

$$\begin{array}{r} 250 \\ 62 \cdot 6 \\ 10 \cdot 5 \\ \hline \end{array}$$

$$\begin{array}{r} 66 \quad 13 \quad 4 \\ 11 \quad 10 \quad 8 \\ \hline 78 \quad 4 \end{array}$$

$$\begin{array}{r} 66 \quad 13 \quad 4 \\ 7 \quad 6 \quad 8 \\ \hline 74 \end{array}$$

P211110(28)
 
$$\begin{array}{r} 17 \cdot 50 \\ 145 \cdot 10 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \quad 8 \\ 10 \quad 1 \quad 10 \\ \hline 68 \cdot 8 \cdot 6 \end{array}$$

$$\begin{array}{r} 20 \cdot 00 \\ 166 \cdot 8 \\ \hline \end{array}$$

$$\begin{array}{r} 58 \cdot 6 \cdot 8 \\ 6 \quad 8 \quad 4 \\ \hline 64 \cdot 15 \end{array}$$

**LIMERICK DOCKS.**

$$\begin{array}{r} 12 \overline{) 309} \\ \underline{24} \phantom{0} \\ 69 \phantom{0} \\ \underline{60} \phantom{0} \\ 90 \phantom{0} \\ \underline{84} \phantom{0} \\ 60 \phantom{0} \\ \underline{60} \phantom{0} \\ 0 \phantom{0} \end{array}$$

$$\begin{array}{r} 21 \\ 8 \\ \hline 648 \\ 54 \end{array}$$

**SPECIFICATION**

$$\begin{array}{r} 58 \quad 6 \quad 8 \\ 66 \quad 13 \quad 4 \\ 9 \quad 0 \quad 3 \\ 10 \quad 2 \quad 0 \\ 4 \quad 16 \quad 3 \\ \hline 149 \quad 2 \quad 6 \end{array}$$

FOR

$$\begin{array}{r} 66 \quad 13 \quad 4 \\ 12 \phantom{00} \phantom{0} \\ \hline 78 \quad 13 \quad 4 \end{array}$$

$$\begin{array}{r} 567 \\ 47/3 \end{array}$$

$$\begin{array}{r} 58 \cdot 6 \cdot 8 \\ 10 \quad 10 \phantom{0} \\ \hline 68 \cdot 16 \cdot 8 \end{array}$$

$$\begin{array}{r} 704 \\ 66/2 \end{array}$$

**BUILDING**

THE

**SOUTH QUAY WALL, SEWER, &c.**

1836.

$$\begin{array}{r} 95 \quad 018 \\ 3 \quad 562 \\ \hline 87 \quad 580 \end{array}$$

$$\begin{array}{r} 1559 \\ 397 \cdot 3 \\ 1986 \cdot 3 \\ 662 \\ \hline 2052 \cdot 5 \\ 102125 \end{array}$$

$$\begin{array}{r} 732 \\ 366 \\ \hline 13 \cdot 10 \\ 30 \cdot 6 \end{array}$$

$$\begin{array}{r} 366 \\ 30 \cdot 6 \\ \hline 869 \\ 72/5 \end{array}$$

By Thomas Rhodes, Esq., Civil Engineer.

LIMERICK,

CORNELIUS O'BRIEN, PRINTER, 108, GEORGE-STREET.

# LIMERICK DOCKS.

## SPECIFICATION

### FOR BUILDING THE SOUTH QUAY WALLS,

&c. &c. &c.

THE quay walls and sewer to be built according to the form and dimensions shewn on the accompanying Plans, Elevations, Sections, marked Nos. 1, 2, and 3, and signed by Thomas Rhodes.

On the General Plan, (No. 1,) the site and direction of the Wall is represented by a Red line, extending from the point A. at the West End of the Wellesley Dock Basin, which is continued in front of Messrs. Harvey's, Howley's, Russells', Kean's, and the Steam Packet Company's quays, (besides other properties not walled in) and to terminate at Kelly's quay, marked B, making a total length of 2,130 feet lineal. Also from the eastern termination of the Wellesley Lock at C, extending along Messrs. Spaight's, Rochfort's, and Arthur's-quays, to join the Custom-house quay at D, in length about 900 feet lineal.

