

**PATTERNS OF CONTINUITY:
REVITALIZING THE UNDERLYING
PRINCIPLES OF KUWAITI TRADITIONAL
ARCHITECTURE AND APPLYING THEM TO A
CONTEMPORARY COMMUNITY.**

By
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Architecture and Urban Studies in Virginia Polytechnic
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the Degree of

MASTER OF ARCHITECTURE

Approved by:

Benjamin Evans, Chairman

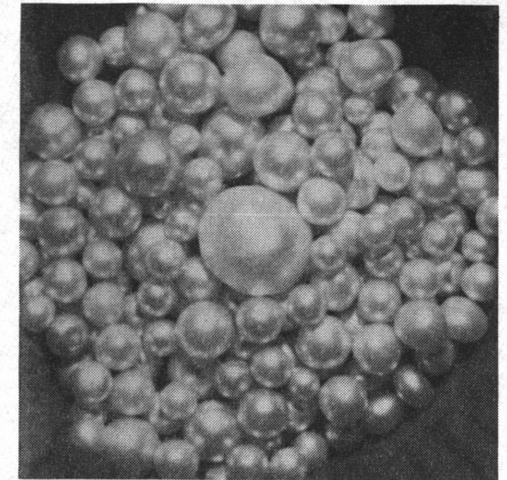
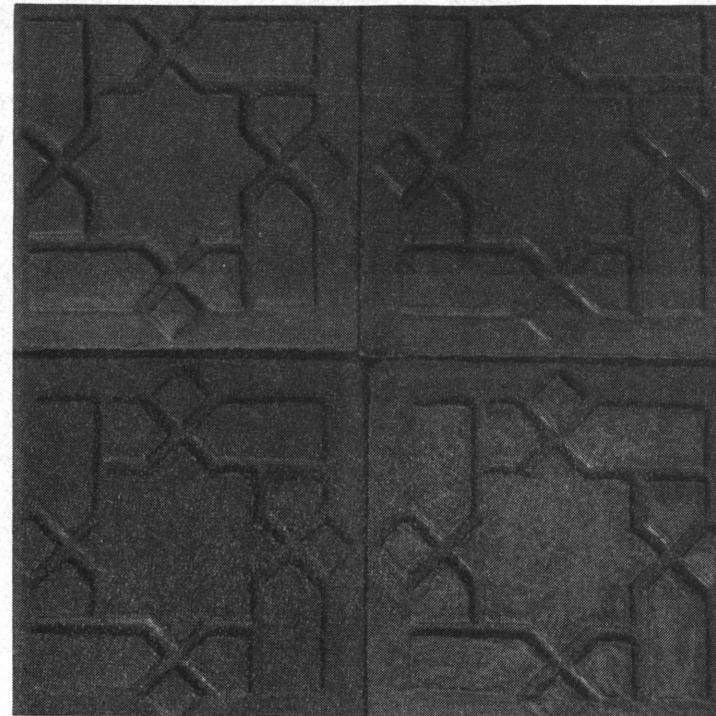
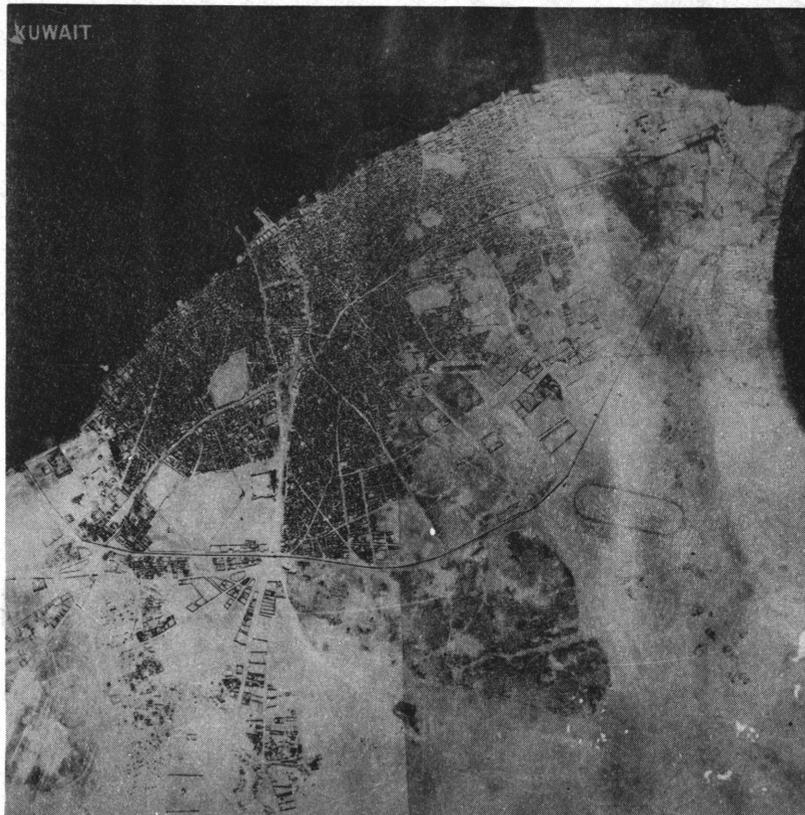
Ellen Braaten

