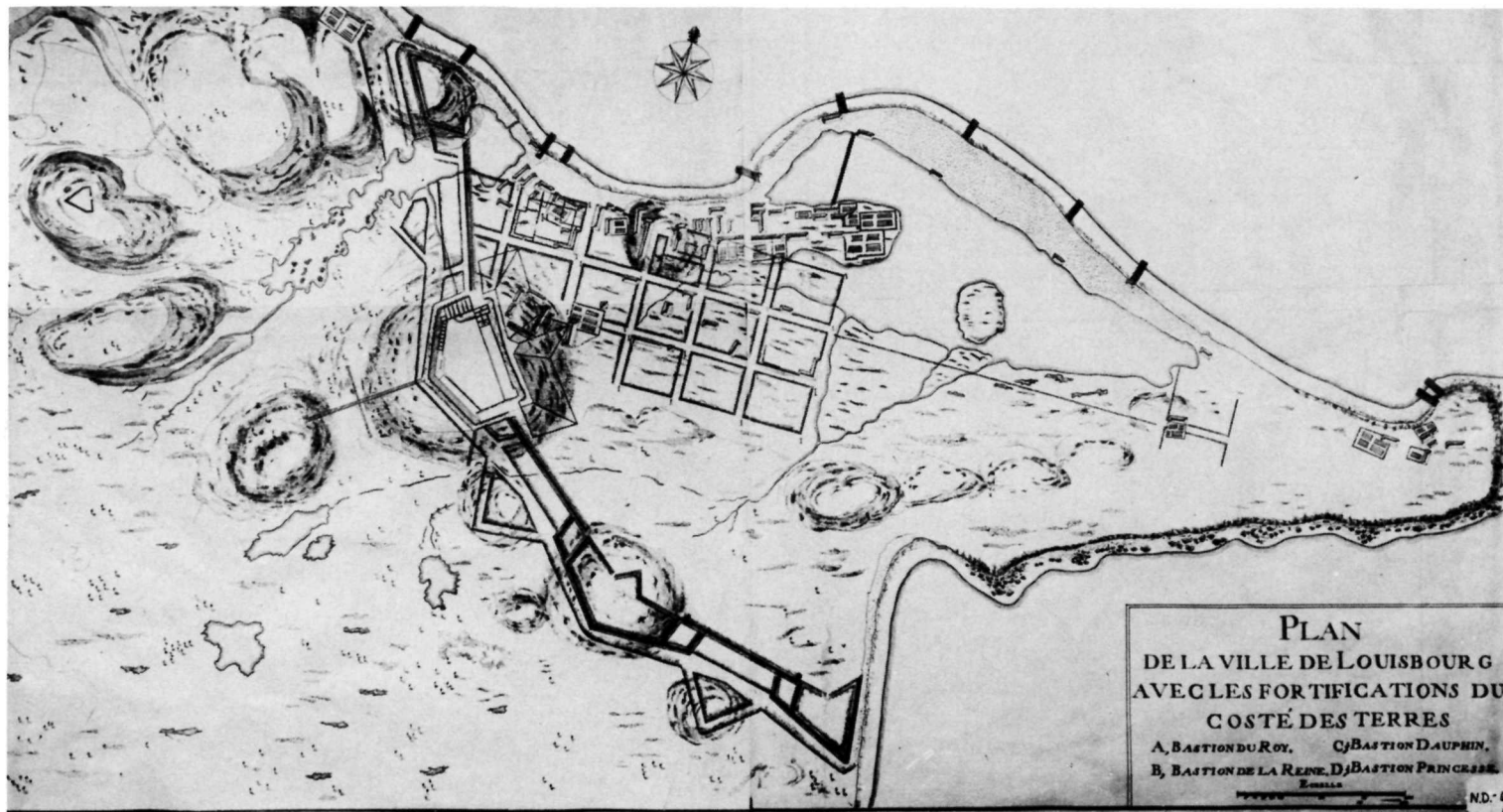


69 Harbour batteries. Initial proposals. The Royal and Island batteries are shown very much as built, but the others were modified or dropped. The plan is unsigned and undated,

but as the right face and flank of the King's Bastion are shown as having been built, also a part of the barracks, a date of 1719-20 may be ascribed. (Archives Nationales, Paris.)

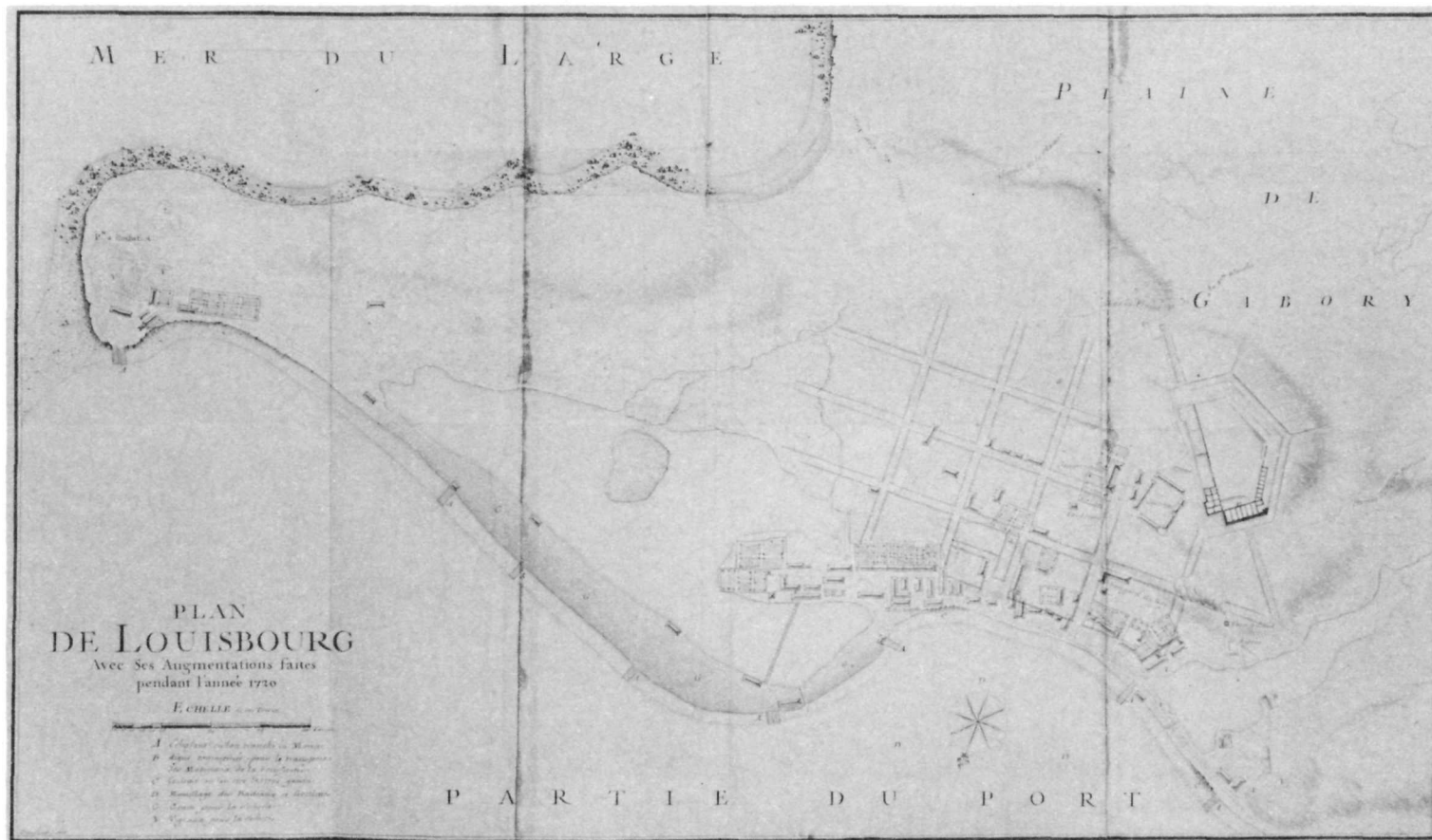


70 Harbour defences. Verrier's 1727 proposals, which were realized as shown, with the later addition of a fourth battery on the Pièce de la Grave. (Archives Nationales, Paris.)



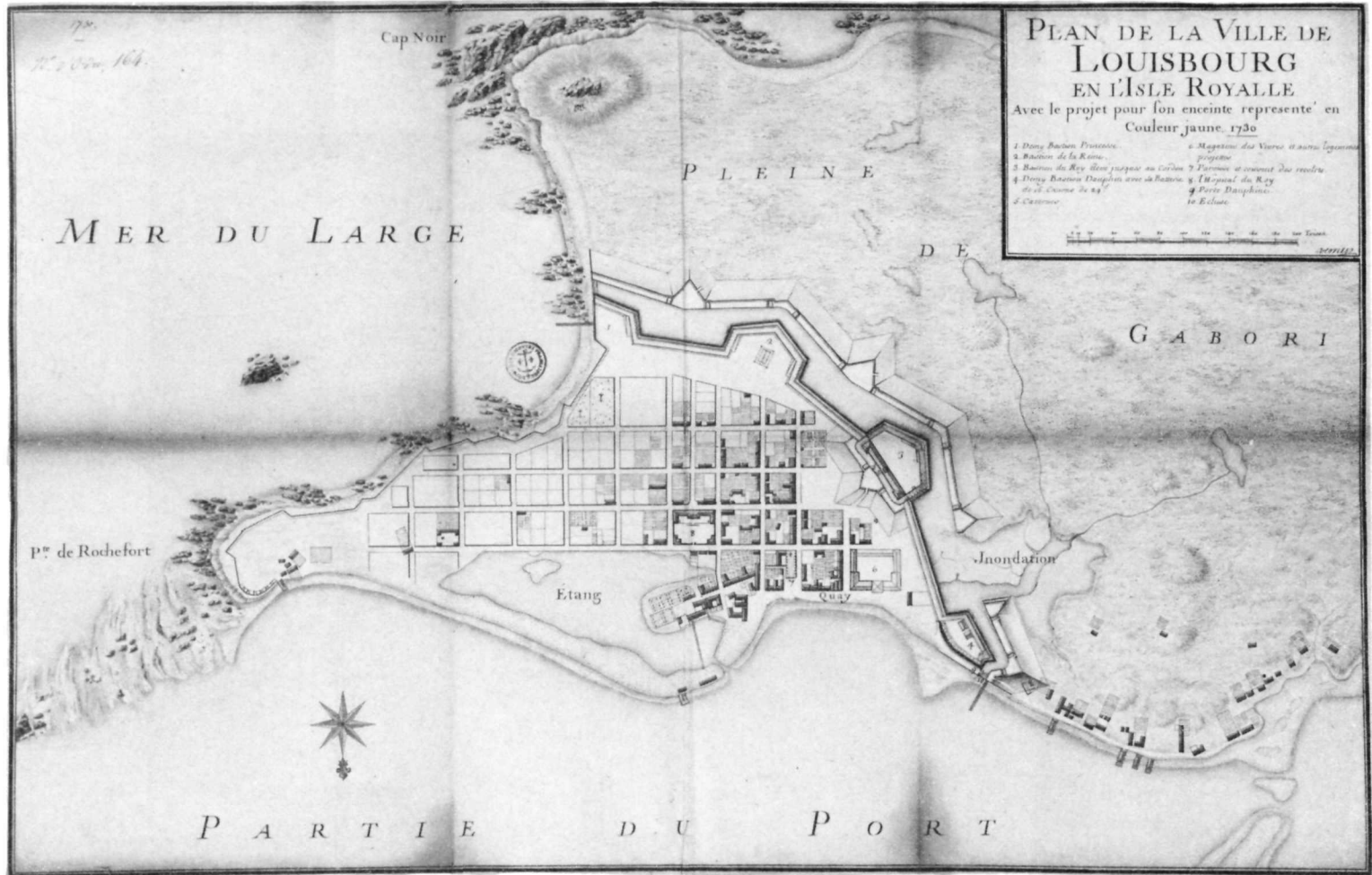
71 Progress on the landward *enceinte*. The King's Bastion is shown as it was actually built; the other bastions are still schematic proposals. The cruciform mine gallery on the capital line of the King's Bastion is already included in the plans. A triangular redoubt was proposed (but never built) for

one of the hills opposite the King's-Dauphin curtain. Plan is undated and unsigned, but the construction already shown places it in the period 1719-20. (Bibliothèque Nationale, Paris.)



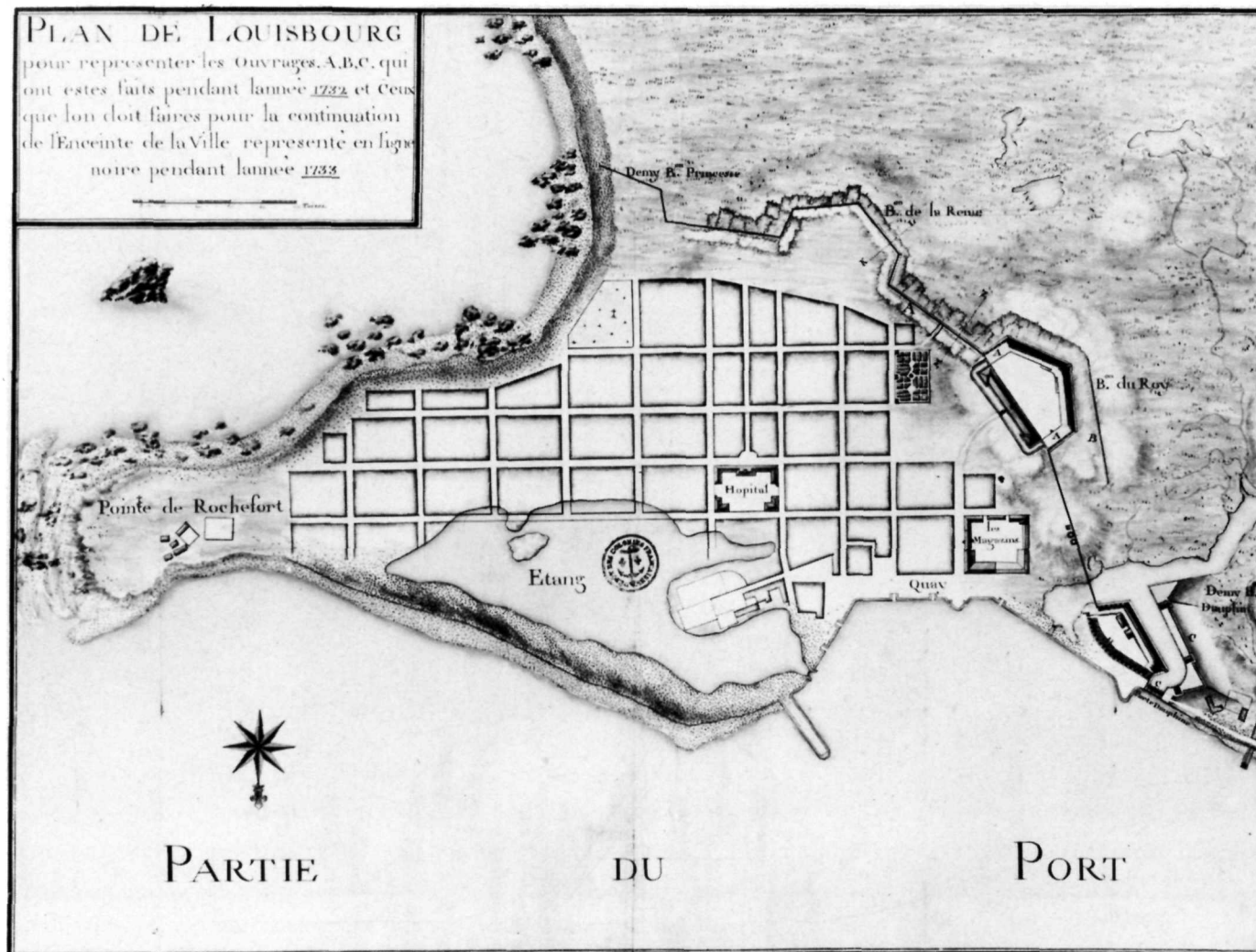
72 Construction progress, 1720. Boucher's plan shows the right flank and casemates of the King's Bastion as having been built, also the casemates along the right face and the north wing of the barracks. The plan is interesting for its

depiction of the temporary government quarters and habitations, as well as the initial street layout of the town. (Archives du Génie, Paris.)



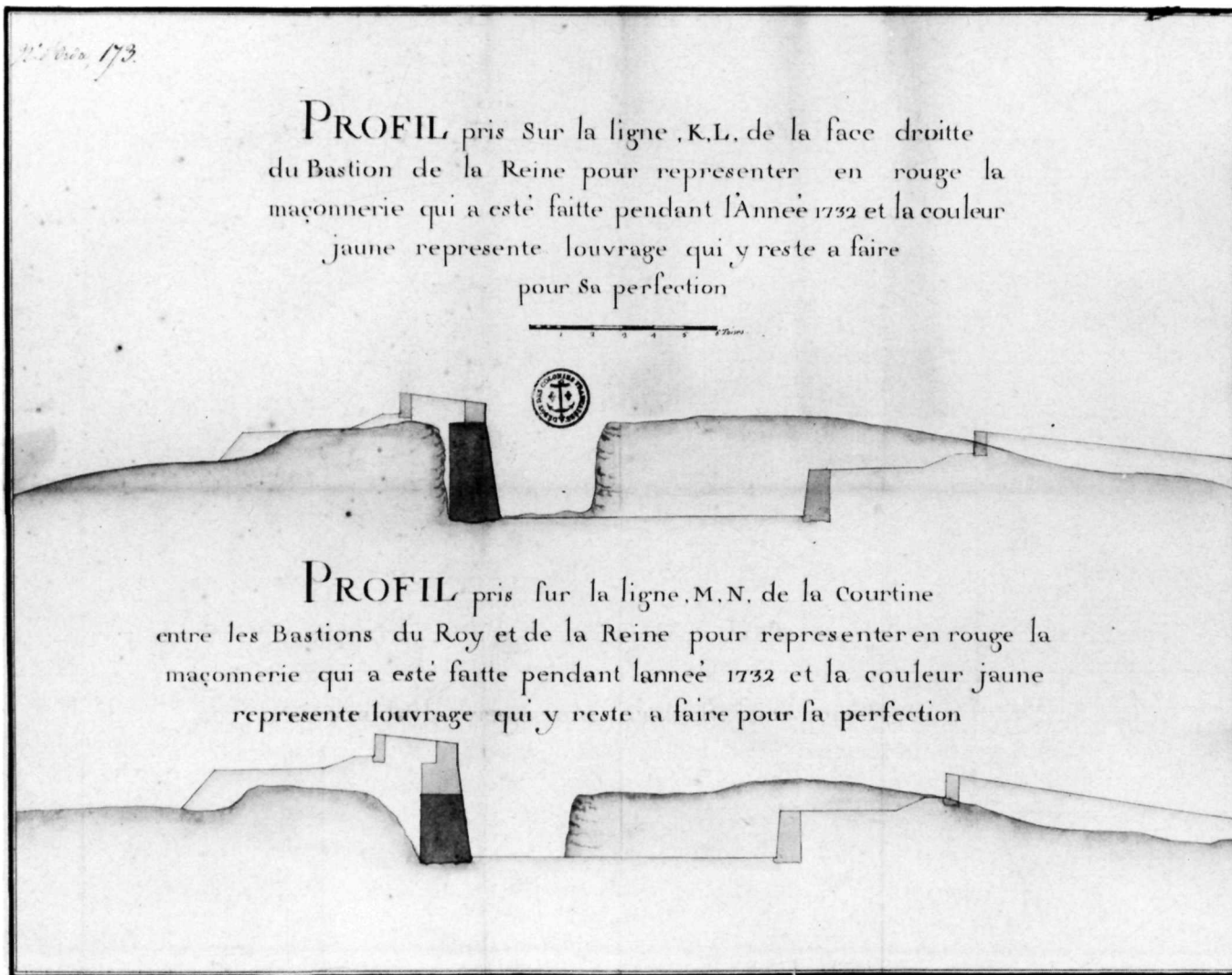
73 Construction proposals. Verrier's 1730 plan is particularly interesting for the defences envisaged extending from the Princess Bastion (depicted as a complete bastion, unlike the

irregular work actually built) around Rochefort Point. The proposed curtain terminates in a battery on the point (Archives Nationales, Paris.)



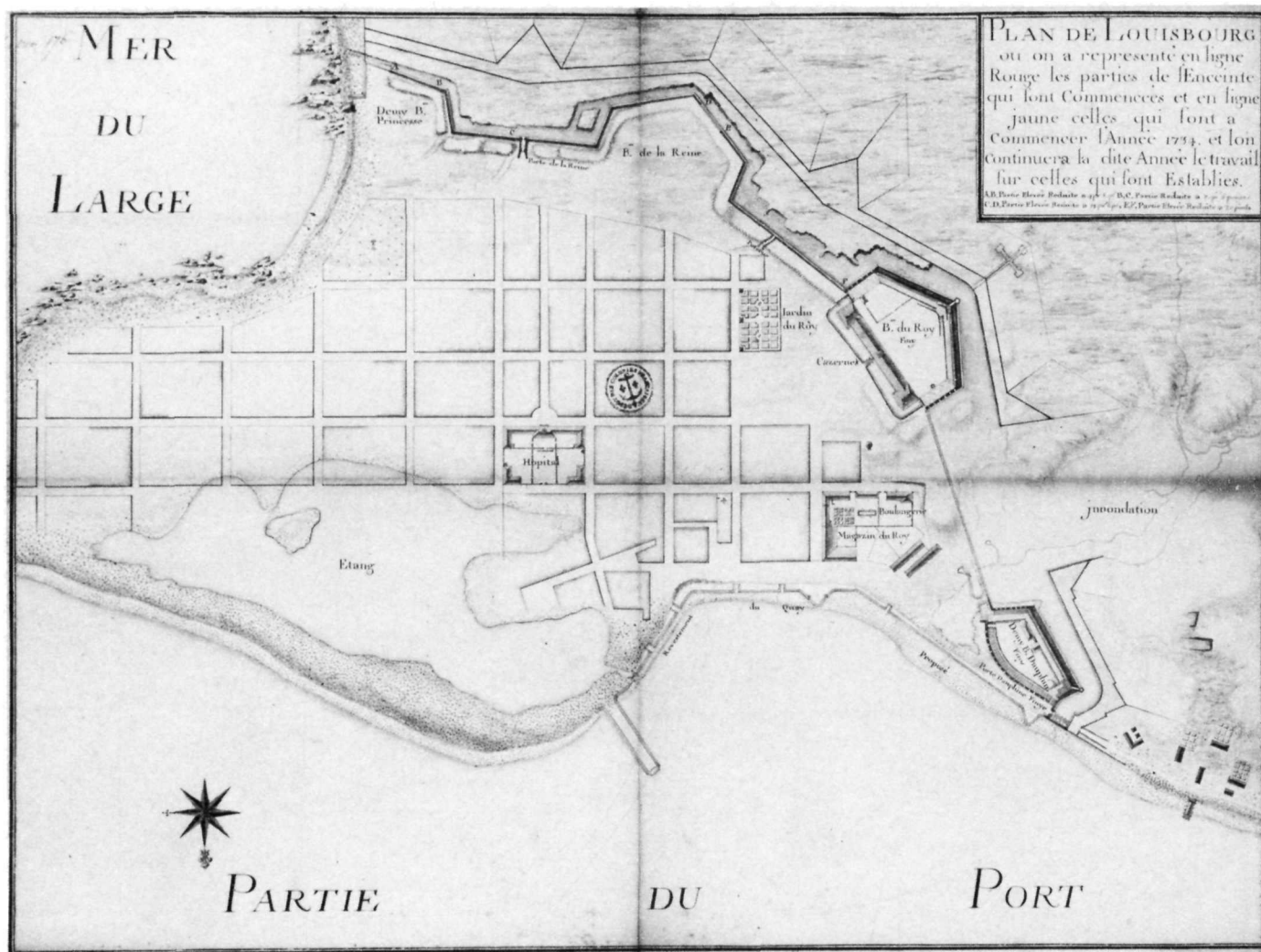
74 Construction progress, 1732. Excavation of the ditch in front of the King's and Queen's bastions and curtain is depicted. Note the proposed configuration of the quay, with

two redans and a mole projecting from the gravel strand. (Archives Nationales, Paris.)



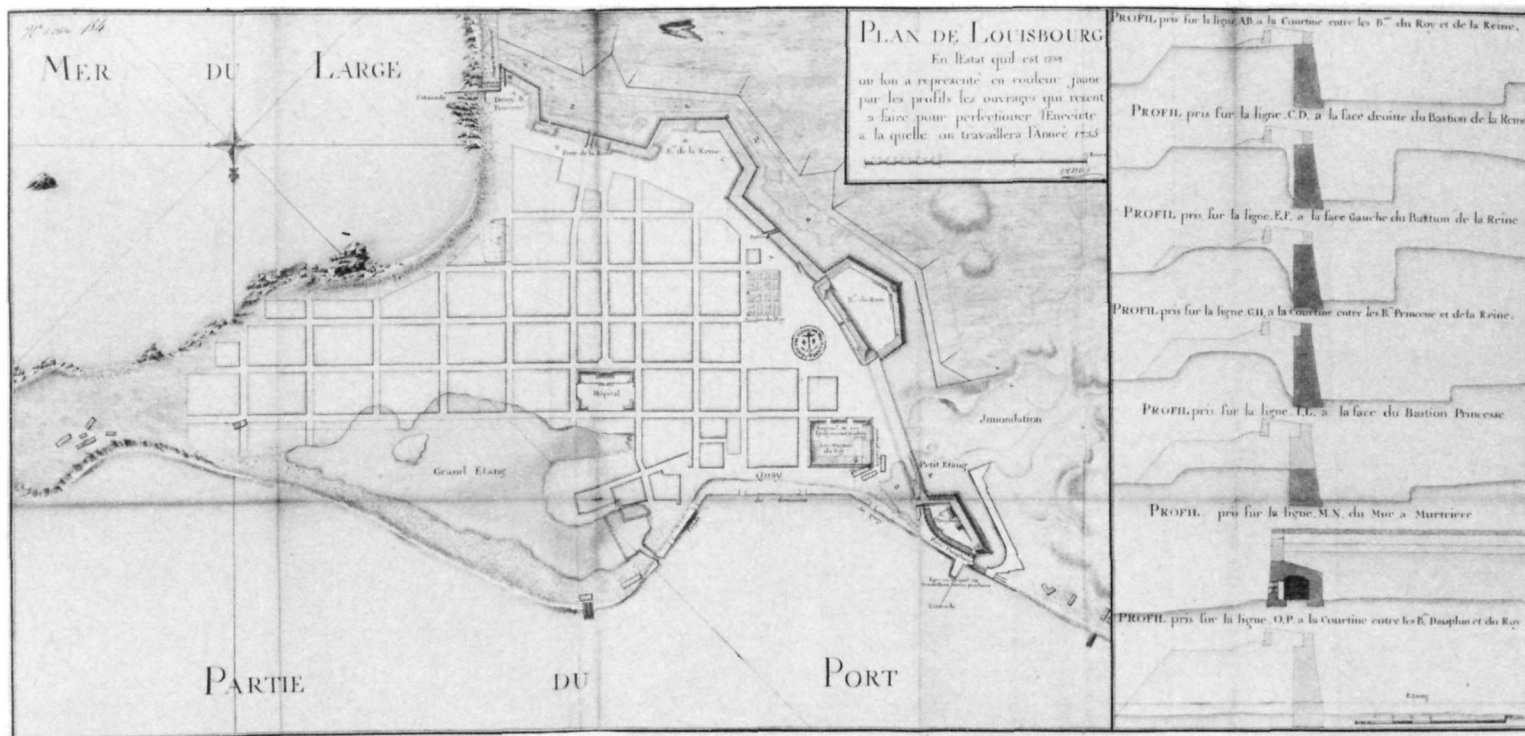
75 Sections through the ramparts: right face of Queen's Bastion, King's-Queen's curtain. The extent to which the

ramparts make use of natural ground levels or rely on fill is depicted. (Archives Nationales, Paris.)



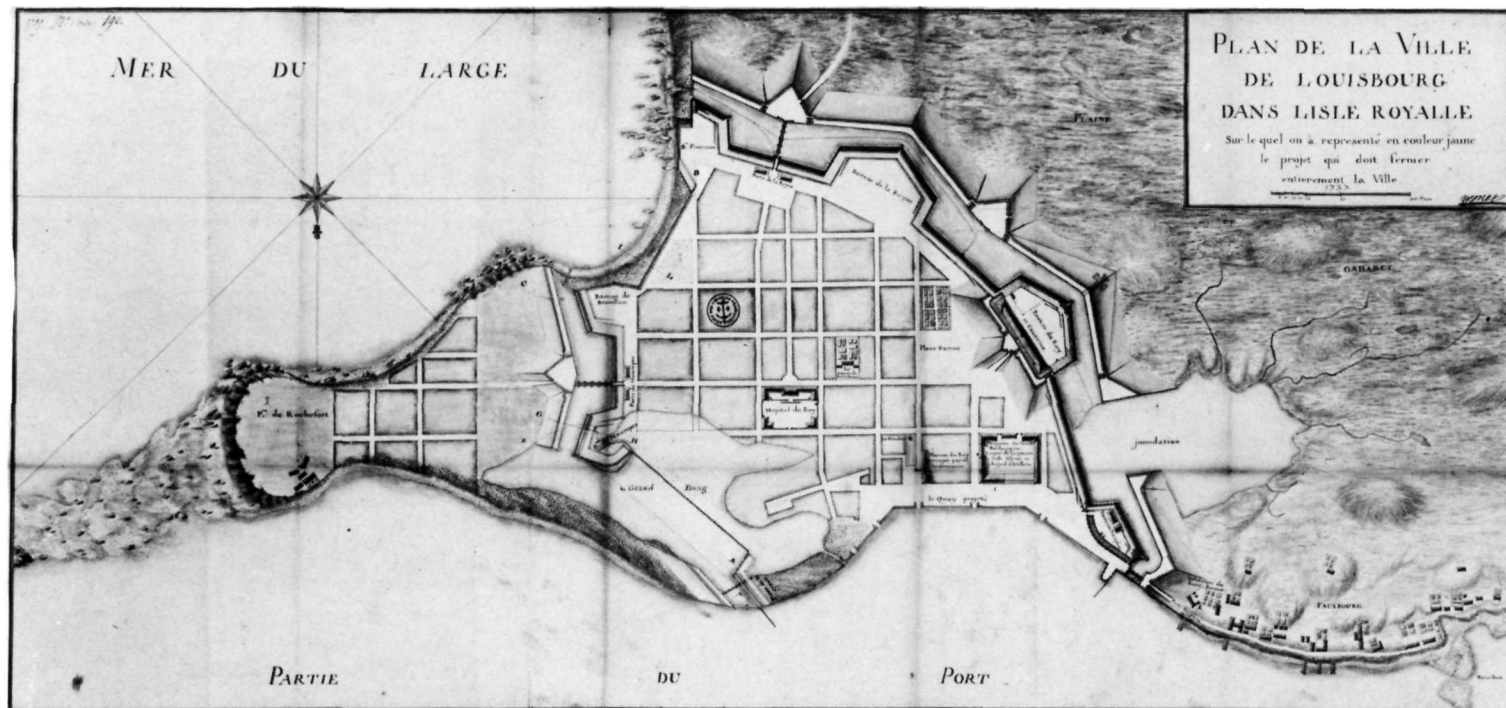
76 Construction progress, 1733. The ditch from the King's to the Princess Bastion is well under way. Note that the

Princess Bastion is depicted as a foreshortened half-bastion, as it was to be built. (Archives Nationales, Paris.)



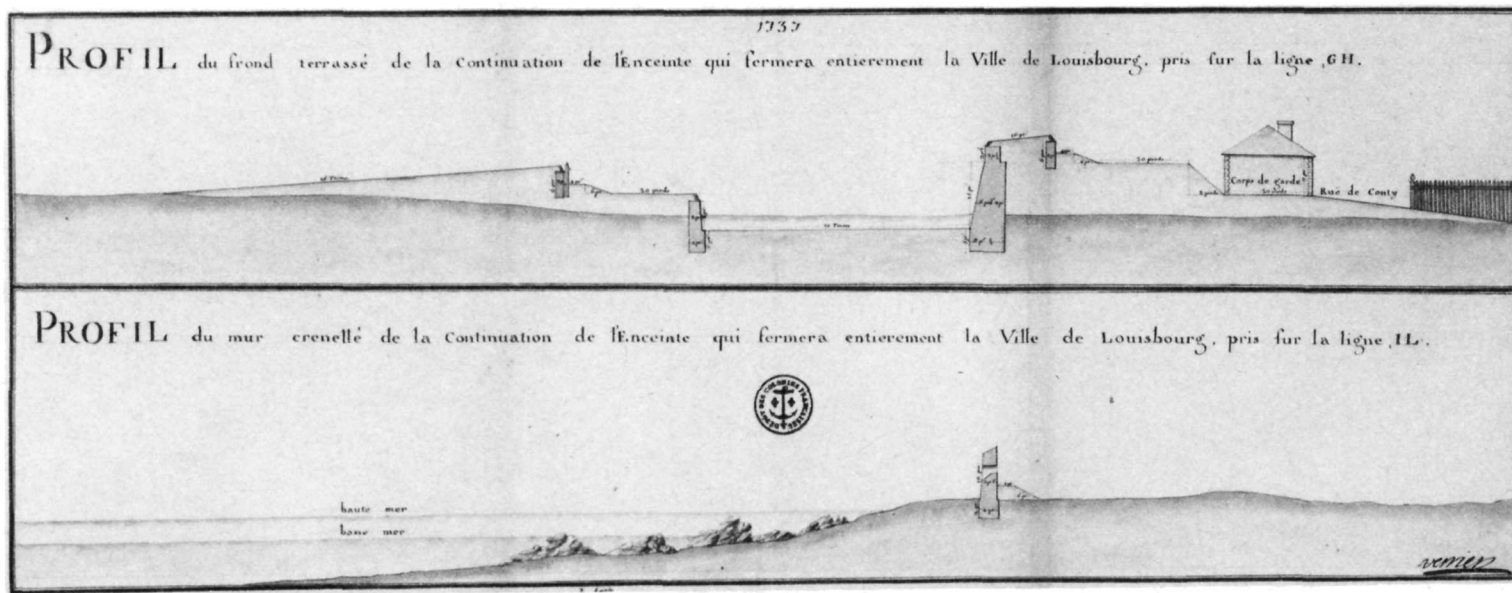
77 Construction progress, Verrier, 1734. The plan is of interest principally because of the accompanying sections. Note, in particular, section MN (second from bottom),

through the loopholed wall of the Princess Bastion, and the modified project of the quay, with the *éperon* in front of the Dauphin Bastion. (Archives Nationales, Paris.)

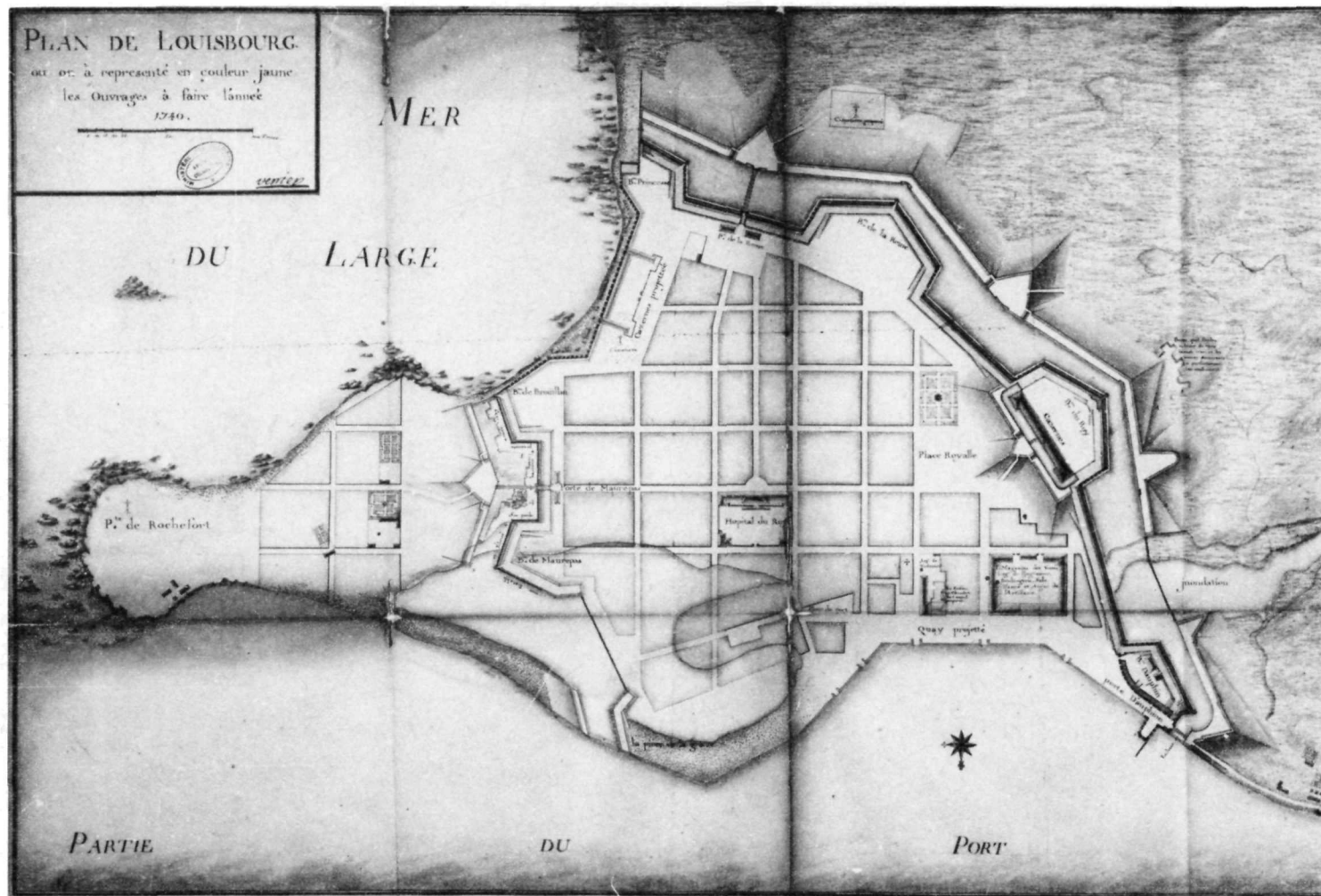


79 Construction proposals, Verrier, 1737. Modifications to the proposed new fortifications at Rochefort are apparent when compared with the preceding plan. Note also the

battery proposed for the gravel strand at the end of the quay (Pièce de la Grave). (Archives Nationales, Paris.)

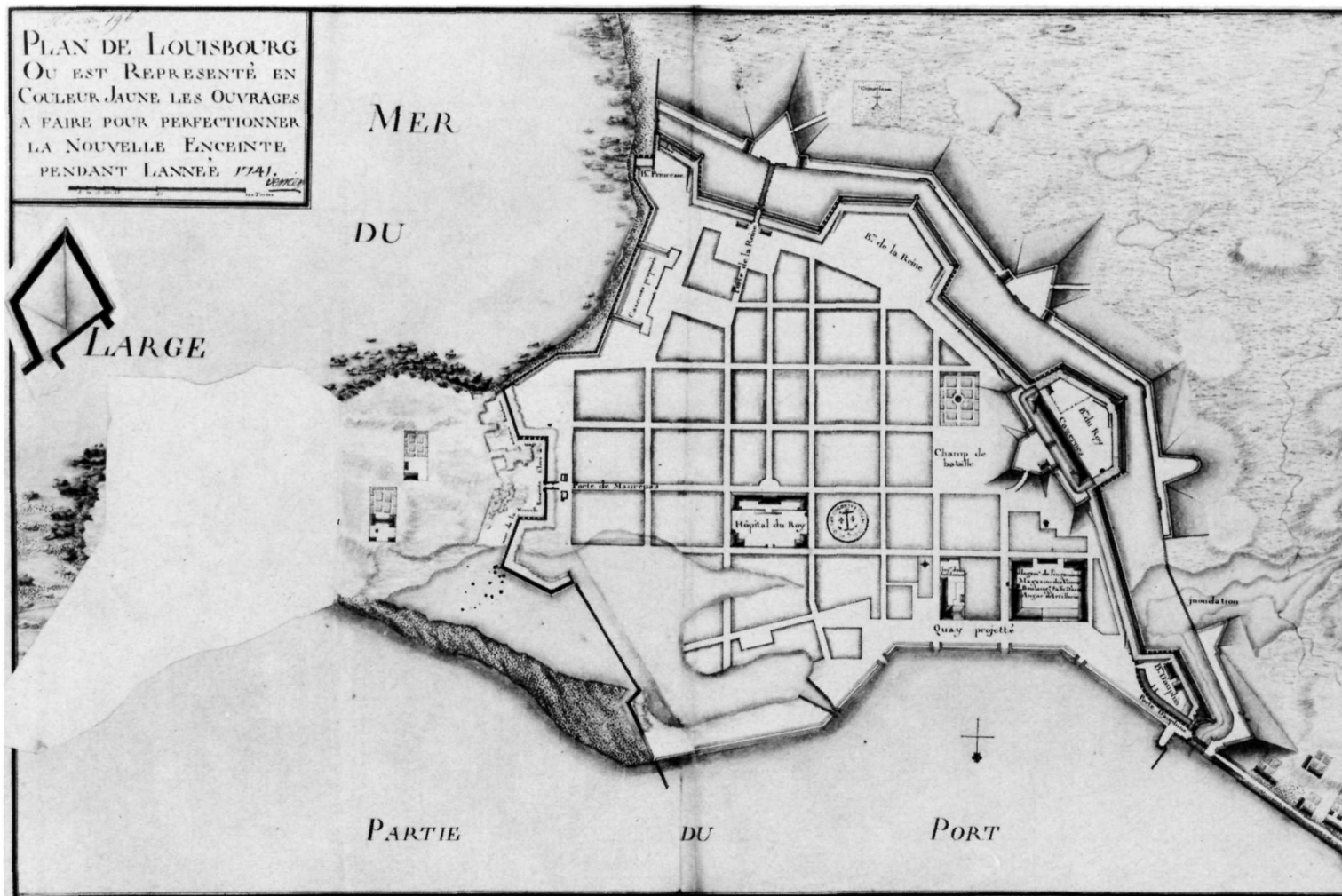


80 Construction proposals, Verrier, 1737. Profiles through the new fortifications (locations are indicated on preceding plan). (Archives Nationales, Paris.)



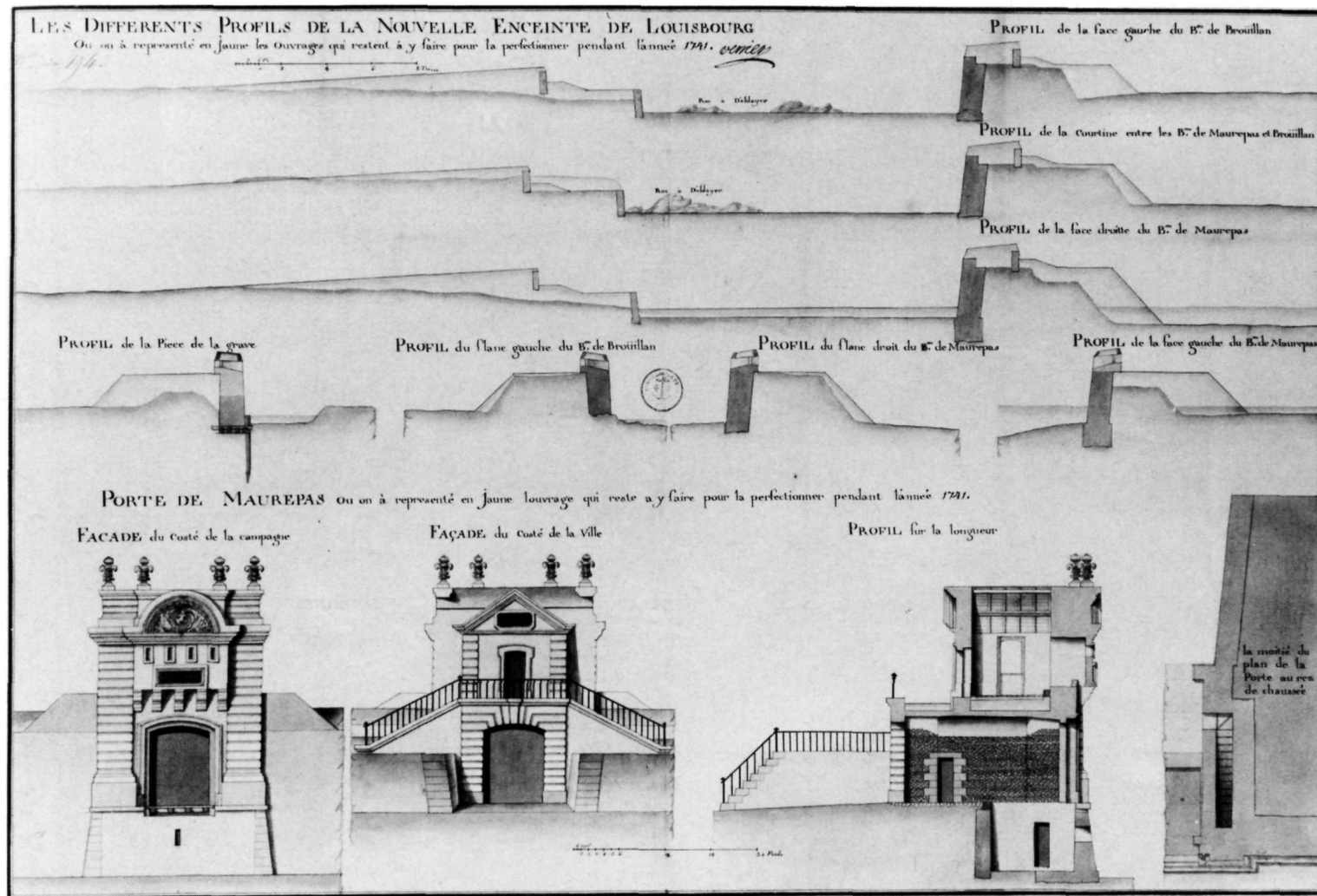
81 1740 construction proposals, Verrier, 1739. Work is progressing on the new fortifications and *mur crenelé* between the Brouillan and Princess bastions; a new barracks is proposed (never realized) behind this wall. On the landward

enceinte, the outworks are nearing completion. The rounded *place d'armes* off the right shoulder of the King's Bastion is depicted for the first time. (Archives Nationales, Paris.)



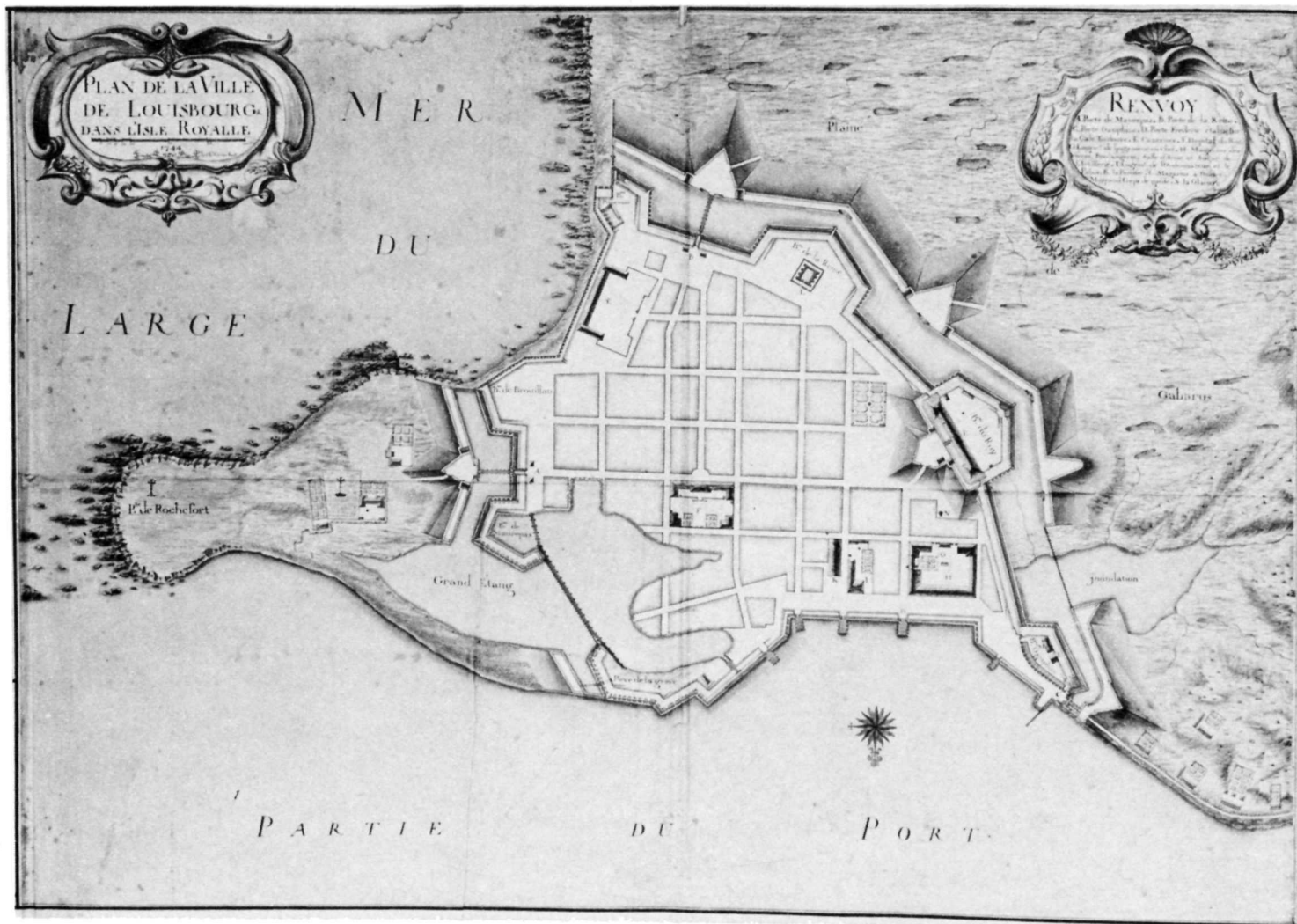
82 1741 construction proposals, Verrier, 1741. The new fortifications are virtually complete as far as the Pièce de la Grave; the ditch and outworks remain (when closed, a fold-

away flap depicts these as completed). The quay has yet to be started. (Archives Nationales, Paris.)



