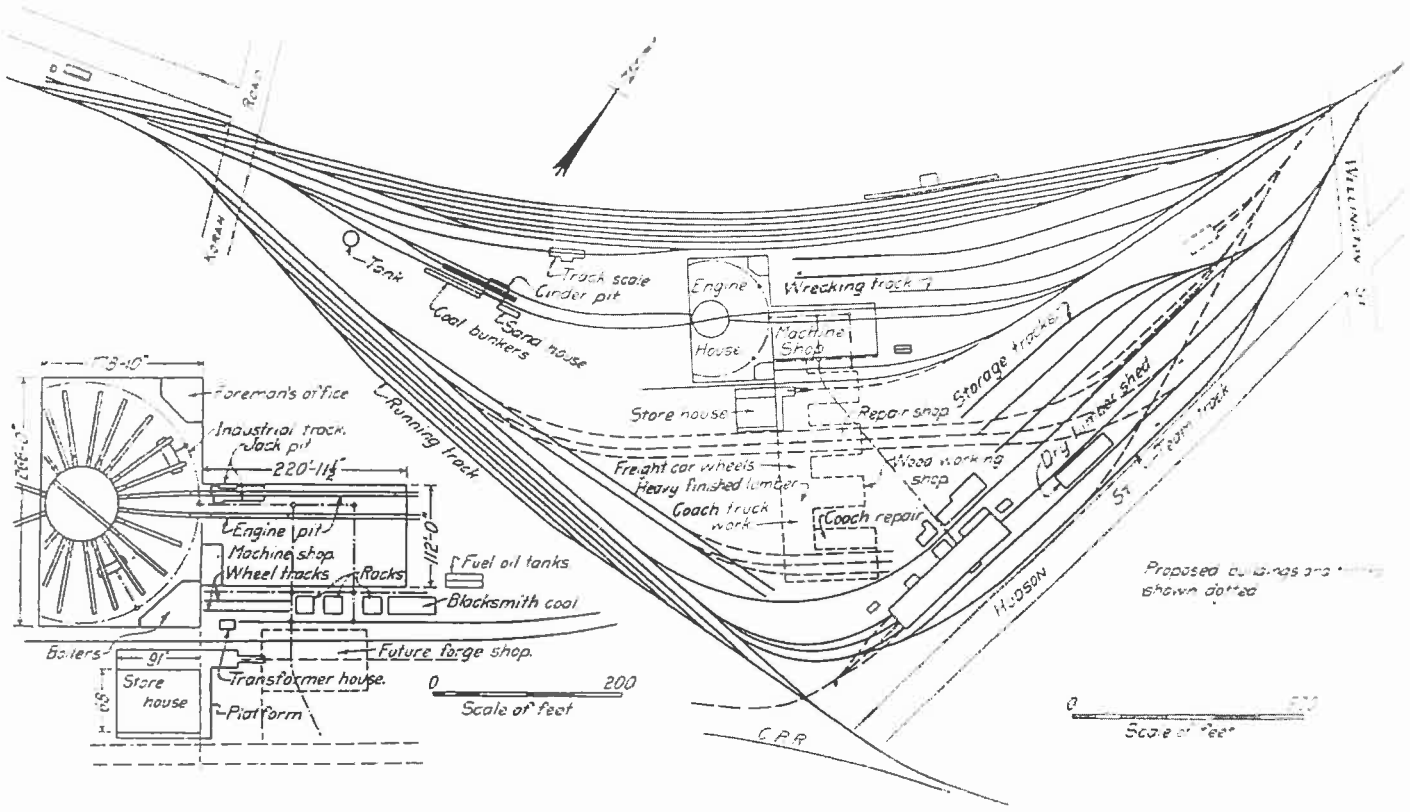
The New Algoma Central Engine House and Shops

Novel Features Designed to Meet Climatic Conditions Characterize the Terminal at Sault Ste. Marie, Ont.

The Algoma Central Railway recently completed extensive terminal facilities in Sault Ste. Marie, Ont., which include an engine house, shop layout and miscellaneous facilities embodying a number of unusual features of design. The terminal is comparatively small but it was essential in the design of the buildings that unusual precautions be taken to insure its satisfactory operation throughout the winter weather which is severe and is accompanied by almost continuous heavy snow. As the exposed turntable is one of the greatest sources of expense and delay under such climatic conditions, it was determined to enclose the turntable in the engine house. This necessity naturally led to the consideration of a square house as the most economical type of building and since the number of doors in such a house could be cut down to two, thus greatly reducing the difficulty of heating the house, and the structural features of the building could be readily standardized with the machine shop, storehouse and proposed car shop, this type was finally adopted.

