ARCHITECTURAL DESIGN

OF A

BUS TERMINAL IN JERUSALEM.

BY
ANTOINE ILYAS THOMAS JALLAD.

June 1949

ARCHITECTURAL DESIGN
OF A
BUS TERMINAL IN JERUSALEM

BY

ANTOINE ILYAS THOMAS JALLAD

This thesis submitted to the Civil Engineering Faculty in Partial fulfillment of the requirements for the Degree of Bachelor of Science in Civil Engineering.

AMERICAN UNIVERSITY OF BEIRUT MAY 11th, 1949.

This thesis was done under the kind supervision and advice of Professor Nicholas E. Manasseh,

TABLE OF CONTENTS

Accompanied by one container with eight plates.

CHAPTER I

The necessity of a terminal.

The city of Jerusalem relies on taxis and busses for its public transportation. The number of routes and busses has been increasing so rapidly, especially after the war, that the curb can no longer serve as a terminal for these routes.

Each line now has its own curb terminal, and the passenger that wants to go from one part of the city to the other, and has to take two or more busses, must rush from terminal to terminal, carrying his shopping bags, in summer under the scorching sun, in winter in an icy drizzle. Also, curb terminals provide no protection from the weather for the passengers waiting there.

Each bus company now has its own garages and offices, spread all over the city. In the morning and in the evening, the busses have to go long distances from garage to terminal and vice versa. Overhead costs are high, and maintenance bills are becoming prohibitive.

A centralized bus terminal will remedy all these disadvantages. It will give protection and comfort to the passengers, will pool overhead costs, running expenses, and increase the efficiency of the services.

Because of its two racial communities, Jerusalem has two distinct urban bus systems, one linking the Arab residential districts to its business centre, and another linking the Jewish residential districts to the Jewish business centre. The two centres are about a kilometer apart.

Jerusalem will therefore need three terminals, one in the Arab business centre, another in the Jewish centre, and a

third to group together all the interurban services to the North, East and West.

This thesis is an attempt to meet the need for the Arab terminal, which will also be the terminal for the interurban services to the South.

CHAPTER II

The requirements of the terminal.

To fulfil its purpose properly, the terminal must be large enough to provide space for all the routes now serving the Arab business centre, and allow for future expansion. It must have garages for the night parking of the 100 odd busses serving these routes, repair shops for their maintenance. It must have passenger handling facilities, such as waiting rooms, information booths, a restaurant, telephone booths, an express parcels delivery office, etc. It must also have drivers' rest rooms, for their convenience before or after shifts.

Table 1 below is a list of the urban bus routes serving the Arab business centre, with the normal running frequency, the number of busses for each route, and the frequency of traffic through the terminal. Table 2 shows the same for the interurban routes to the South.

An estimated 10% of the busses are constantly under repair, painting, or washing and greasing (*). In addition to the repair shops, the various trades connected with bus repairs must have their workshops.

As the building is to be owned by the bus companies, the capital outlay on the terminal must be productive, and so the main building will have, in addition the offices used by the bus companies, others for rent to business firms.

(*) Prof. Manasseh

Table 1.

Route No.	Frequency	No. of busses	Busses per hour
1	5 mins.	9	12
3A	5 "	9	12
4	3 "	15	20
4A	6 "	6	10
6	5 "	8	12
6A	6 "	5	10
6B	10 "	4	6
33	8 "	5	7
33A	10 "	4	6
37	8 "	6	8
38	10 "	5	6
11		76	109

Table 2.

21	20 mins.	5	2
22	15 "	8	4
23	30 "	7	2
43	30 "	4	2
4		24	10

CHAPTER III

The choice of the plot.

Right in the middle of the Arab business centre is a large flat plot of land, particularly suitable for the location of the terminal. Within a radius of 150 m. from the centre of the plot, lie all the present curb terminals of the busses to be served by this new terminal, and therefore no other plot could have been more convenient. Further, it is almost the only vacant flat plot in the business centre.

After I had made my choice, I was told that the Municipal Corporation of Jerusalem had in fact chosen this plot for a bus terminal.

