North American Martello Towers

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Historically, military architecture has been noted for its beauty and logic. Characterized by handsome geometrical configurations, fortifications were unified by functions which organically determined their forms and their relationships. Among the numerous works for defense wherein purpose beautifully and clearly generated form was the Martello tower, a military work which is little known today, but which was once an important adjunct to the defenses of several North American cities.

The Martello tower was named after a tall cylindrical structure situated in the Bay of Martella in Corsica.1 In 1794 this tower, mounting only one heavy cannon, became famous among military authorities when two British men-of-war were defeated from behind its parapet. During the encounter, little damage was inflicted on the French work by the ships, well demonstrating the strength of the structure.2

1. The word “Martello” is evidently a corruption from the geographical term “Cape Martella.” In virtually all nineteenth-century treatises on the art of fortification, the corrupted term is used to identify the architectural type.

2. The incident which made the Martello tower famous and which evidently gave the tower its name was noted in numerous documents on fortification. For example see Captain Lendy, *Tre-

As with all architecture for defense, once the effectiveness of the basic configuration was proven, the defense was formulated; only minor changes were thereafter made, either to improve efficiency or to adapt to a particular site. Circular or elliptical in plan, most Martello towers had diameters of thirty or more feet—in addition to being very strong, curved forms enclosed a large amount of area per length of perimeter. On an open platform at the top were mounted one or more smoothbore cannons, *en barbette*, usually on traversing carriages. The facilities necessary to support both the garrison and the battery were contained within, on several floors.

Simple in form, towers were designed effectively to resist assault. Built either of stone or brick, the walls were usually between six and fourteen feet thick, to provide a bombproof enclosure, and over twenty feet high, to resist escalade. Then, access to the interior was furnished only by a single door, located ten or more feet above the ground. Communication to this entrance was up a ladder or small wooden stair.

The victims of the Bay of Martella incident were natu-

**Fig. 1. Tower No. 45 on the Coast of Sussex, England. Section (reproductions of Crown-copyright records in the Public Records Office, London, appear by permission of the Controller of H. M. Stationery Office).**
rally impressed with the inherent strength of the work which witnessed the defeat of their vessels. Subsequently, in 1796 Martello towers were adopted as basic adjuncts to the defenses of England, and were later erected in considerable numbers along the shores of Kent and Sussex, in response to a threat of aggression by Napoleon (Fig. 1). Later, designs for them were imported into Canada by English military engineers who were occupied with the defense of a land boundary on the south and a sea frontier on the east.

Acting upon the need for stronger defenses after Canada had been won in the French and Indian War, Royal Engineers dedicated their efforts to either rebuilding destroyed works or constructing anew the fortifications for key cities as well as for their arteries of communication. Repairs were made on the enceinte of Quebec until the walls separating the city from the Plains of Abraham had been reconstructed entirely, largely upon French foundations. In addition to the main works, consisting of a series of curtains and bastions, an outer line was proposed by Gother Mann (1747-1830), a military engineer sent to Canada to command the Royal Military Engineers from 1785 until 1791 and again from 1794 until 1804. The projected defenses included a chain of advanced lunettes—works with two faces and two flanks, open at the rear. To be located some 800 yards from the enceinte, they were intended to force an enemy aggressor to commence siege operations far away from the city. Although the need for advanced works was controversial, the lunettes were rejected and four Martello towers were finally erected between 1805 and 1832, about 1,000 yards west of the city walls along a line running northwest to southeast.

Spaced about 450 yards apart, the towers were all similar. The centers for the radii of the interior and exterior faces of the stone walls were offset, creating a thickness of thirteen feet on the side facing the field and seven facing the city (Fig. 2). The strongest part of the wall therefore was oriented to the direction from which enemy missiles would come in an attack. If a tower should ever become untenable, the lesser thickness of the opposite side would facilitate destruction from the ramparts of the enceinte of the city, to prevent enemy occupation. Accessible only at the second floor, two stories were contained within each tower. Typical of all Martello towers, the powder magazine was in the ground story and the quarters were in the second. On the platform above, cannons were mounted behind a thick parapet. This platform was supported by an annular vault, the centerline of the crown of which was concentric with the inner wall line, creating an interesting structure with a double curvature. Below this, the lower floors were framed conventionally with timber.

