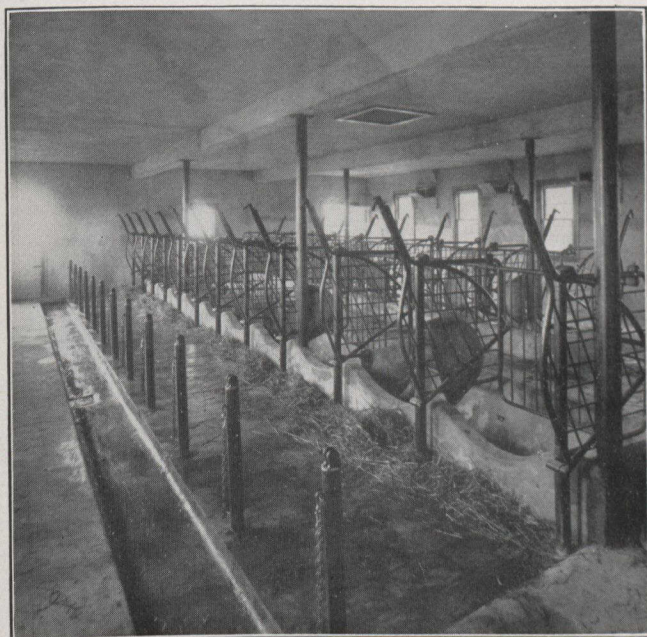


BUILDING IN FREEZING WEATHER.

A great deal of outdoor building has been carried on throughout the entire winter in Winnipeg, and the supposed severity of the winter does not prevent building activity, even when the mercury reaches its lowest level. Among the work carried on continuously throughout the present winter, special mention may be made of the Crescent Apartment Block, Bank of Nova Scotia building, curling rink on Turby Place, Union Depot, Broadway, new Redwood Bridge, Roslyn Apartments, Roslyn Road. It has not been considered the slightest hardship to do out-of-door work on these buildings. While special precautions may be found necessary in the placing of concrete during very cold weather, it can be carried on successfully at a very low temperature. A contemporary gives the following precautions to be taken in erecting concrete work during low temperatures:—

1. Heating Grates.—Encase the building with canvas and place heating grates or salamanders under the floor being concreted. Keep the building at a uniform



A Concrete Cattle Barn at Duluth, Minn.

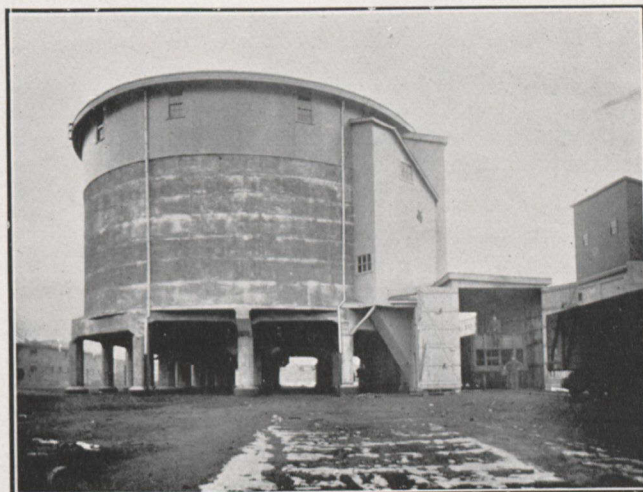
temperature of about 60 degrees. Do not allow intense heat to come in contact with the concrete, as it will dry out the concrete before it has set.

2. Covering the Concrete.—Cover the concrete after being laid with some good insulating material, such as sawdust, straw, cement bags, manure, etc. Be sure to cover the concrete work before stopping work at night, even though it is warm during the daytime.

3. Salt and Calcium Chloride.—Salt dissolved in the water used in mixing concrete helps to prevent freezing by lowering the freezing point. A 5 per cent. solution (by weight) of common salt is ordinarily used and is not detrimental to strength when so used. Calcium chloride has an advantage over salt in that it reduces the freezing to a lower point. Dissolve in the water needed to properly mix the concrete two pounds of calcium chloride for each bag of cement used.

4. Heating the cement, sand, stone and water used in the concrete is helpful, but the materials must never be heated to a temperature of over 100 degrees, as the strength of the concrete will be weakened.

5. Removing Falsework.—Be sure that the concrete is thoroughly set (not frozen) before any centering is taken down. Leaving all the upright supports in place, remove the sides of the columns and beam boxes and thoroughly examine the concrete. Then remove the slab

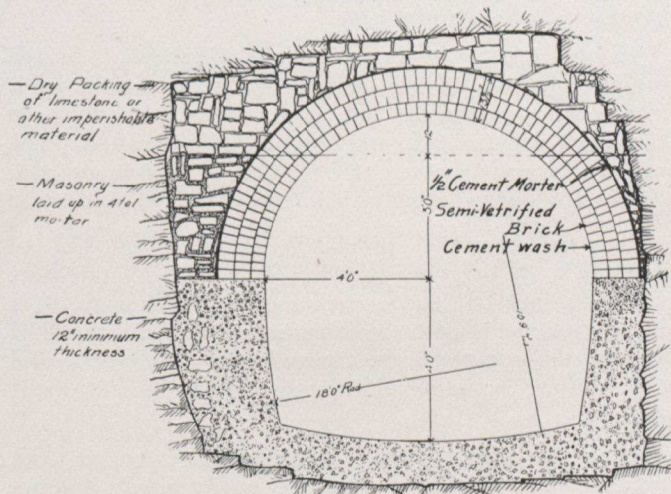


Coal Pocket of Reinforced Concrete, Montreal, Que.

centering, and lastly the main supports. Leave the centering in place a few days longer rather than take chances. Do not take down the centering too soon.

CONCRETE IN TORONTO TUNNEL.

The drilling of the Toronto intake tunnel was started during October, 1907; the heading met during July, 1908, having tunnelled a distance of 5,038 feet. The concrete, side walls and brick arch were built concurrently with the drilling. Concreting was done on day shift, the bricklaying at night, but speed was handicapped by the small area of the tunnel. The tunnel has the common horseshoe sections, eight-foot horizontal and



Toronto Intake Tunnel—Concrete Sides and Invert.

vertical diameters. It is lined with a three-ring brick arch, while the side walls and invert are of concrete, 12 inches thick, and proportioned 1:2:4. The overbreak over the arch was dry-packed, except the haunches, which were laid up in mortar. The side walls and invert were concreted to the rock. The accompanying view shows a cross-section of the Toronto tunnel, with its concrete sidewalks and invert.