

Lake Erie and Northern Railway Electrification.

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Canadian Railway and Marine World for August contained general particulars about the electrification of this line which is being built from Galt to Port Dover, Ont., about 51 miles. The line will operate at 1,500 volts d.c. At Galt connection will be made with the Galt, Preston and Hespeler St. Ry., which runs through to Berlin, and now operates at 600 volts d.c.

The substation equipment for the Lake Erie and Northern will consist of permanent substations at Simcoe and Brantford, and a portable substation located for the present at Galt. This will give a substation spacing between Galt and Brantford of 20 miles, and between Brantford and Simcoe of 24 miles, with a stub end-feed from Simcoe substation to Port Dover of 7 miles. Each of the three substations will have, for the present, one 500 k.w., 1,500 volt rotary converter, and 555 k.v.a., 3 phase transformer. The transformers may be connected so as to step down from 26,400 volt, 13,200 volt or 6,600 volt, 3 phase, 25 cycle circuits, to the desired a.c. rotary voltage. At the Simcoe and Brantford substations the incoming line will be 26,400 volt, 25 cycle, and at each station will go to the transformer primaries through the usual disconnecting switches, choke coils, and k. 21 oil switches, with overload relays for automatic trip.

The rotaries will be started from half voltage taps in the transformer secondaries, the starting switch being mounted on a small separate panel. The d.c. rotary and feeder panel will differ materially from the standard 600 volt panel. It will be 99 ins. high, of marble with black marine finish; and the circuit breaker and knife switch, in the positive lead, which will be at the top of the panel, will each be operated through bell cranks and rods from oil switch operating handles mounted at a convenient height on the front of the panel. The negative lead will be grounded direct from the rotary. The circuit breaker will be provided with low voltage release and auxiliary alarm switch. The d.c. ammeter with insulated cover will be mounted on the panel, and on a swinging bracket will be mounted a 2,000 v. scale d.c. voltmeter with insulated cover, and an a.c. ammeter and power factor indicator. A three phase aluminum cell lightning arrester, complete with horn gap, disconnecting switches and charging resistance, will be provided for the 26,400 volt circuit, and a s.p. d.c. aluminum lightning arrester for station use, with fuse and balancing resistance used across the 1,500 volt d.c. side. The rotary converter will be of special interest in view of its unusual overload capacity to meet the heavy peak loads of short duration incident to railway operation. While the normal full load rating at 1,500 volts is 333 amperes, it will carry 1,000 amperes for one minute, successful commutation being obtained by the use of commutating poles and pole face windings.

The portable substation will, it is said, be the first of its kind in Canada. All the equipment will be mounted on a standard steel flat car. The transformer will have no housing, but the rotary oil switch and other apparatus will be housed in. For service at Galt the transformer will be connected for 6,600 volt primary, but the connections may be readily changed for primary voltage of 13,200 or 26,400 volts for operation at other points along the line. The complete equipment for the three substations is being manufactured by the Canadian General Electric Co. at its Peterborough works, and the manufacturers will install the appar-

atus at the Simcoe and Brantford substations and equip the portable substation at the Peterborough works.

The L. E. & N. R. has ordered from the Canadian Westinghouse Co., Hamilton, Ont., two 80-ton, 1500-volt direct current locomotives, six 1500-volt quadruple car equipments, equipment for two trailer cars, and new universal air brakes for both motor and trailer cars. The locomotives are designed to operate on 1500-volts direct current with the following characteristics: swivel truck, standard gauge, diameter driving wheels 36 ins.; truck centre distance 17 ft. 8 ins.; height from top of rail to top of cab 12 ft.; width over all 10 ft.; tractive effort 9200 lbs., with average of 600 volts at motor.

Each of the six 1500-volt motor car equipments will consist of four 85 h.p. ventilated type motors and AB unit switch type of control. A new and improved type of automatic brake will be used, embodying the features made possible by the use of a universal valve which will be the mechanism that will operate to apply and release the brakes and charge the reservoirs, and it will so far correspond to the triple valve in common use. The universal valve will be of the built up type, a simple form of triple valve being the base. This will make it possible to install and operate the equipment, if desired, in stages by adding to the simplest form of valve, without discarding any of the valve portions, other valve portions as they are demanded by an advance in service requirements, up to the complete form of the device, which will be electro-pneumatically operated. The brake valve, type M-23, will embody improved features as compared with the ordinary automatic brake valve, such as limiting of brake pipe reductions to the predetermined desirable amount for service applications; prevention of overcharge of the equalizing reservoir; and quick response of brake pipe reduction by the combination of direct and equalizing piston exhaust ports. A supplementary reservoir is to be used to give high emergency brake cylinder pressure and graduated release as well as to assist the brake pipe in recharging the auxiliary reservoir. The compressor will be driven by a 1500-volt d. c. motor and is known as the D. K. type. It is of the same general design and construction as other Westinghouse compressors, but is especially rugged and adopted to meet severe operating conditions. The Westinghouse governor synchronizing system will be used to insure equal division of compressor labor, thereby securing reliability of air supply and low expense for compressor maintenance. This will also be used on the locomotives. The brake equipment for the electric locomotives will be the Westinghouse no. 14 EL.

The Toronto Ry. and its proportion of cost of Subways.—The Board of Railway Commissioners has granted the Toronto Ry. permission to appeal to the Supreme Court against the Board's order to contribute to the cost of the subway built by reason of the elevation of the C. P. R. tracks across Avenue Road. The permission is granted on the following questions:—Whether the Board had power to make the order under the agreement of the Toronto Ry. with the City of Toronto of 1891; whether the company is not entitled to have the city furnish the company in the exercise of its running powers, a street or highway known as Avenue Road, and whether, if such was the effect of the agreement the company should have been ordered to contribute to the cost of the construction of the subway.

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