The plot has an area of 12630 M². It is bounded on the North by a 12 m. road that rises from the general level of the plot to 6 m. above it by means of a retaining wall; on the South by the backyards of two buildings; on the East by a 14 m. road; on the West by a 10 m. road. Furthermore. the plot, which was in a small valley, has been made flat by being used a a municipal earth dumping place, so that very little grading will be necessary.

Before the place can be used as a terminal, the entry and some of the exits from the terminal must be completed or improved. Valley road, on the West, which is to be the main exit, must be completed. This will entail the demolishing of two old houses standing in its path. To make the road serving as a Southern exit straight, and of uniform width, the corner of a row of shops at its end must be slashed. To make the entrance on the East more easily accessible to busses coming from the South, an acute corner of a block must be blunted,

necessitating the demolishing of another old building.

The plot will thus have one entrance and three exits, which will avoid traffic jams inside the terminal.

CHAPTER V.

Design of the terminal

The most suitable form of a terminal platform for urban busses is the long platform, on one side of which busses will stop. This is the most efficient system, for it reduces bus parking time to a minimum, so essential to urban routes, where a bus stops only long enough to let passengers mount and dismount. On the average, a Jerusalem bus is 7.50 m. long, so for ease of manoeuvring, each bus will be allowed 12 m. of platform length.

To meet future expansion, the terminal will be designed for 16 urban routes, 8 to a platform. The 4 suburban routes will have a third platform, again with a capacity of 8 busses. Since the suburban passengers must wait for their busses, the suburban platform will be near the waiting room and other passenger facilities. With about 120 bus movements per hour, involving about 4800 people at rush hours, the problem of passenger safety is real. To take care of this, the passengers will not be allowed to cross any bus alley, but will go from platform to platform, or out of the terminal by means of an elevated passageway.

The main building will be on the 12 m. road on the North. On this road's level will be the building's ground floor, while the basement below it will be level with the platforms. That part of the ground floor on the street will have 16 shops, each with a basement below it accessible from the rear of the shop. The basement will receive its light and ventilation by raising part of the slab near the shop's entrance, this rise forming also the show window.

Behind the shops, overlooking the platforms, there will be 12 offices, to be used by the various bus companies.

In the centre of the building will be the passenger entrance. It will be in the form of a T, with ticket counters, information booths, benches for waiting, and toilets. Passengers using the urban busses will pass through this lobby to the elevated passageway, where two staircases will lead to the second and third platforms. Suburban passengers will go down to the basement lobby by means of two staircases in the upper lobby. Also on the ground floor will be two staircases giving access to theeast and west wings of the first and second floors.

In addition to the lobby already mentioned, the basement will contain a restaurant, toilets, telephone booths, a tobacconist's, a small post office, an express parcels delivery office, a drivers' rest room with showers, and also a large storeroom which can meet future expansion requirements.

The first and second floors are identical, and will each contain 36 offices. Each office will have an anteroom from which it is separated by a glass partition. Partition walls will be of light construction, so that any need by a firm for larger office space can be easily and cheaply carried out.

To comply with Jerusalem building regulations, the building must be stone faced, so bearing stone outer walls will be used.

The platforms will be covered by a cantilever slab, to protect the passengers from the sun and rain, whilst the elevated passageway will be completely enclosed, with a slab on top, and glass windows on the sides. The passageway will be

4.40 m. above the suburban busses platform, to permit the the loading of luggage on the top of busses, 2.60 m. high. Over the other two platforms, the passageway will be 3.00 m. high. The width of the passageway is to be 4.00 m.

On the southwest corner of the plot, there will be 9 repair shops, one paint shop, and two washing and greasing bays. The row of repair shops will open on a yard, 18 m. wide across which will be a row of rooms. The repair shops will be covered by a corrugated iron roof supported on columns. Across the yard, the row of rooms will house the trades necessary to the repair of busses. There will a repair foreman's office, a spares room, toilets, showers and a clothes room for the mechanics, an upholsterer's shop, a carpenter's and glazier's, a blacksmith's, a machine shop, an electician's, an engine room, a tire vulcanising shop, and a room for the two watchmen.

The garages, located on the south, will have corrugated ir iron roofs supported on concrete columns. There will be parking place for 91 busses, which more than enough, as most suburban busses will be garaged in the villaged they serve, to be ready for the morning rush.

There will also be two gas filling stations, one near the entrance on the east, and another near the exit on the west.