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August 1990, Blacksburg, Virginia, U.S.A.

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Abstract

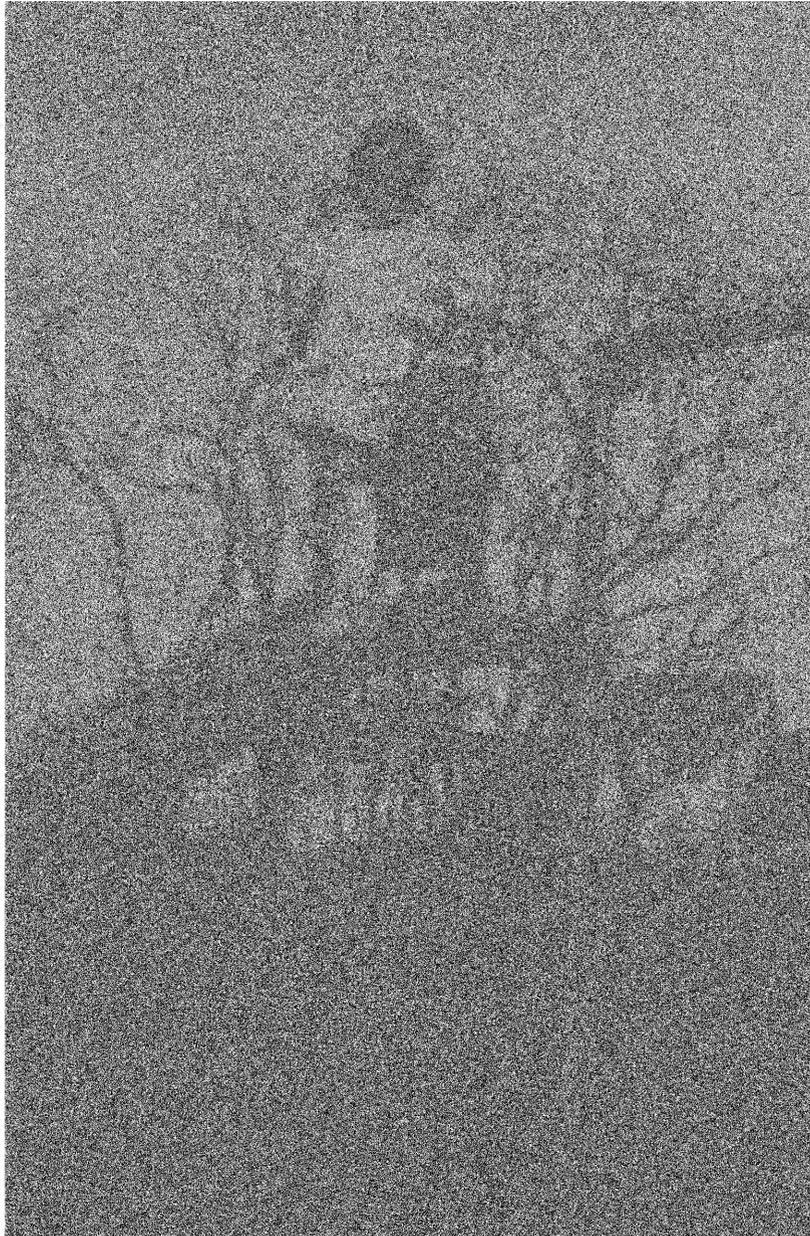
This thesis describes an approach to the planning and design of a Kuwaiti community that fosters a return to the value system established by past generations but being neglected in current planning and design concepts. This design approach focuses the specific environmental factors that exist in Kuwait, as well as being concerned with the values of the community.

