this point. There is a full clearance of 22½ ft. from base of rail to under side of the girders. This extension is 1¼ miles long to the site of the terminal station at Bruce St., and lies along the water front of the St. Marys river.

THE TERMINAL STATION AND general office building is located on Bay St. at the foot of Bruce St., the east line of the building being on the east line of Bruce St., locating the main entrance into the station directly across Bruce St. It is a thoroughly modern and substantial structure, 46 by 150 ft., with three stories, a small basement, and a loft under its pitched roof; and, with the exception of the roof framing, the building will be fireproof. Construction was begun on April 21, 1912.

On the ground floor is located the general waiting room and ticket office, women's retiring room, men's smoking room, express room, separate entrance hall (giving access to the offices by ample stairway, and by provision for an elevator), and the baggage room. Along the street side, the floor of the baggage room is 3½ ft. higher than its main floor. The two elevations are connected by an inclined runway, but in addition baggage can be delivered directly from trucks to the high elevation and from there directly into drays at the elevation of the wagon box. The second floor provides space for the General Manager's general and private offices, the Traffic Manager's general and private offices, the Superintendent's general and private offices, the Auditor's general and private offices, the Car Accountant's office and the Train Dispatcher's office. On the third floor will be located the Chief Engineer's general and private offices, offices of the Bridge Engineer, the Engineer of Maintenance of Way, the office engineers, draughting room and Chief Draughtsman's office, plan room, blueprint room and store room. Lavatories are provided on all floors.

The footings are of concrete and were carried to rock below the elevation of the river. The foundation walls from the footing to grade are of rubble, 2 ft. thick. The walls of the building are of hard native sandstone from the Root River Quarry, grading in color from grey to red brown. From the water table to the first story sill course, the walls are of rock faced coursed masonry. Above this line, rock faced, hammered ashlar work is being used. The first story walls are 20 ins. thick, second story 18 ins., and third, 16 ins. The cut stone trim is of red Portage Entry sandstone, from Houghton, Mich., and blends well with the native sandstone. The trim consists of water table, sill course, flat and arched lintels of first story doors and windows, a heavy belt course at the level of the second floor; sills, lintels and corbels of the second floor, and sills and lintel course of the third floor. The walls are surmounted by a heavy copper cornice and gutter, and the building will be covered by a pitched roof of Vermont variegated green and purple slate. A hipped roof marquise covers the main entrance opposite Bruce St. Provision has been made for train sheds of the umbrella type, to be built in the near future.

The structural supports of the interior of the building are two rows of seven steel columns, on concrete piers carried to rock foundation, and one additional column in the panel containing the elevator shaft and stair hall, forming 24 bays; 16 of approximately 16 by 20 ft. along the sides of the building and carrying the offices, and 8 of approximately 9½ by 20 ft. down the middle of the building and carrying the corridors. I beams form the girders between columns, and between the end columns and the masonry walls. The second, third and loft floors are of reinforced concrete and tile, of the type known as the Johnson system. The first floor is of concrete throughout, resting directly on the fill, except the portion over the basement, which is reinforced.

The building will be heated with steam and the mains will run from the basement, where the boilers are located, through tunnels under the first floor. The building will be electric lighted. Conduits are carried from floor to floor through a wiring duct, with distribution closets at each floor, and the circuits for any one floor are carried in conduits laid in the concrete of the floor above. All partitions are of hollow tile and are plastered. Exterior walls are plastered on metal lath carried by metal furring. Stairs are of steel. Floors of entire first floor and of corridors and lavatories of second and third floors are of granolithic finish. Remaining floors in building are of maple or rough sheathing and sleepers, anchored in concrete. The general interior trim is red oak.

The present concrete train platforms will extend 100 ft. each way from the station, giving a total length of 350 ft. Walks will extend along the east side and front. The space at the west end of the station for 60 ft. out will be paved.

All outside work, including grading, tracks, etc., is being done by the company's forces. Plans for this building were made by the Arnold Co., and the McPhail & Wright Construction Co. are the contractors.

