



المجتمع السكني الجديد بجلوان

NEWA NEW COMMUNITY

URBANIZATION PLAN - 1985



الحى السكنى الجديد بحلوان

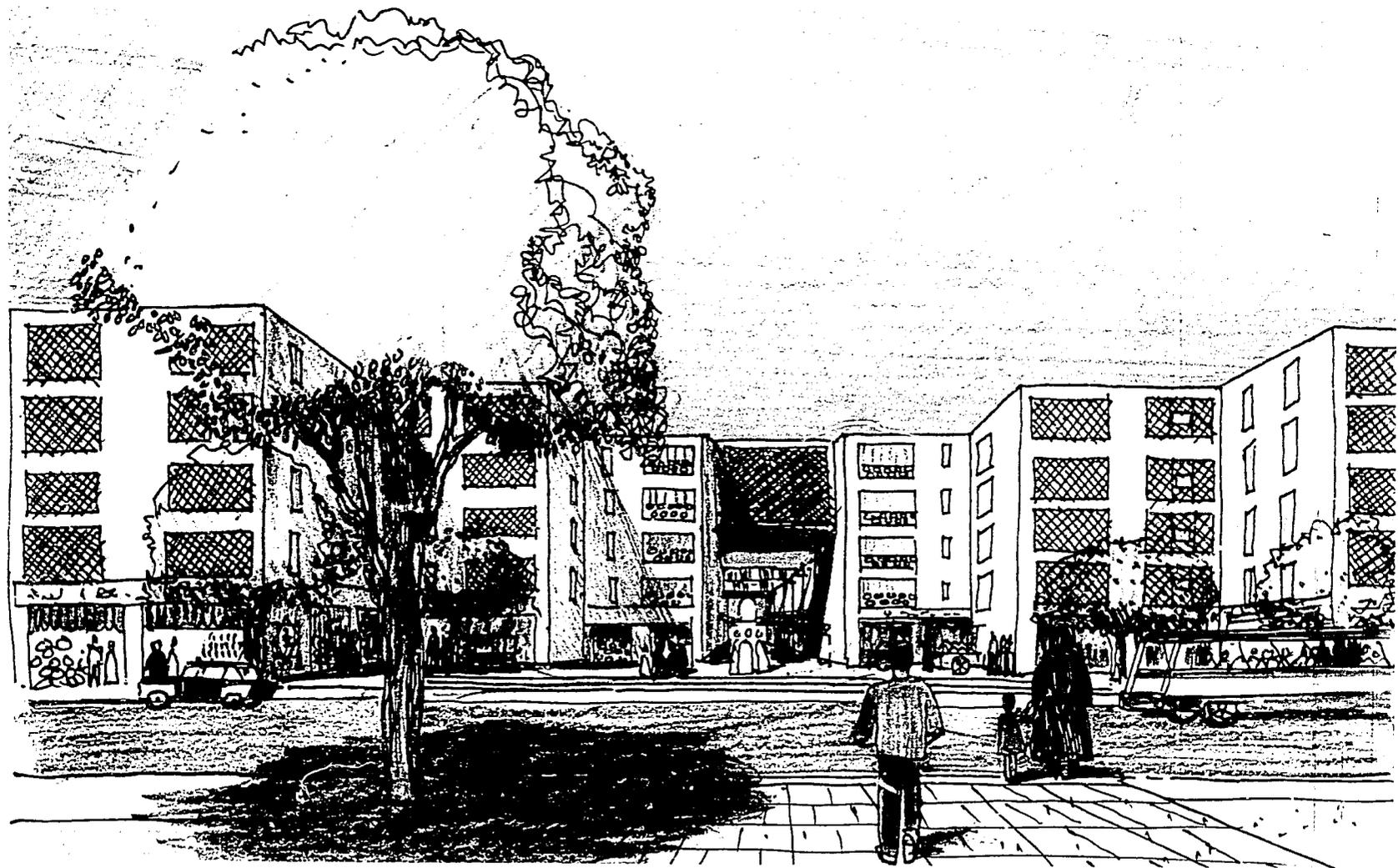
# HELWAN NEW COMMUNITY URBANIZATION PLAN—1985

ARAB REPUBLIC OF EGYPT  
MINISTRY OF HOUSING AND UTILITIES  
JOINT HOUSING PROJECT  
IN COOPERATION WITH  
UNITED STATES AGENCY FOR  
INTERNATIONAL DEVELOPMENT

BASIL-WBTL-NASSAR

joint venture  
IN ASSOCIATION WITH  
J.A. Jones Int'l Inc.

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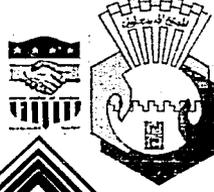
# Contents

Executive Summary  
Acknowledgements  
Introduction  
Regional Context  
The Site  
Policies and Program Requirements  
The Planning Process  
The Scale Model  
Neighborhood Studies  
The Urbanization Plan  
Implementation

## Appendices

- A. Development of Project through 31 March 1985
- B. Training of Egyptian Personnel
- C. Urbanization Planning Documents submitted 25 October 1980
- D. List of Personnel of the Three Consultants

وزارة الإسكان والمرافق  
الجهاز التنفيذي للمشروعات المشتركة  
المجتمع السكني الجديد بطلوان



شروط الإنتفاع بوحدات المشروع

- ان يكون من العاملين في مصانع حلوان ومن غير المقيمين بها .
- ان يكون من العاملين الدائمين وليس المؤقتين وان يكون قد مضى عام واحد على الأقل على تعيينه
- الا يمتلك وحدة سكنية في نطاق ، حافظة القاهرة
- الا يزيد إجمالي صافي دخله الشهري الكلي عن ١٤٠ جنيه .

المجتمع السكني الجديد بطلوان

من أجل غد أفضل

Conditions of Use of the Project Units

1. The beneficiary must be a worker at a Helwan factory and not currently living in Helwan.
2. The beneficiary must be a permanent worker, not a temporary one. (Minimum of one year of work is a requirement).
3. The beneficiary must not own another housing unit within the Cairo Governate.
4. The new monthly salary of the beneficiary must not exceed one hundred and forty Egyptian Pounds.

Helwan New Community:  
For a Better Tomorrow

# Executive Summary:

Helwan New Community (HNC) is an experimental joint housing project (JHP) undertaken by the Government of Egypt (GOE), its Ministry of Development and the State Ministry of Housing and Land Reclamation, and the United States Agency for International Development, (US AID). It will provide an opportunity for industrial workers, whose incomes lie in the 30-60 percentile of the national average, to own their own houses near their place of work. Through the Credit Foncier, low interest loans will make possible the purchase of one of the 6,393 standard lots with, as a basic minimum, a single room with utility core or one of a variety of other larger housing units. The purchaser may, at his option, expand the house to three (3) stories. Five hundred and sixty one market rate lots will provide a project cross subsidy of sale by public auction. It is estimated that the eventual population of 110,000 will be achieved when all housing units are built to their allowed maximum.

The 150 hectare tract lies just east of Helwan, the city at the center of the principal industrial complex of Egypt 30 km south of Cairo. The Urbanization Plan for the sites-and-services project is organized into 20 neighborhoods, each with a basic school, seven (7) of which will be built at this time. Additionally, provisions are made for secondary schools (2) ; a Multipurpose Hall; a Cooperative Credit Building; Community Buildings (1); an Administrative Building; Police and Fire Station; open markets (10); and parks, and sites for neighborhood mosques and churches. All sites are serviced with water, sewer, electricity, and gas. The Model Housing Estate (MHE), completed in 1984 is being used for evaluation, sales and educational efforts as well as a test of market acceptance.

For over two decades, Egypt has attempted various strategies to provide housing for its middle income families. The five-story apartment projects, while efficient to build, are heavily subsidized to maintain low rents, are poorly maintained in respect to the housing units and the ground around them, and do not provide for adequate public services. The ambitious New Cities such as Sadat City, 10th of Ramadan

and the 15th of May, however laudable, require enormous public investment at a scale not seen in the United States or Europe. HNC, for its part, seeks to tap both the financial resources of the purchaser as well as the initiative and the ability of the average Egyptian (everywhere in evidence in the informal sector developments) to provide his family with housing. Ultimately, the level of cost recovery will indicate the success of this experiment.

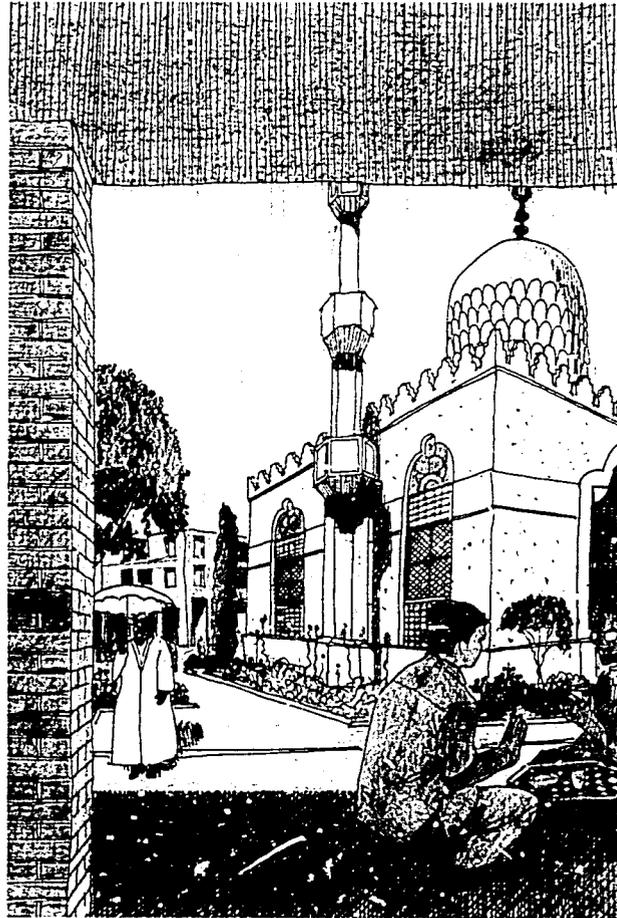
Present indications are that HNC offers Egypt a viable urbanization strategy. When HNC opened an office to see if there were interested purchasers, 22,000 persons signed up for the 6,376 lots. A recent study recommends ten similar developments adjacent to Cairo and Alexandria.

At the time of writing this report, the social development of the project was progressing rapidly and various changes were being made to suit current conditions. A separate report by the Co-operative Housing Foundation, the consultant responsible for the social development of the project, will be issued at a future date to document these changes.

# Acknowledgements

Since the inception of the project in March 1980, many dedicated individuals have made major contributions to the planning and implementation of the project. Without their support and sustained effort, the project would not have been successful.

The project started under His Excellency the Minister of Housing and Reconstruction, Dr. Eng. Mustapha El Hefnawi, who actively supported the project in its early days. In March 1981, Eng. Hassaballah El Kefrawi was appointed minister. He endorsed the concept of a "Sites-and-Services" project in Helwan and subsequently did much to make the project a reality.



In early September 1985, Eng. Abdul Rahman Labib succeeded Eng. Mohsen A. Sidky as Minister of Housing and Utilities. With the help and support of His Excellency Mr. Labib it is anticipated that the infrastructure portion of the project will be completed during 1986 and that the construction of the housing and community facilities will continue at an accelerated pace.

Our thanks to the Governor of Cairo, Gen. Yousef Sabri Abu Taleb, for his positive attitude to the project which he expressed during his visit to the Helwan New Community on 22 May 1984.

We would also like to express our thanks for former AID Director, Donald S. Brown for his help in getting the project started in 1980; to former AID Director Michael P. Stone for his understanding and patience during the third and fourth years of the project; and to the present AID Director Frank B. Kimball and AID Deputy Director Arthur M. Handy for their continuing encouragement and support.

The Contract with the joint venture of Frank E. Basil Inc. of Delaware, Warner Burns Toan Lunde, and Architect Ali Nour El Din Nassar was signed on behalf of the Egyptian Government by Eng. Mohamed Salah El Bendari on 05 January 1980. Eng. Bendari was Chairman JHP until November 1980 and played a key role in the development and approval of the Urbanization Plan. Under his leadership the different and sometimes opposing viewpoints of the various experts involved in the project were reconciled. On 01 November 1980, Arch. Hamid El Wakeel took over as Chairman JHP. Arch. Wakeel steered the project through the design of the infrastructure when many changes had to be made to suit new conditions and new requirements of the various government agencies. We are most grateful to Arch. Wakeel for all he contributed during this phase of the project. Under his direction, the contract for the Model Housing Estate was negotiated and construction work begun.

The present Chairman JHP, Eng. Youssef K. Elrafie, was appointed 01 June 1982. Under his strong leadership and enlightened guidance the project developed the necessary direction and momentum to ensure its success. The Model

Housing Estate was completed at the end of 1983, and the infrastructure contract for the whole site, awarded in July 1984, is now moving ahead to a successful completion in mid-1986.

Of the many dedicated individuals in AID who have been involved in the project, we wish to make special mention of David L. Painter, the



Project Officer for the Helwan New Community from March 1982 onwards for his ability to analyze and resolve the many problems that arose during the development of the Helwan New Community and his active support in ensuring the project got the necessary funds crucial to its success.

12 October 1984

**Meeting between His Excellency the Minister Eng. Mohsen A. Sidky and AID Administrator Peter M. McPherson.**

*On the right hand side of the table are Minister of Housing and Utilities Eng. Mohsen A. Sidky; Governor of Cairo General Youssef Sabry Abou Talab; JHP Chairman Eng. Youssef K. Elrafie; and chairmen of the various housing and utility authorities. Seated opposite them on the left hand side of the table are the AID Administrator Peter M. McPherson; Mr. Bradshaw Langmaid of AID/Washington; Michael P. Stone, AID Director in Egypt; and his successor Frank B. Kimball. Mr. Kimball took over as AID Director in Egypt in early November 1984.*

*Presentations were made during the meeting by the Consultants BWN, CHF, and AMBRIC concerning the Helwan New Community, the Upgrading Areas, the Cairo West water Schemes (both left and right bank) and the Alexandria Wastewater Project.*

Listed below are the people who individually and collectively made this project possible. Our thanks to each and every one of them:

**Ministry of Reconstruction, New Communities and Land Reclamation**

- His Excellency The Minister  
Dr. Eng. Mustapha El Hefnawi  
(Start of Project–May 1980)
- His Excellency The Minister  
Eng. Hassaballah El Kefrawi  
(May 1980–At Present)

**Ministry of Housing And Utilities**

- His Excellency The Minister  
Eng. Mohsen A. Sidky  
(July 1984– August 1985)
- His Excellency The Minister  
Eng. Abdel Rahman Labib  
(September 1985–Present)

**Governorate of Cairo**

- His Excellency The Governor  
General Youssef Sabri Abu Taleb  
(March 1983–At Present)

**United States Agency For International Development (AID)**

- AID Director

- Donald S. Brown  
(Start of Project–May 1982)
- AID Deputy Director  
Owen P. Cylke  
(Start of Project–November 1983)
- AID Director  
Michael P. Stone  
(June 1982–October 1984)
- AID Director  
Frank B. Kimball  
(November 1984–At Present)
- AID Deputy Director  
Arthur M. Handly  
(December 1983–At Present)

**Joint Housing Projects Executive Agency (JHP)**

- Chairman JHP  
Eng. Mohamed Salah El Bendari  
(Start of Project–October 1980)
- Chairman JHP  
Arch. Hamid El Wakeel  
(November 1980–May 1982)
- Chairman JHP  
Eng. Youssef K. Elrafie  
(June 1982–At Present)
- Undersecretary for Economic Affairs  
Mr. Mohamed Ihsan Shiri  
(Start of Project–At Present)

- Undersecretary for Finance and Administration  
Mr. Salah El Din El Essawy  
(Start of Project–At Present)

**AID Associate Directors**

- Richard M. Dangler  
(Start of Project–April 1982)
- Gerald P. Zarr  
(June 1982–June 1984)
- G. Reginald van Raalty  
(July 1984–At Present)

**Project Implementation Unit (PIU)**

- General Manager  
Eng. Kamal El Gamal  
(Start of Project–March 1982)
- General Manager  
Arch. Halim Scandar  
(March 1982–At Present)
- Constr. General Manager  
Eng. Mohamed El Kashef  
(Start of Project–At Present)

**AID Office Directors**

- Desmond O'Riordan  
(August 1977–June 1983)
- Frederick A. Zobrist  
(February 1984–At Present)

### **AID, HNC Project Officers**

- George M. Hazel  
(March 1978–October 1981)
- Craig L. Noren  
(March 1979–March 1982)
- David L. Painter  
(March 1982–July 1985)
- William P. Adorno  
(October 1984–At Present)
- Aaron L. Benjamin  
(March 1985–At Present)

### **Ministries Other Than Ministry of Housing**

- Ministry of Education
- Ministry of Social Affairs
- Ministry of Culture
- Ministry of Health

### **General Organizations and Others**

- General Organization for Physical Planning
- General Organization for Sanitary Sewers and Drains
- General Organization Greater Cairo Water Supply
- Cairo Transportation Authority
- Cairo Governorate
- Telephone Authority
- Cairo Electrical Distribution Company

General Organization for Building and Housing Co-operatives  
Cairo Wastewater Organization  
Gas Authority  
Egyptian Organization for Roads and Bridges  
National Center for Social and Criminological Research  
COPA (Planners and Architects for 15 May City)  
Helwan District Council  
ES-Parsons (Feasibility Study, 1978)

### **The Planning Review Board**

The Urbanization Plan as finally approved incorporates the best thinking of all the members of the Planning Review Board namely:  
Arch. Soliman Abdel Hai  
Dr. Abdel Baki Ibrahim  
Arch. Nasr Salim Habib  
Arch. Kamal Shohayeb  
Arch. Karam Fahmy Abdalla  
Arch. Michel Fouad Gorgi  
Arch. Halim Sandar



12 October 1984  
The Conclusion of the Meeting  
Between His Excellency The Minister  
Eng Mohsen A. Sidky and  
AID Administrator Peter M. McPherson

Minister Sidky and AID Administrator McPherson leaving the meeting, followed by the new AID Director for Egypt Frank B. Kimball; AID Associate Director C. Reginald van Raalty; and Mr. Bradshaw Langmaid of AID/Washington

### **The Consultants to the Ministry**

The Ministry of Housing and Utilities has Consultants under contract to assist them in the planning, design and implementation of the Helwan New Community. They are:

**BASIL - WBTL - NASSAR Joint Venture in association with J.A. Jones Int'l Inc. (BWN)**  
Planning, Architect-Engineer Services, Procurement, Construction, Management and Supervision, Training of Egyptian Personnel.

**The Arab Bureau for Design and Technical Consultation (AB)**  
Design and Preparation of Contract Documents for Houses and Community Facilities.

**Ardaman-Ace and  
Dr. Abdel Rahman H. El Ramly**  
Soils Investigations

**Cooperative Housing Foundation (CHF)**  
Advisory services for Community Associations, Housing Cooperatives, Home Improvement Program, Mortgage Loan Program, Evaluation of Experimental Building Systems, and Institution-building through its work on Project Evaluation New Project Development, Training, Financial Management and Accounting.



Complete lists of the personnel of the three consultants are given in an appendix to this report .

# Introduction

In an innovative approach to solving the housing problem of the poor, the two governments cooperated on a housing project to enable low income families to purchase land and housing units.

The project, known as Helwan New Community (HNC), is classified as a high-density, low-rise, sites-and-services project. Its essential form will be determined by the very large number of small lots which will be sold to a specific beneficiary target population, mainly consisting of Helwan's present industrial workers. The purpose of the project is to create individual building lots, fully serviced with all utilities and essential community facilities. These plots of land will be sold to the Helwan workers who will make a down payment of 10% of the sales price and take out a long-term, low-interest building mortgage for the balance. Additionally, home improvement loans will enable the purchaser to build and add to the core house, built during the initial construction period, to an eventual three-story height.

One of the principal benefits of the project is that a large portion of the cost will be recovered by the government. At the same time, the low income worker will benefit by owning the house

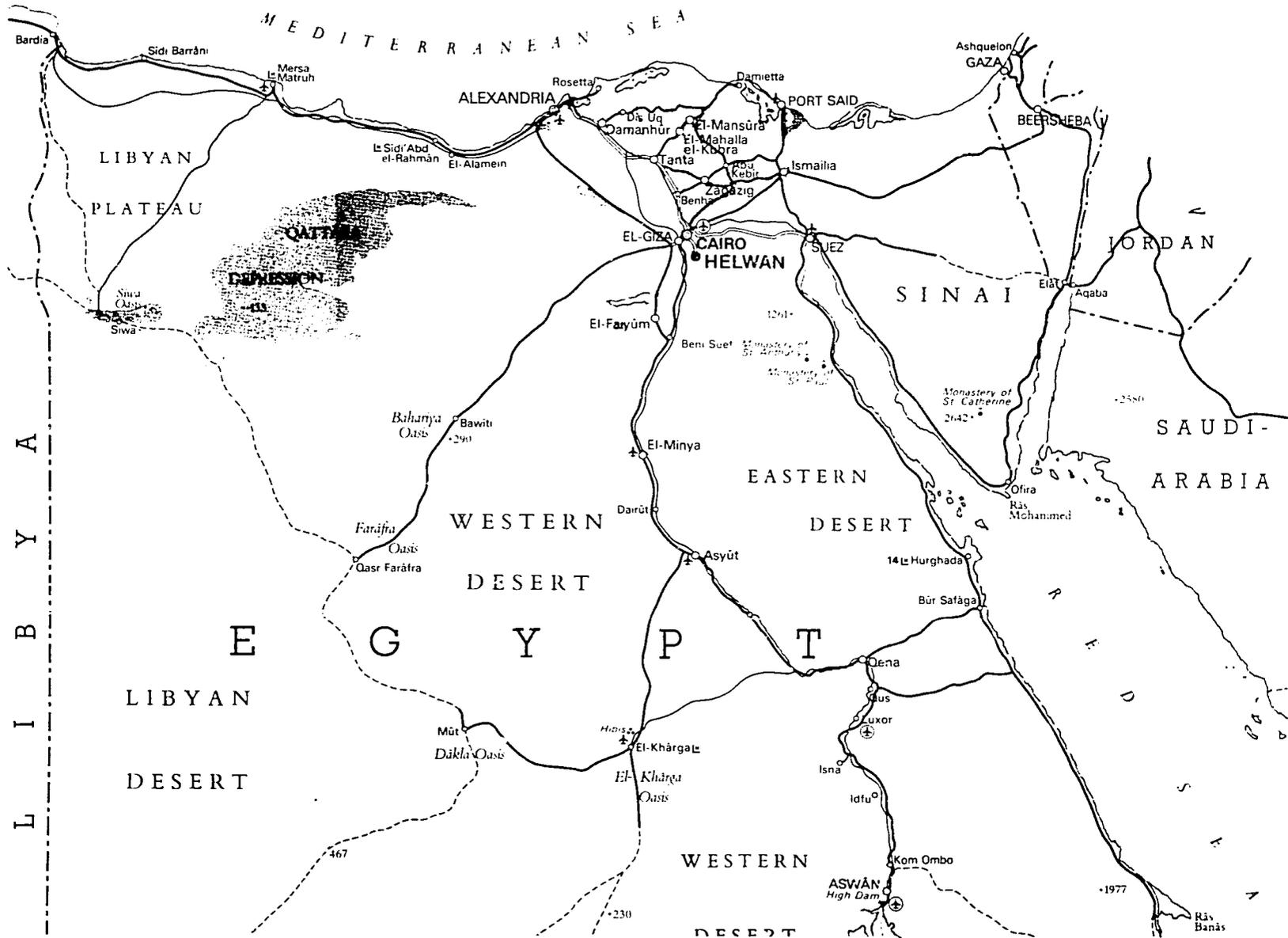
he lives in and will be able to pass it on to his family when he dies. This feature of the project, ownership by workers, is anticipated to contribute greatly to the happiness and stability of this strata of the population.

The scale of this sites-and-services project is larger than any of its kind in Egypt, and indeed, larger than most such undertakings anywhere. The City of Helwan was selected for this project because it is the largest industrial center in Egypt and has an acute housing shortage, particularly for unskilled workers who, on the whole, must travel back and forth from Cairo to Helwan everyday at great human and financial cost.

The Helwan New Community is now under construction and will ultimately provide housing for 110,000 people, complete with all utility services and community facilities. The infrastructure and community facilities, equally financed by the two governments, are scheduled for completion in mid-1986. Build-out of the houses will begin in April 1985 when the infrastructure for the first neighborhood will be completed and the Helwan New Community Sewage Treatment Plant will be in operation.

The first phase of the project was the prepara-

tion of the Urbanization Plan which began in March 1980 with the arrival in Egypt of planners and engineers from the American partners of the joint venture of BASIL-WBTL - NASSAR (BWN), the Consultants to the Ministry of Housing for planning, engineering design and construction management of the project. They were joined by architects and planners of the office of Arch. Ali Nour El Din Nassar, the Egyptian partner of BWN. Over the next several months, this group worked with the other consultants to the Ministry, the Arab Bureau and the Cooperative Housing Foundation, in preparing the Urbanization Plan. Each stage of the work was closely coordinated with the appropriate Ministries and General Organizations, particularly the General Organization of Physical Planning, to ensure that all requirements were satisfied and in accordance with current Egyptian practice. Each phase in the development of the Urbanization Plan was closely coordinated with the Planning Review Board, a panel of Egyptian experts in planning, architecture and engineering. Their input was invaluable. The Urbanization Plan, approved on 27 December 1980, contains the best thinking of all those who were involved and is a synthesis of the latest and best Egyptian and American planning criteria.



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The second stage of the work, the design of the infrastructure, was accomplished between January 1981 and May 1982. All engineering designs for the infrastructure and utility systems were closely coordinated with the appropriate Egyptian agencies and authorities. Included in this phase was the design of the Sewage Treatment Plant, an interim facility designed to handle a population of about 25,000. By the time the build-out of the Helwan New Community exceeds this figure, a new system to serve the whole of the Helwan area will be in operation. One feature of the Sewage Treatment Plant will be the recovery of water and sewage sludge: the sludge will be mixed with desert sand and fertilizer to form humus and the recovered water will be used for irrigation.

Procurement of American materials and equipment for the project began during the design stage of the infrastructure and approximately \$12,000,000 worth have been imported into Egypt to date.