Plan No. 2. shews the Elevation, Plan, and Sections of the Wall, with details of the same, Figures 1, 2, 3, and 4, all marked with figured dimensions.

Plan, No. 3, shews the Sections of the Main Sewer, to be made from the Canal Lock, along Charlotte's-quay, Patrick-street, bottom of George's-street, Brunswick-street, Henry-street, Bedford-street, and along the back of the quays to the termination of the Wall at Kelly's quay.

The toe of the Wall (for the lower part) viz. : from A to B, to be founded at the datum level of the Wellesley Lock platform, one foot below the Gate sill, and to be carried up in height 25 feet, being a continuation of the same level as the present Coping of the Basin Wall, the breadth at the base to be 10 feet, diminishing upwards to the underside of the Coping, which is to be 6 feet in breadth.

The face or profile of the Wall to have a curvilinear batter of four feet, the curve to be drawn from a Radius of 80 feet, the centre of which is to be on a level with the Coping ; the back to be perpendicular and to have contreforts, sixteen feet apart from centre to centre, and four feet square, well bonded into the body of the Wall.

The Wall for the upper part, viz. : from C to D, to be founded on the same level, as the top of the Lock sill, consequently one foot less in height than the part below the Lock.

## EXCAVATION.

The Site for the foundation of the Wall, which is composed of Limestone Rock, partly in a solid, and partly in a loose state, shall be cut out, agreeably to the form and dimensions, as represented on the Plan and Transverse Section, perfectly even, and level longitudinally. In case the Rock should be loose, or in any other way deficient below the specified level, the loose part to be excavated and removed down to the solid, which shall be cut out in regular steps, and the Wall founded thereon, with proper footings, as shall be directed by the Engineer appointed by the Commissioners. The bottom of the Dock or River course in front of the Wall, which is exposed and left dry at low Water, is composed of Rock, loose Shingle, and

other matter which shall be excavated, where required, the entire length of the Wall, one foot below Wellesley Dock Gate Sill. The material to be entirely cleared away from the Dock and River courses, to this level, and used up, for backing the quay walls:—

The Wall and Contreforts to be backed with a good clay puddle, four feet in thickness, formed in layers of 9 inches in thickness, well watered and rammed, so as to be impervious to water, to be carried up regularly with every course of Masonry; the other backing shall be carried up in a similar manner, with the material, to be excavated and taken up from the bottom of the Wall.

## MASONRY.

The Wall to be composed of sound Limestone of approved quality and dimensions, procured in the neighbourhood.

The foundation to have two courses of Ashler work, through the Wall, each course sixteen inches in thickness, well squared and bonded, no stone to contain less than sixteen feet superficial on the bed.—All the face-work of the Masonry of the Wall to be of Ashler Work, and to consist of alternate courses of headers and stretchers, and not less than the following dimensions, viz.: headers, four feet six inches in length, on the bed, and three feet in length on the face, stretchers six feet on the face, and two feet six inches on the bed—no course to be less than fifteen inches in thickness.

All the Ashler work to be neatly squared, drafted and picked on the face, beds, and end joints, so as to join close throughout. Face work to have a tool draft of two inches round the joints, to be stumped and punched inside. The horizontal joints to be chamfered or rusticated to appear three inches outside and two inches in depth.

The Coping to be two feet in thickness, and four feet six inches wide, no stone to be less than twenty-four feet superficial on the bed. The bed and joints to be perfectly well dressed and jointed throughout, and the face and top worked similar to the front ashler, with the outer angle rounded off to a five inch radius. To have a stone dowel of seven inches square and one foot in depth, let in flush with the top at each joint, and run full of cement as they are set, (as represented on the drawing.)

The backing and contreforts to be of well squared rubble masonry, laid in regular and parallel courses, not more than two courses in height to one of Ashler facing, so as to lay firmly, and be properly bonded into the Wall at the face, and for the full depth of the beds and ends. The backing of each course of Ashler to be completed and properly levelled up, before the succeeding course of Ashler is begun to be set. The stone which composes the Old Wall to be made use of for backing, so far as it may be thought fit for the purpose by the Commissioners and their Engineer, and valued accordingly before the same be put in use.

