A NEW TOWN CENTER FOR ESPOO

By

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Dear Dean Anderson:

In partial fulfillment of the requirements for the degree of Master of Architecture, I hereby submit this thesis entitled, "A New Town Center for Espoo."

Respectfully,

[Signature]

Ho-Ling Teng

/mlr
ACKNOWLEDGEMENT

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ABSTRACT

It is my intention to take full advantage of this newly emerged academic program by taking part and participating in a full-scale search for a solution to the problems facing our man-made environment in respect to the present fast evolving world.

A competition program has been used as a vehicle to transform ideas into reality. It is my hope that an individual viewpoint will be generated from this exercise and will be developed as an alternative concept among many others, all in search of a common course--a harmonic and balanced spatial organization for tomorrow's man-made environment.

A concept of "final spatial order" seems contradictory to our timeless universe. We might never be able to obtain this goal. Yet the responsibility of architects to their society is the same as that in society of the past. Each offers his partial and incomplete achievement, and every one of these individual efforts will be accumulated as a total collective effort which will eventually move the world into a better future.
INTRODUCTION

Of all man's efforts, constructing shelter for protection against nature is probably one of the most fundamental struggles in the long process of civilization. Under these shelters, man established his family, communicated with his fellow men, and performed various human-activities. Men were shaped by their own creation physically and socially, and accepted this man-made environment as an inevitable background within which they spent most of their lifetimes, and made most of their efforts.

This achievement has dated back as early as men first recorded their history. The development from primitive cave to sophisticated works of architecture, from a single dwelling to a larger complex building group; from the small village to the great city; has clearly indicated a parallel relationship to men's civilization development. Each construction effort was profoundly and intimately related to a specific time and place in history. This continued effort and achievement reflected not only the condition and need of a society in a particular time and place, but also would predominantly influence the consecutive forecoming future of that society.

Once ideal and concept have been put into physical form, it becomes a man-made environmental background. This background of man-made environment and the foreground of human activity are interacting upon one another and forming an unbreakable chain of sequence. Each progress that men have added to their physical world was in-
fluenced by the condition of that particular society which they lived in. The influencing factors are:

1. the political, economical, and religious conditions of the society;
2. the geographical location and historical background;
3. the living standard of the people;
4. the level of technological development.

In the history of men, each time new progress has been made, it has changed the physical environment to some degree. Or each time social order has changed, men's living pattern has changed accordingly. Our cities were the result of this long, slow, but harmonic evolutionary process in physical form.

The Industrial Revolution was followed by the increasingly accelerated progress of technology in the 20th Century; it tilted the balance of the harmonic evolution of men's physical world. Our social order has been disturbed by fast-changing values.

The cities have received impacts from both urbanization (population concentration) and the increasing demands of communication. These have confused the city's physical order and total social context.

Architects and planners have emphasized their utmost effort and concern in trying to stop city's decay and reconstruct our city's organization in order to carry on man's activities. Yet, the nature of this problem with the continued increasing complexities of life, plus the evermore intricate interweaving of all the factors
that form the framework of society—philosophy, ideology, politics, economics, science, technology, humanism, ethics, etc., leave a much greater problem than any single profession of planning, architecture, or urban design is capable of solving. The evolutionary process has become so quick that any physical plan fails before it is accomplished; a building which usually took centuries to fail, is now obsolete in a few years. How should we plan our city or build to meet the demands of a fast-changing society?

This problem has influenced the direction of the higher professional education in architecture and planning. At the Tenth Urban Design Conference it was stated: "Now, though training in architecture has continued to progress, again new circumstances call for radical advances. We learned that a building can no longer can be thought of, if it ever properly could, as an entity in itself, or even only with reference to its immediate setting. Nor can a small cluster of buildings exhaust the reach of an architect's concern." It concluded, by recognizing that we have come to a time when no one person or single kind of person, can possibly meet the professional demands with which those who work in the architectural field will be confronted. Furthermore, it calls for men with the broadest kind of education; and a more advanced kind of professional education must be devised to provide them.