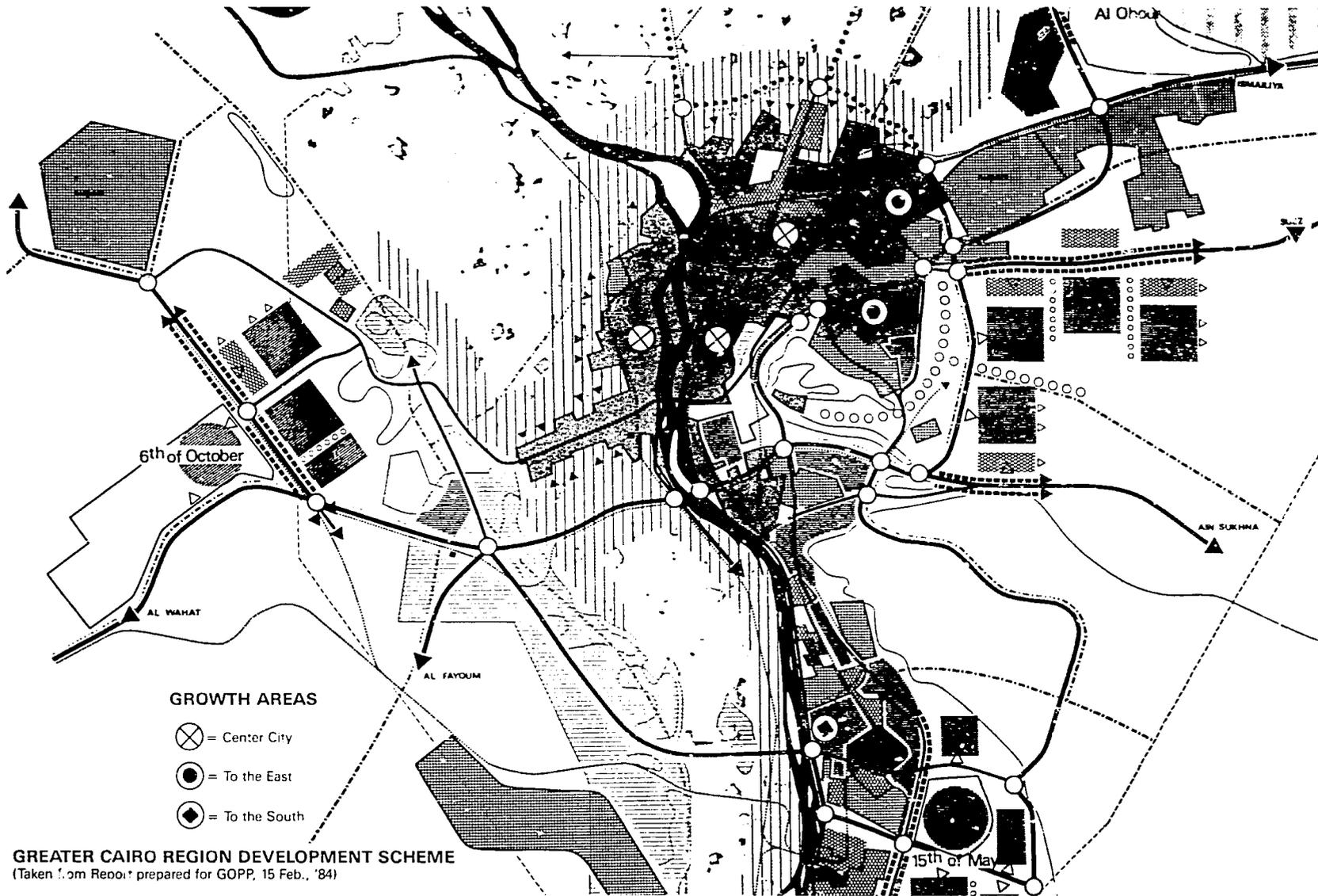
The construction phase of the project began with the construction of the Model Housing Estate. It was comprised of 180 housing units in various stages of completion to test the prefer-

ence of the people for the housing solutions offered as well as the basic planning concepts of the Urbanization Plan. The Model Housing Estate was completed by MAK Construction Company in December 1983 and formally accepted by the Ministry in April 1984. The contract for the infrastructure of the whole site was awarded to Perini/Ayoubco, a joint venture of Perini International and Adley Ayoub, one of the foremost Egyptian contractors. They began work in October 1984 and are scheduled to complete their work in mid-1986. The Community Facilities for the project (schools, municipal buildings, clinics, markets, etc.) have been designed by the Arab Bureau and construction will start early in 1985.

Each phase of the project took longer to accomplish than was first anticipated, primarily because so many organizations provided input to the project which had to be coordinated and reconciled and had to comply with the many requirements of the Egyptian Government and USAID. However, all this has now been accomplished. Should the Ministry decide to implement another "Sites-and-Services" project using the same criteria approved for the Helwan New Community, the planning and design could be

achieved in a much shorter time.

A summary of key events in the development of the project, together with photographs of work in progress, is contained in an appendix to this report. The Urbanization Plan submittal of 25 October 1980 is contained in four volumes and copies are available from the Ministry on request. They contain the full details and data of which this report is a summary.

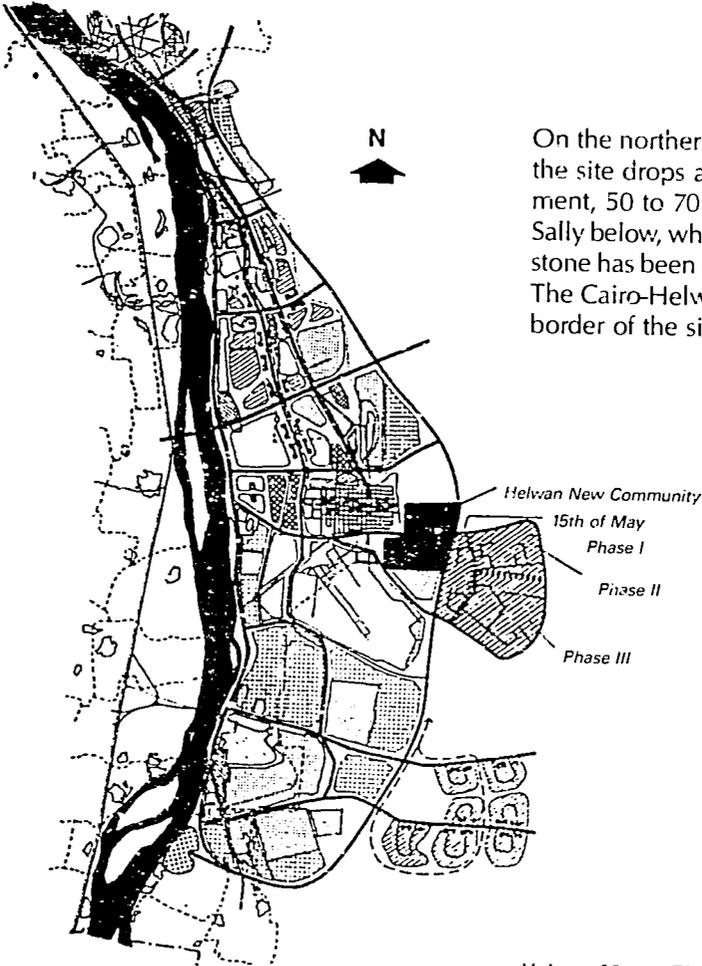


# Regional Context

Lying on the east bank of the Nile approximately 30 km south of Cairo, Helwan, the industrial center of Egypt, provides employment for over 150,000 workers in a variety of heavy industries (steel, cement, automotive, etc.). Of these, 60,000 commute from Cairo by rail while others use public or private buses operated by individual factories. Trips average 100 km and consume 3 to 5 hours daily. By the end of the century, the number of jobs is expected to rise to 250,000 making the commuting problem even more acute.

The housing market for HNC lots appears beyond question.

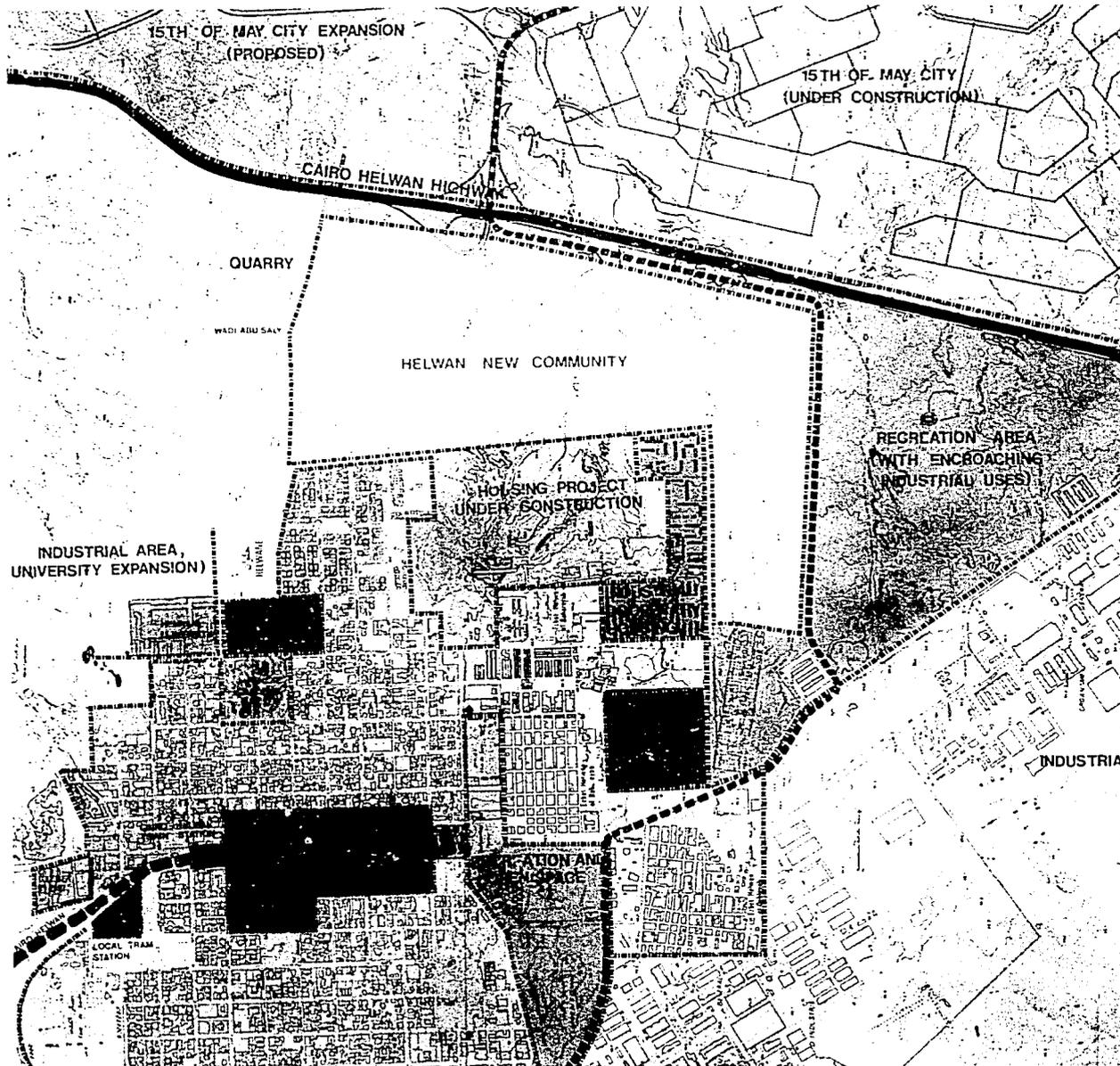
Within the region of the existing City of Helwan, Helwan New Community occupies an unique and extremely favorably location. Its 150 hectare site lies immediately to the east of the Old City on the rising slope of rugged desert land at a distance of from 1.4 km to 2.75 km from the railroad station, thus placing Helwan's Central Business District, CBD, within acceptable walking distance of the site. The southwestern leg of the "L" shaped site is less than 500 meters from the Central Industrial Sector of the City, thereby, further reducing dependence on public transportation for many of the workers.



On the northern boundary, the highest part of the site drops abruptly in a limestone escarpment, 50 to 70 meters high, to the Wadi Abu Sally below, where active quarrying of building stone has been carried on for over 4 millennia. The Cairo-Helwan Highway edges the eastern border of the site for a distance of 1.7 km.

- Housing to Remain
- Proposed Housing
- Upper Income Housing
- Tourist Housing
- Housing for Industry
- Major Service Centers
- Minor Service Centers
- Existing Industry
- Proposed Industry
- Industrial Services
- River Port
- Recreation
- Major Roads
- Mass Transit

Helwan Master Plan

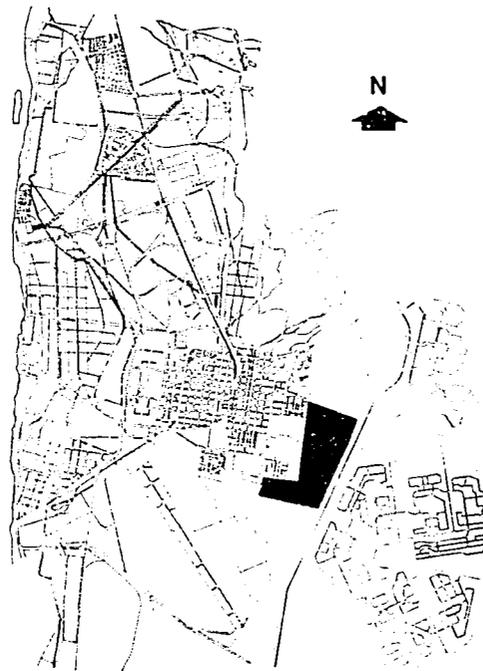


# Land Use Plan

# The Site

Immediately beyond the highway lies the first residential city, "The 15th of May," with its future extension to its north. These two ambitiously-planned projects would transform some 1,300 hectares into residential cities serving 150,000 and 50,000 persons respectively. The Atlas industrial cooperative housing of 5-story apartment buildings has recently been completed immediately to the west of the HNC site.

From the northeast corner of the site the ground slopes generally in a southwest direction, the ground elevation dropping some 52 meters. The ground surface is irregular and characterized by Wadis from 3 to 5 meters in depth. Several depressions run from east to west across the site, roughly dividing it in thirds.



Typically, in this desert region, the topography is superficially mixed with an overburden of 0.35 to 3.00 meters of decayed rock and sand above strata of limestone which occasionally emerge in weathered outcroppings.

The naturally defined topographic areas produce eight distinct tracts of terrain which helped to determine the basis of the eventual plan.

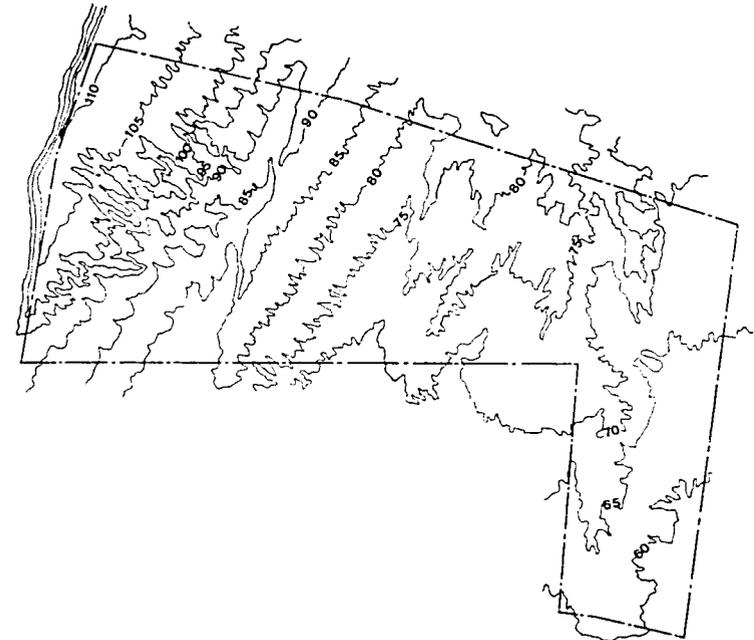
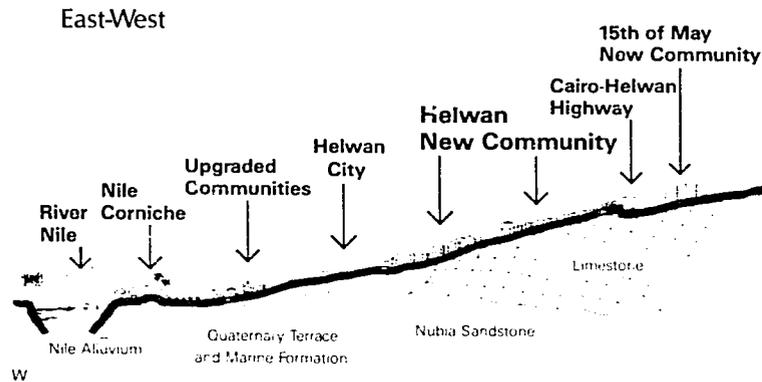
Point source pollutants originating in the industrial sectors are carried clear of the site by the prevailing northerly winds. While vehicular emissions, fugitive dust storms, the "Khamseens," and rubbish-burning may create an annoyance, it is assumed that future air quality will not drop to unacceptable levels.

Annual temperatures average between 12.3° C to 27.5° C high with relative humidity of 29% to 54%. While rainfall averages about 1.0 to 3.1 cm annually, site drainage through the natural wadi is maintained against the rare occurrence of a downpour.

The site is without vegetation.

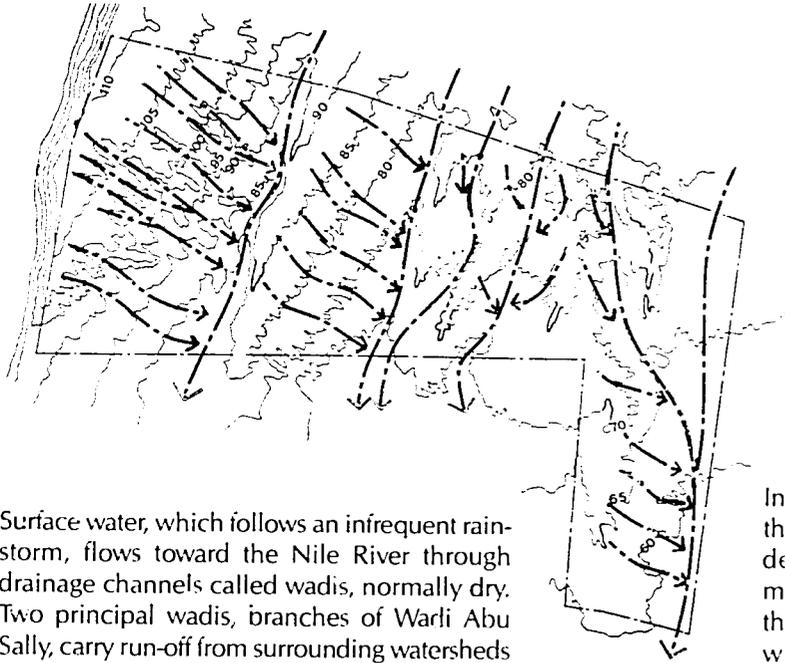
# Section From River Nile To Helwan New Community

## Topography

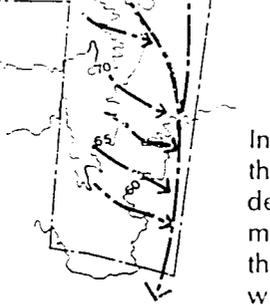


Characteristically the limestone shelf is eroded by drainage channels called wadis. The high cliff of 50 to 70 meters at the north end of the HNC site drops down to the Wadi Abu Saily. Although smaller in size as well as depth, the three wadi crossing the site strongly influenced the planning of roadways, lots, water distribution, sewage, and storm drainage.

## Storm Drainage

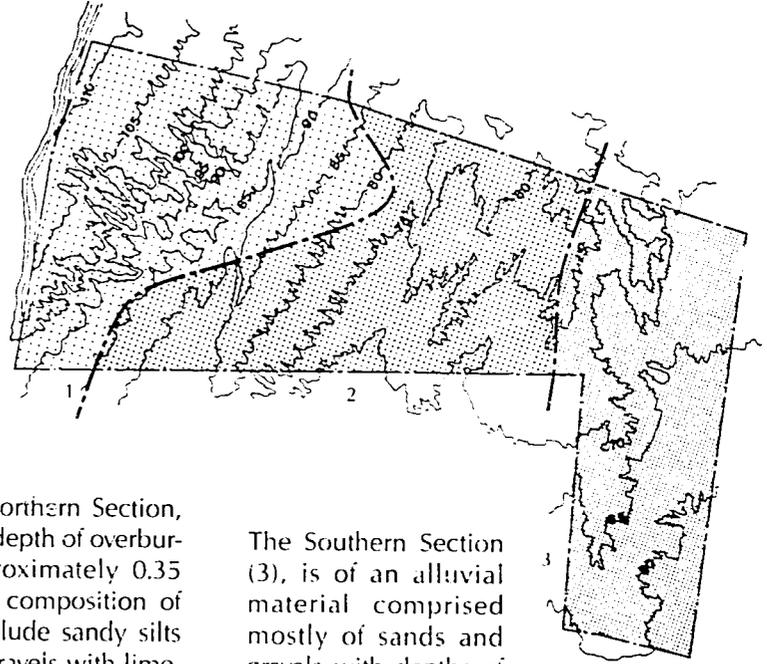


Surface water, which follows an infrequent rain-storm, flows toward the Nile River through drainage channels called wadis, normally dry. Two principal wadis, branches of Warli Abu Sally, carry run-off from surrounding watersheds and direct the water toward the Nile River. The northern wadi which borders the site is quite deep and wide at the north boundary. The southern wadi is quite wide, but shallow in depth; the flow line passes through the southern third of the site. The upper reaches of this drainage basin are blocked by the Cairo-Helwan Highway and no culverts under the highway are provided.



The Center Section (2), is much flatter with few ridges and one smaller east-west wadi. The average depth of overburden is less than 0.20 meters and in some cases, none. The underbearing strata are limestone and are very similar to the northern section.

## Soils



In (1), the Northern Section, the average depth of overburden is approximately 0.35 meters. The composition of the soils include sandy silts with some gravels with limestone exposed on the ridges, ledges and wadis.

The Southern Section (3), is of an alluvial material comprised mostly of sands and gravels with depths of this alluvium ranging from 0.30 meter to more than 3 meters.

The depth of soils and types of substrata have a direct influence on the ease and cost of grading for lots and roads, trenching for utilities, and available growth medium as well as suitability for vegetation growth.

# Policies And Program Requirements

The Ministry's Joint Housing Projects Executive Agency (JHP) laid out its basic requirements for HNC in the "Project Paper," a U.S. funding request document produced by AID in 1978 with the cooperation of the Ministry. During the Urbanization Planning phase, these requirements have been refined and expanded to include input from the various ministries, consultants and specialists. Aware of the unique and experimental nature of the project, some compromises among various desiderata had to be effected. Matters pertaining to density, lot size, public amenities, open space, utilities and cost recovery have been subjected to intensive research, analysis and discussion.

What has emerged is a set of requirements and assumptions which form the basis of the Urbanization Plan. Briefly summarized, it is assumed that:

1. As a "Sites-and-Services" project, all lots will be provided with normal roadways and utilities (water, sewer, electricity, gas).
2. Standard lots will have a single room with utility core as a minimum. Averaging 60 square meters in area, they will allow for a

range of housing solutions and construction options up to, and including, a completed housing unit.

3. The average family size is assumed to be five. They would occupy one story of any housing unit.

4. Standard lots, Type A, B and C will not exceed 3 stories. D lots will have arcades with shops on the ground floor and will be 4 stories in total height. Market Rate Lots will be allowed 5 stories with shops at ground level.

5. The purchasers of A, B and C lots will have incomes in the 30% to 60% range of the national average and will be factory workers employed in Helwan but living elsewhere or renting in Helwan. Monthly payments will not exceed 25% of purchaser's income. In 1981 the monthly payments range is 108 to 144 LE/month. Taxes will reduce the net income by an average of 20%.

6. The "Affordability Test" will require that the serviced plots to be "affordable" when mortgaged at 8% interest for 30 years with a down payment of 5% for housing unit of less than

30 square meters or 10% for larger units.

7. In order to achieve the cost recovery goals set for the project, approximately 7,000 total lots are required.

8. To effect a cross-subsidy, 500 larger lots of 200 square meters will be sold at market rates. (At a later date, D lots were also designated as "Market Rate Lots.")

9. If most purchasers start with the basic housing unit of one room with utility core, the community will achieve a rate of "build-out" (to its maximum of 3-stories) in not less than 20 years, in all probability, within 28 to 30 years. This is based on current incomes and construction costs, both of which may be adversely effected over time.

10. Owing to larger combined family incomes and savings, more purchasers may be able to afford a complete 2 to 3 story house. In that case the build-out period will be greatly decreased, perhaps even to a single decade.

11. Designed for an eventual total population of approximately 110,000, the 20 neighbor-

hoods will then achieve populations averaging 5,500 persons each.

12. Each neighborhood will be provided with a Basic School site and a Neighborhood Center. Two High School sites will serve the entire community.

13. Sites for Community Facilities, consistent with current Ministry standards, have been provided. Designed by the Arab Bureau (AB), they consist of the following community-wide services:

Administrative Building	1
Cooperative Credit Bank	1
Police & Fire Station	1
Open Market	1
District Centers	2

Each pair of neighborhoods will contain sites for

Post-Telephone & Telegraph office	1
Social Center	1
Health Center	1
Open Market & Cooperative Food Store	1

Of the total Community Facilities, those that will be built in the initial construction period and financed by AID will include: 8 Schools (7 Basic, 1 Secondary); Health Clinic; 1 Social Center, 1 Public Administration Center; and 1 Postal, Telephone, and Telegraph building.

14. Other land appropriate to Egyptian standards has been reserved for mosques, churches, parks and sports clubs.

15. Commercial activity will be housed on the ground floors of market rate lots bordering the principal roadways and the neighborhood souks.

16. A cooperative organization will provide leadership and direction for half of the community; a home owners association will provide a similar function for the other half. The Cooperative Housing Foundation (CHF) will be responsible for setting up these residents organizations. Among their responsibilities will be the enforcement of building and zoning controls and maintenance of public open space.

# The Planning Process

In April 1980, the planning team of BASIL-WBTL-NASSAR (BWN) commenced preparation of the Urbanization Plan for the Helwan New Community.

It was envisioned that the Urbanization Plan for the 153-hectare site could be completed within a four month period, based on the assumption that the Project Paper and the conceptual plan in the Feasibility Study prepared by ES-Parsons had the full approval of those involved. However, as the planning process began in earnest it became apparent that the contributions of many more parties had to be incorporated into the final decisions before the design would be acceptable to all. A series of preliminary alternative plans was presented on 17 June 1980, stimulating an active discussion of virtually every premise. In order to develop a successful plan it became necessary to reconcile fundamental differences of approach in terms of requirements of the Ministry, the comments and recommendations of various consultants, and the project goals as outlined in the Project Paper, as well as the basic agreements originally reached between the governments of Egypt and the United States. The efforts of the consultants at this juncture were to develop a workable consensus



among these varying points-of-view.

Efforts were concentrated on the “Loop Road” alternative, favored in the earlier meetings. In its presentation on August 18, 1980 BWN was directed to develop three alternative urbanization plans based on revised criteria including a significant reduction in density of development, a significant increase in the number of required schools, the size of school site and an

**The “Integrated Plan”**

increase in the minimum lot size. At this point in time, the Arab Bureau architects had begun their work and lot sizes were established based on their designs for attractive and affordable housing. Questions such as lot width and depth, the size and character of open spaces, width of streets, bus routes and transportation systems, locations of schools, markets and public facilities were again reviewed in detail. Meanwhile, agreements were reached with the appropriate ministries regarding schools, electricity, water, gas and tramway.