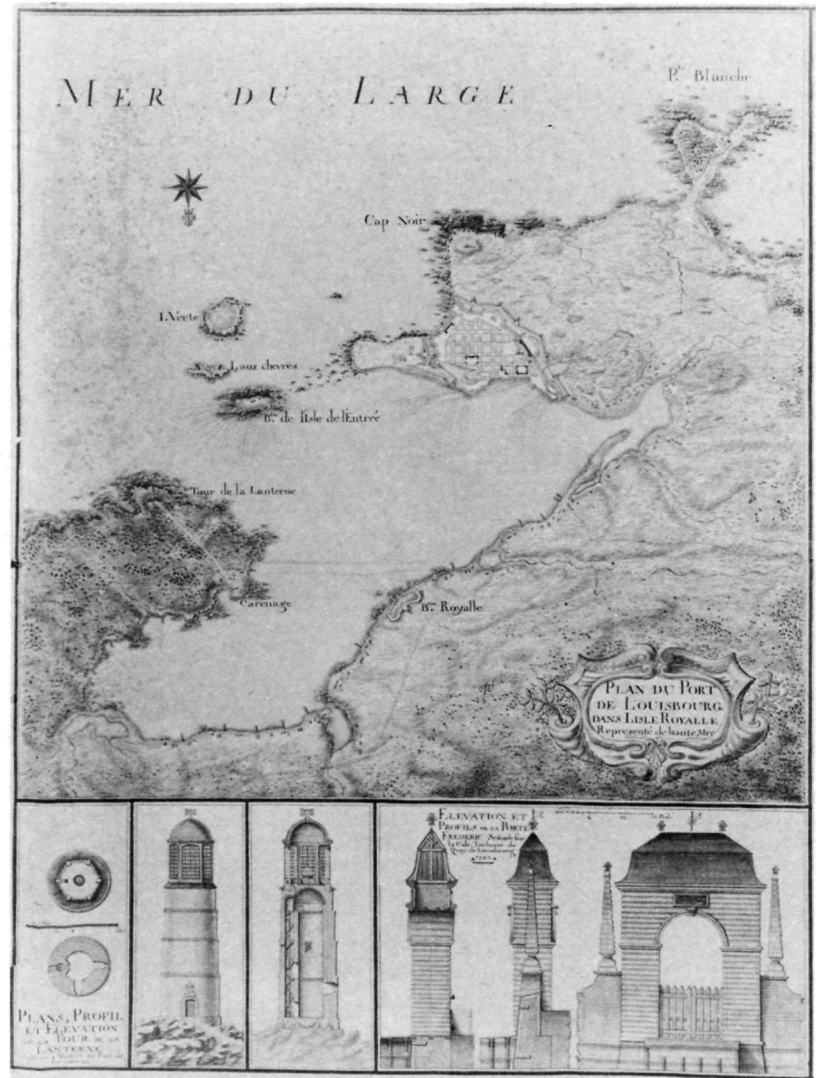
83 1741 construction proposals, Verrier. Profiles through the ramparts of the new fortifications indicate the sloping nature of the escarp and the revised form of parapets (cf.

Fig. 80). Note also the timber cribwork on which the Pièce de la Grave escarp is founded. The revised design of the Maurepas Gate is presented. (Archives Nationales, Paris.)



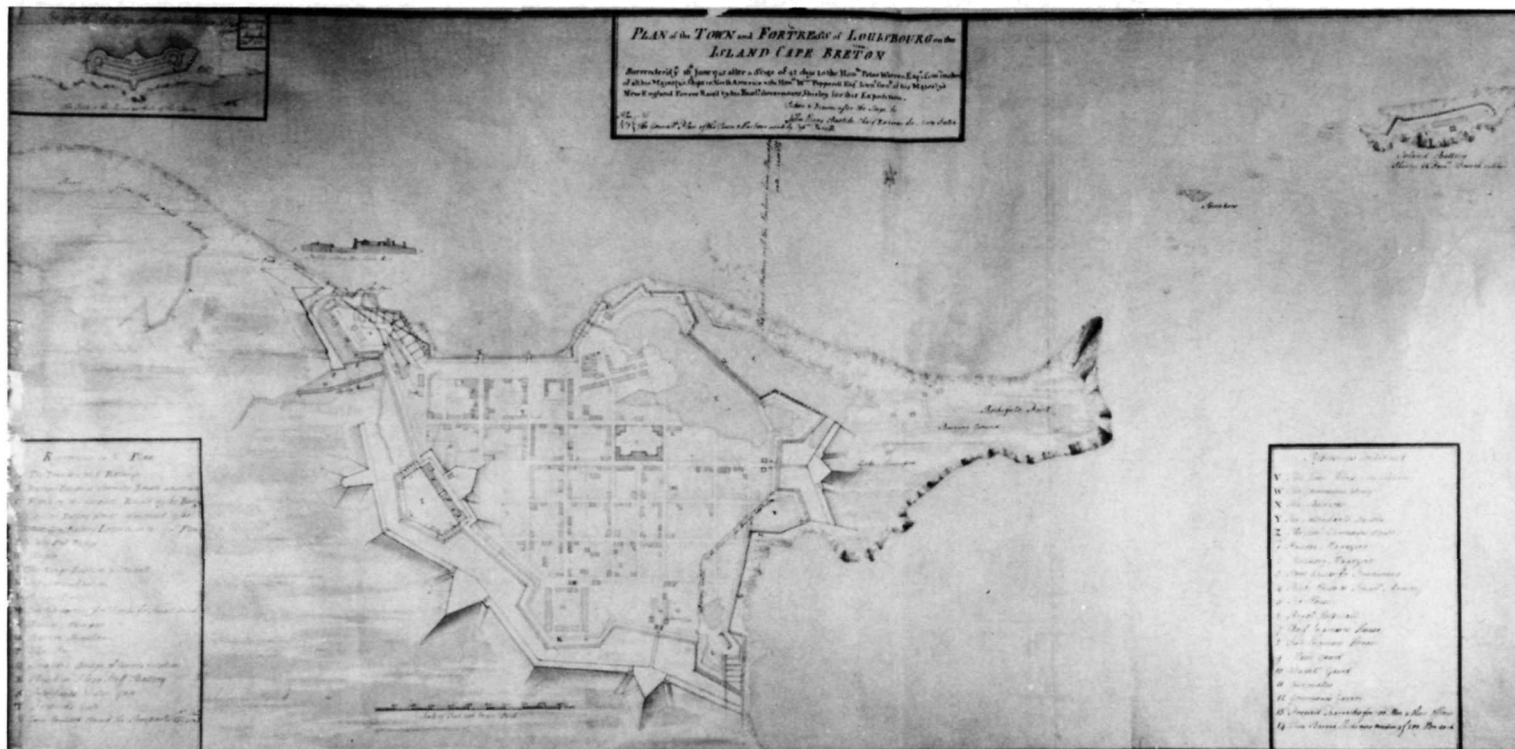
84 Louisbourg fortified, Verrier, 1744. The powder magazine, L, in the Queen's Bastion and the barracks, E, between the Princess and Brouillon bastions are proposals, but the rest

of the fortifications are as built. (Archives du Génie, Vincennes.)



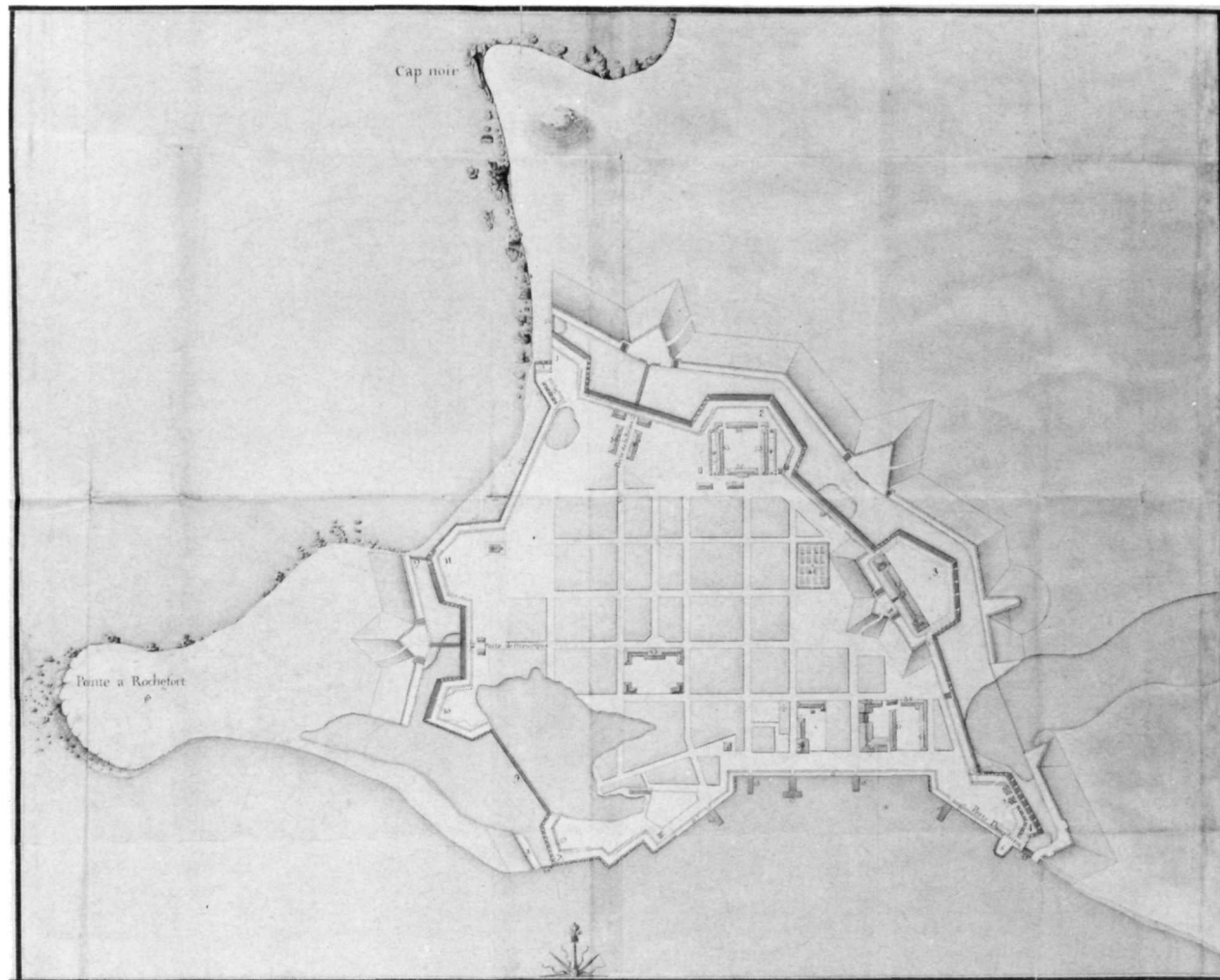
85 Harbour defences, 1742. The interrelated fields of fire from the four batteries are shown. Inset below are details on

the lighthouse and Frederick Gate. (Archives du Génie, Vincennes.)



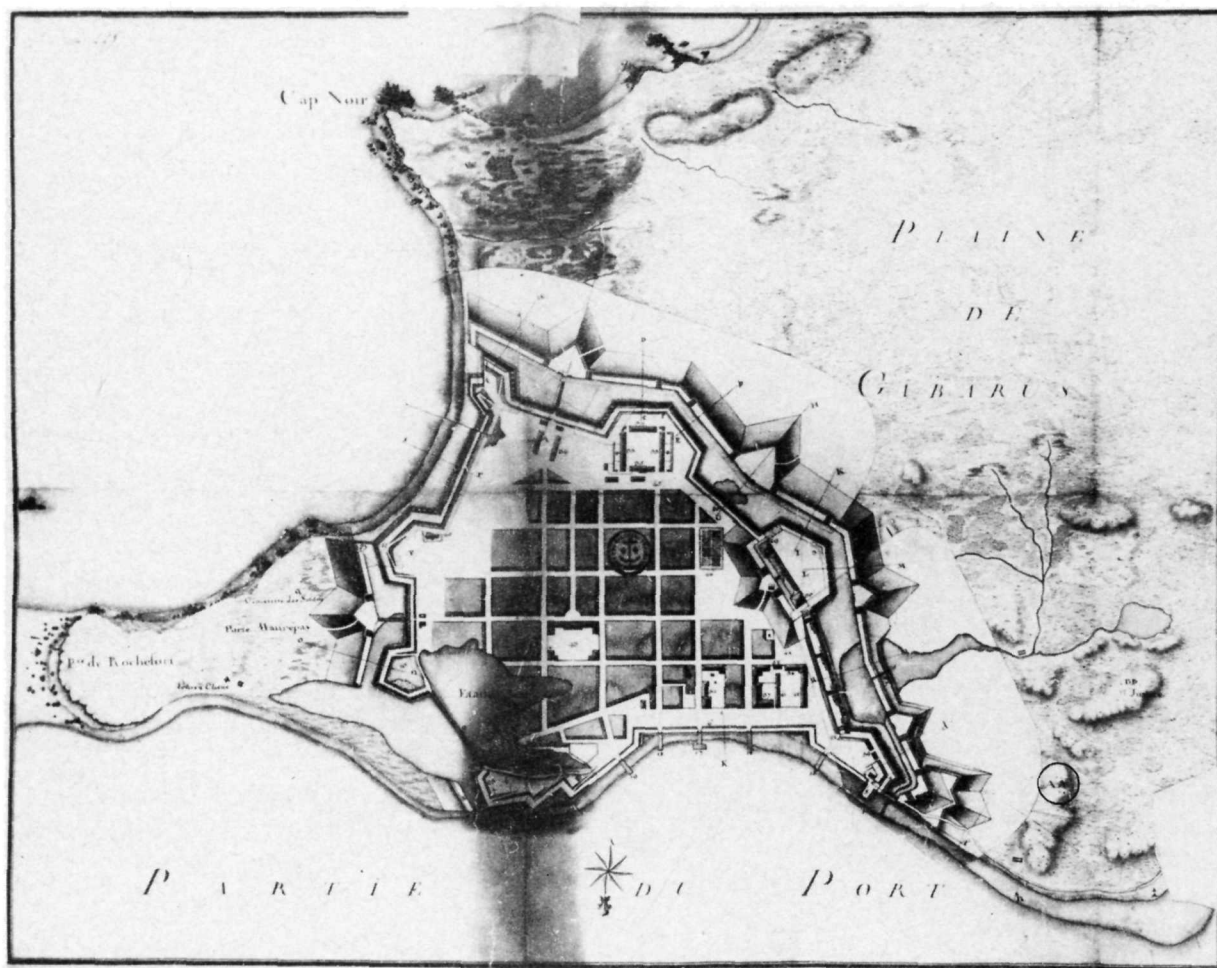
86 The British occupation; John Henry Bastide, 1745. The engineer has included proposals for improving the design and

defensive capabilities of the Dauphin and Princess bastions. (Royal United Services Institution, London.)



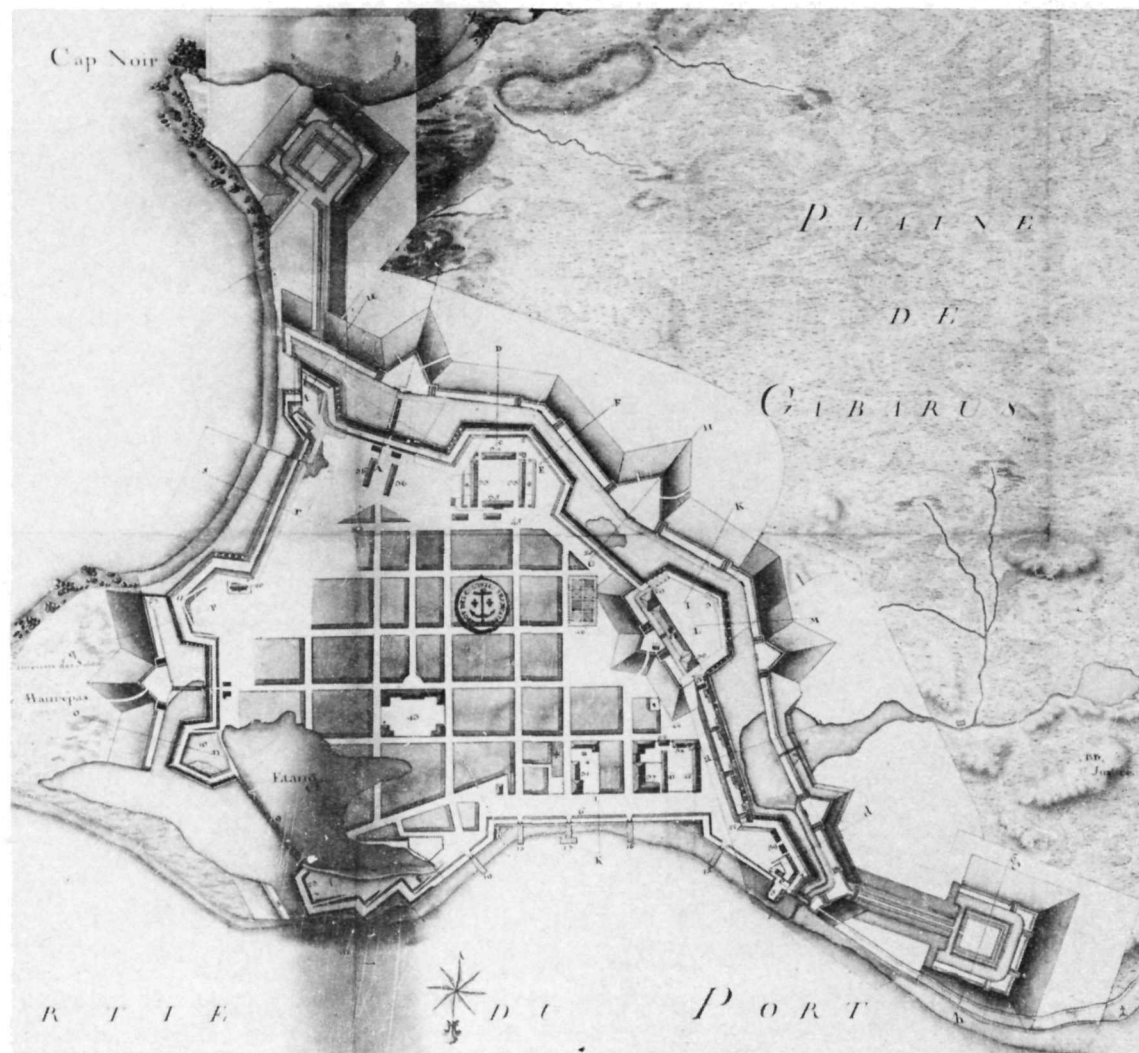
87 The fortifications, 1751. Plan accompanying Franquet's general description of the place as he found it (AG, CTG, 14-1-28). What is depicted is presumably the state of the fortifications as the British had left them in 1749. Note the

embrasures on the right face of the King's Bastion and the left face of the Dauphin Bastion, also on the intervening curtain. (Archives du Génie, Vincennes.)



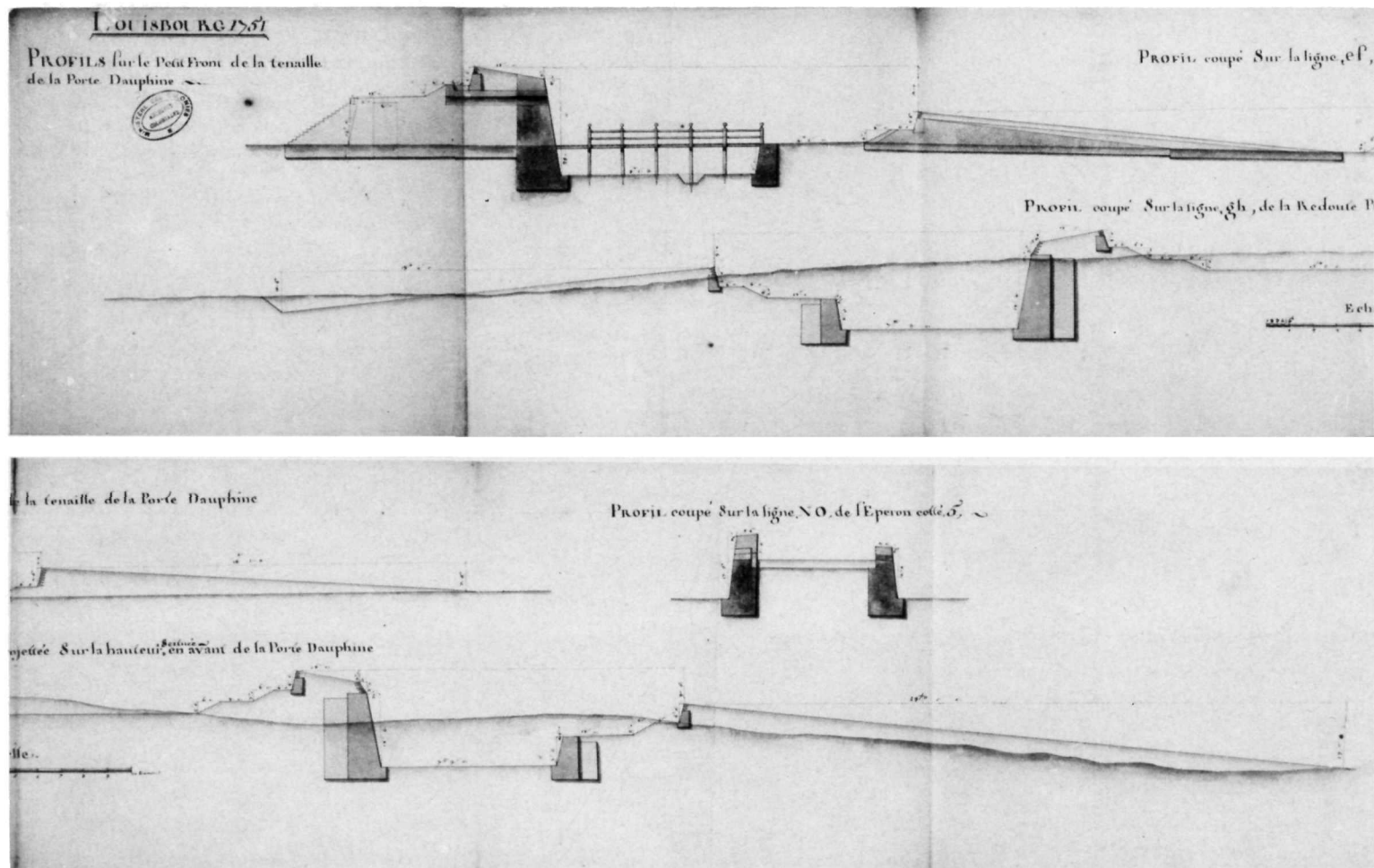
88 Proposals to improve the fortifications, Franquet, 1751. The plans show what the engineer considered to be a strict minimum of work in order to maintain a good defence. The major modifications are to the outworks on the King's-Dauphin front: the covered way, with large *place d'armes*, is continued across the pond and a second glacis, flanked by two

more *places d'armes*, extends the capital line of the Dauphin Bastion towards the lime-kiln hill (AA, circled). The curtain on this front is provided with embrasures and a series of traverses to protect the gunners from enfilade. (Archives Nationales, Paris.)



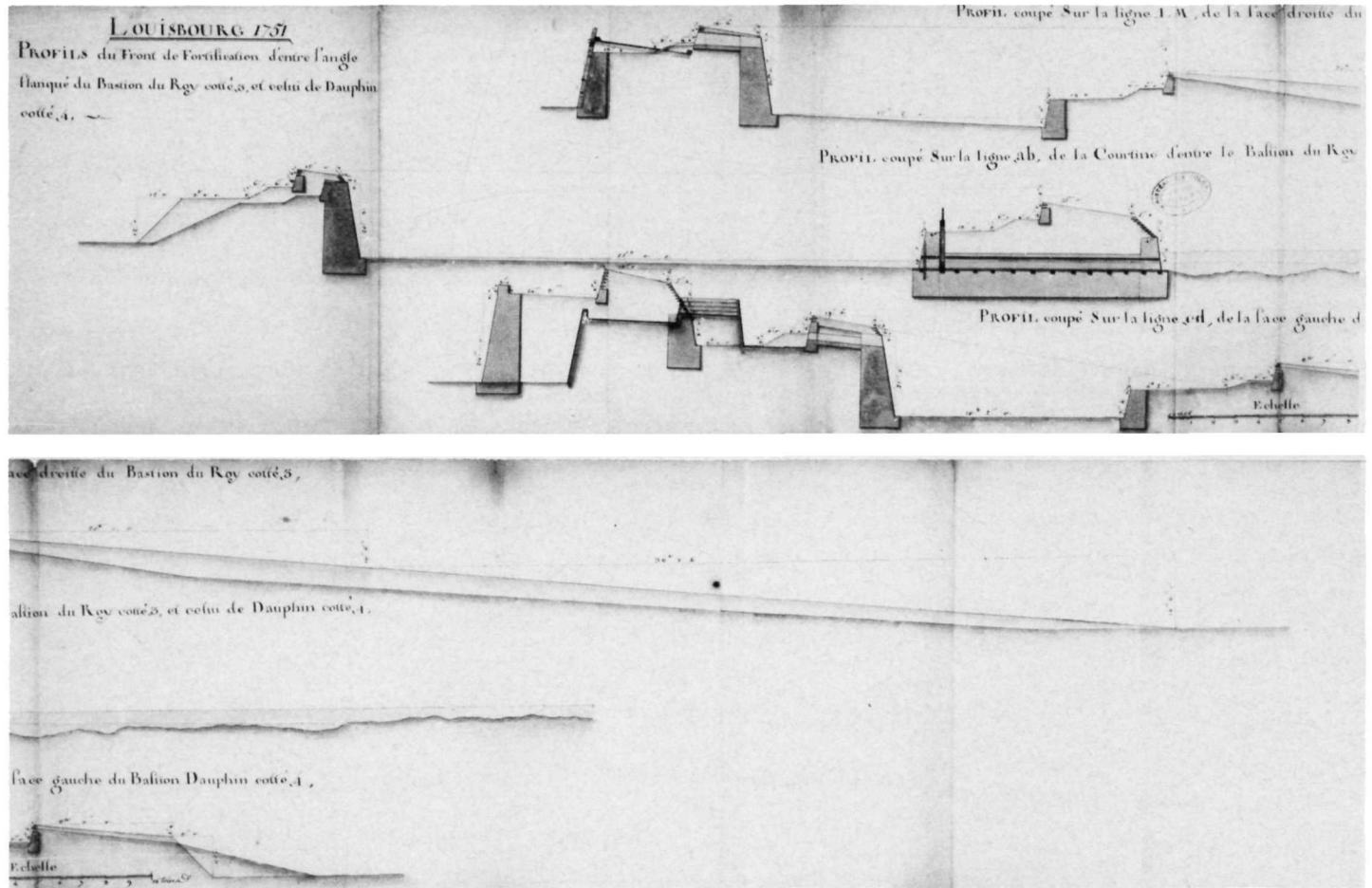
89 Proposals to improve the fortifications, Franquet, 1751. The same plan as in Figure 88, but with foldaway flaps down to indicate the location and design of the proposed redoubts

at Black Rock and on the lime-kiln hill. (Archives Nationales, Paris.)



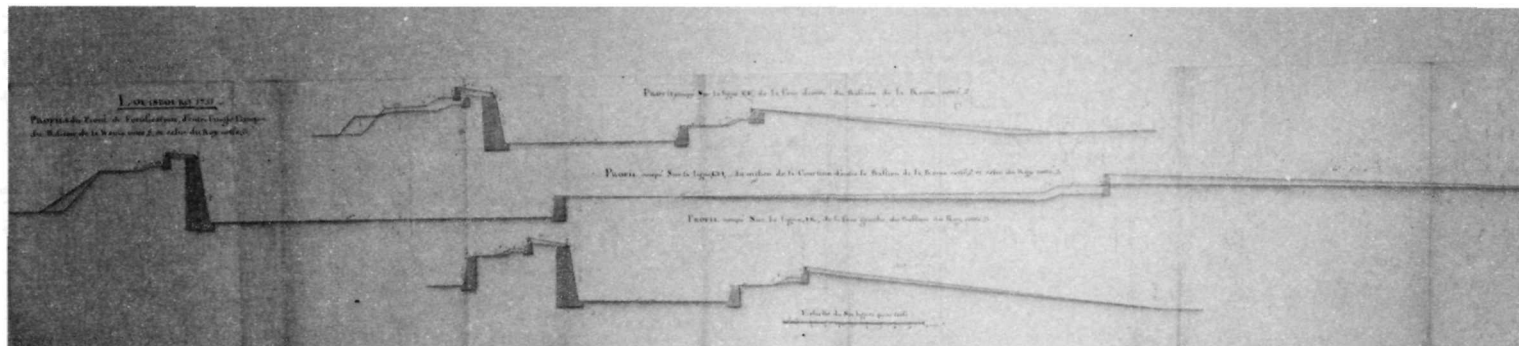
90 Proposals to improve defences, Franquet, 1751. The sections across the ramparts drawn to accompany the engineer's memoirs and the plans (Figs. 88, 89) on which the locations are marked. The drawings purport to show existing structures (the darker shading or lower lines) for which the

improvements are proposed. The modifications consist primarily of raising and extending the glacis and raising and thickening the parapets. The Dauphin Gate area, including the redoubt, is shown. (Archives Nationales, Paris.)



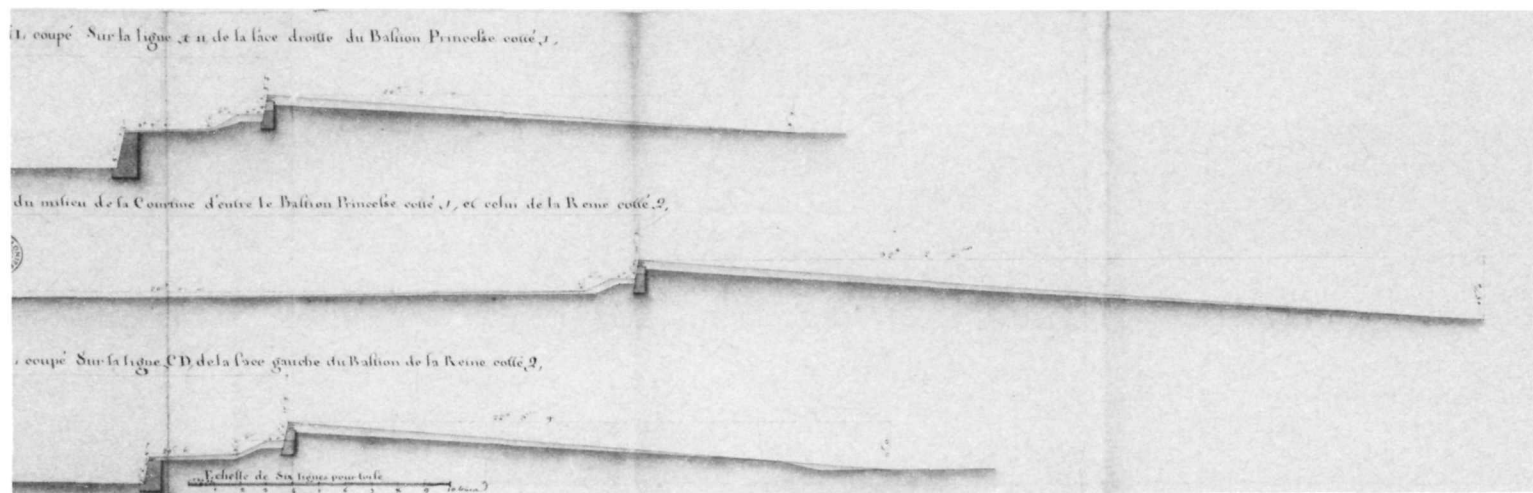
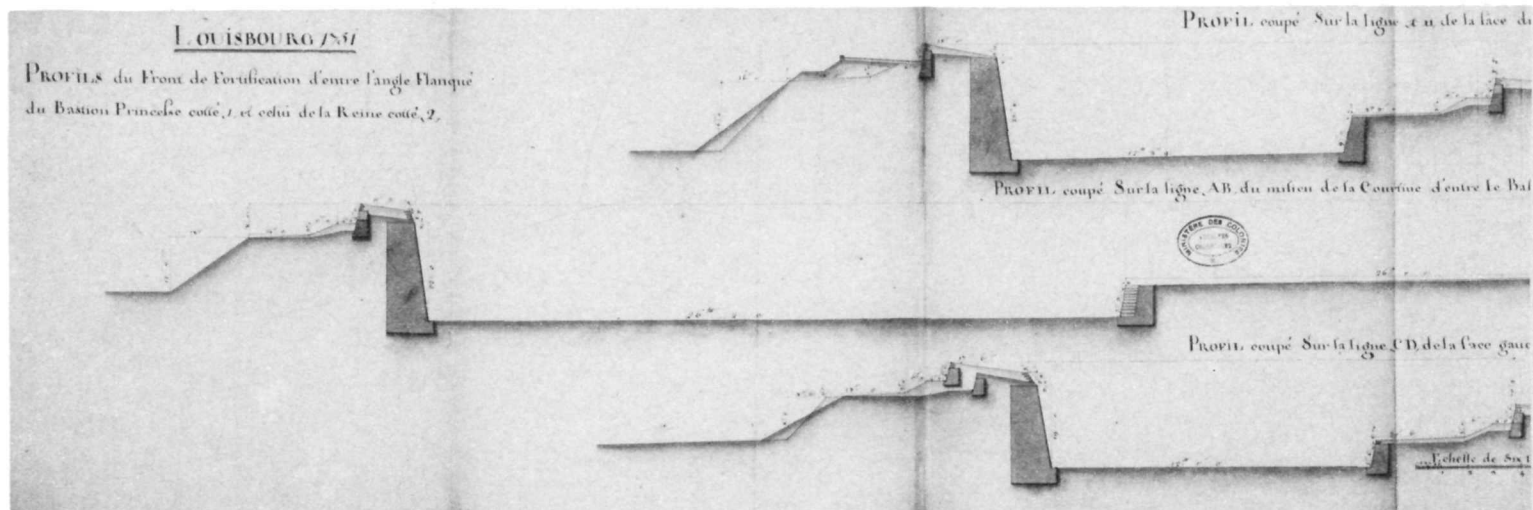
91 Proposals to improve defences, Franquet, 1751 (see Fig. 90). The right face of the King's Bastion; the King's-Dauphin curtain, and the left face of the Dauphin Bastion. This is one of the most difficult of Franquet's drawings to interpret because the representation of the King's Bastion rampart is contrary to other historical evidence as well as the archaeological findings. Possibly the timber framing was that of the

platform installed by the British during 1745-49; if it covered the interior revetment, the true thickness of the wall might not have been available to Franquet. In the lower profile, the existing cavalier, built by the British on the Dauphin Bastion, is shown with another, larger one superimposed. (Archives Nationales, Paris.)



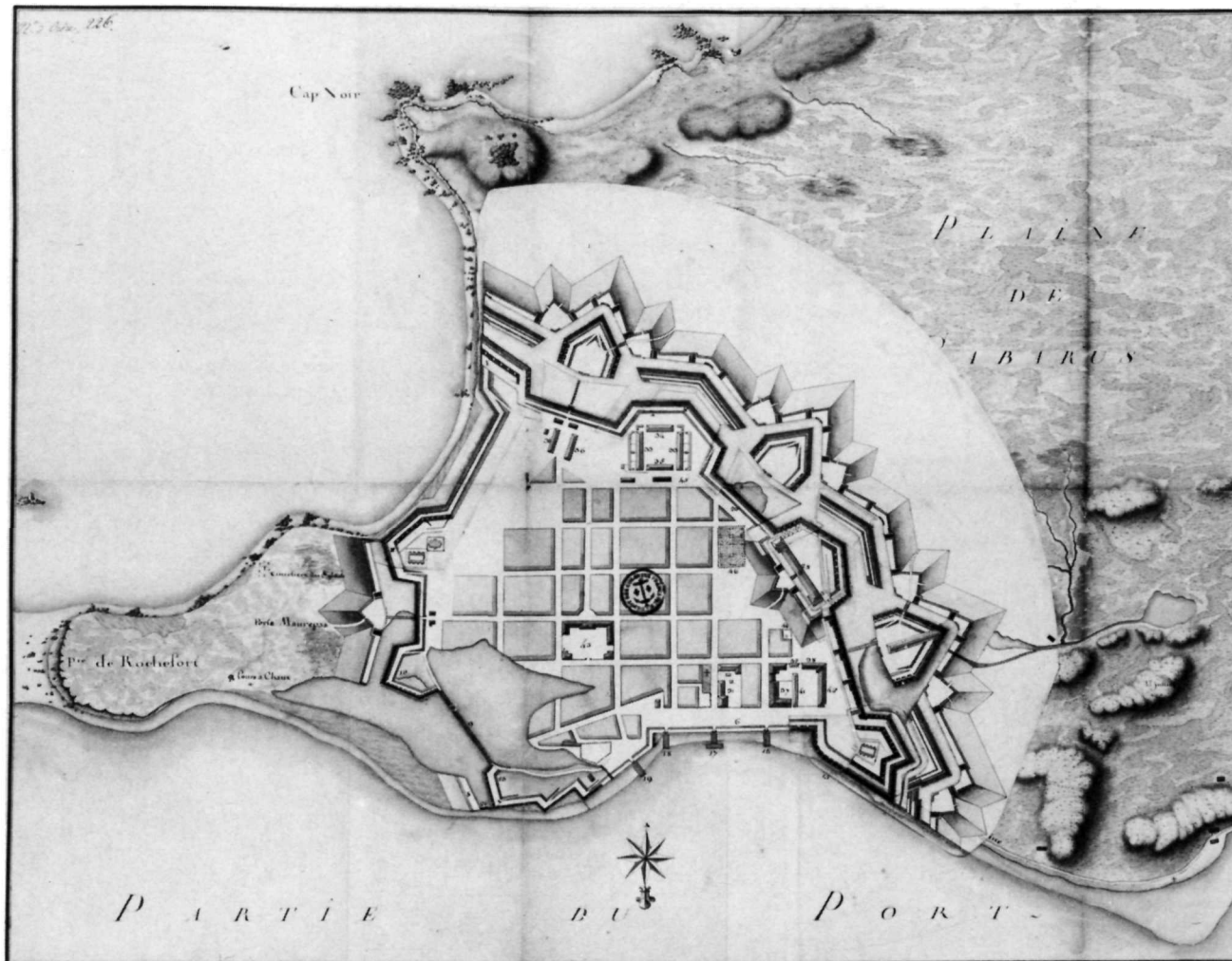
92 **Proposals to improve defences**, Franquet, 1751 (see Fig. 90). Profiles through the right face of the Queen's Bastion

and the King's-Queen's curtain. (Archives du Génie, Vincennes.)



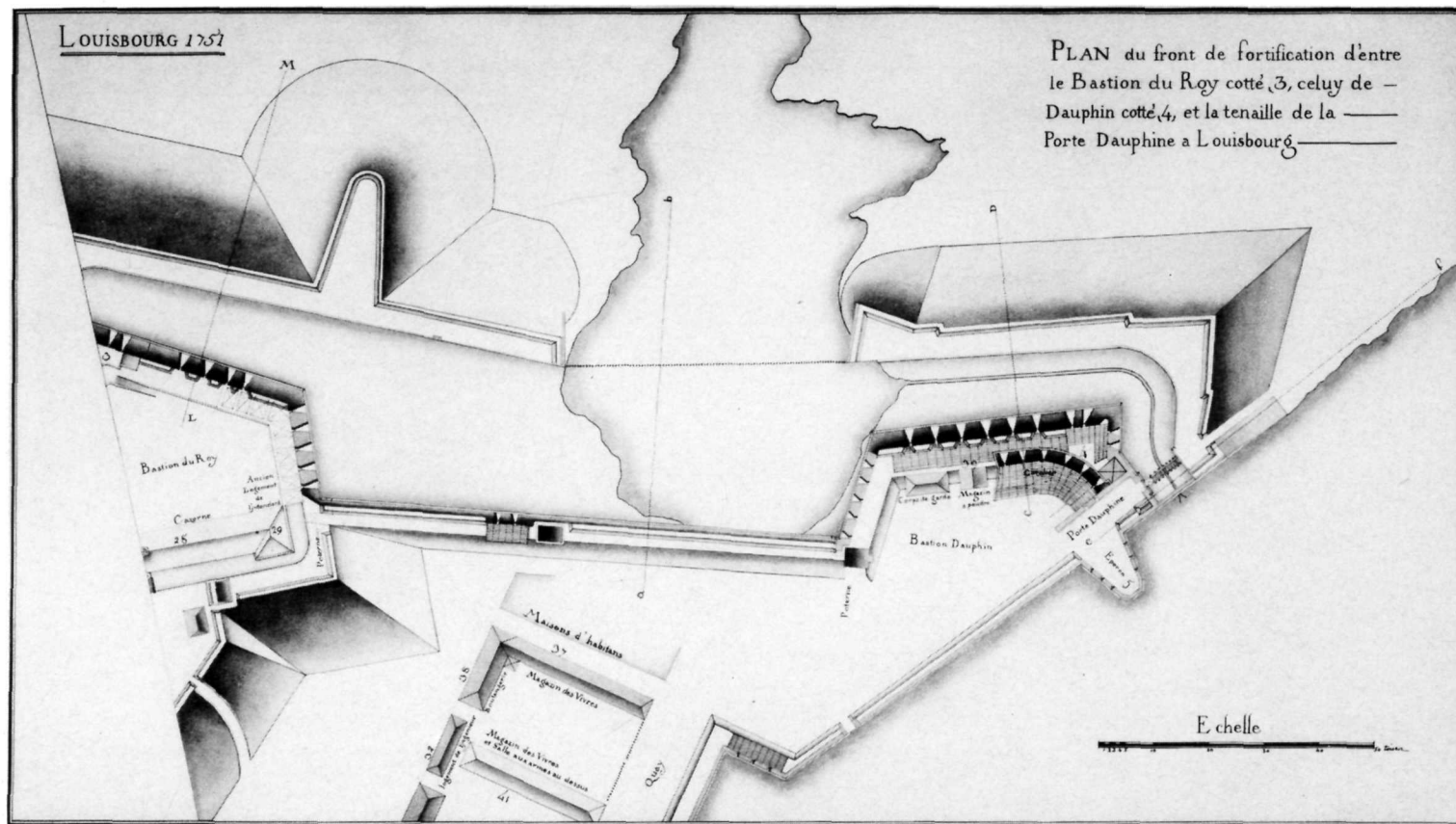
93 **Proposals to improve defences**, Franquet, 1751 (see Fig. 90). Profiles through the right face of the Princess Bastion,

the Queen's-Princess curtain and the left face of the Queen's Bastion. (Archives Nationales, Paris.)

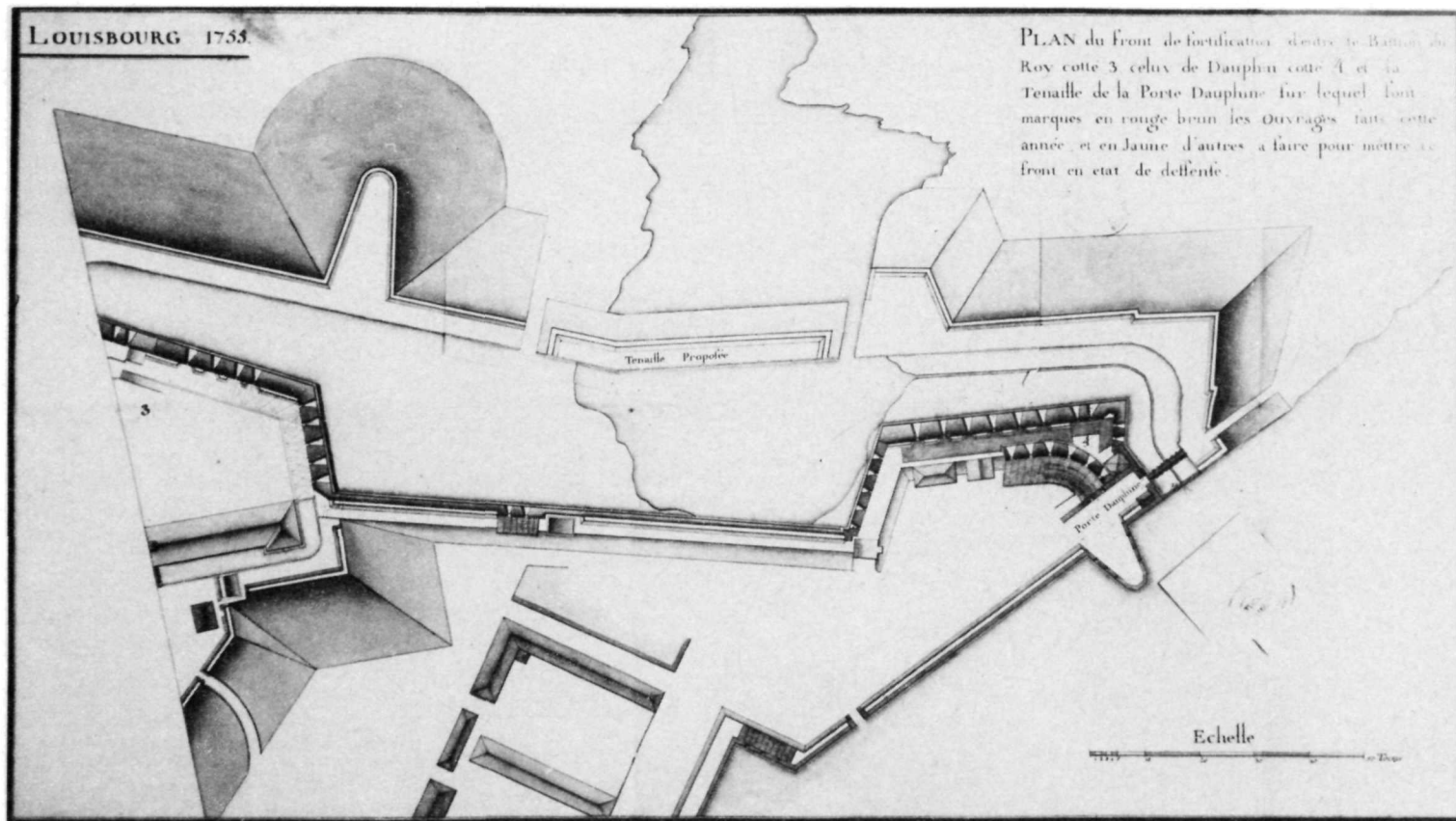


94 Proposals to improve the fortifications, Franquet, 1751. The more ambitious scheme of covering each front with a large *demi-lune* and each bastion with a counterguard. The Dauphin Bastion is redesigned as a more powerful *tenaillé*

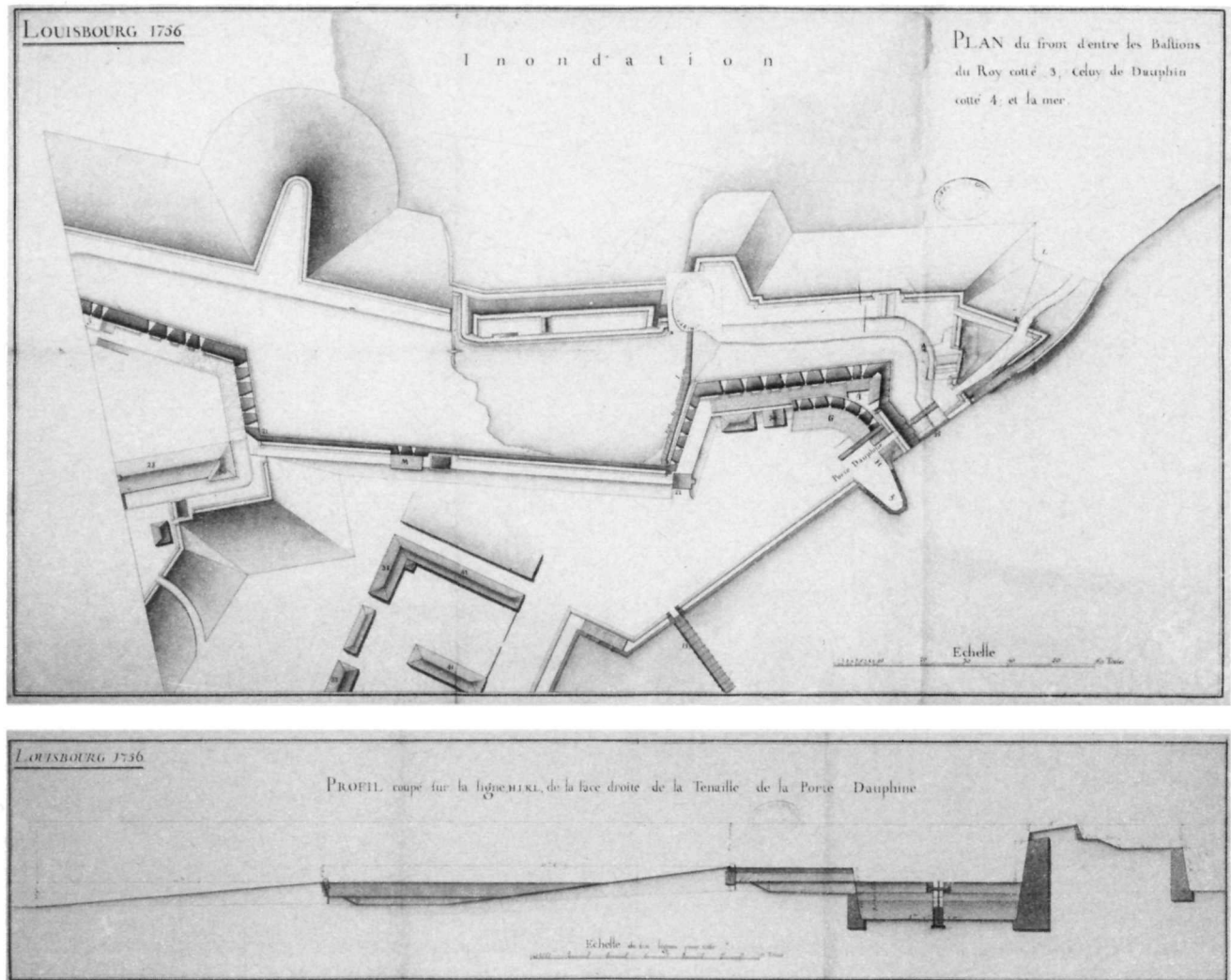
work with a cavalier conforming to the same trace on the interior, and a cavalier was proposed for the right face of the King's Bastion. (Archives Nationales, Paris.)



95 The fortifications, Franquet, 1751. Detail of the King's-Dauphin front as the engineer found it. (Archives Nationales, Paris.)

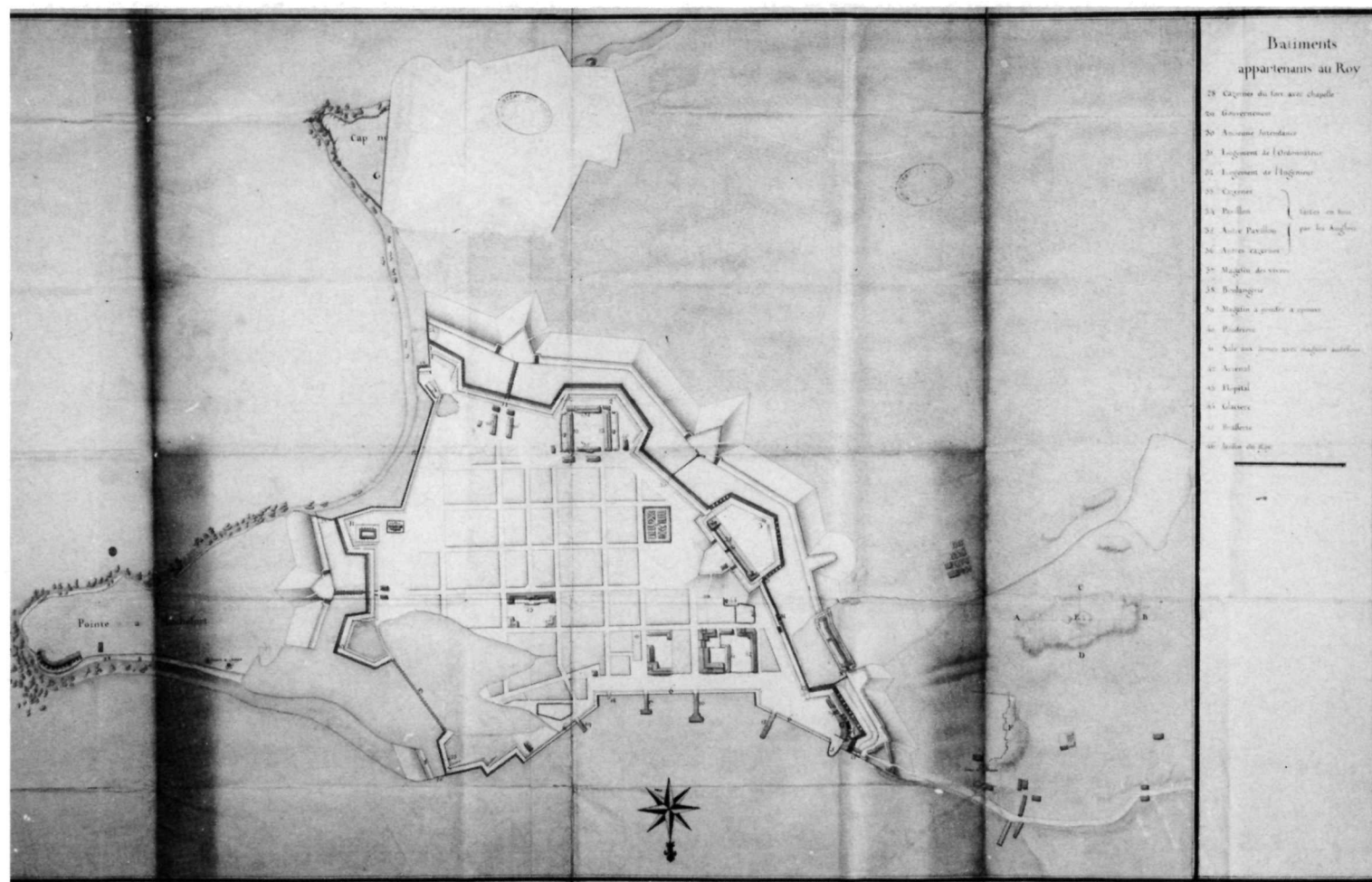


96 King's-Dauphin front, 1755. Preliminary design of tenaille across the pond. Proposal includes modifying *place d'armes* at right of tenaille. (Archives Nationales, Paris.)

