

✓

TOWN PLANNING SCHEME OF A NEW SUBURB

SOUTH OF BEIRUT

BY

AFIF HIBRI

1951

105

Epsn 105

TOWN PLANNING SCHEME OF A NEW SUBURB
SOUTH OF BEIRUT.

by

Afif Hibri

Thesis submitted to the Civil Engineering Faculty
in partial fulfillment of the requirements for
the degree of Bachelor of Science in Civil
Engineering.

May 1951, A. U. B.
Beirut, Lebanon

Rec'd 26/5/51
Jra

ACKNOWLEDGEMENT

This thesis was made under the supervision of Professor N. Manasseh, whose suggestions and vast experience contributed a lot to its realization. To him I submit my thanks and gratitude.

INTRODUCTION

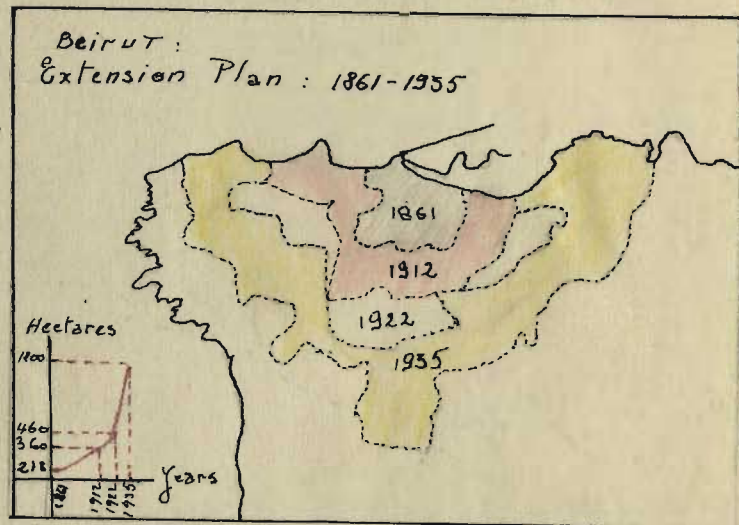
For quite a long time the city of Beirut grew haphazardly without any rational plan. The first inhabitants traced fantastic paths or "pack-donkey's ways" over the hills which were later followed and enlarged into streets.

Furthermore, the present lack of restrictions stimulated such an overcrowding of buildings that it produced a terrible congestion of population dangerous at the same time to the convenience, the health and the safety of the

people. "Beirut will die from its own congestion" if it remains growing the way it did.

Recently the town-planners felt that danger and started reorganizing the town by widening the streets, opening new avenues through the dense blocks of buildings, and imposing new laws where the factors of size and bulk have the prime importance. Such an effort, although indispensable, is not sufficient. It should be combined with a vast programme of decentralization.

We must however have the foresight in obtaining a well balanced and orderly growth, in accordance with principles



of true economy. We find it imperative for Lebanon not to have any of its land that could be planted with cereals, root crops and orchards, turned into town planning schemes. From all the environment of Beirut, the bare sand dunes south of the town are then found to be the most suitable for such a development. Being at only 5 to 10 kilometers from "Place Des Canons" they can be successfully turned into a beautiful residential area with factors of harmony and spaciousness at full control.

These facts, pointed out by my advisor, together with the recent removal of the old aerodrome suggested to me to have my new suburb in that region in general, and to chose that definite area in particular.

CHAPTER I.
OUTLINE OF THE ELEMENTS

The suburb's plan should not be limited to those features, such as streets, parks and public building sites, that are drawn on paper in the form of a map; it must be supported by factual data justifying them and by figures studying their cost. We here present these facts and figures under the following items:

1. Boundaries and areas - Studying the relative position of the land with respect to the town, and its general subdivisions.
2. The street pattern - with the street systems, widths, intersections and parking places.
3. Land Subdivision and Housing - with statistics about the built up areas, the inhabitants, and the costs.
4. The community facilities including
 - a. the school
 - b. the playgrounds
 - c. the swimming places.
5. The public utilities with
 - a. business and public buildings
 - b. shopping centers
 - c. parks and parkways

Other elements of the plan such as proposals for water supply and sewage disposal are usually studied and shown on the map but with the approval of my supervisor I decided not

to deal with them in my work.