Islamic teachings are built on the concept of unity in creation and purpose. All creatures are created by One and are linked in worshipping the Creator. In the design, all the housing units in the community and the *souq* develop from the principles of geometry and are linked by unity of purpose.

Contemporary architecture and urban structures in Kuwait should not only rely on local physical materials, but also express the valuable principles of Islamic culture. Islam considers each community to be one family, the Islamic community's architectural environment should be based on this relationship between individuals.

Acknowledgements

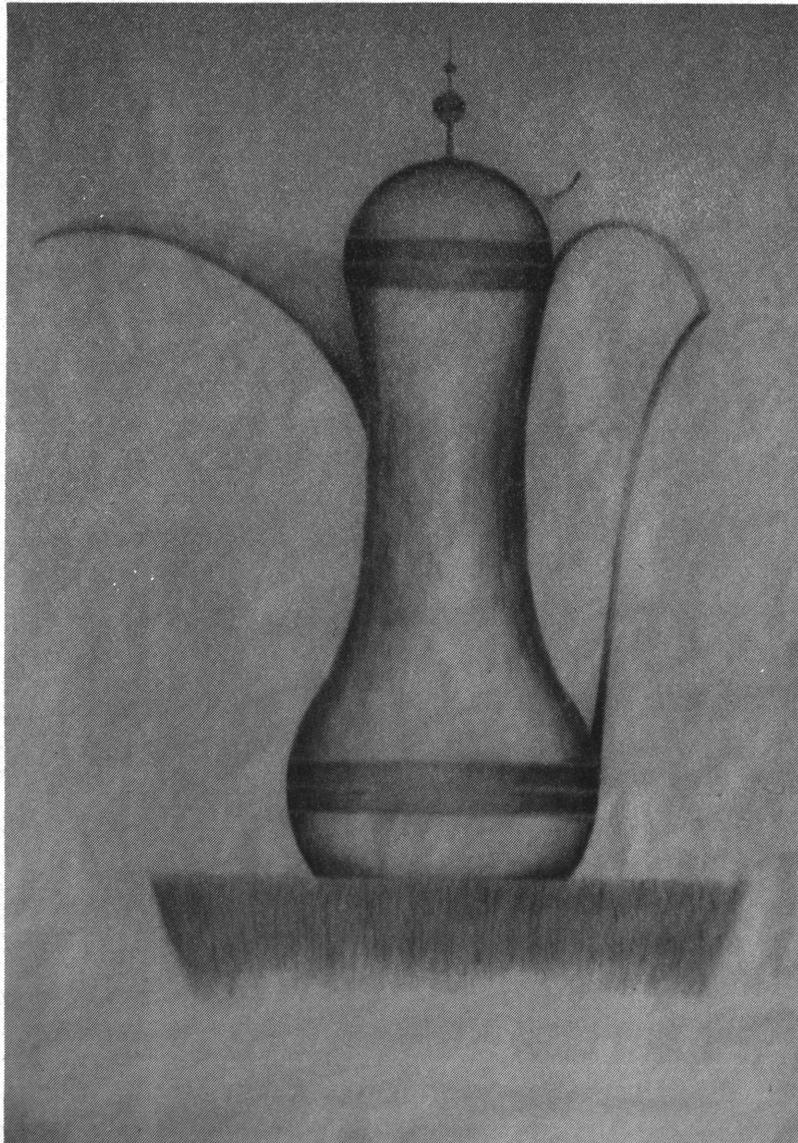
I wish to express my thanks to all the people contributed into the success of this thesis, and specially my thesis committee, for their input and patience, my parents, brothers, and sisters for their unceasing belief in me, my wife, for her continual patience, encouragement, and sacrifice throughout my education in Architecture, and last but not least, my friends in Kuwait and America, for their support.