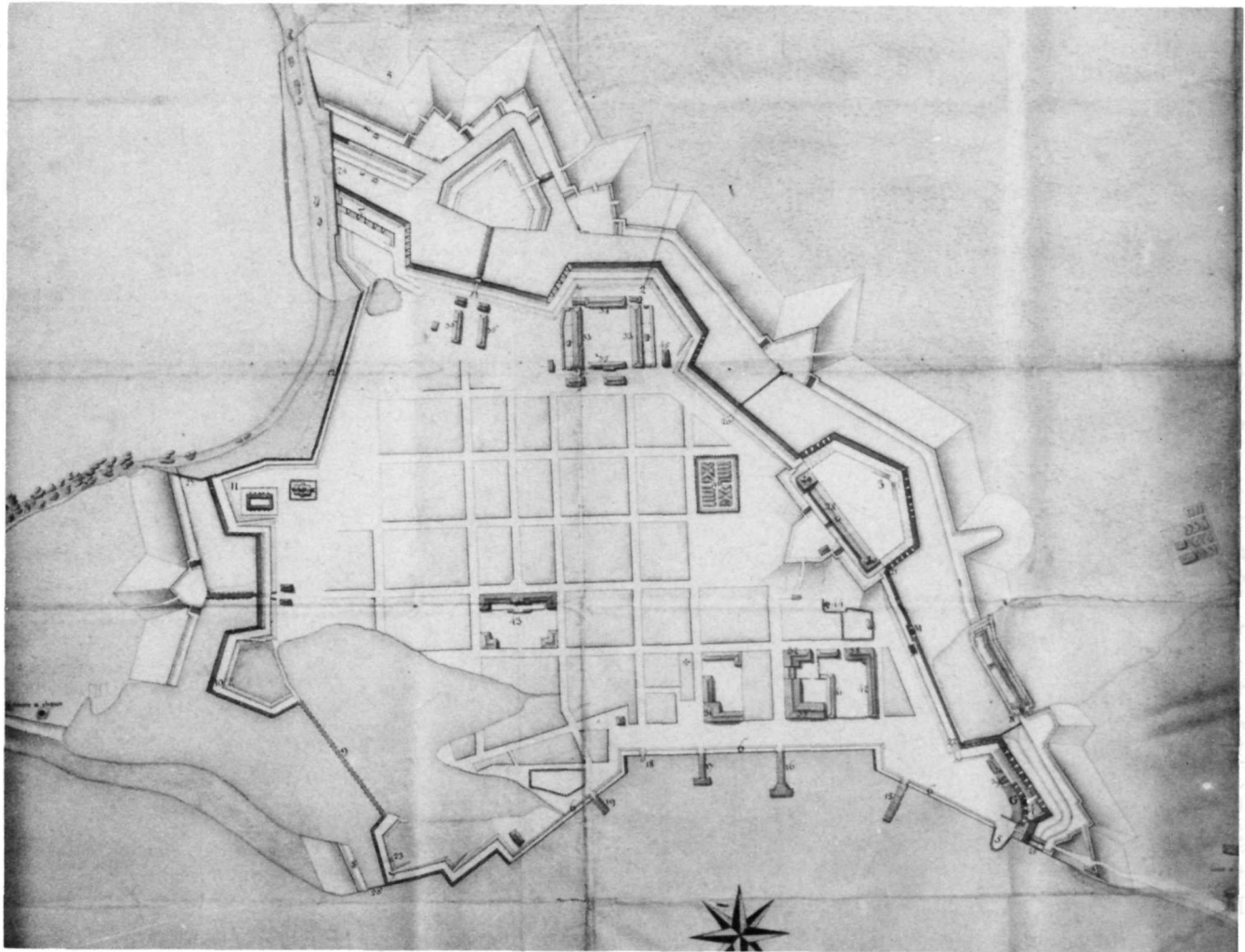


97 King's-Dauphin front. The revised tenaille project, 1756. The work entails modifications to the covered way and glacis in front of the gate as well, to provide more effective fields

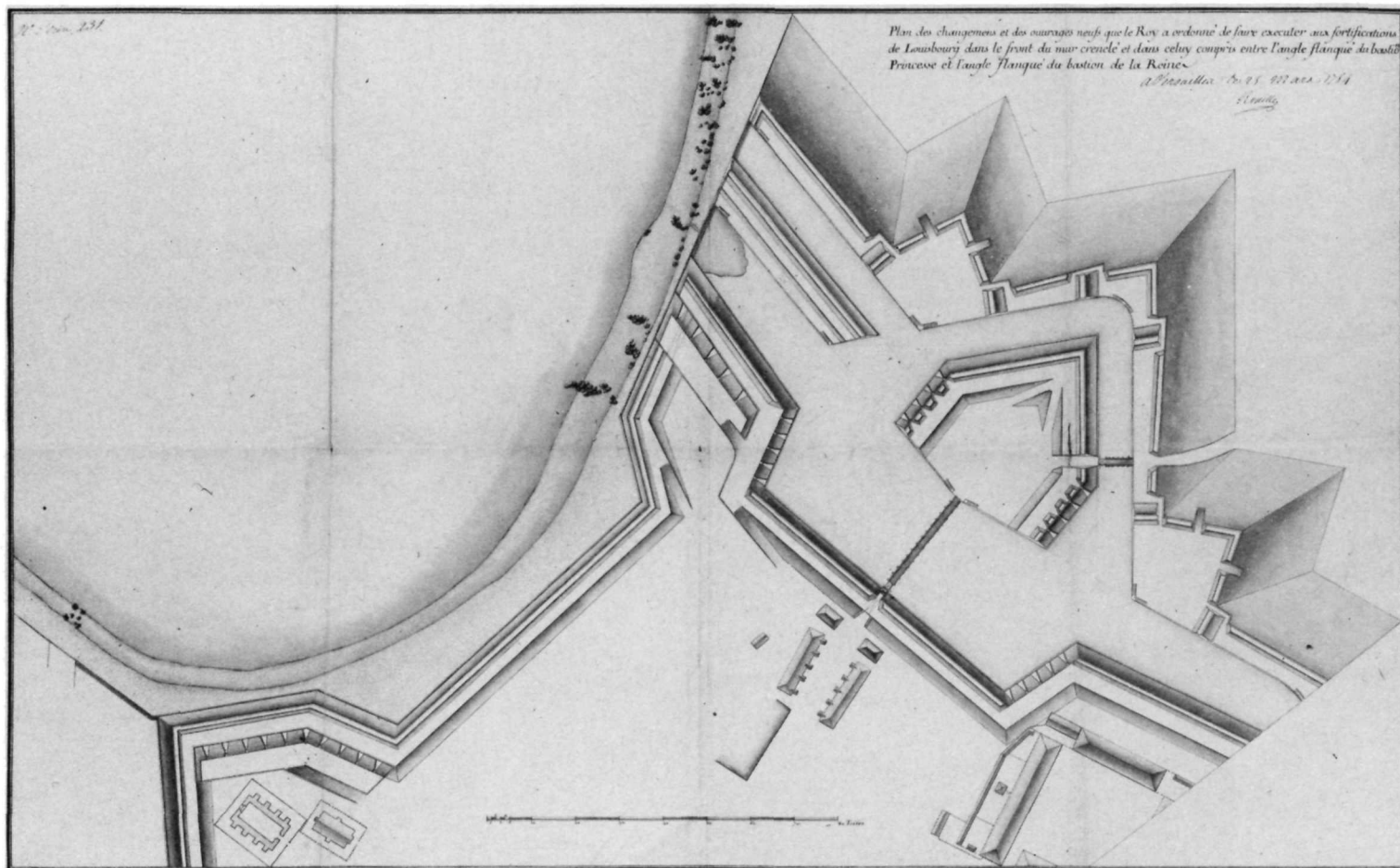
of fire across the road and entrance. The profile shows the *batardeau* in elevation. (Archives Nationales, Paris.)



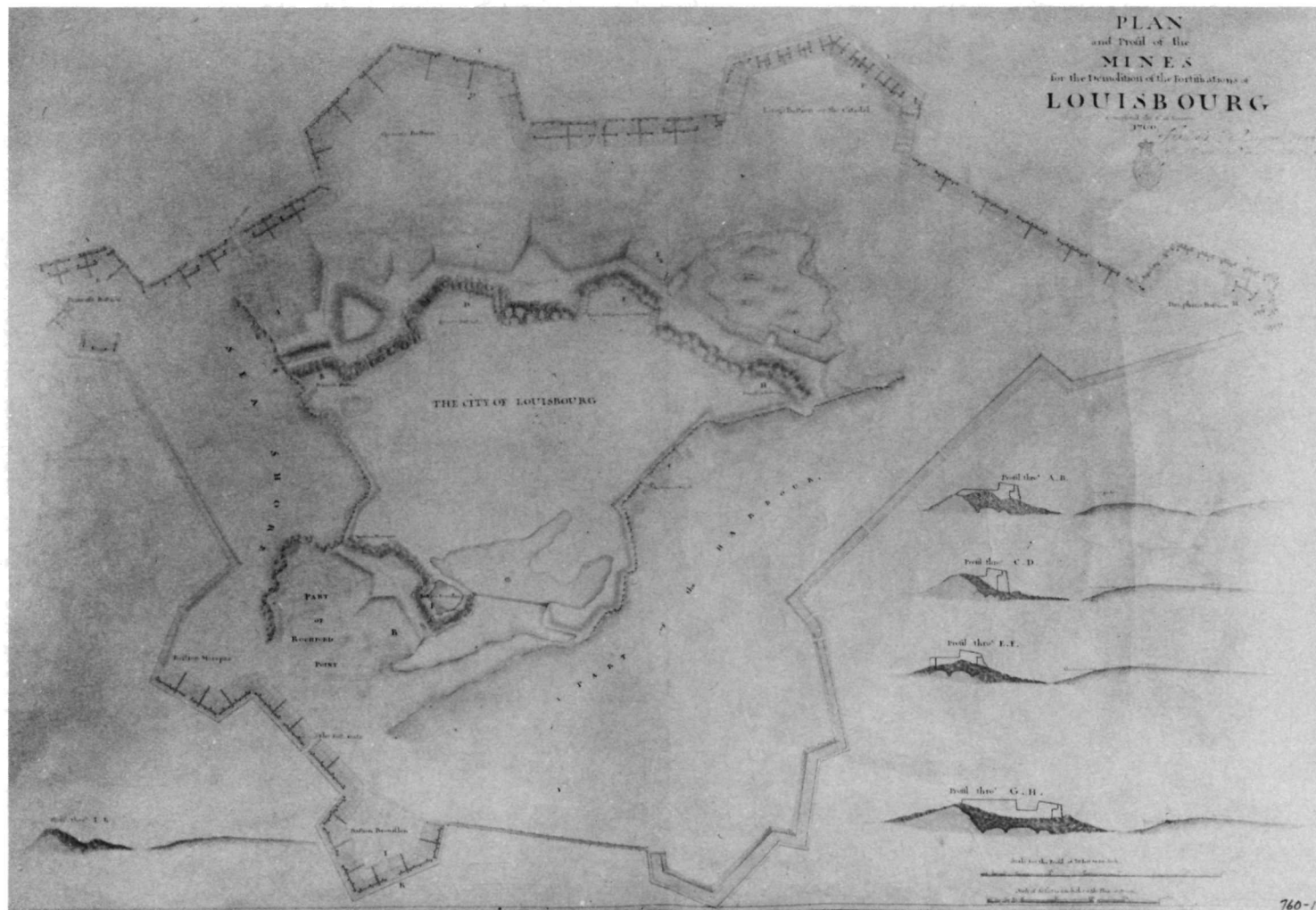
98 The fortifications, 1756. Note the battery at Rochefort Point, also the work in progress to lower the hills in front of the Dauphin Bastion. (Archives Nationales, Paris.)



99 The fortifications, 1756. Figure 98 with foldaway flap down to indicate the *demi-lune* on the Queen's-Princess front. (Archives Nationales, Paris.)

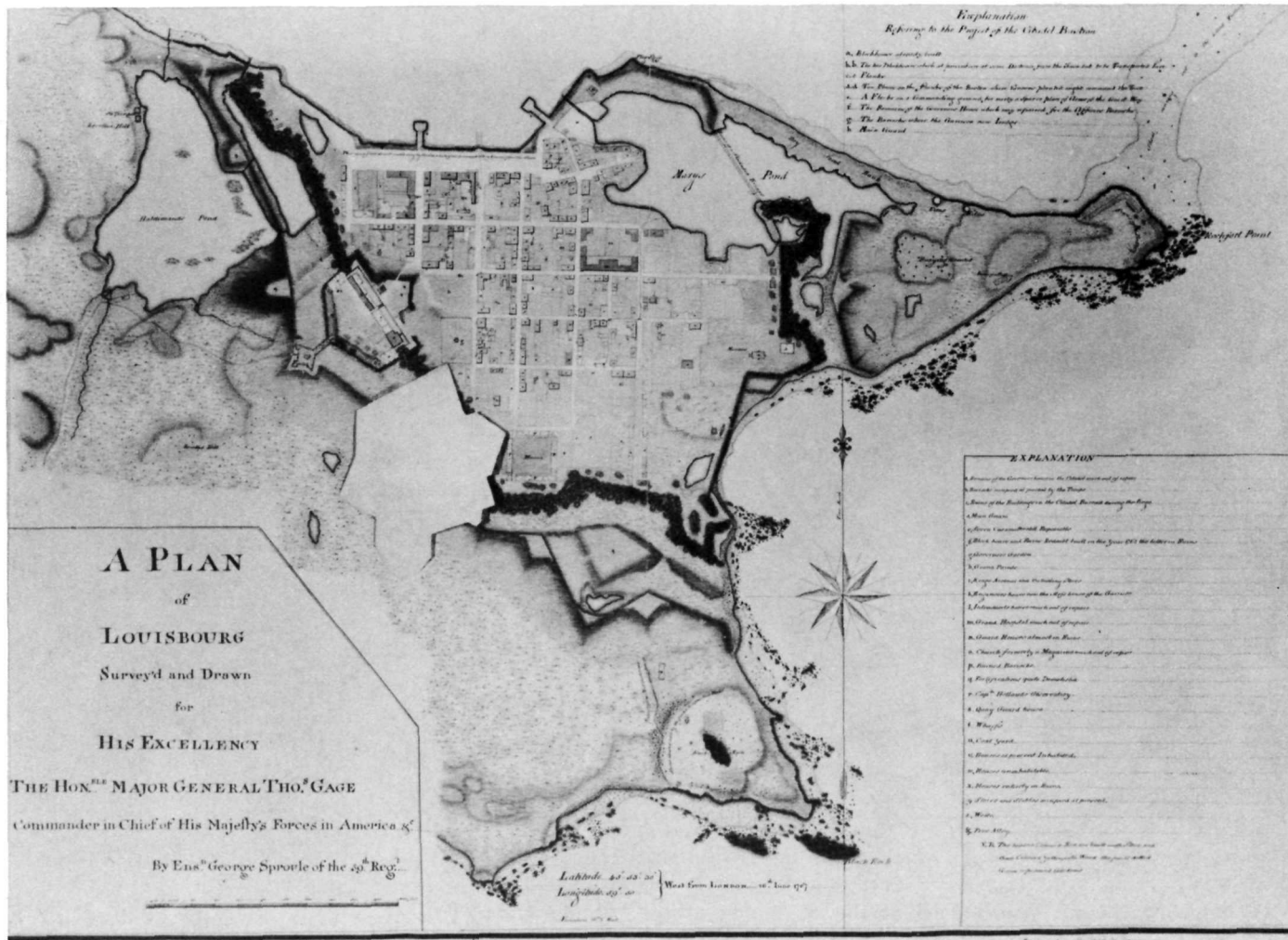


100 Queen's-Princess front. Detail showing the *demi-lune* project, as approved by the minister, 1754. (Archives Nationales, Paris.)



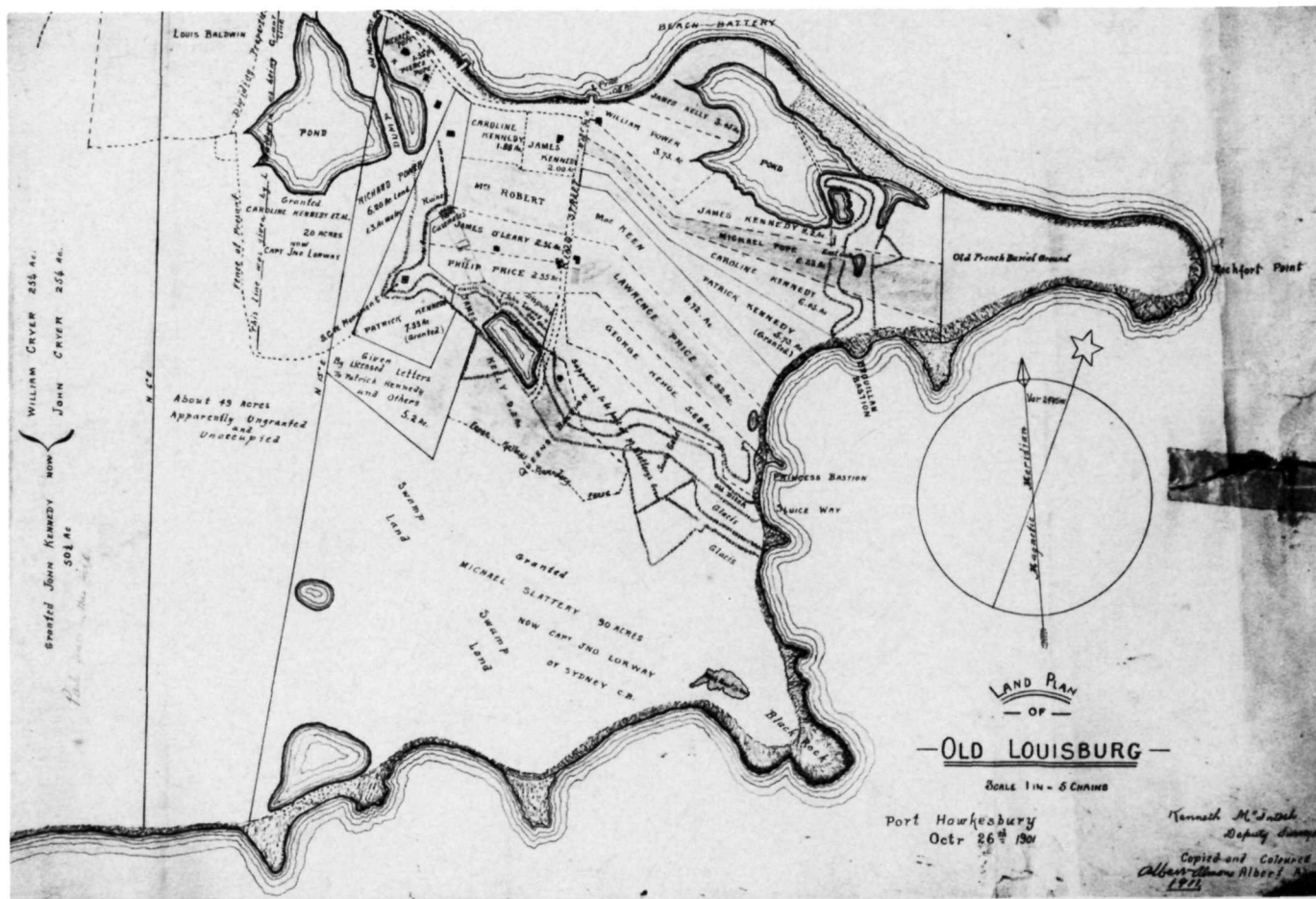
102 Demolition of the fortifications, François de Ruvoynes, 1760. Engineer's plan of the mine galleries dug into the ramparts. Within that plan is a general plan depicting the state of the walls after the mines had been exploded.

Profiles at right show the rubble collapse beneath outlines of what had previously existed. (Royal United Services Institution, London.)



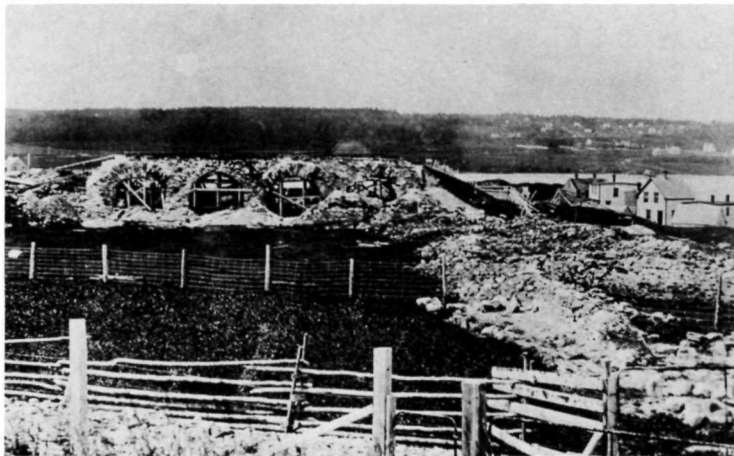
103 The town after demolition of the ramparts, George Sproule, 1767. The quay and Pièce de la Grave are already eroding or being covered by beach gravel. Note the block-

house on the glacis in front of the King's Bastion and the causeway leading to it. (William L. Clements Library, University of Michigan, Ann Arbor, Thomas Gage Papers.)



104 Louisbourg. Land concessions at the beginning of the 20th century. (Albert Almon copy, William Lewis, Louis-

bourg, Nova Scotia; copy on file, Fortress of Louisbourg National Historic Park.)



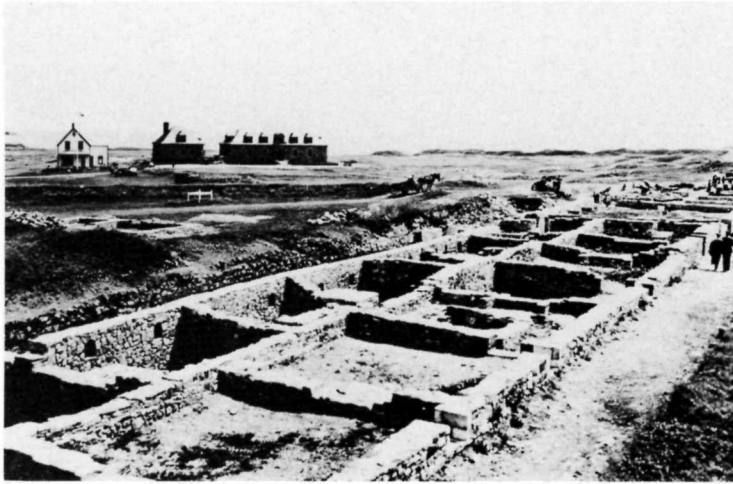
105 Stabilization of right flank casemates. Probably Kennelly's work in the 1900s. Looking across the terreplein of the King's Bastion; ruins of barracks at right. (Fortress of Louisbourg NHP.)



106 Restored left flank casemates, complete with interior revetment (1930s). (Fortress of Louisbourg NHP.)



107 Stabilization of the barracks' foundations, 1930s. Rubble is stockpiled in the townside *place d'armes* (upper centre). (Fortress of Louisbourg NHP.)



108 Stabilized ruins of the barracks, 1940s. The guardhouse in the *place d'armes* (centre left) has also been excavated and stabilized. Background, the park's museum building. (Fortress of Louisbourg NHP.)

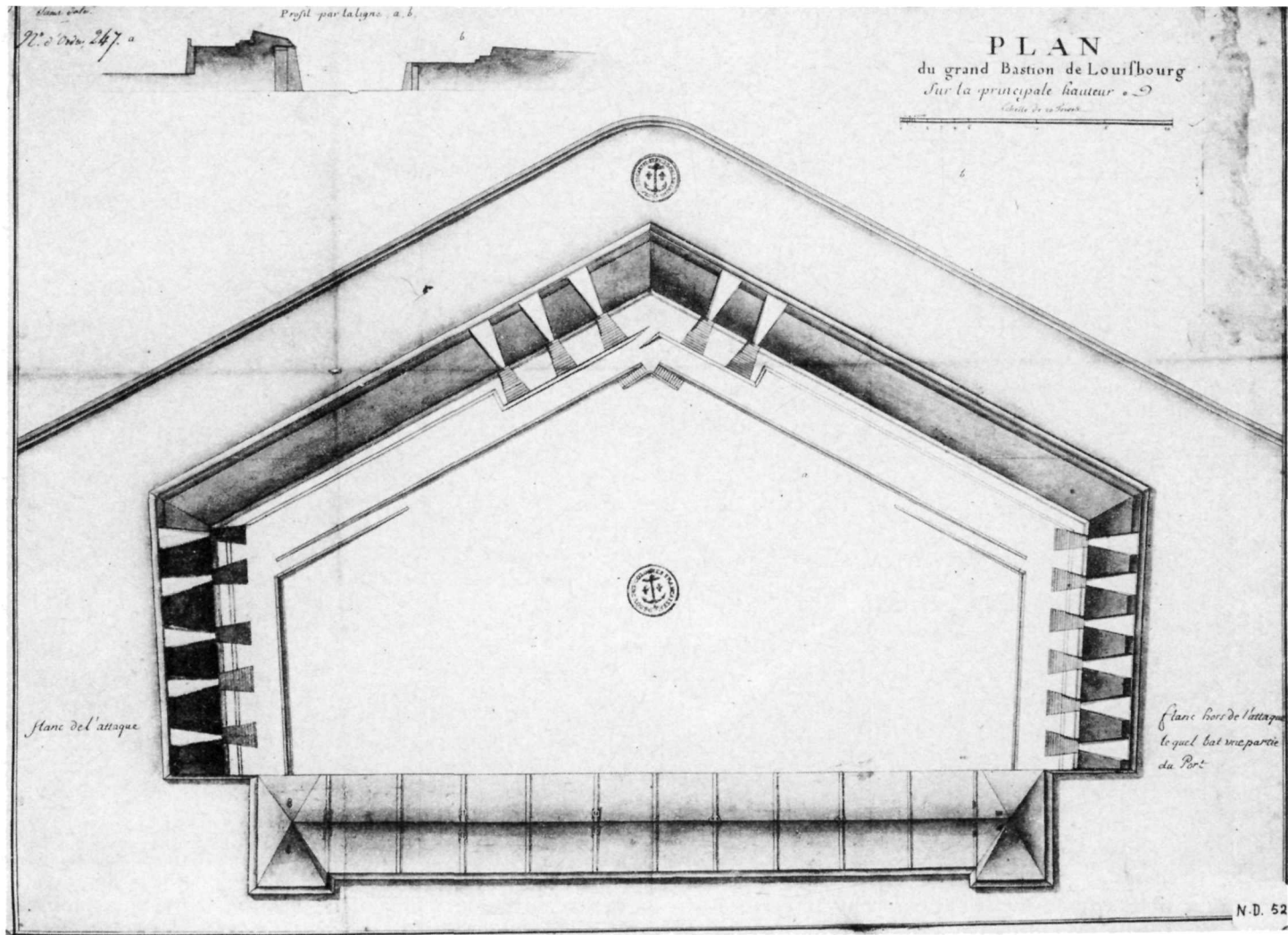


109 The stabilized barracks as seen from the ditch. The sloping basement walls of the governor's wing are in foreground; in background, stabilized right flank casemates. (Fortress of Louisbourg NHP.)



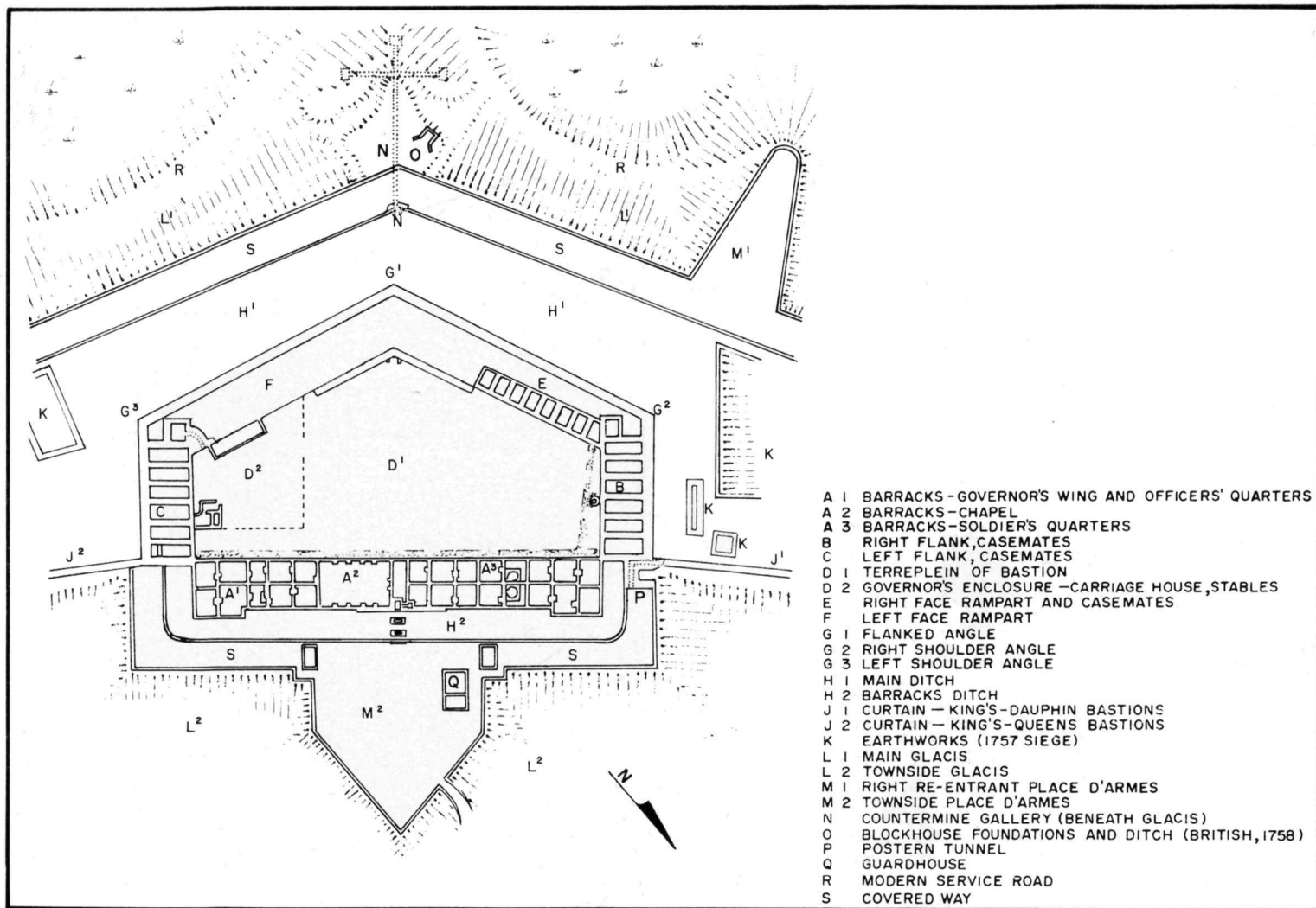
110 Aerial view of town and fortifications prior to restoration programme, 1960. Demolition craters in ramparts are clearly visible, as is the post-demolition British blockhouse on the capital line of the King's Bastion; the road leading to it from the museum cuts across the governor's wing of the

barracks and the left face of the bastion. Note the stabilized remains of the barracks, the hospital and the *commissaire-ordonnateur's* house; also the various access roads around and through the ramparts. (Fortress of Louisbourg NHP.)



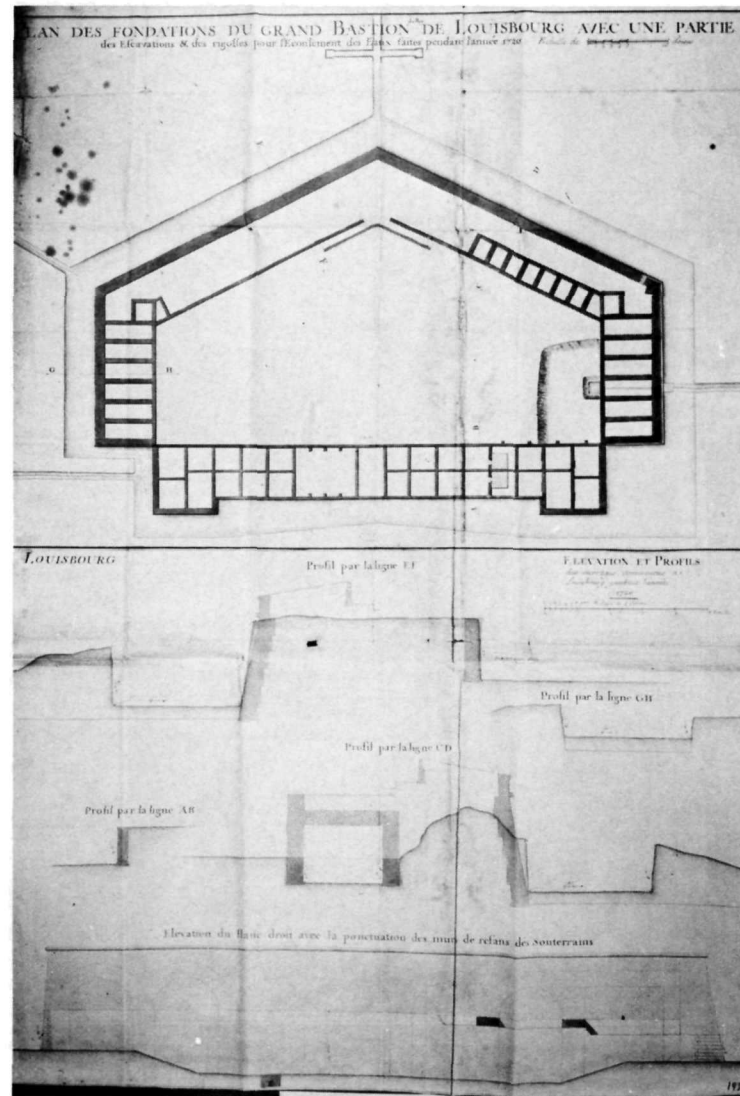
111 The King's Bastion, early proposals. Undated plan accompanies Verville's 1717 devis. Of particular interest is the design of the parapet: a sloping revetment and a superior

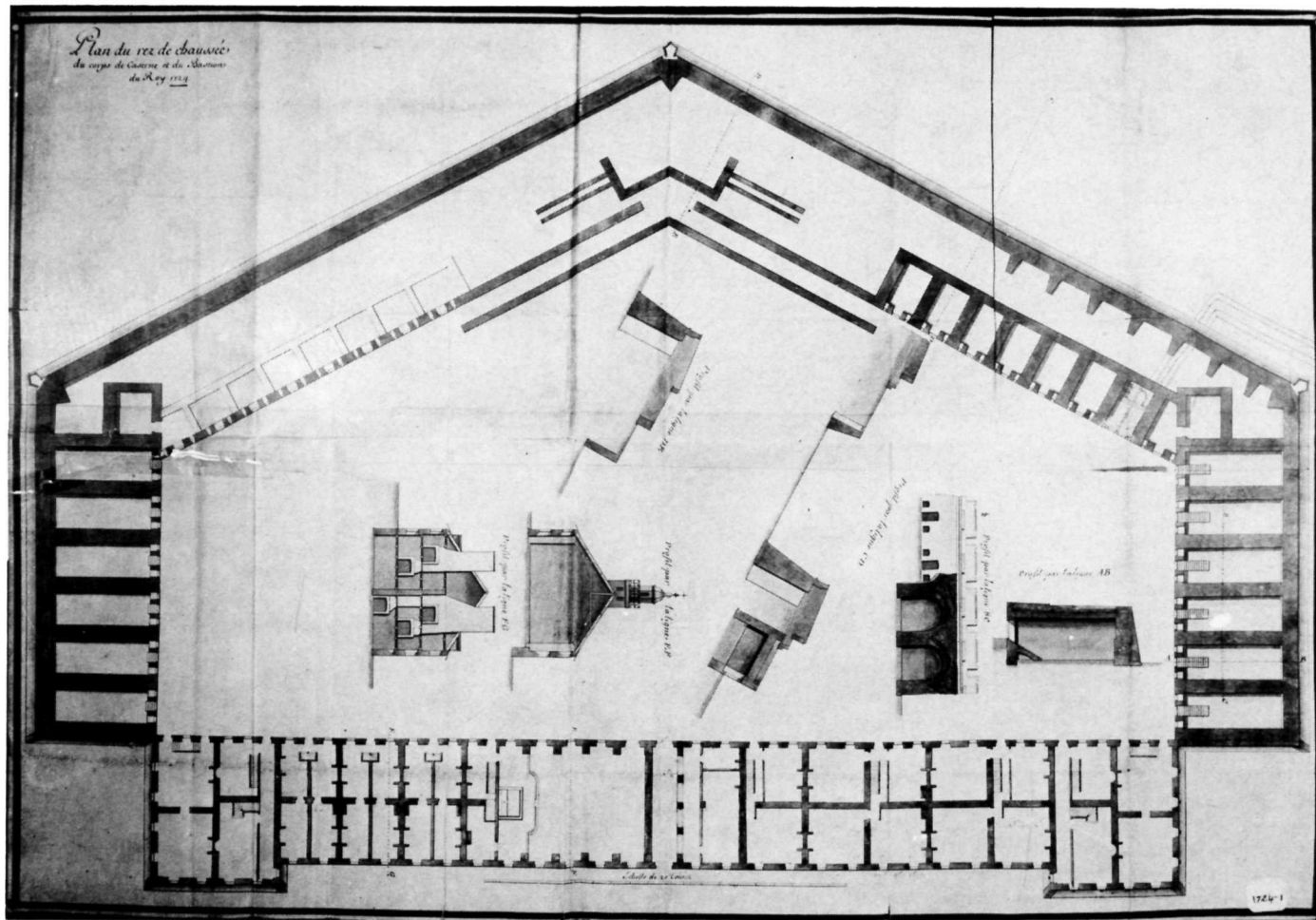
slope aligned on the covered way. Embrasures were to be set in the parapets of the faces as well as the flanks. (Archives Nationales, Paris.)



112 King's Bastion: key to principal features. (Drawing by T.M. Smith.)

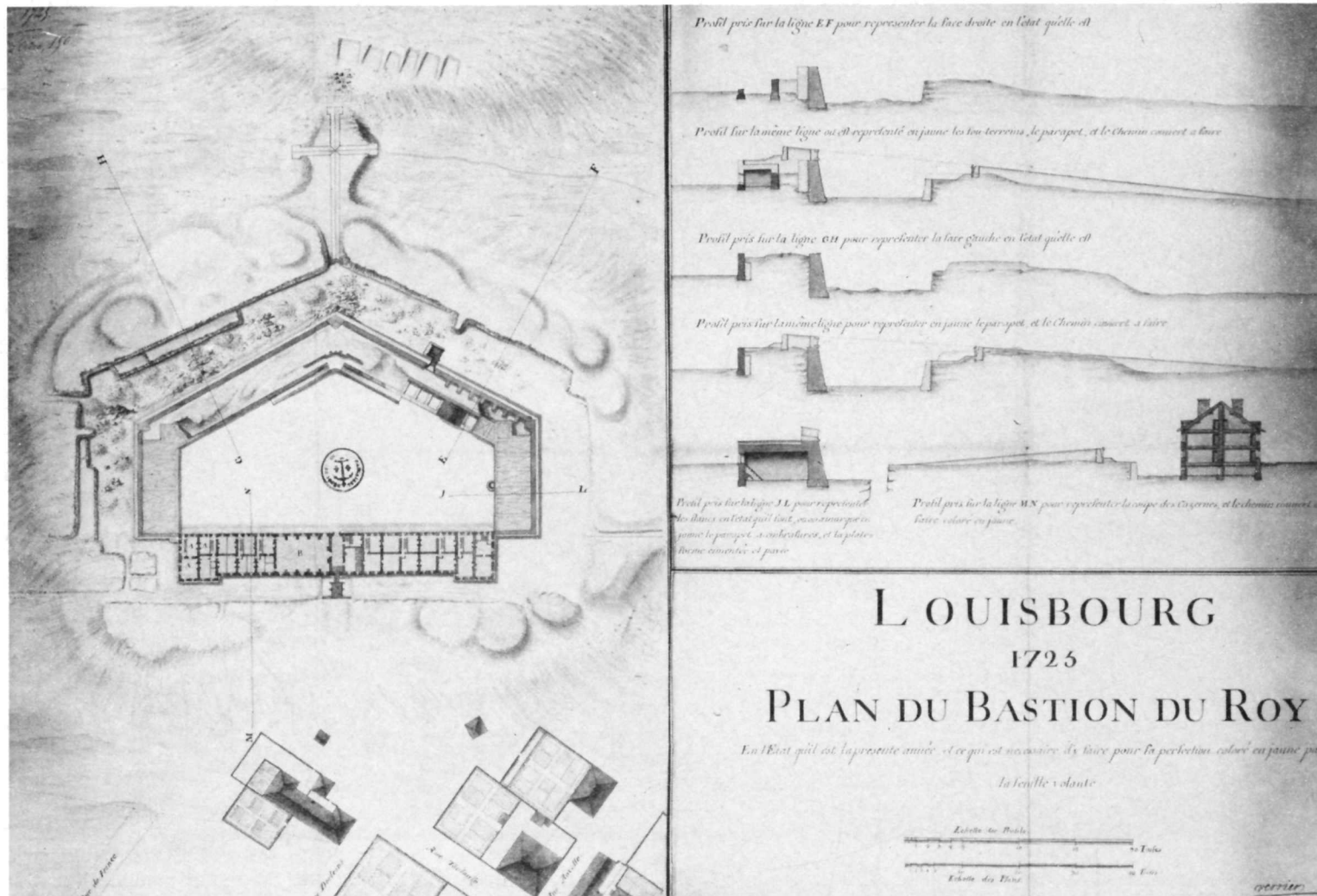
113 King's Bastion, construction progress, 1720. The bastion is depicted as actually laid out. Work accomplished may be compared to the general plans of the town (Figs. 71, 72). Work has not started on the escarps, shown here as descending in a series of steps at the rear; this method was not followed. The parapet has been modified from that previously proposed (Fig. 111). (Archives du Génie, Vincennes.)





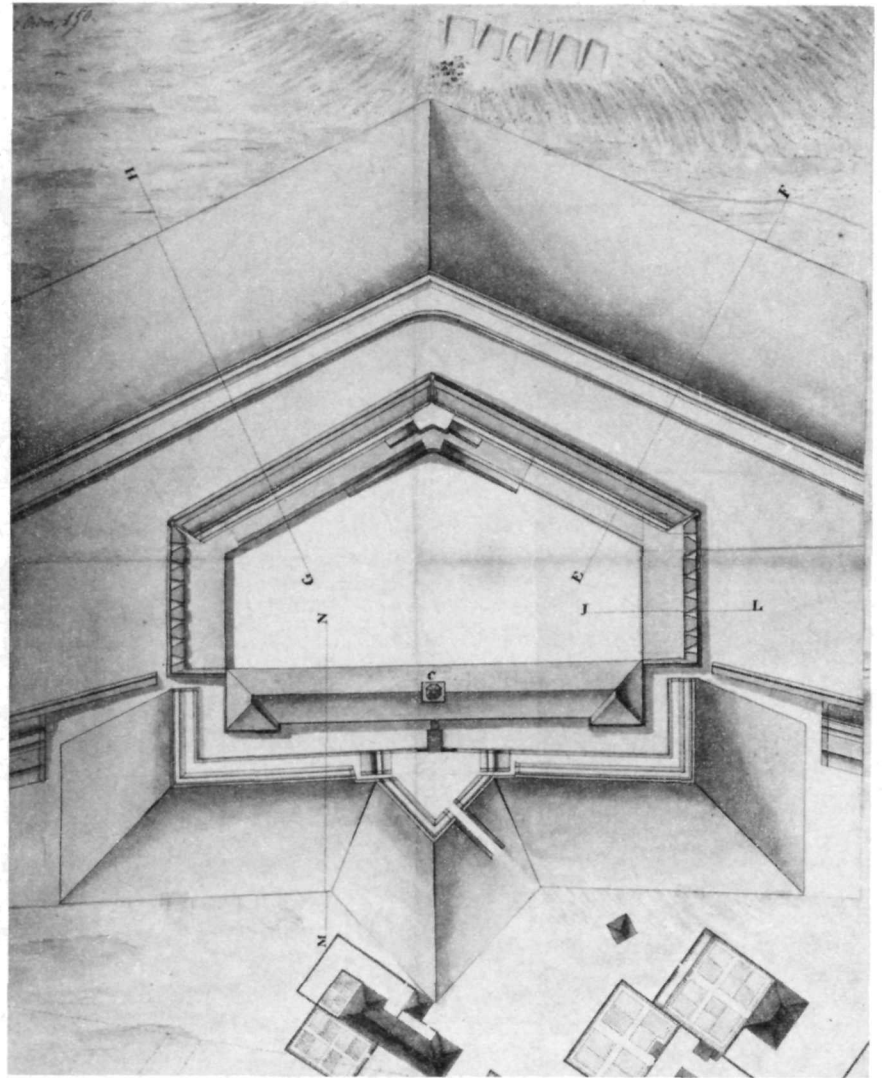
114 **King's Bastion**, construction progress, 1724. The bastion is a free-standing unit: note quoins at extremities of flank escarps. Profile CD clearly shows glacis and superior slope of parapet on same alignment. The interior revetments of the faces overlap those of the flanks, thus blocking off a

casemate vent on each flank. No floors are indicated in the casemates at terreplein level; the steps leading down into the casemates are shown as having been built, but none were found in excavation. Note also the latrine depicted in right face casemate (8R). (Archives du Génie, Vincennes.)



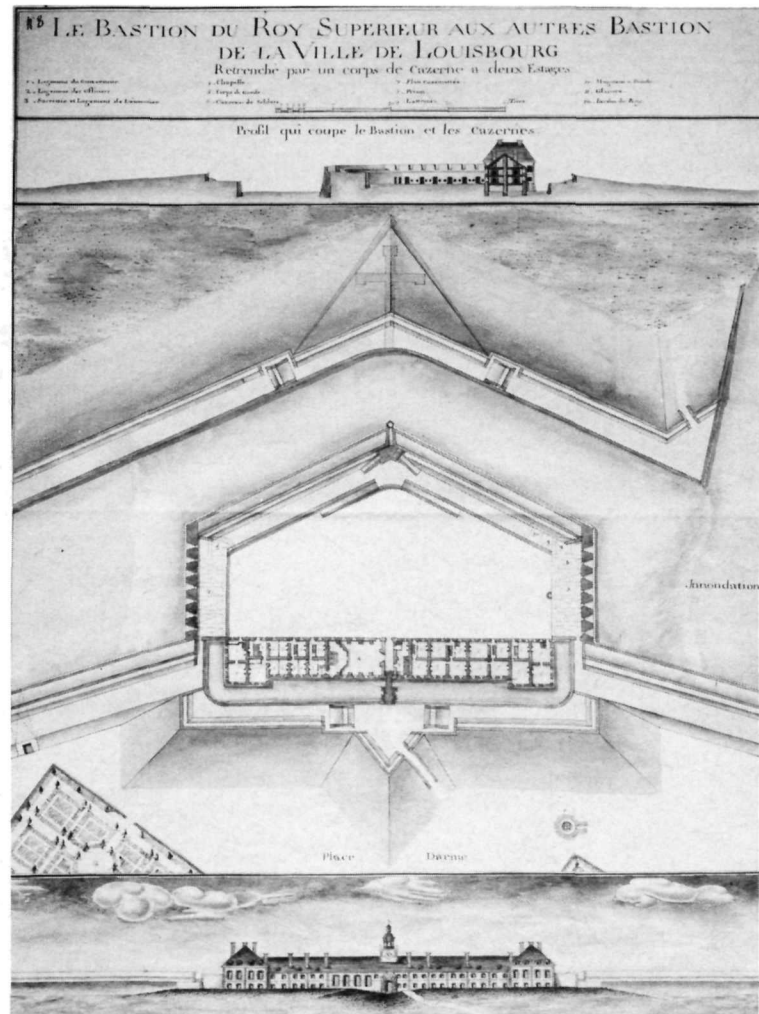
115 King's Bastion, construction progress and projections, Verrier, 1725. Note the gap on the right face for bringing construction material into the bastion. The relationship

between glacis and parapet is clearly shown. (Archives Nationales, Paris.)