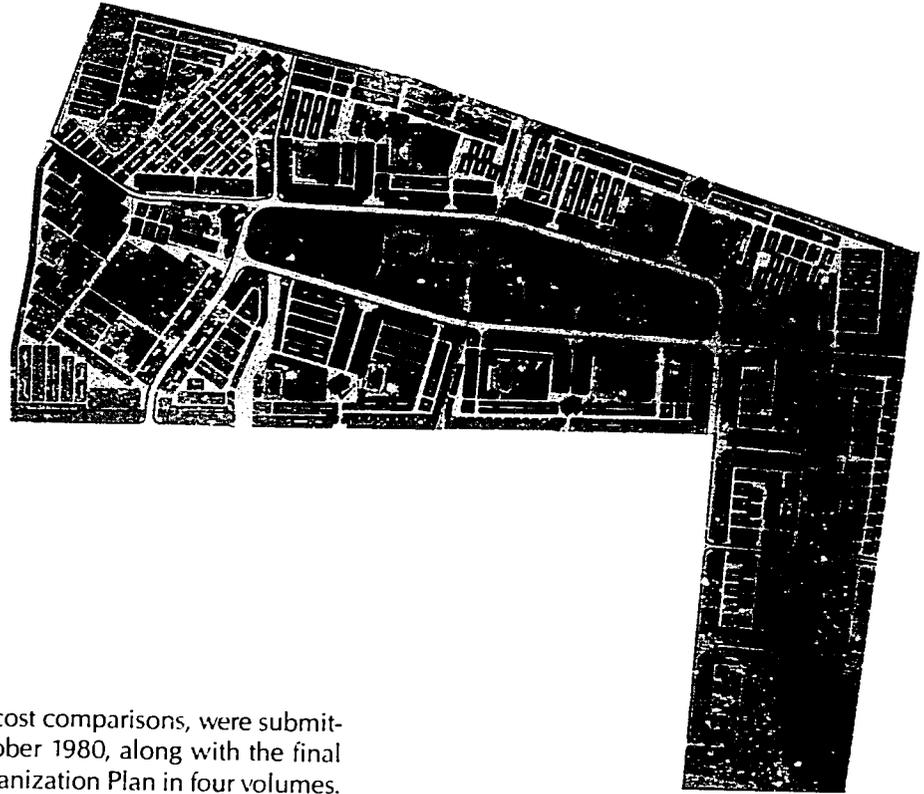
The three plans that were produced are as follows:

–The “Integrated Plan” (extending the street patterns of the existing city of Helwan into the new community)

–The “Medan Solution” (an inward looking community focused around a central area)

–The “Loop Road” Solution (this was the preferred alternative and was formally approved on 27 December 1980).

The three alternative plans, complete with en-



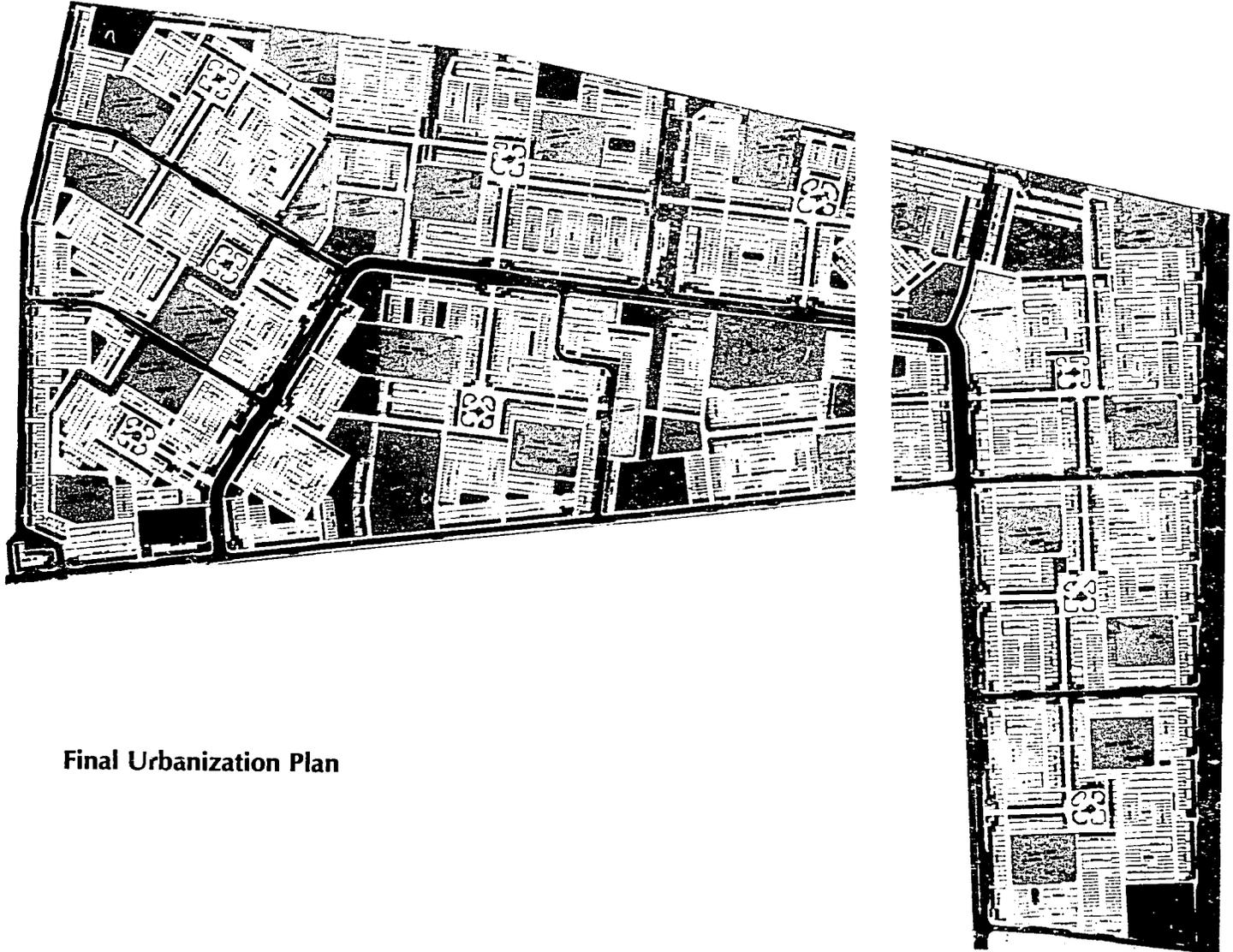
**The “Medan Solution”**

gineering and cost comparisons, were submitted on 25 October 1980, along with the final draft of the Urbanization Plan in four volumes. Subsequent working sessions with representatives of the Ministry, USAID, PiU, the Egyptian Planning Consultants, FCH, and the Arab Bureau resulted in the reaffirmation of the Loop Road scheme as the preferred plan in serving the needs of the Helwan New Community. The final presentation documents were approved in a letter from the Ministry dated 27 December 1980.

in retrospect, it appears to BWN that the extended period of time to complete Phase I of the Urbanization Plan was well spent in that it enabled the various constituencies to achieve a realistic consensus, subsequently allowing the project to move successfully forward without any significant changes. When it is considered that this was accomplished under conditions requiring inter-governmental, inter-ministrial and cross-cultural agreement, this appears to be a significant achievement, particularly for a project for which no prior prototype existed in Egypt (or elsewhere) at the scale and magnitude of the Helwan New Community.

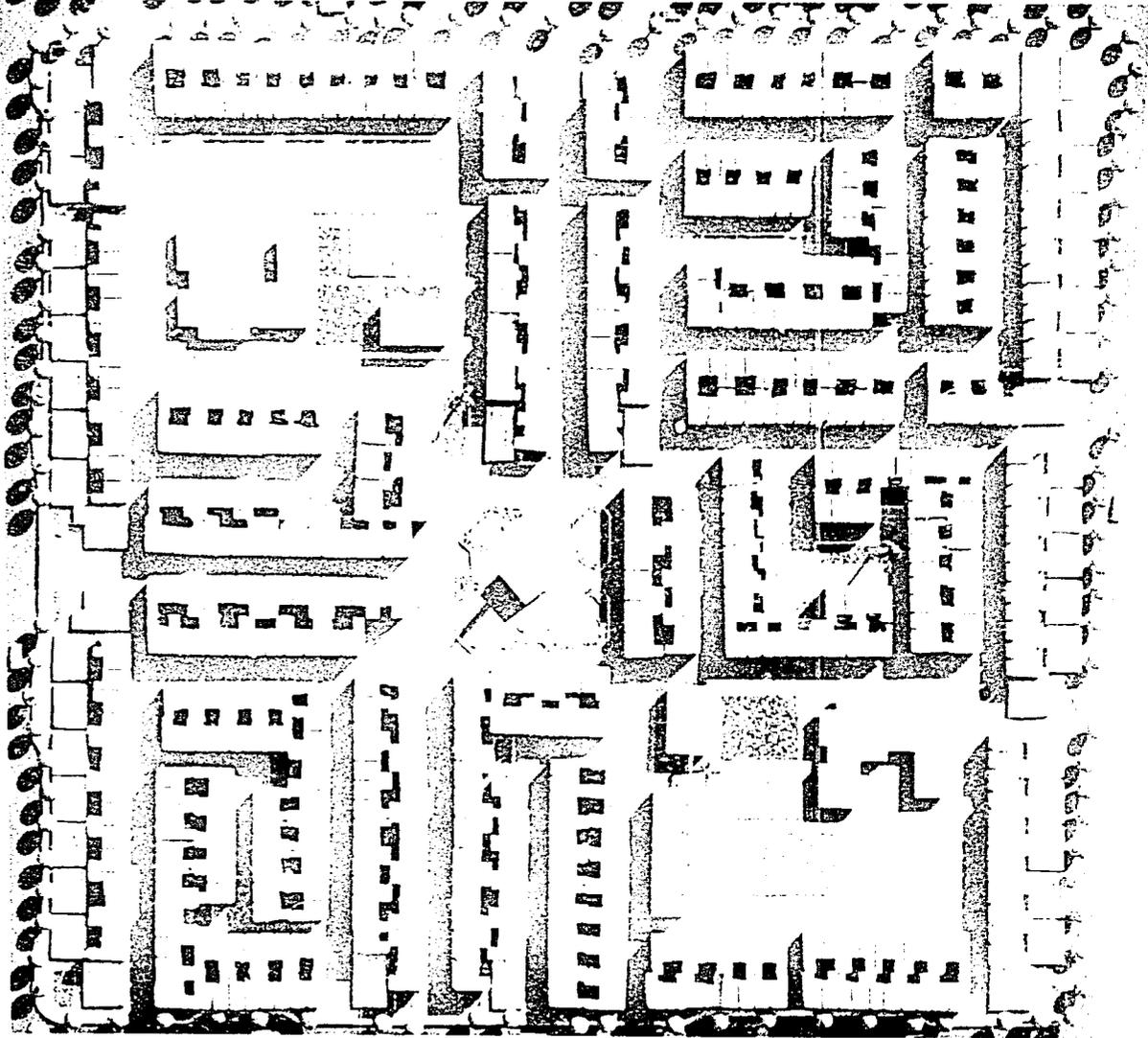


**The “Loop Road Solution”**

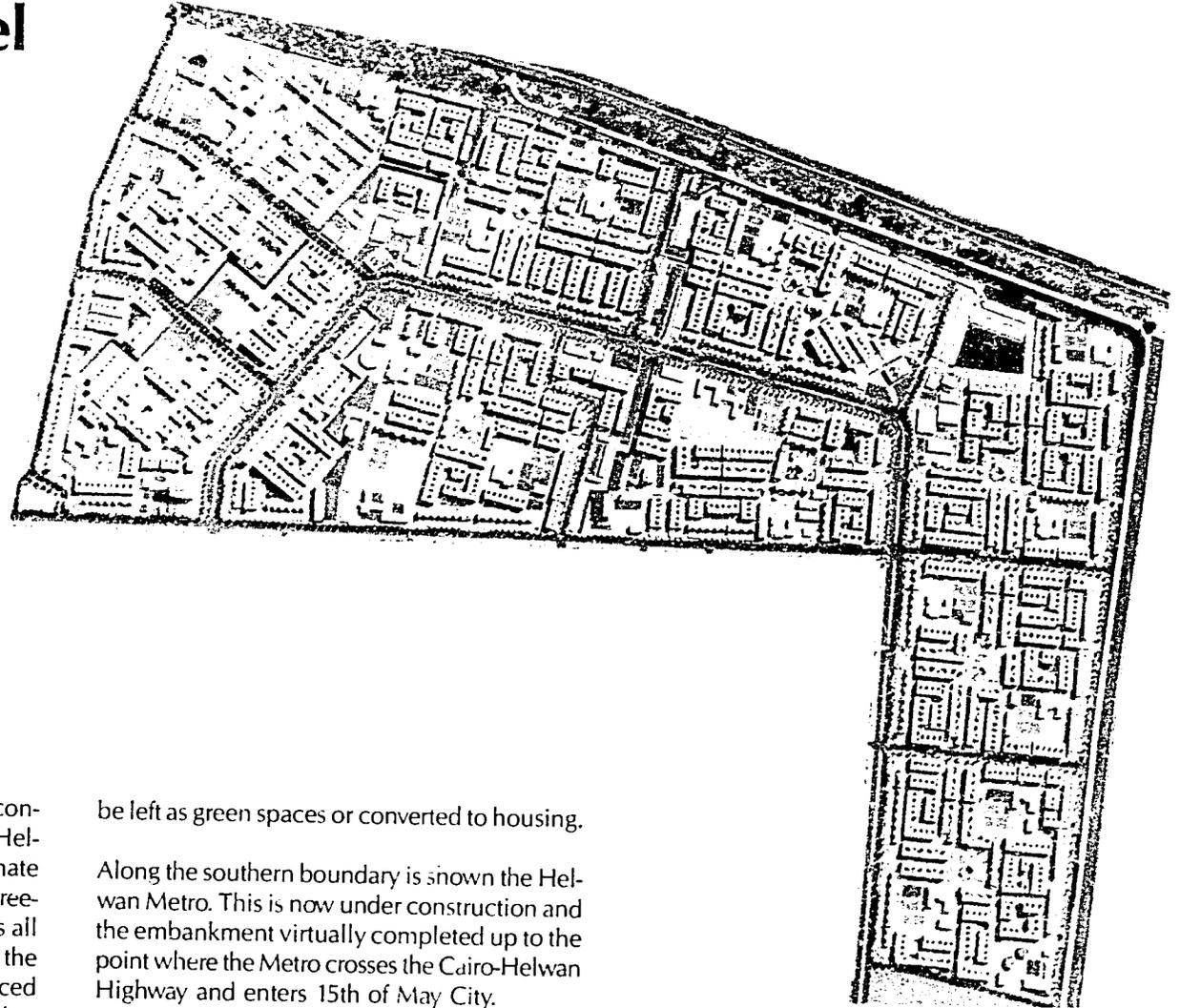


**Final Urbanization Plan**

Prototypical Neighborhood  
(Neighborhood 2)



# The Scale Model



The scale model of the project has been constructed at a scale of 1:1,000. It shows the Helwan New Community built out to its ultimate development with all housing lots having three-story houses erected on them. It also shows all school sites with school buildings: however, the number of schools may ultimately be reduced in which case some of the school sites will either

be left as green spaces or converted to housing.

Along the southern boundary is shown the Helwan Metro. This is now under construction and the embankment virtually completed up to the point where the Metro crosses the Cairo-Helwan Highway and enters 15th of May City.



### Looking North

The Model Housing Estate is in the foreground and Neighborhood 5 extending northwards as far as the wadi across the center of the site. Note the "Loop Road" passing around the Model Housing Estate and along the east side of Neighborhood 5.

# The Urbanization Plan: Land Use

## General:

Within the total available site of 135 hectares (18.3 hectares taken by the Cairo-Helwan Highway), the allocation of land uses is the result of a balance between the number and size of lots, sites for community and educational facilities, vehicular and pedestrian circulation and open space. Community and educational facility sites are, to some extent, mandated by their respective ministries and the plans prepared for them by the Arab Bureau (AB). Major circulation is largely a function of location and shape of the site; open space a matter of social decision. Lotting, therefore, becomes a limited variable in which, contrary to logic, the smaller the lots, the greater amount of land devoted to local circulation.

## Lot Size And Number

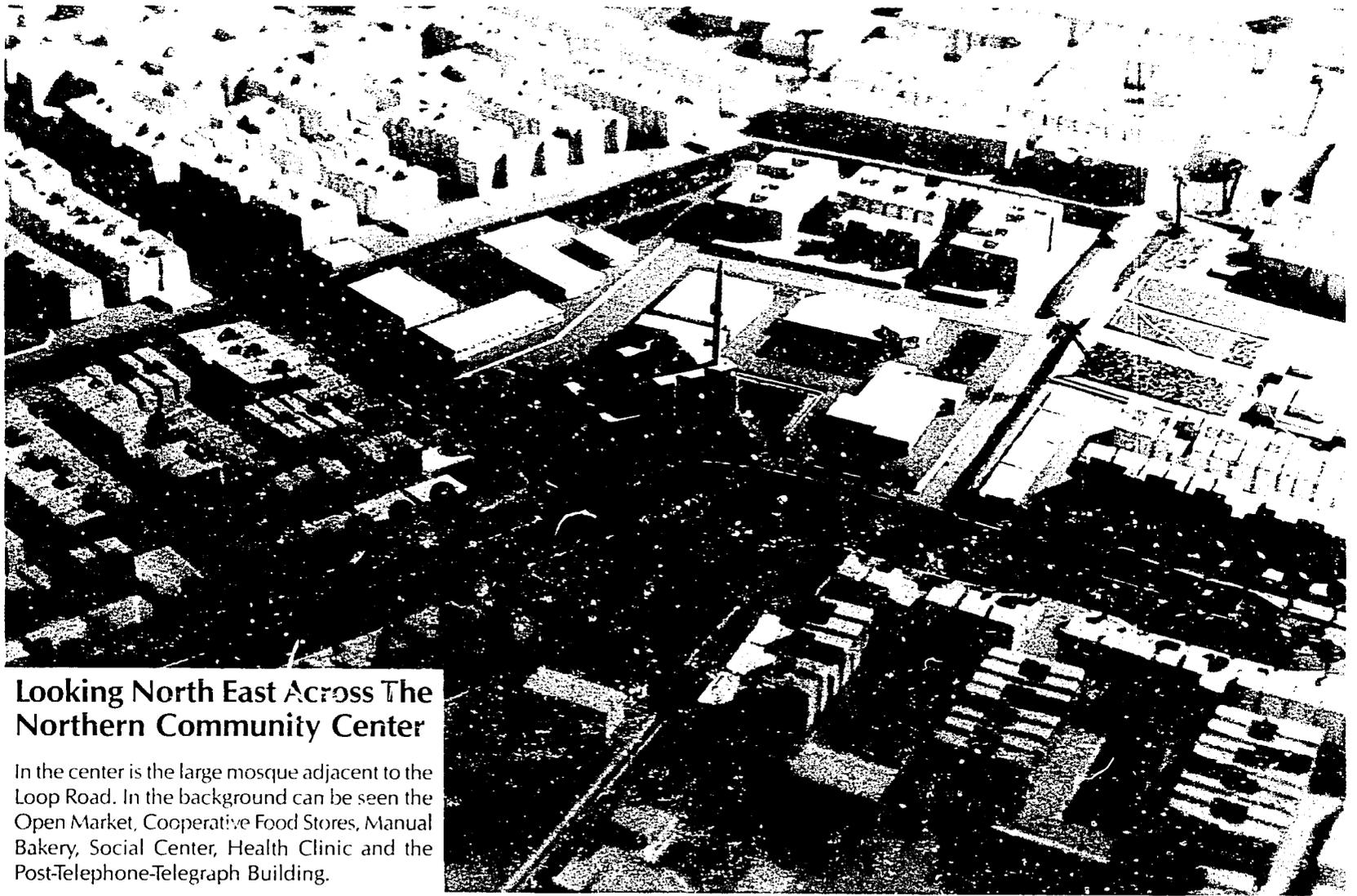
These key project issues received exhaustive critical analysis during the preparation of the plan, since they set the number of beneficiaries and hence, the affordable price per lot, the amount of cost recovery for the project, the range of variation in lot areas and the housing units each can accommodate.

Two possible standards were considered:

The Egyptian Planners and Consultants generally favored larger lot sizes and lower densities roughly approximating the GOPP standards for moderate income families of 200 persons/feddān (476 persons/hectare). AID, with its concern for affordability and the general applicability of this type of solution to help reduce the

cost of housing generally in Egypt, preferred smaller lots thereby reducing their price in order to reach the largest possible number of beneficiaries. The relationship between average lot size, total area available for subsidized lots (total site less the area allocated to market-rate lots) can be seen in the graph "Determination of Average Lot Size." The question was finally resolved by adopting the GOPP and Cairo Governorate standard for economic housing of 300 persons/feddān (714 persons/hectare) which, coincidentally, is the ultimate design density for HNC. (110,000 persons/hectare ÷ 153 hectares = 718 persons/hectare)  
(718 persons/hectare = .42 = 301 persons/feddān)

\*Gross site of 153 hectares with 18.3 hectares taken for the highway the total available site was reduced to 135 hectares and 812 persons/hectare



## Looking North East Across The Northern Community Center

In the center is the large mosque adjacent to the Loop Road. In the background can be seen the Open Market, Cooperative Food Stores, Manual Bakery, Social Center, Health Clinic and the Post-Telephone-Telegraph Building.

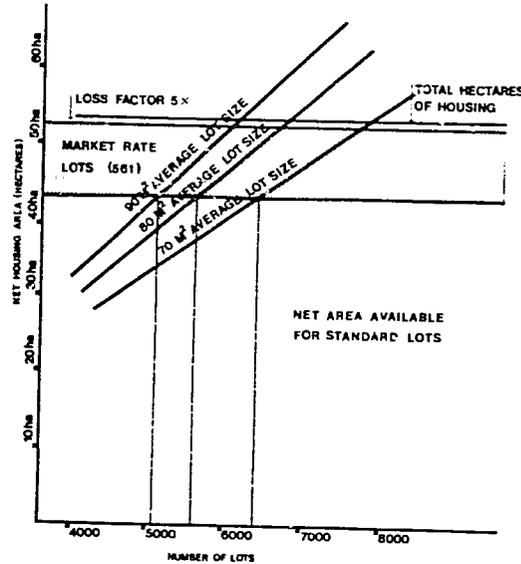
# Determination of Average Lot Size

The compromise solution provides for the following mix:

Lot Type	Lot Area	Number	%	Total Area (ha)
A	56.250	3,123	45	176.2
B	67.500	1,695	25	113.7
C	84.375	839	12	70.8
D	101.250	736	10	74.5
E*	202.500	561	8	113.6
		<u>6,954</u>	<u>100</u>	<u>54.88</u>

\*Later D lots were reclassified as Market Rate Lots.

DETERMINATION OF AVERAGE LOT SIZE



## Population

Lots	No. of Stories	Persons/Fir	Total/Bldg	Total/Type
A	3	5	15 x 3,123	= 46,995
B	3	5	15 x 1,695	= 22,275
C	3	5	15 x 839	= 12,585
D	3	5	15 x 736	= 11,040
E	4	7	28 x 561	= <u>15,708</u>
				111,603
			Assume	110,000

# Looking West

Neighborhood 5 is in the middle foreground with the Secondary School on its east side along the Loop Road. Note the 66-II KV Substation at the top right center. To the south of the Loop

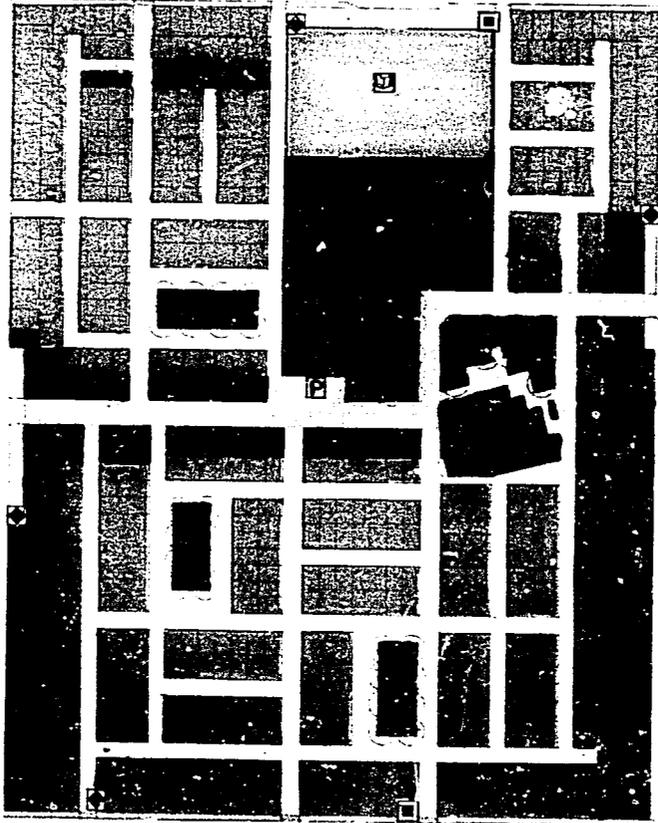
Road can be seen the Southern Community Center, containing The Open Market, Shopping Area, Social Center, Bakery, Clinic and the Post and Telegraph Office.



# Neighborhood Studies

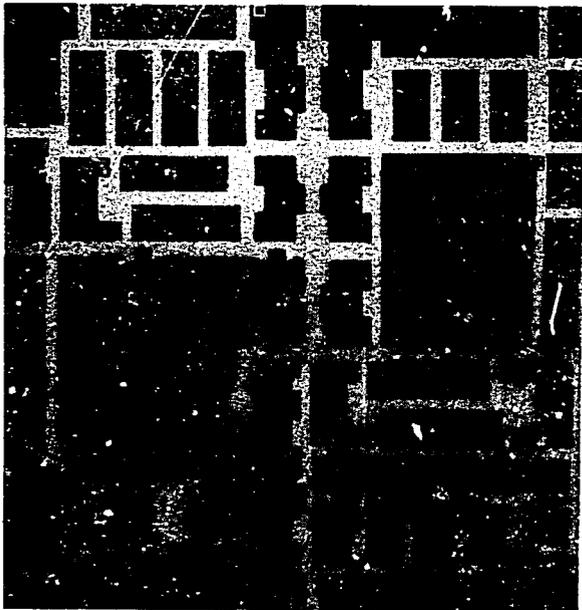
Borrowing heavily from observed patterns of traditional Egyptian villages, each neighborhood combines housing, shopping, schools, mosque, and community services in close proximity. Bordering the principal thoroughfares, market rate lots contain the major shops and services on their ground level. At the bus stop is a small open market. A “gateway” street lined with small shops, leads to the mosque set in a landscaped park. The basic school of each neighborhood provides much-needed open space for recreation as well as a community meeting room. Small parks are scattered throughout.

The three prototypical neighborhood studies examined different planning patterns leading to the final arrangements incorporated into the overall plan.