## MORTAR.

The Ashler work and backing to be laid flush in their respective kinds of Mortar, and every course well grouted so that the whole may become one solid mass. The whole to be built in lime mortar of approved quality for setting under water, mixed with clean sharp river sand, not greater in proportion than two of sand to one of lime, to be well and sufficiently wrought in a Pug or Mortar-mill, prepared expressly for the purpose, as shall be directed by the Engineer. The Mortar for the Ashler work—the lime must be kept dry and not exposed to the air, until it is wanted for use, when it must be mixed with the proper proportions of sand, and run through a fine screen, and then add the requisite quantity of water; it must be thoroughly worked and incorporated by the mill, so that no white specks may appear.

The external joints of the Ashler work as high as the tide rises, to be raked out and pointed with good Roman Cement, mixed with a due proportion of clean sharp river sand, so as to prevent the Mortar from being washed out by the tide.

## DEFENDERS.

A vertical Recess to be cut in the face of the Wall, at the distance of 16 feet apart from centre to centre, 15 feet in length, 14 inches wide, and four inches in depth, to admit of defenders which are to be provided by the Contractor, of the best British Oak, or African Oak timber, 15 feet, by 14 inches, by 12 inches, free from sap and other defects, which are to be scribed, and fitted to the recess and wall, and secured by a cast iron socket at the bottom, let nearly and firmly into the Masonry, and run in flush with Cement; also by a Cap of the same Metal at the top, with two wrought iron ties, and a bolt for securing the same in its place, as described by the Elevation, Plan, and details, in drawing No. 2. (figures 1 and 2.) The wrought and cast iron work to be of the best quality and workmanship, well executed, and to the satisfaction of the Engineer. All the Iron and Timber work to be coated with Tar and Pitch, in proper proportions well boiled and laid on hot.

## MOORING RINGS.

Mooring Rings to be provided and fixed at the distance of every fourth or fifth Fender, or 64 feet apart from centre to centre, to be executed agreeably to the form and dimensions described on the Elevation, Plan and details in drawing, No. 2, and Figure 3. The ring and bolt to be of the best scrap iron, with a Cast iron plate at the front, and another at the back of the Wall, let neatly into the stone, and firmly keyed at the back, the whole of which is to be well executed, and coated over with boiled tar and pitch laid on hot.

## MAIN SEWER.

A Main Sewer to be constructed under the Streets and Quays, as is described by a Red Line on the Ground Map, Drawing No. 1, and in dimensions and form as represented in Sections of Drawing No. 3, to extend from the upper end of Charlotte's-quay, near the Canal Lock, along Patrick-street, the lower end of George's-street, Brunswick-street, Henry-street, Bedford-street, and at the back of the New Quay wall to the termination at or near Kelly's-quay. Its position is described in Drawing. (or Section) No. 2; to be built of the best Brick-work, or Stone-work, of Ashler Masonry, set in Mortar of approved quality; but as the particular description of Work is not finally determined upon, the Contractor is to deliver a Tender for each kind of Work separately. There are to be two sizes of Sewers, as shown on Drawing No. 3, the smaller size to be constructed for the upper part, for half the distance, and the larger size for the lower part. The bricks used in building the Sewer to be good, hard, sound, and well-burnt stock bricks, and to be laid in well-compounded mortar, made of good strong Stone Lime, and clean River Sand, (similar in quality to that to be used for the Quay walls.) The Workmanship to be of the best description, the bricks in each arch to be well bonded, and the bricks of the arch at the bottom of the Sewer, to be laid close and even, on the upper surface, bedded in mortar and grouted. Shafts or apertures for cleansing the Sewers to be formed opposite the outlet of each intersecting Sewer, or at distances not exceeding one hundred and eighty feet from each other, such shafts or apertures to be constructed with walls 1½ brick in substance, carried up to within one foot six inches of the surface of the street, or quay, the size of such shaft or aper-

ture not to be less than four feet in length and three feet in width at the bottom or level of the crown of the arch, nor less than three feet six inches in length, and three feet in width, at the top, to be finished above by a substantial coping and grating.

The Contractor to be responsible for all injury or damage that may be sustained by any buildings, Houses, Walls, or any other Erections, as also, by the Water or Gas-pipes, and other property from the slipping of the ground, or otherwise from the execution of the Works.