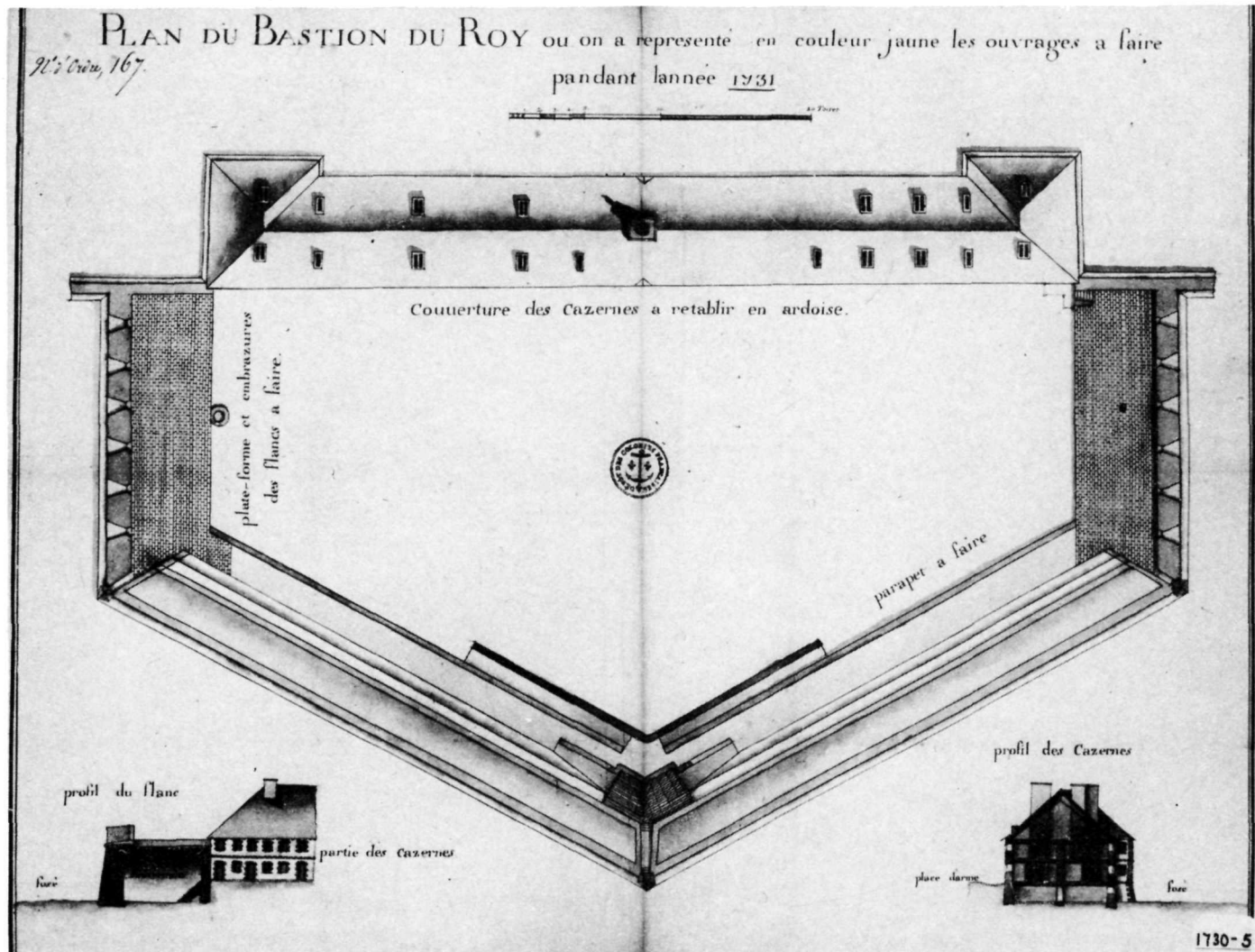
116 King's Bastion. Representation as it should look when completed (a foldaway flap over Fig. 115). Seven embrasures

are allowed for on each flank; also *guérites* at each shoulder angle. (Archives Nationales, Paris.)



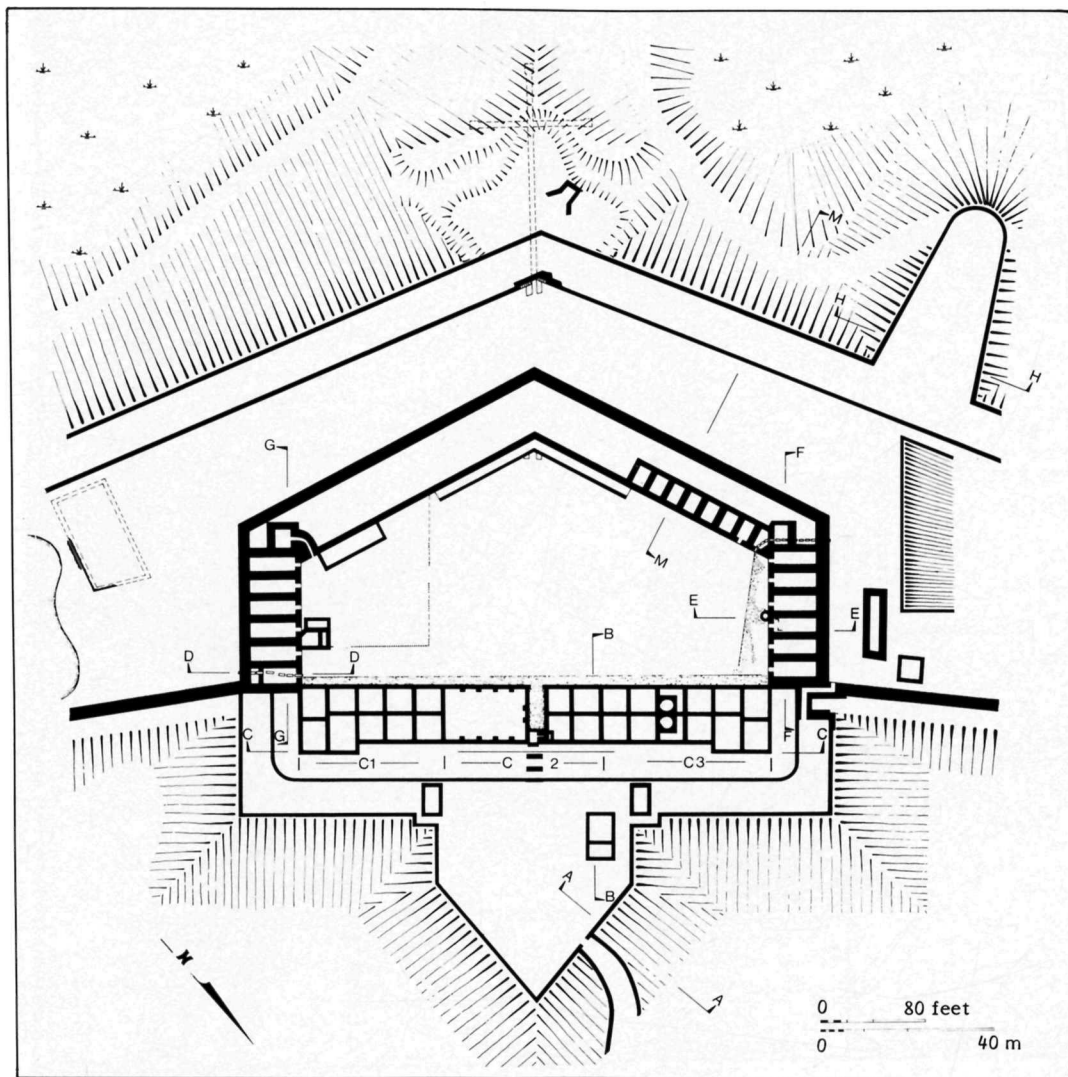
118 King's Bastion. Undated, unsigned plan. Representation of barracks suggests a late 1720s or early 1730s date. The plan is chiefly of interest for its identification of various casemates as prisons and latrines. Note also the mine gallery

under the glacis. In the profile above, the parapet of the face and the glacis are on the same alignment; the interior revetments of the flank and the face parapets are shown at the same elevation. (Archives du Génie, Vincennes.)

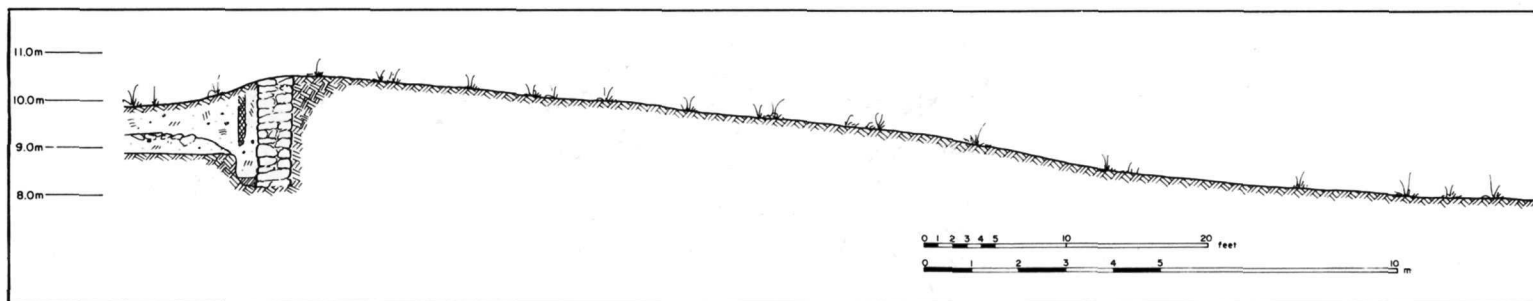


119 **King's Bastion**, construction proposals for 1731. The plan is of particular interest for the way the flanks are represented with ashlar paving. The embrasures have been

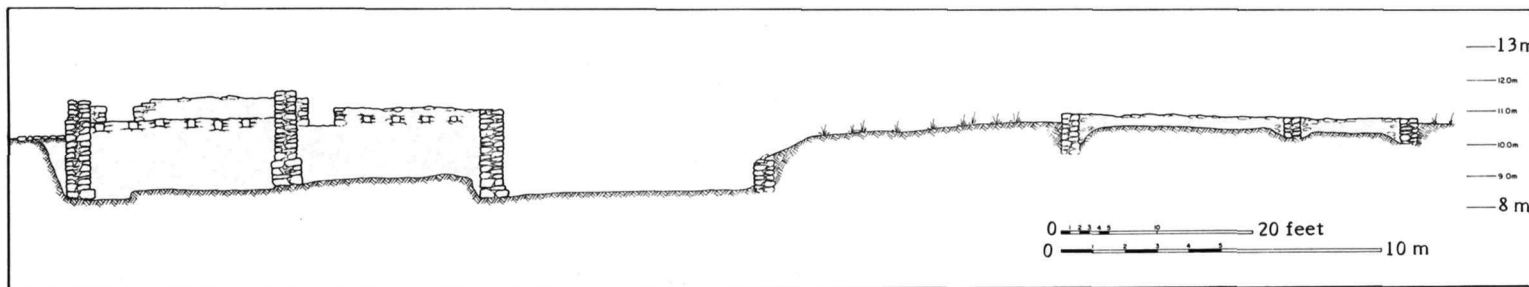
reduced from seven to six on each flank. (Archives Nationales, Paris.)



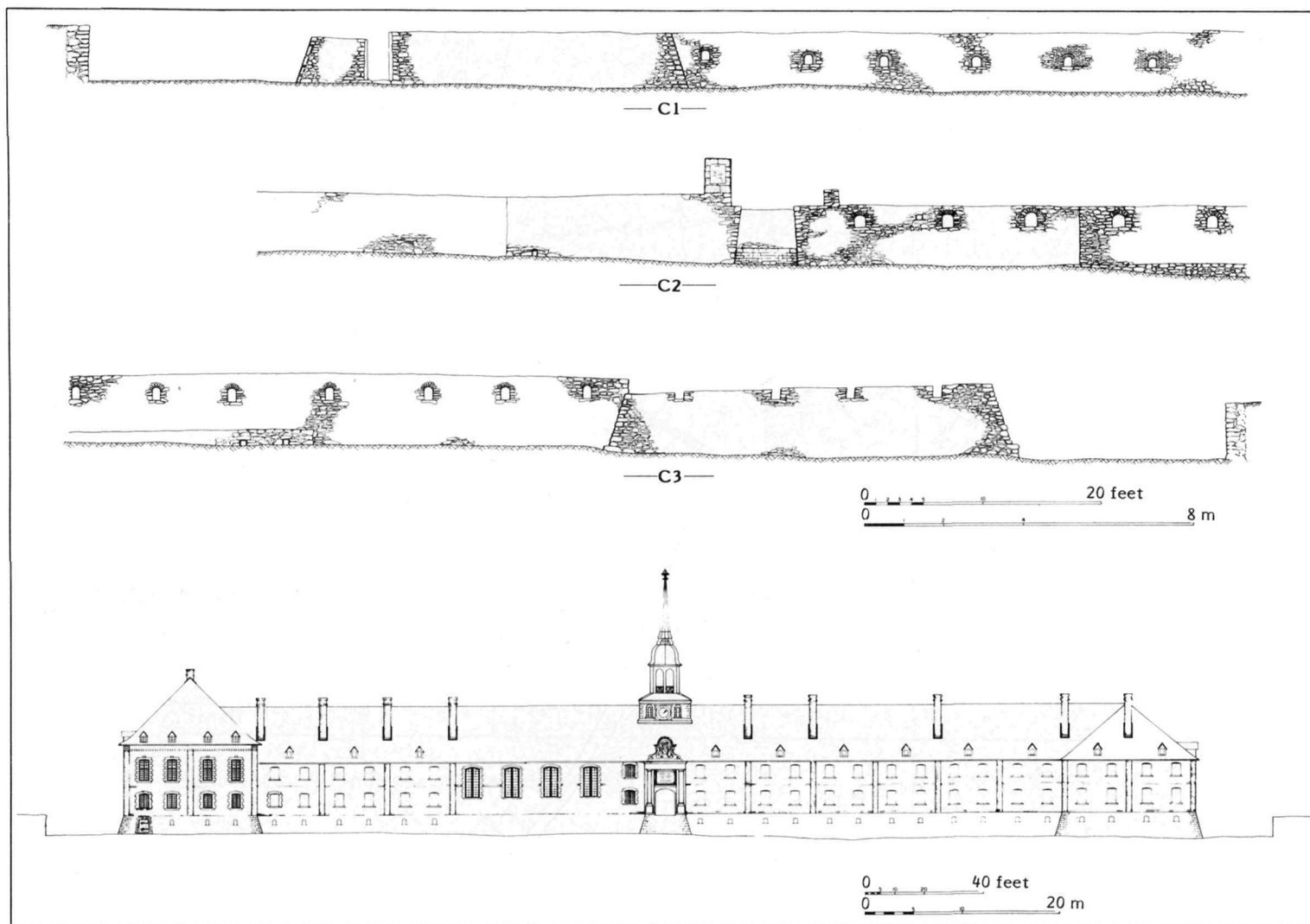
121 King's Bastion, key to sections. (Drawing by T.M. Smith.)



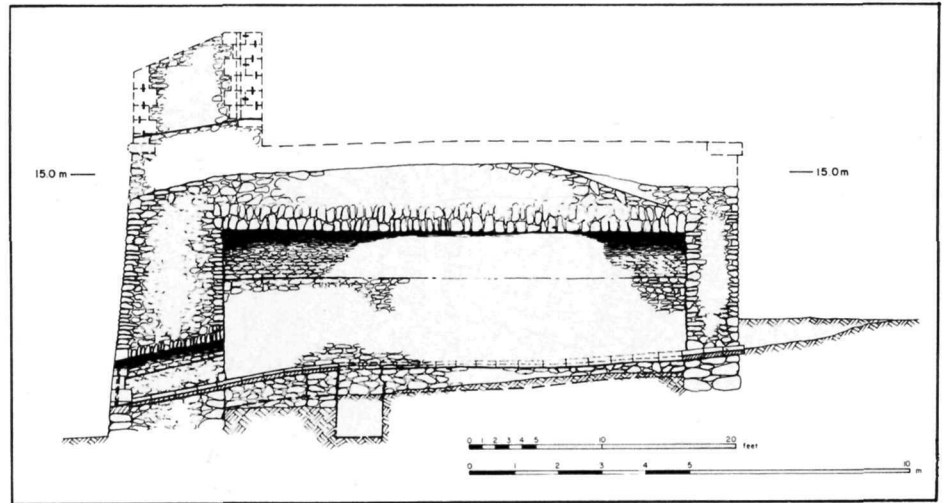
122 King's Bastion, section A-A. (Drawing by T.M. Smith.)



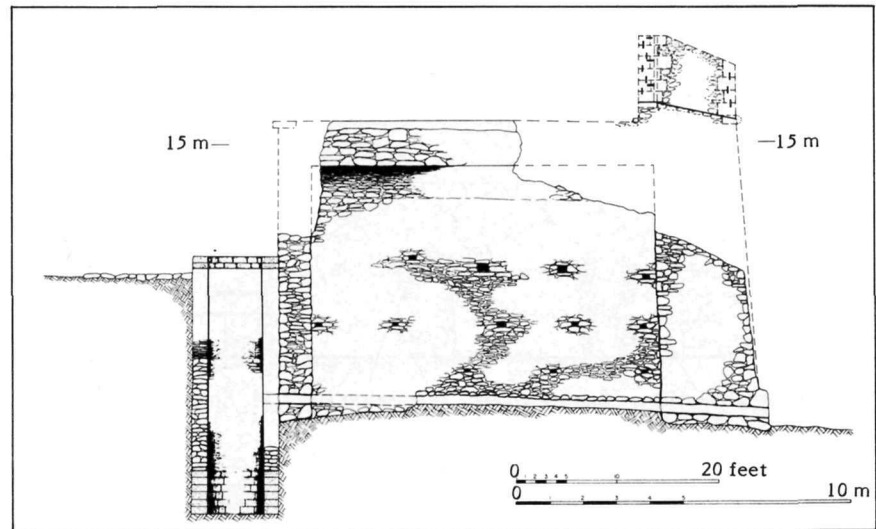
123 King's Bastion, section B-B. (Drawing by T.M. Smith.)



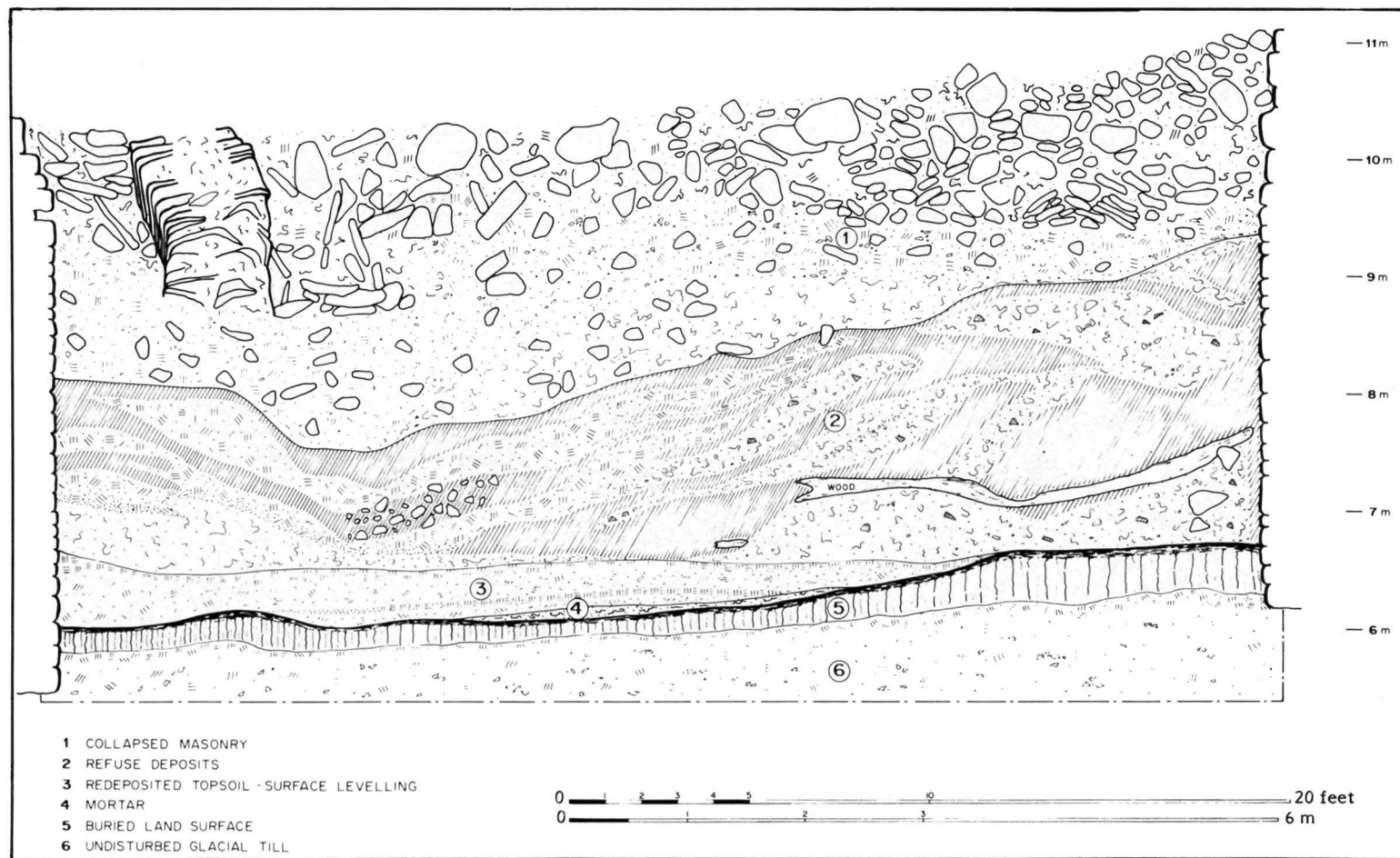
124 King's Bastion barracks, elevation C-C and conjectural elevation. (Drawing by T.M. Smith.)



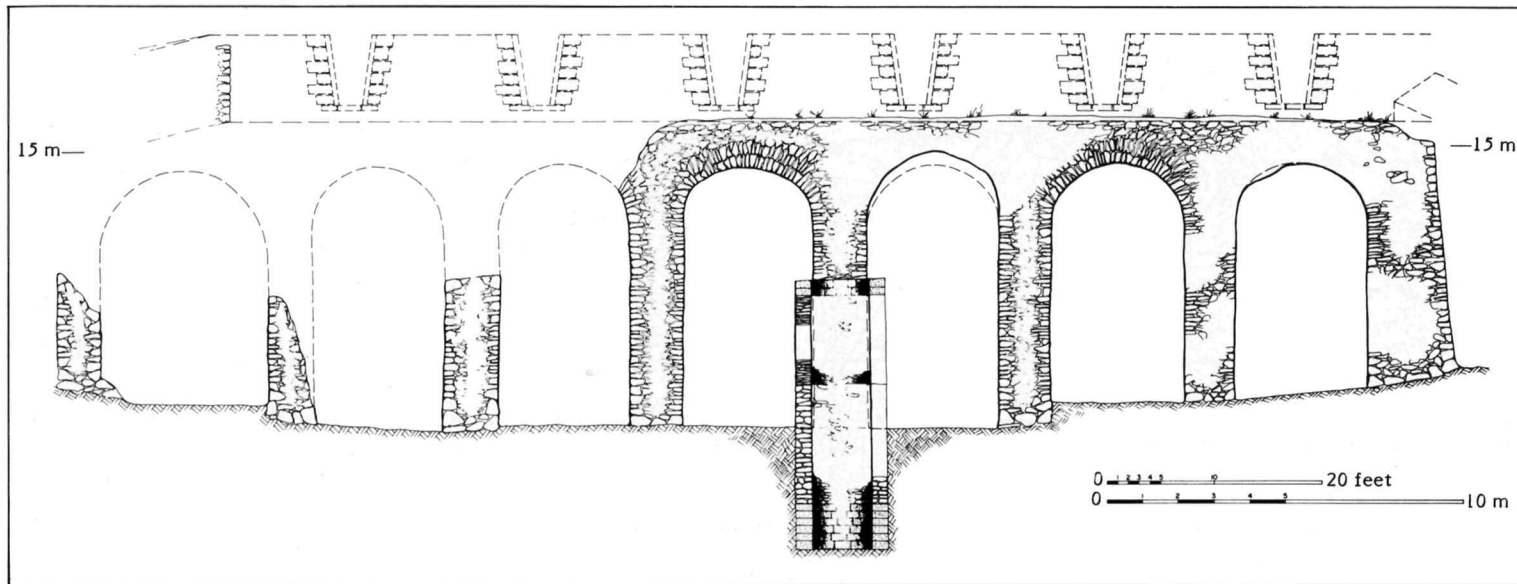
125 King's Bastion, section D-D. (Drawing by T.M. Smith.)



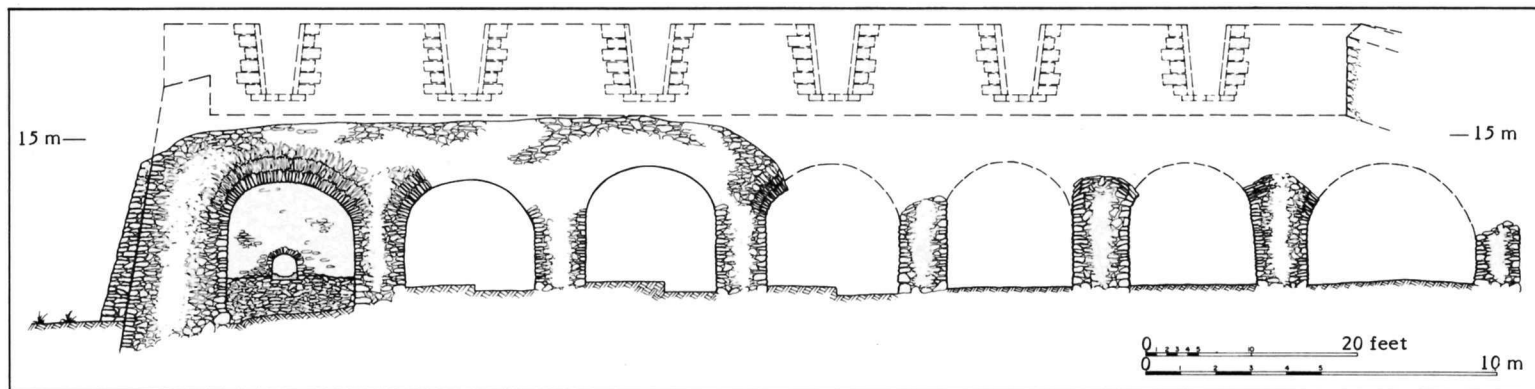
126 King's Bastion, section E-E. (Drawing by T.M. Smith.)



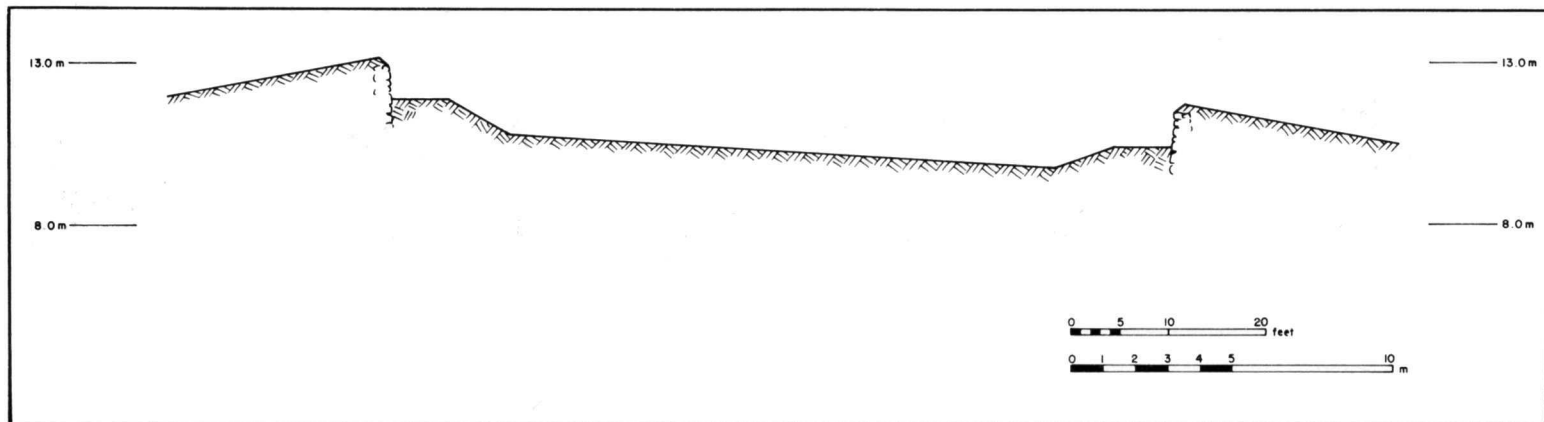
127 **King's Bastion, casemate 5R.** (Drawing by T.M. Smith.)



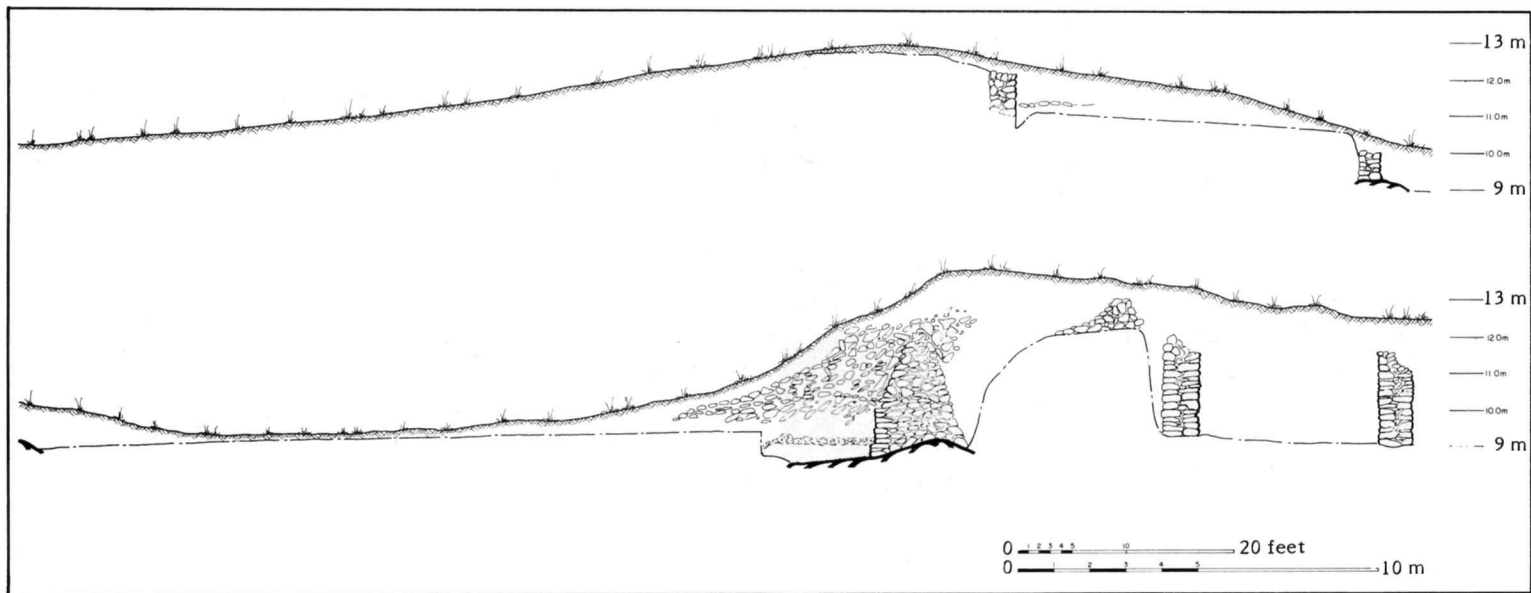
128 King's Bastion, section F-F. (Drawing by T.M. Smith.)



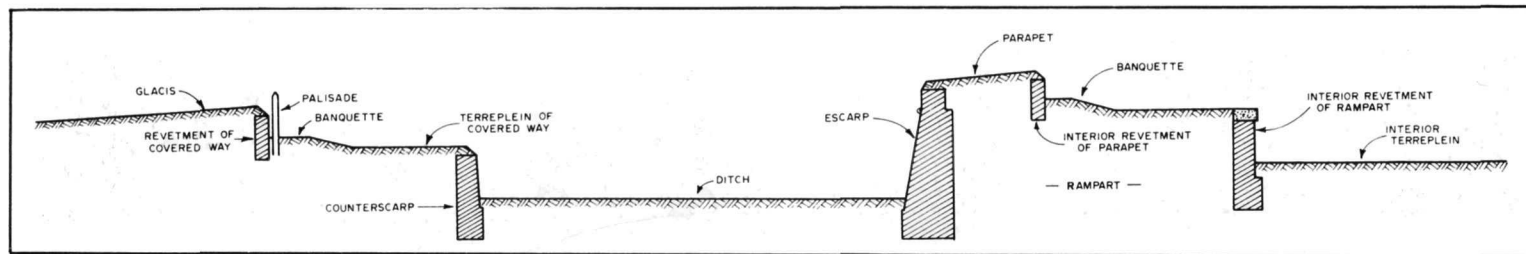
129 King's Bastion, section G-G. (Drawing by T.M. Smith.)



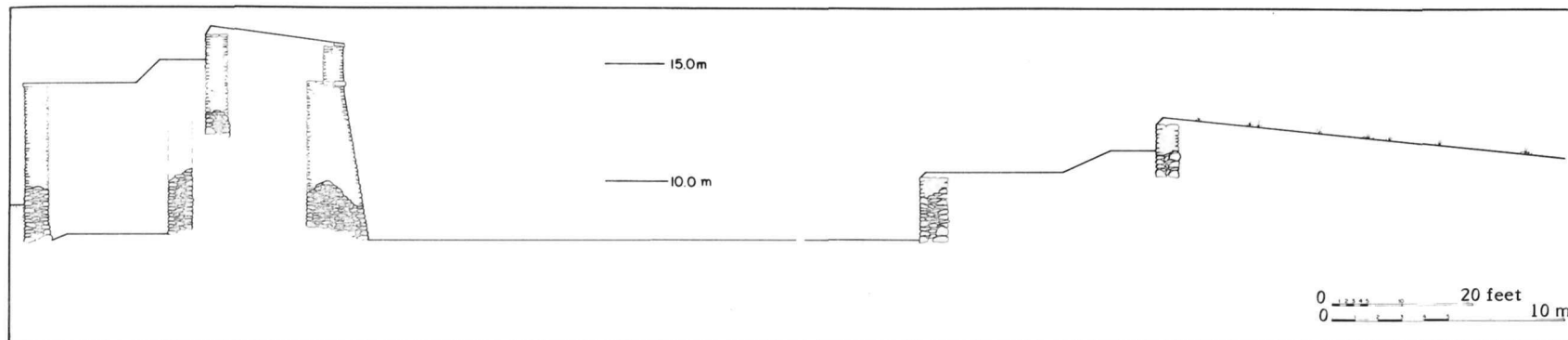
130 King's Bastion, section H-H. (Drawing by T.M. Smith.)



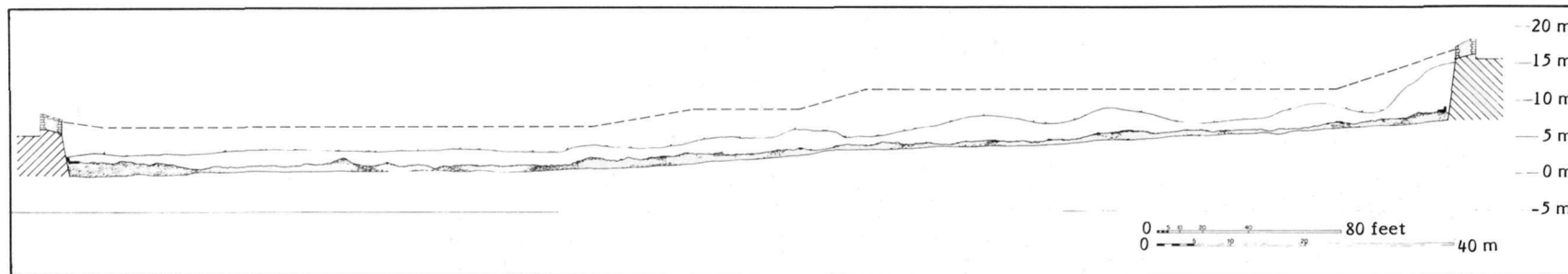
131 King's Bastion, section M-M. (Drawing by T.M. Smith.)



132 Typical section through fortification. (Drawing by T.M. Smith.)



133 King's Bastion, parapet command of glacis, conjectural reconstruction. (Drawing by T.M. Smith.)



134 King's-Dauphin curtain, elevation J¹. (Drawing by T.M. Smith.)

135 King's Bastion. All that remained of the escarp and quoins in the left shoulder angle. (Fortress of Louisbourg NHP.)

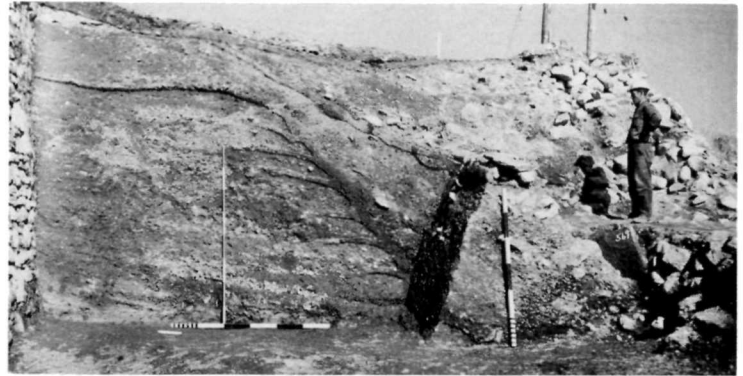


136 King's Bastion. Left flank escarp after excavation; drain in re-entrant angle at right. The extent of early 20th-century stabilization attempts are visible as darker masonry below fencing and dipping toward top of drain. (Fortress of Louisbourg NHP.)





137 King's Bastion, old and new. Solid and well-preserved original casemate arches and partitions at rear; reconstructed left flank escarp nears completion in front. (Fortress of Louisbourg NHP.)



138 King's Bastion. Emergency measures for defence: turf and fascine revetment placed against left flank escarp (extreme left) in 1757. Rubble-stone drain installed during 1900s stabilization work is immediately above scale at right. (Fortress of Louisbourg NHP.)



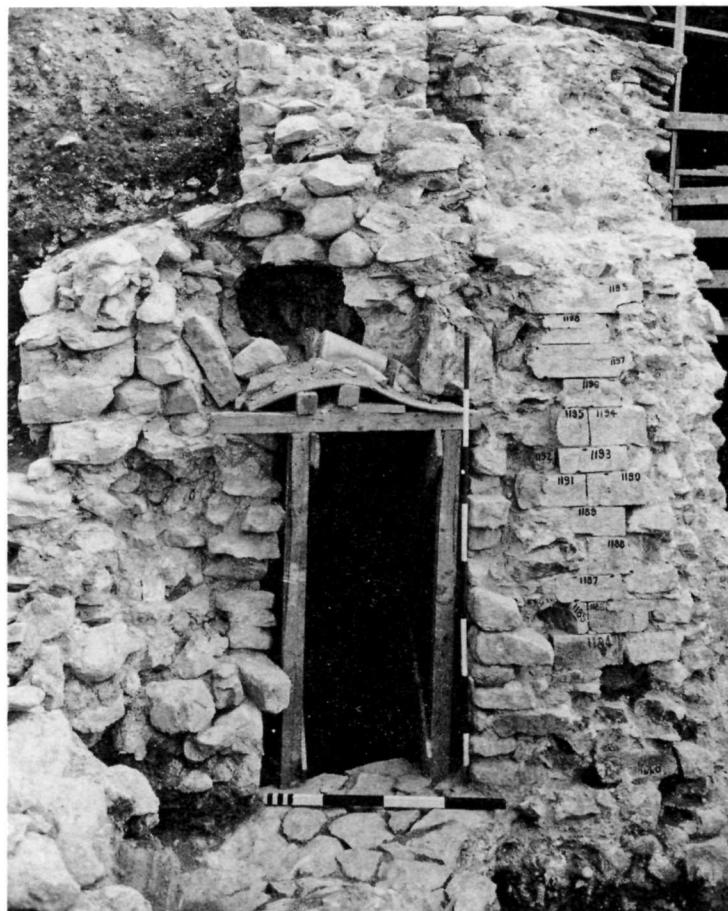
139 King's Bastion. Right flank escarp: remains of the wall rebuilt in 1755. Note use of dressed stones as plinth to receive timber uprights. (Fortress of Louisbourg NHP.)



140 King's Bastion. Right flank escarp. Junction between 1755 wall and original base is shown by difference in masonry colour and texture. (Fortress of Louisbourg NHP.)



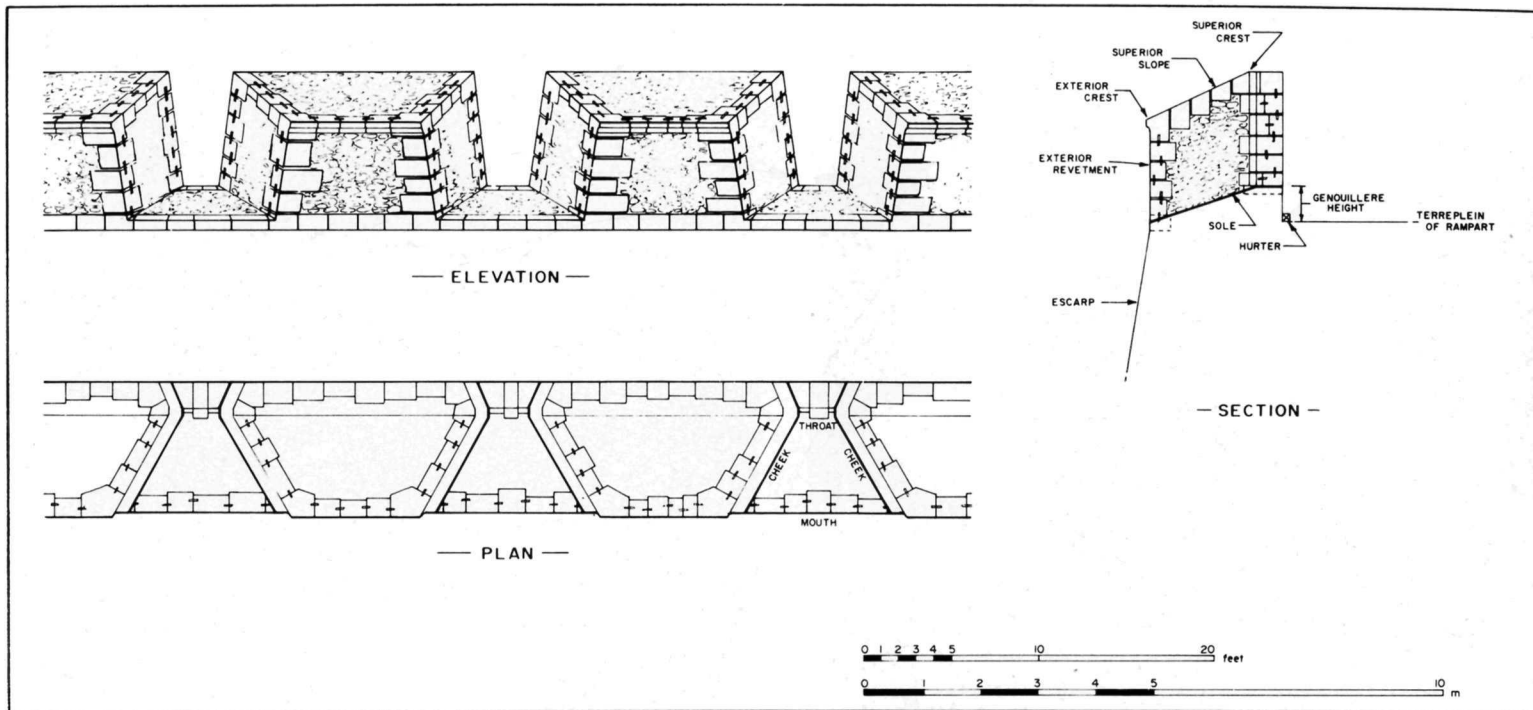
141 King's Bastion. Right flank escarp: dressed sandstone quoins, seen in profile (immediately to right of range-pole). Quoins date to original 1720 construction prior to addition of curtain wall. (Fortress of Louisbourg NHP.)



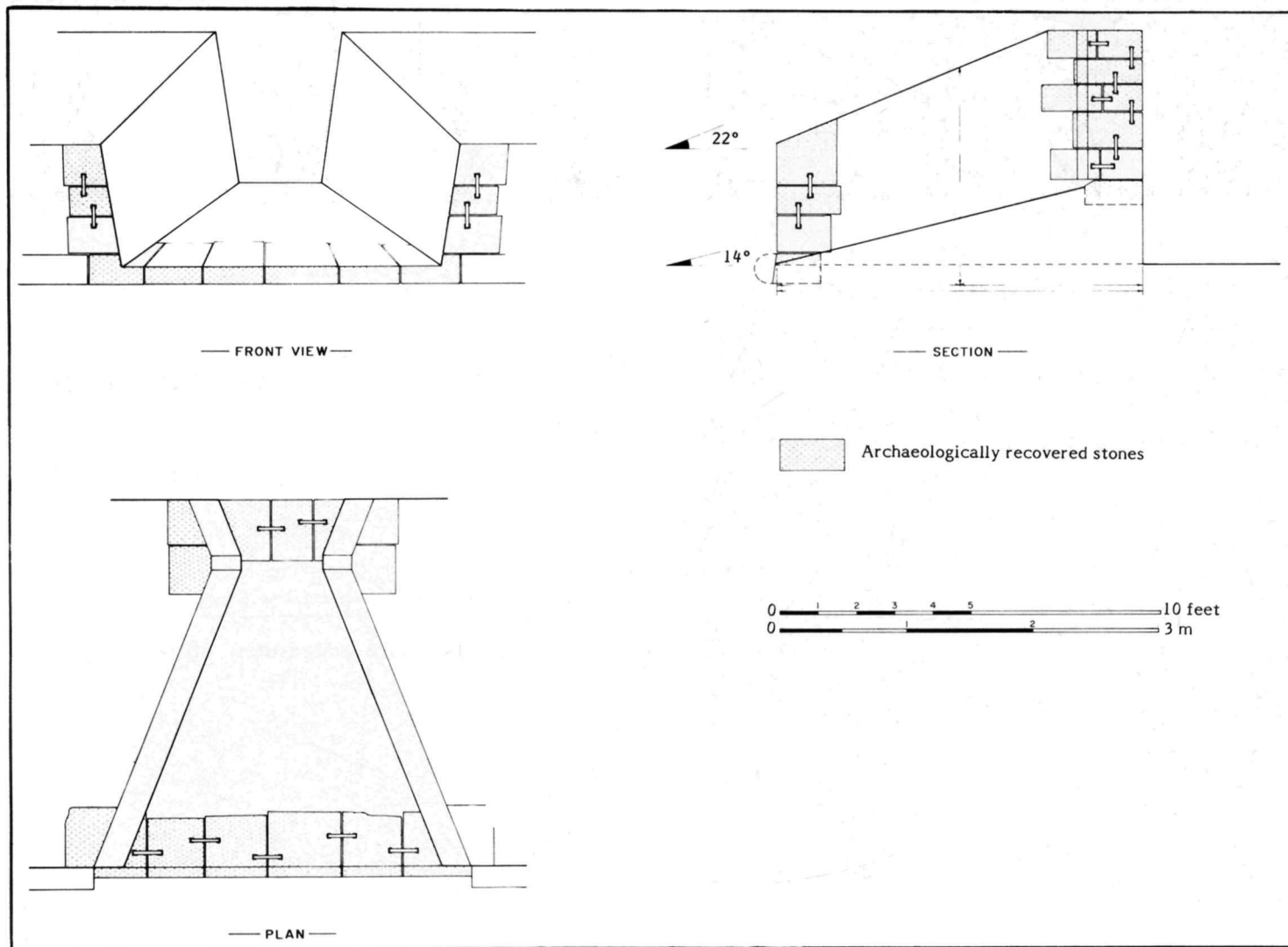
142 King's Bastion. Right re-entrant angle: surviving section of postern tunnel, parallel and keyed to terminating wall of flank. At right, remaining quoins from original angle when bastion was a free-standing redoubt. Above, rear of parapet of King's-Dauphin curtain. (Fortress of Louisbourg NHP.)



143 King's Bastion. Re-assembled angle at rear of right flank. (Fortress of Louisbourg NHP.)



144 Typical parapet with embrasures. (Drawing by T.M. Smith.)



145 King's Bastion, conjectural re-assembly of right flank embrasures. (Drawing by T.M. Smith.)



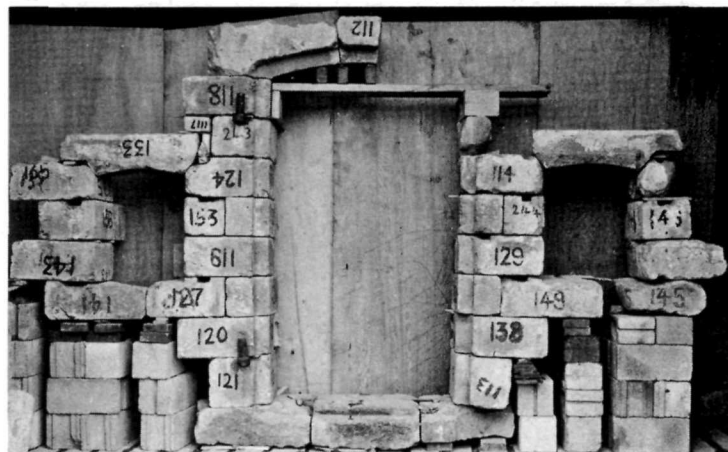
146 King's Bastion postern. When removed and examined, sill and jamb stones proved to have been reworked. (Fortress of Louisbourg NHP.)



147 King's Bastion. Right face casemates, looking north towards Dauphin Bastion (low mound beyond pond, upper left). Note remains of interior revetment of parapet in rampart fill at left. (Fortress of Louisbourg NHP.)



148 King's Bastion. Right face casemate 8R: cobble floor and drainage channels. (Fortress of Louisbourg NHP.)



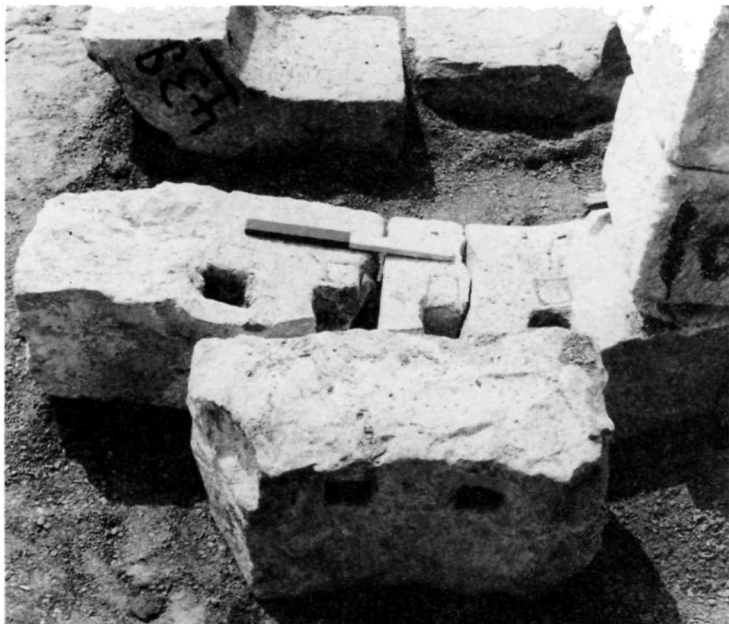
149 King's Bastion. Right flank casemate: doorway surround. (Fortress of Louisbourg NHP.)



150 King's Bastion. Casemate 7R: remains of drain passing through escarp at rear of casemate. (Fortress of Louisbourg NHP.)



151 King's Bastion. Casemate 6L: doorway and vents with flat sandstone surrounds, as seen from terreplein of bastion. Note junction with interior revetment of left face (at right). (Fortress of Louisbourg NHP.)



152 King's Bastion. Dressed stones forming surround of drain opening, recovered from rebuilt right flank escarp; damaged lintel in foreground. Note square holes to receive iron grille. (Fortress of Louisbourg NHP.)