While the Quebec towers were designed to defend

3. Lendy, Treatise, p. 375; Charles Oman, Castles (London, 1926), p. 24. Seventy-four Martellos were built in Sussex and Kent. Twenty-nine more were built north of these, along the shores of Essex and Suffolk: Sutcliffe, Martello Towers, p. 60.

4. The development of these fortifications can be seen in numerous manuscript drawings deposited in the Map Room, Public Archives of Canada, Ottawa; the Archives Nationales, Paris; and the British Museum, London.


7. Among the documents relating the nature of this controversy were, Committee of Royal Engineers to The Earl of Chatham, 14 March 1805, Public Archives of Canada, Military Series (b.g. 8, Series c, vol. 384); and Gother Mann to The Earl of Chatham, 23 March 1805, Public Archives of Canada, Military Series (b.g. 8, Series II, vol. 10).
Fig. 3. Branch tower, Fort Henry, Kingston, Ontario (courtesy: Amon Carter Museum of Western Art, Fort Worth, Texas).
against land approaches, others were developed for defense against the attacks of ships. Another Martello tower erected near Lancaster, New Brunswick, during the War of 1812 further demonstrated the confidence of Royal Engineers in this form. Later, a chain of towers appeared on the shores of Lake Ontario.

Located at Kingston, Ontario, these were among the most important fortifications of Upper Canada. Describing the strategic importance of the city in 1819, the Duke of Wellington reported that it “is the connecting point between the Upper and Lower Province. It contains the Dockyard on Lake Ontario, . . . is the most populous Town in the Province, and . . . [is] liable at all times to be attacked.” In 1826 Lieutenant Colonel Ross Wright of the Royal Engineers arrived to develop plans for new fortifications to replace the outmoded works that had been thrown up after the opening of the 1812 hostilities. Of an extensive system, however, only one redoubt—commenced in 1832 and named Fort Henry—along with two branch towers (Fig. 3) and four Martello towers were finally realized. The branch towers were similar to Martellos. With cannons mounted behind parapets on the top platforms, they were designed to provide assistance in the defense of deep ditches extending from two opposite sides of the redoubt to the shore where the towers were located. All of this isolated the tip of the peninsula from the mainland, theoretically making it accessible to land approach only across a drawbridge over one of the ditches.

8. For an illustration of this tower, see Alan Gowans, Building Canada: An Architectural History of Canadian Life (Toronto, 1966), pl. 7.
9. Wellington to Bathurst, 1 March 1819, Public Archives of Canada, Colonial Office Records, Q Series, m. g. 11, vol. 154, p. 149.

It was not until the Oregon Country dispute that work began on the stone walls of the Martello towers. Commenced in 1846, these structures—named Cedar Island, Market Shoal, Murney, and Fort Frederick towers—formed a chain of water batteries, so linked together that each could support its neighbor during an attack. Differing slightly in plan with those at Quebec, the perimeters were elliptical at the parapet, with long and short axes of over fifty feet. The cylindrical interiors had diameters ranging from thirty-three to forty feet, with the centers offset to create wall thicknesses of about fifteen feet on the sides vulnerable to direct attack and nine or less on the opposite

10. The plans of the various towers are deposited in the Public Archives of Canada. For Fort Frederick, Murney, and Cedar Island towers, see drawing H4/450, Kingston, 1865; and H4/450, Kingston, 1846. For Market Shoal tower, see H4/450, Kingston, 1846, Shoal tower.
sides. As at Quebec, the heavy gun platforms were supported by circular vaults springing from a central column and the outer enclosing wall.

The towers were heavily armed. With the exception of Murney tower (Fig. 4), which mounted only one thirty-two pounder, all had platforms designed for a single twenty-four-pound and a pair of thirty-two-pound cannons, mounted on traversing rails. Within, thirty-two-pound carronades were positioned to fire through embrasures, which could be closed with iron shutters. This artillery was manned by garrisons of twenty-four.