In recent years, architecture has begun to search and re-examine itself as to its philosophical goals, values, and its relation to the universe. Physically, various new materials, new construction systems, and computer aid to design have been explored to help for solving today's complex problems. It is an endless search
with an open end. Conclusions can be only objective, partial, and fragmental. It is questionable whether a total, so called "universal solution" exists. This new consciousness can be best expressed by a P/A article "Toward the third millennium" as described. "The new attitude, on the other hand, has its roots in the Einsteinian concept of the universe--one that leads to suspicions that space and time are not part of a consistent, uniform matrix; matter may be constituted not of rigid particles but of energy states--a condition not of status but of constant movement. There is no prime cause and destined end, and probably, given the experiments of Lee and Yang (Nobel Prize, 1956, for the idea that parity was being violated), no fundamental symmetry of nature exists. From this standpoint, each person's time and viewpoint varies; the only reality is the confluence of events at a particular place and time."
DESIGN CRITERIA

The role of the architect in his responsibility to contemporary society is the same as that in society of the past. His spatial expression (as small as a house or as large as town planning) is simply his own interpretation of human conduct.

The growing complexity of the contemporary world makes of any of these attempts an extremely difficult task and an ambitious one. In some cases it may even be considered as dangerous. It is simply because man creates environment and environment, in its turn, influences man.

We should re-emphasize that in human conduct many constants do not change no matter how the environment varies. Only by this standard can the architect bridge between man and his rapidly evolving total universal space (surrounding environment) with harmonic and balancing relationship. And only the architect who creates space, at the present time, is able to fulfill man's desires with precise spatial ideas.

Architects must learn to become specialists in space. Before modern technology or new computational powers could bring new satisfactions to human users of technology, and could perhaps even provide solutions for stabilizing the changing environment; man still has to search for an appropriate organizational space, which responds to today's and tomorrow's need, for himself.

With the help of modern technology, the combining of architecture and urbanism is even more encouraged. This act has
been proven to be not only fruitful but also urgently needed.

To consider an architectural academic exercise as a search for spatial organization on a town scale, certain design criteria have to be set forth in order to make it possible for the designer to transform his concept into reality. These criteria should rather be considered, as a hypothetical conclusion which generates from the subjective interpretation of an individual, than as an attempt to simulate a real project which normally orientates more heavily toward a utopian idea.

The following conclusions will serve as the design criteria of this thesis project.

1. High density living environment--due to the threat of population explosion, there is no more land available for continued dispersing of our cities as we have been doing. Indefinitely expanding the existing highway system does not help the traffic problem in a big city. Therefore a new concept of city organization is necessary in order to use land more efficiently and to also preserve unused land.

2. Rubber-wheeled vehicles will continue to be the basic transportation tool in the near future. That is to say the basic function of the vehicle will remain to serve man as one of the most efficient transportation modes, and yet its speed, size, and energy form might vary slightly.

3. Industry has been widely accepted as one of the potential sources of improving housing construction by means of mass production.
4. The rapid evolution of our city requires a flexible organization in its function or even differentiation between part of a structure which is liable to change and one that might be relatively permanent.

5. A city that has a segregated system between pedestrian and vehicle should be encouraged. It would be ideal to arrange this in such a way that men's daily activities can be achieved within walking distance. By doing this, the waste of time and effort in communication will be greatly reduced.

6. A self-sufficient township will release the burden of a large city, and prevent an ever-spreading metropolis.

7. A city should be organized toward the interest of the people who live within it, through the government's of a local non-profit organization's assistance instead of purely a financial or politically orientated investment.
ANNOUNCEMENT OF THE COMPETITION

The Township of Espoo hereby issues an invitation to participate in an open international competition of ideas.

The aim of the competition is to obtain ideas and proposals for a new administrative town centre to be built in near future, which centre should represent a high standard architecturally, should be functional as regards traffic and economically feasible.

On completion, the competition area, the new principal centre of Espoo, will be the most important administrative centre of the western metropolitan area of Helsinki, the capital of Finland. According to estimates, there will be 90,000 inhabitants in the immediate sphere of influence of the centre in the objective date of the competition, and 320,000 inhabitants will be living in its administrative sphere of influence. The competition does not aim at a final solution of the town plan, but at illustrating various possible ways of creating a town centre in the competition area.