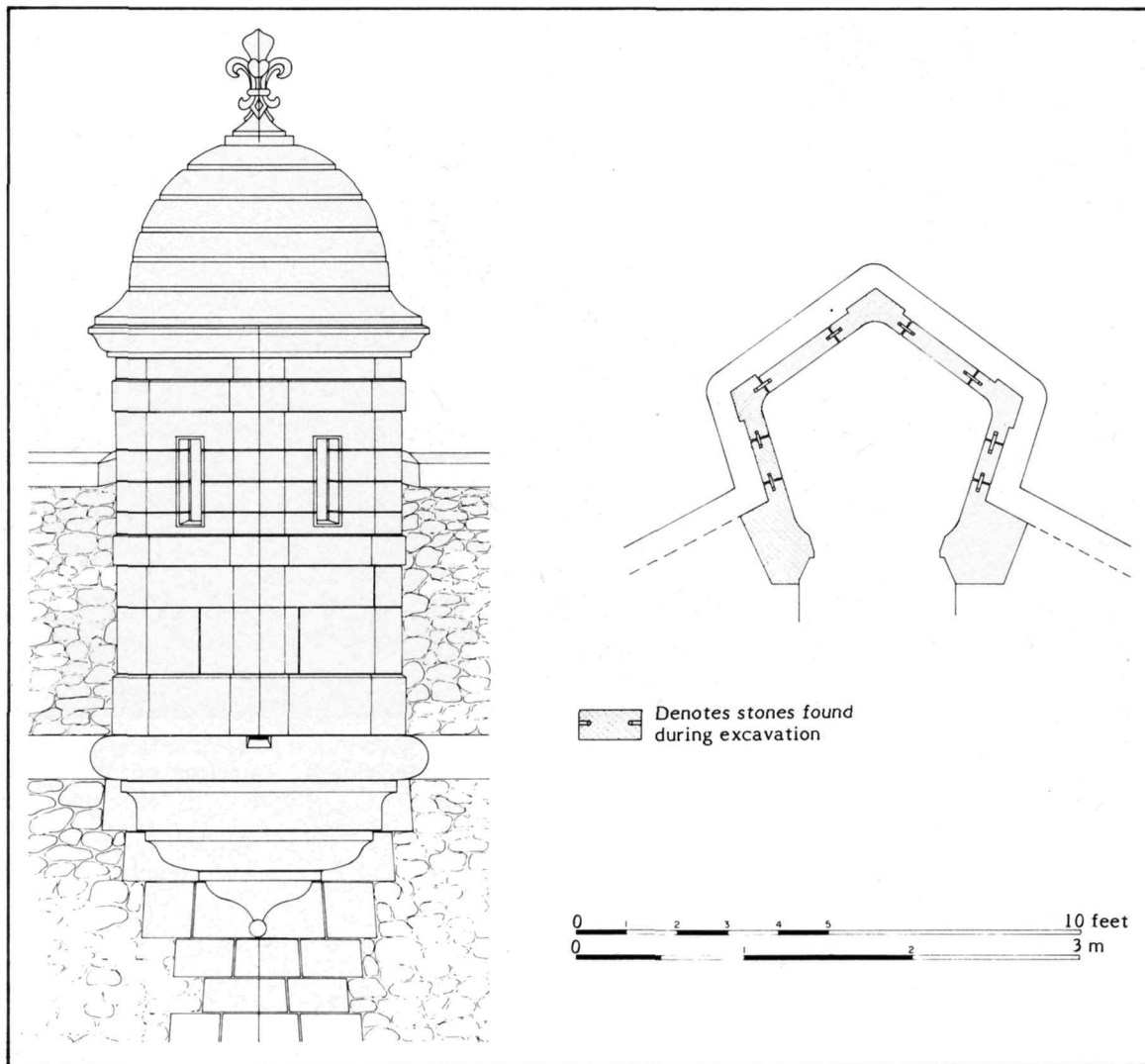
153 King's Bastion. Casemate 1R: remains of wooden floor. (Fortress of Louisbourg NHP.)



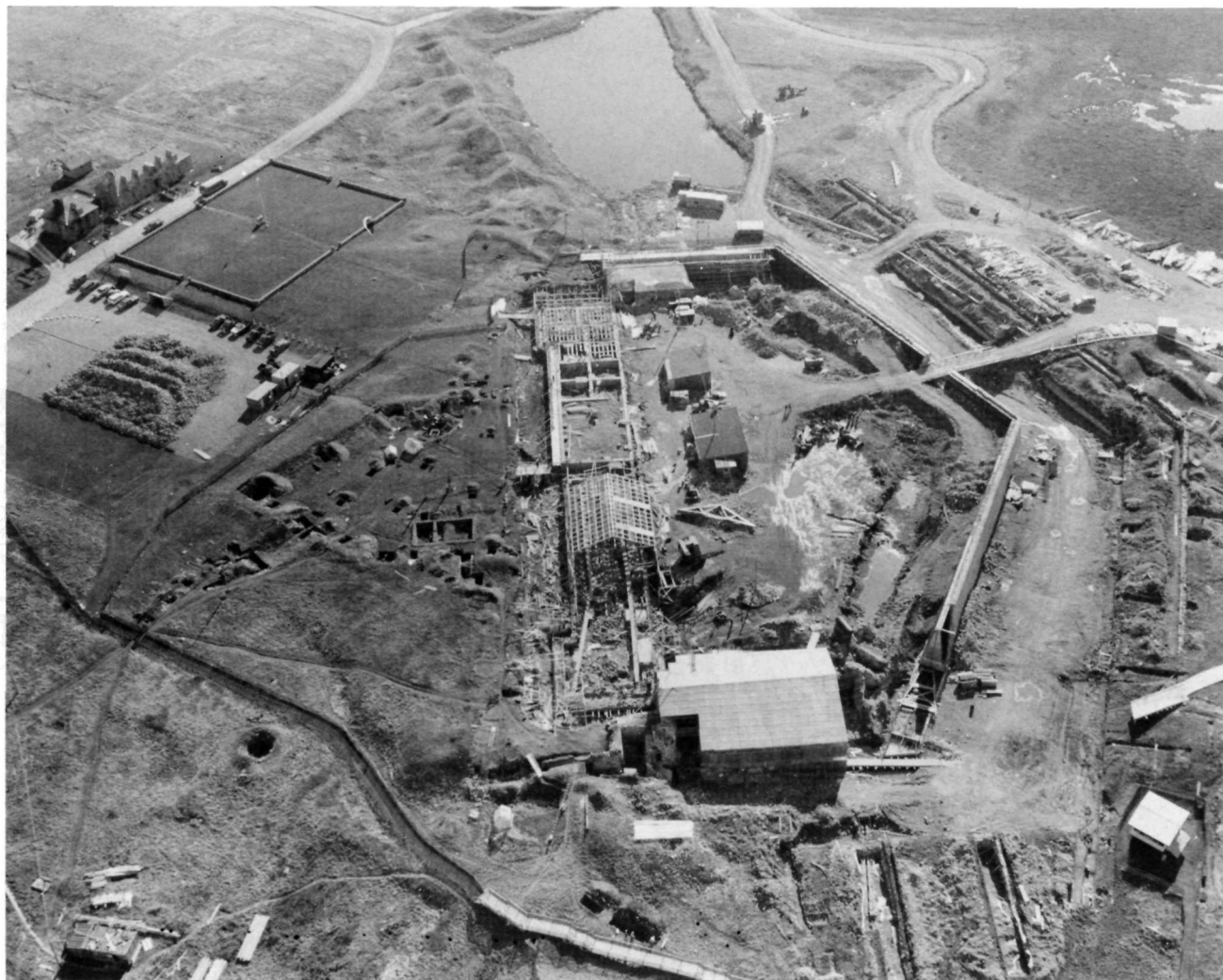
154 King's Bastion. Right-flank casemates: ashlar paving blocks from terreplein of rampart. (Fortress of Louisbourg NHP.)



155 Brouage (Charente-Maritime). *Guérites* on the ramparts. (Photo by author.)



156 King's Bastion *guérite*, conjectural model. (Drawing by T.M. Smith.)



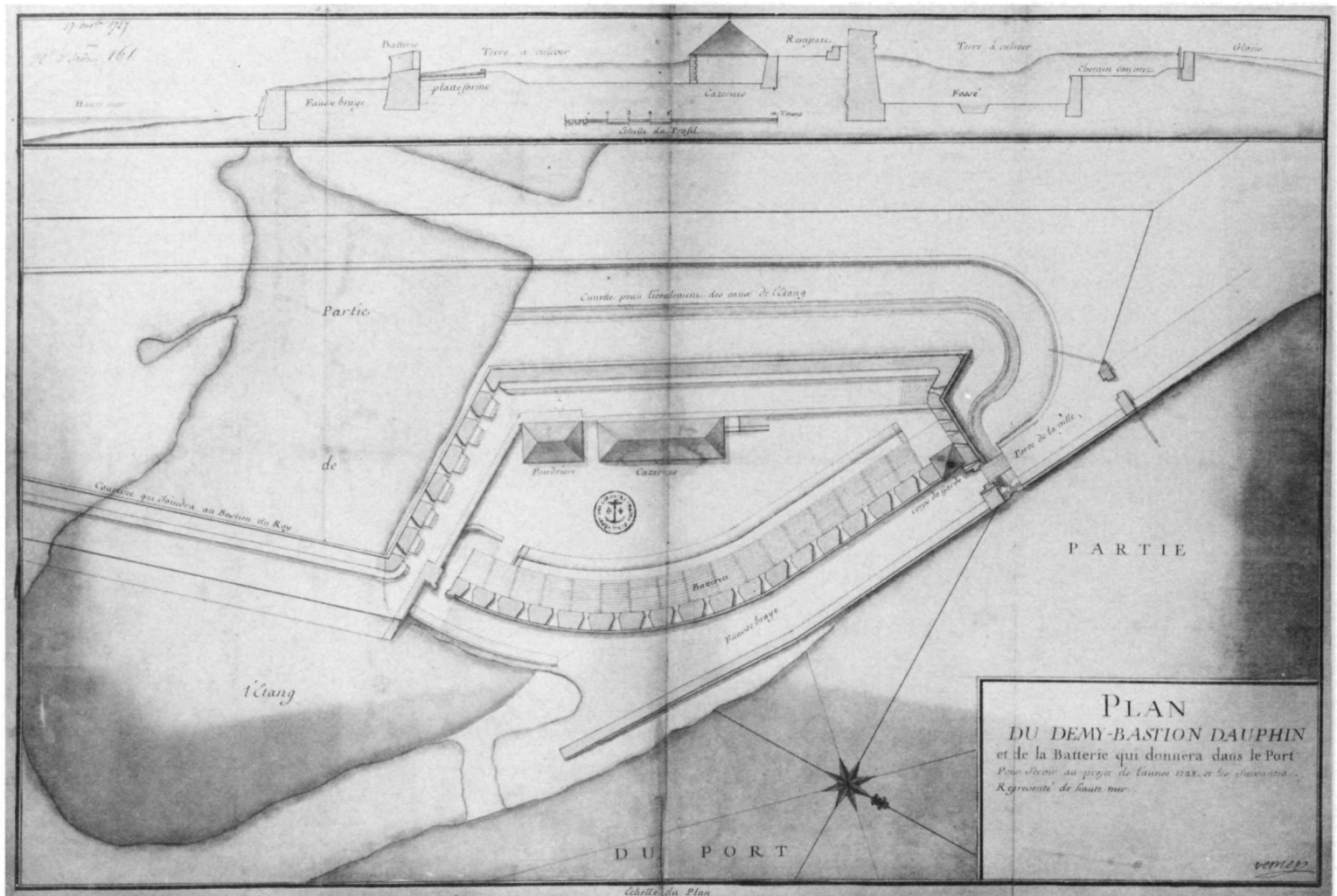
157 Citadel. Aerial view during excavation of townside *place d'armes* (centre left). Construction of barracks and escarp is in progress. (Fortress of Louisbourg NHP.)



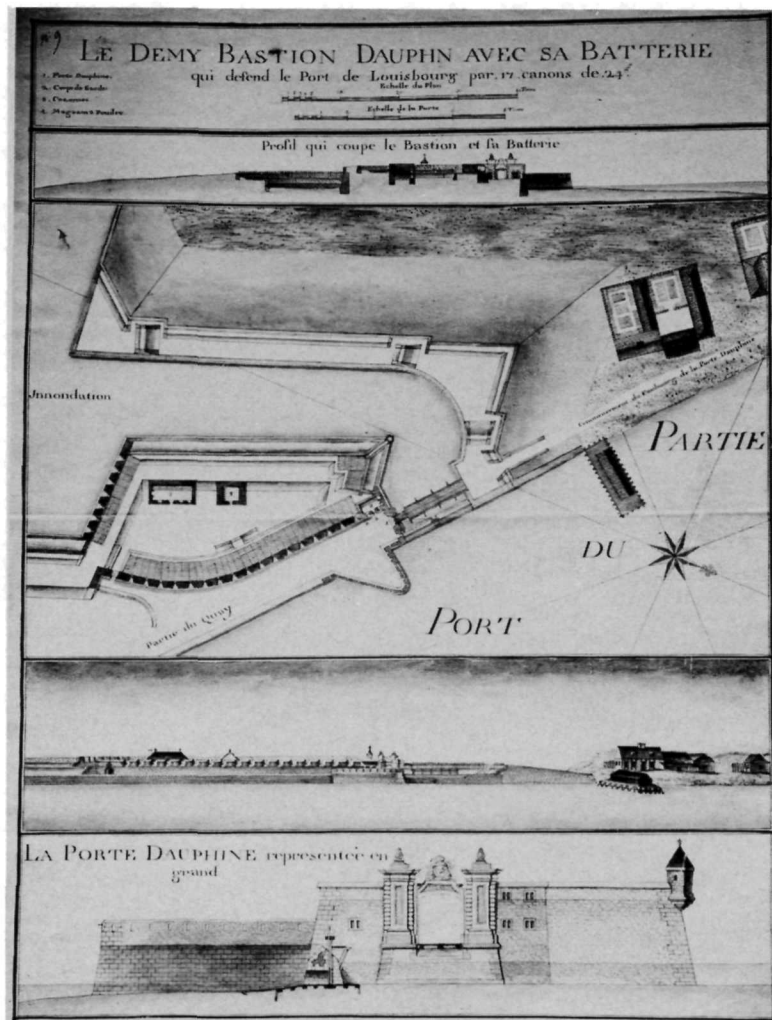
158 King's Bastion barracks. Rubble of collapsed structure in basement below level of 1930s stabilization work (roughly at level of top of vertical scale). Numbered blocks of dressed sandstones are from fireplace and window surrounds. (Fortress of Louisbourg NHP.)



159 Citadel. Townside *place d'armes*: post-moulds of palisade posts set in banquette immediately behind interior revetment. (Fortress of Louisbourg NHP.)

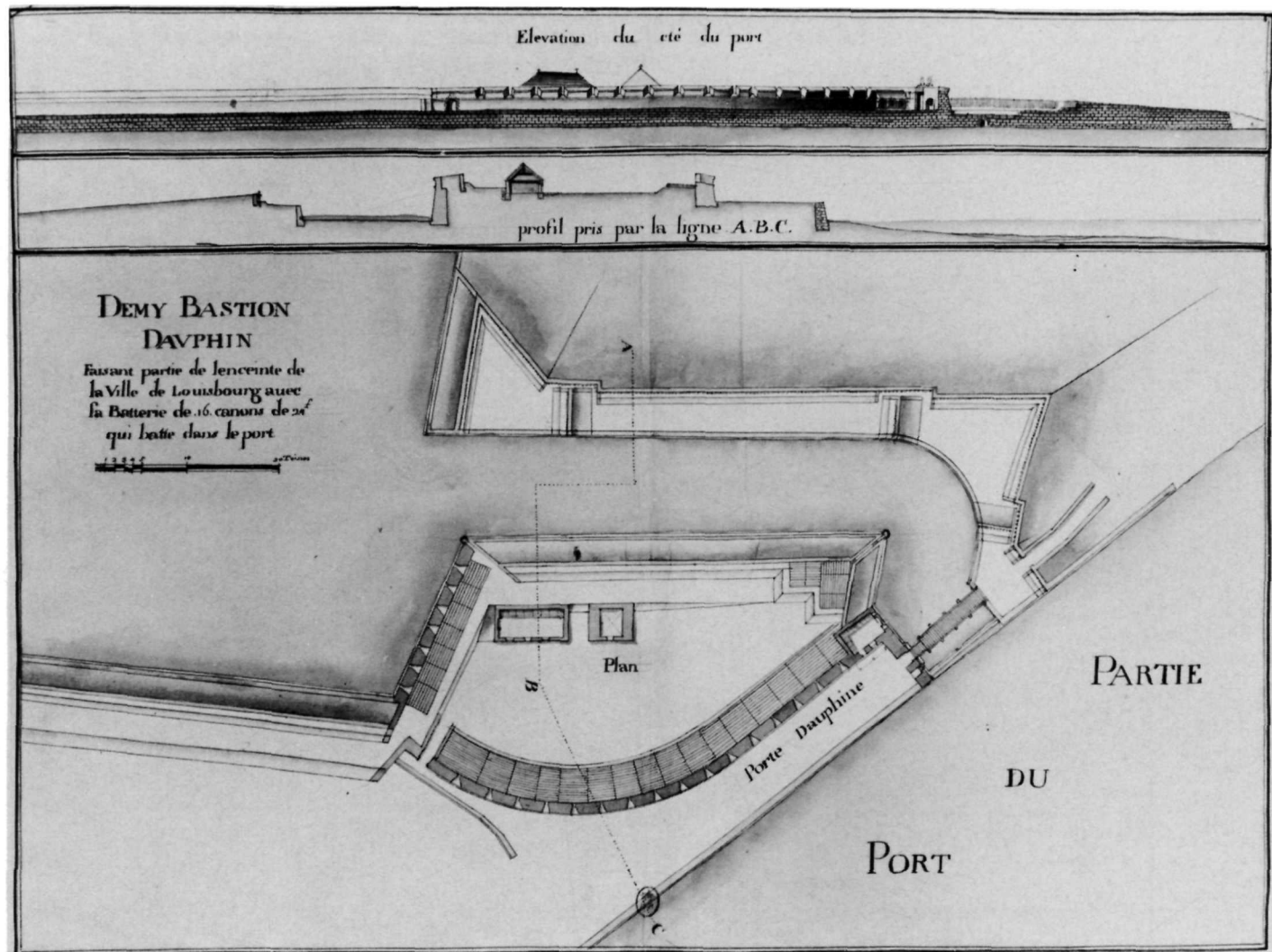


160 Dauphin Bastion. Early construction proposals, Verrier, 1727. Not followed in detail. (Archives Nationales, Paris.)



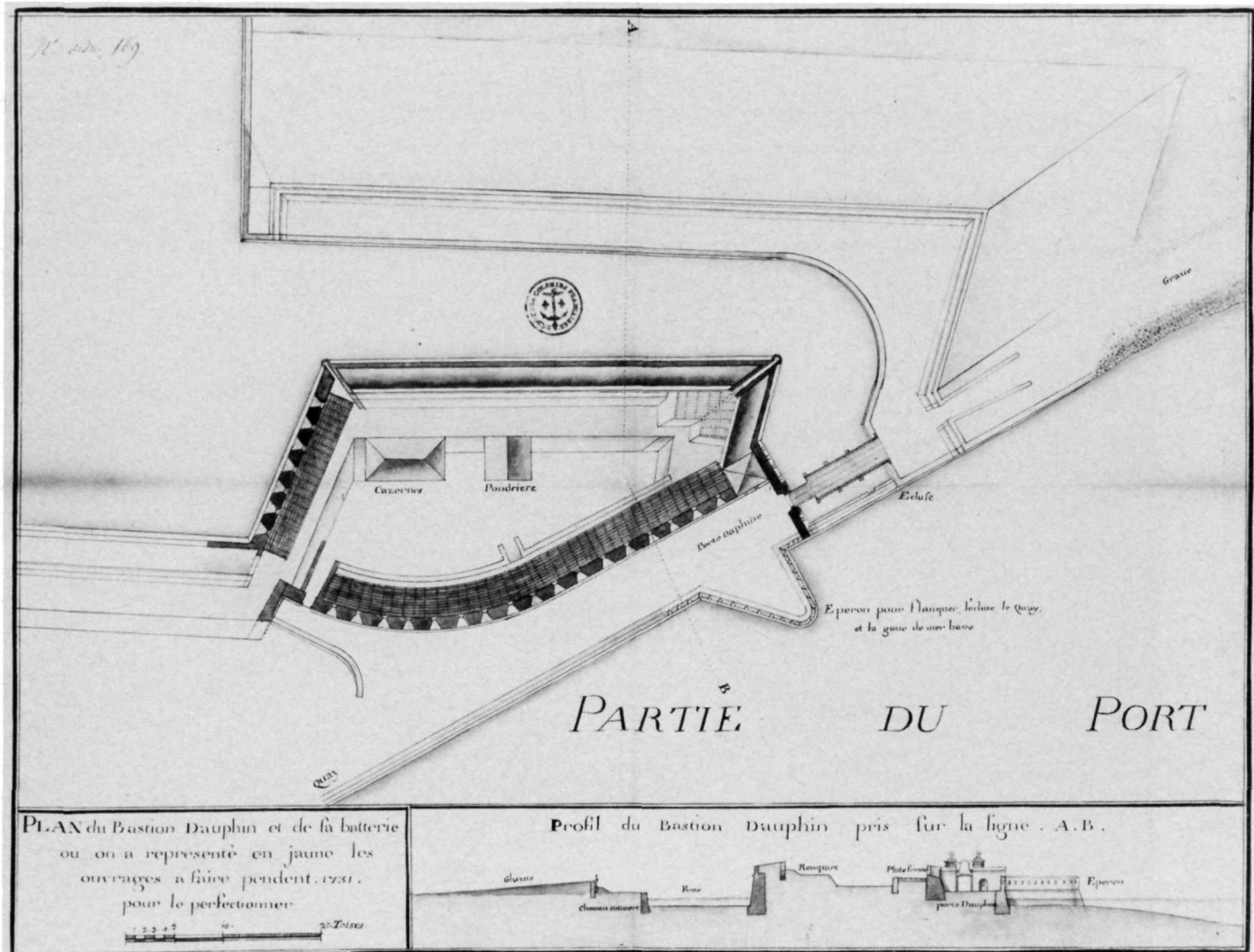
161 Dauphin Bastion. Unsigned, undated plan and view. Circular Battery is shown with 17 embrasures and interior revetment of masonry; the entrance through the battery is depicted at left in the general view. The *éperon* and quay

wall are shown as faced in ashlar. Note section through *batardeau* and sluice (below); representation of gate is identical to a larger, dated drawing (Fig. 166). (Archives du Génie, Vincennes.)



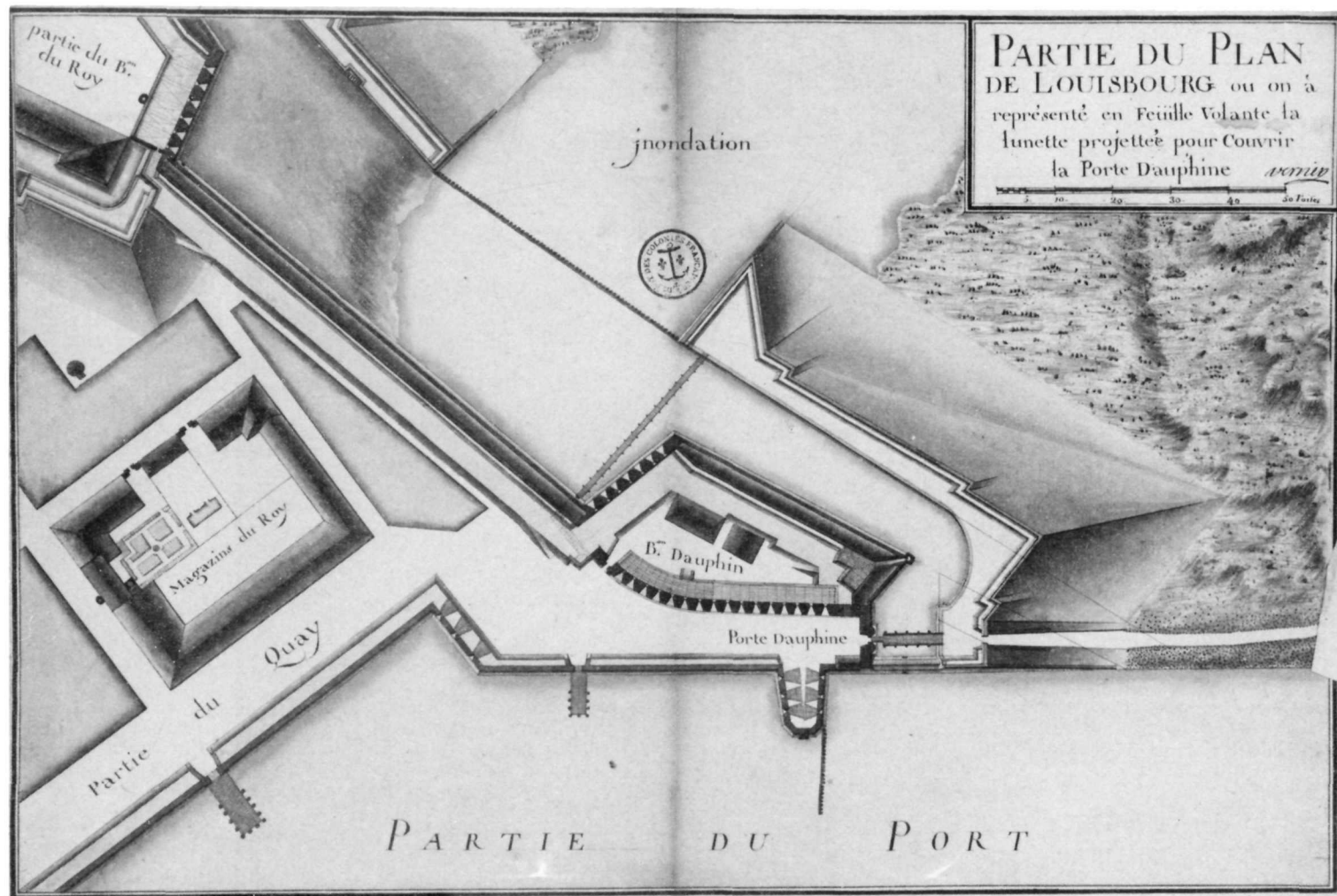
162 Dauphin Bastion. Undated, unsigned plan. Circular Battery is shown with 16 embrasures and interior slope of earth. Note gradual diminishing on interior slope of left face

the nearer it is to flanked angle. No *éperon* is shown. (Bibliothèque Nationale, Paris.)



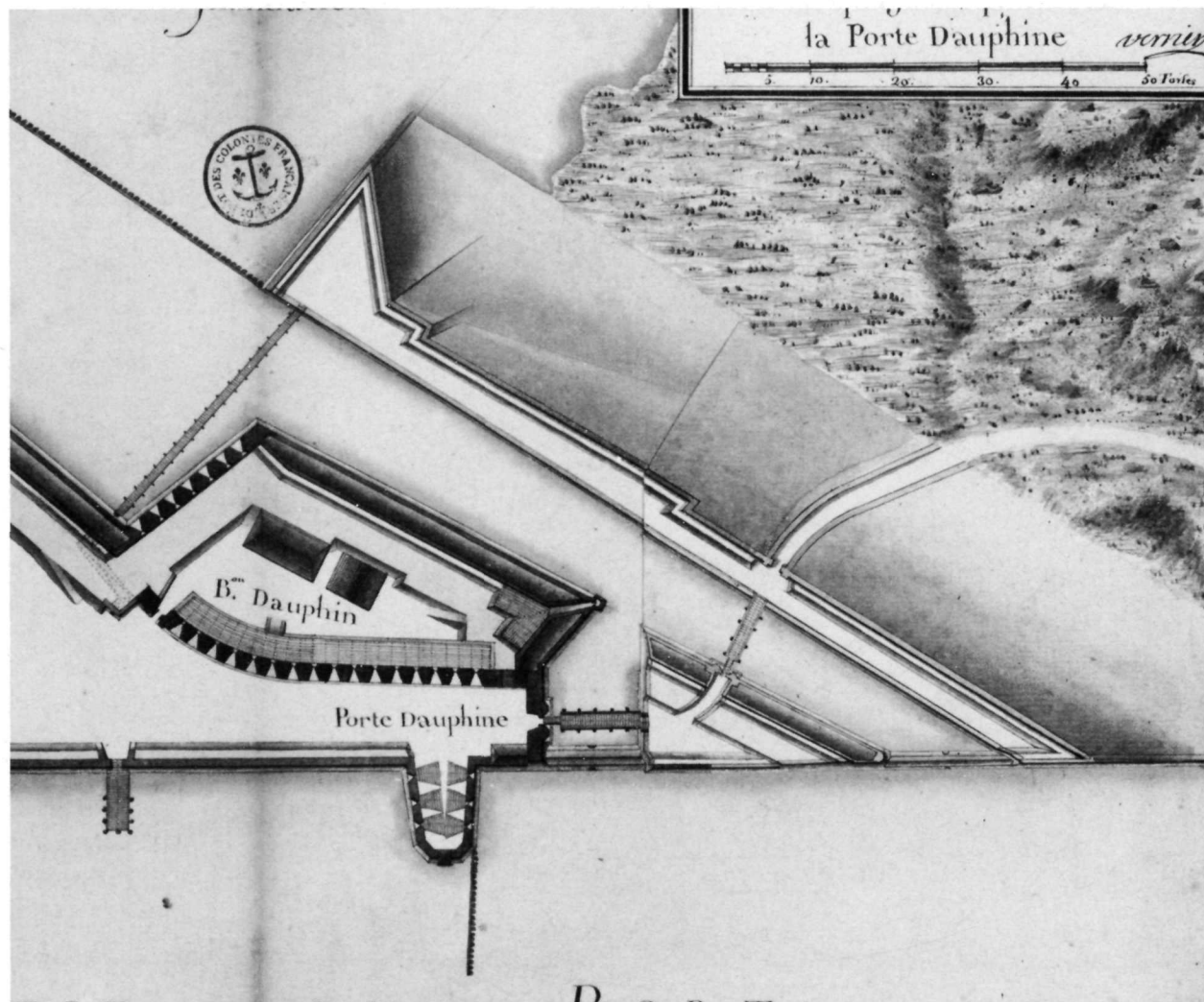
163 Dauphin Bastion. Construction proposals for 1731. Circular Battery is shown with 17 embrasures and masonry

interior revetment (indicated as work to be done). (Archives Nationales, Paris.)

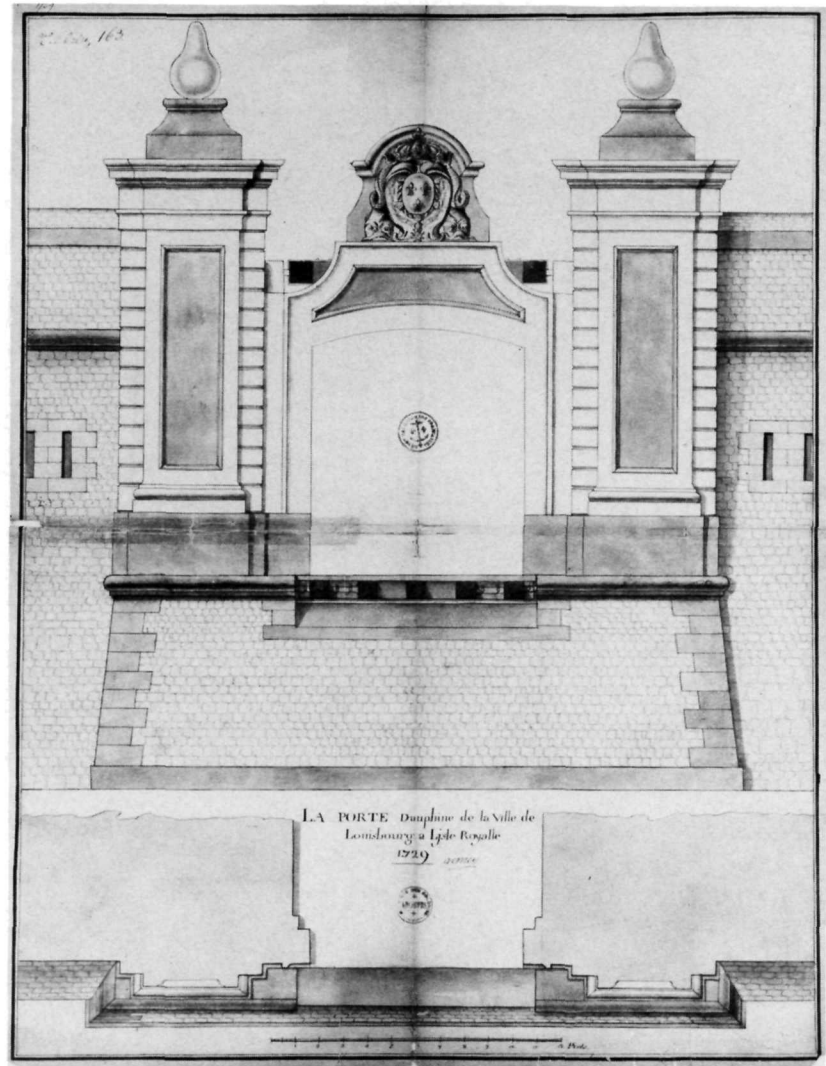


164 Dauphin Bastion. Proposal to modify glacis in front of gate, Verrier, undated (1744). Ramparts, including *éperon*,

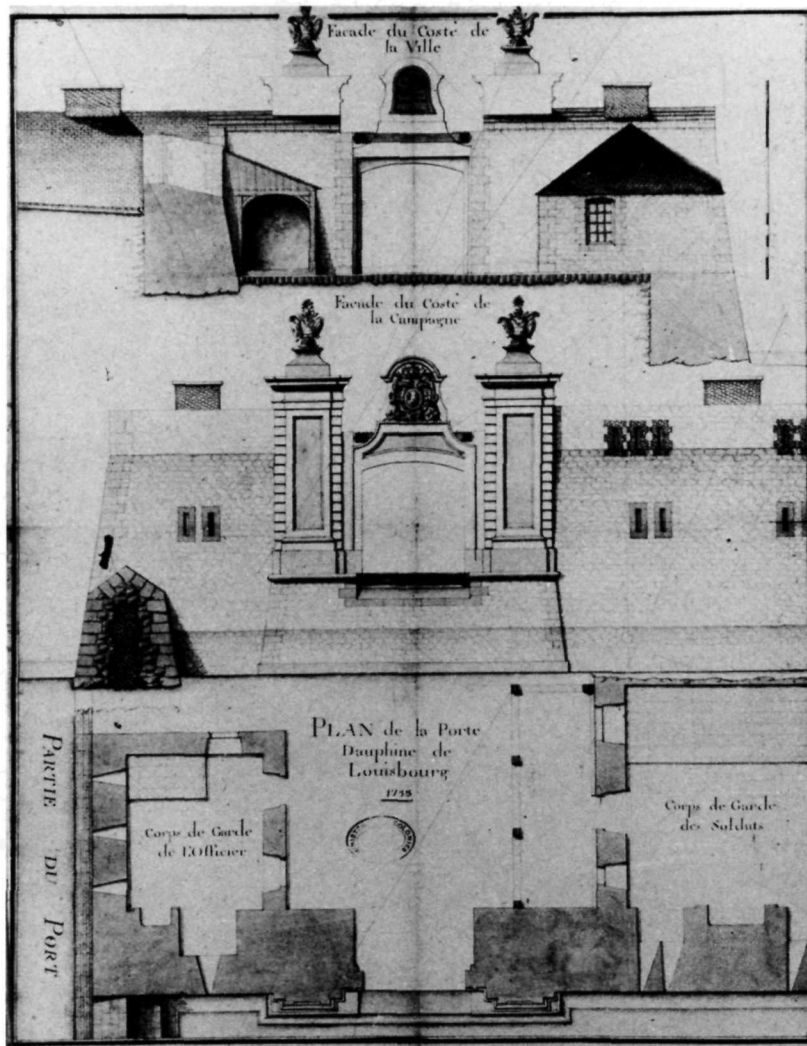
are represented in their completed state; Circular Battery has 16 embrasures. (Archives Nationales, Paris.)



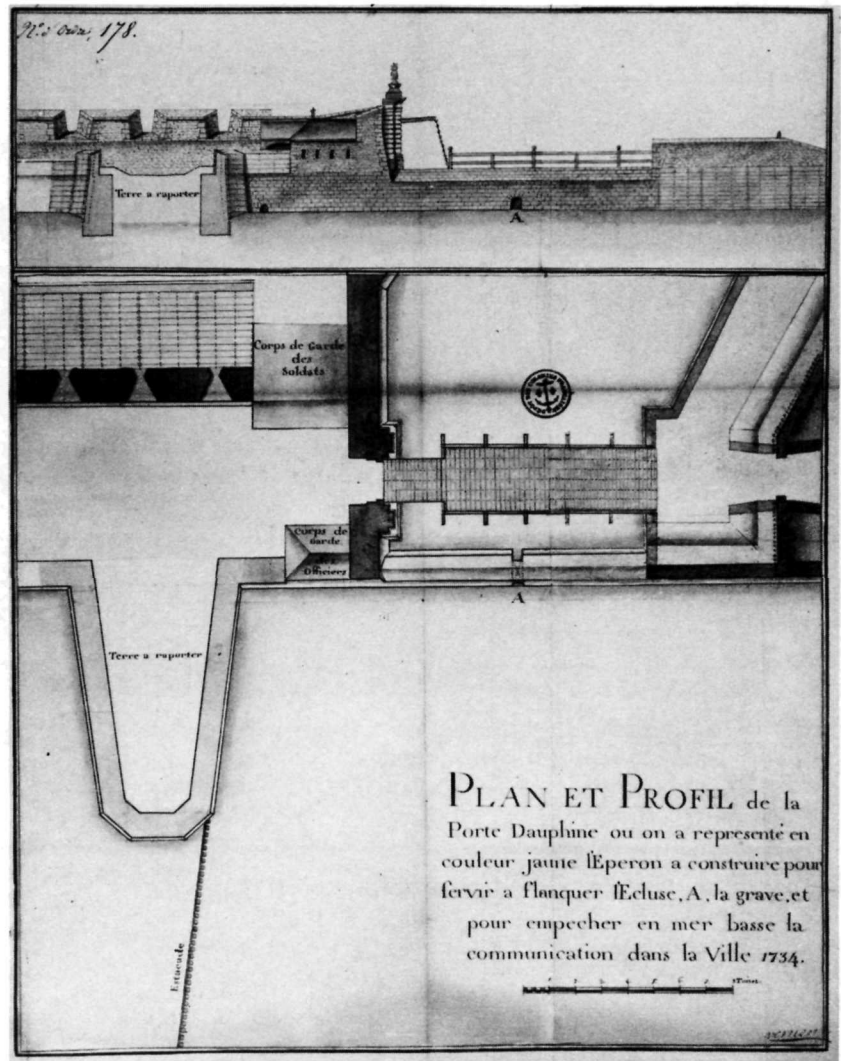
165 Dauphin Bastion. Figure 164 with foldaway flap down to show proposed lunette in front of gate. (Archives Nationales, Paris.)



166 Dauphin Gate. Preliminary design, Verrier, 1729.
(Archives Nationales, Paris.)

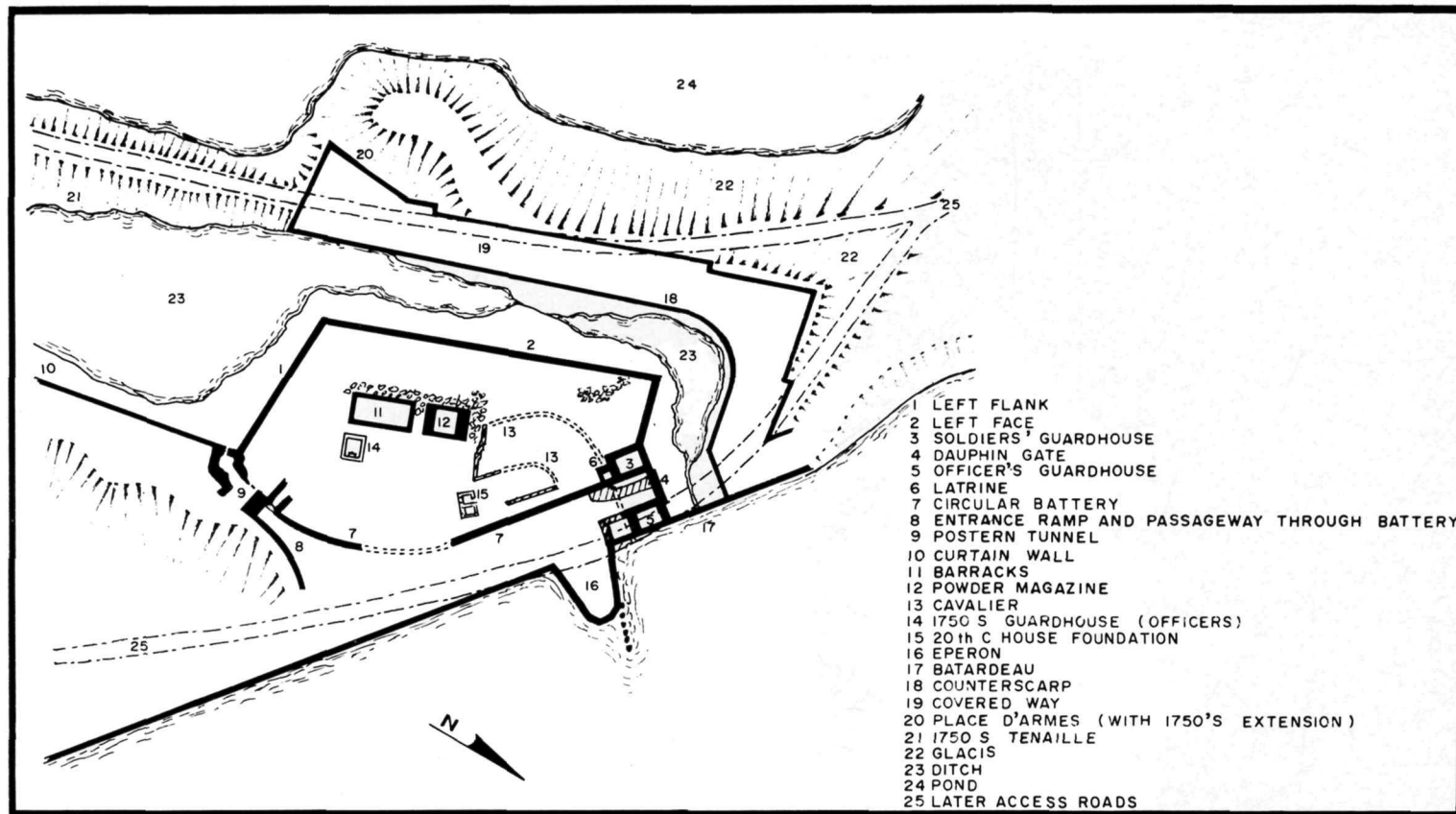


167 Dauphin Gate. Revised design, 1733. Useful for sections through Circular Battery and *atardeau*; also plan of guardhouses. (Archives Nationales, Paris.)



168 Dauphin Gate. Construction of *éperon*, 1734. Note extensive use of plank revetting although *atardeau* is faced

in ashlar. Note also outlet for latrine drain at right of *éperon*. (Archives Nationales, Paris.)

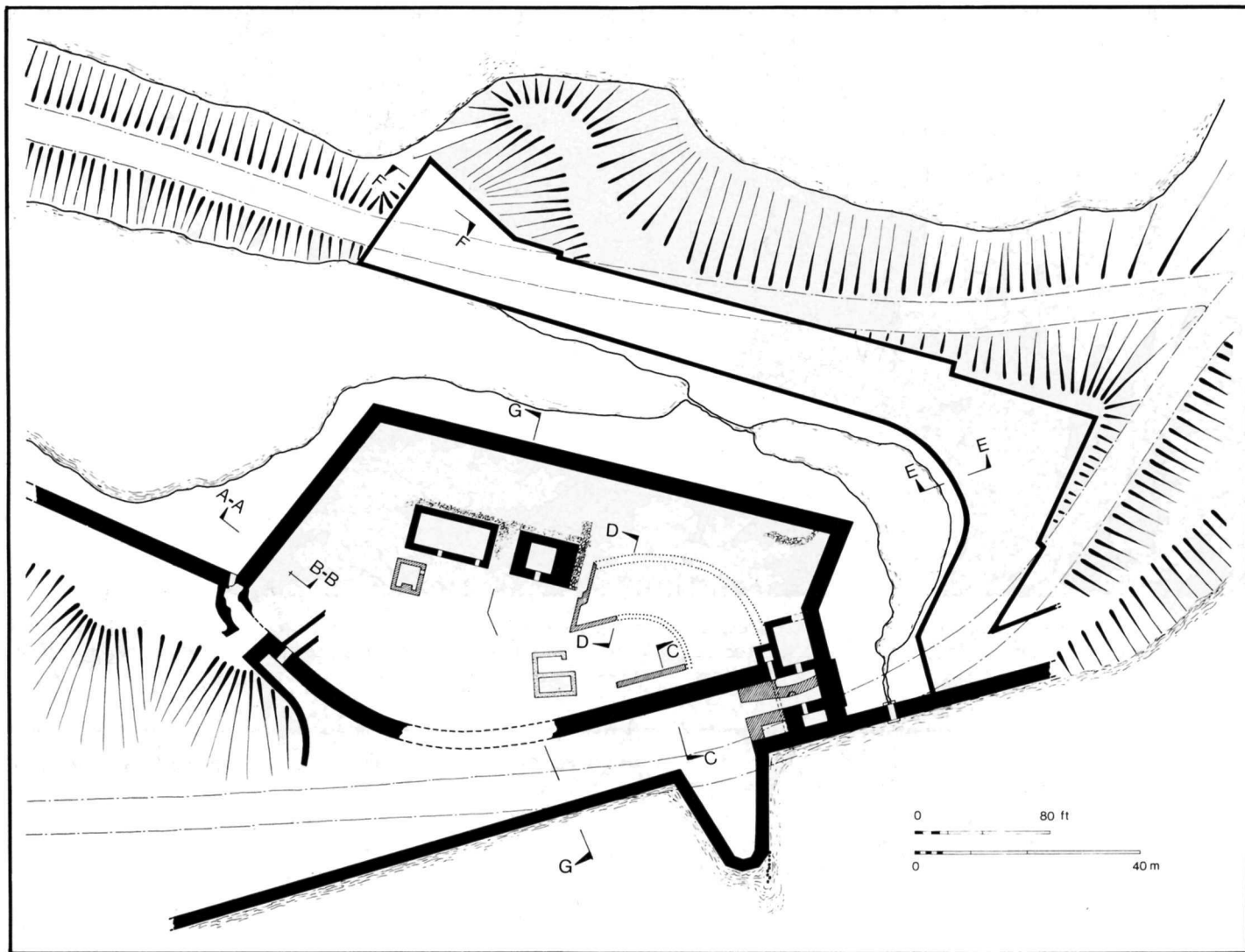


169 Dauphin Bastion: key to principal features. (Drawing by T.M. Smith.)

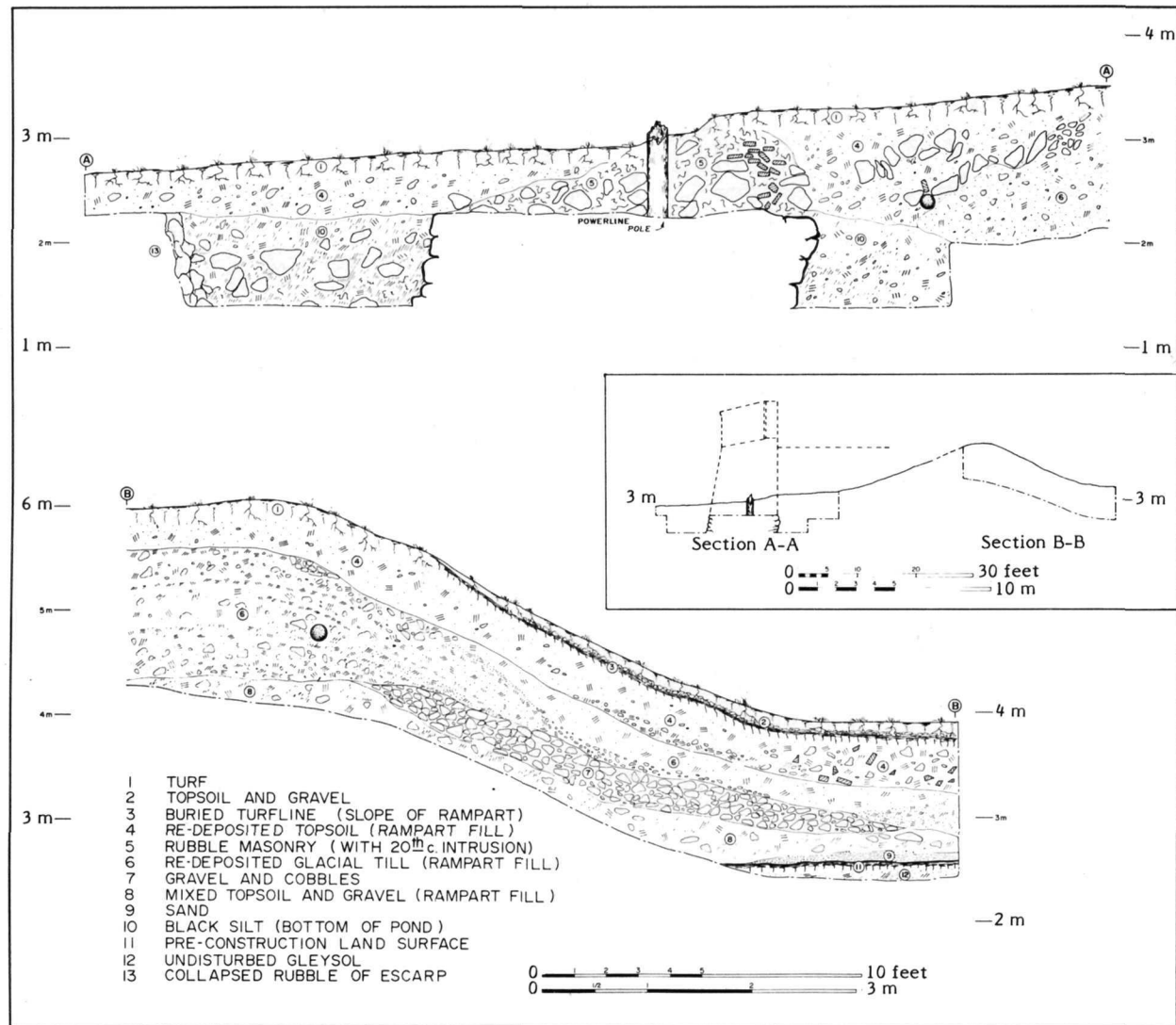


170 Dauphin Bastion. Initial stages of excavation. View is taken from covered way towards left flank; plastic shelter at far right is location of re-entrant angle. Two crew members

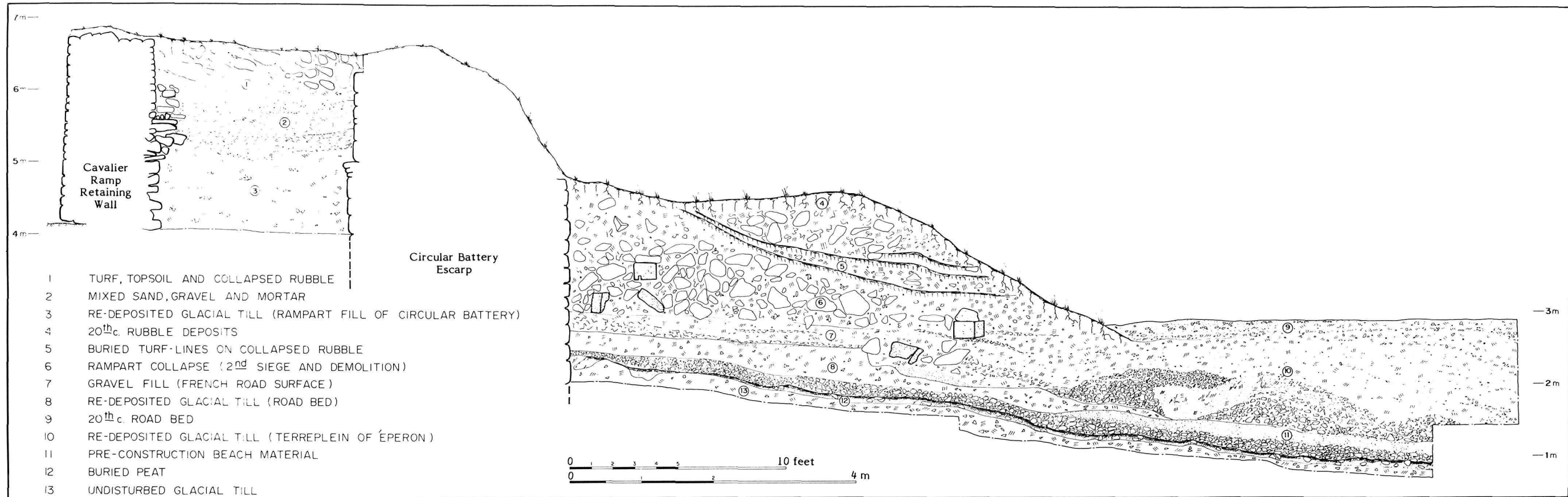
in raft (centre right) are attempting to place intake of 6-inch pump (centre left) in clear water as opposed to mud. (Fortress of Louisbourg NHP.)