In the excavation, and performance of the Sewer Work, the ground on each side to be supported from slipping in by close planking, wale-pieces, and a sufficient number of struts, as shall be directed by the Engineer. At the commencement at Charlotte's-quay, the bottom of the inside of the Sewer to be constructed thirteen feet below the level of the top of the quay or basin wall, and to have a descent or uniform fall of half an inch to every ten feet in length, from this point. To have four openings or arched tunnels from the Dock to the Sewer, of two feet square, built of Ashler Masonry, the same thickness as the Walls of the Sewer, and to be fitted up with a valve, and suitable machinery at each Tunnel, for the purpose of opening and shutting the same, to scour out the Sewer with water from the Dock. These openings to be placed at convenient distances, viz.: Two on Charlotte's-quay, and two along the New-quay wall, from the Wellesley Dock Basin to Kelly's-quay, as marked on the General Map, (Drawing No. 1.)

### PAVING.

The space of ground which is to be appropriated for the quay, to be levelled up, for the distance of 60 feet in breadth, from the face of the quay wall, and the whole surface paved with paving stone of Limestone or Granite, in sizes not less than 12 inches long, 10 inches deep, and 6 inches in thickness, well squared, and set with proper channels constructed for draining the surface to lead to the descents and cess-pools.

### BOUNDARY WALL.

At the outside or extremity of the property belonging to the Commissioners, a boundary wall shall be built of the best hammer dressed work, well bonded and set in good mortar, to be eleven feet six inches in height from the foundation, and in thickness, with other dimensions as described on the Drawings, with proper footings, and finished at the top by a substantial coping. A gateway to be left at the centre of every street, thirteen feet in width, with pillars constructed on each side of Ashler work, well squared, bonded, and dowed together with iron dowels.

### GENERAL OBSERVATIONS.

The Contractor or Contractors to find and provide all Stone, Bricks, Lime, Sand, Cement, Wood, and Iron, clay for puddling, as well as all cranes, planks, barrows, engines, pumps, coffe dams, and all other materials, tools, and implements, necessary and requisite for the due performance and completion of the work, at his or their own expense.

The Contractor is not in any case to depart from the letter of this specification, without written directions to that effect, signed by the Commissioners, or their Engineer, but if at any time the Commissioners or their Engineer direct changes to be made, the Contractor is to execute them, and be paid the extra

cost, or allow the consequent deductions ; the value to be estimated and agreed upon (according to the Schedule of Prices,) by the Company's Engineer, and the Contractor, before such change is commenced, or, in case he and the Engineer be not able to agree, it is to be submitted to *Arbiters*, mutually chosen, who shall first appoint an *Umpire*, and, in case the *Arbiters* cannot agree, the award of the *Umpire*, shall be final.

In all cases of change, authorised as aforesaid, the change is to be considered as affecting only the object in view, and then specified, and not as tending to annul or vitiate the General Contract.

When the sites of the sundry works mentioned in this specification, are not described in the Map, Plans, and Sections, they are to be determined by the Commissioners' Engineer.

The whole of the works herein mentioned are to be completed in a substantial and proper manner within two years after the signing of the Contract, to the entire satisfaction of the Engineer to the Commissioners.

The Contractor to find security to the amount of £4,000 for the due performance of the work hereinbefore specified, and during the progress thereof. Measurements are to be made every two months of the quantity of dressed materials on hand and work performed ; and the value thereof is to be estimated by the Engineer agreeably to the Schedule of prices, to be given in by the Contractor, together with his tender, and one-tenth part to be deducted from the value of the work performed, the remainder is to be paid to the Contractor, upon his presenting the Certificate of the Engineer to the Secretary and Treasurer to the Dock Commissioners, the tenth part so deducted from each payment, is retained by the Treasurer, as additional Security over and above the amount of security, beforementioned, but to be paid the Contractor within one month, after the work shall have been completed, and taken off the Contractor's hands, by the Engineer to the Limerick Bridge Commissioners.

The Commissioners will pay for the necessary property, but the damage and injury which may be occasioned by procuring Materials, and otherwise, are to be paid by the Contractor.

The Contractor is to give due personal attendance, or in his absence to have a duly qualified person to act responsibly in charge of the work, approved of by the Commissioners, and their Engineer, with whom they can at all proper times confer.