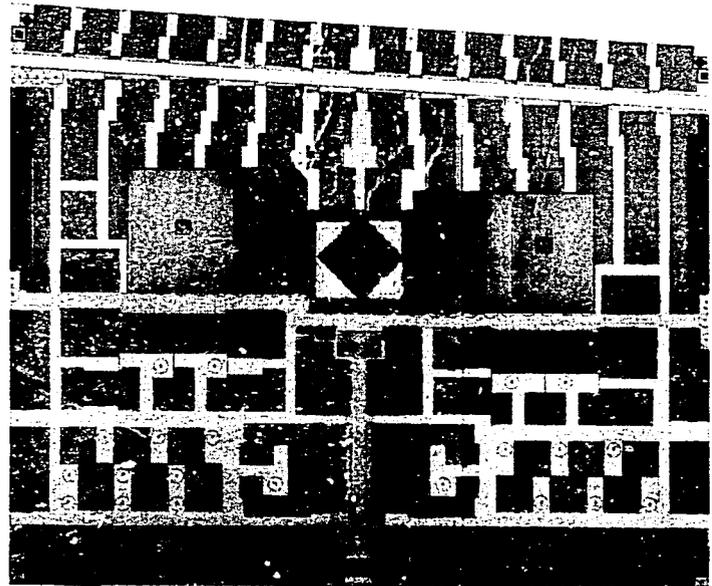
-  Neighborhood Mosque
-  Basic School
-  Community Room
-  Play Area
-  Child Care
-  Post Office
-  Telephone/ Telegraph Office
-  Health Center
-  Solid Waste Collection Station
-  Utility Site
-  Commercial Uses Permitted
-  Parking Area
-  Bus Stop
-  Garden

## Neighborhood Study A



**Neighborhood Study B**

-  Neighborhood Mosque
-  Basic School
-  Community Room
-  Play Area
-  Child Care
-  Post Office
-  Telephone/ Telegraph Office
-  Health Center
-  Solid Waste Collection Station
-  Utility Site
-  Commercial Uses Permitted
-  Parking Area
-  Bus Stop
-  Garden



**Neighborhood Study C**

# Education

The Ministry of Education guidelines indicate that 13 to 15% of the population will be attending school (84% of school age population). The basic and secondary school population is composed as follows:

Basic School	Total Population	Factor	Required Classroom	Students Class Est.	Student Population
Primary	110,000	13%	1374	65	11,000
Prep	110,000	15%	1148	32	4,700
<b>Secondary School</b>					
Total 110,000 x 15% = 16,500 - estimated school age population = 16,500 110,000 x 13% = 14,300 - 16,500 = 2,200 TOTAL STATE					

It is logical, therefore, to site a basic school of 2-4 classrooms in the center of each of the 20 neighborhoods. For these schools, sites of 1 to 2 feddans (4200-8400 Sq.) are standard: HNC will provide 7500 Sq.M (.75 ha) sites. The Ministry has requested two secondary schools of 33 classrooms each. Each will have a site of 2.0 ha.

Regardless of the validity of the Ministry's standards, however, the actual need for schools for HNC are most difficult to quantify. The twenty basic school sites each containing .75 ha can serve an estimated ultimate population of 110,000. However, owing to HNC's extended period of growth reflected in the unpredictability of the second and the third story extension by the purchaser, it is not possible to guess whether school age populations requiring such an enroll-

ment will ever be reached. In fact, one can conceive of a situation where, as in the U.S., schools built for peak student enrollment are abandoned after only 15 to 20 years as the resident population ages and the student population declines.

Under the present plan, only 7 basic schools and one high school will be constructed so that each double neighborhood will start with only one basic school. As time goes on, additional schools may be built depending on the demand. If such a demand does not develop, the sites will continue to serve as open recreational space, or as the authorities eventually may decide, additional residential sites. The total land reserved for school sites, nevertheless, is 19 hectares (Basic Schools 20 x .75 = 15 hectares; Secondary Schools 2 x 2 hectares = 4 hectares). It constitutes over 1/3 of the net residential area, an unusually high percentage even in a highly populated urban environment.

The continuing virtue of the provision for so many school sites is that it provides vital open space for active play by children and young adults within a very high ultimate density housing environment. It also allows for future adjustments as required.

Initially, the approved Urbanization Plan called for a tramway to cross the site at a mid-point of the overall site along the edge of an existing wadi, reaching the 15th of May at its northerly entrance. Subsequent plans by the Tramway Authority, however, have moved the tramway right-of-way to the southern border of the site, turning northerly in the highway right-of-way. Details of its intersection with the highway and the site service road await final resolution.

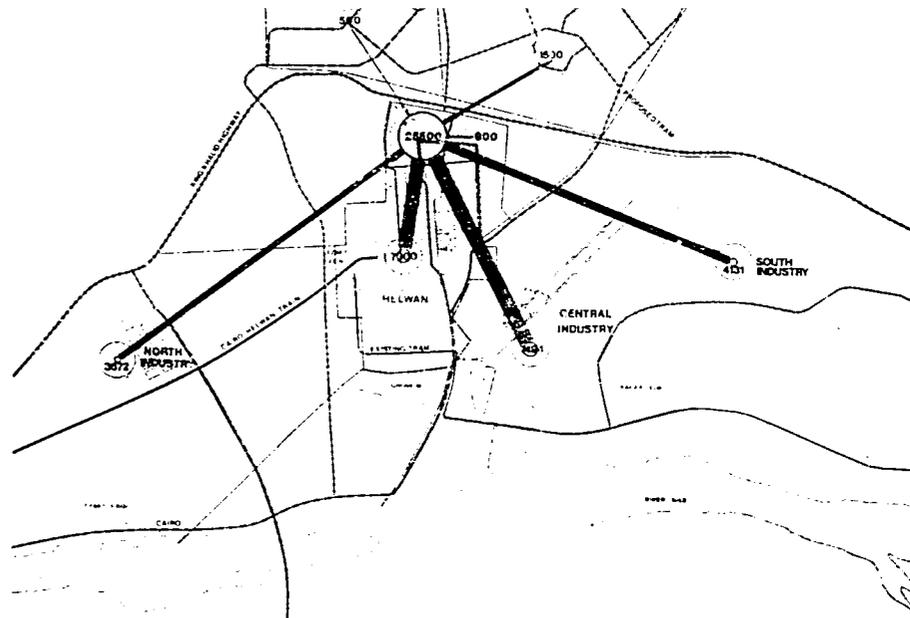
The very nature of the HNC development program lies in its gradual evolution from sites-and-services to a fully developed community. Within its closely knit framework, the urbanization plan seeks to foster a unity of result through a diversity of means allowing each site holder to evolve his particular structure as his needs and abilities permit, within the guidance and control of the Cooperative and/or Home Owners Association. In response to these characteristics, the plan has drawn heavily on the most typical of Egyptian settlement patterns, formalizing the natural tendency for strip development of commercial space and public facilities along major thoroughfares and transportation routes prevalent throughout Egyptian villages.

# Transportation

Along the south border of the site a new road will provide access from old Helwan to the Cairo-Helwan Highway and to the 15th of May City beyond to the east. This permanent road replaces an unofficial road built by a contractor across the HNC site in the late 1970's to expedite the construction of the 15th of May City. However, because of high volumes of traffic this unofficial road will inevitably generate and owing to the population density of HNC, it is considered advisable by all parties not to allow the road to continue across the site, which would have resulted in effectively bisecting the new community with a formidable traffic barrier.



**Traffic Volume Flow A.M. Peak Hour**



### Morning Peak Hour Work Trip Assignments.

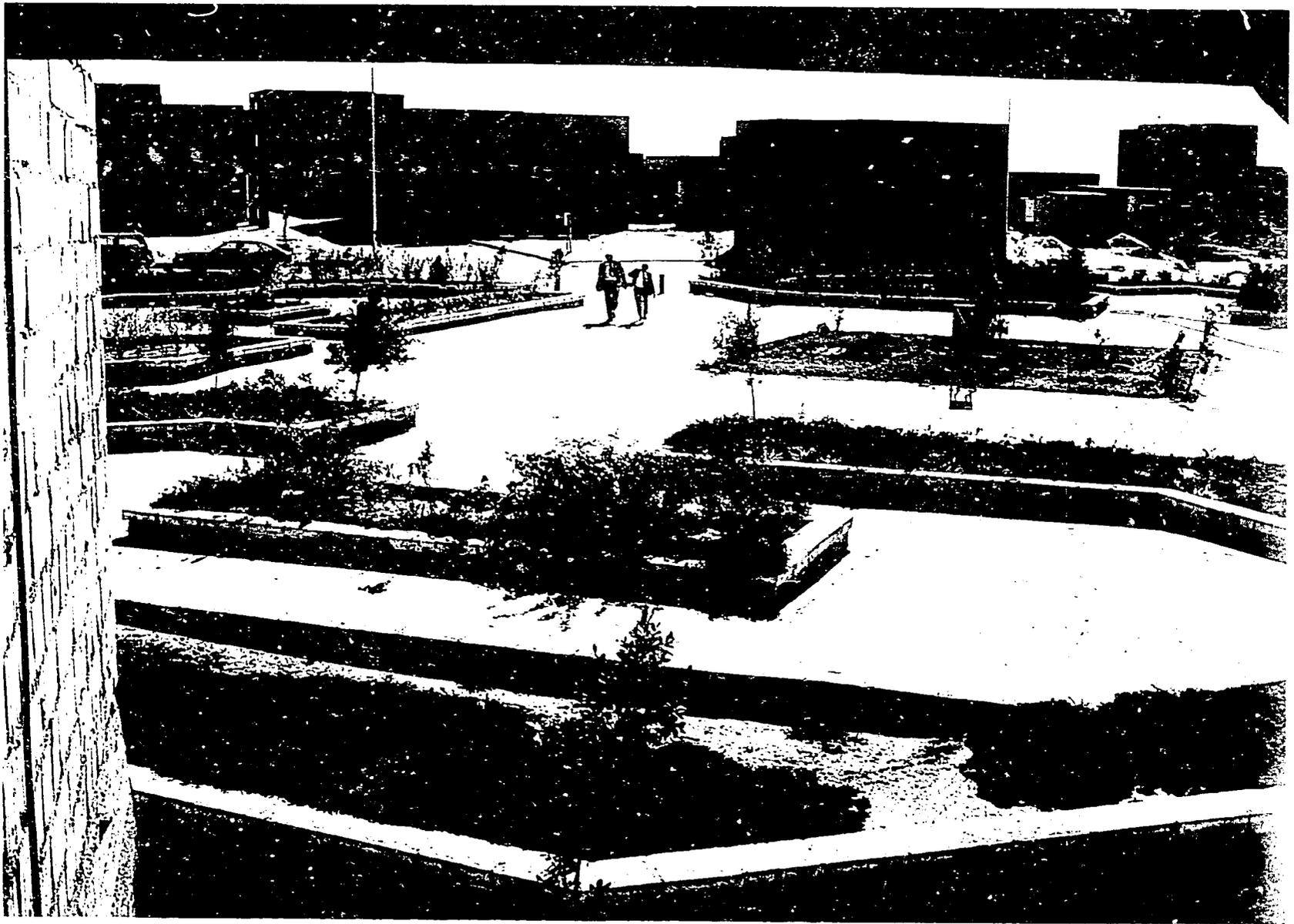
In consideration of these factors, the following circulation hierarchy was developed:

Type	Location	Traffic
1. Main thoroughfare 22M	Central Spine	Bus, Truck, Car
2. Bypass 27M	South border of site bypass to Cairo-Helwan Highway	Bus, Truck, Car, Train in Medan
3. Collector 15-16M	Neighborhood borders outlets to site perimeter and main thoroughfare	Neighborhood Outlet
4. Souk 10-12M	Shopping street, service only	Local Service (Car, Pedestrian)

The transportation study, prepared by Dr. Magdy Noureldin, includes the following design assumptions;

1. External access principally to the West to the Helwan CBD and Metro station and the three industrial centers.
2. Working population 1.5 persons/family or 30% of population.
3. Pedestrian travel will be prevailing mode within HNC.

4. Car ownership 15 car/100 population or 15% of families based on low family income.
5. Bicycle ownership just under 40/100 or 2/family.
6. Morning peak hour 0730-0830 is greatest with afternoon travel 1530 to 1630 amounting to about 2/3 of morning traffic.
7. Mode of external travel will approximate the following percentages: Car 21%, bicycle 47%, Bus 50%, Train 15% and Walking 12%.



# Open Space

From the beginning, methods of dealing with the serene and formidable desert landscape were of great concern. Everywhere in urban Egypt the difficulties of controlling and maintaining open spaces are apparent. Within public housing areas, they become littered with garbage, construction materials, abandoned vehicles and typical urban debris. Outside of the delta, irrigation is a constant requirement. In contrast, private open space is generally well maintained, even by the lowest income families where it is generally irrigated with "gray water." It is, therefore, critical that a hierarchy of publicly-controlled open spaces be established to serve this community, with responsibility for maintenance clearly defined and enforced by the Cooperative or Home Owners Association.

Within the urban context, all open space is of enormous importance, providing ventilation, common gathering areas and places for markets and recreation. To serve these functions, the urbanization plan provides the following areas:

## 1. The Neighborhood Medans

At the entrance to each double neighborhood, the Medan provides space for an open market, bus stop, and a gathering place. Centered on the Medan is the Community Administrative Build-

ing which provides a gateway to the souk and the mosque site beyond.

## 2. Neighborhood Parks

Interspersed throughout each neighborhood are small parks averaging between 100 and 500 square meters with some larger areas where site conditions permit. They are carefully prescribed within the plan to insure that their landscaping and sitting areas can be readily maintained and so as to reduce the danger of their being misused for dumping or parking. There is an average of 8 to 10 of these parks for each neighborhood. These mini-parks were strongly favored by the Egyptian consultants, in preference to semi-private courtyards or other resident-controlled areas, a concept proposed by BWN for consideration based upon the traditional private cul-da-sac "housh" in Egypt. The total area of these parks is 3.5 hectares.

## 3. Sports Club

A site of 2 hectares has been reserved for a private membership sports club, similar to those now in Helwan.

## 4. Community Parks

A total of 2 hectares has been reserved as community parkland.

In summary the total open space as park and recreational space is as follows:

Medan	5 hectares
Neighborhood Parks	3.5 hectares
Sports Club	2.0 hectares
Community Parks	2.0 hectares
	8.0 hectares

The GOPP standard for open space is an allowance of 4 square meters to 8 square meters per person. Based upon an ultimate population of 110,000 for the recommended standard would require 4.4 to 8.8 hectares, so the open space provided by the Urbanization Plan is at the uppermost end of the recommended range.

Not included in the above totals are the park areas around the mosque site (+ 1 hectares net) or park areas around the Community Facilities (+ .5 hectares net). The sites on which the 11 future Basic Schools (18.25 hectares net) on the additional Secondary School (2 hectares net) are to be built at some future date have also not been included as required open space. Approximately half of each school site is reserved for a football field and a play area when the schools are completed insuring preservation of additional area for recreation.

# Landscaping

The character of open space provided by the urbanization plan for Helwan has been described. This description of open space defines the sites within the Helwan New Community which can be landscaped. These are the:

- Neighborhood Medans
- Neighborhood Mosque and major mosque sites
- Neighborhood Parks
- School Sites, including their playing fields
- Sports Club
- Major streets and street medians

Due to the relatively narrow widths of the secondary streets and other circulation elements, no street trees or other landscaping can be provided there. On the individual house plots, each landowner would be encouraged to provide some form of large-scale vegetation, particularly of trees with edible fruits such as citrus, pomegranate, as well as other trees which will not become too large at maturity.

It is particularly important in communities built in the desert that their urban fabric be softened with large-scale vegetation wherever possible. This humanization of the cityscape by trees, large shrubs, and vines, gives outdoor shade,

shadow patterns and a restful reduction of the glare which characterizes the bright desert environments.

The sharpness with which the natural landscape of Egypt changes at the edges of the Delta and the borders of the Nile underscores the change in the groundwater regime in a very dramatic way. All vegetation in the lower elevations along the borders of the Nile are sustained by capillary movement of the groundwater up into the root zone of the trees and shrubs planted in the lower elevations. However, higher elevations on the fringes of the river and the Delta, not formally irrigated, still support considerable growth of trees, shrubs and vines as can be seen in upper Helwan and the Mokattam Hills, for example. How these trees and shrubs along the streets survive without the aid of positive irrigation can only be explained by leakage from the potable water supply and sewage collection systems provided and installed in these urban and semi-urban sites. Some of this leakage can be measured statistically. Assume that Helwan will reach its ultimate population of 110,000 people and that the minimum household use of fresh water is 100 liters per capita per day. According to authorities, the leakage factor of water sup-

ply systems is 15% and a similar leakage factor for sewage collection systems in dry environments might be 5%. Therefore, the minimum amount of water that could escape to the ground in the Helwan New Community would be 20 million liters per day.

And since these systems run in the streets, the leakage zone is similarly associated with the streets. One consideration that the consultants attach some importance to is the possibility that the individual house plots can be irrigated with "gray water," meaning kitchen and bath waste as opposed to septic waste. The gray water can be used to irrigate trees, shrubs and vines (which could be trained on the walls of the dwelling) on the house plots rather than having this landscape maintained by potable water.

Because of all the foregoing, the landscape design contemplated for the Helwan New Community will, perforce, be relatively spartan. The design will be achieved using planting of durable trees and large shrubs capable of withstanding heavy drought conditions. These trees will be species of acacias, eucalyptuses, pepper trees (schinus molle) and both fruiting and flowering vines trained against building walls and enclosures, such as grapes and bouganvilles. These trees, shrubs, and vines would be planted at reasonable mature scale so as to survive possible malicious damages, accidental breakage or damage by grazing animals. These plants would occur in the medians, neighborhood parks, along the major streets and on the sites of the public facilities and schools.

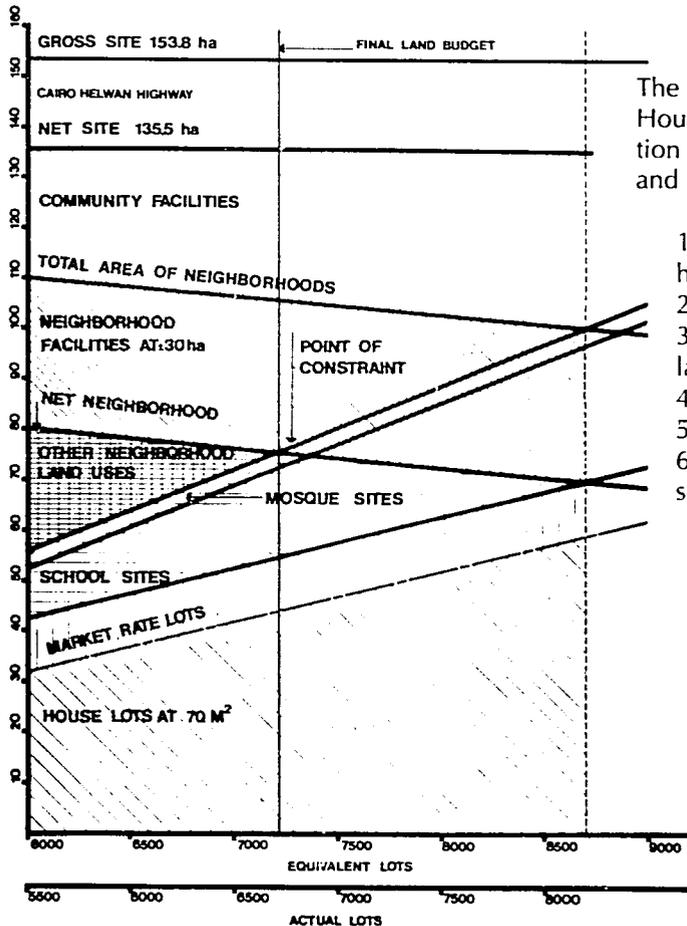
## **Implementation of Landscaping Program**

It is assumed that the provision of landscaping for the Helwan New Community will be either contracts let by public bid, section by section, or alternatively, by the establishment of a shrub and tree nursery to grow stocks of these for planting in sites by gardeners hired by the project.

## **Maintenance**

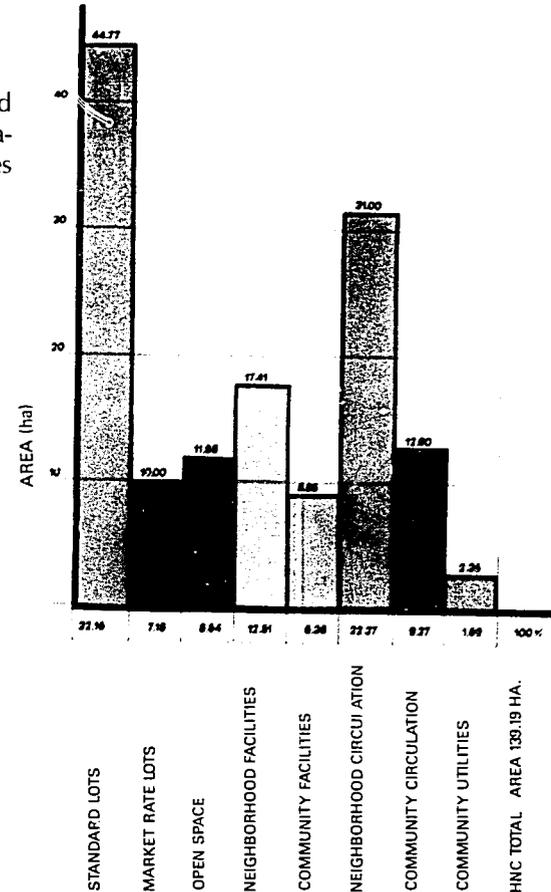
It is believed that the water associated with system leakage (which cannot be prevented even in the best systems) will provide a large part of the water requirements of the landscape plants. However, during the first year or so after planting, most of the materials will require attention by reasonably skilled labor, as to watering particularly. Thereafter, a municipal force would need to be established to maintain public sites and the street plantings. The maintenance of the medians and the neighborhood of the housing cooperatives which will be charged with landscaped maintenance with their areas of responsibility.

# Land Budgeting By Graphic Analysis



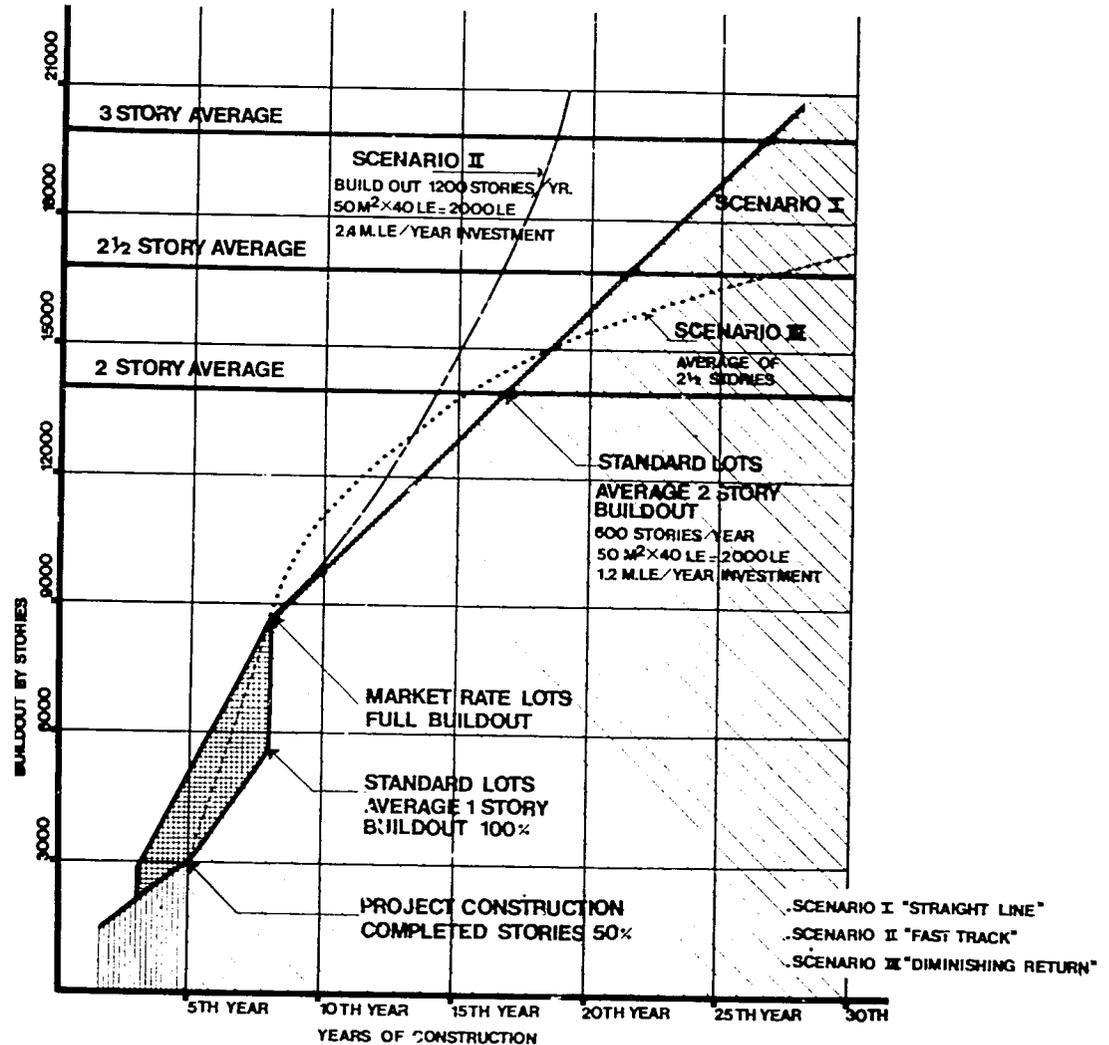
The graph illustrates that Additional Lots and Housing units will result in increased population requiring increased community facilities and schools.

1. Cairo-Helwan Highway, absorbed 18.3 hectares
2. Community facilities increases
3. Neighborhood facilities and local circulation, parks, etc.
4. Mosques increase slightly
5. School sites increase with density.
6. Market rate lots ( $\pm 500$ ) maximum possible under these constraints.