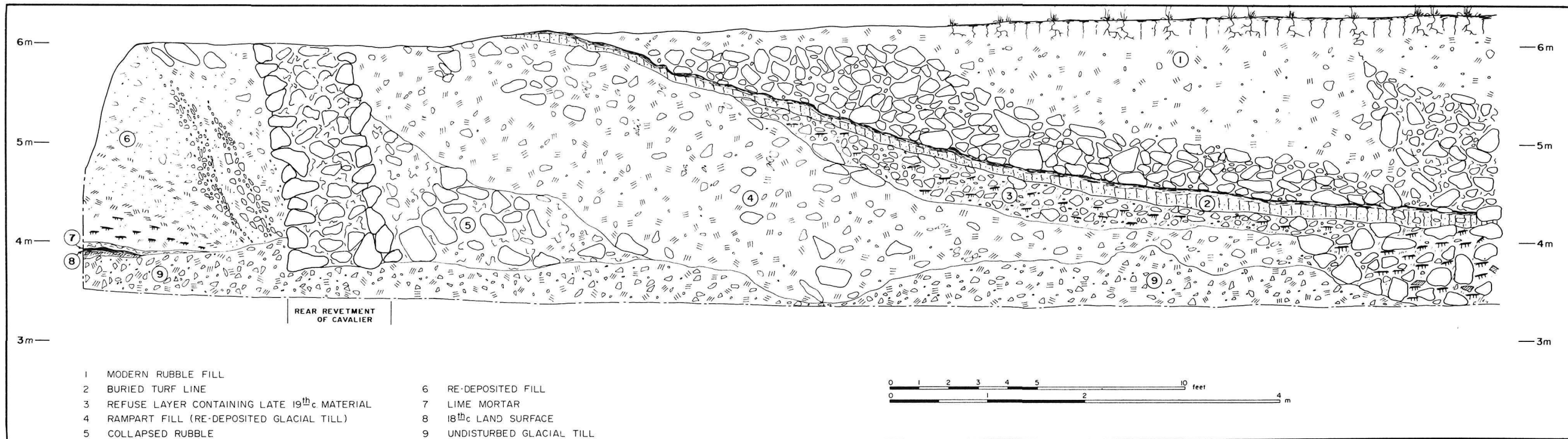
171 Dauphin Bastion: key to sections. (Drawing by T.M. Smith.)



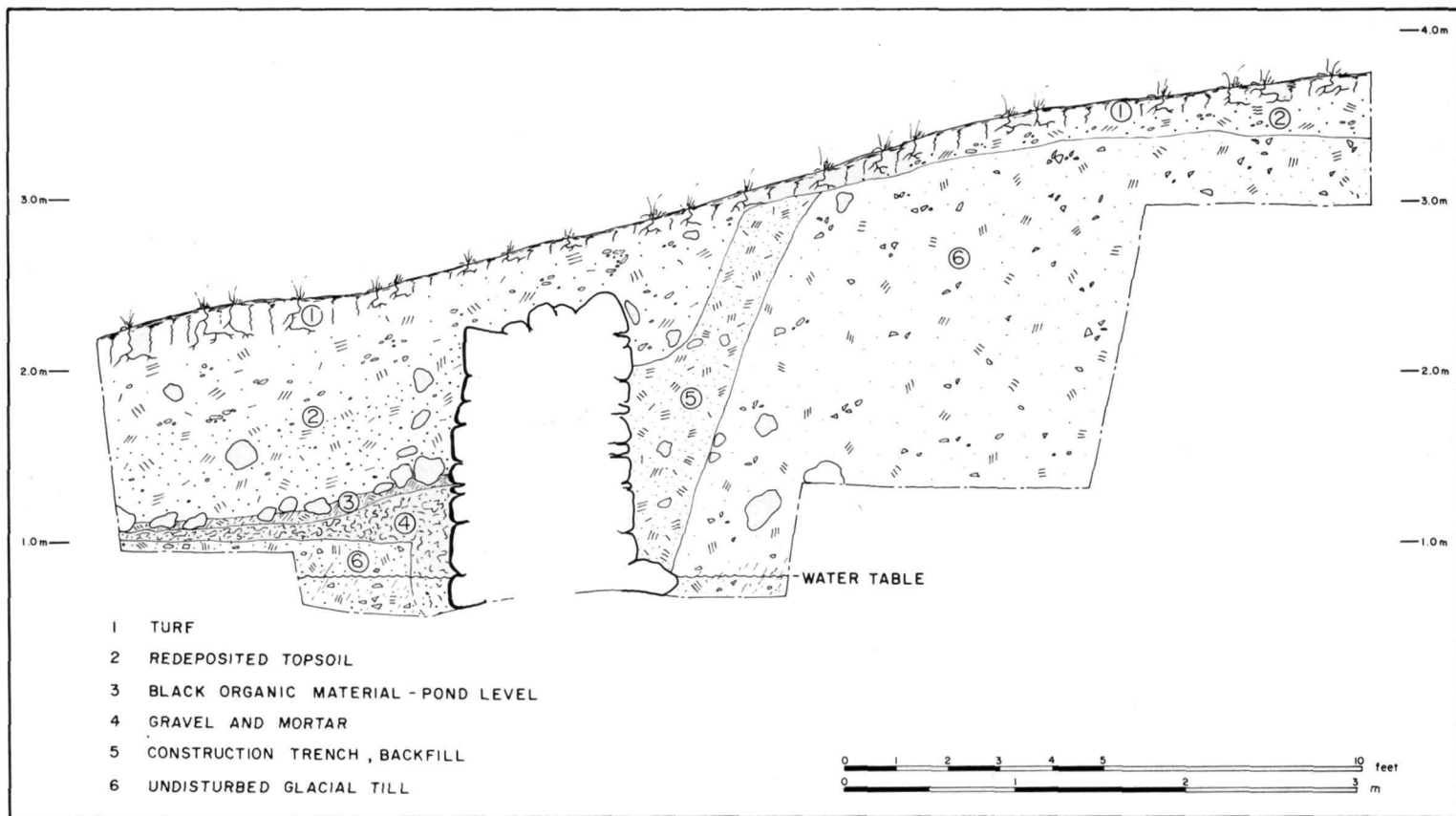
172 Dauphin Bastion, section A-A, left flank escarp, and B-B. (Drawing by T.M. Smith.)



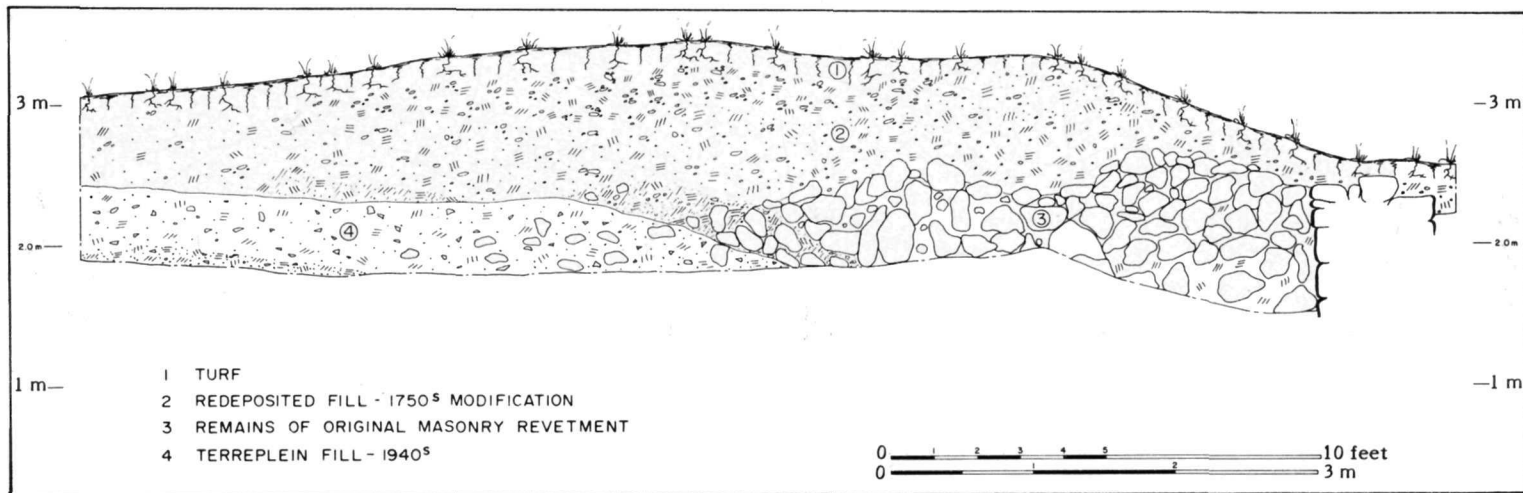
173 Dauphin Bastion, section C-C. (Drawing by T.M. Smith.)



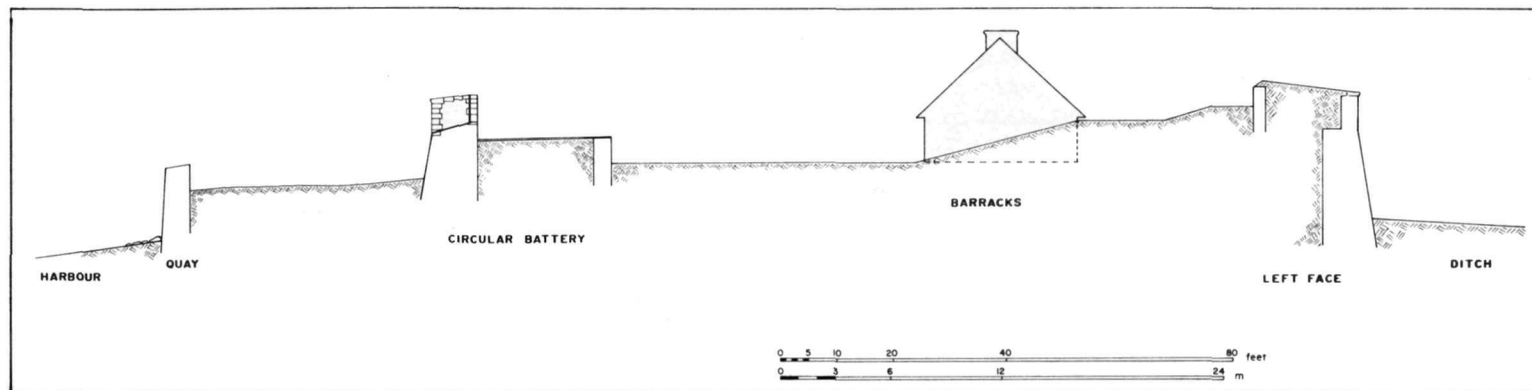
174 Dauphin Bastion, section D-D. (Drawing by T.M. Smith.)



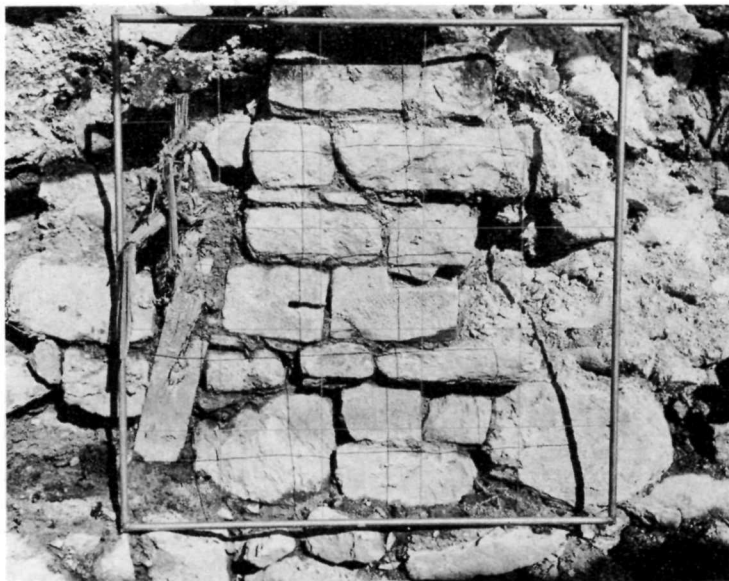
175 Dauphin Bastion outworks, section E-E. (Drawing by T.M. Smith.)



176 Dauphin Bastion outworks, section F-F. (Drawing by T.M. Smith.)



177 Dauphin Bastion, conjectural reconstruction, section G-G. (Drawing by T.M. Smith.)



178 Dauphin Bastion. Left flank escarp; rebuilt outer facing of wall. Note use of dressed sandstone from earlier contexts. At centre right is part of sill from a gun embrasure. (Fortress of Louisbourg NHP.)



179 Dauphin Bastion. Left shoulder angle. Escarps of face (at left) and flank (at right) are little more than rubble. (Fortress of Louisbourg NHP.)



180 Dauphin Bastion. Circular Battery entrance: jamb of dressed sandstone with wrought-iron pintle *in situ*. End wall of ramp leading from quay to entrance is at upper left. (Fortress of Louisbourg NHP.)



181 Dauphin Bastion. Circular Battery entrance. Full width of entrance is indicated by wing walls, restricted entrance by location of jamb and pintle (adjacent to scale in foreground). (Fortress of Louisbourg NHP.)



182 Dauphin Bastion. Circular Battery; *in situ* remains of interior revetment and blocked gun embrasure. (Fortress of Louisbourg NHP.)



183 Dauphin Bastion. Circular Battery: *in situ* remains of gun embrasure, blocking removed. (Fortress of Louisbourg NHP.)

184 Dauphin Bastion. Tenaille front and cavalier. (Fortress of Louisbourg, NHP.)

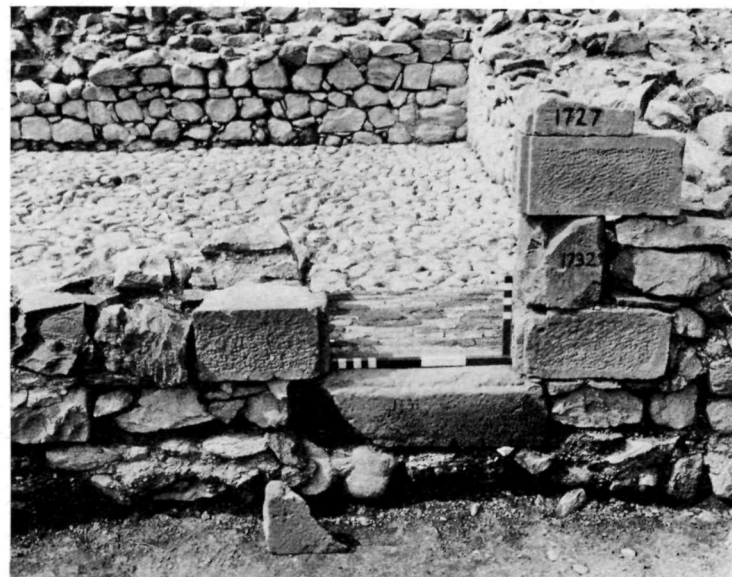


185 Dauphin Bastion. Circular Battery and cavalier ramp retaining wall. Rear of escarp of battery at left, after removal of cavalier fill; retaining wall of ramp leading to

cavalier at right. Note different masonry pattern. (Fortress of Louisbourg NHP.)



186 Dauphin Bastion. Barracks. Left face rampart is at rear. (Fortress of Louisbourg NHP.)



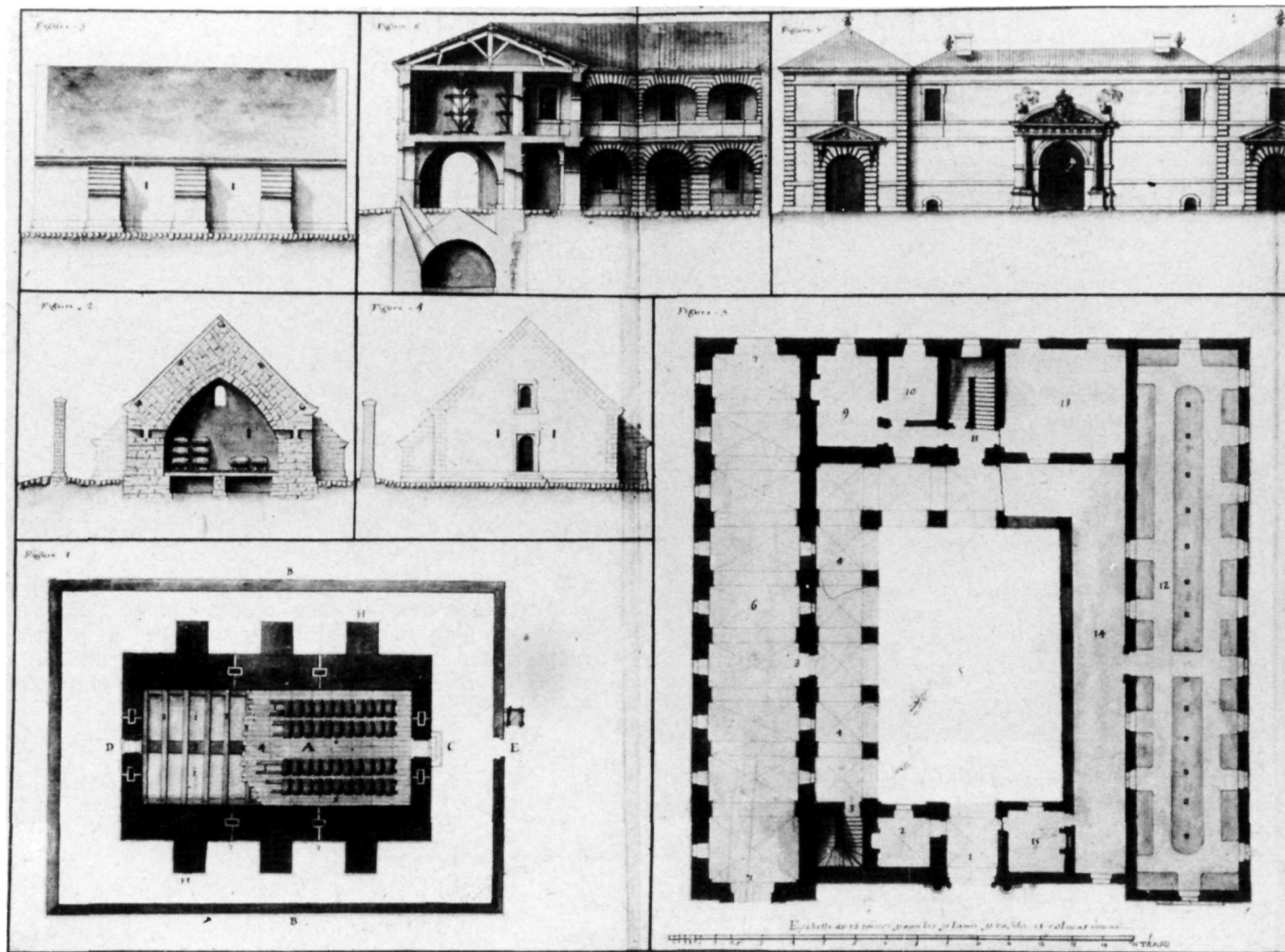
187 Dauphin Bastion. Barracks: dressed sandstone surround of modified entrance. Note brick threshold. (Fortress of Louisbourg NHP.)



188 Dauphin Bastion. Powder magazine after excavation. Note masonry keyed to roof at rampart level, upper right; also parallel troughs in masonry to receive roof timbers on side wall, left. (Fortress of Louisbourg NHP.)



189 Dauphin Bastion. Powder magazine: spring of the arch with remains of brick lining. (Fortress of Louisbourg NHP.)



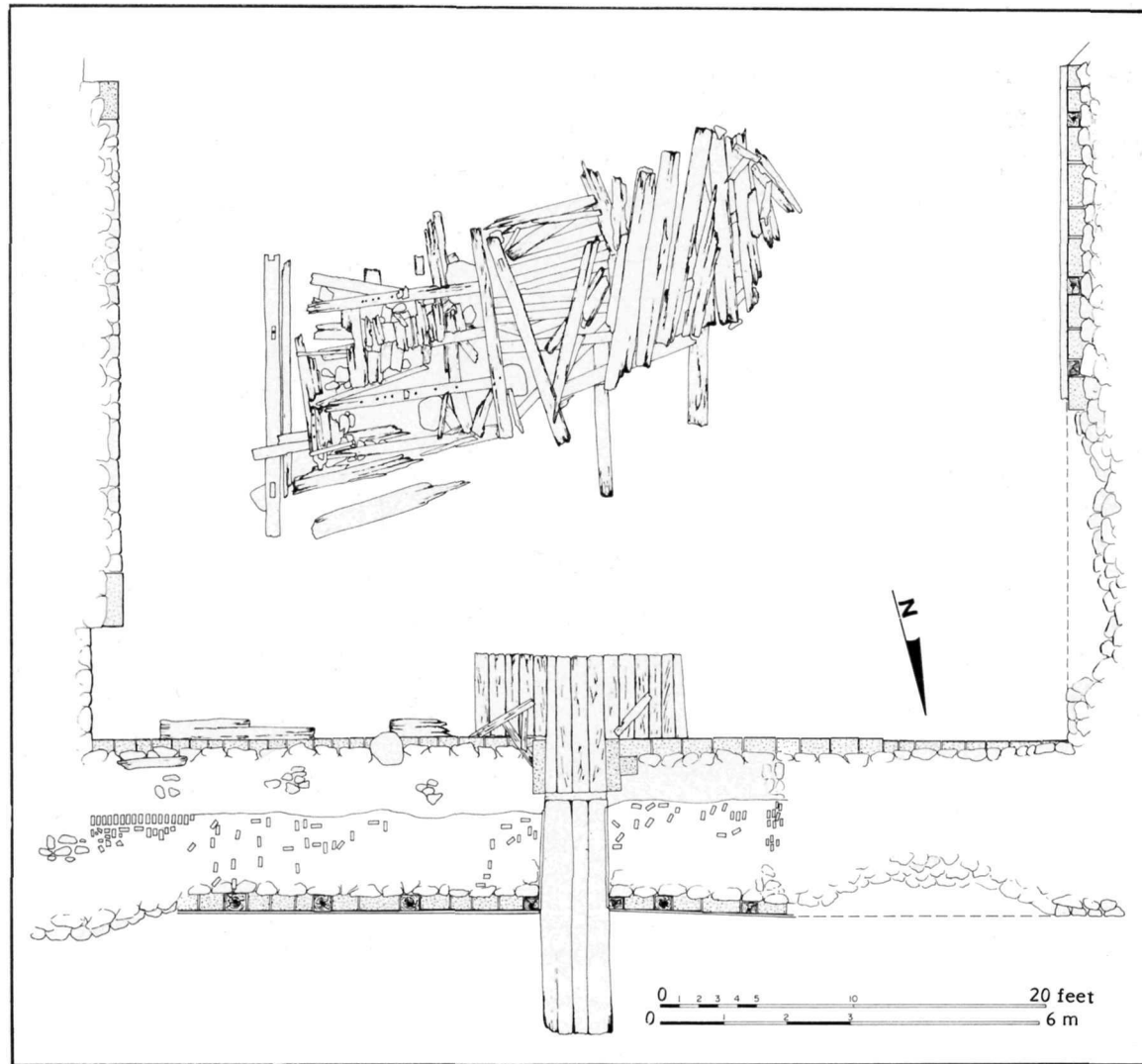
190 Dauphin Bastion. Powder magazine and arsenal. Claude Masse. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



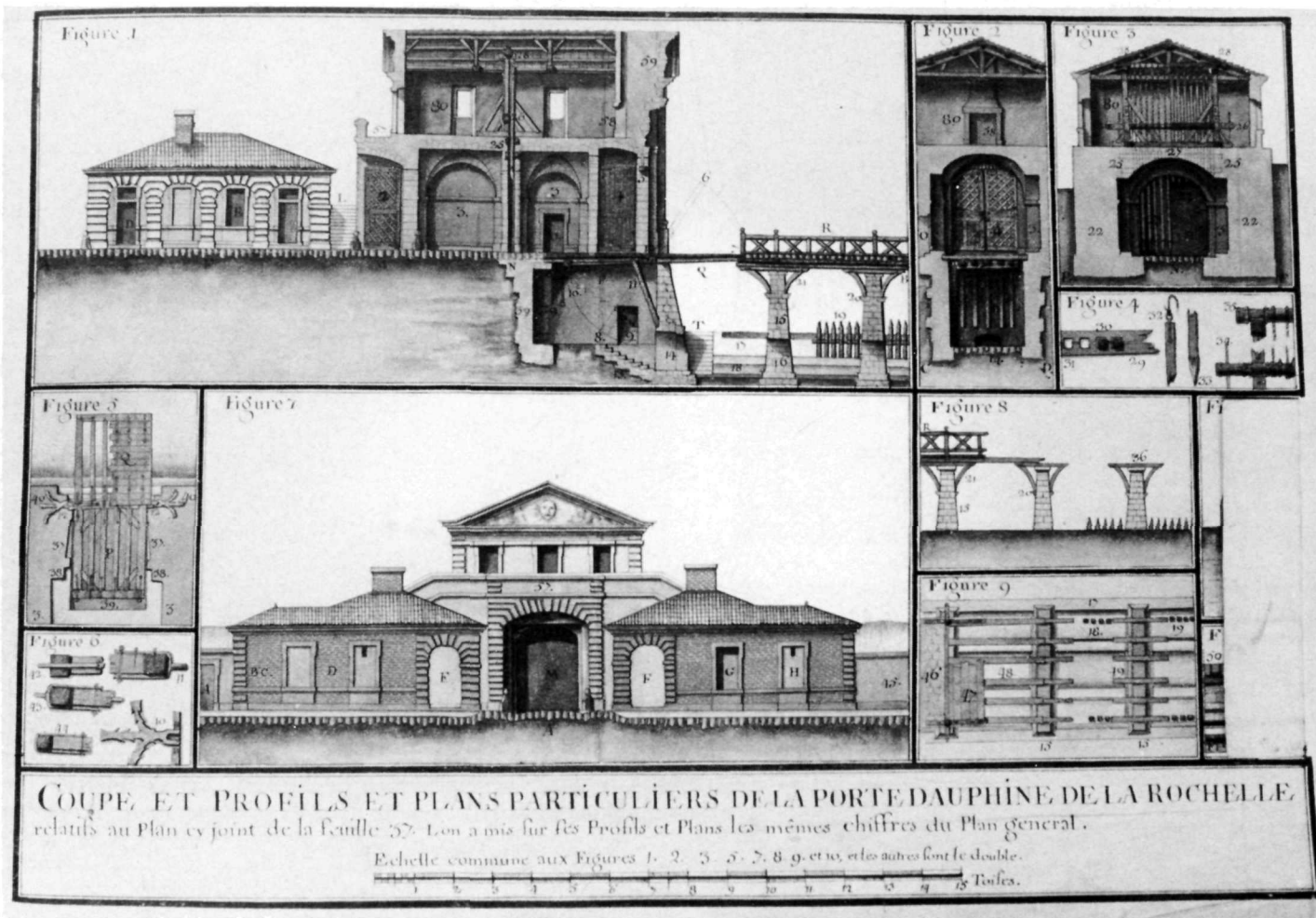
191 Dauphin Gate. Remains of drawbridge; fixed portion of bridge with plank decking in background. (Fortress of Louisbourg NHP.)



192 Dauphin Bastion. Tenaille front and gate; recording grid in place over remains of drawbridge. Note sandstone block marking angle of barbette. Below plastic shelter, rubble-filled foundations of soldiers' guardhouse; note remains of brick arch spanning the later entrance through rampart. (Fortress of Louisbourg NHP.)

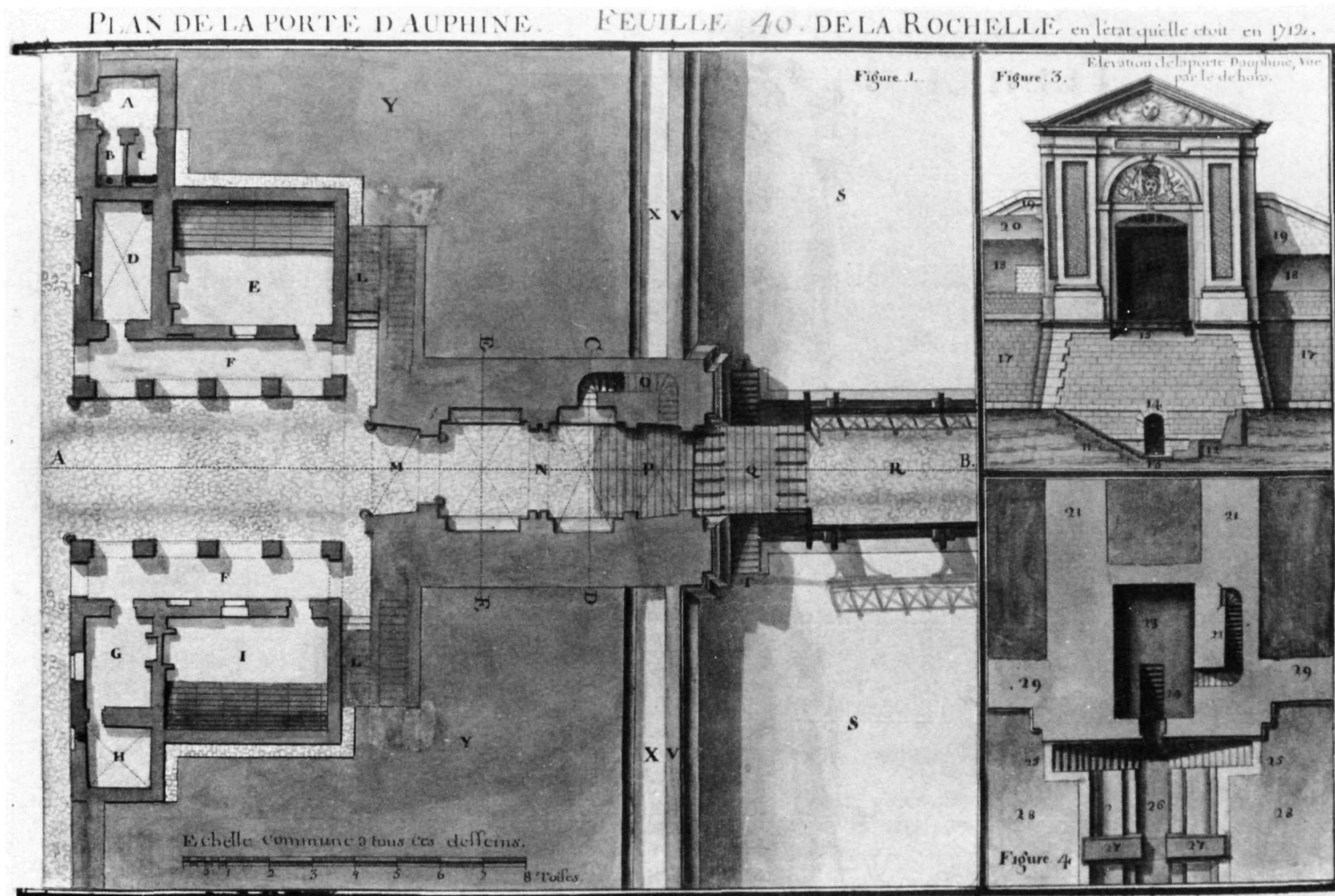


193 Dauphin Bastion. *Ratardeau*, sluice and drawbridge remains. (Drawing by T.M. Smith.)



194 La Rochelle (Charente-Maritime). Dauphin Gate and guardhouses. Location of guardhouses is comparable to Louisbourg examples, but there is an upper guardroom with *orgues* (inset, upper right). Drawbridge does not have over-

head swipe-beams, but pivots at the base of gateway so that counterweight swings down into chamber at ditch level (cf. Queen's Gate, Louisbourg). (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



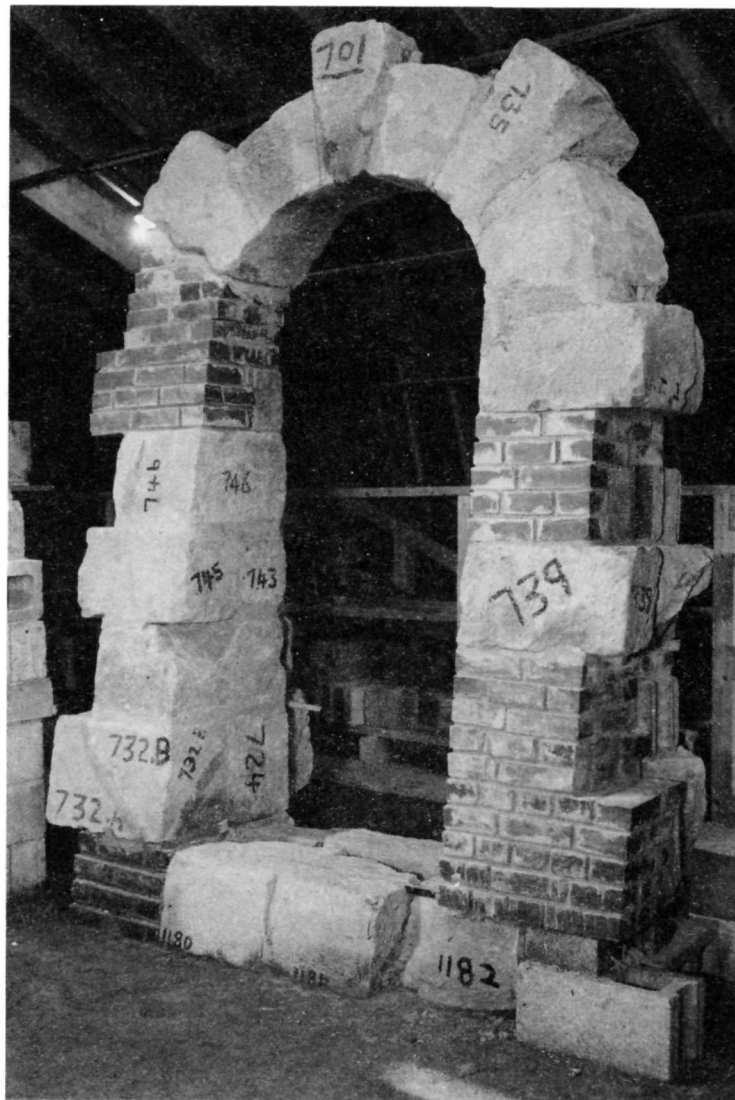
195 La Rochelle. Plan of Dauphin Gate, accompanying Fig. 194. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



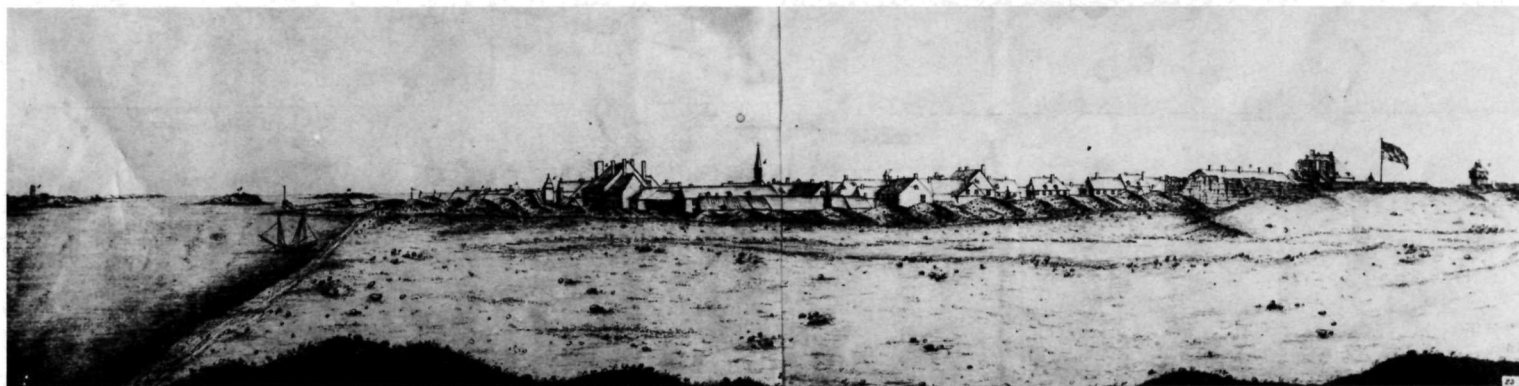
196 King's Bastion. Postern tunnel: view from above of postern roof. Terminating wall of right flank is at left (beneath plywood shelter); remains of King's-Dauphin curtain escarp is upper centre. Counterscarp of ditch in front of citadel barracks (foreground) forms one wall of postern; dressed sandstone vent surround is at lower left. On top of roof, butting onto terminating wall of flank, is interior revetment of curtain parapet. (Fortress of Louisbourg NHP.)



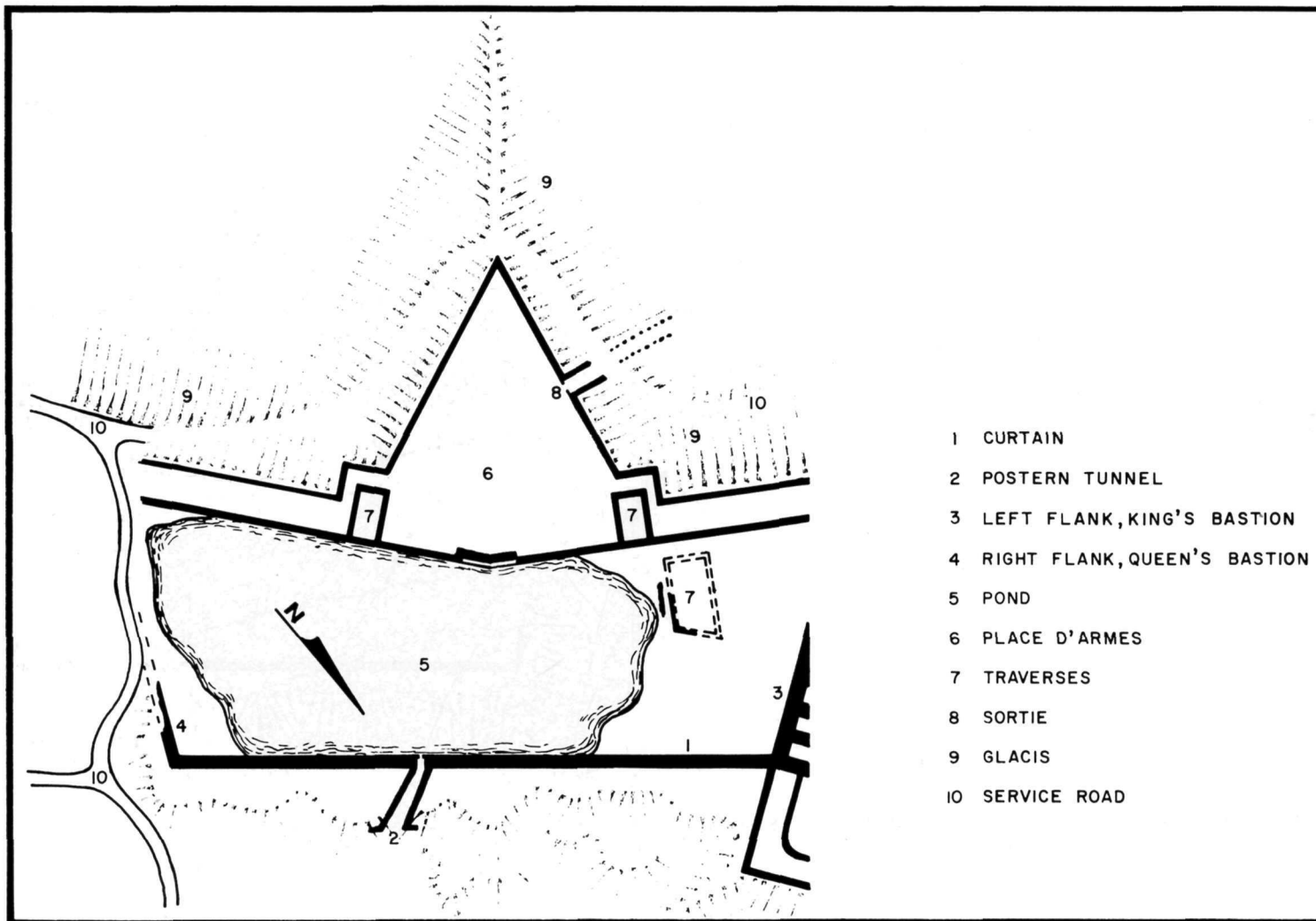
197 Outworks. Sandstone quoins terminating original counterscarp in front of Dauphin Bastion at right, plank revetment of Franquet's tenaille at left. (Fortress of Louisbourg NHP.)



198 King's Bastion. Postern tunnel: doorway overlooking the ditch, reassembled from stones recovered during excavation. (Fortress of Louisbourg NHP.)

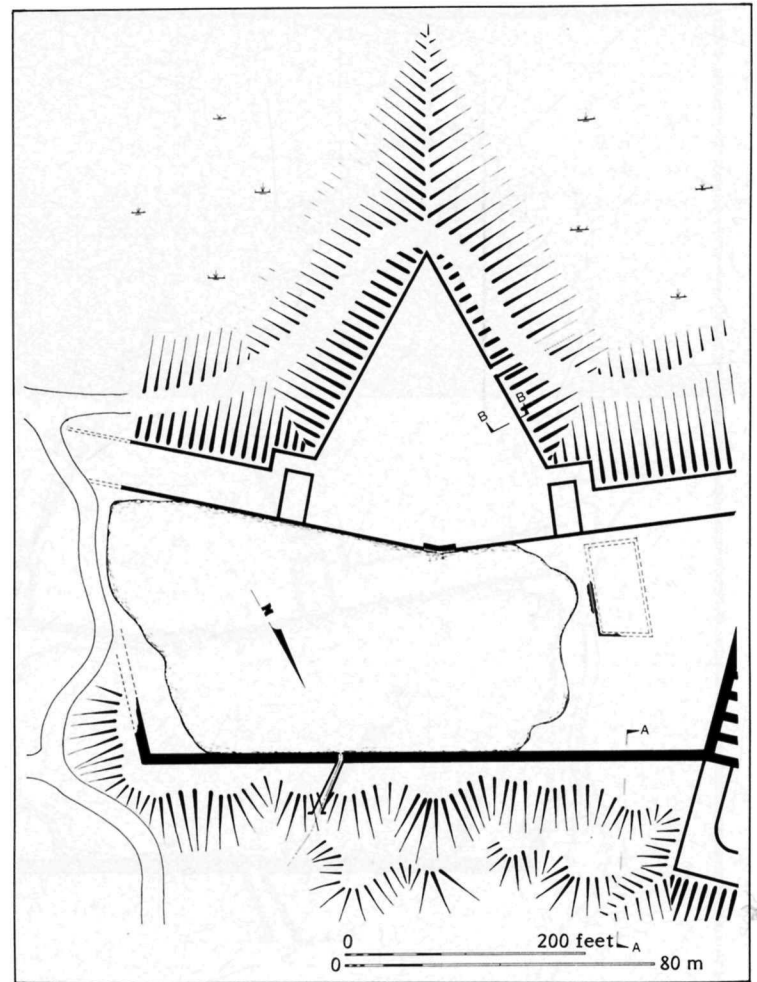


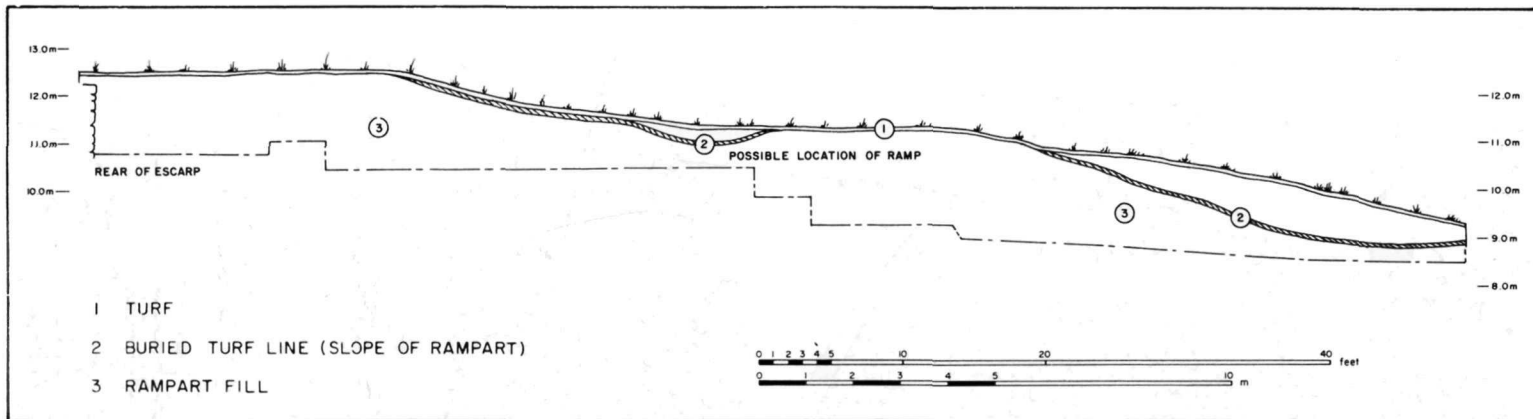
199 King's-Dauphin front after demolition, Thomas Wright, 1766. British blockhouse is at extreme right. (British Library.)



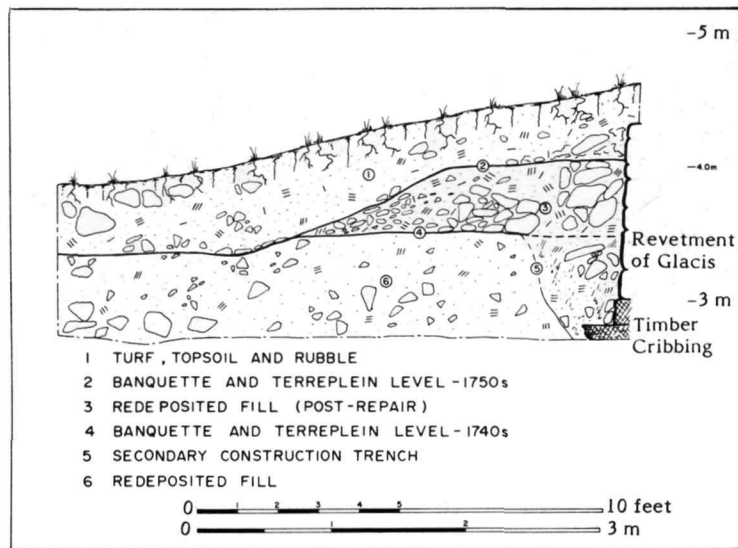
200 King's-Queen's curtain and *place d'armes*: key to principal features. (Drawing by T.M. Smith.)

201 King's-Queen's curtain and *place d'armes*: key to sections. (Drawing by T.M. Smith.)

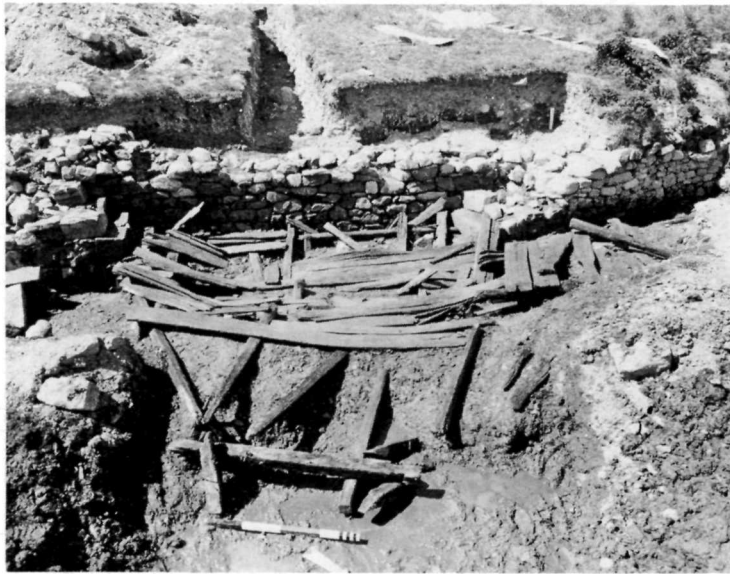




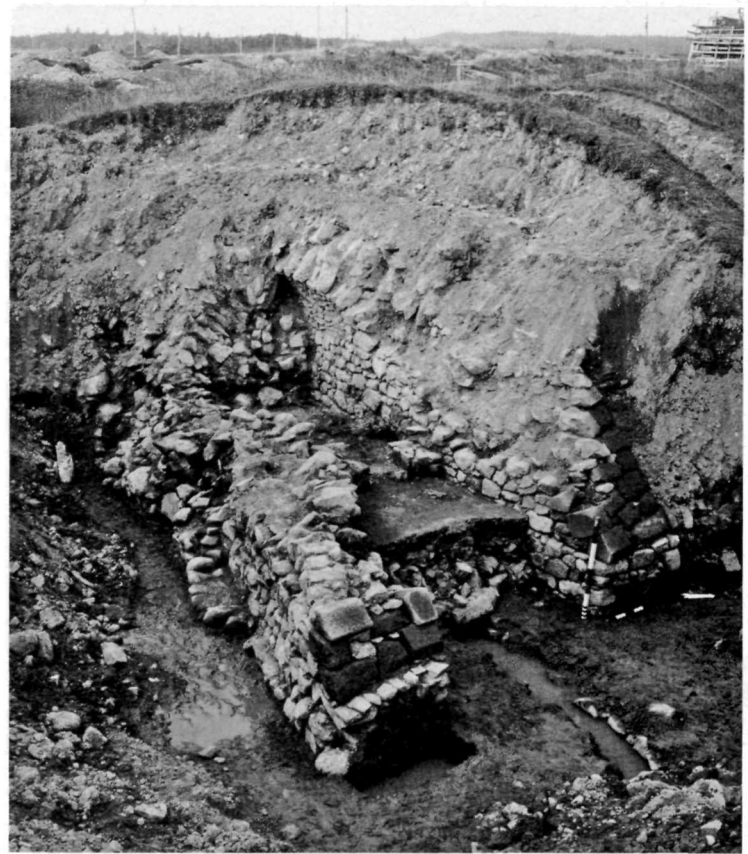
202 King's-Queen curtain, section A-A. (Drawing by T.M. Smith.)