The house is designed to contain 24 stalls but as this capacity is not required at present, a portion of the building covering 14 pits has been built, with provision for extending this to the full size when desired. The pits are kept close to the turntable for with the comparatively few radial tracks only about 12 ft. is re-



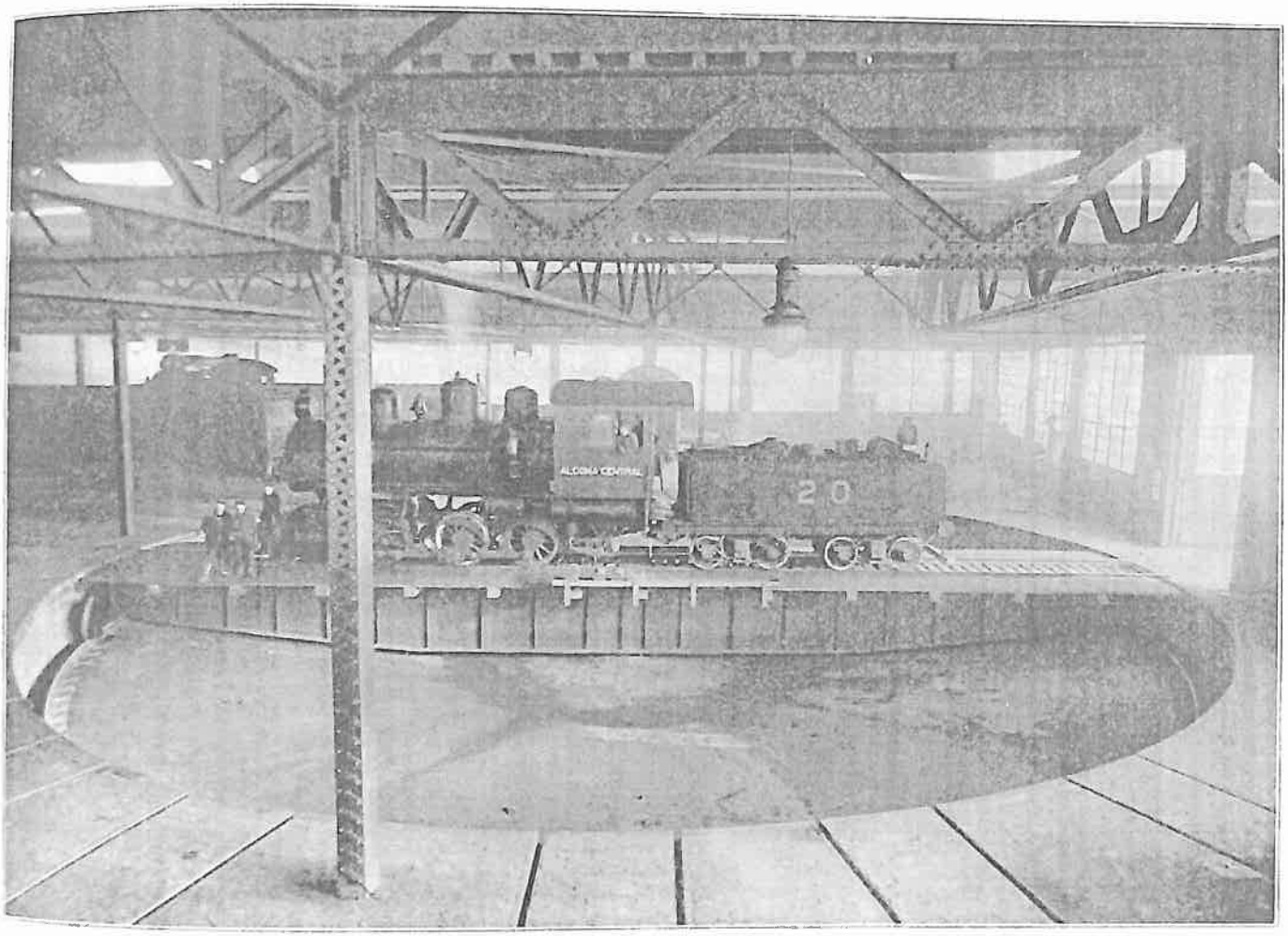
General Plan of Algoma Central Terminal at Sault Ste. Marie, Ont., with Detail of Engine House and Shops

New Rectangular Engine House at Sault Ste. Marie, Ont., Showing Typical Winter Conditions

gated between the end of the 80-ft. table and the 70-ft. pit to secure the necessary clearance. These dimensions would require a house at least 250 ft. square to cover the complete circle, and in order to allow space around the ends of the pits for an industrial track and to enable the roof construction to be arranged in 44 ft. units which was desirable for the shop buildings, the sides of the engine house were made 200 ft. The present width is 178 ft. 10 in. and the front wall is so constructed that it can be easily removed and the material used in the corresponding wall of the complete house when it is desirable to make the addition of 88 ft. and provide the remaining 10 pits of the complete circle. The triangular spaces in the corners of the building are utilized for a foreman's office and locker room and the boiler equipment for heating the buildings.