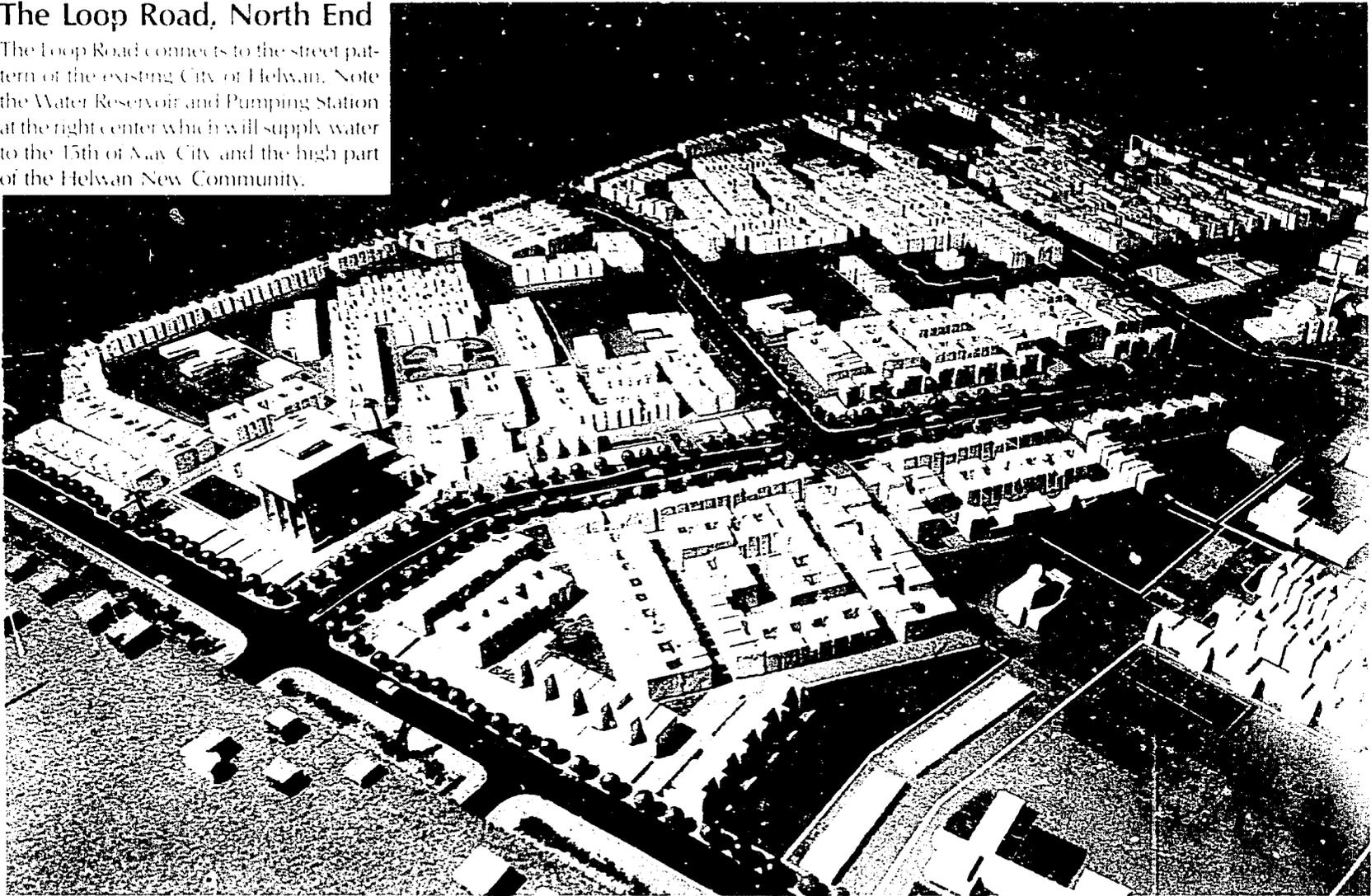
# Rate of Buildout

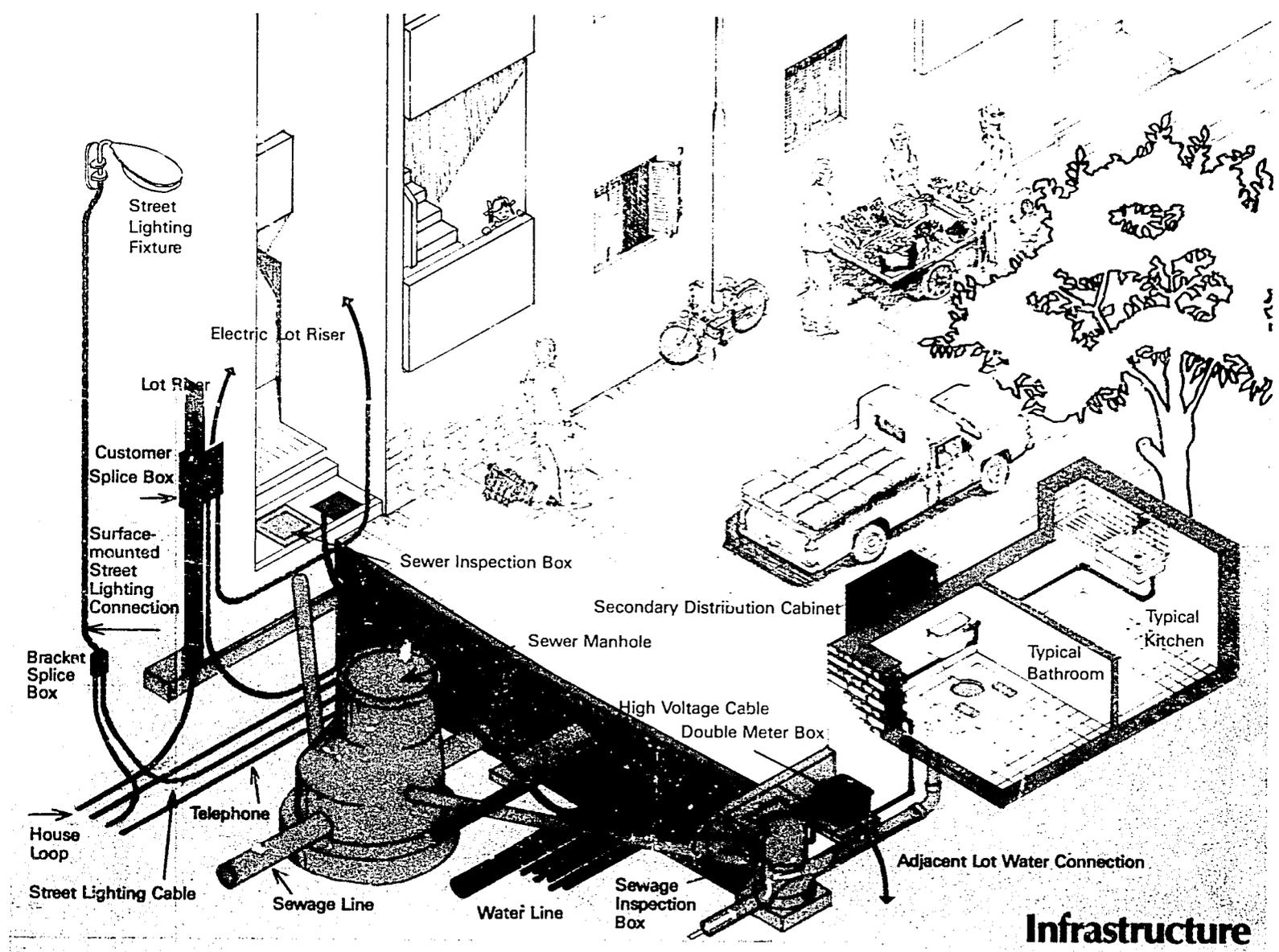
Under present economic and financing conditions, it is assumed that the "Rate of Buildout" to the allowable three stories of all standard lots will take from eighteen to more than thirty years. Independent incomes of related family members, especially those working abroad, would accelerate this schedule by perhaps five to eight years.



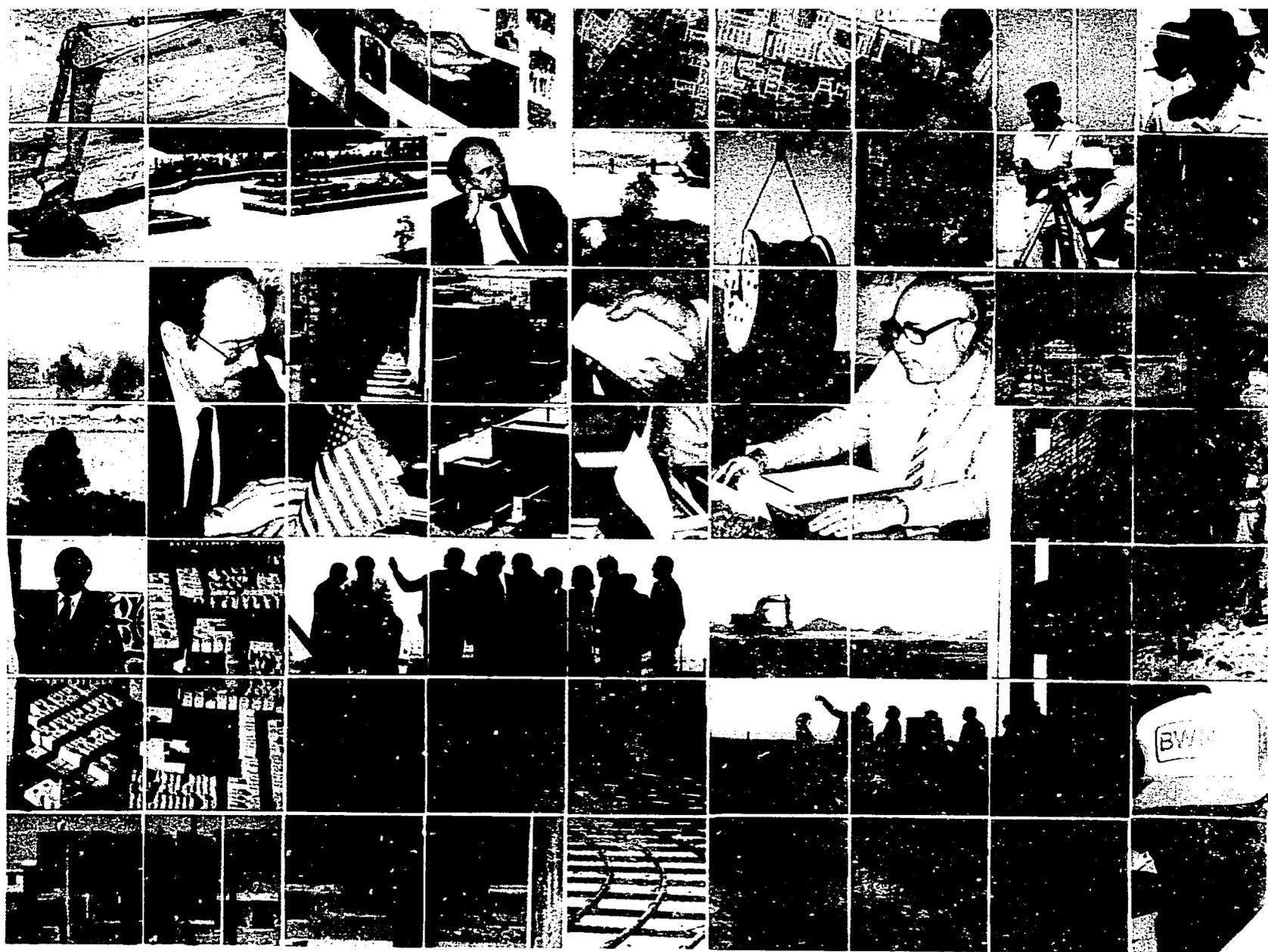
## The Loop Road, North End

The Loop Road connects to the street pattern of the existing City of Helwan. Note the Water Reservoir and Pumping Station at the right center which will supply water to the 15th of Nay City and the high part of the Helwan New Community.





# Infrastructure



# Infrastructure

While the planning effort is the initial function in the evolution of an urbanization plan, the preparation of detailed and accurate engineering studies is vital if a project is to be successfully implemented and be viable. In evolving the Urbanization Plan for the Helwan New Community, the planners were supported by a team of engineers experienced in each of the engineering disciplines. As part of the planning process, the engineers evolved concept designs for all utility systems as well as criteria for the grading and drainage of the site. This required close liaison with the appropriate Ministries, General Organizations, and other entities within the Egyptian Government to ensure that the concept designs would be in accordance with their wishes and established requirements. Egyptian design criteria for the various utilities systems have been developed to suit the current conditions in Egypt and extensive discussions took place with the authorities to establish, where possible, reduced standards in order to save money in constructing the Helwan New Community. Current Egyptian design practice was compared to American, and where appropriate, changes were made and compromises agreed upon. As a result of this close liaison between the Egyptian authorities and the BWN engineers,

the Urbanization Plan presented on 25 October 1980 was backed by very thorough and detailed concept designs for the supporting infrastructure. On the following pages are brief descriptions of the various infrastructure systems. More complete details are given in Appendix C to this report.

**Typical Utilities Service Model for Two Housing Lots**

*Water supply with meter, sewage connection to main sewer, and electric power to customer Splice Box.*

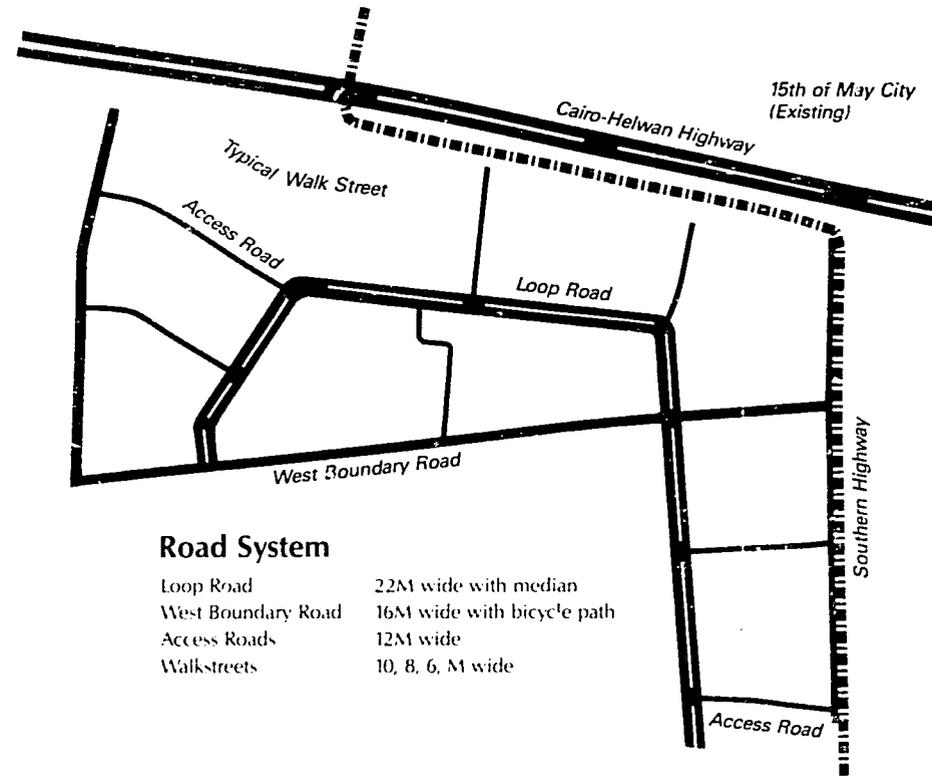


# Roads

The road system was developed during the planning phase and a detailed traffic study was made to establish a flow of both the vehicular and pedestrian traffic within the site in order to decide on appropriate road widths. Prior to commencement of design, the BWN engineers had a series of meetings with the Egyptian Organization for Roads and Bridges (EORB) to ensure that all of their requirements were included in the design, as well as maximum road gradients currently permitted in Egypt.

The main traffic artery through the site is the 22 meter wide Loop Road. The next major road is the 16 meter wide West Boundary Road which is anticipated to carry both bus and considerable cycle traffic. A separate cycle path has been provided. A network of 12 meter access roads runs between each of the 10 neighborhoods. Within the neighborhoods themselves are "walk streets" which are designed for pedestrian and bicycle traffic only with occasional use by emergency vehicles. They are surfaced with crushed rock; all other roads are paved with asphalt.

There is no link between the Helwan New Community and Cairo-Helwan Highway except through the Southern Highway which runs



## Road System

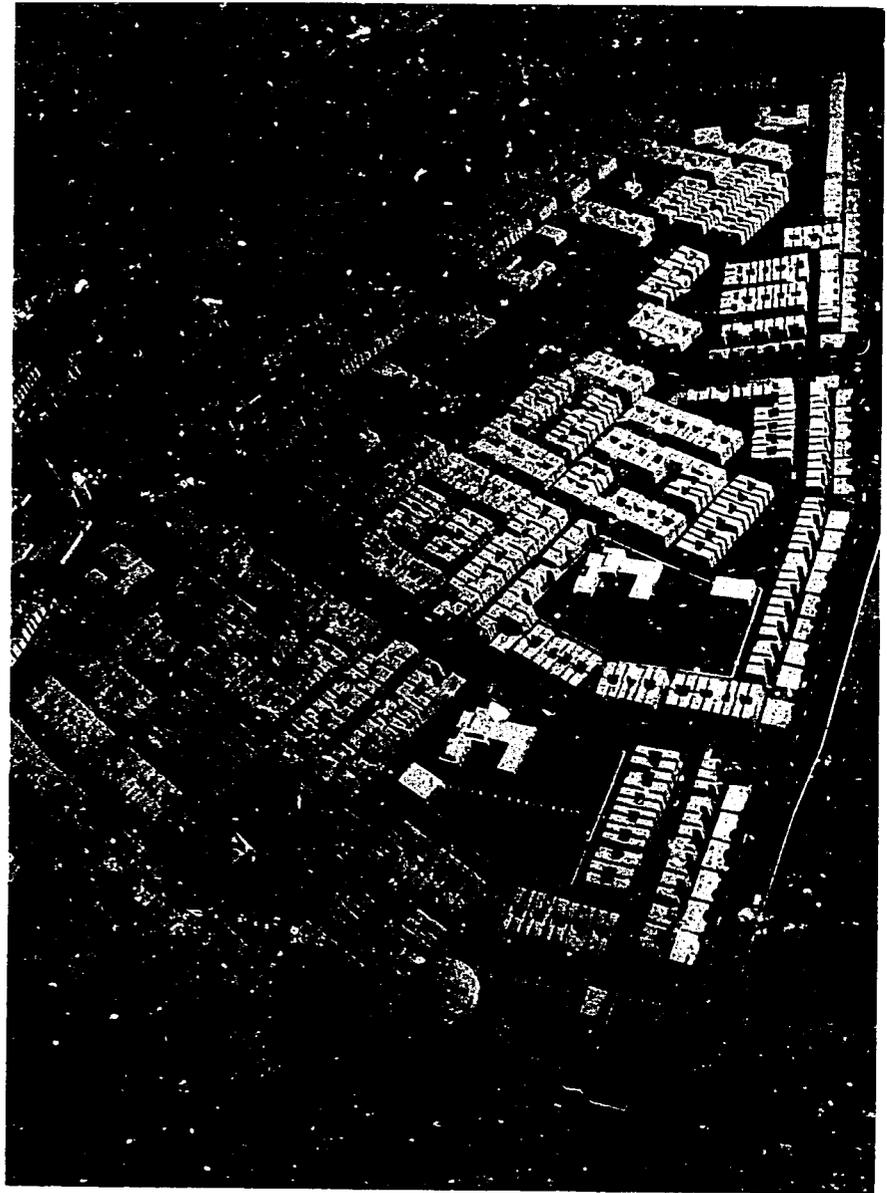
Loop Road	22M wide with median
West Boundary Road	16M wide with bicycle path
Access Roads	12M wide
Walkstreets	10, 8, 6, M wide

along the south boundary of the site. The Urbanization Plan and traffic study indicated that the residents of the Helwan New Community would virtually all work in the Helwan area:

also the planners wished to avoid attracting excessive traffic directly through the project, effectively dividing it in two.

## Looking West From the Northeast Corner of the Site

The elevated water tank to serve the high part of the community is at the highest point of the site in the northeast corner of Neighborhood 8. In the background is Neighborhood 10, adjoining the existing city of Helwan. To the left is the northern part of Neighborhood 7, the Secondary School, and one of the two Coptic Churches of the Helwan New Community. Along the right side is a deep wadi, the northern boundary of the project.



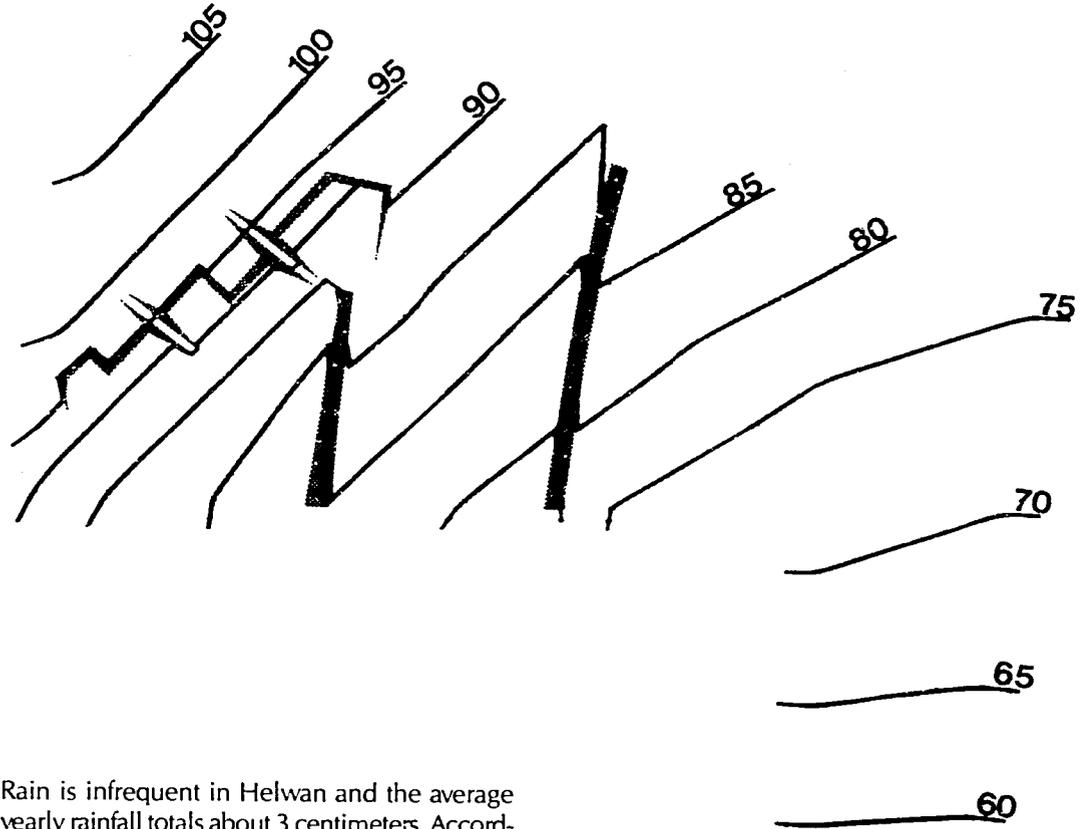
# Grading and Drainage

The site is largely limestone rock traversed by wadis running from east to west throughout. The site slopes from the northeast corner approximately 60 meters. To minimize the cost of grading the site the planners recognized the pattern of existing wadis and the engineers prepared the grading plans to reduce, as far as possible, the cost of grading.

The site and existing topography are discussed in detail elsewhere in this report under the heading of THE SITE.

The northern part of the site is the most rocky. As a result of a series of studies, it was concluded that the most economical arrangement was to divide the area into two levels and ramp up the roads between the two levels rather than to grade the ground itself uniformly from one level to another.

The grading plan as finally designed was the most economical, recognizing as it does the existing topography. The site has variations in elevation which will result in a more interesting pattern than one that is uniformly level.

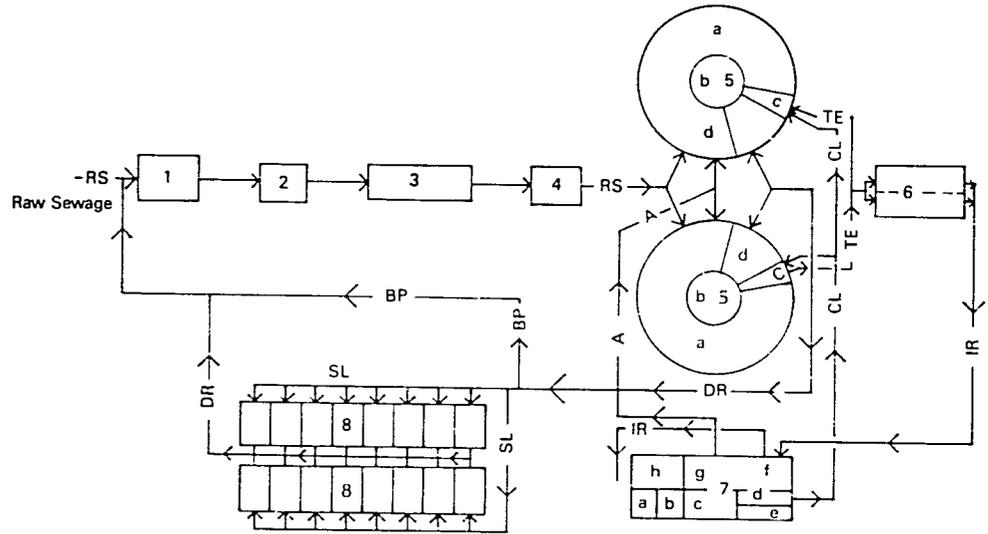


Rain is infrequent in Helwan and the average yearly rainfall totals about 3 centimeters. Accordingly, the site has been designed to drain by sheet flow making storm drains unnecessary.

# Sewerage System

The overall site falls approximately 60 meters from the northeast corner to the southwest corner where the Sewage Treatment Plant is located. In order to simplify the sewage collection system and reduce maintenance to a minimum, it was decided to make the sewage flow by gravity throughout the site down to the southwest corner. To achieve this, it was necessary to construct the main sewer along the West Boundary Road at a depth of 7 meters where it passed through the high ground near the Model Housing Estate. A cost-benefit and value engineering study was made of this particular part of the system since the cost of constructing the main sewer at such a depth was considerably more expensive than providing a sewage lift station and reducing the depth of the pipe. However, based on a 30-year life cycle study of the operating costs and maintenance of a lift station it was concluded that it would be more cost-effective to put the main sewer at a depth of 7 meters. A photograph of this work appears in another section of this report entitled "Development of the Project Thru 31 Mar 84."

The Sewage Treatment Plant is designed for a population of 25,000. This estimate was based on the data available at the time of the design



## List of Facilities

- |                               |                            |
|-------------------------------|----------------------------|
| 1 Influent Pump Station       | 7 Control Building         |
| 2 Comminutor—Bar Screen       | a Office-Lab               |
| 3 Grit Chamber—Parshall Flume | b Toilets-Shower           |
| 4 Intermediate Pump Station   | c Storage                  |
| 5 Extended Aeration Units     | d Chlorine Supp'y Room     |
| a Aeration Tank               | e Chlorine Storage         |
| b Clarifier                   | f Irrigation Pumps         |
| c Chlorine Contact Tank       | g Air Blowers              |
| d Sludge Holding Tank         | h Emergency Generator Room |
| 6 Effluent Storage Tank       | 8 Sludge Drying Beds       |

## Design Data

Design Flow 600,000 G.P.D.  
 Influent B.O.D. 300 PPM  
 Influent SS 300 PPM  
 Effluent B.O.D. 20 PPM  
 Effluent SS 20 PPM  
 Plant Efficiency 90%

## Legend

RS Raw Sewage  
 TE Treated Effluent  
 IR Irrigation Line  
 SL Sludge  
 DR Drain  
 BP Bypass  
 CL Chlorine Supply  
 A Air Supply

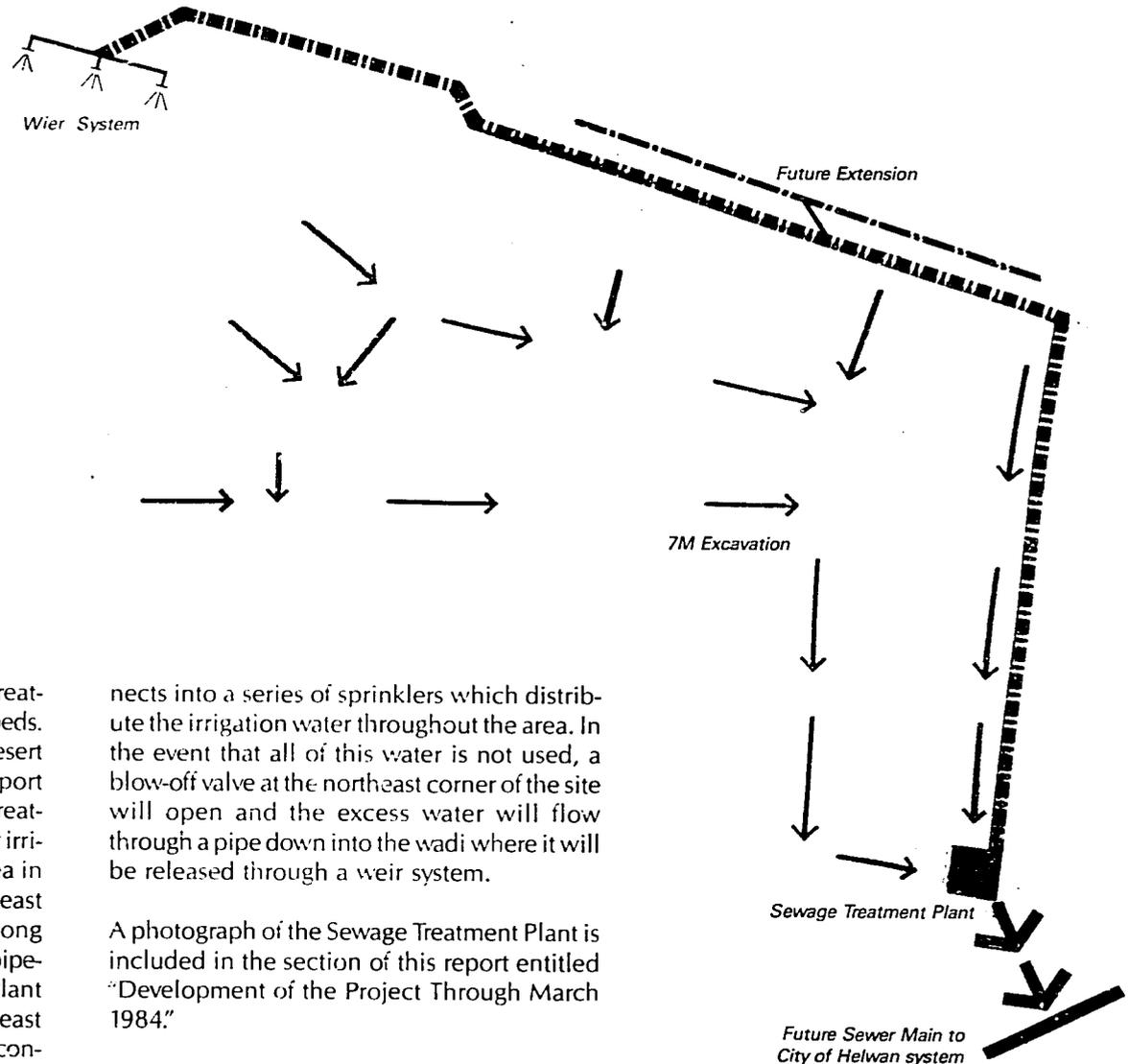
in 1981 which indicated that the main City of Helwan system would be operational by 1987. However, early in 1985 it became evident that the City of Helwan system would not be operational before 1992 at the earliest. Accordingly, the authorities are currently reviewing the need to expand the Helwan New Community sewage treatment plant as the population of the new community is expected to exceed 25,000 considerably before 1992.