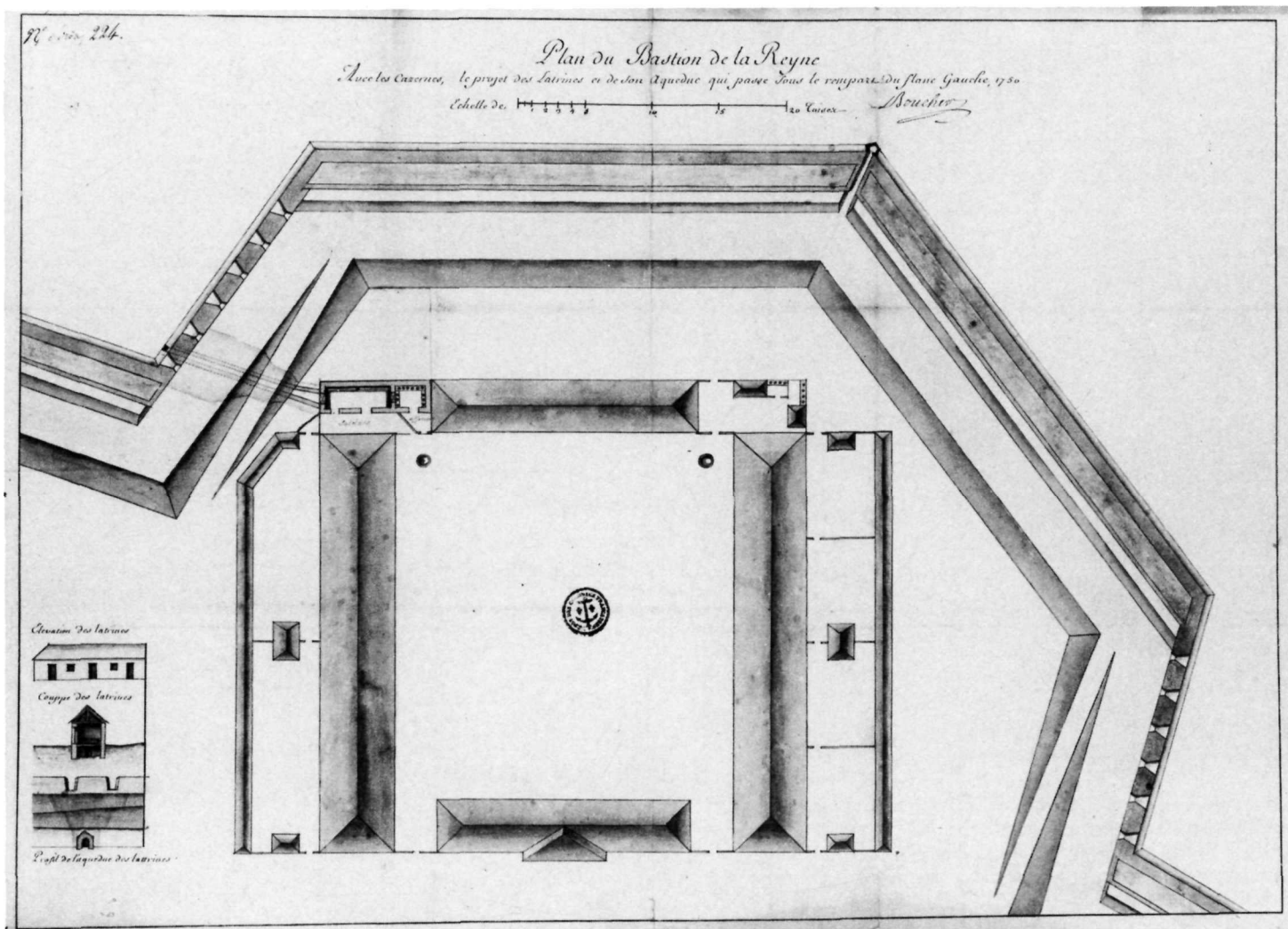
203 King's-Queen's place d'armes, section B-B. (Drawing by T.M. Smith.)



204 Outworks. Counterscarp with dressed sandstone steps leading to *place d'armes* in front of King's-Queen's curtain; remains of wooden bridge from postern in curtain. (Fortress of Louisbourg NHP.)



205 King's-Queen's curtain. Postern tunnel viewed from the town. Flanking walls, retaining rampart fill on each side of entrance, are in foreground; doorway and start of tunnel is set back in slope of rampart. Note stony fill beneath threshold, also drainage channel below fill. (Fortress of Louisbourg NHP.)



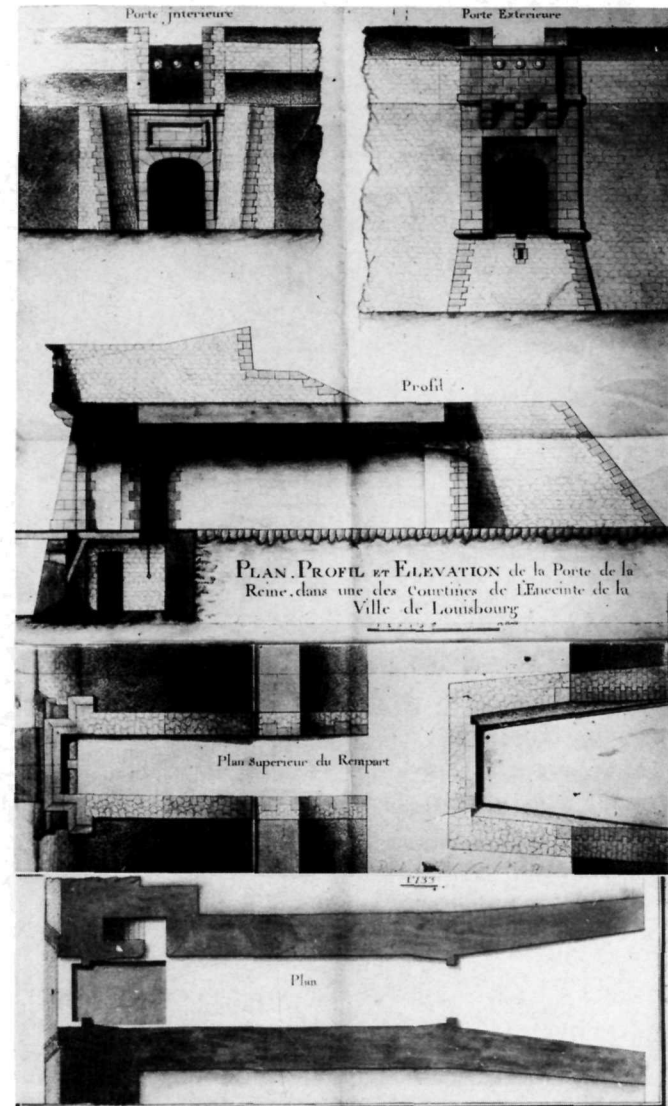
207 Queen's Bastion, Boucher, 1750. The barracks built by the New England forces during the 1745-49 occupation are

shown; also Boucher's latrine, emptying into the ditch. (Archives Nationales, Paris.)

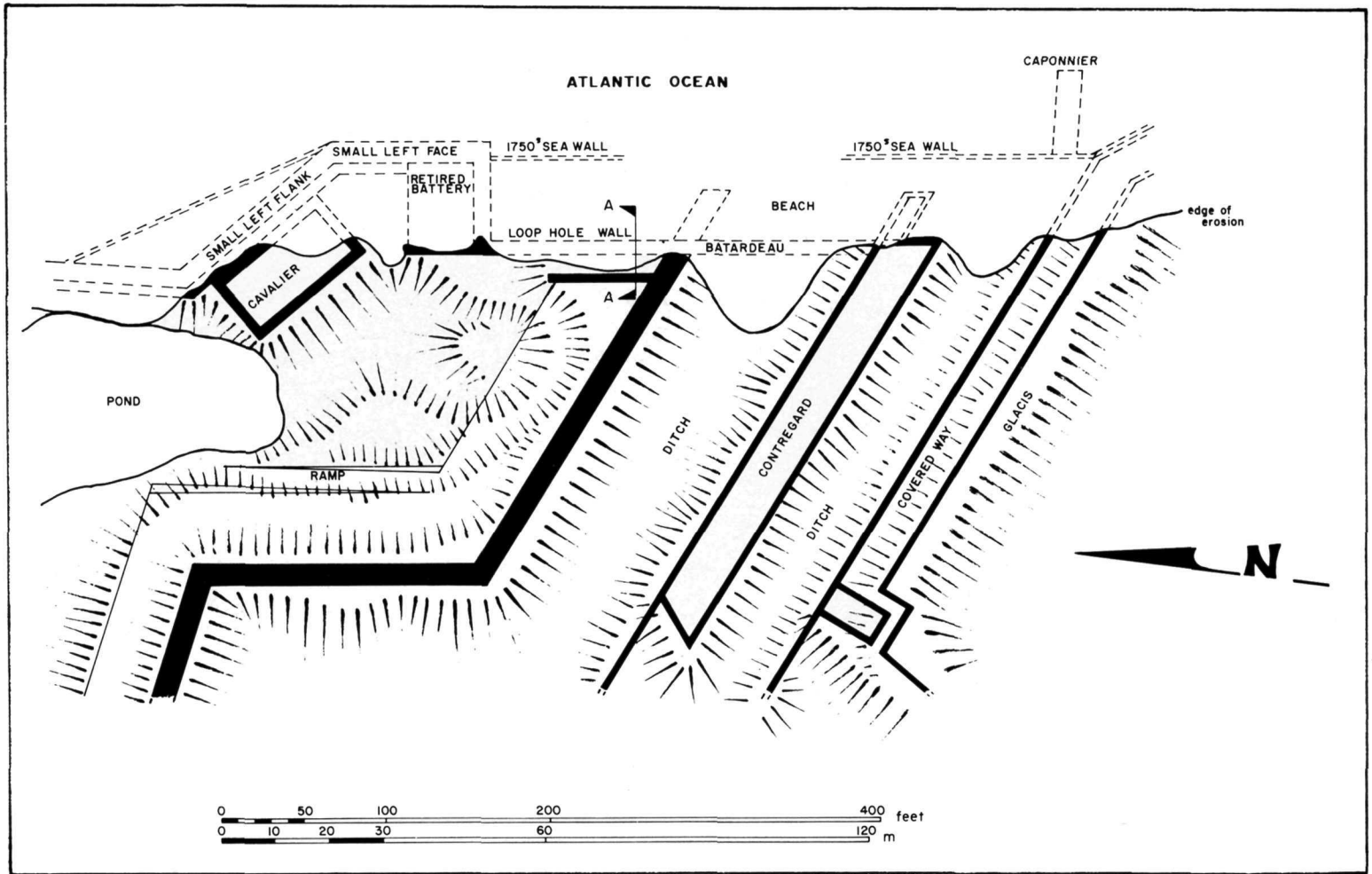


208 Landward defences. Low-level aerial view, Queen's Bastion in centre. Outline of New England Barracks is clearly visible. Note outline of *place d'armes* and traverses, lower left, covered but not obscured by Franquet's *demi-lune*,

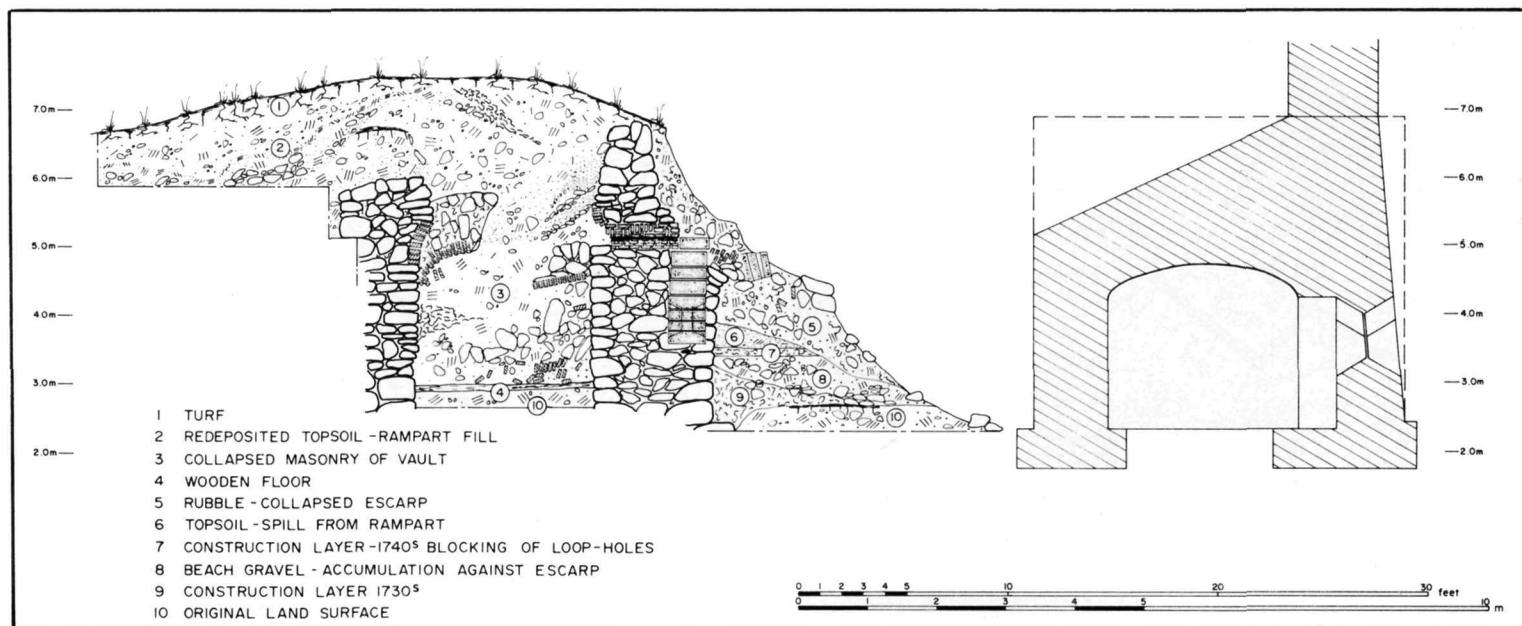
in front of Queen's-Princess curtain. Note also absence of curtain ramparts in area of pond in front of Dauphin Bastion (extreme top of picture). (Fortress of Louisbourg NHP.)



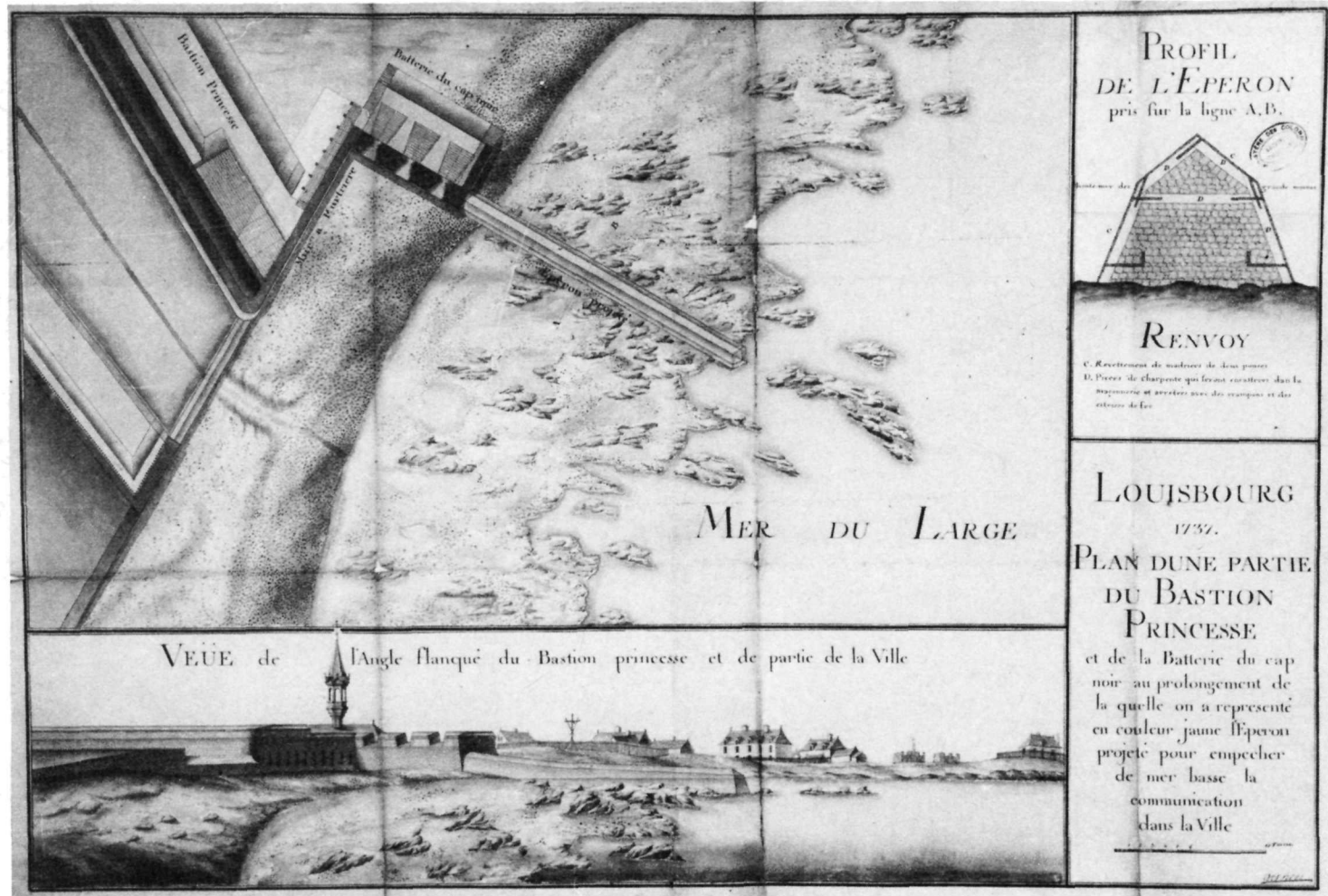
209 Queen's Gate, 1733 proposals. The bascule chamber, shown on centre profile, is reached by a flight of steps from the upper door in the passageway, as depicted if the "plan Superior" section is folded back (lower drawing). (Archives Nationales, Paris.)



210 Princess Bastion. The outline of fortifications from the 1758 plan has been superimposed on existing contours and exposed structures. (Drawing by T.M. Smith.)

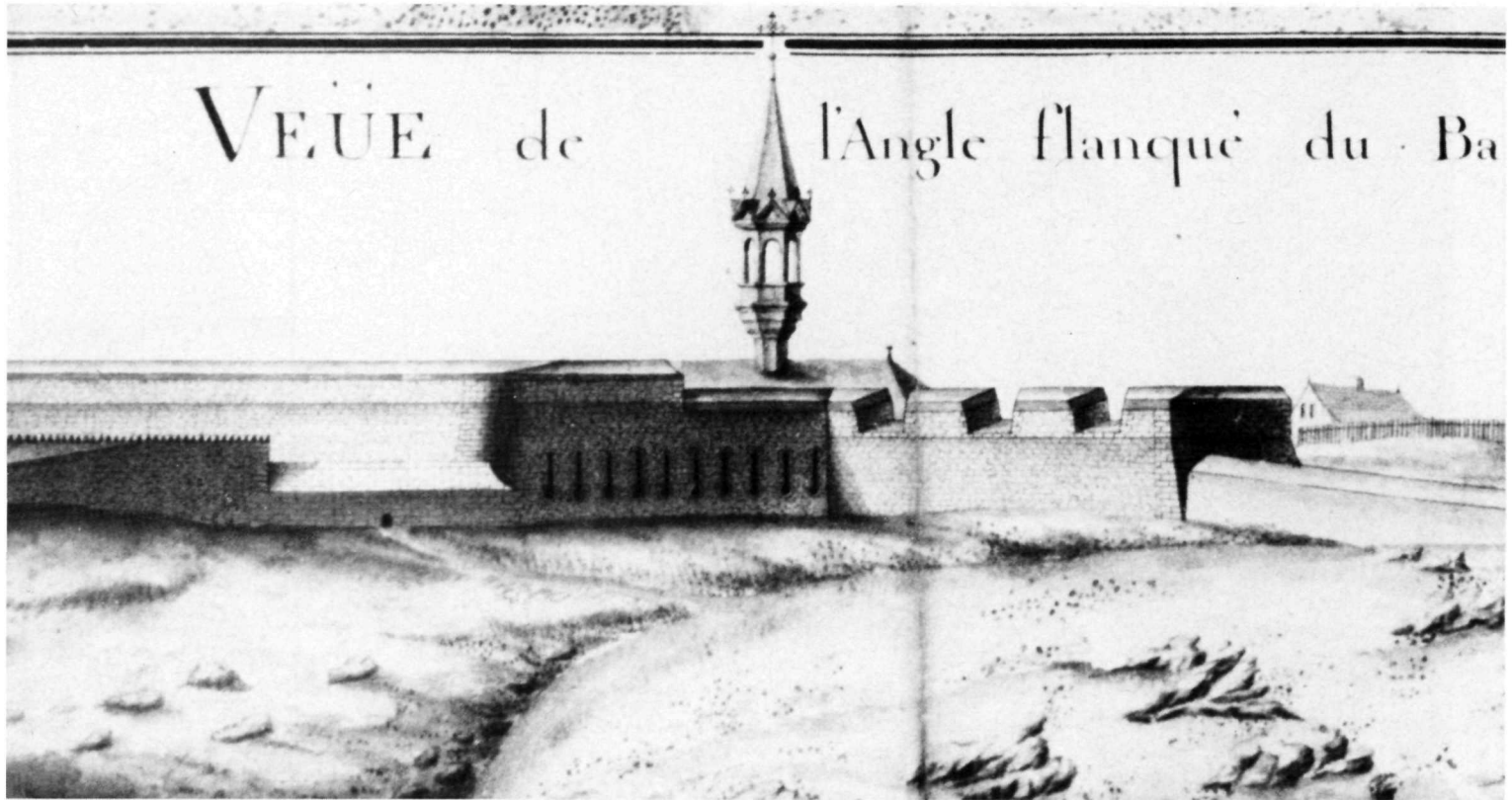


211 Princess Bastion, section A-A. (Drawing by T.M. Smith.)



212 **Princess Bastion.** Proposed *éperon*, Verrier, 1737. The plan shows the retired battery commanding the beach in the direction of Black Rock, also the loopholed wall facing the shallows. If raised, the foldaway flap depicts the casemate

beneath the ramparts (not shown here). The profile of the *éperon* shows the construction technique of sheathing walls with planks nailed to timbers held by iron clamps imbedded in the masonry. (Archives Nationales, Paris.)



213 Princess Bastion. Detail from Figure 212. Palisades on the covered way are seen at left appearing above the crest of the glacis; *batardeau* closes off the end of the ditch. Note the rounded shape of the flanked angle. The inverted keyhole

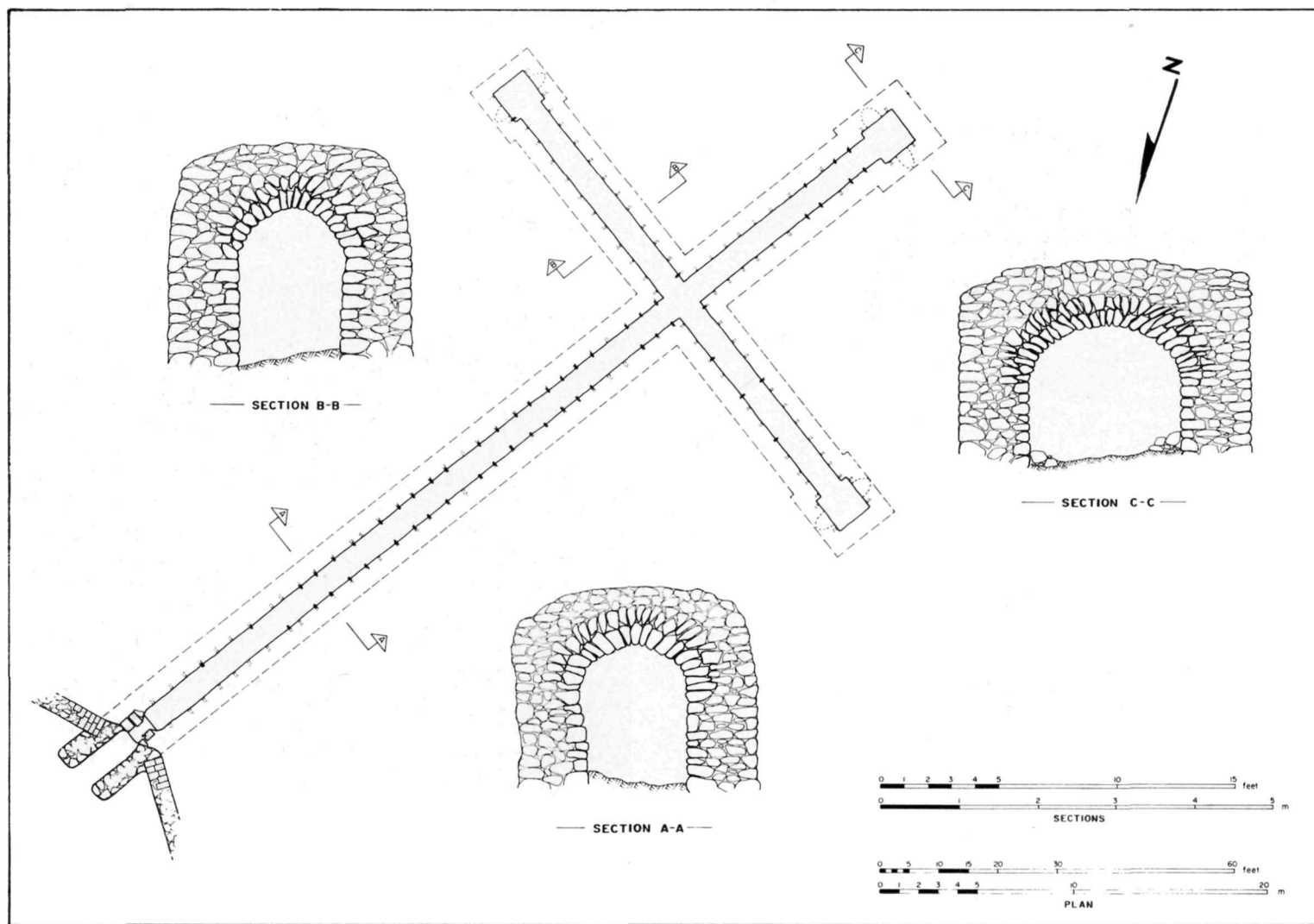
shape of the gun-loops is clearly depicted. Also of interest is the turf capping on the parapets, especially the merlons of the embrasures. (Archives Nationales, Paris.)



214 Princess Bastion. Coastline in 1963 when loophole was first exposed by erosion. (Fortress of Louisbourg NHP.)



215 Princess Bastion. Loophole as excavated. (Fortress of Louisbourg NHP.)



216 **King's Bastion** glacis, countermine gallery. (Drawing by T.M. Smith.)



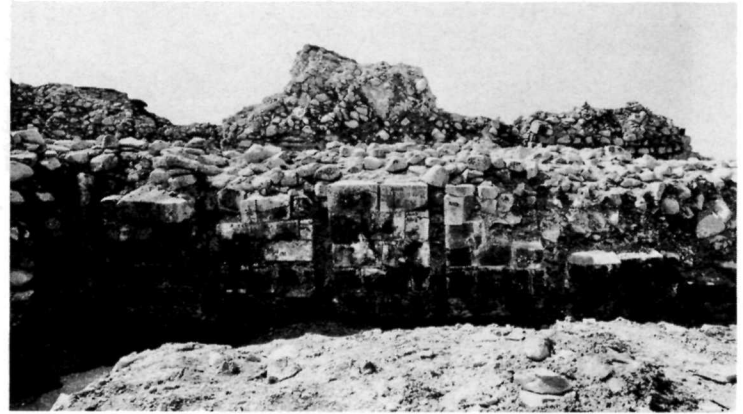
217 Outworks. Counterscarp and covered way revetment in front of King's Bastion, as excavated. Note broken ground and commanding heights beyond glacis. (Fortress of Louisbourg NHP.)



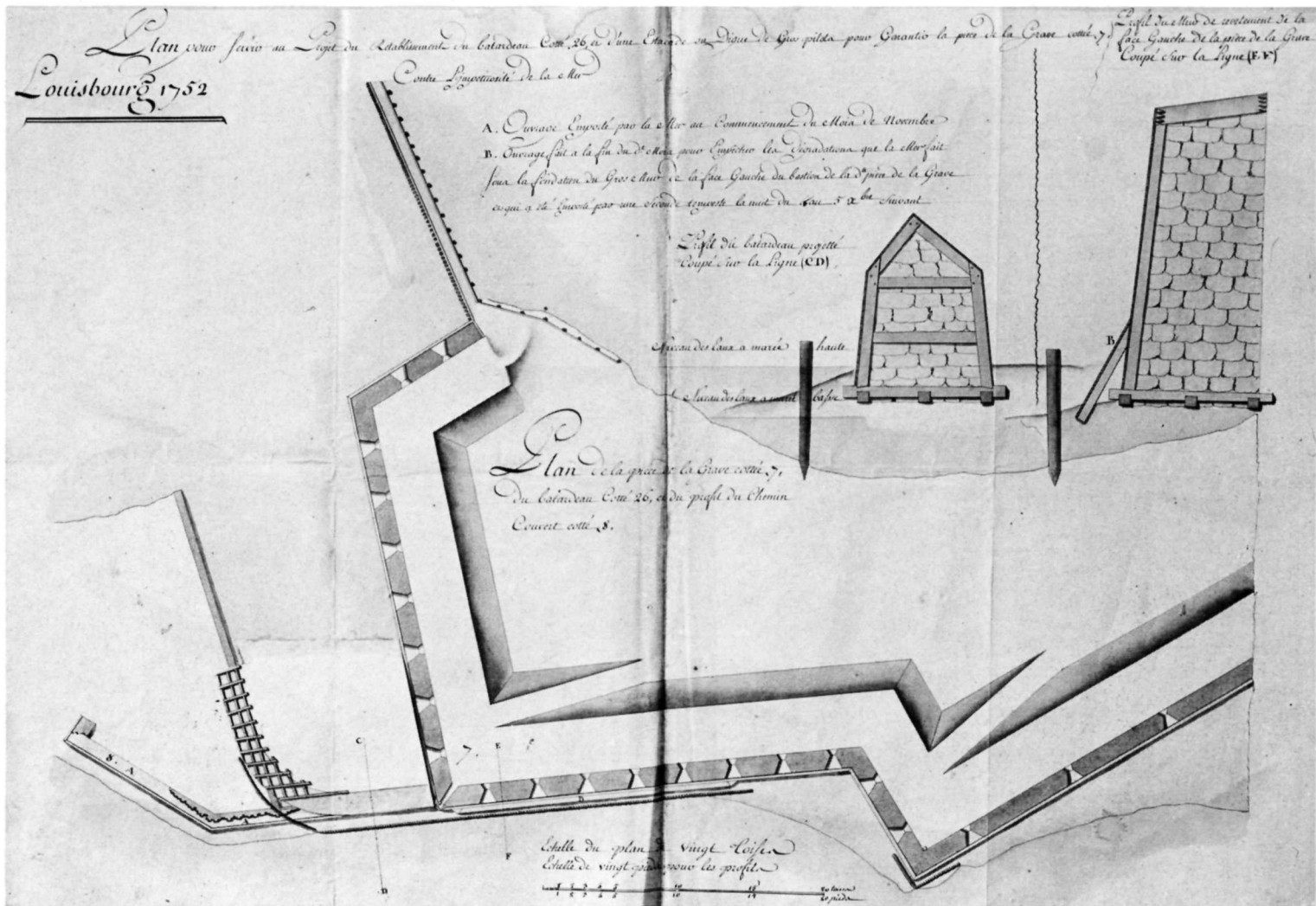
218 Mont-Louis. Traverse on covered way. (Photo by author.)



219 Outworks. Traverse or *épaulement* built in ditch parallel to right flank of King's Bastion. Note drystone revetment on side nearest bastion, foreground; also use of rocks as fill beneath topsoil covering. (Fortress of Louisbourg NHP.)



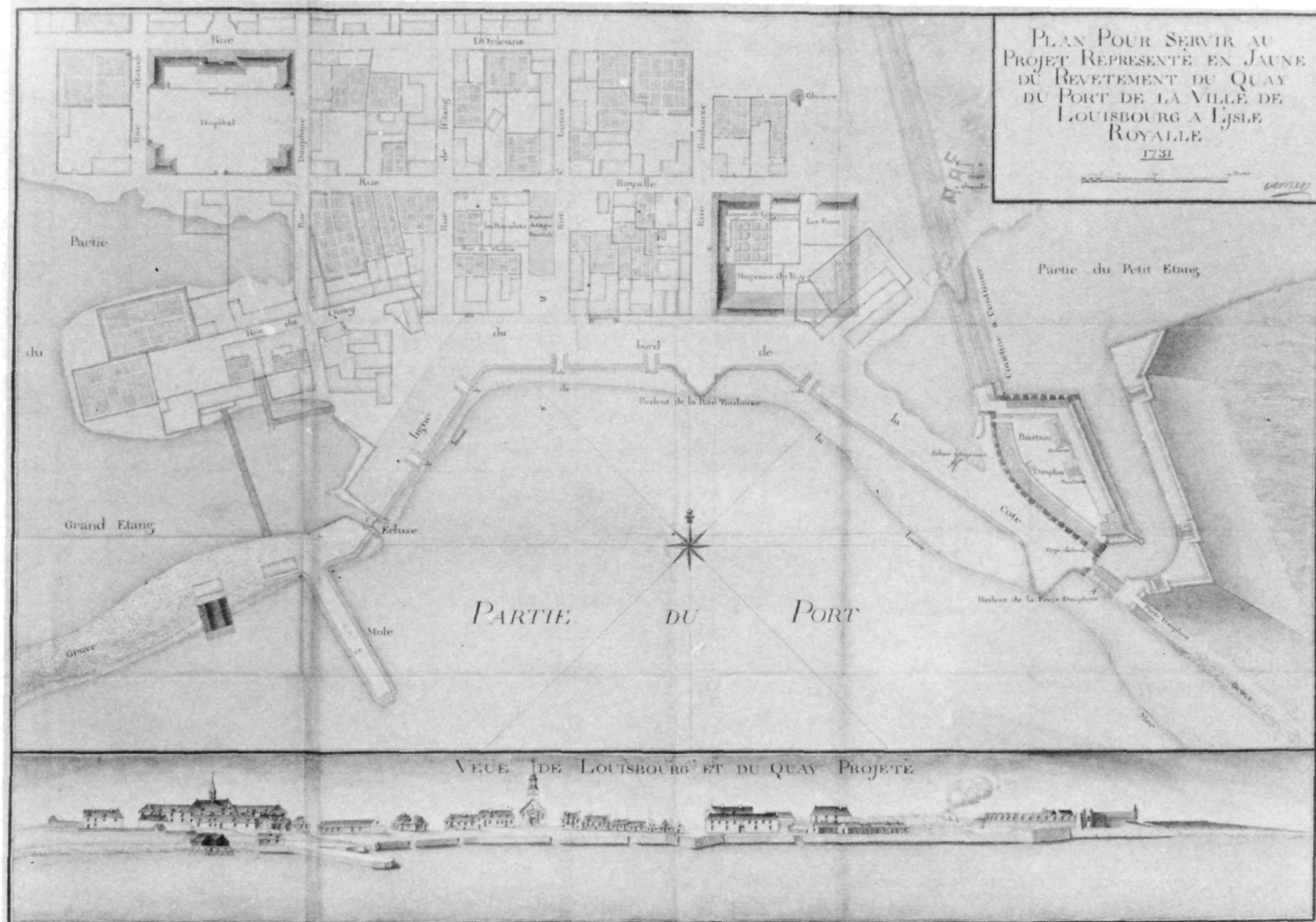
220 Quay Wall adjoining *batardeau* of Dauphin Bastion; ashlar masonry with recesses to receive timber uprights to which planks were nailed. Remains of Circular Battery and passage behind Dauphin Gate in background. (Fortress of Louisbourg NHP.)



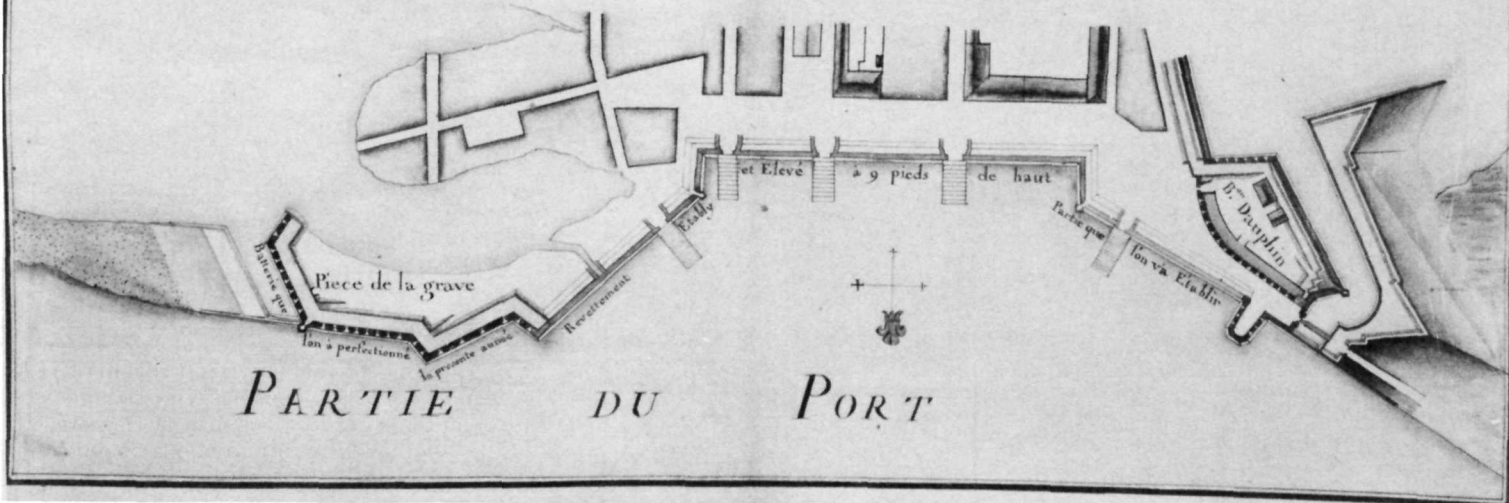
221 **Pièce de la Grave.** Breakwater proposed by Franquet to reduce damage to the ramparts. (Archives Nationales, Paris.)

222 Pièce de la Grave. Timber cribwork, presumably the foundations of Franquet's breakwater, exposed during extremely low tides. (Fortress of Louisbourg NHP.)

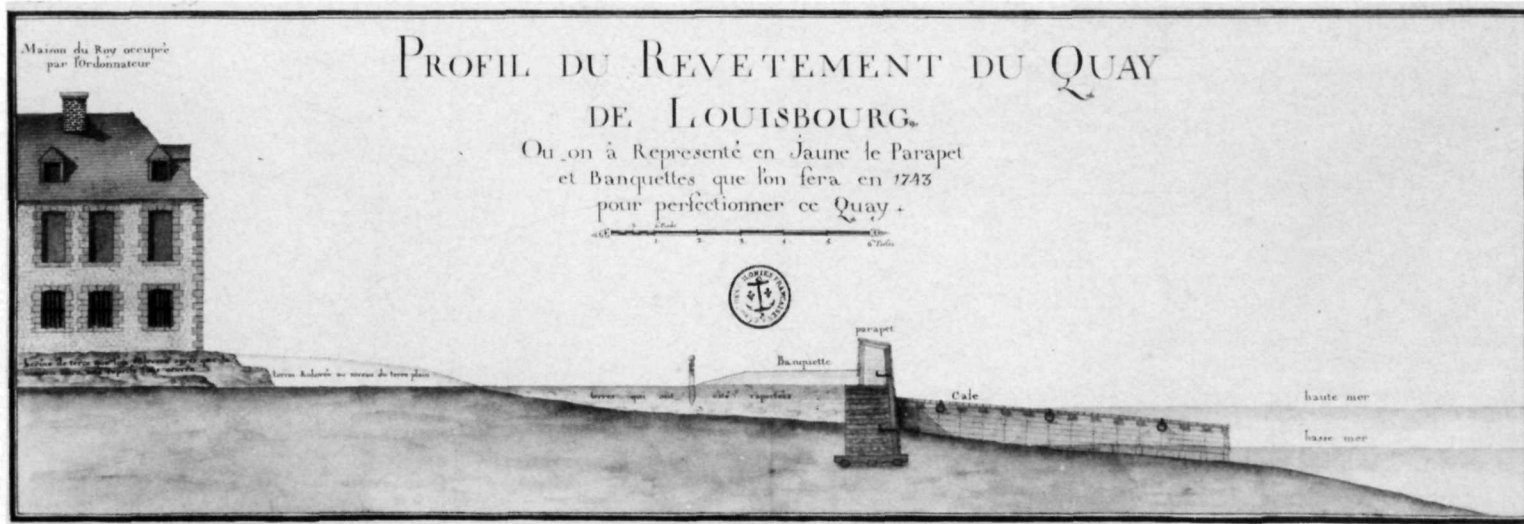




223 Quay. Early proposals, Verrier, 1731. (Archives du Génie, Vincennes.)

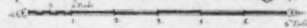


Dauphin Bastion are shown as completed works. (Archives Nationales, Paris.)



PROFIL DU REVETEMENT DU QUAY DE LOUISBOURG.

Ou on a Representé en Jaune le Parapet
et Banquettes que l'on fera en 1743
pour perfectionner ce Quay.



para pte

B. nuptia

Colo

haute mer

have over

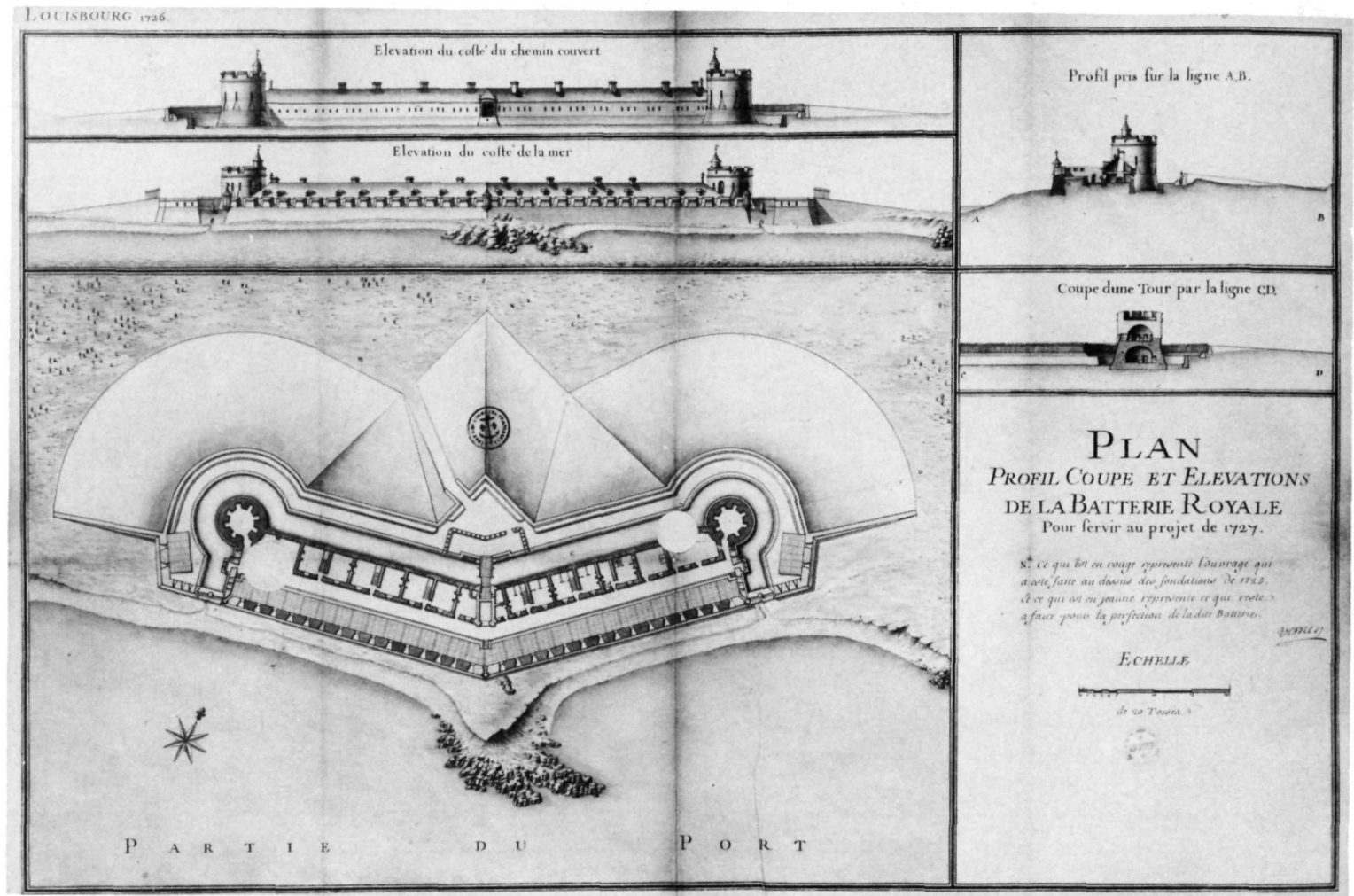
225 Quay. Section through wall with slipway in background, 1743. (Archives Nationales, Paris.)



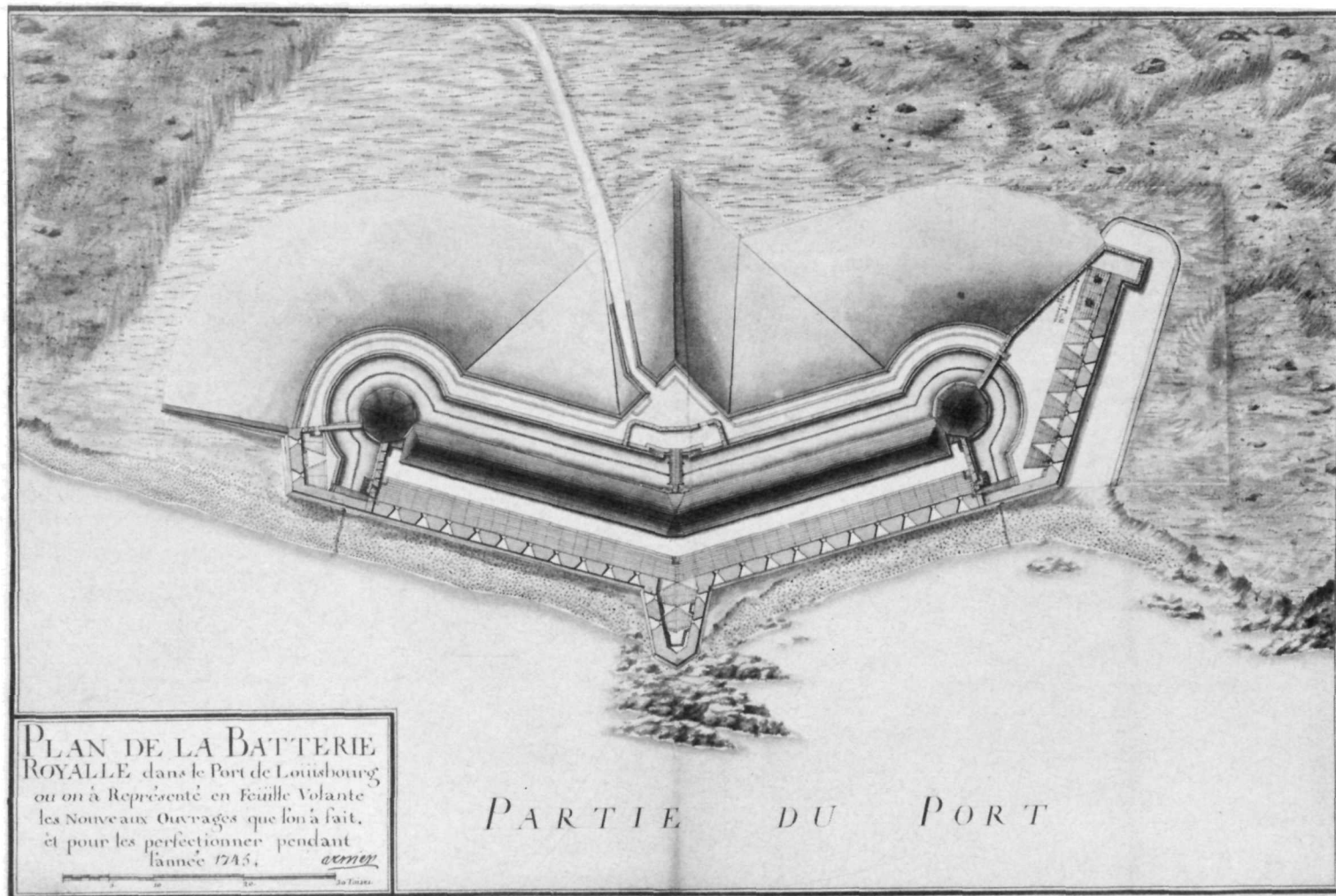
226 Quay. Right re-entrant angle as excavated; gateway and pilings for Cale de la Halle at right. Note plank revetting at base of masonry, also recesses for timber uprights. (Fortress of Louisbourg NHP.)



227 Quay. Cale de l'intendance and junction with Rue Toulouse, viewed from the town; quay revetment and wooden pilings in background. Note series of rubble and brick drains in road surface. (Fortress of Louisbourg NHP.)

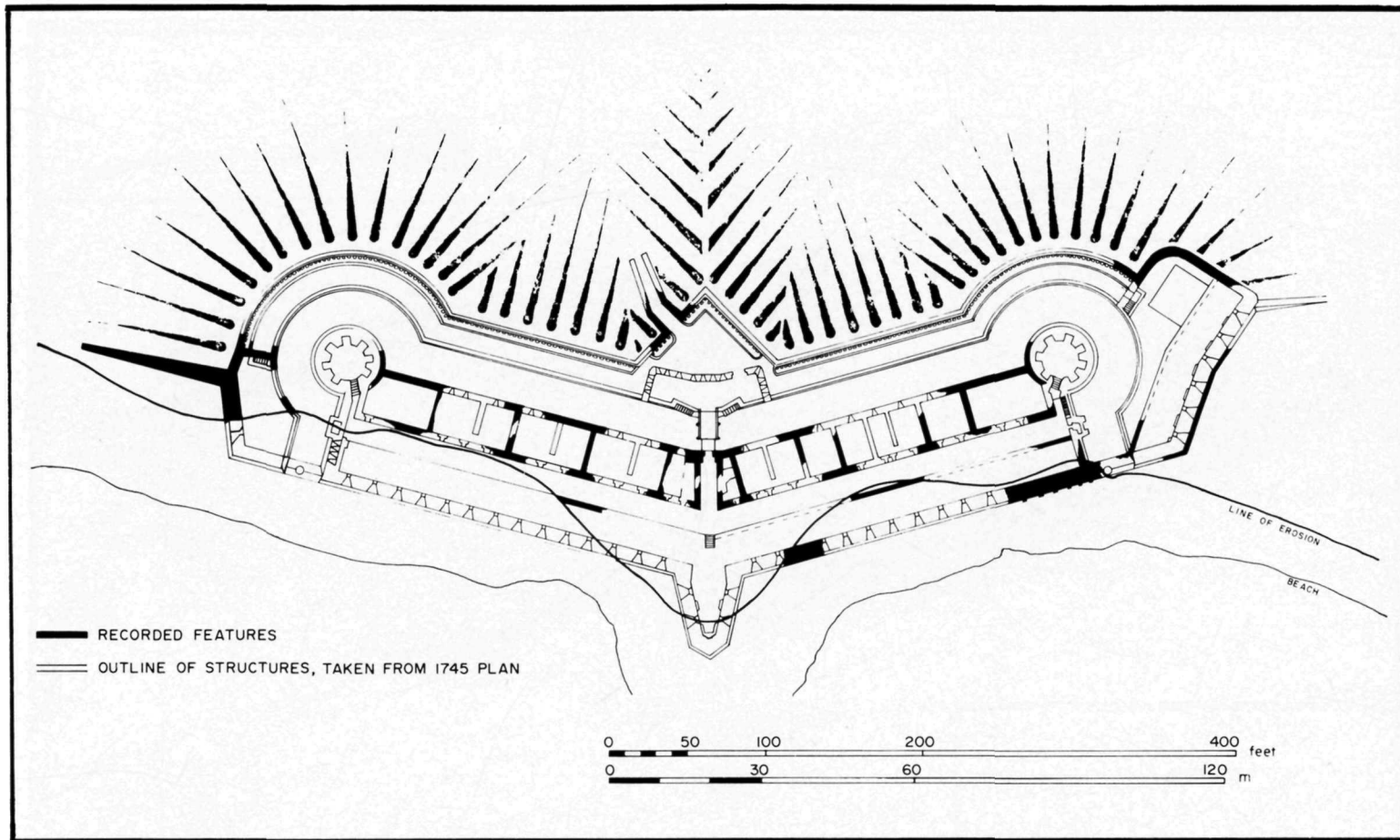


228 Royal Battery. Construction proposals, Verrier, 1726. The basic design thereafter remained unchanged throughout the entire period of occupation. (Archives Nationales, Paris.)