The competition area is situated at the crossing of the biggest motorway leading west from Helsinki (The Tarvo Motorway) and a ringroad that encircles Helsinki at a distance of 15-20 kms. The only railway leading west from Helsinki crosses the competition area. The distance of the competition area from Helsinki is about 20 kms both by motorway and by railway.
PROGRAM OF THE COMPETITION

1. Location of the Competition Area and its Position as Part of the Helsinki Regional Plan

1.1 The township of Espoo is part of the metropolitan area of Helsinki, the capital of Finland. At the turn of this century, the total population of the metropolitan area is estimated at 1,500,000. The total population of Finland, according to estimates, will then be 6,000,000.

1.2 The main centre of the metropolitan area is the centre of the city of Helsinki which, simultaneously, is the main centre of the country. This centre is surrounded by the main city area which has 300,000 inhabitants.

1.3 Outside this main city-area, sub-centres of about 50,000 to 100,000 inhabitants have been envisaged. Five of these are now taking shape to the west of Helsinki and four of these are situated in the township of Espoo. The most important of these will be the competition area, the new principal centre, Espoo, now to be planned. The sub-centres are Tapiola, Leppavaara and Kivenlahti.

1.4 The fifth western sub-centre is Kirkkonummi. It lies south-west of the township of Espoo, near an industrial and harbour area now taking shape at the western end of the Jorvas Motorway, the coastal railway and the ring-road.

1.5 Due to its geographical location, the main centre of the metropolitan area, Helsinki, is a terminal town, and this results in a network of radial highways.
1.6 Helsinki is growing radially, along the main highways and the railways. The early growth of the town took place mainly along the railways, but nowadays, under the influence of the sea, the city is growing mainly to the west and the east. The longer the distances, the stronger the tendency to radial growth.

1.7 Three of the seven main radial traffic routes leading to Helsinki cross Espoo. From the point of view of the competition, the northernmost of these routes has little significance, because it mainly serves the long-distance traffic to Pori direction and in Espoo crosses large areas meant for recreational purposes.

1.8 The middle route is the most important of the routes leading westwards from Helsinki. In the township of Espoo it has been divided into two routes. The old Turku highway now serves as an important local traffic route, and the new motorway, the Tarvo Motorway, mainly serves long-distance traffic to Turku direction.

1.9 The southernmost radial main route, the Jorvas motorway, follows the coast. At the moment, it mainly serves local traffic and even later it will be the main route to Helsinki for the western sub-centres of Tapiola, Kivenlahti and Kirkkonummi.

1.10 The coastal railway, which at its Helsinki end runs between the above-mentioned old Turku highway and the Tarvo Motorway, and further of follows the ring-road, is a very important mass transport route, especially when the railway has been electrified to Kirkkonummi, which will, according to information now available, take place in 1968.

1.11 In order to develop train traffic to the west from Helsinki, a new railway route has been prospected, to branch off from
the present tracks at the Espoo railway station. It would lead to Turku through Lohja and Salo and, through train ferry connections, to Sweden and Continental Europe.

1.12 The most important ring-road round Helsinki is the outer ring-road, which encircles the centre of Helsinki at a distance of 15-20 kms. When a ring-road is mentioned in this competition programme, it always means the main ring-road mentioned above, which crosses the competition area from south-west to north-east.

1.13 At both ends of the ring-road, at Batvik and Vuosaari, rapidly developing medium heavy industry has been located.

1.14 Both at Batvik and Vuosaari there are good prospects for building harbours serving foreign trade. At the western end of the ring-road, at Batvik, the harbour plans are nearer realization.

1.15 The ring-road is very important to Espoo as almost one third of the road is inside the township of Espoo and as it is as centrally located as the traffic routes leading westwards from Helsinki through Espoo.

2. Competition Area

The centre itself should be located approximately at the central area of the vicinity of the main traffic routes and the old church centre.

3. Topography of the Competition Area

3.1 In contours, the terrain is typically Finnish. The absolute altitudes, measured from sea level, alternate between 0 and
+ 70 metres, taking the whole area into consideration. As the competition maps show, the relief of the terrain varies greatly. Typical are long valley formations and rocky, steep hills bordering on them. The rock of the hills is partly visible, partly covered by moraine, gravel or sand. In the valleys the surface of the land is normally under the level + 25 m.

3.2 The most notable -- even as regards scenery -- valley formation is the Espoo river valley, which crosses the competition area from north-east to south-west.