Extended Aeration Units  
 Capacity:  $50\% \times 600,000 = 300,000$  G.P.D. per unit  
 Aeration Period: 24 hours  
 Clarifier Area: 531 Sq. Ft. Per Unit  
 Clarifier Surface Setting Rate: 565 gal./per./day./sq. ft.  
 Sludge Holding Tank Volume: 6,604 Cu Ft  
 Chlorine Contact Chamber Volume: 884.5 Cu Ft  
 Chlorination Period: 32 min (avg)

Sludge Drying Beds  
 Surface Area: 20,670 sq ft

Effluent Storage Tank  
 Capacity:  $2 \times 150,000 = 300,000$  gal

# Irrigation System

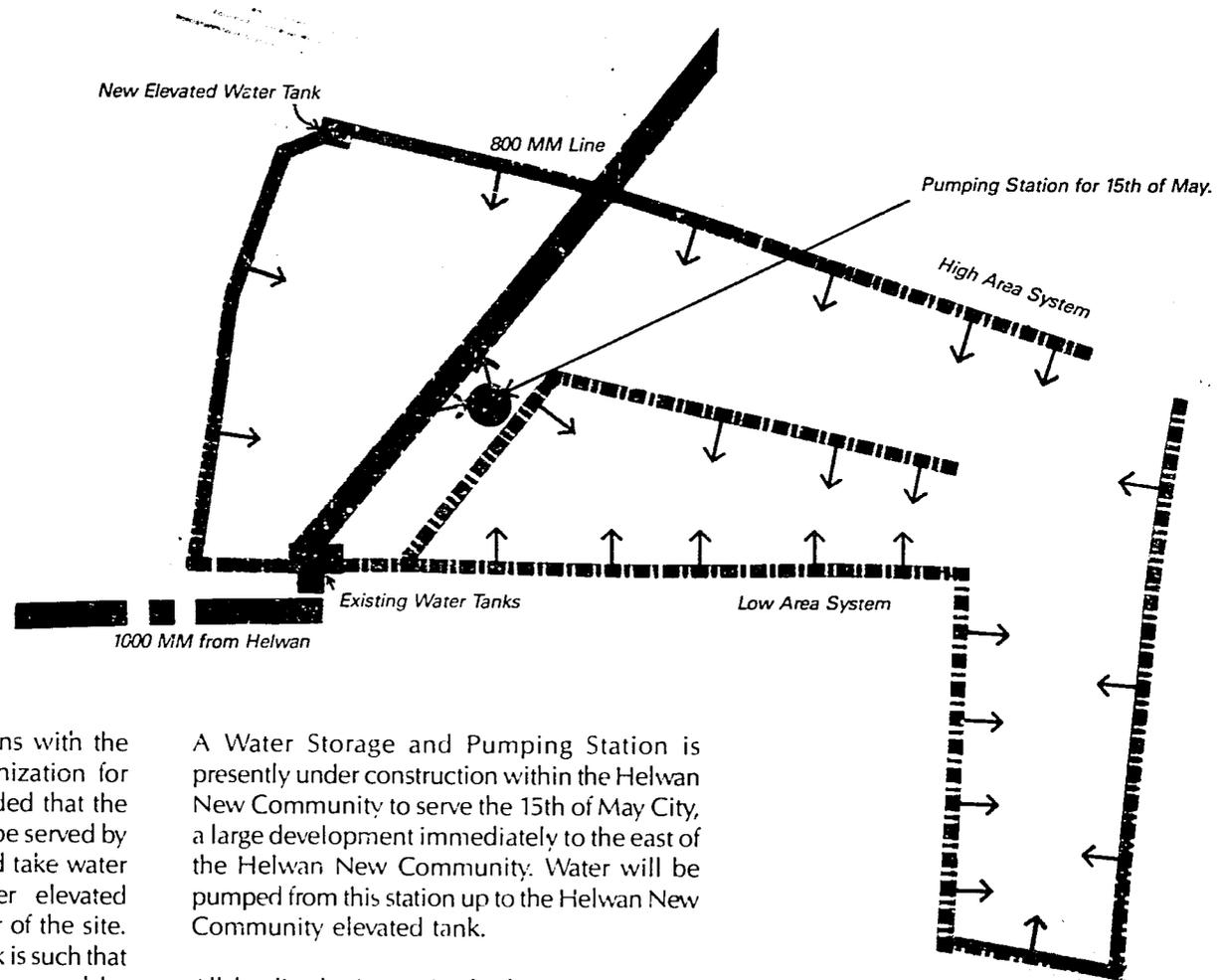


The sludge that results from the sewage treatment process will be dewatered in drying beds. It is planned to mix the dried sludge with desert sand and fertilizer to create humus to support vegetation. The water recovered from the treatment plant will be chlorinated and used for irrigation. It is intended to create a green area in the 100 meter right of way between the east boundary of Helwan New Community along the Cairo-Helwan Highway. The irrigation pipeline runs from the Sewage Treatment Plant along the Southern Highway to the southeast corner of the site, then turns north where it con-

nects into a series of sprinklers which distribute the irrigation water throughout the area. In the event that all of this water is not used, a blow-off valve at the northeast corner of the site will open and the excess water will flow through a pipe down into the wadi where it will be released through a weir system.

A photograph of the Sewage Treatment Plant is included in the section of this report entitled "Development of the Project Through March 1984."

# Water System



As a result of extensive discussions with the engineers of Greater Cairo Organization for Water Distribution, it was concluded that the Helwan New Community should be served by a distribution system which would take water from the existing 500 cubic meter elevated water tank at the northwest corner of the site. The elevation of the water in the tank is such that only two-thirds of the site can be served by gravity flow. The remaining one-third of the site, primarily the high area of Zone D and part of Zone A, will be served by an elevated water tank located at the northeast corner of the site to which water would be pumped up from the lower gravity system.

A Water Storage and Pumping Station is presently under construction within the Helwan New Community to serve the 15th of May City, a large development immediately to the east of the Helwan New Community. Water will be pumped from this station up to the Helwan New Community elevated tank.

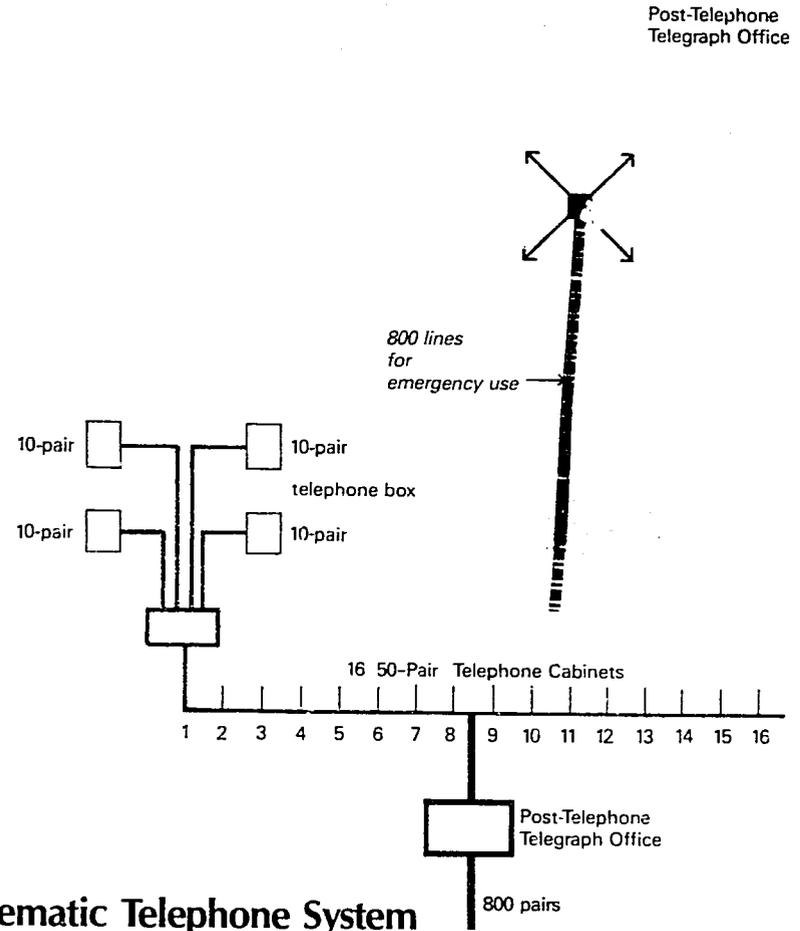
All the distribution mains for the system consisting of PVC pipe were imported from the United States for the project. The valves in the system were also procured in the USA as were the individual house connections and the associated water meters.

# Telephone System

Because the Helwan New Community is a project designed for low income workers, only a basic telephone system is provided, primarily for emergency use.

The design of the system was evolved in close cooperation with the telephone authority, Arab Republic of Egypt National Telephone Organization (ARENTO).

A total of 800 lines are connected to the Post, Telephone and Telegraph Office located in the Southern Community Center. From here the lines radiate to sixteen, 50-pair telephone cabinets distributed throughout the whole site. Four 10-pair connections are available in the cabinet itself. Individual users will ultimately be connected to the telephone boxes.



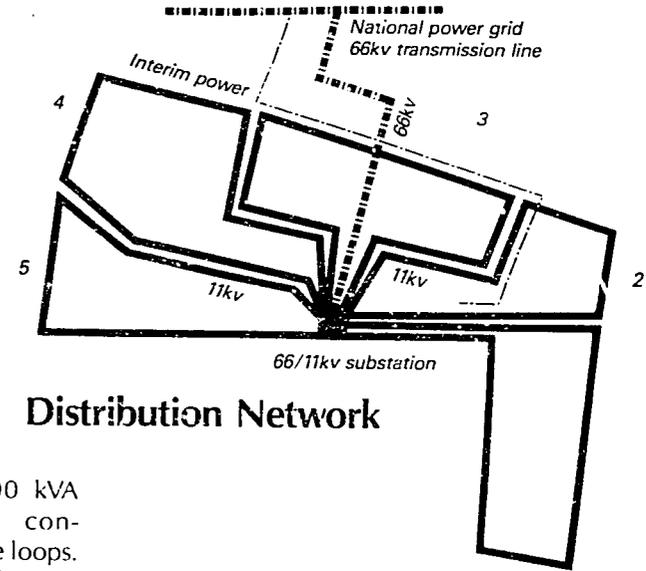
Schematic Telephone System

# Electrical System

The electrical distribution system was designed in close liaison with Cairo Electricity Distribution Company (CEDCO) and each stage of the design as it evolved was reviewed with the appropriate CEDCO engineers.

The basic system consists of a 66,000 volt connection from the national power grid at

the northeast of the site to the 66-11 kV Substation within the Helwan New Community where the electric power is stepped down to 11,000 volts and distributed in five loops throughout the site. There are a total of

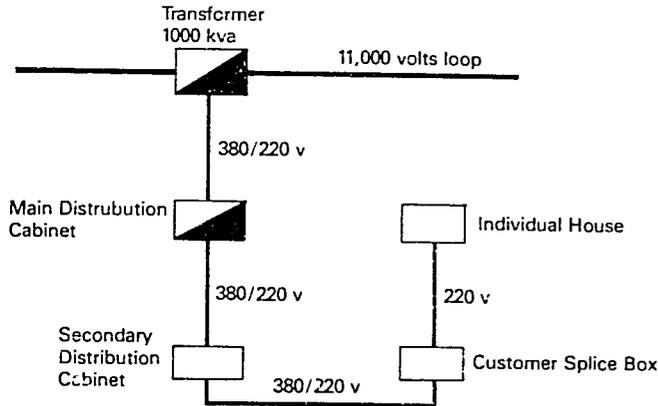


**Distribution Network**

forty-six 1,000 kVA transformers connected to these loops. From the transformers run loops of electric power cable carrying 380/220 volts to main and secondary distribution cabinets which in turn are connected to a Customer Splice Box at each building lot. Electric power of 220 volts is then supplied directly into the houses.

An interim electric power system of 11,000 volts will be provided in order that Neighborhood 5 can be built out and occupied prior to the completion of the main 66-11 kV Substation which will serve the whole site. Work on this substation began 01 March 1984 and it is scheduled for completion within 18 months.

The distribution cables throughout the site are being installed by the infrastructure contractors in accordance with the schedule which gives priority to Neighborhood 5.

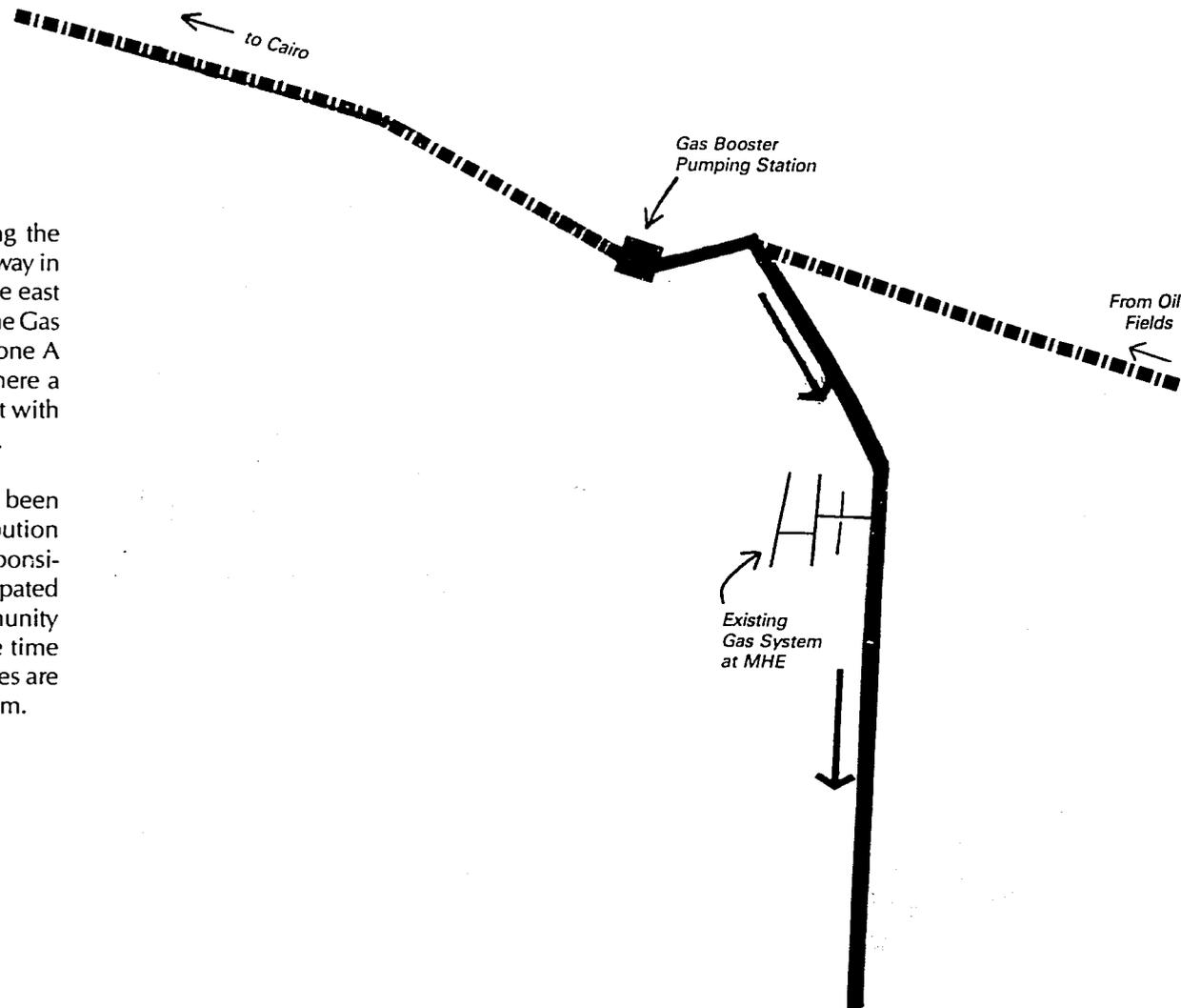


**Schematic Electric System**

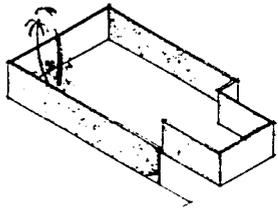
# Gas System

The main gas line to Cairo passes along the western boundary of Cairo-Helwan Highway in the right-of-way between the road and the east boundary of Helwan New Community. The Gas Booster Pumping Station is located in Zone A of the Helwan New Community. From here a gas main runs through the site to connect with the southern part of the City of Helwan.

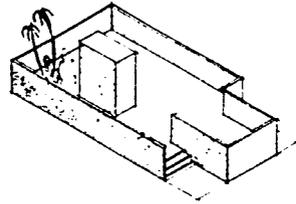
The Model Housing Estate has already been equipped with a complete gas distribution system by PETROGAS, the authority responsible for the overall gas system. It is anticipated that the whole of the Helwan New Community site will be provided with gas and at the time of the writing of this report detailed studies are being made by PETROGAS for the system.



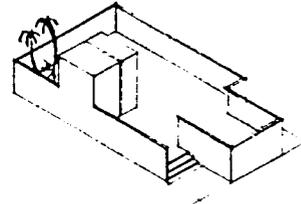
# Implementation Incremental Growth



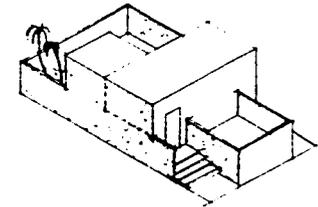
Stage 1  
Wet wall



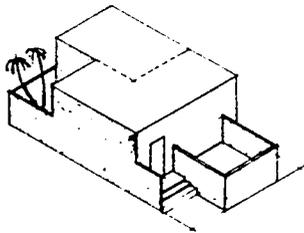
Stage 2  
Bath only



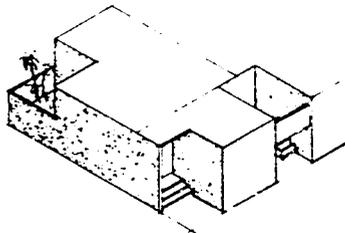
Stage 3  
Service Core



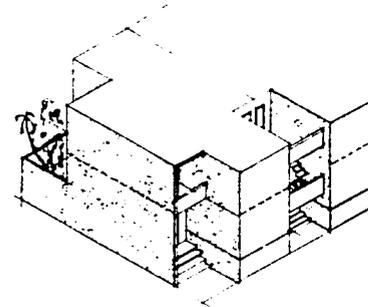
Stage 4  
Service core + One Room



Stage 5  
SC + 2 Room



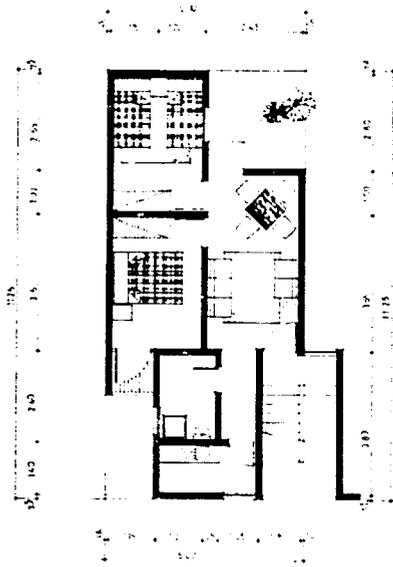
Stage 6  
SC + 3 Room



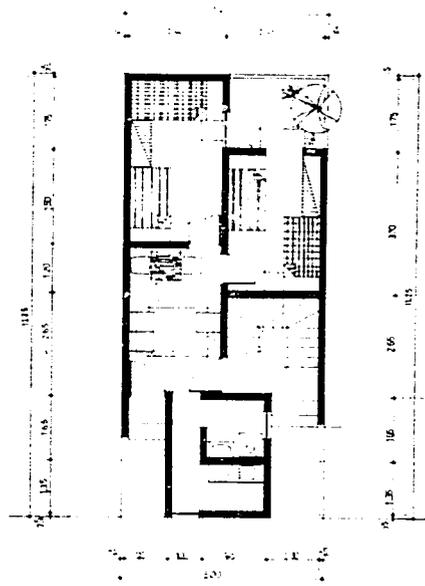
Stage 7  
Typical Floor + Stair

Seven alternative stages of construction will provide a broad price range making the project affordable to the widest possible income levels of beneficiaries.