The foundations are of concrete, which is carried up to a height

is operated by a pneumatic tractor. The center pier is of concrete, liberal in size, being 11 ft. 6 in. square at the base. The concrete pit floor is 5 in. thick pitched to drain to a circular gutter 14 ft. from the center of the pit, which carries the drainage to a large sump connected with the sewer. The pits under the engine stalls are 70 ft. long and 3 ft. 11 in. wide, varying in depth from 2 ft. 8 in. to 3 ft. 2 in. The 80-lb. pit rails are spiked to 6 in. by 8 in. by 1 ft. 4 in. creosoted cross ties, anchored in the concrete walls of the pit. The floor consists of paving brick laid on a 6-in. concrete base. A driving wheel drop pit is provided under two tracks and a truck wheel drop pit under two other tracks. These drop pits have a 24-in. gage track from end to end for transferring wheels, which, when lifted to the floor level, can be run out on a narrow gage track connected to the circular industrial track at the ends of the stalls



Interior View of Rectangular Engine House

8 ft. 6 in. above grade, for the outside walls, above which brick walls with 3-ft. pilasters spaced 22 ft. center to center. The latter gives the advantage of fireproof construction, and the ability to use the same details as in the other buildings of the group [illegible] for adoption of steel roof trusses supported on the brick pilasters and on latticed steel channel box columns. Monitors 22 ft. wide are provided over each bay running parallel with the direction of the prevailing wind in order to reduce the accumulation of snow on the roof. The monitors are all equipped with Pond adjustable steel sash hinged at the top for ventilation. The roof trusses carry steel purlins on which is laid 2 in. wood sheathing covered by a 5-ply Barrett specification roofing, finished at the edges with a graveled copper guard. The steel roof trusses are protected from corrosion by a special preservative paint known as "Ferro-Rubron," an English product, and the additional precaution of allowing ample metal in all trusses was taken.

The turntable is 80 ft. long, has a capacity of 300 tons and

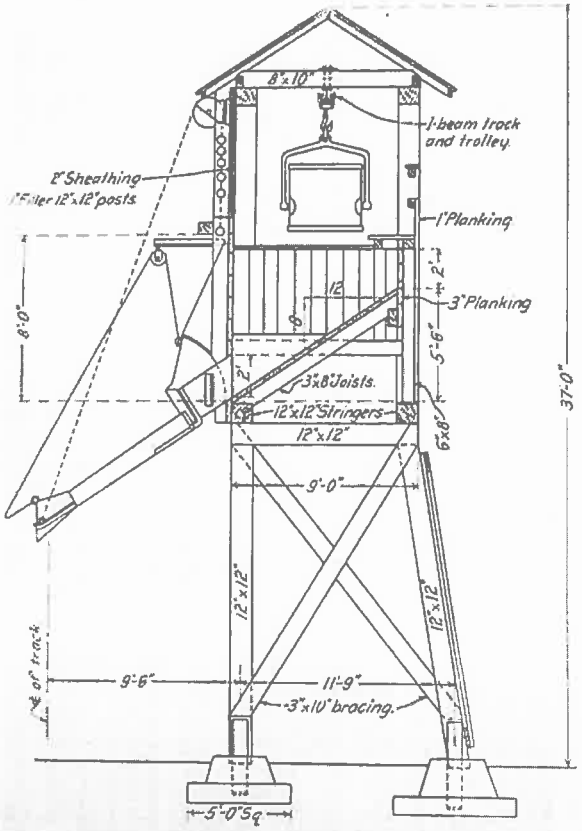
The smokejacks are of sectional cast iron construction, furnished by the Paul Dickinson Co., Ltd.

The building is heated by the indirect system, consisting of a steam driven fan and Green "Positeflow" horizontal heater coils. The hot air is forced through underground concrete runnels and vitrified tile ducts to the turntable pit and all engine pits. The heating provisions are somewhat in excess of standard practice. Steam is supplied by three internally fired boilers of 150 h. p. each. The building is lighted with large capacity Tungsten units and flaming arc lamps. Electric power for the shops is purchased from a local hydro-electric company.

The machine shop is 112 ft. wide and 220 ft. long, connecting directly with the engine house. Two tracks extend through both buildings passing over engine pits in the machine shop served by a 10-ton electric crane and an electrically operated locomotive screw jack. A space 54 ft. wide extending practically the full length of the shop is devoted to the machine tools and black-

smith shop, the foreman's office, tool room and toilet room occupies one end of this space.