The following plans are also included:

- Plan No. 1 : 1/10,000 location plan
- Plan No. 2 : 1/2,000 existing plan
- Plan No. 3 : 1/2,000 Master Plan
- Plan No. 4 : Detailed sections of streets.
- Plan No. 5 : a. typical dwelling
 b. typical villa
 c. a beach house

A large number of detailed plans is avoided by the presence of many details in the master plan, such as the different turn-about, the parks, the parking places, and the playgrounds.

CHAPTER II.
BOUNDARIES AND AREAS

The location plan, if carefully studied will show that:

1. The subdivided area is situated East of the main boulevard leading to the new aerodrome.
2. The area extends eastwards until the sandy beach known as "Saint-Simon" which is kept a vast swimming place.
3. A more or less cheap and shoddy development extends at the North, from which we separate our unit by a continuous 30 meters boulevard.
4. The South is unplanned bare sand that we leave for future extension of the suburb, it is limited now by a boulevard leading to the village of Ouzai.

The "old aerodrome" occupies most of the central portion and, as can be judged from the contour map the land slopes from its left edge to the sea giving a drop of 50 meters in a distance of 800 meters. Such a topography furnishes an excellent opportunity for making of that hill a charming villas district. The villas, facing the West, offer a nice view of other villas among gardens and trees beyond which extends the sandy beach with its fantastic panorama, then the sea.

The level ground of the aerodrome serves for locating the playgrounds, and a part of the residential district which is extended to the "Boulevard of Khaldeh". Finally the North-East portion is an old quarry with a very unsteady topography. It has been left to be planted with trees as a national park.

CHAPTER III.

THE STREET PATTERN

In subdividing a new region (as in our case) there is always a tendency to have very uniform and similar patterns; we find however more attractiveness in treating every small area in a distinctive way, with a character of its own. The general topography besides helping, necessitates such a variety.

The existing "boulevard of Khaldeh" suggests, for example, to treat the ground adjacent to it with a pattern inspired by the equilateral triangle grid.

The remainder of the area is planned according to the topography and the requirements of its use, without any specific pattern.

It will be also noticed that the residential streets are connected to the Boulevard only at the rempoints, in order not to disturb the rapid traffic required for that important thoroughfare. There is a general tendency in the whole plan to discourage traffic without immediate destination, from entering the residential streets. We have, for that purpose, a belt of thoroughfares around the area, with a major residential street dividing it into two parts.

Width of the streets: It is not always proper to take definite standards of width for streets and would be more advisable to relate each street with the topographical conditions and zoning classifications.

We are also guided by the following considerations:

1. The minimum traffic lane for one car is 3 meters for the size of car and margin of error of its motion.
2. The parking lane for 1 car is 2.5 m.
3. The design of sidewalks in residential streets is based on the assumption to carry a width of two - one meter umbrellas or two baby carriages of the same width. We have then a sidewalk width of

- 5 m for boulevards
- 5 m for the 25 m. major street
- 4 m for alleys leading to the central parks
- 3 m for major residential streets
- 2 m for minor residential streets and culs-de-sac.

A 2% slope is provided ^{from} for the property line to the curb to facilitate drainage and the rate of crown is 1/4 of an inch per foot.

Six widths of streets are found necessary:

- a. 40 meters for the main boulevard
- 30 " " other boulevards
- b. 25 " " the major middle street
- 15 " " some major residential streets
- 12 " " the other major residential streets
- 9 " " the minor streets and culs-de-sac

The details as to the number of lanes, width of sidewalks etc are shown in plate no. 4. However it will be noticed that the streets having two roadways have a green strip

at their central portion which is 10 meters wide for the main boulevard and 5 meters for the other thoroughfares. The strips are disconnected at the points where a possible change of traffic from one roadway to the other can be expected. Green spaces are also found at intersections under a great variety of dimensions and shaped according to the traffic requirements.

Interference:

A particular attention should always be paid to the important problem of interference, which is the source of most traffic troubles and accidents.

It takes place under the following conditions:

1. Cross-interference, when two traffic streams are crossing.
2. Internal interference, between the vehicles moving in the same direction.
3. Marginal interference, when slow moving traffic such as people occupy the edges of the roadway.
4. Medial interference, between vehicles in opposite direction.