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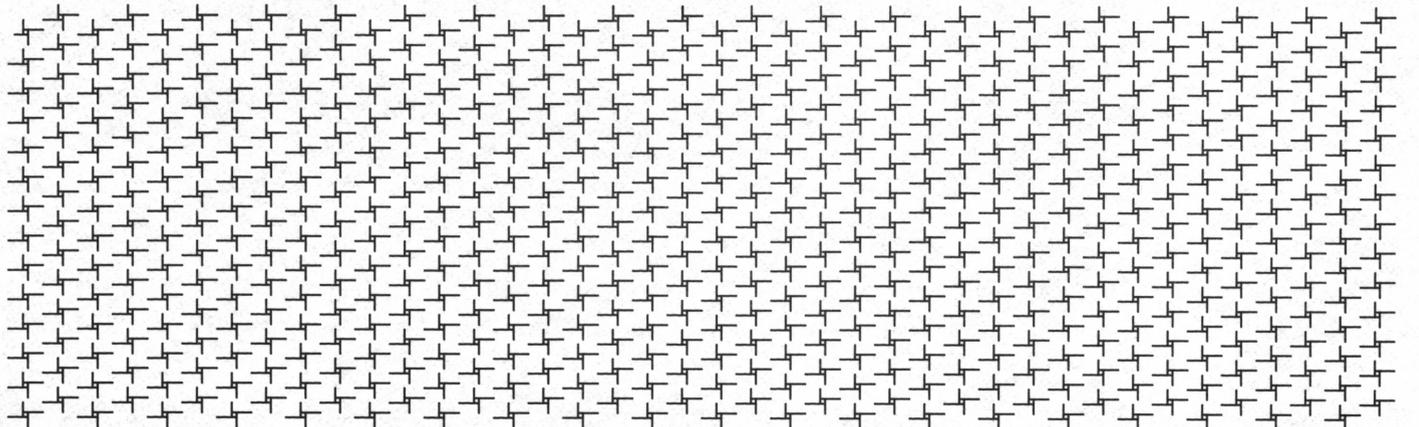
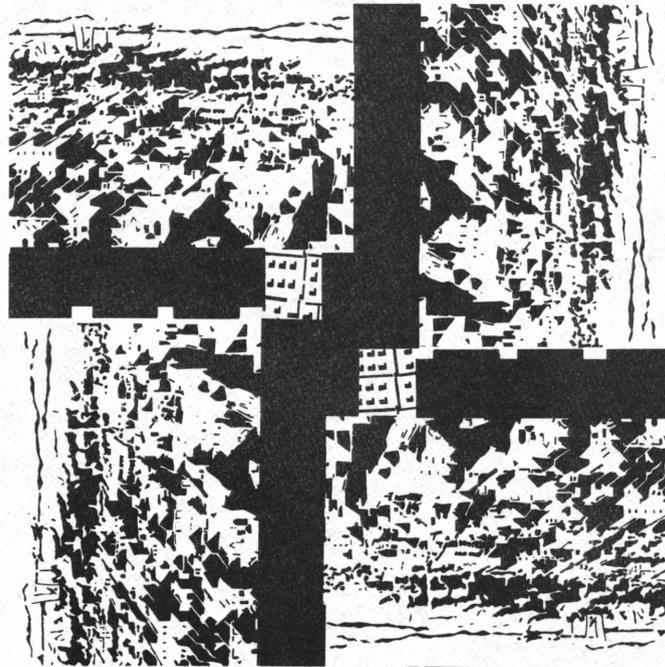
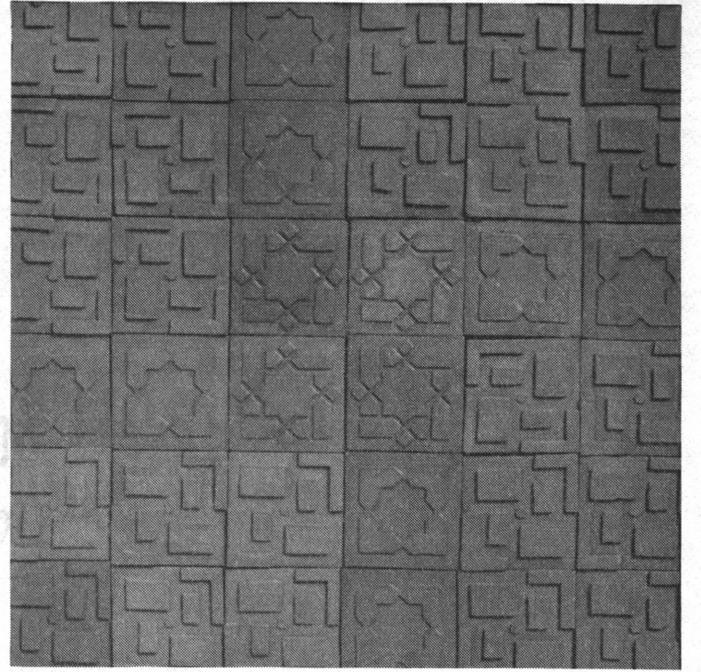