No Tender will be received except it agree with the accompanying form, which must be signed, and sent under a sealed cover, addressed to the Secretary to the Commissioners of the Limerick Bridge, and marked on the outside "Tender for building Dock, Wall, and Sewers," on or before the Fifth day of May next, (1836) after which day no Tender will be received.

The Commissioners do not bind themselves to accept the lowest Tender.

(Signed.)

THOMAS RHODES.

26th March, 1836.

### FORM OF TENDER.

I hereby make offer and engage to construct the Proposed Quay Wall, on the South side of the River Shannon, at Limerick, or as much thereof as may be thought advisable by the Bridge Commissioners, complete in all respects, agreeably to the Plans, Specifications, &c., signed by Thomas Rhodes, and dated 27th February, 1836, at the following prices, viz. :

To be written in words.

- |   | £ | s. | d. |
|---|---|----|----|
| 1st. For the River Wall complete, including the Wooden Defenders, Cast Iron Caps, and Sockets, Mooring Rings, and Bolts, backing and puddling the same, at the rate of £                                |   |    |    |
| per lineal yard.....  |   |    |    |
| 2nd. For excavating the rock, and preparing the foundation ready to receive the Masonry, also clearing the bed of the River, in front of the Wall, to the specified depth through-out, at the rate of £ |   |    |    |
| per lineal yard, measured along the line of the Wall.   |   |    |    |

To be written in words.  
£    s.    d.

- 3rd. For paving the quays, at per superficial yard .....
- 4th. For building the boundary wall or fence, at per cube yard .....
- 5th. Do. for gate, posts, or pillars of Ashler work, at per cube yard .....
- 6th. For excavating the ground and constructing the Sewer of Ashler work, including filling in the earth work, repairing the Streets, where the ground has been disturbed, with descents, cess-pools, &c. complete, at per lineal yard.....
- 7th. For excavating the Ground, and constructing the Sewer of brick-work, &c. &c. complete, at per lineal yard .....

And I will make this Tender subject to all and each of the conditions expressed in the before-mentioned Specification, and I will abide by the Schedule of Prices delivered therewith.

I remain, Sir,

Your's, &c.

John Roche, Esq. Secretary to the Com- }  
missioners of the Limerick Bridge. }

### SCHEDULE OF PRICES.

*To Regulate the Payment of the INSTALMENTS, also to regulate the Payment of any extra Works, that may of necessity be required.*

To be written in words.

- 1st. Ashler Masonry for the Quay Walls, including dressing, lime, and labour of setting Masonry, all complete, at per cube foot .....
- 2nd. Do. for Coping, Do.....
- 3rd. Ashler work dressed only, Do.....
- 4th. Squared rubble backing, including Mortar, complete, do.....
- 5th. Excavating and removing the Rock, and other matter in the foundations, and front of Wall, at per cube yard .....
- 6th. Clay puddle and punning at the back of Wall, at per cube yard.....
- 7th. Defenders of African Oak, including Workmanship, and fixing complete, at per cube foot.
- 8th. Do. the same of British Oak .....
- 9th. Do. Do. of Memel Timber.....
- 10th. Cast Iron, in caps, sockets, and plates complete, and fixing, at per cwt, .....
- 11th. Wrought iron Mooring Rings, Bolts and Holdfasts, &c. Do.....
- 12th. Mortar prepared, at per cube foot .....
- 13th. Stone dowels for coping, including cutting and cement, each .....
- 14th. Squared rubble work in boundary wall, at per cube yard .....
- 15th. Ashler work in gate pillars, complete, at per cube foot .....
- 16th. Squared paving, at per superficial yard, complete, set in the work .....
- 17th. Ashler Masonry in Sewers, at per lineal yard, set complete, including excavations, &c.....
- 18th. Brickwork in Sewer of the same dimension, complete, at per lineal yard, .....
- 19th. Masons per day, of 10 working hours each.....
- 20th. Excavators. Do ..... Do .....
- 21st. Carpenters, Do ..... Do .....
- 22nd. Labourers, Do..... Do .....
- 23rd. Millwrights, Do ..... Do .....
- 24th. Smiths, Do ..... Do .....
- 25th. Horses, Do ..... Do .....
- 26th. Horse, Cart, and Man ..... Do .....