Internal, marginal and medial interferences are dealt with by providing adequate widths of roadways and sidewalks. But the most painstaking and most frequent is cross-interference happening at every intersection of streets. The use of policemen for traffic control at important intersections is becoming primitive and uneconomical, specially in residential districts. Adequate islands with safety isles and middle strips can be more

permanent and stable substitutes; that is why we devoted a long time for their study and design. As can be seen in the plan, they form a great variety of sizes and shapes, every intersection has its own particular case and the design is left to the ingenuity and imagination of the town planner. Few technical points are constantly in mind.

a) In major intersections, a car emerging from one street should travel at least twenty meters before it penetrates any other one.

b) All the corners of strips, isles and islands should be smooth curve, no sharp points should be present.

c) Middle strips are broken up a short distance (not more than 50 m.) from the start, to allow mistaken cars to come back readily and follow the right street.

Parking:

It is practically impossible to prevent curb-parking in the wrong place, when adequate parking places are not provided where needed; the result is, of course a traffic congestion with an increased possibility for accidents; we will not emphasize any further that problem confronting every community. The right procedure for a solution is to study the parking requirements of every area, pointing out, first, the minimum dimensions required for the parking of a passenger car at different angles of the car's axis with that of the street:

<u>Angle</u>	<u>Length required</u>	<u>width of lane</u>
0°	6 m	2.5 m
30°	5 m	4.5 m
45°	3.5 m	5 m
60°	2.8 m	5.5 m
90° front towards the street	2.5 m	5 m

We studied the parking requirement for:

1. The beach: A double row of 12 off road parking places, each about 50 meters long and 5 meters wide, for a maximum number of 14 cars at 45°. The total number of parked cars is then 120, which is ample.
2. The playgrounds and school: Two rows of 45° parking lanes with a total length of 280 m. and can locate 80 cars.
3. East shopping center: Two lane of 80 meters each, for a total number of 46 cars.

Few occasional parking places are also found near the public buildings and in some other localities.

CHAPTER III.

LAND SUBDIVISION & HOUSING

The town planners hold a great responsibility in their subdivisions. They are responsible to coming generations and on the success or failure of their effort depends the safety and welfare of a whole community.

The first step is to cut land into streets, blocks and lots. The general subdivision should be made such as to have a conformity with the shape and variation of the land seeking

- a. the greatest profit
- b. the best possibility for traffic convenience
- c. the beauty of the site.

The greatest profits are obtained by having two rows of lots in a block and convenient shapes and sizes of blocks and lots.

The blocks are 80 meters wide in the dwelling-houses region and 100 meters in the villas region. They are in most cases about 300 meters in length, for traffic convenience. Where deeper blocks occur, culs-de-sac are used in their interior and in some cases the width of the blocks gives the opportunity for interior play spaces and parks whose situation and size do not unduly affect the privacy of the surrounding houses.

Widths and depths of lots:

In considering the sizes of a dwelling-houses' lot we have under the eyes the plan of a typical building (plate No.5). We are first guided by the consideration of having a two-story dwelling for two families, in a lot.

The area of land occupied by the building is 300 m^2 allowing only 30% of the lot for building site, the area of a lot should be then about 1000 m^2 which is provided by a 40×25 lot. We have then a side set back of 4 meters a front set back of 8 meters and a rear garden of about 15 meters length.

The requirements of the villa are completely different. Here, more spaciousness should be given and an average of 23% of the area occupied by the building is necessary.

The villa is about 400 m^2 and a lot of $35 \times 50 = 1750 \text{ m}^2$ is chosen.

COSTS:

The cost of a lot differs, of course, according to its position but the lesser cost of some lots will be equalized by the increased cost of some others so that a good approximation is obtained by choosing an average for the whole unit. The present congestion in Beirut gives to the land a high scarcity value; The "improved lots" prevent that extravagance and while the cost of a meter square can be found as high as 200 L.L. in certain parts of the town we expect it not to be more than L.L. 15 in

our suburb. The cost of a dwelling lot is then 15,000 L.L. and the cost of the building being 100 L.L. per meter square per floor, we get a total cost of 75,000 L.L. for two families or 37,500 L.L. per family.

The apartment if rented at 2,000 L.L. will give a profit of 5.5% on the invested money, which is considered to be a good average.

The cost of land for the villa is L.L. 26,000 and the cost of a meter square being 125 L.L. for the villa construction we have then a total cost of 126,000 L.L.