3.3 In the middle of the competition area, immediately to the north-east of the Espoo railway station is the filled-in Kirkkojarvi Lake. Its altitude is + 5 m.

4. Landscape Situation and the Present Buildings

4.1 The landscape setting of the present central area is the result of a process which has lasted several centuries. It has been spontaneous as regards its nature, dictated by natural environment and a predominantly agrarian economy.

4.2 Rocks covered by forest, the fields in the valleys and the river have been the fundamental factors in the landscape, and this has influenced the location of the buildings.

5. Historical Monuments

5.1 Since the 15th century the grey stone church has dominated the landscape. The parish house from a later period and the
old municipal hall are an integral part of the aesthetic and functional milieu of the church.

5.2 The old Lagstad primary school opposite the church on the other side of the river, has no great architectural value, but it has its own importance as an element in the church milieu.

5.3 When planning their entries, competitors should pay attention to the preservation of this milieu and see to it that the church building is allowed enough space as regards the landscape and the city plan. The location here of buildings that through their size, forms or location might diminish the status of the church in the landscape would not be fitting.

5.4 In addition to this, competitors should pay attention to the fact that the river certainly has had its influence on the location of the church and that the river valley opening to the south-west and north-east is part of this scenic unity. The new cemetery located in the river valley to the south-west of the church must also be taken into consideration.

5.5 In addition to the church and the surrounding milieu, there are some other objects with either historical or milieu importance, the preservation of which in the town plan is recommended.

6. Climate

6.1 Finland is part of the arctic zone. The winter climate is wet and cold.

6.2 The average temperature in the competition area is +5°C, the average annual maximum temperature is +28°C and the
average annual minimum temperature -- 27°C.

The average temperatures in separate months are as follows:
January - 6°C, February - 7°C, March - 3°C, April + 2°C, May + 9°C,
June + 14°C, July + 17°C, August + 16°C, September + 11°C, October
+ 5°C, November + 1°C and December - 3°C.

6.3 The average annual precipitation is 650 mms and there are, on the average again, 110 rainy days in a year.

6.4 The competition area is, on the average, covered with snow from December 15th to the end of April.

6.5 The winds in the competition area are normally light (1 to 6 knots) or moderate (6 to 22 knots). As they are rather evenly divided between the different quarters (south-esterly winds tend to be the most frequent), they are not of any particular importance as regards planning.

7. Dimensioning of the Espoo Center

7.1 The Town Hall -- Most of the administrative functions of the township of Espoo will be concentrated in the Espoo Town Hall, so it much have a central location. This is one of the main tasks of the competition. The Town Hall must have good traffic connections with all the routes leading to the centre and it must have sufficient parking space.

7.2 The Town Hall must be architecturally dominant in the centre. When planning it, the competitors must pay attention to the possibility of building it in stages.
7.3 The amount of office and public spaces to be included in the Town Hall is as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Popul. of Espoo</th>
<th>Office-space</th>
<th>Public</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>100,000</td>
<td>7,000 m²</td>
<td>3,400 m²</td>
<td>10,400 m²</td>
</tr>
<tr>
<td>1985</td>
<td>200,000</td>
<td>14,000 &quot;</td>
<td>6,400 &quot;</td>
<td>20,000 &quot;</td>
</tr>
<tr>
<td>2000</td>
<td>320,000</td>
<td>25,000 &quot;</td>
<td>6,000 &quot;</td>
<td>31,000 &quot;</td>
</tr>
</tbody>
</table>

The above figures are approximate.

7.4 The above figures in square meters contain halls, corridors, stairs, rest-rooms and other supplementary space in addition to the actual working space, but no parking and technical space.

7.5 The public spaces mentioned in the above table include, among others, the conference rooms of the Town Council, the Board and the committees and the Main Hall.

7.6 Library, about 7,000 m² of space.

7.7 Arts Museum, about 2,000 m².

7.8 Other museums and exhibition halls which the competitors think necessary.

7.9 A church in addition to the old church.

7.10 A theatre for 1,000 spectators in a big auditorium, and 400 in a small one.

7.11 A concert hall with a seating capacity of 1,500.

7.12 Cinemas.

7.13 Buildings for various associations.

7.14 Youth centres.

7.15 An institute for adult further education.
7.16 Higher secondary schools (the three upper classes of secondary school, vocational training schools, institutes) for about 4,000 pupils. There must be about 15 m² of floor space/pupil, and thus these schools need a total of 60,000 m² of floor space. In addition the schools need courtyards and traffic space up to 10 m²/pupil and different sports field.