Although the towers could cooperate in an attack, each was a self-sufficient defensive work, modified in detail according to its site. The simplest, in design if not in construction, was Market Shoal tower, erected in the water on a platform of oak and rock, within a cofferdam (Fig. 5). Situated on land, the other towers were provided with...
caponiers for flank defense against a close-in assault. The Fort Frederick tower, now the Royal Military College Museum, was the largest and strongest (Fig. 6). Often called a redoubt rather than a tower, it had four levels instead of the usual three. Four caponiers enabled the garrison to defend the base of the tower. These were perforated with rifle ports and were partially protected by a low mask of earthworks.

Towers also appeared along the sea frontier of the United States. To guard the harbor of Newport, Rhode Island—one of the best in the country for wind-driven vessels—a circular tower was built upon an imposing height overlooking the East Passage into Narragansett Bay, opposite Fort Adams. Commenced shortly after the turn of the nineteenth century and romantically called “Fort Dumplings,” the work was described in 1811 as a “tower of stone, with casemates, which will contain thirty or forty men . . . [but is] in an unfinished state.” For the defense of Charleston Harbor, South Carolina, a Martello tower was erected sometime between 1806 and the end of the War of 1812 (Fig. 7). Engineers’ drawings show it was a small symmetrical work, over forty feet in diameter. Obviously because of the difficulty of turning vaults with compound curvature, the interior structure was wood rather than masonry, although in 1833 it was proposed that the work be changed to stone. Within a few decades, however, more extensive defenses were erected around the bay and the tower lost its importance. Moving down the coast to Tybee Island, Georgia, another masonry Martello tower with the usual stores, “secure quarters for the men, and a platform for cannon” was described by Benson J. Lossing in his Pictorial History of the Civil War (Fig. 8). Evidently constructed during the same period as the Charleston tower, in 1823 this work was reported to be in a healthy situation and in good repair.

Other towers were similar in concept but different in form, perhaps because of limited availability of skilled masons. Designed by Simon Bernard (1779–1839), a French military engineer serving the United States, identical towers were included among rather extensive systems of defense for both Mobile and New Orleans. The Mobile work, projected to defend Grant’s Pass and Pass au Héron, was never realized. The New Orleans tower, erected at the mouth of Bayou Dupré, was commenced in 1830 and was designed to control one of the approaches to the city from Mississippi Sound. It mounted fifteen pieces of ordnance and required a wartime garrison of fifty men. Hexagonal in form, it consisted of a brick shell, with an interior structure of wood.

Among the last towers to be erected on the continent—if not indeed the final—were two works at Key West, Florida (Fig. 9). Intended to augment the strength of Fort Taylor (begun in 1844) in defense of the harbor, these were set up early during the Civil War and reflected the refinement of form and detail that characterized many works for defense erected during the middle decades of the nineteenth century. Like numerous other Gulf Coast permanent fortifications, they had thick enclosing walls of brick, which were partially shielded by earthworks covering a

12. American State Papers: Military Affairs, iii, 249. Between 1 January 1806 and the end of the war, $20,212.33 was spent on its construction.
13. (Philadelphia, 1866), ii, 125.
15. Bernard’s plans for the towers are in the Cartographic Branch, National Archives, Washington, D.C.
16. Numerous plans for these are deposited in the Cartographic Branch, National Archives, Washington, D.C.
counterscarp gallery. The Key West towers closely resembled the *tours-modeles* which had been favored by Napoleon for coast batteries. In concept they were similar to Martellos, except they were square. Like the *tours-modeles*, the walls of the American works had thick masonry parapets, with machicolations on each side, to allow for the defense of the base of the walls. As with the circular or elliptical towers, the walls which were exposed to the cannons of enemy ships were thicker than those facing land approaches.

These towers and those preceding them in both the United States and Canada became obsolete during the Civil War. Thick masonry walls, heavy as they were, could not withstand the impact of large missiles fired from accurate rifled cannons, which were well proven during the conflict. After the war, most American works fell into disrepair. However, in Canada most of the Martello towers have been preserved.

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