A LIGHT AND USEFUL ROOF TRUSS.

THE erection of the framed superstructure over the aëration tanks at the new sewage disposal plant in Edmonton, afforded the opportunity to use for the first time in connection with such works in Canada, a very handsome and yet simple and economical roof principal. The particular design is known as the "Belfast Truss," on account of its having been originally introduced by Messrs. Francis Ritchie and Sons, Limited, of Belfast, and used by them in roofing many industrial concerns in the north of Ireland and the Midlands of England.

The principal claims which this particular class of roof has for the attention of Engineers are: (1) Economy in material and carpentering work, and consequent low prime cost; (2) small superficial area of the roof in relation to the area covered by it; (3) the possibility of practically eliminating wind pressure as a factor in the stress calculations; (4) durability; (5) simplicity, lightness and pleasing appearance.

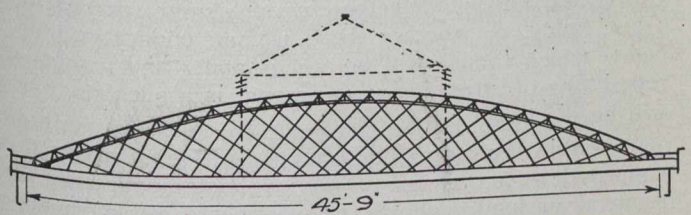


Fig. 1.—Wooden Truss in Outline.

The clear span across the aëration tanks above referred to is 45 feet 9 inches, but the truss can with equal facility be used on spans up to 120 feet—a consideration of the greatest importance where the roofing of the various units of sewage disposal or water filtration plants has to be faced, on account of climatic conditions, or from sanitary or other reasons.

Fig. 1 shows the truss in outline, the dotted lines indicating the ease with which a skylight and louvre ventilation can be obtained. The truss may be used on spans up to 120 feet. Fig. 2 shows a cross-section of the truss at the centre of the span, and an elevation of part of the string, bow and lattices to the same scale. In the case of this 45-ft. 9-in. truss the following specifications apply: Purlins, two parallel scantlings each 4 in. by 1 in.; bow, two parallel pieces of pitch pine each 3 in. by 1¼ in.; lattices, 3-in. by 1-in. spruce; string, two parallel scantlings, each 10 in. by 1½ in.; sole piece, 5-in. by ¾-in. spruce.

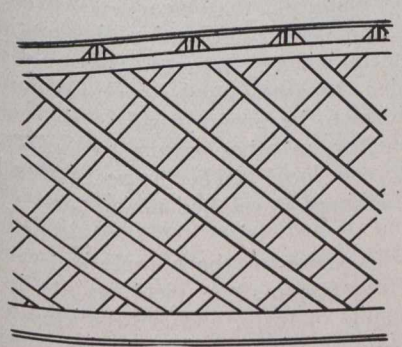
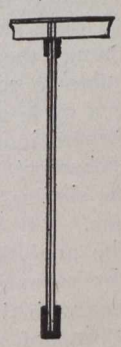


Fig. 2.
String, Bow and Lattices (Enlarged Elevation).



Cross-Section Through Truss at Centre of Span.

The roof principals, in the particular case under consideration, are placed 10 feet apart c. to c., and the dead load to be carried by each was estimated at 12,000 lbs., made up of the weight of the truss itself, with the superimposed load of purlins, shiplap, "Ruberoid" roofing, and a possible snow load.

The bending moment is zero at the point of support, and maximum at the centre of the span, and between these points it varies directly with the distance from the point of support. If the bending moment is calculated at any number of points between the support and the centre, and ordinates erected to a uniform scale, the line joining the extremities of the ordinates will be found to form a parabola, and the bow of the truss in question is such a parabola.

In a truss such as the one under consideration there are no secondary stresses in the fibres of either string or bow, and so stress and strain are uniformly distributed over the cross-sections of these members. For this reason the allowable unit stress may be much greater than would be the case in a solid beam of wood. Furthermore, the extraneous roof load is applied to the truss through the purlins at a great number of evenly distributed points, and is partly taken care of by an immense area of lattice members, which might almost be considered as a solid web.

No apology is necessary for introducing this particular truss to the attention of engineers, because its adaptability to just such purposes as those described above give it a claim to recognition.

THE SURVEY OF CANADIAN QUARTZ MINERAL CLAIMS.

THE Canadian Government employs a number of surveyors in laying out quartz mineral claims. Most of this work is carried on in the Yukon, though a considerable number of coal, iron and the baser metals surveys are being carried on in Alberta, Saskatchewan and Manitoba. These surveyors work under the direction of the Surveyor-General at Ottawa.

Before beginning the survey of a mineral claim the surveyor is expected to make a thorough examination of the evidence in the mining recorder's office relating to the mineral claim to be surveyed, and to the adjoining over-lapping claims. He also procures all further evidence available on the ground.

Every mineral claim is designated by a lot number in the group to which such lots belong. The numbers of the lot and group must be obtained from the Surveyor-General at Ottawa, or, in the Yukon Territory, from the commissioner. All the boundaries of a claim must be run out, measured and marked in the ground, unless impossible from the nature of the ground, in which case a closed traverse may be substituted.

Boundaries in the woods are well opened up and blazed. The line is begun by retracing the location from post No. 1 to post No. 2, and measuring its length and bearing. The surveyor particularly ascertains and measures carefully the position of the discovery post. Should location post No. 2 of a mineral claim be more than 1,500 feet from location post No. 1, or more than 40 chains in the case of a location for iron or mica, the surveyor plants another post in the location line at a distance of 1,500 feet, or 40 chains, as the case may be, from post No. 1, but not disturbing the original location post No. 2.

Overlapping.—In surveying a claim which overlaps, or is in dispute with another mineral claim, the surveyor