7.17 For colleges and similar schools about 400 hectare should be reserved per 10,000 students. Colleges may be located both in the centre proper, and its surroundings, as it seems fit to the competitor.

7.18 For those colleges and institutes that are not located in the centre proper, the competitor must indicate the area reserves and traffic solutions.

7.19 Amount of Vacancies with Regard to Various Occupations

<table>
<thead>
<tr>
<th>Occupation</th>
<th>Vacancies</th>
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</thead>
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<tr>
<td>Town Hall administration, trade and services</td>
<td>appr. 9,000</td>
</tr>
<tr>
<td>Central industries</td>
<td>appr. 1,500</td>
</tr>
<tr>
<td>Industrial office vacancies</td>
<td>appr. 2,500</td>
</tr>
<tr>
<td>Traffic</td>
<td>appr. 1,200</td>
</tr>
<tr>
<td>Building enterprises</td>
<td>appr. 800</td>
</tr>
<tr>
<td><strong>Total amount of vacancies</strong></td>
<td><strong>appr. 15,000</strong></td>
</tr>
</tbody>
</table>

7.19.2 An approximate 35 m² per job, or 500,000 m² altogether, of floor space must be reserved for this number of employees. This floor space includes the town hall mentioned in article 41. (31,000 m²). Other public buildings, on one hand, mentioned in articles 42.--47. are not included in these 500,000 m², but are additional.

7.19.3 The centre must function as a whole, at all stages, from the start to completion.
7.20 In the centre proper there are no hospitals.

7.21 To the north-east of the future centre, in the Jorv area, a hospital of 420 beds will be built in the near future. Adjoining to it, an area will be preserved for a local hospital of 500 beds, to be built later.

7.22 With a view to the mass transportation of the inhabitants, the big industrial areas should be in the vicinity of the railway, in Kilo and Kauklahti. Of these, the Kauklahti area is suitably connected with the Espoo main centre and supports it.

7.23 The competitors have no reason to alter the sites reserved for the big industrial areas as shown in the master plan map (illustration 5). They only have to pay attention to the question of how these will affect the traffic network when planning the 1:10,000-scale plan for the use of the land and the traffic pertaining to the master plan.

7.24 Housing

7.24.1 The housing in the close sphere of influence of the Espoo centre has been grouped in suburbs of 6,000 inhabitants each in the outline for the master plan.

7.24.2 As the main aim of the competition is to solve the problems involved in the planning of the actual centre, the competitors only have to pay attention to the influence which the housing areas planned according to the outline for the master plan have on the network of streets and highways in the centre proper.
and in the whole area. The arrangement of the housing areas outside the centre can be schematically described.

7.24.3 The competitors must define the number of apartments in the centre proper and the amount of basic services needed. Among the local basic services, shops of different kinds, primary schools, kindergardens, health centres and libraries must be listed. They must be located at walking distance from the residential areas.

7.25 Space for future institutions, which at the moment cannot be envisaged, should be reserved.

7.26 Highway Traffic

7.26.1 The main highway routes constructed and now under construction, in Espoo, have been dealt with on the 1:10,000-scale standard map (Appendix 4.)

7.26.2 As there are several alternatives in the location of the ring-road shown on the competition maps, the competitors have the opportunity to consider whether the section of the ring-road now under construction should later be developed into a four-lane road with multilevel crossings or whether it should preserve its character of a local road. In the latter case, the competitor must suggest a new route for the ring-road proper.

7.26.3 The competitors should suggest at least one main traffic route suitable for through-traffic, which would be in the proximity of the centre. This route should have connections with the national highway network on the north and east sides of the area (the Helsinki ring-road, the Tarvo Motorway); on the south side of
the area it should have connections with the Kauklahti industrial area, the Kivenlahti sub-centre and with the Suomenoja crossing of the Jorvas Highway. For this purpose the straightening of the Espoo-Suomenoja local road was planned earlier, with a railway crossing at Espoo railway station.