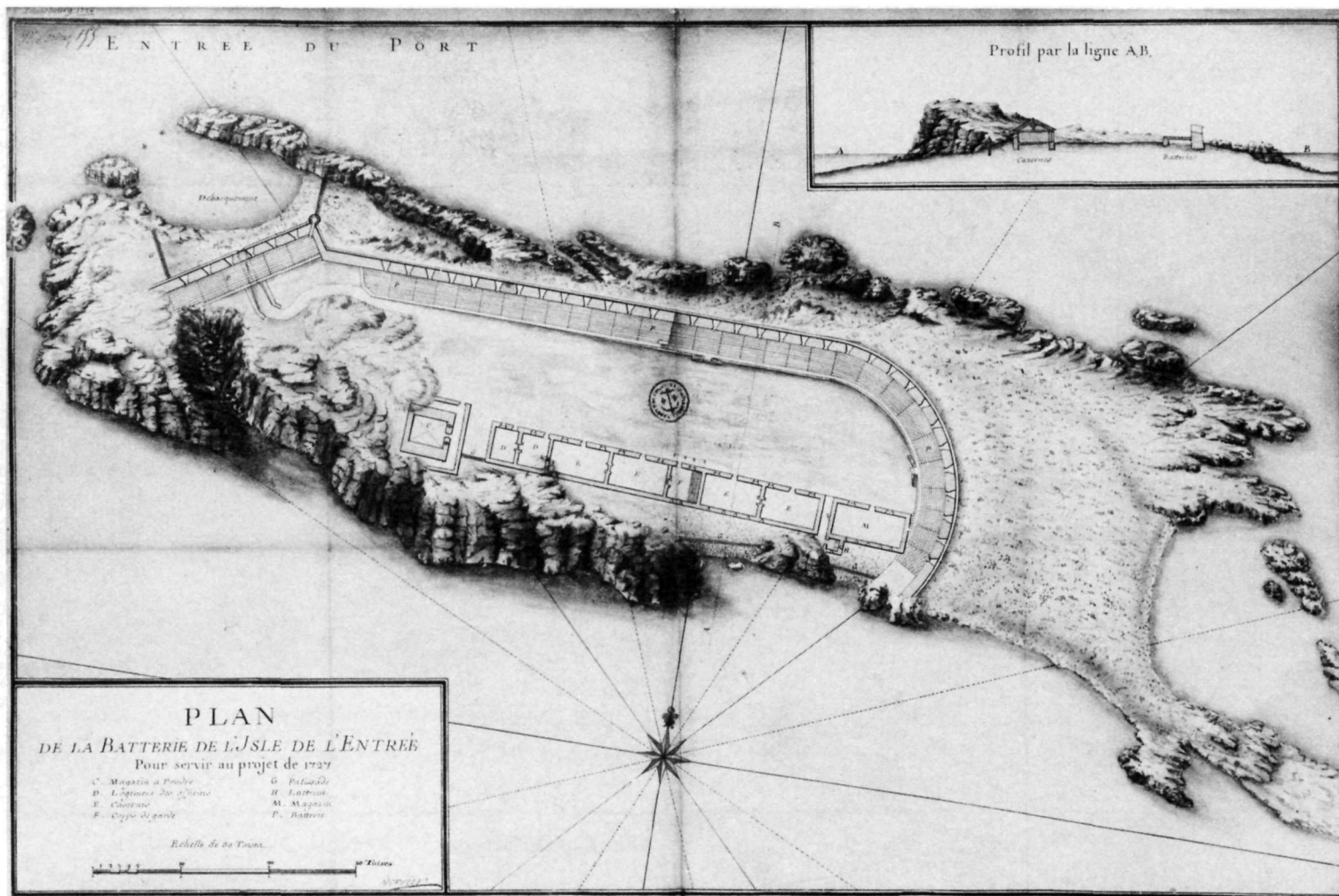


229 Royal Battery. Additional defences, Verrier, 1745. The work proposed was the *épéron* at the salient and extension to left flank; note also a loophole wall extending from new flank

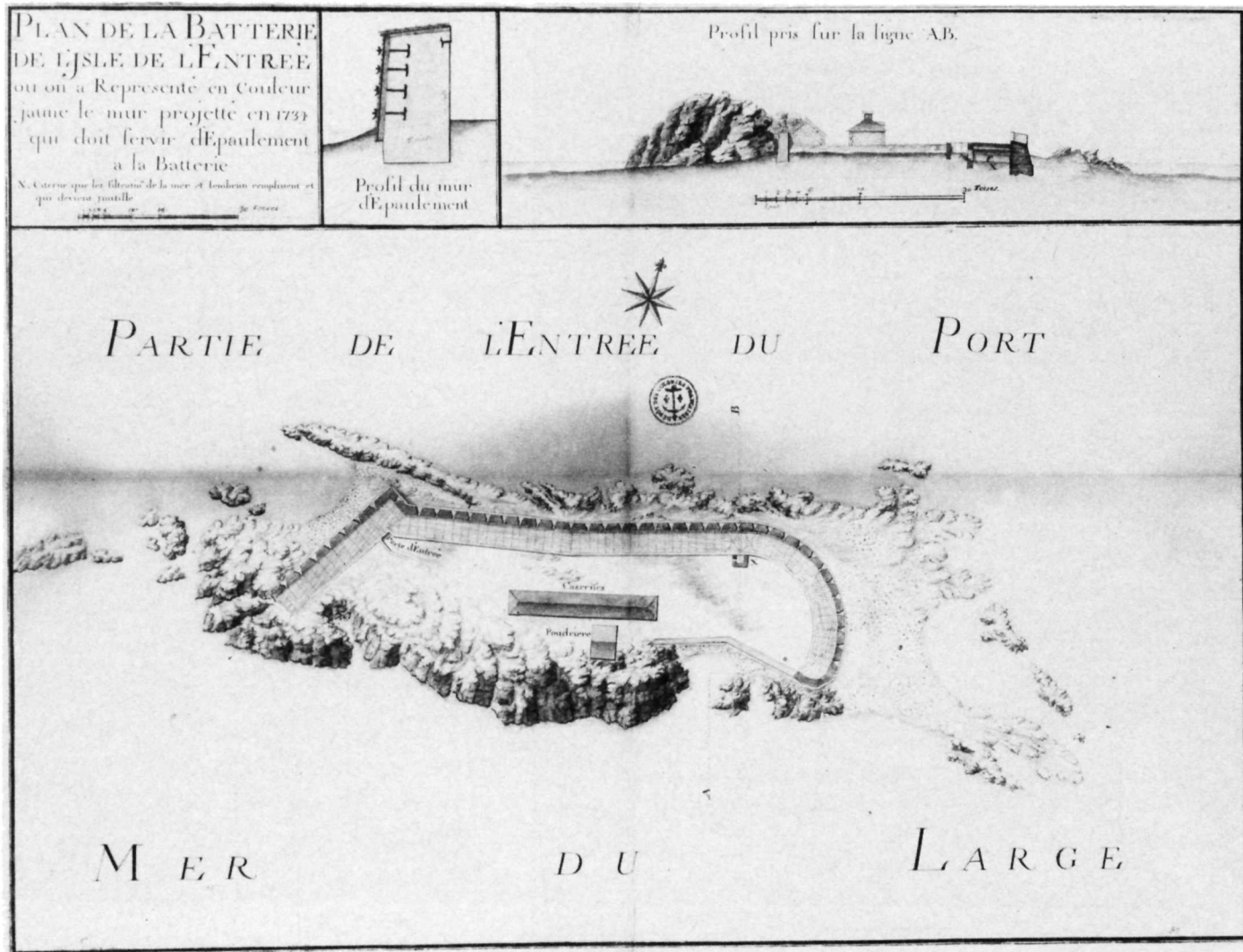
to counterscarp in front of tower. Towers are depicted with roofs, presumably of wooden shingles. (Archives Nationales, Paris.)



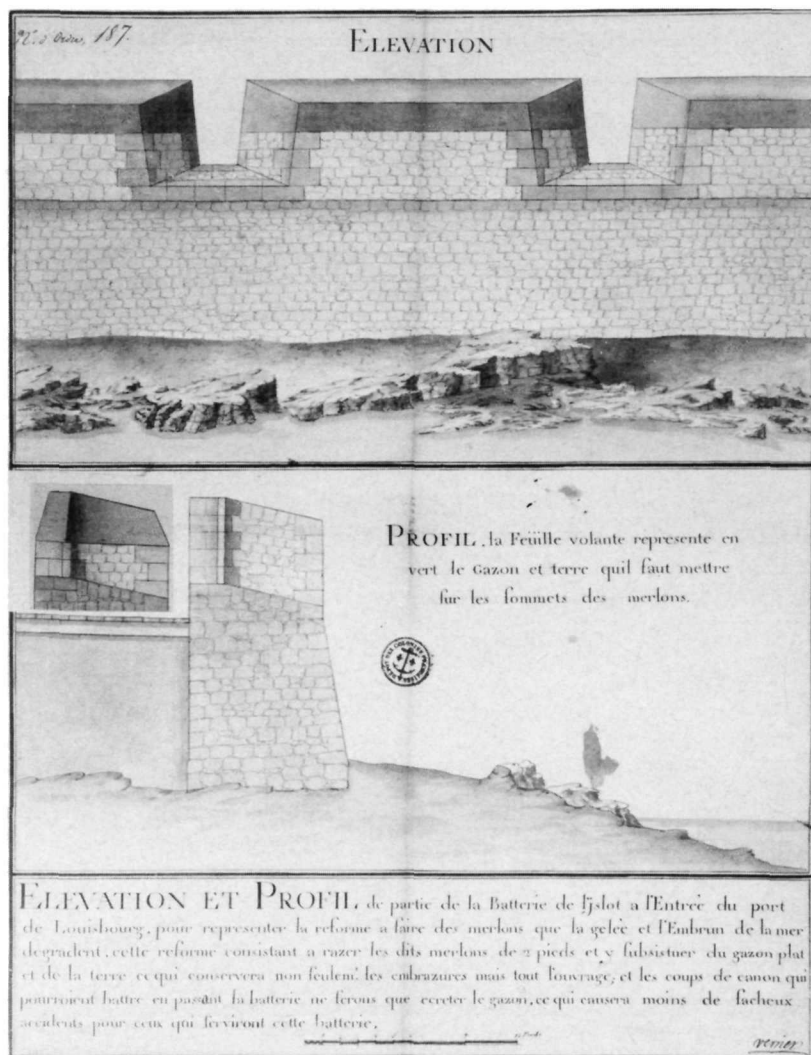
230 Royal Battery. (Drawing by T.M. Smith.)



231 Island Battery. Construction proposal, Verrier, 1726.
(Archives Nationales, Paris.)

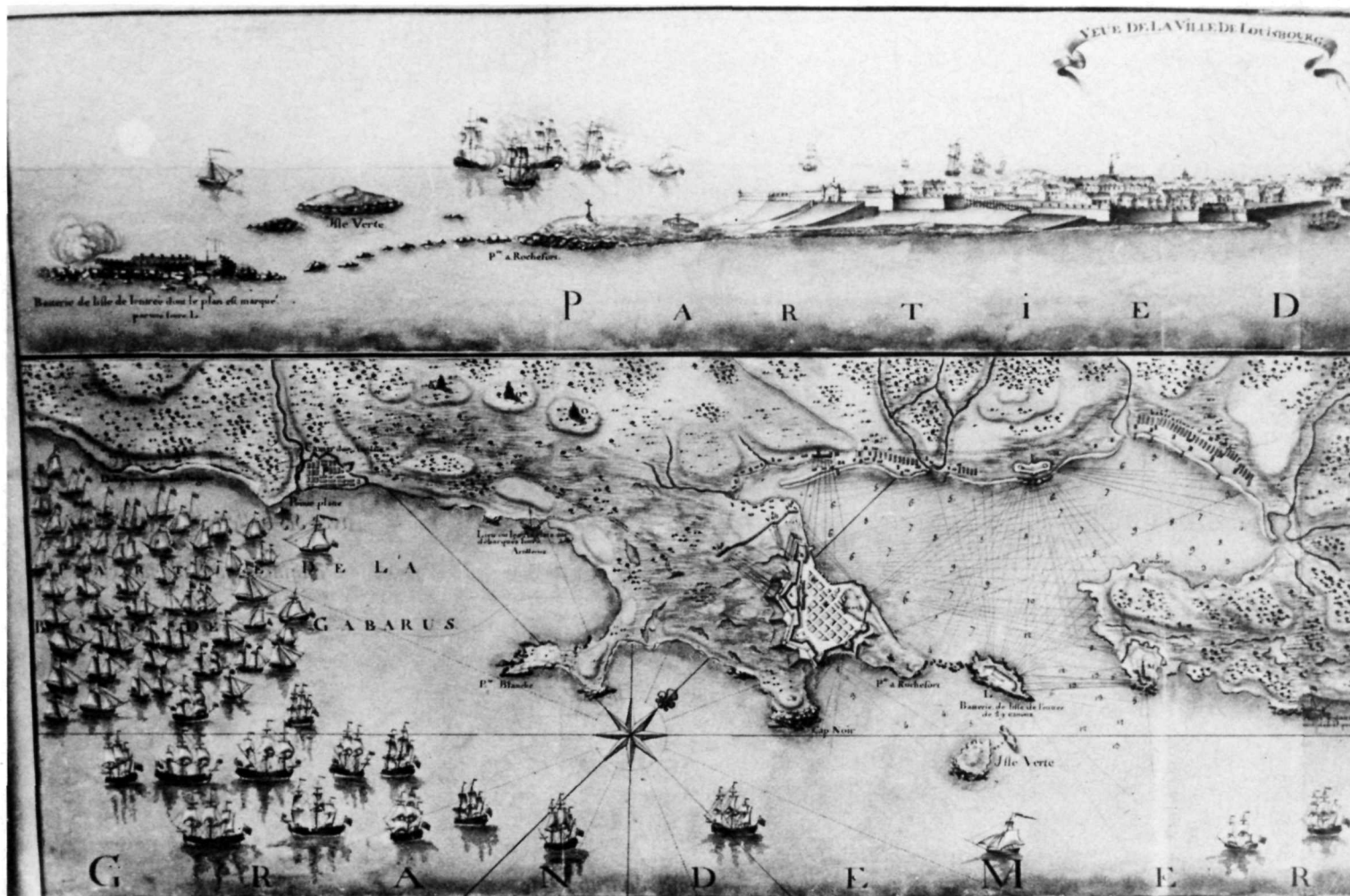


232 Island Battery. Modifications and additions, 1734.
(Archives Nationales, Paris.)



233 Island Battery. Repair and modifications to parapet, Verrier, 1735. Elevation view shows masonry of exterior revetment and slope of parapet reduced by two *pieds* and

replaced with turf; inset shows this technique in section. (Archives Nationales, Paris.)



234 1745 siege. English landing in Gabarus Bay is shown, with encampment at Flat Point (Pointe Platte). Note batteries and trench in front of King's and Dauphin bastions, also

battery firing across harbour. (Original source unknown; copy on file Fortress of Louisbourg NHP.)



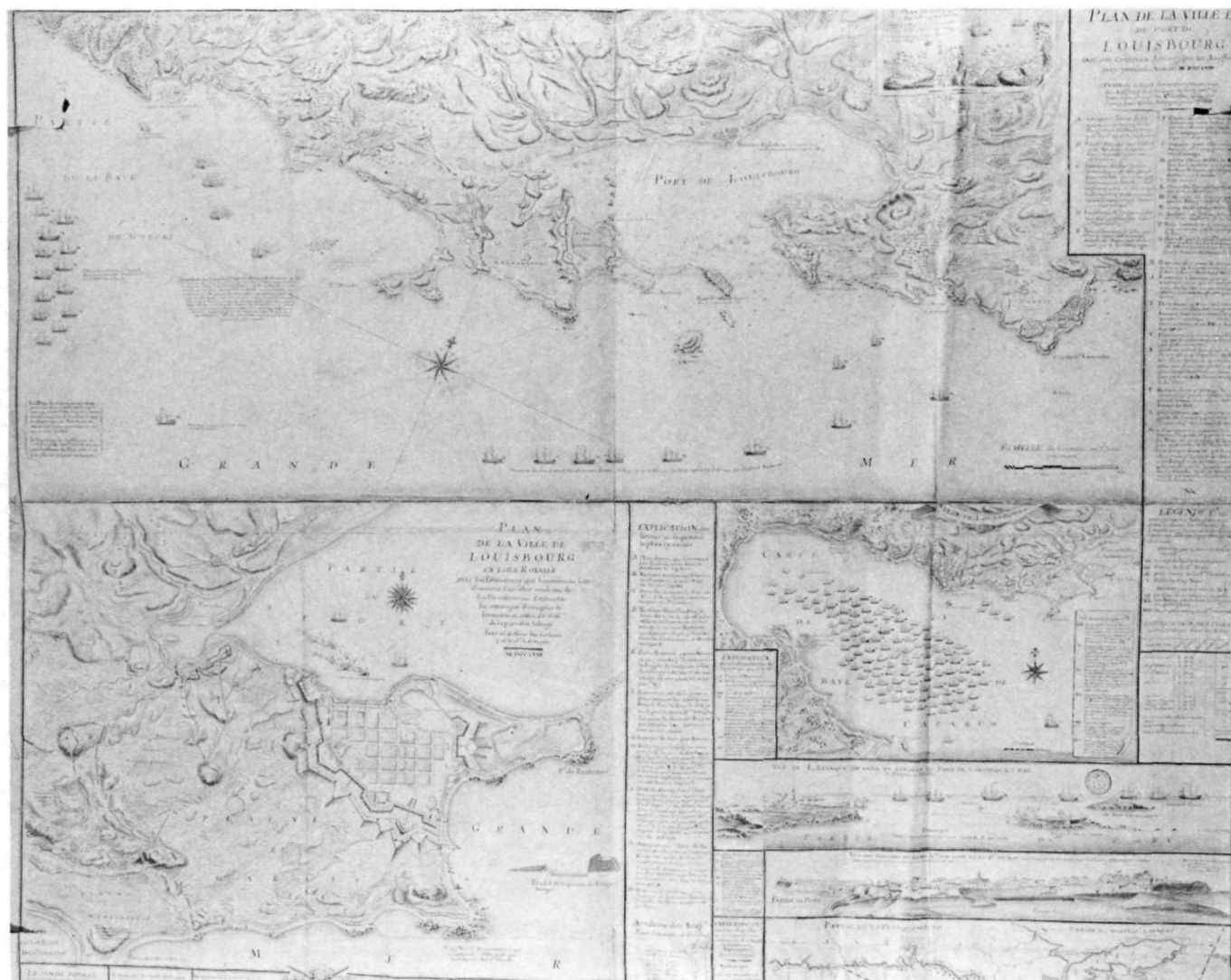
236 1745 siege. Batteries firing on King's and Dauphin bastions. S, battery of mortars and cannon, presumably on Rabasse Heights; V, T, advanced batteries. Titcomb's battery (Martissan Heights) is firing at the Dauphin Bastion across harbour. As depicted, the hills bear little relation to actual

topography: Rabasse property would have been closer to Barachois and advanced battery T on another knoll (lime-kiln hill) near the Dauphin Bastion. (Original source unknown; copy on file Fortress of Louisbourg NHP.)

194



238 1758 siege. Disposition of British camps and redoubts, Samuel Holland. (Public Archives Canada, H3/240.)

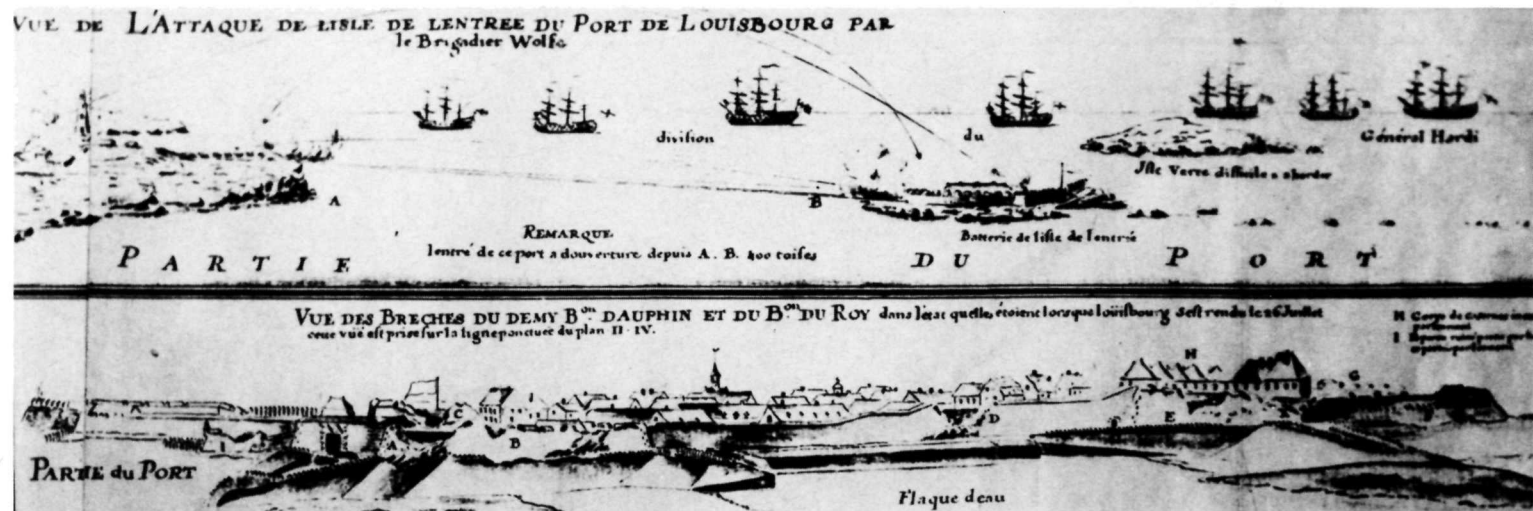


239 1758 siege. Plan and views of British attack, Lartigue.
(Bibliothèque Nationale, Paris.)

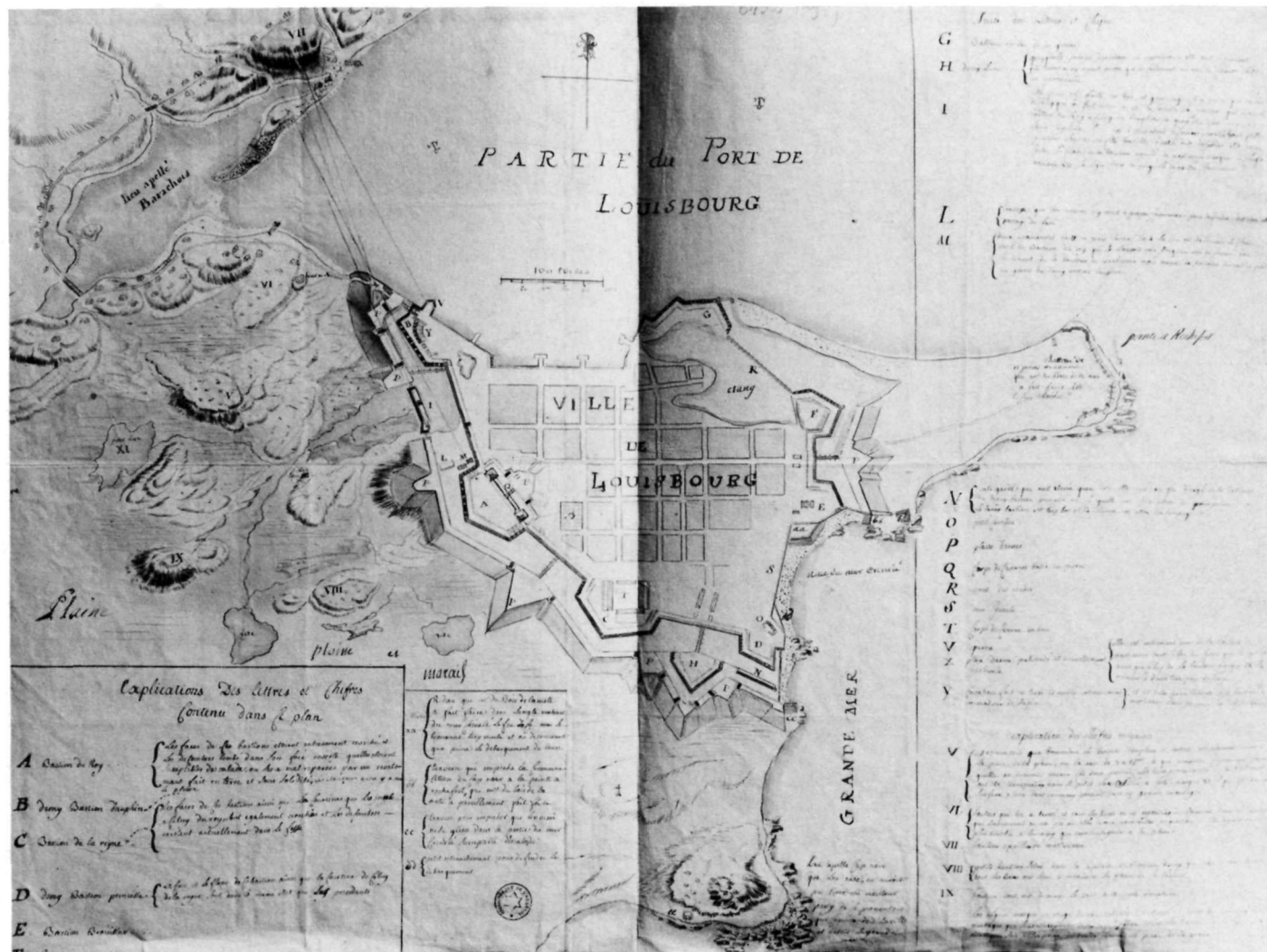


240 1758 siege. Detail from Figure 239. Note disposition of British batteries and trenches. Green Hill is at A (small circle), "La Grande Butte à Brissonet." French batteries

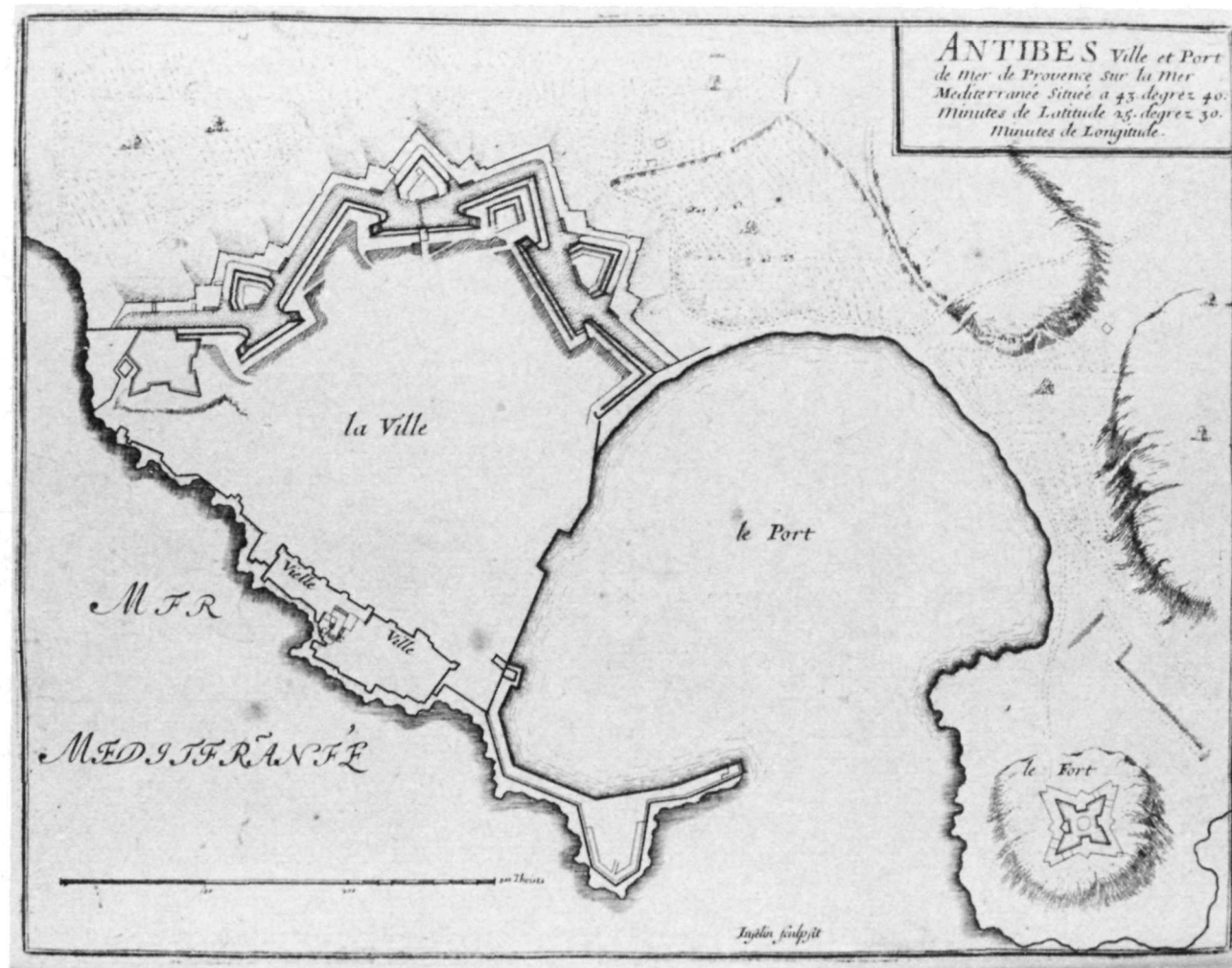
(large circles) commanding the coastal approaches to Black Rock are on the knolls south of the *marais*. (Bibliothèque Nationale, Paris.)



241 1758 siege. Detail from Figure 239. Breaches in the ramparts on King's-Dauphin front. (Bibliothèque Nationale, Paris.)



242 1758 siege. Detail of the hills used for British battery positions: V, hauteur de la justice; VI, lime-kiln hill; VII, Martissan Heights. (Bibliothèque de l'Arsenal, Paris.)



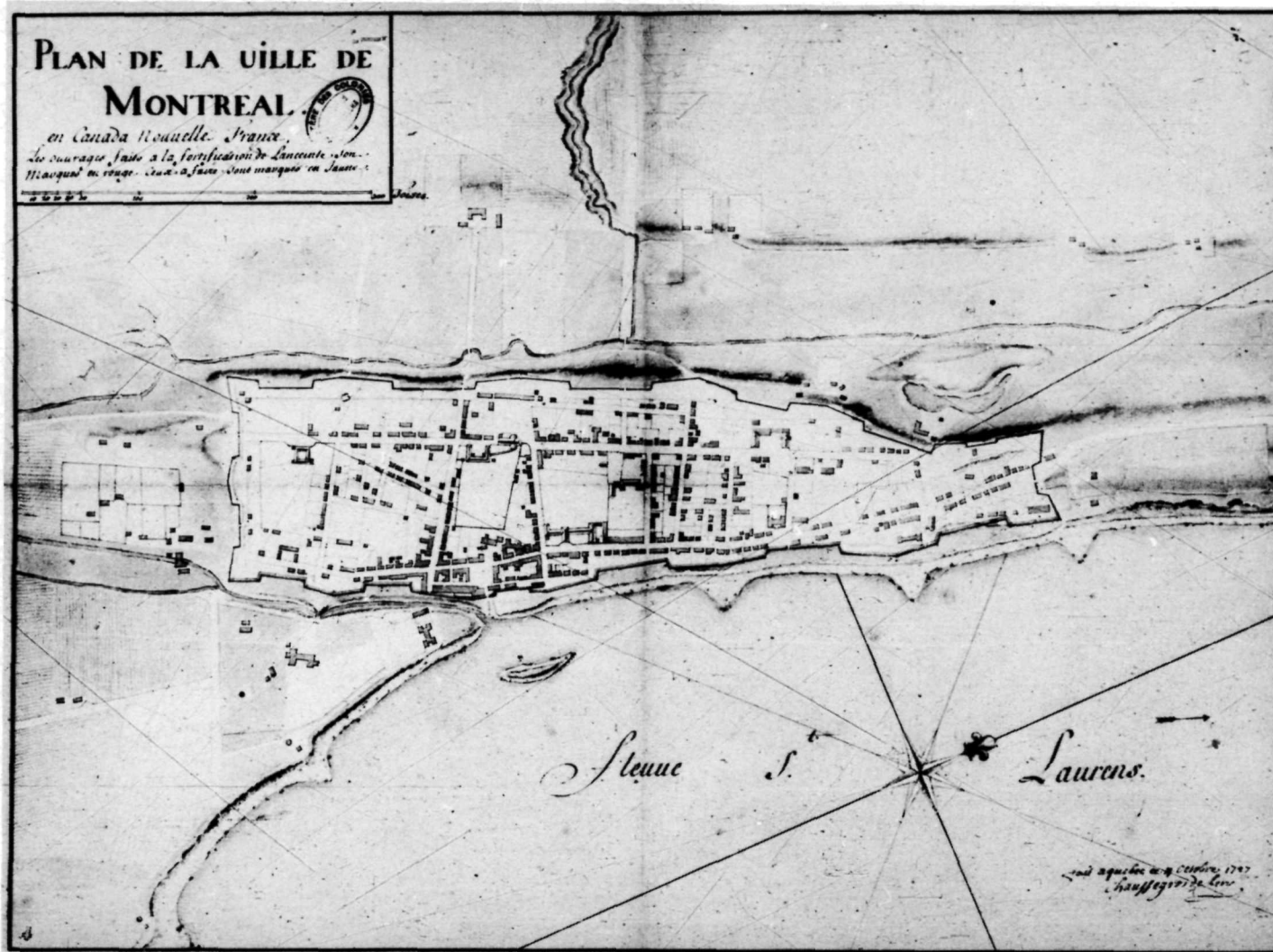
243 Antibes (Alpes-Maritimes). Small town of Greco-Roman origins on Mediterranean; 16th-century bastioned enceinte, modified and improved by Vauban. Coastline is defended by low parapet with frequent re-entrants for flank-

ing fire; port is protected by a mole and, opposite the town on a hill, Le Fort Carré of 16th-century origin. (De Fer, *Force de l'Europe: Introduction à la fortification* [Paris, 1695], p. 42.)

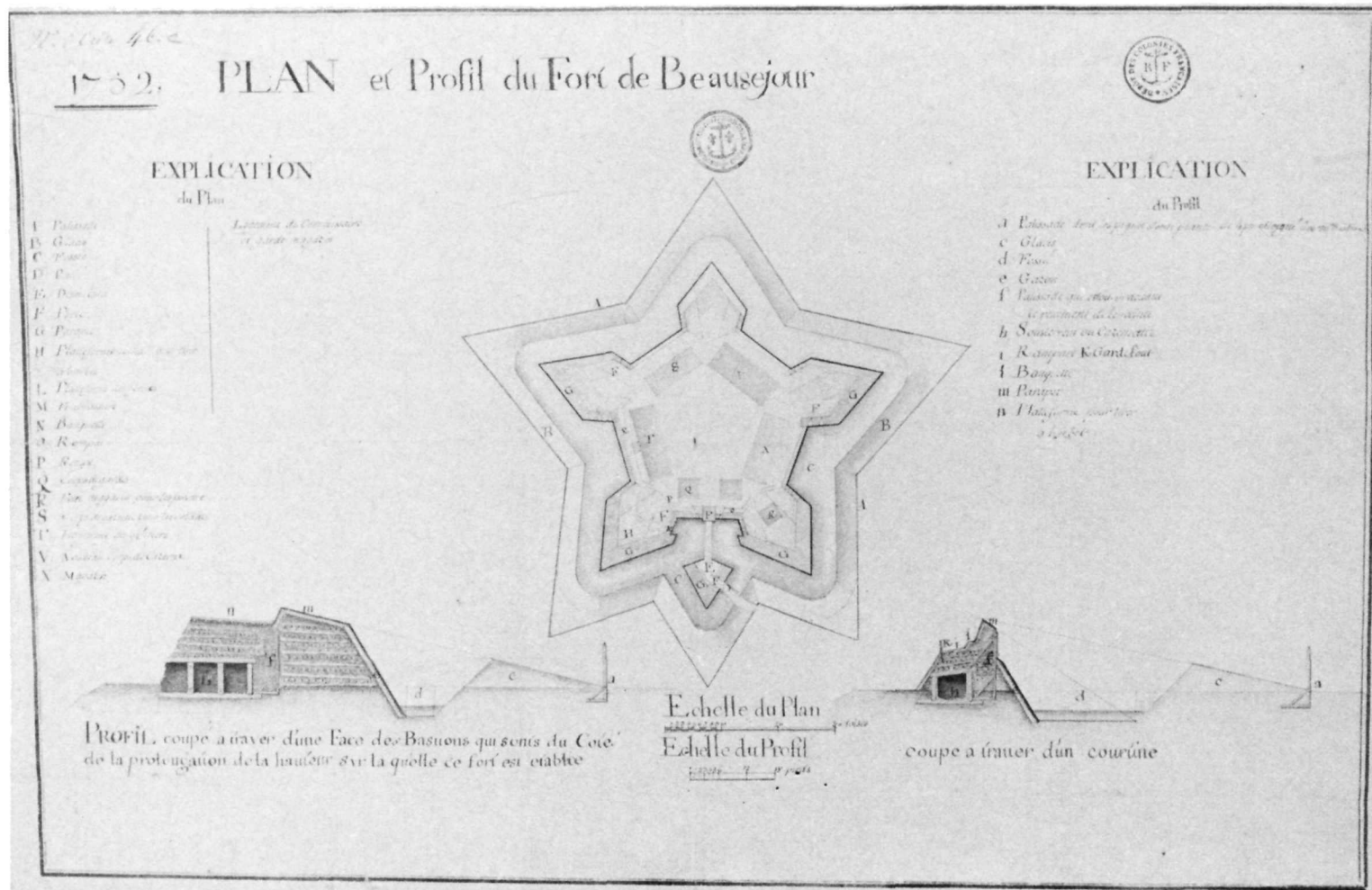


244 Quebec. Fortifications, Chaussegros de Léry, 1752. The main bastioned *enceinte* isolates the rocky promontory from westward approaches; rest of upper town is defended by

low parapet with re-entrants. Lower town is provided with a bastioned *enceinte* along shoreline. (Public Archives Canada, C 21779.)

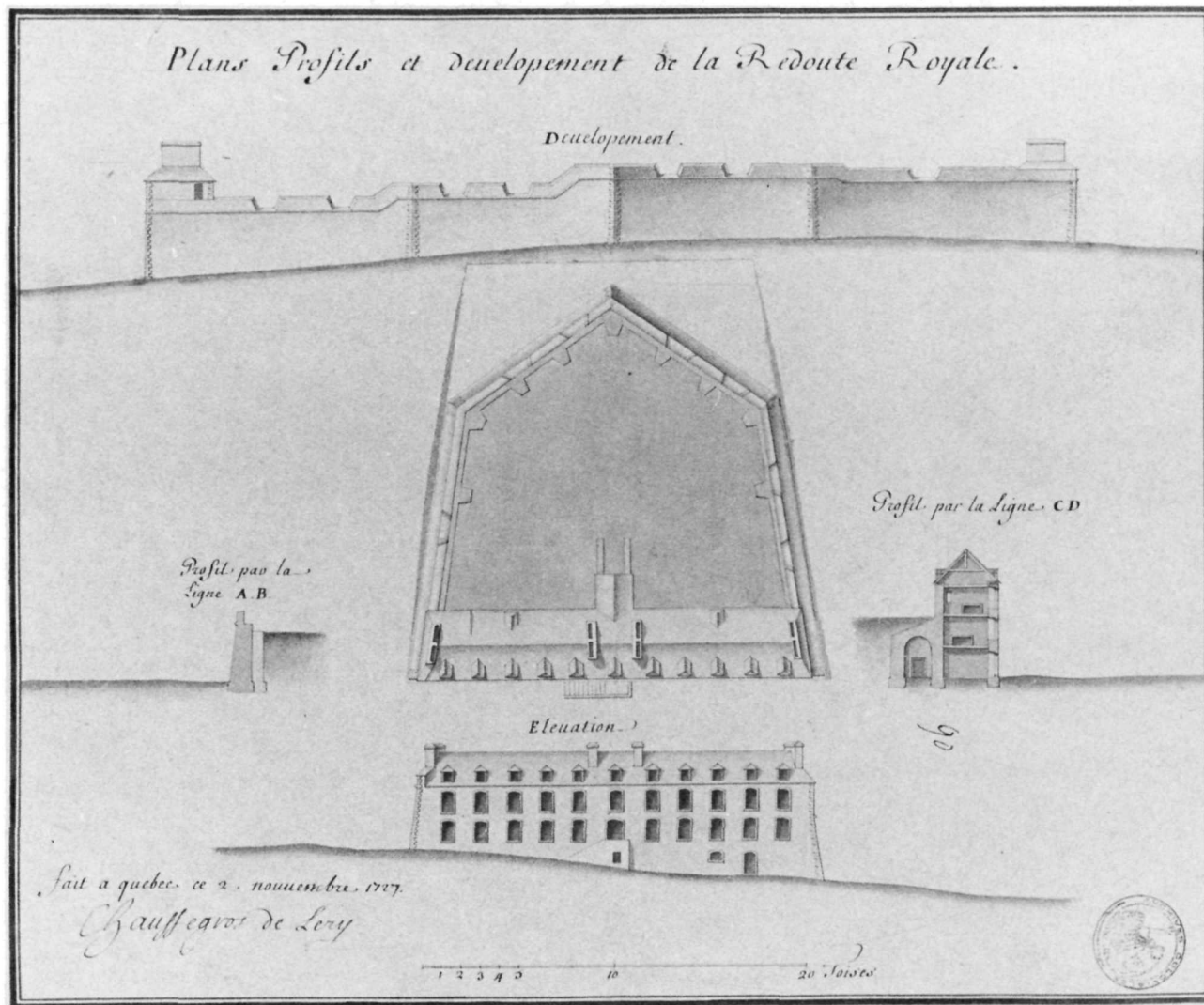


245 Montreal. Chaussegros de Léry, 1727. Low, flanked defences surround the town at the water's edge; the ground rises continually to the west. (Archives Nationales, Paris.)



246 Fort Beausejour. 1752. One of the more sophisticated frontier forts, based on a regular pentagon, using earth and timber construction. A casemate (H) is in one bastion, a

powder magazine (R) in another. (Archives Nationales, Paris.)



247 Quebec: Redoute bastionnée. One of the series of detached redoubts built to defend the western approaches to

the town; later abandoned with construction of a regular bastioned *enceinte*. (Archives Nationales, Paris.)



248 Louisbourg. The fortifications and harbour entrance are in background of this aerial view. Broken ground and commanding heights leading almost to glacis are in fore-

ground and middleground; lower slopes of Green Hill at extreme right. (Fortress of Louisbourg NHP.)

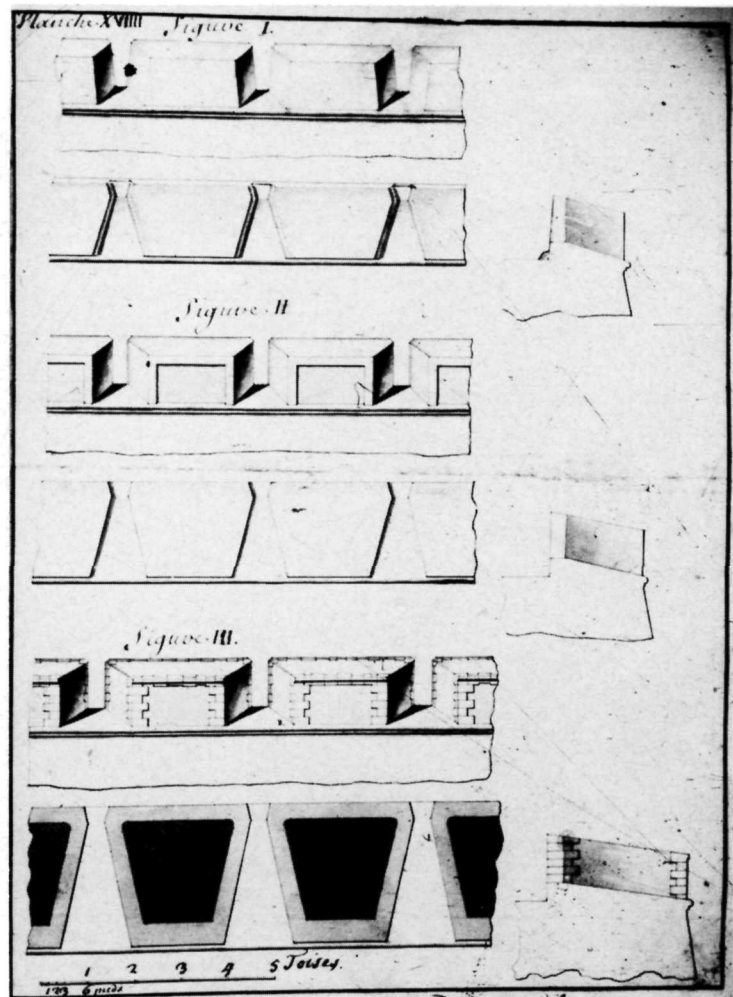


249 Collioure (Pyrénées-Orientales). Medieval chateau (A) guards old port and town; bastioned works were added in 16th century, improved by Vauban ca. 1670. He also added a large *demi-lune* on landward front of chateau and a series of

detached works extending up hills to the north to cover commanding ground. Detached forts (C, G, E, F) were also located on heights south of the harbour. (Collections du Ministère de la Défense, Bibliothèque du Génie, Paris.)



250 Collioure. Medieval chateau in lower left centre, 17th-century *demi-lune* at left. Fort and barracks (C on Fig. 249) dominates the town, centre right. Detached works (E and F, Fig. 249) may be seen on the ridge above the town. The small fort on the hill south of the harbour is in foreground. (Photo by author.)



251 Embrasures. Variations recommended by Chaussegros de Léry. (Public Archives Canada.)



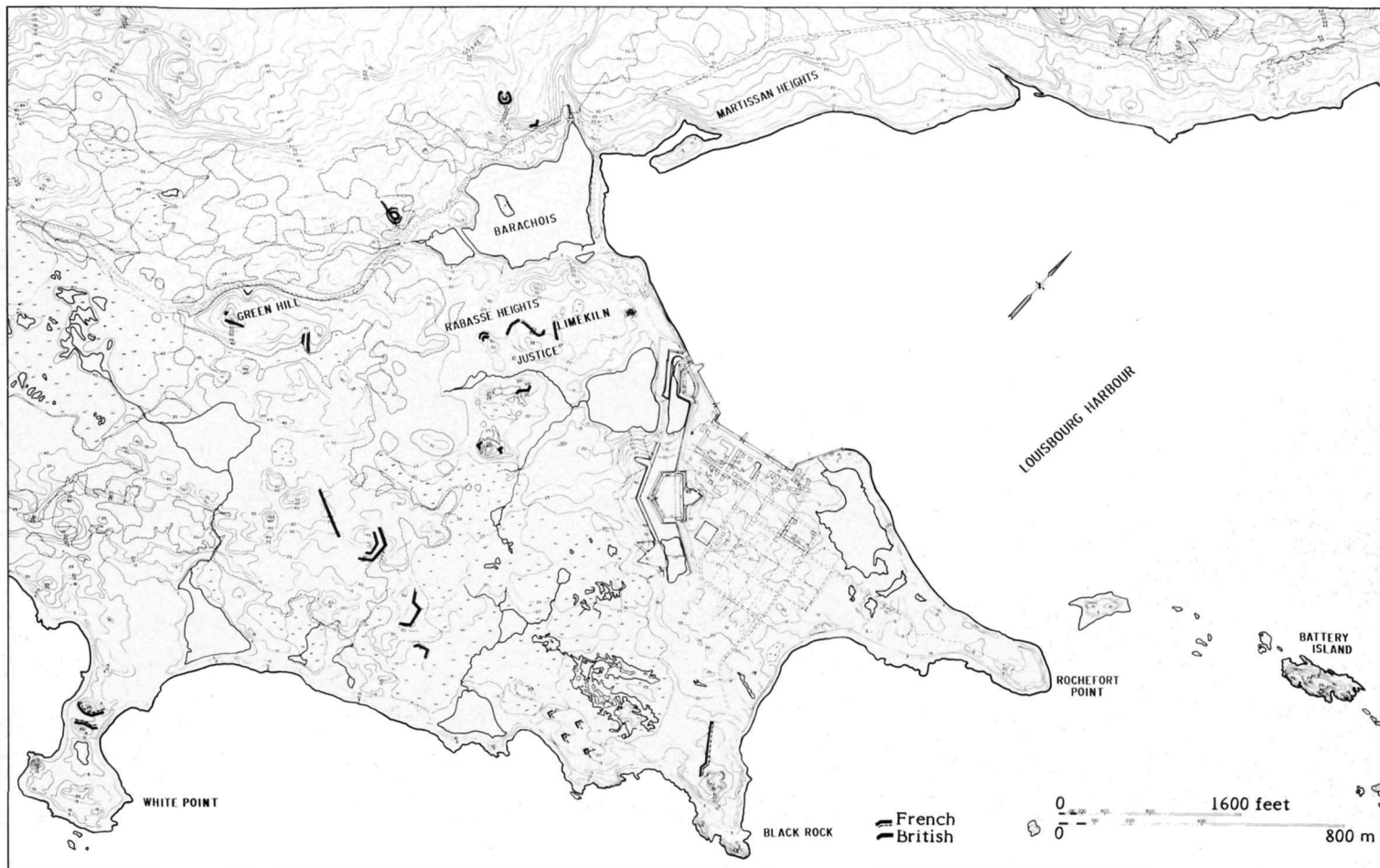
253 Fortifications of Louisbourg. Excavation and reconstruction. The Dauphin Bastion is at an early stage of excavation (foreground); construction is in progress on the

King's Bastion and barracks (background). (Fortress of Louisbourg NHP.)



254 Fortifications of Louisbourg. Reconstruction complete. Dauphin Bastion and gate in foreground; quay and *éperon* to

left; King's Bastion and barracks in background. (Fortress of Louisbourg NHP.)



255 Fortress area: French and British field fortifications. Five-foot contour intervals based on 1962 survey. (Drawing by T.M. Smith.)



256 The town and walls of Louisbourg as seen from Martisan Heights (the location of Titcomb's Battery, 1745). (Fortress of Louisbourg NHP.)

The French defended their North American territories with isolated forts at strategic sites in the wilderness and with bastioned masonry walls around the three towns important enough to warrant such fortifications: Montreal, Quebec and Louisbourg. Documentary, architectural and archaeological evidence reveals to what extent the French, then predominant in military engineering, applied long-established Old World methods at

Louisbourg and to what extent they adapted to the different physical and military environment of the New World. Twice besieged, Louisbourg was twice taken. Yet in both sieges it held out, unaided, for more than six weeks after the enemy had landed. More could not have been asked.

Volume One: text; Volume Two: illustrations.

