

The Place of the Engineer in Town Planning

(By Thomas Adams)

The Functions of the Engineer in Social Construction

The engineer deals with the exploitation and control of natural resources. As engineer he harnesses the water powers that create new industries. He discovers the minerals and makes them available for human use. He invents and builds the machinery of the factory and the mill that creates cities and towns. As surveyor he measures and divides the farm and his divisions influence both the development of agriculture and the ultimate methods of sub-division in cities and towns. He looks upon his work and says it is good; for what is bad is not his fault.

The Engineer is thus concerned with the fundamental elements that enter into the creation of cities and towns—both in respect of the methods of laying out the land and the industrial and residential use to which it is put.

But it is also the engineer who has to plan the services that are necessary to make industry efficient and living conditions healthful in the city. While he has created the things that draw industries and homes together, he also builds the conveniences they need for purposes of communication, the railway and the highway. While with the aid of the capital and executive ability of others he has made the city to exist, he also has to instal the water supply, dispose of the wastes and transmit the light and energy needed for the social organization of the city. Thus his responsibilities for social construction are greater than those of any other class.

While the engineer has never been really mastered by the forces of nature he has been constantly mastered by the smaller forces of political art and his engineering purposes made subservient to political uses. Witness the way in which land has been planned and measured without regard to topography, or without design for the most economical use, but primarily to facilitate speculation. The surveyor has done this at the bidding of his political masters, but the time has come when science is being regarded with proper respect even in political circles. We need more engineering sense applied to our public policies, particularly in the development of our cities.

In regard to rural land settlement the provincial governments are beginning to promote organized settlement on sound lines. Old haphazard methods of placing settlers without preliminary investigation of the land are being slowly abandoned. Reconnaissance reports are being made showing the failure of rectangular plans based on the meridional system. The importance of having surveys made under charge of one surveyor for a whole district, instead of by many men working at cross purposes, is being recognized. Reconnaissance surveys should include soil surveys, to provide a satisfactory basis for settlement in rural territory.

Neglect of Engineering in Cities

Waste and consequent high taxation in our cities are due to neglect and not to extravagant use of engineering. When cities are getting into financial difficulties they cut down the engineering service, whereas it is usually greater engineering service and efficiency that are needed. The last thing we seem to think of is to get rid of the causes of waste. We go on providing palliatives to remove effects. City councils do not employ engineers to plan the cities but keep them busy dealing with the evils that result from want of planning. It is time to apply the scientific and business principles that have made a success of industrial organization to the social organization of the city.

There is need for stock-taking of all engineering work periodically in all cities. Without this a city council cannot

tell what part of its city undertakings is paying and what is losing money. Plans of mileage of streets, sewers and watermains are often the result of a combination of partial records and guesses. Maps are not available showing distribution of population in relation to public services.

Mr. A. G. Dalzell has referred in an article to the proposal to investigate the sedimentation of the Fraser river for the purpose of directing harbor improvements and new industries and keeping navigation open, and has suggested that if it is important to study how atoms of sand are deposited in the mouth of a river, it is also necessary for engineers to study how atoms of humanity are building up communities for good and evil. He has shown how engineering skill is directed to improvement of physical conditions but lacks opportunity to apply the same skill to the improvement of social conditions.

Surveying and Planning Vancouver

It is not too late to plan Vancouver. Its future growth will be greater than its past growth. Growth has two forms—development of new areas and re-development of areas already built upon. The geographical area for study should be the region comprising Vancouver, North Vancouver, Point Grey, South Vancouver, Burnaby and New Westminster. This should be surveyed by engineers to ascertain present conditions. This survey would deal with harbors, railway transportation, main arterial highways, classification of areas of land suitable for different purposes, etc. The regional survey and plan can only be prepared by the aid of the provincial government. It is merely a guide for the preparation of the plan for each city or other municipal unit. On its basis the plan of each city should be prepared.

Railways and waterways have to be studied in relation to selection of industrial areas. Consideration has to be given to the purposes of the arterial highway system; its effect on cost of transportation, safety and economy in street space and construction. The connection between width of streets and heights and densities of buildings and between narrower streets for residential areas and wider streets for industrial areas raises important problems.

Regional water supply and sewage disposal require study. Street and lot sub-division for residential purposes are unsuitable for industrial purposes, and both need different types of planning. Mr. A. G. Dalzell's report on Ward 8 was a revelation of the folly of letting a city grow without a plan. Ward 8 was sub-divided in 1885. The main highway, Fraser Avenue, was placed where it had to be carried over the steepest ridge, requiring a costly and wasteful cut necessary. About 80 acres, or a fifth of the whole, was reclaimed peat-bog. Some \$6,000 had to be spent in piling for sewers alone. The street on which the main branch sewer was laid settled 2½ feet during construction. The estate was developed by the provincial government and no provision was made for water supply, sewers or sanitation. The Saskatchewan Town Planning Act provides that no land of muskeg, marsh, or peat formation, or which is subject to flooding, shall hereafter be sub-divided or sold in lots for building purposes until such land is thoroughly drained at the expense of the owners; also that where any area cannot be economically provided with local improvements owing to character or levels of the land not more than two houses shall be erected to each acre. Under a proper town planning scheme Ward 8 would have been developed on economical principles and been an asset instead of a loss to the city.

Mr. Dalzell estimated that the cost of a 50 foot lot in this ward was about \$2,080, without proportion of cost of parks, firehalls, etc.