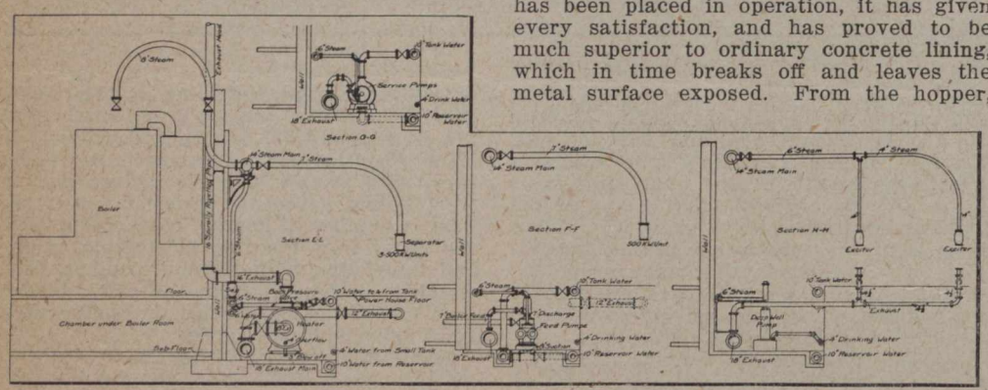
water tank at an elevation of 150 ft., in the grounds to the rear of the power house. The other end of this tank main through the pit, passes out through the front of the building under the midway, making connections underground to all the buildings of the plant.

For fire purposes, there are two 1,000 gallon underwriter pumps in the pit, drawing from the reservoir main, and delivering into the tank main, and thence to the fire hydrants throughout the grounds. In case of fire, the tank can be shut off by a valve and a pressure of 175 lbs. put in the mains. All the pipes are designed to stand full pressure, or are furnished with pressure regulating valves.

Drinking water is supplied by an artesian well at the west end of the pit, delivering to a 10,000 gallon tank suspended under the main tank on the water tower. This drinking water reservoir and pump also connect through a 4 in. main over the reservoir water main in the pit, passing out at the front of the building into the distribution tunnel under the midway, and thence to the buildings of the plant.

Through the distribution tunnel, there is an 8 in. main for the return from the heating system, an 8 in. main from it connecting with the two return wet vacuum pumps near the east end of the pit. From these pumps is a 6 in. water main along



Cross Sections through Pit at Different Points.

the fire wall side of the pit, delivering into the heater through its top. This is in addition to a cold water supply pipe off the service main, which has a float control valve. From the heater, the water is drawn off through a 12 in. main beneath, and thence to two 200 gallon feed pumps to the west of the heater in the pit. This intermediate connection has two pipes united to it midway in its length, one from the reservoir water main and the other from the tank water main, each provided with a valve, so that the feed can be drawn from any one of the three sources, maintaining a constant supply. The feed water to the boilers leads back through two 7 in. mains through the fire wall.

The feed mains, after passing through the fire wall, connect with parallel 5 in. mains running the length of the boiler room in the chamber which passes under the whole area of that room. Between each pair of boilers, is a 2½ in. main running from each feed main, the two uniting through a system of elbows, and a connection running under each boiler. The whole system is duplicated and cross connected so that the possibility of a breakdown is very remote.

Air from the compressor is stored in a vertical cylindrical tank of 191 cu. ft. capacity in the pit adjacent to the compressor. From the tank, the air is delivered through a 5 in. main, which passes into the distribution tunnel, and thence to the different buildings.

The boiler room is 45 by 150 ft., and contains eight 425 h.p. city water tube boilers (a total of 3,400 h.p.) They are designed for operation up to 150 lbs. pressure, and are arranged in four batteries of two each along the fire wall dividing engine and boiler rooms. The breaching for the boilers enters the chimney about 12 ft. above the ground level, through a 15 by 6 ft. opening. The chimney has two 24 by 18 in. cleaning doors at the bottom, and stands on a concrete base 30 ft. square by 11 ft. deep, while the whose rests on 84-25 ft. wooden piles. Two of the boilers are arranged for using shavings and other refuse from the wood working shops, while the other six are equipped with chain grate stokers, which are driven by small duplicate steam engines, located in the boiler room basement, where the shafting is also placed. Directly in front of the boilers, and erected on steel columns, are located the coal and ash receiving and storage hoppers.

