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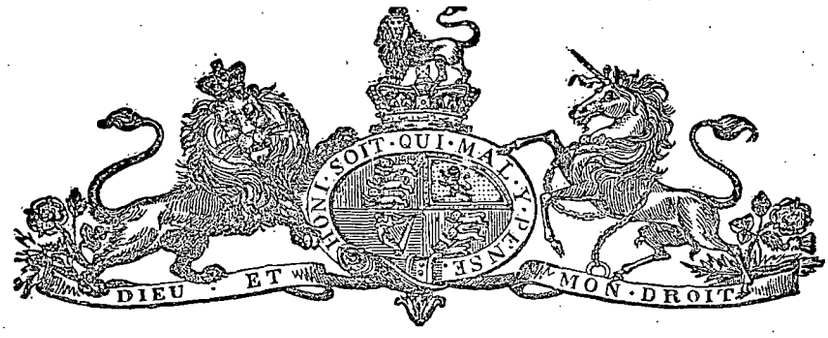
LEGISLATIVE COUNCIL.

ALEXANDRA BATTERY:

REPORT ON CONSTRUCTION.

Laid upon the Table by Mr. Moore, and ordered by the Council to be printed, September 3, 1880.



CONSTRUCTION OF ALEXANDRA BATTERY.

Staff Office, 28th August, 1880.

SIR,

IN reply to your instructions of this day's date, I have the honor to forward for your information the following Report on the construction of Alexandra Battery:—

Drawings.—Owing to the Battery being an old work reconstructed, of which or the site no accurate plans could be obtained by the Consulting Military Engineer, the whole of the work has had to be constructed from rough sketches and tracings, the details of which it has been necessary to adapt to the requirements of the site and existing work. It would consequently have been impossible to carry out the work by contract, or except under the superintendence of a Military officer conversant with the special requirements of the Artillery service.

Site.—The Battery is laid out as directed by the Consulting Military Engineer. The faces of the work, the positions of the different guns, and the lines of fire were carefully checked over by him during his last visit to Tasmania. The laying out of the Battery is in accordance with the latest improvements, and admits of each of the guns covering the maximum extent of ground consistent with the safety of the detachment.

Quality of the Materials.—All materials used are the best obtainable of their respective kinds; and the quality has been approved of both by the Consulting Military Engineer and the Engineer-in-Chief on their visits to the Battery. Approval for every item of expenditure is obtained beforehand.

Timber.—Very little timber has so far been required, but the whole of that used has been seasoned and free from pipes, shakes, and other defects. Sufficient timber for the interior of the Magazines and Stores was procured before the work commenced, and has now been more than two years seasoning.

Iron.—Almost the whole of the iron used has been Lowmoor or Swedish, having been obtained from the Stores when returned from Port Arthur. Iron, obtained elsewhere, has been Crown, No. 1, or equal thereto. All cast-iron work is sound, clean, and free from sand, air-holes, flaws or defects.

Mortar.—The mortar used consists of one part of fresh well-burnt Risdon lime (the best obtainable), two parts of clean sharp sand, free from earth or loam, and obtained a considerable distance above high-water mark, mixed in a dry state, and well ground, with a proper quantity of water. The mortar is used fresh, and only mixed as required.

Cement.—The cement used has been best Portland, obtained direct from England through the Storekeeper.

Brickwork.—All bricks used have been sound, hard, kiln-burnt, and of uniform size and shape. All brickwork is laid in English bond on mortar, as specified above. The second courses are grouted with grout made in the same proportions as mortar. The joints do not exceed ¼ of an inch, and all are thoroughly flushed with mortar. After removing the centres the soffits of the arches have been raked out and carefully pointed with Portland cement.

Retaining Walls.—All retaining walls have, where practicable, been made sloping with a batter of an inch to the foot. Where it has been found impracticable to give the walls batter on account of their joining the upright walls of the Magazines and emplacements, they have been made countersloping. Where the rock only has been faced, and there is no pressure from within, the walls have been made upright, as they are then less exposed to the action of the weather. It would be found unwise to leave the rock unfaced in the rear and interior of the Battery on account of the heavy drainage from the slopes above, and the impossibility of keeping the Battery in anything like order without doing so.

Dry backing to Walls.—In all cases, before refilling earth against walls or facing the rock, a course of rough stones has been built as a backing through which the water can pass freely.

Lime Concrete for foundations or coverings of arches consists of one part of the lime aforesaid, two parts sand, and three parts of blue metal broken to pass through a 2-inch gauge, mixed dry and afterwards thoroughly incorporated with water. It is placed on in layers not exceeding 12 inches in thickness, and well rammed until the mortar flushes to the top. The surface is roughed before the next layer is added.

Rubble Masonry.—The stone is of very good description, carefully picked over, laid in even courses, and well tied. Where new work has had to be joined to old the junction has been made with cement to avoid shrinkage, and well tied into the old work.

Ashlar is of first quality. A large quantity was obtained from the Prince of Wales' Battery. The beds and joints are worked fairly, the arisses true, and the faces rough dressed. The coping is most substantial, dowelled and pointed with cement.

Drainage.—Ample drainage has been provided by large wells and drains each side of the central Magazine, and a third is being constructed for Nos. 1 & 2 guns (on the right of the battery). Weep holes have been provided for the drainage of the facing walls.

Freestone.—The racer curbs are the only freestone used, and these are of the very best brown stone.

Labour.—The labour is the best obtained at the market prices. The employment of the workmen rests with the head of the Department.

Progress of the Work.—Fortnightly reports of the progress of the works are forwarded to the Consulting Military Engineer, and the construction has been approved of both by him and the Engineer-in-Chief. The work is daily inspected, all measurements are made, and all materials approved by myself.

General Remarks.—The work is, in my opinion, thoroughly sound and suited to all requirements: on the other hand, there has been no superfluous expenditure or excessive strength given to the construction. The whole of the gun-pits constructed would carry 7-inch guns, and those on which the 7-inch are being mounted would take far heavier guns. It is generally and erroneously supposed that defence works require great additional strength and stability on account of the concussion from the guns. This is not the case; the concussion is confined to the carriages and racers, and the parapet immediately under the muzzle of the gun. As a proof of the above, I might state that it has been conclusively proved that a brickwork arch of 20ft. span, only 18 inches thick, with a layer of concrete over it only 6 inches thick at the crown, is amply strong enough as a platform from which to fire a 25-ton gun (600pr.), having an energy of recoil (194·100) twice as great as that of any gun in the Australian Colonies, and more than four times as great as that of the 7-inch gun (42·400) to be mounted at Alexandra Battery. The platforms, walls, and arches are amply strong, it is evident from the above. The construction of defence works in the other Colonies by civil engineers, at high rates of pay, has not proved that they can be constructed better or more cheaply than by military officers. The cost, so far, of the Alexandra Battery has been about the same as that paid for the Tamar Battery at Launceston, and the whole cost will not exceed about half that of the Queen's Battery when first constructed.

I have the honor to be,
Sir,
Your obedient Servant,
E. M. TUDOR BODDAM, *Capt. Staff Officer.*

The Hon. Colonial Secretary.

JAMES BARNARD,
GOVERNMENT PRINTER, TASMANIA.