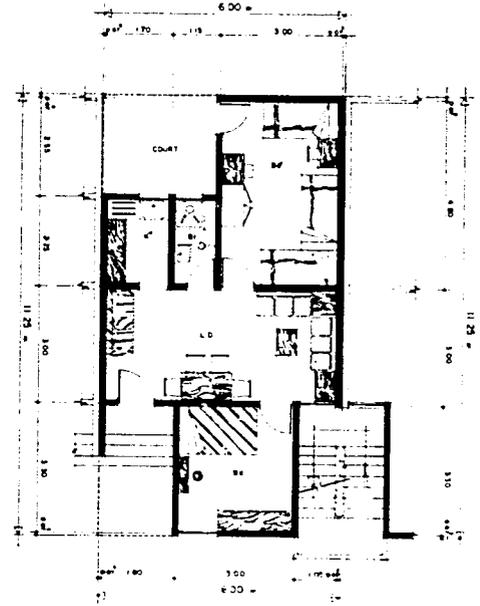
# Housing Types



Type A2 5x11.25m<sup>2</sup>

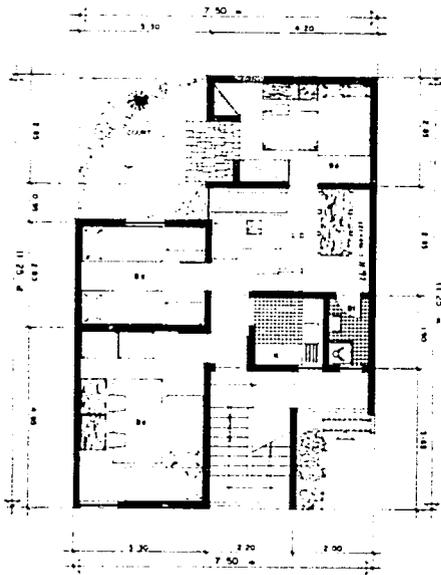


Type A 5x11.25m<sup>2</sup>

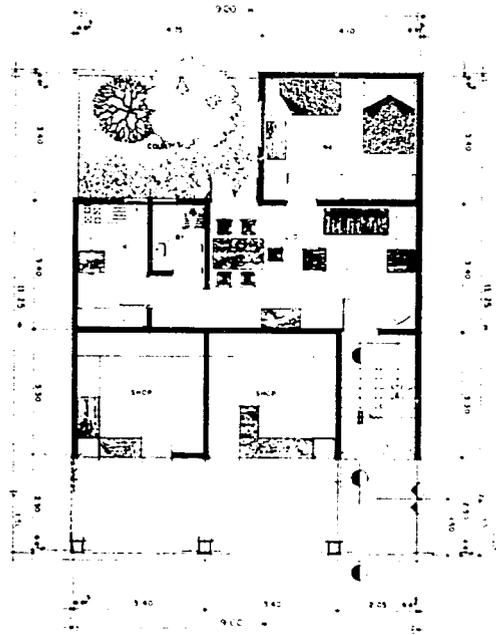


Type B 6x11.25m





Type C 75x11.25m

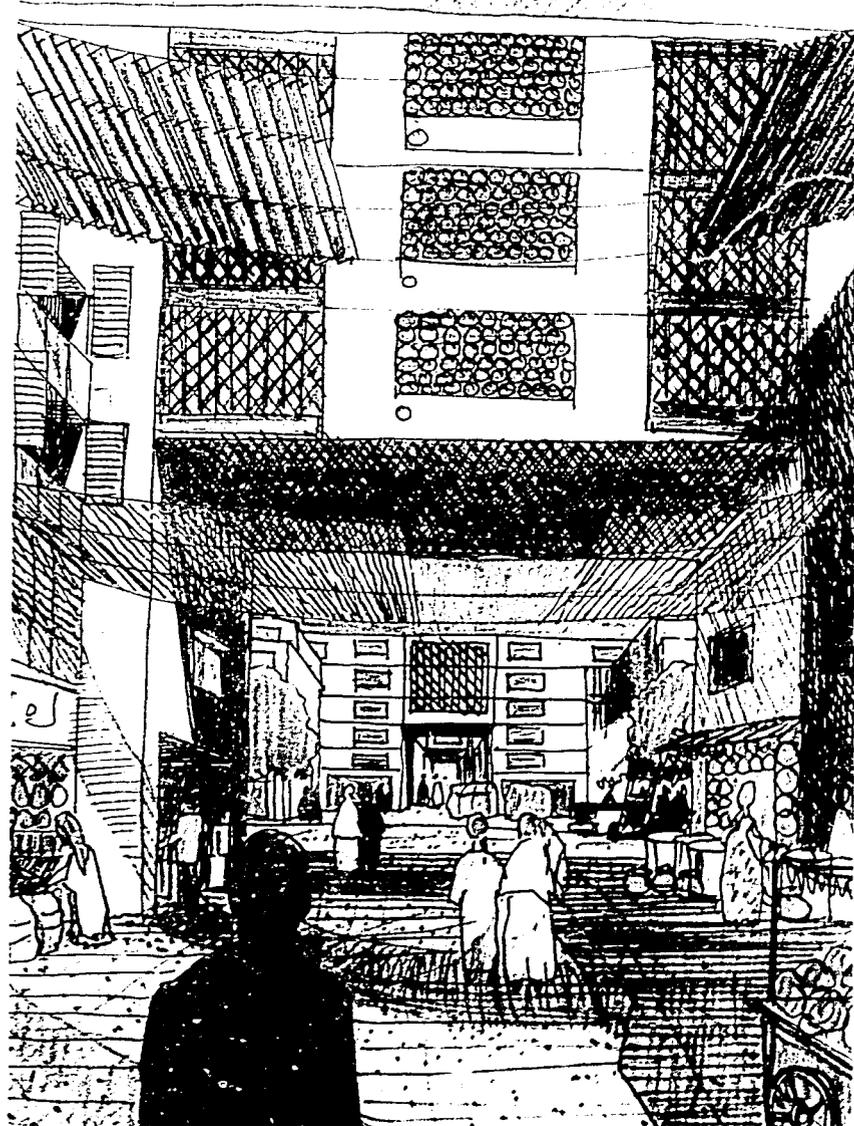


Type D 9x11.25m



## The Model Housing Estate

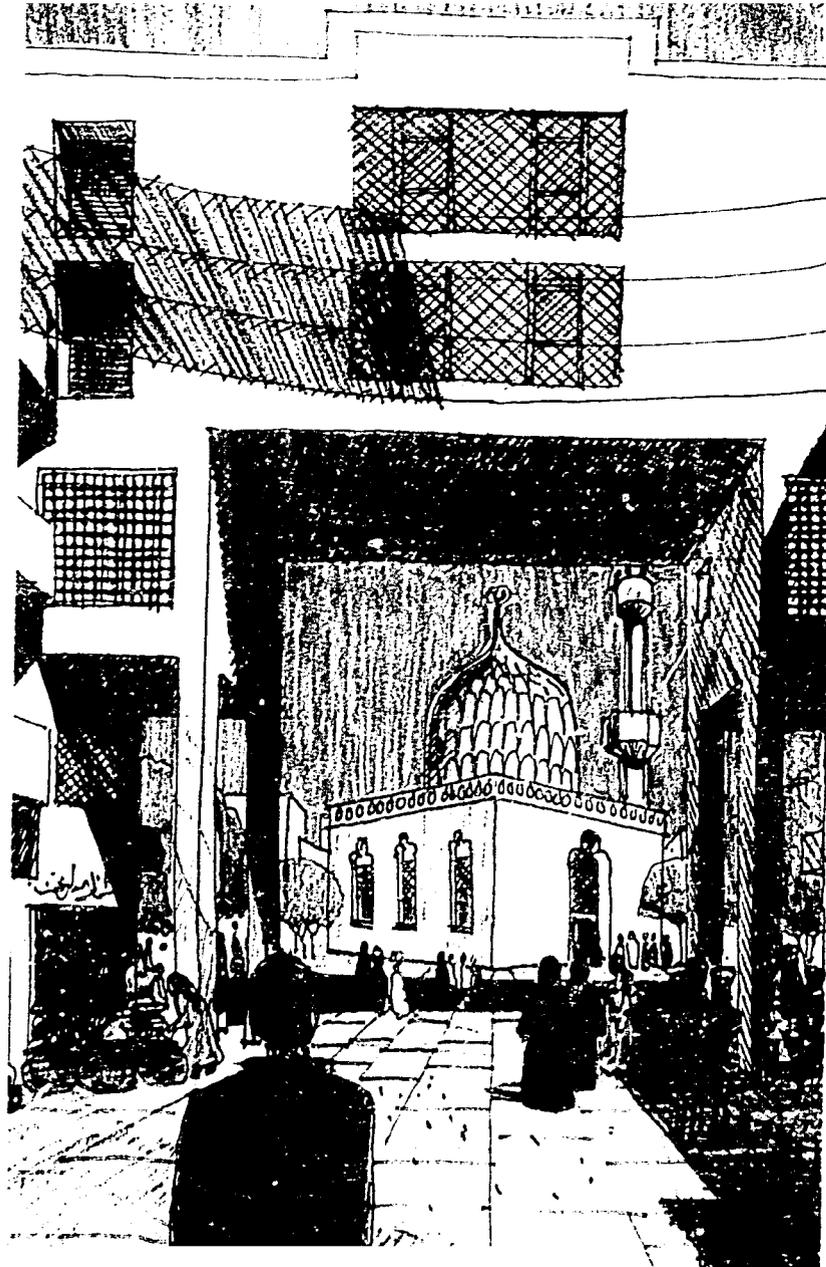
As a means of testing the market acceptance of the HNC Housing and Urbanization Plan concepts, JHP elected to build the Model Housing Estate as a prototypical demonstration of both the urban design concept for a single neighborhood and the variations of the design and construction of housing units as to lot size, unit area and method of construction. Completed in the Spring of 1984, the 186 units are available for public examination, clearly indicating to potential buyers the possibilities offered by each. Although neither the market rate lots bordering the main thoroughfare nor the mosque which will occupy a central position in the neighborhood square will have been constructed at that time, it will be possible to judge the acceptability of this concept as a social and physical prototype for housing in Egypt today and tomorrow.



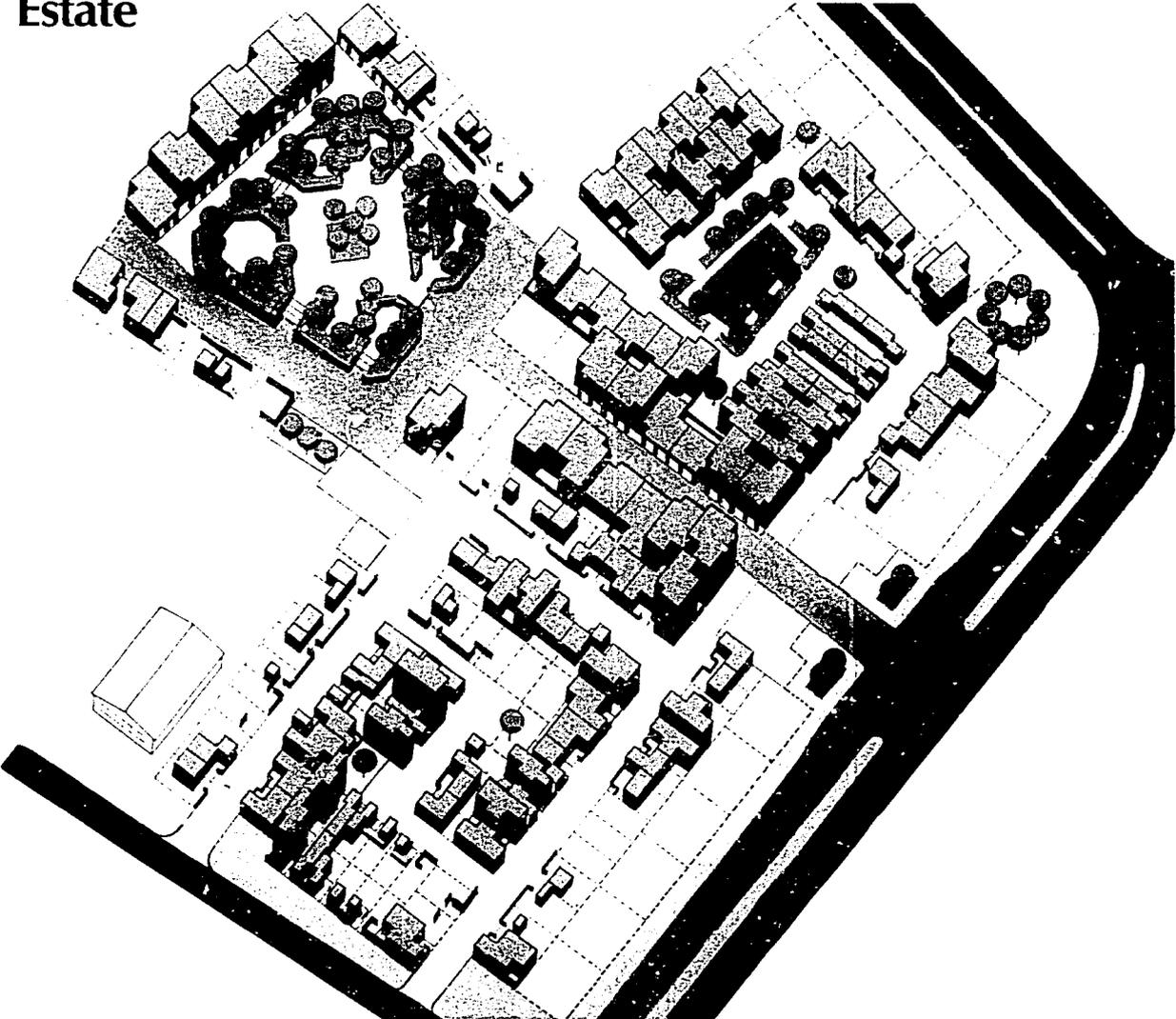
## Guidance and Research

Culminating years of cooperative effort by representatives of the two nations, the Helwan New Community appears to be well on its way to becoming a reality. Based on new housing and land policies formulated through the combined efforts of the Ministry and AID, the resulting program provides, for families of moderate means, the following:

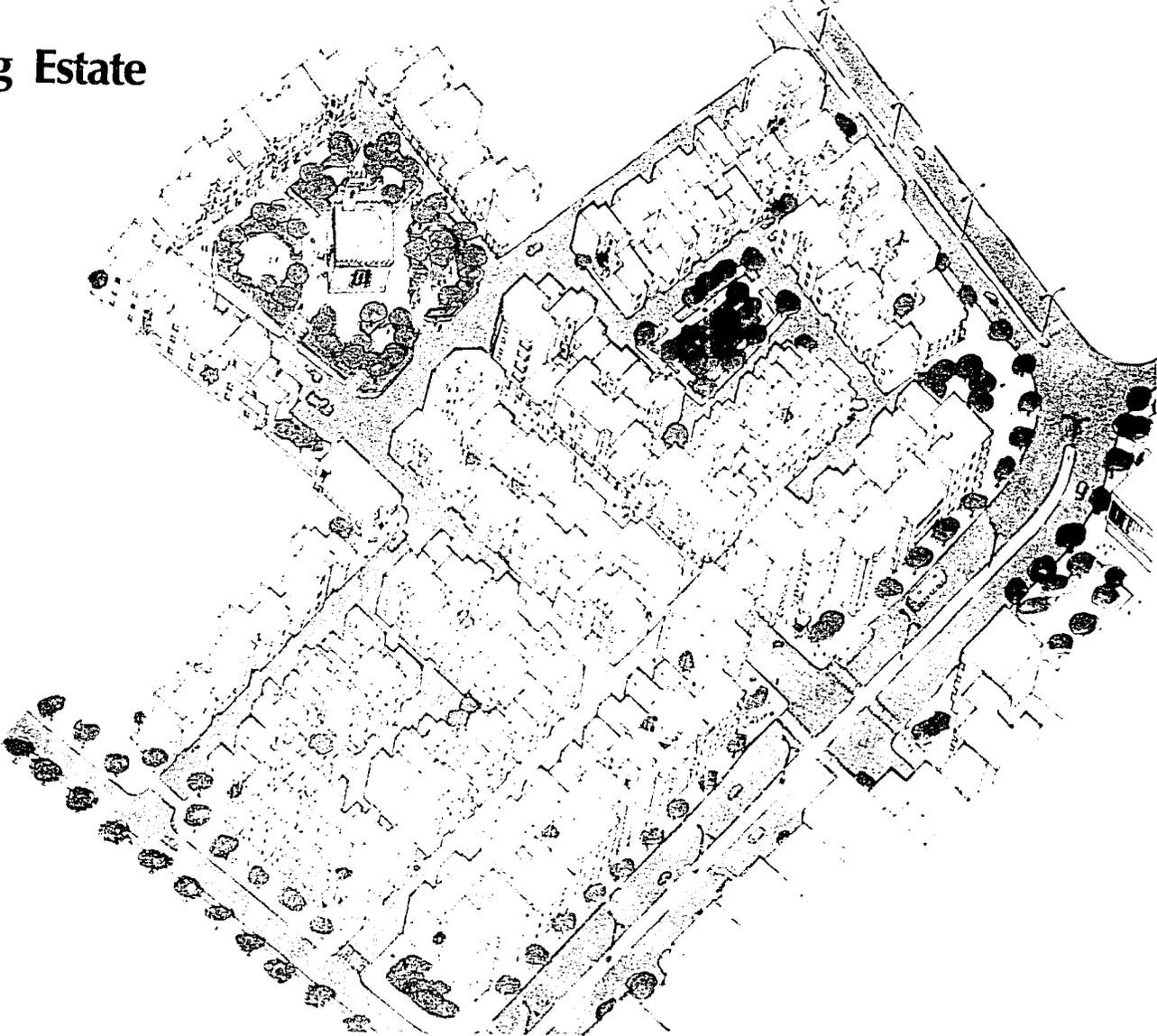
- Private ownership of land and a housing unit sized according to means;
- Availability of low-cost mortgages;
- Complete range of both social and infrastructural services;
- Potential to reduce the cost of housing by self-help efforts.
- Formation of a cooperative or residents association to manage community affairs and lend assistance to residents.

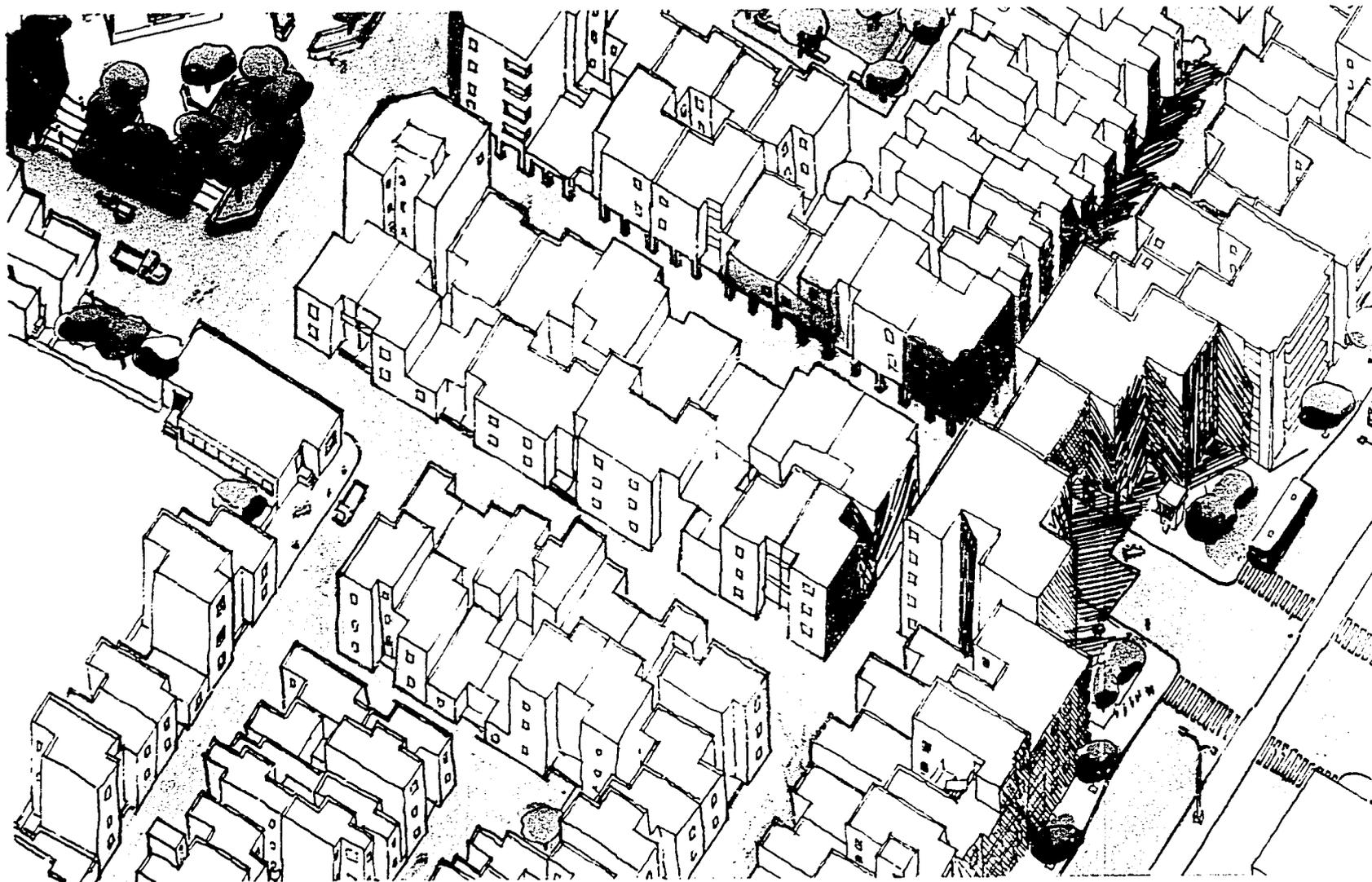


# The Model Housing Estate Presently



# The Model Housing Estate Fully Developed





**The Model Housing Estate- Detail**

# Appendix A

## Development of the Project Through 31 March 1985

### The Urbanization Plan

The preparation of the Urbanization Plan for the project was accomplished between March and December 1980. Although it took longer to prepare and receive approval for the Urbanization Plan than originally scheduled, the additional time was well spent because the final plan approved on 27 December 1980, was a synthesis of the best thinking of the personnel of the Ministry of Housing and Utilities, USAID, the Planning Review Board, and the Egyptian and American planners of the three Consultants to the Ministry (BASIL-WBTL-NASSAR, the Arab Bureau, and the Cooperative Housing Foundation).



**First presentation 17 June 1980**

*From right to left: Arch. Michel Fouad, GOPP Chairman; Eng. Hassan Mohamed Hassan, ex Minister of Housing; Eng. Salah El Bendari, JHIP Chairman; Eng. Soliman Abdel Hai; Donald S. Brown, AID Director*

# Design of the Infrastructure

The design of the infrastructure, including the Sewage Treatment Plant, was completed in May 1982. During this phase personnel of the Ministry of Housing and of BWN worked closely with all the Egyptian authorities involved in the project to ensure that the design of the various utility systems etc. were in accordance with their requirements and current Egyptian practice. These included the Ministry of Health, the Egyptian Organization for Roads and Bridges, the General Organization for Sanitary Sewers and

Drains, Greater Cairo Water Authority, Cairo Electrical Distribution Company, ARENTO, Cairo Transportation Organization and the Helwan District Council.

## The Model Housing Estate

The first increment of design covering the Model Housing Estate was approved in April 1981. A

contract for constructing the infrastructure and 180 housing units was awarded in August, and construction began in October. It was completed in late 1983 and formally accepted by the Ministry of Housing in April 1984. The Model Housing Estate is currently being used for a marketing study to determine which of the housing alternatives offered is preferred by the beneficiaries. Based on the results of this study, decisions will be made and a strategy evolved for developing the overall site.



October 1982—Work progresses on the Model Housing Estate



September 1983—The Model Housing Estate nearing completion

## Procurement of American Materials

Procurement of construction material and equipment began during the design of infrastructure when long-lead time items for the Sewage Treatment Plant were advertised for tender in the latter part of 1981. To date, over \$12,000,000 worth of American equipment and materials have been imported into Egypt for use in the project.



**American Materials Arrive at Site**  
The first shipment of 63,000 lineal feet of high voltage cable arrive on the site in March 1983.



**Pre-Bid Conference—19 April 1983**  
Arch. Hamid E. Wakeel opening the meeting on behalf of Chairman JHP, Eng. Youssef K. Eltali who was on a visit to AIT in Washington, DC, at the time. From right to left, PIU Gen. Manager, Arch. Haim Scander; Desmond O'Riordan, AID Office Director; Arch. Wakeel; David L. Parter, HNC Project Officer; and PIU Construction General Manager, Eng. Mohamed El-Kasher.

## Contract for the Infrastructure

In April, the contract for the infrastructure for the whole site was advertised. Seven major American and Egyptian joint ventures submitted tenders. The Pre-Bid Conference and the inspection of the site occurred on 19 April 1983.

After a detailed analysis of all the tenders the Ministry selected the low bidder, a joint venture of PERINI INT'L of the United States and AYOUBCO, one of the foremost Egyptian Contractors.



**19 April 1983**  
The Pre-Qualified Contractors Inspect the Site

# The Pre-Construction Conference

Soon after the award of the infrastructure contract to the joint venture of PERINI/AYOUBCO, a pre-construction conference was held at the site on 21 August 1983. It was attended by senior members of the Ministry, AID, Perini International Inc. and Adli Ayuoub Co. The conference was presided over by Arch. Halim Scandar, PIU

General Manager assisted by Eng. Mohamed El Kashef, PIU Construction General Manager. Representing AID was Mr. David L. Painter, the Project Officer for the Helwan New Community.

In order to fully cover all issues that were discussed at the prebid conference, representatives

of the JHP financial section, legal, and other representatives of the Council of State were in attendance. These included Mr. Salah El Din El Essawy, JHP Chief of Finance; Dr. Ali Kotb, Council of State representative; Eng. Adel Sharabas, JHP Contract Manager; and Barrister Farouk Sadek, JHP legal Advisor.



**The Pre-Construction Conference—21 April 1983**

*From left to right: Mr. Salah El Essawy, Undersecretary for Finance and Administration; Dr. Ali Kotb, representing the Council of State; Eng. Adel Sharabas, JHP Contracts Manager; and J. Porter Arnold II, BWN Procurement Manager.*



**The Pre-Construction Conference—21 April 1983**

*From left to right: Arch. Halim Scandar, PIU General Manager presiding over the Pre-Construction Conference. On his right are David L. Painter, AID HNC Project Officer; Mr. Thomas G. Putscher, AID Financial Certification Officer; and Warren G. Pettingell, Sr. V.P. PERINI INTL.*

# The Infrastructure Contract

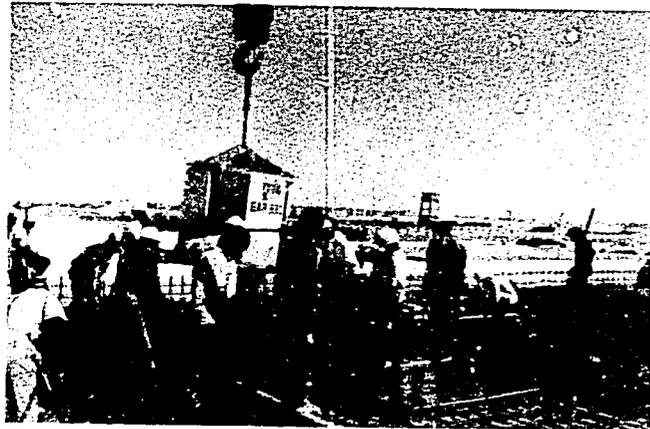
Perini/Ayoubco began mobilizing on 12 October 1983 thereby establishing 12 November 1983 as the contractual start date for the project. The contract stipulates a 30-month construction period and all work is scheduled to be completed in mid-1986. The construction includes almost 50 km of roads and walk streets, complete with all utilities.

The first part of the project to be built out will be the southern part of Neighborhood 5 consisting of 308 housing lots adjacent to the Model Housing Estate covering about 4% of the pro-

ject. The infrastructure for this area was completed on 31 March 1985 and thereafter it is the Ministry's intention to construct three-story houses in this area as quickly as possible for a total of 924 flats which will provide homes for about 5,000 people. Bids were requested by the Ministry on 20 March 1985 and the contract was awarded during the third quarter of 1985. In the photograph to the right the infrastructure of Neighborhood 5, typical for the whole site, is shown.



Neighborhood 5  
Infrastructure completed on 31 March 1985.



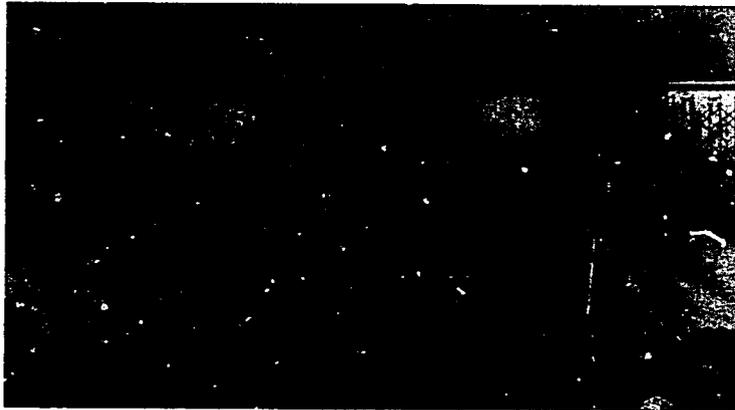
Main Sewer Excavation—April 1985  
Excavating main sewer, 7 meters deep, along West Boundary Road.



Sewage Treatment Plant—January 1984  
Perini/Ayoubco construction forces at work on the foundations of the aeration tanks.

# The Sewage Treatment Plant

The Sewage Treatment Plant was designed as an interim facility to be used until the main City of Helwan system is completed. At the time of the design it was expected that the main system would be in operation by 1987 at which time the Helwan New Community was expected to have a population of about 25,000. This was the population estimate used for the design of the Sewage Treatment Plant. As the City of Helwan system will not now be completed until 1992 expansion of the Helwan new Community Treatment Plant or some other solution to the problem may be needed.



The Sewage Treatment Plant—August 1985

At the conclusion of the sewage treatment process, dried sewage sludge will result together with recovered water which will be chlorinated and held in a storage tank. It is intended to use the sewage sludge mixed with desert sand and fertilizer as humus for creating green areas in the Helwan New Community. These areas will be irrigated by water recovered from the sewage treat-

ment plant. It is intended to develop the 100 meter wide right of way between the King Khalid Highway and the east boundary of Helwan New Community in this manner and develop it as a green area to demonstrate what can be done with the by-products of a sewage treatment plant.



**Briefing by PIU Construction General Manager—22 August 1984**  
*His Excellence Minister Sidky is briefed on the uses of sewage sludge and water recovered from the sewage treatment process. On the Minister's left is Undersecretary for Economic Affairs, Mr. Ihsan Shiri and on his right, USAID Eng. Mohamed Iawzi. At the extreme right of the photograph is BWN Field Engineer Awman Chozlan.*

# The 66-11 Kv Substation

The electrical needs of the project will be served by a substation located in Zone A which will receive electric power and transform it down to 11,000 volts for distribution through the system. The contract for this substation was awarded to General Electric and work commenced on it in mid-March 1985. It is scheduled to be com-

pleted within eighteen months.

Each stage of the development of the design and specifications for the 66-11 kV Substation was closely coordinated with the Cairo Electricity Distribution Company (CEDCO). Various requirements of CEDCO that are necessary for the

successful operation of an electrical substation in Egypt were incorporated into the design and the construction documents. At the request of CEDCO, the design of the busbar system was such that the substation could be expanded at a future date if required.



**Chairman JHP Eng. Youssef K. Elrafié reviewing the contract document prior to signing it. On the right is Eng. Adel Sharabas who is in charge of all electrical work on behalf of the JHP.**



**17 December 1984—Contract Signing**

*Top Row: from right to left, Mr. O.Y. Powell, GE/Cairo, Eng. Maged Kamei, GE/Cairo  
Seated: Eng. Youssef K. Elrafié, Chairman JHP with Nha D. Hoang, Manager Systems Sales N.T.H.Q., and Mr. H. Manfred Schellpfeffer, Manager-Europe and Africa Region*

## Visitors to the Site



### The Governor Begins his Inspection

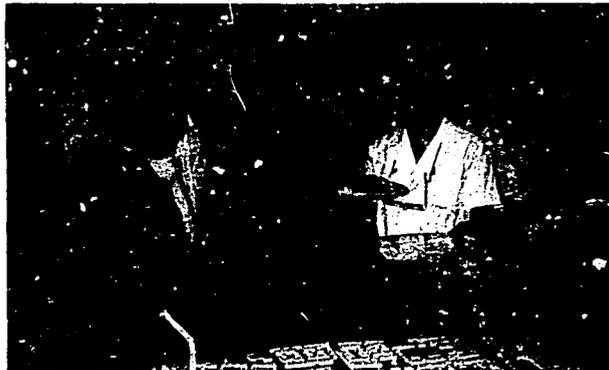
The Governor of Cairo leaving Block 9 of the Model Housing Estate. On his left is Chairman JHP, Eng. Youssef K. Elrafie; to the Governor's right is BWN Program Manager John R. Flanagan.