The coal handling plant consists of 3 parts:—crushing, conveying and storing. The coal, being first brought in cars up a ramp to a height of 7 ft. above the ground level, is dumped into a large hopper built into the southwest side of the boiler room. This hopper is of interest from the fact that a new lining material in the form of mastic flooring is used for the bottom surfaces on which the coal is dropped, and in the period that has elapsed since the plant has been placed in operation, it has given every satisfaction, and has proved to be much superior to ordinary concrete lining, which in time breaks off and leaves the metal surface exposed. From the hopper, the coal is mechanically conveyed through a crusher, located in the boiler room basement, which transports it to the overhead storage bins. Ashes from the boilers are also delivered to the conveyer and deposited in a separate hopper, from which they are dumped by means of a chute into cars outside the building. The coal crusher is operated by a 20 h.p. a.c. motor, located under the main receiving hopper, while the conveying system has a 10 h.p. a.c. motor located above the storage bins. The combined coal handling plant, which is entirely automatic, has a capacity of 40 tons per hour.

The power plant was designed under the supervision of W. J. Press, Mechanical Engineer, N.T.R., and the construction was carried out under the direct supervision of D. A. Evans, Assistant Engineer, practical operation of the plant commencing during the latter part of March, 1912.

Railway Lands Patented. Letters patent were issued during July, respecting railway lands in Manitoba, Saskatchewan, Alberta and British Columbia, as follows,—

	Acres.
Calgary and Edmonton Ry.	2,389.00
Grand Trunk Pacific Ry.	179.67
Grand Trunk Pacific Branch Lines Co.	45.784
Manitoba and North Western Ry.	480.00
Manitoba South Western Colonization Ry..	164.56
Qu'Appelle, Long Lake and Saskatchewan Rd. and Steamboat Co.	3,279.00
Total	6,538.014

Halifax Ocean Terminals, Intercolonial Railway.

Since the article on this subject was published in Canadian Railway and Marine World for September, the following information has been received:—

Tenders for the double track railway from Rockingham, 4 miles from North St. station, Halifax, to the site of the new terminals were asked for in two sections as follows:—A line from Rockingham to Jubilee House, Halifax, about 3.5 miles, including the formation of a freight terminal yard, and a diversion of the I.R.C. in Bedford Basin and at Fairview forming section 1. Section 2 consists of a line from Jubilee House, via Maplewood to Brussels St., two miles; thence northerly and easterly about a mile to His Majesty's lumber yard, and southerly and easterly about a mile to Reid Rock in Halifax harbor, to include filling and forming along the west shore of Halifax harbor, for the proposed bulkhead, quays and piers and the construction of a rubble mound breakwater from the shore of Pleasant Point Park, near Fort Ogilvie, to the Reid Rock. The material obtained in the excavations is to be used, so far as approved, for filling in the embankment in section 2, and the yard in section 1, The contractors are to remove all buildings on the right of way, etc., fence the same, and carry on all their operations without interfering with the traffic on the I.R.C., the Halifax and South Western Ry., or the Halifax Electric Tramway Co.

The earth cuts are to be 22 ft. wide for single track, with 13 ft. additional width for extra tracks; rock cuts are to be 20 ft. wide for single tracks, with slopes of ¼ to 1, unless otherwise oredred, and an additional width of 13 ft. each where extra tracks are required. A grade width of 16 ft. is required for embankments under 16 ft. high, and 18 ft. for embankments over 16 ft. high, with side slopes of 1½ to 1 for earth, and 1¼ to 1 in rock, and where extra tracks are to be laid, an additional width of 13 ft. is to be provided for each.

The breakwater off Point Pleasant Park is to be of the rubble mound type, to be composed of the best selected clean, hard, sound and durable rock to be obtained from the excavations, as the engineer shall direct. The least dimension of any block is not to be less than one-quarter of its largest dimension. The breakwater will consist of a rock embankment, protected on the sides and seaward end, with large "Pierre Perdu" a random rubble rip rap, and paved on top with large angular blocks of rock.

The core embankment will be 40 ft. wide at low water level of ordinary spring tides, and will be formed with side slopes of one horizontal to one vertical extending from the bottom of the harbor to low water level. The core embankment from the bottom of the harbor to 30 ft. below water level will be composed of rock of varying size, but at least half of the pieces of the remainder shall weigh not less than one ton each. The slope and ends of the breakwater 30 ft. below water will be protected with angular blocks weighing from half a ton to two tons each. On the seaward slope the protecting rip rap will have blocks weighing from two to eight tons each. From the top of the embankment at low water level to the top of the breakwater, blocks weighing from 2 to 8 tons must be used, with at least half weighing 5 tons. The top surface of the breakwater, 30 ft. wide is to be roughly paved to an even surface with roughly squared block well set and with joints not wider than 12 ins. and having all interstices tightly packed with close fitting spaces.