7.26.4 The amount of peak hour traffic in 1990 to the centre will, according to estimates, be about 4,000 pcu/h and the amount of traffic to the station about 1,500 pcu/h, or 5,500 pcu/h altogether. The amount of buses arriving in the centre has been estimated at 200 buses/peak hour. Buses serve both passengers into the centre and those continuing their trip by train.

7.26.5 The long-distance bus traffic from Helsinki to Turku direction now primarily uses the Tarvo Motorway, and its bus stops have been situated at the crossings of the ring-road. The competitor has to show the terminal of this traffic either in the centre itself, or in the proximity of the Tarvo Motorway, and the traffic arrangements pertaining to it.

7.27 Parking

7.27.1 It can be estimated that parking spaces are needed for about 20 per cent of the number of cars in the centre. Since the population of this immediate sphere of influence is estimated at 90,000 and the amount of cars at 400 cars/1,000 inhabitants, the total number of cars is 36,000, 20 per cent of which is 7,000 cars.
7.27.2 The competitors must allocate the 7,200 parking spaces in the central area so that the requirements of the town structure are taken into account. The parking spaces should normally be closer than 300 metres to the basic institutions they serve.

7.27.3 When dimensioning the parking spaces the competitors should reserve a gross $30 \text{ m}^2$ per car.

7.28 Rail Traffic

7.28.1 The traffic congestions caused by private cars in the centre of Helsinki will cause a rapid growth in the importance of rail traffic as a means of rapid mass transportation. After the electrification of the railway (in 1968) the journey from Espoo station to Helsinki takes approximately 20 minutes. In addition to this, the Espoo railway station will later be the last stopping place for long-distance trains before Helsinki.

7.28.2 In the vicinity of Espoo station there must be parking spaces for this traffic (park-and-ride). The minimum requirement would be parking space for 2,000 cars. This can, however, be partially included in the total amount of parking space, if this area is connected with the parking space in the centre.

7.28.3 For those buses which take passengers to the railway station, there must be sufficient parking and maneuvering spaces close to the station, and the competitor must pay attention to the mutual relationship of the railway station and the centre.
7.28.4 The present locations of the Espoo, Kauklahti and Kauniainen railway stations are satisfactory from the point of view of traffic, and there is no reason to alter them without well-defined reasons.

7.28.5 The competitor may freely locate the railway station building in the station area. The limits are the tunnel in south-west, and in north-east, the bend of the tracks leading into the cutting.

7.29 Installations Serving Recreation and Sports

7.29.1 Large areas ideally suited for recreation open up at the northern end of the competition area. They serve the whole Helsinki metropolitan area. A number of laid out paths and skiing tracks lead to this area.

7.29.2 Espoo Bay, at the south-west corner of the competition area, serves yachting in the area. Boat quays can be built on the coast.

7.29.3 To the north-east side of the centre area proper, at Kasavuori, a centre for winter sports common to Espoo, Kauniainen and Helsinki has been planned. It should include a large ski-jump, two practice ski-jumps and a slalom slope, with adjoining dressing rooms and hostels.

7.29.4 The planning of the Kasavuori Winter Sports Centre does not come into the sphere of this competition. The competitors only have to indicate the traffic arrangements caused by the centre.
7.29.5 Sites for installations serving sports typical in Finland must be indicated in the centre. These must include a stadium, a sports centre including halls for different ball games and gymnastics, a hardpan hall for general athletes, a swimming hall and ice-hockey hall.

7.29.6 As regards the schools space should be reserved for a soccer field for each 400 pupils if the schools are located far from each other.

7.29.7 If the plan permits the location of the schools close to each other, the use of ball game fields can be rationalized, and their number, consequently, decreased.

7.29.8 The sports fields must be so planned that there is sufficient space reserved for lawn tennis, basketball and other games in addition to football fields.
SITE SELECTION

When searching for a location for the Espoo administrative centre, the location shown by the competition maps has been chosen. It is in the proximity of the Espoo Old Church and Espoo Railway Station.

It has good traffic connections with the main centre of the metropolitan area, Helsinki and, along the ring-road, with main national highways, with the Helsinki Airport, which is situated at a distance of 25 kms, and with the harbours planned at both ends the ring-road.

