

MUNICIPAL DEPARTMENT

SEWER CONSTRUCTION.*

By W. R. GORT.

Of all public work, sewer construction presents the most difficult and varied problems, always more or less complicated, thus making the estimated cost largely a matter of speculation, unless a complete record of every detail of similar work is available.

In many cases estimates are based upon insufficient data, which may do where a margin of 35 to 40 per cent. is considered close enough, but where an estimate is required which is safely within a range of from 2 to 5 per cent. other methods must be pursued.

The finest calculations and most complete data, however, will not compensate for mismanagement, and the finest calculations without a liberal addition of good judgment and experience will produce equally poor results.

The specifications which govern a certain case control the cost to a great extent, but not so completely as is generally supposed. There is probably an interpretation and enforcement in this class of work that is an indeterminate quantity. In different locations the same specifications, though simple enough, are treated in a widely different manner.

The requirements in specifications for excavations usually define the shape of the bottom of the trench, the side slopes, bracing and refilling. The latter is the source of most of the initial trouble and later expense in keeping up the street surface, and it is next to impossible to compel the workmen to put sufficient pressure on the

*Paper read before the Kansas Master Plumbers' Association.

JOHN GALT, C.E. & M.E.

MGM CAN Soc. C.E. and C.E.A., Etc.

CONSULTING ENGINEER and EXPERT

ROOM 12, ABERDEEN CHAMBERS,
Cor. Victoria and
Adelaide Sts., Toronto

Specialties—Water Supply and Sewerage.

tamper to entirely eliminate the future possibility of settlement.

In making estimates for the cost of sewer construction certain elements invariably come in which must have due attention or losses will ensue. The necessity for insurance covering accident to employees is imperative, and the careful contractor invariably protects himself by it. The variation of the price of material and labor frequently causes serious losses to contractors who do not provide margin enough to cover such changes. Close

figures should carefully be made and the actual cost of all materials and labor entering the construction, after which a liberal percentage should be added to provide for profits and possible variation in price.

(To be Continued.)

A. E. AMES & CO.

BANKERS.

18 King Street East, TORONTO.

Buy and Sell

GOVERNMENT, RAILROAD and
MUNICIPAL SECURITIES.

Lyons Electric Co - Brantford, Ont.

Contractors, Specialists, General Supplies.
Close Figures on High Class Work.

Portland Cement..

HIGHEST GRADE

SOLE AGENTS —



Largest Makers in the World.

BELLHOUSE, DILLON & Co.

30 St. Francois Xavier Street,

MONTREAL

BELLHOUSE, DILLON & CO., 30 St. Francois Xavier St., Montreal

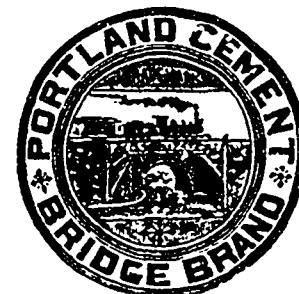
Sole Agents for the Compagnie Generale des Asphaltes de Franco (Rock Asphalt.)

PORTLAND CEMENT NORTH'S CONDOR

Paving and Fire Brick a Specialty

"DYCKERHOFF" and "WHITE CROSS" Brands

NORTH'S CONDOR BRAND AWARDED FIRST PRIZE AND GOLD MEDAL AT THE ANTWERP EXHIBITION



PORTLAND CEMENT

Sewer Pipes

Fire Bricks

Fire Clay

ALEX. BREMNER

50 Bleury Street, MONTREAL



Pumps for Waterworks

Waterworks Systems
Installed

Steam, Hydraulic, Electric,
Gasoline, Air Lift and
Automatic Rams.

Steam Boilers and
Filters

Write for Prices and Particulars

The John McDougall

CALEDONIAN IRON WORKS CO., LIMITED

MONTREAL, P.Q.