The foregoing figures refer to large-sized lots and first class villas. Many studies of lots cost are made, based on certain theoretical designs with various graphs and diagrams. The costs are shown in relation to block length and width of a lot. These studies are related to the American costs and estimations but with proper factors they can be applied to this part of the world.

CHAPTER IV.

THE COMMUNITY FACILITIES

By community facilities we mean such features as schools, playgrounds, parks, open spaces and bathing beaches. Cinemas and theaters are usually included too, but we limited ourselves by leaving special sites for them, without going into further details.

In the design of the above mentioned features we are guided by the following important considerations:

- a. Suitability of the site to their function
- b. Dimentions and capacity in relation with the population.
- c. Location.

1. The school: is designed here for primary education only, having in mind that the near-by "Unesco" grounds will be made a national university.

The school is here intended for approximately 1,500 students. It is so located that the large sloping ground below it left for students recreation will offer at the same time a view comparable to that of the A. U. B. Two buildings are designed: first, the main building containing the classrooms, hall and library and second the summer building with sliding glass walls, which will be used for open-air classes and winter recreation. Finally the position of the school is such that safety and accessibility is ensured for the whole area and it is at the same time well isolated from the residential disturbance.

The school is an integral part of the community recreational system so that it forms a compact block together with the play field. They are however separated by the circular road to ensure the privacy of the school when wanted.

The playfield is formed of the football green field with a site for tennis fields and another for volley-ball and basket-ball games. The "Grand-Stand" locates under it the players' rest rooms; sites for the bar and other facilities have also been designed.

A large parking field is provided and has been already studied.

2. Parks, playgrounds and open-spaces.

A great number of parks and playgrounds is required for a compactly built region, where the dwellings have no open spaces around them and where the average number of occupants in each dwelling is relatively large. But here, the dwelling takes only a small percentage of the lots' area, the rest of which is left as a garden. There is, then, a much lesser need for parks and open spaces. However some are found to be necessary, few being designed to be formal with harmonious rows of trees and symmetrical planted isles, while the others are informal for children's active amusement. Most of them are provided with sand pools and some of the common playing features.

The large area at the North-East will be one of the most beautiful national parks, for its topography, and situation.

3. The swimming beach:

The popularity of "Saint - Simon", sandy beach, is increasing every year, but the actual trend of expansion is defective, being a more or less cluster of beach houses around two or three centers. A general planning for the whole area with specific regulations is found necessary.

American statistics show that to be comfortable a person needs at least 160 square feet or 14.5 square meters of the beach so that the place is fitted for as many as 20,000 swimmers, including the inhabitants of the new suburb. The problem of cars parking should then be studied and provisions for the parking of more than 1,500 cars is made by the design of side parking patterns similar to the one shown in our plan, for both sides of the boulevard. That design is found to be the most practical and suitable for the traffic.

CHAPTER V.

THE PUBLIC UTILITIES

The public utilities, similar to the community facilities, are important features the shape, bulk and position of which should be planned and studied carefully and with the greatest foresight. They include:

- a. The public buildings
- b. The shopping centers
- c. The benzine stations
- d. The hospitals, prison, etc...

1. The public buildings:

Locate a police station, a municipality, a fire station, the water supply and electricity bureau and finally the telephone and post offices.

A special site is reserved for the buildings in a focal point which is located away from the residential center and the nearest possible to the town. Here too, the parking problem is taken into consideration.

2. The shopping centers:

Two centers are found necessary; the size and position of which are in coordination with the requirements of the area they supply.

Wide sidewalks and parking places are made for the conveniences and safety of the traffic and special provisions and requirements are necessary to keep the place clean and healthy.

3. The benzine station:

It is designed according to the most up-to-date patterns.

4. The hospital, prison, and cimetry:

Are important features, but they should be away from the residential quarters.

BIBLIOGRAPHY

1. Adams, Thomas : "Design of Residential Areas"
2. " " : "Recent advances in Town Planning"
3. Aggiouri, René : "Beyrouth ma Grande ville"
4. Bauer, John : "Transit Modernization and street
traffic control"
5. Gibbon, Sir Gwilym : "Reconstruction and Town and Country
planning"
6. Lohmann, Carl : "Principles of city planning "
7. Labatut, Jean : "Highways"
8. Lewis, Harold : "Planning the Modern City"
9. Wright, Myles : " Small Houses "
10. Sartoris, Alberto: "Encyclopedie de l'Architecture nouvelle".