It will be rather easy to establish traffic connections between the new principal centre and the three sub-centres of Espoo with the assistance of now existing roads and traffic routes to be built in the future.

Since the overall configuration of Espoo New Town is a linear scheme, its spine runs in approximately a North and South direction, with one end joining the existing railway and the other with the ring-road (the western portion of the ring-road is still in the planning stage at the present time).

The major change in the geographic condition of this vicinity is to raise the water level of the Espoo River by constructing a six-foot dam at the crossing point of the main alignment. It is for the purpose of creating partial electrical energy for the town and also for controlling the water level in the recreation lake. By doing this, the upper stream of the Espoo River has been widened approximately 400 feet at the widest point. Both the
University on the North shore and the residences on the South shore will have the advantage of this waterfront site.
PHASING

The phasing plan of the Espoo Town Project is directly based on the estimation of the population growth in the Espoo principality.

<table>
<thead>
<tr>
<th>Stage</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>First stage</td>
<td>25,000</td>
</tr>
<tr>
<td>Second stage</td>
<td>55,000</td>
</tr>
<tr>
<td>Third stage</td>
<td>90,000</td>
</tr>
</tbody>
</table>

First Stage:

The main center complex which has a definite schedule will be the initial construction. This portion, in the sense of total environment, has certain characteristics under rigid control; yet it offers freedom in its construction time sequence. It also allows for possible alteration or deviation from the original even within its first stage.

Second Stage:

1) Activities can be added to increase the various functions of the town centre.

2) More living quarters can be provided (along with their supporting facilities) by extending from both ends of the town centre.

3) A mass transit line from the railway station on one end to the parking garage on the other end of the town center will be constructed.

Third Stage:

Sub-centers will generate with the necessity of meeting the growing population of Espoo Center. With zoning control, it
is hoped that a linear growth pattern will occur and the alignment will be amplified in the direction of Kavniainen, parallel to the motorway so that constant access to the expressway can be provided.
TOTAL CONFIGURATION

The immediate town center activity is composed in sections which are unified by one sequential constructed linear structure. These five sections are namely: 1) the Town Hall and Cultural Center, which are located at the two high points geographically; 2) an Adult Education Center, Hotels, and Entertainment Center, which no one side closely links with a Secondary Educational School and a University along the side of the Espoo River. (The above two are both adjacent to the Espoo historical church which will be preserved and developed as an historical attraction.) 3), 4), and 5) are mainly occupied by regional commerce with a bus terminal on the lower level.

All five sections are supported by south-west and south-east orientated intown housing structures. These will construct a Fundamental living pattern that is to recall the early form of human activity--home, work, and recreation which are closely located within short walking distance. The residences associated both with the natural and man-made environments. The designer intends to create a new city image in which the image of natural environment and the image of man-made environment are simultaneously interwoven.

The large industries and major commercial warehouses are located near the existing railroad, where soil conditions are poor yet level. Light industries which are non-generative of nuisance noise, and light trucking industries could locate within the town
center, with automatic mechanical conveyors linking the production line to storage and retail.

Combined with the existing skiing facilities at the south-east, area for such sports as skating, boating, sailing, and swimming, and water-skiing.
TRAFFIC, CIRCULATION, PARKING, AND PEDESTRIAN MOVEMENT

1. Regional traffic: The master plan of Espoo regional traffic has closely followed the program and related to the nationwide transportation network.

Two transportation exchanges, the parking facilities at ring-road at north and the train terminal at south, are functioning as the two main entrance gates to the town center. Other existing local roads are also being used as secondary regional roads, or connectors between major routes and the town center. Through these secondary connections, Espoo town center has three accesses to the motorway.

It is also part of the national network plan that the west-bound road to Kirkkonummi and the South-bound road to Kauniainen will be developed as major communication routes to the subcenters.

2. Town center circulation:

The in-town vehicle traffic can be classified into the following three categories:

2.1 Through traffic:--four-lane, two-way roads are centrally located and running parallel through the town center with various accesses.

2.2 Secondary collector roads:--two two-lane, one-way traffic roads running parallel to the town center on both edges are the main service roads to all intown residents, small industries, commerce, and other town activities.