THE FREIGHT HOUSE is a frame building on solid concrete walls and piers, covered with corrugated iron and a prepared felt roof. It is 32 by 112 ft., with an office in the east end, and was built by the McPhail & Wright Co. on plans furnished by the railway company.

All the above work is being carried on under the writer's general charge as Chief Engineer, with J. A. Hedgcock in direct charge of the forces. L. B. Wulff, as Superintendent for the Arnold Co., in charge of their part of the work, and H. H. Dickinson, Engineer in charge of this work at the Chicago office, have rendered excellent service to the railway company. The writer is indebted to Mr. Dickinson for the above description of the terminal buildings. All outside work is being rapidly completed, and the inside work at the shops and station buildings will run into the winter. The Mechanical Department took possession of the Locomotive House on Dec. 1, and has been using it regularly since.

In addition to the above terminal work, the railway company is considering the construction of a modern coal dock with unloading machinery and storage capacity at this point. A similar dock is also planned for Michipicoten Harbor and Little Current.

Maintenance of Way by Contract.

The article on this subject in Canadian Railway and Marine World for October, pg. 507, and the extract from a railway official's letter published in the November issue, pg. 559, have aroused considerable interest among maintenance of way officials. The following contribution from J. B. Cameron, Somerset, Pa., will also be read with interest:—

This subject has received more or less consideration from maintenance of way officials for several years without any railway of prominence as yet adopting the system; but such failure does not in any way indicate that a system of contracting would not result in increased efficiency and decreased costs, both of benefit to the railways.

Efficiency is the slogan of the day in all branches of railroading and especially in the maintenance of way department. Wages have increased, but the efficiency of the worker has not kept pace with them. It has on the contrary decreased, and this is to be expected, since the price of labor depends entirely on the economic laws of supply and demand and a large demand results in small supply, increased wages and increased indifference on the part of the laborer.

If increase in wages will not result in increased efficiency it is apparent that any other scheme offering even a suggestion of improvement is worthy of careful consideration.

There are but two methods, the writer believes, that will increase the efficiency of the worker and they are, first, by awakening an interest in the laborer for his work, and second, by increased efficiency in supervision. Either scheme is in its elements a contract scheme, for to awaken in any laborer an interest in his work can only be accomplished by making his earnings depend on results and not on a fixed amount per diem. Thus the laborer becomes in a measure a contractor, and increased efficiency in supervision can in a similar manner be best obtained by making the cost to the railway company depend on results and not on a fixed daily wage.

To contract for work it is necessary to have unit costs on which to base payment for same, but a just basis for such payments can only be arrived at after careful study and investigation. There are many classes of work that have been thus standardized, and in railway maintenance work any material increase in the efficiency of the worker will only result after such a standardization as will insure to the laborer adequate compensation for a fair day's work.

The writer does not believe the method of awarding contracts for such work to a large contractor to be desirable at present, but he does believe in treating each foreman as a contractor in some such fashion, as is done by certain large industrial concerns. Men will do more work for the same individual as a contractor than they will do for him as a foreman of a railway company. As a contractor the foreman could therefore do work cheaper than he could as a foreman, providing he gave the work the same efficient supervision in each case.

Some people will claim that a poorer grade of work would result from such an arrangement, as the contractor, in order to obtain larger profits, would be satisfied with a poorer grade of work. This might well be answered, however, by considering the results obtained by the contract system on construction work.—Engineering Record.

The Alaskan Railroad Commission, after having completed an extensive tour through the territory, spent some time recently in Ottawa, Ont., investigating the methods of building railways in the northern regions and the Government attitude thereto, before returning to Washington to prepare a report.

W. M. PORTEOUS, Agent, Canadian Pacific Ry., Freight Department, St. Louis, Mo., in remitting renewal subscription, writes: "I might state that I enjoy reading Canadian Railway and Marine World very much, as it is the only reliable means of information regarding Canadian railway matters in general which I receive."

The Interstate Commerce Commission recently dismissed the Humboldt Steamship Co.'s application for the establishment of through routes and joint rates, with the White Pass and Yukon Route, between Seattle, Wash., and Dawson, Yukon, and other Canadian points, on the ground that it had no jurisdiction over a company located, owned and operated in a foreign country.