The foundations and walls of the machine shop are of the same type as in the engine house. The building is divided into two bays, one 44 ft. wide and one 66 ft. wide. The former is covered by a single pitch steel truss roof supported by steel columns at each end, with a clearance above the floor of 18 ft. 2 in. The 66-ft. bay is covered by double steel trusses with steel monitor framing extending the full length of the building. Steel sash and Pond operating devices are used throughout. The roof consists of reinforced cement tiles 1¾ in. thick, cast in slabs about 5 ft. 6 in. long and 2 ft. wide. These slabs bear directly on the steel purlins and on the walls, and are covered with 5-ply Barrett specification roofing finished in the same



Typical Cross Section Through the Coaling Station

manner as on the engine house. The floor of the building consists of 5 in. of concrete covered with a 1-in. sand cushion on which are laid 3-in. creosoted maple paving blocks. The building is heated in the same manner as the engine house, except that the hot air is partially distributed through overhead galvanized sheet metal ducts.

The storehouse, which is 68 ft. by 91 ft. in size, is located with reference to a proposed development of freight and passenger car repair shops arranged along a covered runway for a traveling crane and the storage of material so that in severe weather all work can be handled between the various portions of the shop under cover. The central connecting passage with shops extending at right angles to it allows any desired expansion to be made in the size of the individual shops without affecting the general plan as long as a longitudinal shop is not objectionable.

The coaling station is of an unusual type, similar in general details to a number of stations that have been developed for use in the northern portions of the country where the operating conditions are very severe during the winter. The building is entirely of timber well over-sized to allow for deterioration, and all posts rest on concrete footings with heavy steel plate anchor straps. The supply of coal for the winter months must be purchased during the summer when it can be delivered in lake boats, and it is stored on the ground adjacent to the coaling station. Only a limited storage is provided in the 13 inclined bottom coal pockets in the house, the supply being conveyed from the storage pile to the dock in quantities to meet the daily demand. The coal is loaded into one-ton steel buckets with bales which are moved to the ends of the coal dock. The buckets are then hoisted to a trolley track extending longitudinally over the elevated delivery bins by a plain inverted pneumatic hoist operating in conjunction with a jib crane to allow the buckets to be swung around and the bale hooked on a plain I-beam trolley on the runway track. The hoist is then released by the operator, who pushes the loaded bucket along the track directly over the pocket to be filled, and, by releasing an automatic catch on the bale, the bucket empties the coal into the pocket and is then conveyed back to the storage pile for refilling. The delivery pockets are designed to deliver predetermined amounts of coal to locomotive tenders, the capacity ranging from two tons to eight tons. Each pocket is equipped with an Ogle delivery gate and spout which is said to be frost-proof. The entire structure is covered with a wood-sheathed roof and composition roofing.

This work has been carried out under the general direction of R. S. McCormick, chief engineer. The plans were made by The Arnold Company, Chicago, who were also the constructors of the entire plant. P. L. Battey, vice-president of the Arnold company, supervised the work and construction was carried out under the direction of H. H. Dickinson.

RAILWAY AFFAIRS IN OTHER COUNTRIES

Financial conditions in Brazil were not of the best during 1913, and this state of things is reflected in the recently issued report of the Brazil Railway for that year. This company, which was incorporated in 1906, operates directly some 3,280 miles of railway in southern Brazil, and has a large interest in the Paulista and Mogyana Railways, which own 1,795 miles of line in the state of São Paulo. It has a large interest in the Madeira-Mamore Railway and the Uruguay Railway, and in subsidiary enterprises, which are expected eventually to produce a profit in themselves and also to bring new traffic. An all-rail connection between São Paulo and Montevideo was established during the year by the completion of the bridge over the River Uruguay and of the connection with the Central Uruguay at Sant' Anna.

From the lines in southern Brazil directly operated by the company, gross receipts were secured in 1913 of $14,479,920, representing an increase of $1,422,228, or 10.89 per cent. Operating expenses ($9,200,534) were, however, higher by $1,716,639, or 22.94 per cent, leaving net receipts lower by $261,074, or 5.28 per cent. Receipts show increases under nearly all headings because of the stimulus given to low-grade traffic by reductions in tariffs and because of improved train facilities. The higher percentage of operating expenses (63.54 against 57.31) is due partly to the greater mileage of line in operation, 154 additional miles having been opened during the year. There was also a heavier renewal of ties, and an increase in tonnage and train mileage, consequent on the better service given both for passengers and merchandise, which entailed a heavier coal consumption and a larger wages bill.

In spite of the commercial crisis in Brazil the receipts of the Paulista and Mogyana Railways, in which the Brazil Company is largely interested, showed a steady expansion, and the same dividends of 12 and 10 per cent. respectively, as in the previous year, were declared by each company, and their reserves further augmented. This was done in spite of the increase in working expenses.

The earnings of the Madeira-Mamore Railway, on the other hand, were affected by the severe depression in the Amazon valley following a severe crisis in the rubber industry.