2.3 Local service lines:--most of these are low-speed
two-way intown circulation and local service traffic.

The circulation organization as a whole is a three-dimensional "open-ended" system. It allows for greater flexibility and adaptability to the system itself. It also offers multiple choices for one to select a path between given points. Except at the residential clusters where traffic has to follow a more rigid circulation pattern.

3. Parking:

In-town residential 1,390 cars
town center parking
(commercial, business, town adminis-
trational, and recreational) 2,500 cars
North parking facility
(at ring road) 2,000 cars
South parking facility 1,500 cars

Total 7,390 cars

Near-town residences with their own parking facilities are not included in the above figure.

4. The pedestrian circulation is segregated from the vehicle traffic except at the level of local service and parking areas. The continued central pedestrian plaza is composed of a main town corridor along which various functions and activities are linked. Sectional moving pedestrian conveyors and escalators will be located at the major circulation paths. And all of these public pedestrian routes are either enclosed or partially covered for protection against the weather and cold.
Today's building construction method is an old and inefficient one. The present housing is enormously expensive without any significant gain in quality or technological advancement.

It is quite conceivable that in the future some large scale effort in searching for better construction methods or new concepts will be undertaken by a large construction industry. It has been widely accepted that industry with its research potential and technical know-how will eventually set foot into building construction to develop both pre-fabricated units and assembly-elements systems for tomorrow's housing.

Espoo Town Center design has heavily relied on this trend.

The housing distribution in the first stage at Espoo is as follows:

<table>
<thead>
<tr>
<th></th>
<th>Units</th>
<th>Population</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>In-town residents</td>
<td>1,390</td>
<td>5,560</td>
<td>22</td>
</tr>
<tr>
<td>Near-town residents</td>
<td>2,360</td>
<td>9,440</td>
<td>38</td>
</tr>
<tr>
<td>Espoo vicinity</td>
<td>2,500</td>
<td>10,000</td>
<td>40</td>
</tr>
</tbody>
</table>
STRUCTURE

1. The lower parking and utility levels are mainly composed of 60 ft. x 20 ft. continued frame concrete structures with 20 ft. x 4 ft. pre-cast slab units.

2. The office structure is composed of continued serial sets of single and double columns of alternated concrete "ladder frames." The "Ladder frame" spans 45 ft. with one side attached to the utility core, with a 10 ft. cantilever on the other side. Each "ladder framee" is 20 ft. apart. In between, these frames are filled by a 20 ft. x 4 ft. span of channel-shaped pre-cast light metal frame ceiling-floor unit.

The space in the double columns and the floor-ceiling channels is to be used as mechanical space.

The office bridges span 160 ft. and overpass the main town corridor thus joining the offices on both sides.

3. The high-rise housing structure is the combination of both the fixed "box" structure at the lower levels and the "insert-unit" at the upper levels between two extended bearing walls.

4. The pre-fabricated housing units at the lower cluster are resting on both "step-terrace" structure grids of 25 ft. x 25 ft. x 10 ft. height modules, and natural sloping grade.
The mechanical system is basically a decentralized one. It is divided into several separate mechanical plants according to the division of the structural clusters. Each plant supplies its immediate functions such as housing, offices, and commerce. This gives particular advantage to staging the construction growth process without waste in over-design of extra-capacity.

The mechanical supplying system within each cluster could be generally described as follows:

1. Mobile-insert housing cluster:--A set of primary hot and chilled water lines are part of the basic installation in the supporting structural framework. The mobile insert-housing unit itself consists of a built-in thermal-distribution line with its individual convertor and thermostat controlled circulator. In this fashion, the primary line of supply and return would circulate within an enclosed system to which the individual housing units can be simply connected to or disconnected from the various times and locations.

2. The high-rise housing is supplied with comfort-air by vertically fixed, yet extendable ducts.

3. Offices are also supplied with comfort-air by vertically fixed ducts, and distributed through the space within the mechanically integrated structure.

4. Commercial and small industrial space will be supplied
either by stationary comfort-air which serves a group of similar function spaces, or by hot and chilled water lines.
BIBLIOGRAPHY


PRESENTATION

REGIONAL PLAN

PHASING PLANS

LEVEL PLANS

SECTIONS

ESPOO NEW TOWN MODEL

TOWN CENTER MODEL

ARCHITECTURAL SECTION MODEL