On 22 May 1984, His Excellency the Governor of Cairo, General Youssef Sabri Abu Taleb, visited the site. He was welcomed on behalf of the Minister of Housing and Utilities by the Chairman JHP, Eng. Youssef K. Elrafie. After a briefing, the Governor inspected work in progress.



### The Governor Inspects a Core House

Eng. Samir Shawki of the PIU describes the details of a one-room core house to the Governor. In the left side of the photograph is Charles J. Billand, Vice President of CHF and Team Leader of CHF in Egypt.



His Excellency the Minister of Housing and Utilities, Eng. Mohsen A. Sidky, visited the project on 22 August 1984.

### The Minister Inspects the Scale Model

From left to right: PIU Construction General Manager Eng. Mohamed El Kashef, Undersecretary of Administration and Finance Mr. Salah Ellessawy, His Excellency the Minister, Undersecretary for Economic Affairs Mr. Ishaq Shiri, Chairman JHP Eng. Youssef K. Elrafie, and BWN Manager of Public Relations Mr. Rafik Sattar.

### Inspection of Model Housing Estate

After a detailed briefing of the current status of the project, the Minister inspects the work in progress.



# Inauguration of Sewage Treatment Plant 30 January 1986



## **EAJEP Chairman Eng. Youssef K. Elrafie Welcomes the Guests**

*His Excellency the Minister of Housing and Utilities Eng. Abdel Rahman Labib and His Excellency the Governor of Cairo General Youssef Sabri Abu Talab arriving at the Helwan New Community on 30 January 1986. Mayor of the City of Helwan General Fathy Salaam is seen shaking hands with the Minister.*

*The Minister and Governor were accompanied by a large group of personnel from both the Cairo Governorate and the Ministry of Housing and Utilities. Among the distinguished guests was Deputy Governor of Cairo General Ahmed Hassan who had previously visited the site to inaugurate Neighborhood 3 and Access Road No. 3 across the site on 31 October 1985.*



## **AID Director Mr. Frank B. Kimball Arrives at the Site**

*Mr. Kimball is seen here shaking hands with the Deputy of Cairo General Ahmed Hassan. To the left of the photograph is AID Associate Director Mr. C. Reginald van Raalte.*

*Mr. Kimball was accompanied by a number of personnel from AID who have been involved in the implementation of the project. These included AID Project Officer for the Helwan New Community Aaron L. Benjamin, Project Engineer William C. Adorno and Civil Engineer Mohamed Fawzi. AID Associate Director for Development Policy, Planning and Evaluation George A. Laudato also accompanied the Director on the visit.*

# The Briefing

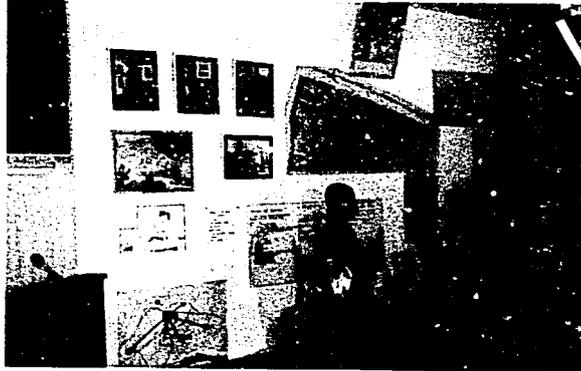
The following personnel gave briefings:

EAIJ Chairman Eng. Youssef K. Elrafie  
PIU General Manager Arch. Halim Scandar  
BWN Program Manager John R. Flanagan  
CHF Team Leader Charles J. Billand  
PIU Construction GM Eng. M. El Kashef  
BWN Operations Engineer William H. Rappold  
PIU Operations Engineer Hassan Metwally



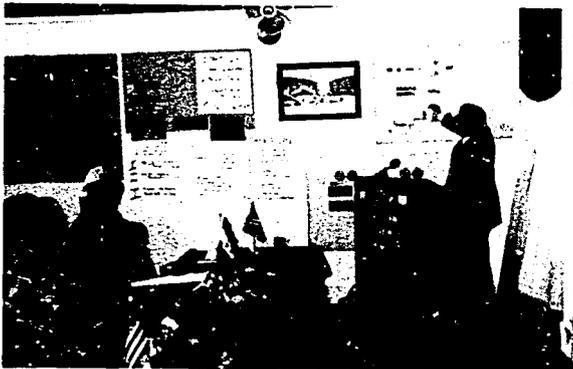
## Distinguished Guests at the Head Table

From right to left: Deputy Governor of Cairo General Ahmed Hassan; EAIJ Chairman Eng. Youssef K. Elrafie; Governor of Cairo General Youssef Sabri Abu Taleb; Minister of Housing and Utilities Eng. Abdel Rahman Labib and AID Director Mr. Frank B. Kimball.



## Opening Address

EAIJ Chairman Eng. Youssef K. Elrafie welcomes the guests and described the objectives of the project.



## Sewage Treatment Plant Operation

PIU Operations Engineer Hassan Metwally gave a detailed briefing of the various treatment processes that occur in the Sewage Treatment Plant.

## Reviewing the Briefing Material

AID Associate Director for Development Policy, Planning and Evaluation Mr. George A. Lucdato and AID Project Officer for Helwan New Community Mr. Aaron L. Benjamin review briefing material prepared by Cooperative Housing Foundation, the Consultant to the Ministry responsible for the Social Development of the project.





**Dedication Ceremony**

Minister Labib unveils the commemorative plaque with Governor Abu Talab and AID Director Frank B. Kimball.



**The Commemorative Plaque**

"Helwan New Community Sewage Treatment Plant Dedicated By His Excellency Engineer Abd El Rahman Labib Minister of Housing and Utilities

January 1986

To the Helwan New Community for improved Public Health and Environmental Protection

Designed by BASIL-WBTL-NASSAR and constructed by PERINI INT'L-AYOUBCO Joint Venture for the Executive Agency for Joint Projects of the Ministry of Housing and Utilities. Construction supervision by the Project Implementation Unit and BASIL-WBTL-NASSAR partnership in association with I.A. JONES INTERNATIONAL. The Helwan New Community project is financed jointly by the Governments of Egypt and the United States of America Grant Number 263-0066."



**Start-up of Influent Pump No. 1**

Their Excellencies and the AID Director jointly start Influent Pump no. 1 at the Intake Structure of the Sewage Treatment Plant.



**The Aeration Tanks of the Plant**

In the right foreground is CHF Team Leader Charles L. Billard (on right) talking with John Ryan of AID.

**The Distinguished Guests Inspect the Plant**

Cairo General Organization for Sanitary Drains Operations Engineer Sarwat El Masri was in charge of the inspection of the Plant. He is seen here on the Governor's left as he describes the various processes of the Plant.



*His Excellency Minister Labib thanked all the managers and engineers working for the Executive Agency Joint Projects and its Project Implementation Unit, the Arab Bureau and other Egyptian Consultants, the Joint Venture of BASIL-VBTL-NASSAR, the Cooperative Housing Foundation, and the construction contractors PERINI-AYOUBCO for their close cooperation, which was resulting in the very fine project he had seen today.*

*The housing problem in Egypt was a very urgent one and projects such as the Helwan New Community were very effective projects for solving the housing shortage which was one of the primary concerns of the Government of Egypt and the Ministry of Housing and Utilities.*

*The Minister concluded by thanking AID Mission Director Mr. Kimball for his help and the help of all the people in AID who shared in the success of this project.*



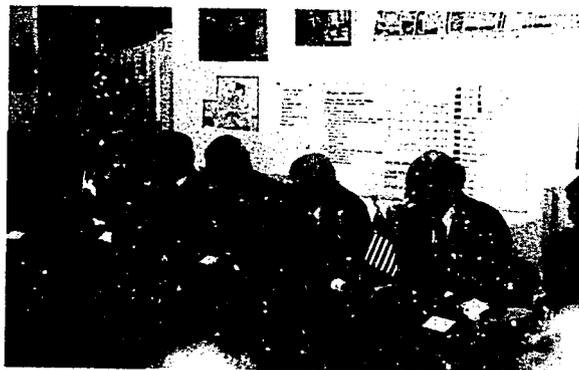
**His Excellency the Governor of Cairo Speaks of the Housing Needs of Egypt.**

*AID Mission Director Mr. Frank B. Kimball said it was a positive experience to travel around the site and see the actual work being done as a result of the effective and close cooperation between the Egyptians and Americans undertaking this project.*

*He noted that a large number of people would benefit from the Helwan New Community, which appeared to be very well planned and showed in the quality of the work.*

*Mr. Kimball said this project would become a model for future similar developments to help the housing problems in Egypt and he hoped AID would be involved in such programs in the future.*

*Mr. Kimball concluded his speech by thanking all those who were involved in the planning, and construction of the Helwan New Community and offered his congratulations to all those connected with its implementation.*

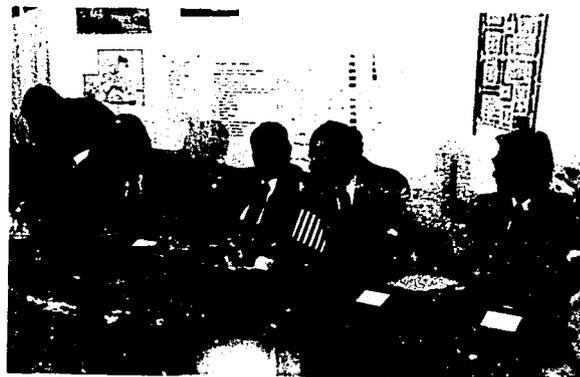


**His Excellency the Minister Addresses the Meeting.**

*Governor of Cairo General Yousser Sabry Abu Talab thanked Mr. Kimball and AID for their assistance in the Helwan New Community. He said it was one of the most successful projects of the AID Program and most important, it was directed toward low income people who lived here in the Helwan Area.*

*The Governor felt that the project was ready for repetition and would help greatly with the housing needs of Egypt. Such projects were very badly needed in Egypt and should be a high priority in the AID Program.*

*The Governor concluded by expressing his satisfaction in seeing the close cooperation between Egyptians and Americans in making the Helwan New Community possible and he concluded by thanking all those managers and engineers who were involved in the project.*



**AID Director Mr. Frank B. Kimball Speaks on Behalf of the U.S. AID Program. To his left is AID Project Officer Aaron L. Benjamin.**

His Excellency Dr. G.Ph. Brokx, the State Secretary of Housing, Physical Planning and Environment of the Netherlands, visited the project on 12 December 1984. Dr. Brokx was accompanied by a large group from the Dutch Housing Ministry as well as Dutch contractors and manufacturers of building materials.



**Visitor from the Sudan**

*Eng. Mohamed El Kasher leads the Sudanese visitors on an inspection of the Sewage Treatment Plant. On Eng. Kasher's right is BWA Manager of Public Relations, Mr. Raik Sattar.*

23 December 1984—A delegation from the Ministry of Housing of the Sudan visited the project. After a briefing the party made an inspection of the site and expressed a particular interest in the utility systems and the service module serving each of the housing lots. The party completed their inspection with a tour of the Sewage Treatment Plant.



**Visit of Netherlands Housing Minister**

*Chairman JHP Eng. Youssef K. Elrafie welcomes Dr. Brokx, State Secretary of Housing, Physical Planning and Environment of the Netherlands.*

Dr. Brokx was greeted by the JHP Chairman, Eng. Youssef K. Elrafie, on behalf of the Minister of Housing and Utilities. After a detailed briefing by the PIU General Manager and others, Dr. Brokx made a tour of the site starting with the Model Housing Estate, then through work in progress on the infrastructure and finally inspecting the Sewage Treatment Plant.



**Inspection of Work in Progress**

*Eng. Youssef K. Elrafie accompanies Dr. Brokx and his party on their inspection of the project.*

On 12 October 1982 the Chairman JHP, Eng. Youssef K. Elrafie was pleased to welcome Michael P. Stone, AID/Egypt Director. Mr. Stone was accompanied by Associate Director Gerald P. Zarr, Office Director Desmond O'Riordan, Project Officer David L. Painter, and Eng. Mohamed Fawzi, AID Civil Engineer. After a detailed briefing of both the physical and social development of the project, the visitors were conducted on a tour of work in progress on the Model Housing Estate.

The Credit Foncier Egyptienne is the banking entity entrusted with the handling of the funds



**Visit of Chairman of Credit Foncier**  
The Chairman CFE and his party at the BWN Site Office. On his right is Eng. Youssef K. Elrafie, Chairman JHP.



**12 October 1982—Visit of AID Director**  
Chairman JHP Eng. Youssef K. Elrafie conducts Michael P. Stone, AID Director for Egypt, through the Model Housing Estate.

which will be used to make loans to the low income workers who will live in the Helwan New Community. These loans will enable a low income worker to buy a basic plot of land on a 30-year mortgage and, as his family increases, he can obtain further low interest home loans to expand his house both horizontally and vertically. As the project is now reaching an advanced stage, the work of the Credit Foncier Egyptienne will become more important to the overall success of the project.

On 07 November 1984, the Chairman JHP was pleased to welcome the new Chairman of the Credit Foncier Egyptienne (CFE) on a visit to the

site. The Chairman CFE spent some time in Block 9 of the Helwan New Community where the CFE computer, which will be used to monitor and control the mortgages on home loans, is located. After a briefing, the Chairman CFE and his party made a tour of inspection of the site.

Other visitors to the site included a group from the Holland Housing Institute, The Hague, Netherlands; a group from the University of Newcastle, upon-Tyne, England; and a party of professors and students from the University of Berlin Architectural School.



**Visit by English Students**  
The students and their professors inspecting the Model Housing Estate.

# Appendix B

## Training of Egyptian Personnel

The training of Egyptian personnel working on the Helwan New Community is one of the more important objectives of the project. It is intended that the Project Implementation Unit (PIU) for the Helwan New Community will develop into a nucleus of engineers within the Ministry of Housing and Utilities who are skilled in all the management and engineering disciplines needed to implement future housing projects similar to the Helwan New Community. This objective is being realized and at the completion of the project it is anticipated that the PIU will have a skilled and well trained group of

managers and engineers in all disciplines.

The first part of the training program was accomplished during the design phase of the infrastructure when the Ministry assigned groups of engineers to work directly with the consultants. In addition, BWN hired a number of Egyptian engineers and draftsmen and trained them in the techniques of designing infrastructure systems to the level of detail usual in designs prepared in the United States. At the conclusion of the infrastructure design in May 1982, these engineers and draftsmen left FVN to take up positions

in other engineering organizations in Cairo, bringing with them the skills that they had learned.

From the beginning of the construction phase of the project, BWN has had, within the group, a number of field engineers and inspectors who are receiving in-depth training in current American construction management techniques including quality control, scheduling, quantity surveying and general construction control and supervision.



A number of the PIU engineers are working closely with the BWN engineers as their counterparts in all aspects of the construction phase of the project. Further training, although not directly connected with the BWN, results from the number of Egyptian personnel employed by the Contractor, Perini/Ayoubco, who are receiving training in the latest American construction techniques.

In addition to the on-the-job training, BWN are providing a number of training courses in the various engineering disciplines. Courses are

offered in Quality Control, the use of the computer as a scheduling tool, and Surveying. This latter course is of six weeks duration and provides a basic grounding in topographic survey as well as surveying techniques necessary to set out civil engineering projects. On conclusion of these courses the successful PIU engineers are presented with a certificate of accomplishment. A copy of a certificate recently awarded to a PIU engineer is shown on the following page.

Training courses in the United States were attended by senior members of the Ministry and have been a great benefit for the project. These included courses in Contract Law, Procurement, Arbitration, Computers, and Policy for Developing Countries.

#### Presentation of Certificates

BWN Program Manager John R. Flangan handing certificates of accomplishment in Surveying to Dr. Brokx, State Secretary for Housing of the Netherlands for presentation to PIU Engineers. From left to right: Eng. Hayam Ismail, Eng. Karmen Anis, Eng. Magda Michle, Eng. Hakmet Hnam.



# Appendix C Urbanization Planning Documents

These Volumes available on special requests to the Ministry of Housing and Utilities, Shooting Club Road Dokki, Cairo, Egypt

## Helwan New Community المجتمع السكنى الجديد بحلوان

Volume I of IV Urbanization Plan

Volume II of IV Infrastructure

Volume III of IV Cost Estimate

Volume IV of IV Site Development Plans

تخطيط المدينة الجزء ١ من ٤  
المرافق الأساسية الجزء ٢ من ٤  
التكاليف التقديرية الجزء ٣ من ٤  
مخططات تطوير الدفع الجزء ٤ من ٤

Prepared by

BASIL-WBTL-NASSAR

a joint venture of

**Frank E. Basil, Inc.**

1510 "H" Street NW  
Washington DC 20005  
U S A

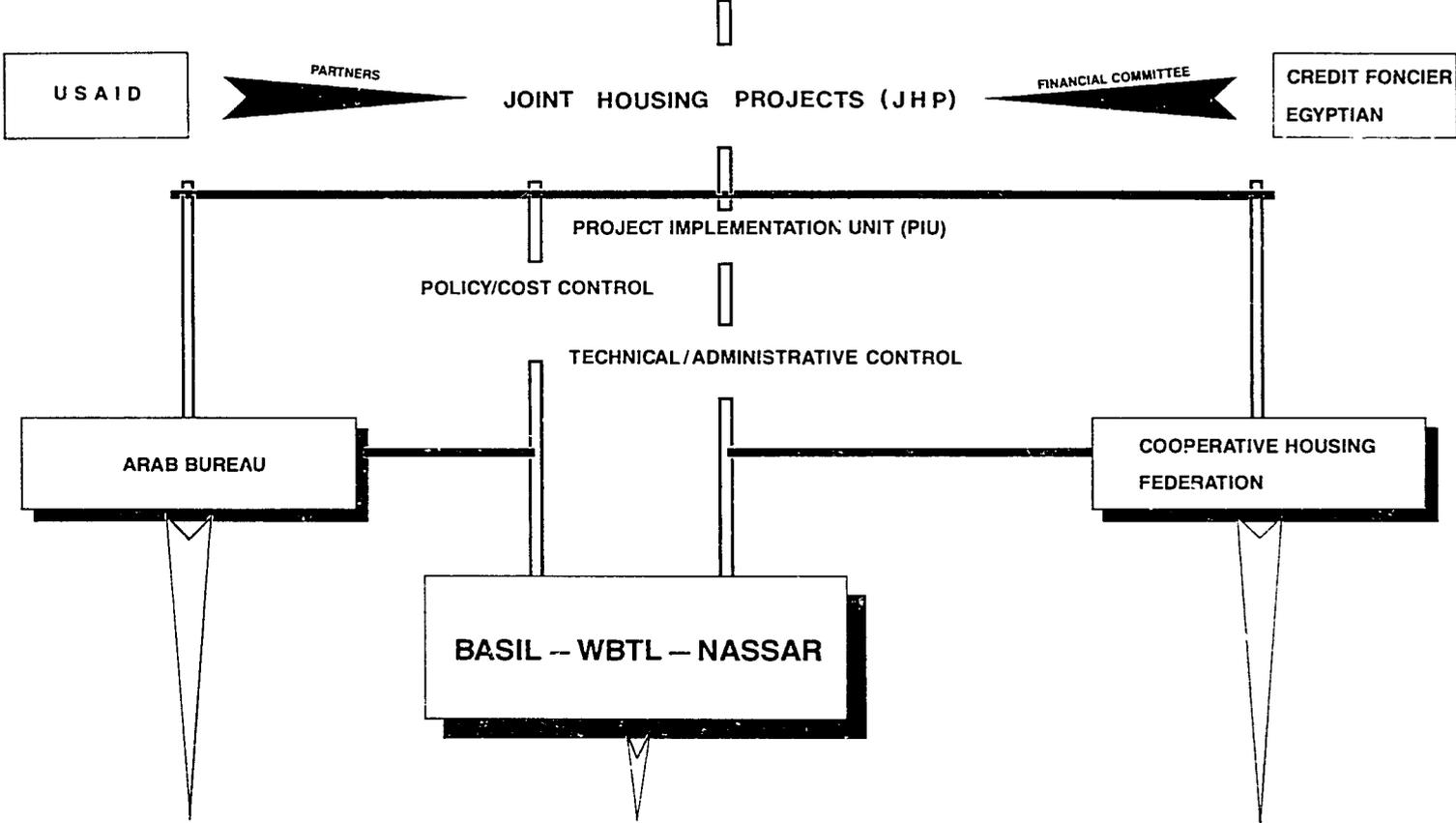
**Warner Burns Toan Lunde**

330 West 42nd Street  
New York, NY 10036  
U S A

**Ali Nour El Din Nassar**

5 Kasr El Nil Street  
Cairo  
Arab Republic of Egypt

MINISTRY OF RECONSTRUCTION  
AND STATE MINISTRY FOR  
HOUSING AND LAND RECLAMATION



ARCHITECTURAL DESIGN

PHYSICAL DEVELOPMENT

SOCIAL DEVELOPMENT

# Appendix D

## List of Personnel of the Three Consultants

### List of Personnel of BWN (chronological, not hierarchical order)

#### Basil

John R. Flanagan  
Dino Pappas  
Pete Boyaci  
Timothy G. Gates  
Wasim Adnani  
Milton Myridis  
William L. Clark  
Nick Athousakis  
George Tokatlides  
James Mitsakopoulos  
Kurt Weis  
Alexander Abbott  
Walter Snell  
John Avgoustidis  
Demetrius Karion

#### WBTL

Danforth W. Toan  
Frithjof M. Lunde  
Robert Reiter

#### J.A. Jones Int'l Inc.

John S. Bolton  
Henry B. Lankford  
Wayne Holt  
Donald Smith  
John Porter Arnold II

Thomas Griffin

James B. Chapman  
Pantelis Gregoriades  
Michael Strack  
Ronald Blakey  
Helga Klein  
William Keane  
Peter Mullen  
Francis Bennett  
Carol Bennett  
Keith Knarston  
Maria Day  
John McAdams  
Peggy Bailey  
William H. Rappold  
Helen Turner

John Hart  
Edward Canino

Norman R. Burton  
Clarence Rhodes  
Howard S. Harmon  
Cris Bird

#### Nassar

Wafik Talaat  
Soliman Nashed  
Samir Onsi  
Salwa Wadih  
Ali Nassar  
Mohamed Allam  
Berlanty Fahmy  
Samir Osman  
Waguïh Youssef  
Ali Abdel Azim  
Hussein El-Serafi  
Ayman Ghozlan  
Ahmed Salem  
Moustafa Hussein

#### BWN

Safaa Fakhry  
Hoda Nassef  
Rafik Abdel Sattar  
Nasr Fawzi  
Mohamed Ali  
Rafaat Abdel Sattar  
Nahed Gamal  
Atef Fouad  
Saleh Mourad  
Emily Lankford  
Samy Abdel Aal

Sayed Ali  
Alaa Khalil  
Yousri A. Azim  
Ahmen Farag  
Mohamed Ramzi  
Ramadan Ali  
Kamal Gharib  
Safwan A. Aleem  
Hassan Ali  
Ahmed Taha  
Amr El-Badri  
Atef Nassar  
Nagat Ali  
Alaa El Kattan

Ekram El-Safty  
Horeya Mohamed  
Renata Ostertag  
Hamdy Kishk  
Talaat Azam  
Rawya Omar  
Nassar Saad  
Abdel Migeed Wakeel  
Sonia Shaheen  
Marva Baur  
Amal Fahmy

Nahed El-Naggar  
Siham El-Naggar  
Awny Ghais  
Sawsan Abdallah  
Megaclis Asteris  
Wafaa Samuel  
Wafik Farid  
Abdel-Moneam Wakeel  
Jill Flanagan  
Wagdi Nasr  
Ashraf Fawzi  
Mohamed Salah  
Sayed Farid  
Nadia Nour  
Ibrahim Zaki  
Alaa Rashad  
Sherif Victor  
Mona Rizk  
Soheir Taha  
Ashraf Azmy  
Maher Tawfik  
Amny Yousry  
Amal Ali  
Olemy Ali  
Fatma A. Halim  
Ragab Bedawi  
Samen Attia

Amira Erian  
Souad Sayed  
Samia Nawar  
Aciel Abedl Wahed  
Magdi Tawfik  
Mona Roushdy  
Ashraf Bakir  
Heba Selim  
Sonia Halim  
Wahid Safwat  
Mary Blakey  
Awatef Gad  
Samir Girgis  
Fatma Abbas  
Abdel Hakim Takey  
Hassan Metwaly  
**O & M Office**  
Supervisor  
Ahmed Shaawky  
12 Janitors  
3 Cooks  
**O & M Vehicles**  
Transportation  
Supervisor  
Raouf Ali  
11 Drivers  
1 Mechanic

# List of Personnel of the Three Consultants

## Arab Bureau

Ex. Chairman Dr. Yehia El Zini  
Chairman Dr. A. Kamal Abd'El Fatah  
Dr. Ramsis Sedra  
Dr. Abd-Elhalim Ibrahim

### Arch. & Planner

Eng. Fathi Abo Shadi  
Eng. Fouad Nazmy  
Eng. Amal Wahba  
Eng. Faten Gamea  
Eng. Mahmoud El Rouby  
Eng. Tiseer El Hefnawy  
Eng. Mervat Hessin  
Eng. Awmayma Badawi  
Eng. Aman Mahmoud  
Eng. Shaden Salah El Din  
Eng. Emad Abdo Aiaad

### Chief Department

Eng. Fawzi Salem

### Sanitary Engineering

Eng. Sayed Abed El Latif  
Eng. Sofi Yousef  
Eng. Malak Ramsy  
Eng. Alaa Eetizas

Eng. Doriaa Kamal  
Eng. Nora Ahmed  
Eng. Nagwa El Kholly

### Electrical Engineer

Eng. Fawzi Zaki  
Eng. Houda Rafik  
Eng. Mohamed Salama  
Eng. Fatma Sadek

### Draftsmen

Yehia El Sayeh  
Mohamed Aiaad  
Moussa Soliman

### Soil Investigations

Eng. George Halim  
Eng. Khalid Loutfy  
Eng. Laila El Sayed

### Specifications and Estimation

Eng. Farouk El Kafrawy  
Eng. Sohir Moamen  
Eng. Ali Sharara  
Eng. Hessein El Shennawy  
Eng. Mohsen Abd El Aziz  
Eng. Housam Arafa  
Eng. Violet Shokry

### Civil Department

Chief Eng. Salah Nassar

## Cooperative Housing Foundation (CHF)

### Advisory Team

Hassan Bellasy  
Charles Billand  
John Driscoll  
Sawsan El-Messiri  
Essam El-Rifai  
Barry Frazier  
Paul Gabele  
Jim Keen  
Youssef Ramzy  
Paul Shirey  
Steve Silcox  
Jack Smit  
Jeffry Stubbs  
Albert Wahba  
Robert Williams  
Salah Zaki

### Support Staff

Wafaa Abdel-Hamid  
Wafaa Abdel-Rehim  
Hala Abul-Naga  
Amal Ashry  
Maissa Atta Aly  
Antoun Dahdouh  
Mona Hashem  
Nabila Hashem  
Gamil Helmi  
Salwa Victor  
Margerit W. Youssef