

# CITY OF MELBOURNE TRAMWAYS.

## CONTRACT No. 37.

1. *SPECIFICATIONS of MATERIALS to be supplied and work to be performed in the construction of a Brick and Concrete Sewer in Victoria-street, City of Collingwood.*

2. The works are to be carried out as shown in the Contract Drawings, and as directed in this Specification, and in accordance with such other directions as may be given from time to time as the work proceeds, and to be under the inspection and direction and to the satisfaction of the Engineer of the Tramways Trust.

3. The contract commences at a point distant two chains from western boundary of Rupert-street, and extends to a point six chains eastward of Flockhart-street; a total lineal measurement of 90 chains.

Extent of Contract.

4. The contract embraces the excavation for and the construction of a brick and concrete egg-shaped sewer, together with the construction of man-holes, and the laying down of pipes to connect with the Tramway tunnels already constructed.

Explanation of Drawings.

5. In drawings—

Sheet No. 1 shows the general plan, together with the section of sewer, and details of man-holes, &c.

Sheet No. 2 shows the longitudinal section, together with the position of man-holes, pipe connections, &c.

Materials which will be supplied by the Trust

6. The man-hole frames and covers shall be supplied by the Tramways Trust at Messrs. Foreman and Co.'s Foundry, and the wood-paving blocks at the Trust's Yards, corner of Dudley and Adderly streets, and the Contractor shall cart the whole of these materials on the works at his own cost as they may be required.

Materials to be provided by Contractor.

7. The Contractor shall provide all cement, screenings, 2-inch metal, and sand, drain pipes, iron ladders, rolled girders, buckle plates, and bricks, together with all labour tools, centering and other plant necessary to complete the contract, in accordance with the drawings and specifications.

Excavation. 8. The excavation shall be taken out to the dimensions shown in drawings, and Contractor shall carry it out exactly to the alignment and levels laid down by the Engineer—any excavation removed beyond the exact requirements shall be filled in with cement concrete, at the Contractor's expense.

The macadamised portion shall be first excavated, and the material deposited in places convenient to the works of the Contractor; and after the tender is completed, and the filling-in satisfactorily executed, the metal shall be again replaced on the roadway. All earth or rock material excavated below the level of the macadam shall be carted from the works by the contractor.

In the portions of the excavation where rock may exist Contractor must receive the sanction of the Collingwood Council before any blasting operations can be performed.

Gas and water pipes. 9. The gas and water mains and services which come into contact, or interfere with the construction of the Sewer, shall be altered and removed by the Melbourne Tramways Trust; but the Contractor shall be held liable for any damage that may be caused to such gas or water pipes which have been exposed by him in the excavation until such time as the permanent alterations are effected,

#### MATERIALS.

Cement. 10. The whole of the Portland cement used in the works shall be provided to the Contractor by the Tramways Trust at the rate of Twelve shillings and five pence (12s. 5d.) per cask, and he shall take delivery of the cement at the stores of Messrs. McLean Bros. & Rigg, in and about the City of Melbourne, and cart it on the works when required.

Gauge Boxes. 11. The Contractor shall provide gauge boxes for measuring the proper proportions of cement, sand, and screenings, and all material used shall be measured in these boxes as the work proceeds.

Centering. 12. The centering used in the construction of the concrete tunnels shall be made of seasoned timber, substantially framed. The centres shall be approved of by the Inspector before being placed on the works.

Cement Concrete. 13. The whole of the cement concrete used throughout the contract shall be composed of one measure of Portland cement, one measure of washed sand, two measures of screenings, and four measures of  $2\frac{1}{2}$ -inch metal. In making the concrete the sand screenings and metal shall first be measured out and deposited on suitable wooden platforms, after which the cement shall be measured, and the whole shall be incorporated by turning over at least twice with suitable shovels; water shall then be added from a fine hose in such quantities only as will give the concrete the necessary consistency, and during the process of watering the whole of the materials shall again be turned over and thoroughly mixed. It shall then be placed in position to the dimensions and form shown in drawings, and shall be well rammed so as to allow of its becoming thoroughly consolidated.

Brickwork. 14. The whole of the bricks used in the construction of the Sewers to be new, sound, well-formed, machine pressed bricks, from the Hoffman, Northcote, or other approved brick factories. They shall be laid in cement mortar by the consistency of one (1) of cement to two (2) of fresh water sand. The joints in the brickwork shall not exceed a quarter of an inch in thickness, and where closers are used they shall be made to fit the opening as nearly as possible, and no bats or small portion of bricks shall be allowed in the Sewers. The brickwork to be bonded properly throughout, and the horizontal courses shall run straight through the length of the Sewer.

Constructing Sewer. 15. After the excavation is satisfactorily completed, Contractor shall place the concrete and brickwork to form the culvert, and by means of templates carry up the sides of brickwork and concrete to the level of the springing of the arch. The centering shall then be fixed and the arch constructed. Contractor shall provide sufficient centering, so as to allow of at least 30 feet being left to support the arch while the work is being carried forward; and he shall supply from time to time whatever quantity of centering or other turning piece may be ordered by the Engineer during the progress of the works.

Should at any time before the contract is completed, any portion of the Sewer become distorted or lose its true Section from irregular shrinkage of the arch or other causes, the Contractor must reconstruct such portions at his own expense.

The outlet of the Sewer to be constructed as shown in drawings.

Man-holes and Covers. 16. The manholes shall be constructed throughout to the form and dimensions shown in drawings, and spaced at distances shown in the longitudinal section sheet No. 2.

The top shall be supported by buckle plates screwed to rolled girders of the form and dimensions shown, and the covers which shall be supplied by the Trust shall be laid down as shown on drawings.

The cover shall be protected on all sides by wood paving, laid down as shown in drawings, with joints grouted with cement mortar of 2 of sand to 1 of cement.

The roadway adjoining the blocks to be made good, and the macadam well rammed and consolidated.

The filling above Sewer to be carried up in layers not exceeding four feet, and well rammed and consolidated.

Pipe Connections. 17. The pipe connections shall be made to the Tramway tunnels as shown in the Transverse Section, and spaced at distances shown in the longitudinal Section.

The trench for the pipes to be taken out to a uniform inclination, and the pipes laid with joints placed close together, and set in cement mortar of the consistency of 3 of sand to 1 of cement, and the filling in above the pipes to be made thoroughly solid, the pipes to be socket and glazed drain pipes thoroughly sound throughout.

Mud tanks. 18. The mud tanks shown in Sheet No. 2 shall be constructed to the form and dimensions shown, and in accordance with the direction given in the previous clauses of this specification.

Damage to  
Tramway  
works.

19. Should any damage be caused by the Contractor to Tramway tunnels, or concrete foundations below the pavings, or to the pavings, or any portion of the Tramway works now completed through his operations in the construction of the Sewer, either by blasting or from other causes, the Contractor shall repair all such damages to the Tramway works at his own expense and to the satisfaction of the Engineer.

Damage to  
street  
buildings.

Contractors shall be solely liable for any damage that may be caused to adjacent buildings, or any portions of the street, kerb or water channels, and all other such property be as stipulated under clauses 8 and 14 of the general conditions.

Completion of  
the works.

The whole of the works included in the contract shall be completed within months from the date of signing of the contract. The portion of the Sewer from the outlet to Church Street to be first commenced and completed within months, and the balance within months, and Contractor shall carry on the works in as many portions of the length as may be directed by the Engineer, and so that the work may be completed within the specified time.

As it is of the utmost importance that the works shall be completed within the time specified, the damages for non-completion shall be strictly enforced.

G. S. DUNCAN, ENGINEER.