1. Introduction

The commitment of this thesis is to ensure continuity of the architectural and urban identity of Kuwait by revitalizing the Kuwaiti cultural heritage.

The search for order always occurs in a context which contains essential elements, such as man within his specific culture or within his physical environment. Order can be achieved by understanding the complete set of relationships between these elements. This understanding helps to discover the identity of order in that context.

The purpose of this thesis is to design a contemporary Kuwaiti housing community in the city of Kuwait in a way which will reflect the culture of the people and inspire a sense of unity through architecture and urban structure. The form of the housing and the varied spaces created by it are based on traditional Kuwaiti and Islamic towns. The construction of these towns has always taken into consideration the site and the climate of the area. This approach to the plan and design of this community will encourage a return to the value system established by past generations but lost in current planning and design concepts.



God is One: He furnishes man with all the resources for spiritual, moral, and social development.

The prophet Mohammad (the blessing and peace of Allah be upon him) said: Islam is built on five: testifying that there is no God but Allah and that Mohammad is His messenger (*Ash'shahadatein*: profession of faith); performing the prayers (*al-Salat*: ritual or devotional worship); almsgiving (*al-Zakat*); making the pilgrimage to the House (the House of God, *al-Ka'aba*); and fasting Ramadan (*Sawm Ramadan*: fasting during the Holy month of Ramadan). *These five pillars of Islam define the basic identity of the Muslims - their faith, beliefs and practice - which binds together a worldwide community of believers into a fellowship of shared values and concerns.

* Related to the Book of al-Bukhari and Moslim.

Prayer is the heart of the Islamic religion and faith. Allah has said in *Surat al-Rum*, Meccan Sura, in the Holy Qur'an:

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
 فَسَبِّحْ لِلَّهِ حِينَ تُمْسِرُ
 وَحِينَ تَصْبِحُونَ ﴿١٧﴾ وَلَهُ الْحَمْدُ فِي السَّمَوَاتِ وَالْأَرْضِ
 وَعَشِيًّا وَحِينَ تُظْهِرُونَ ﴿١٨﴾

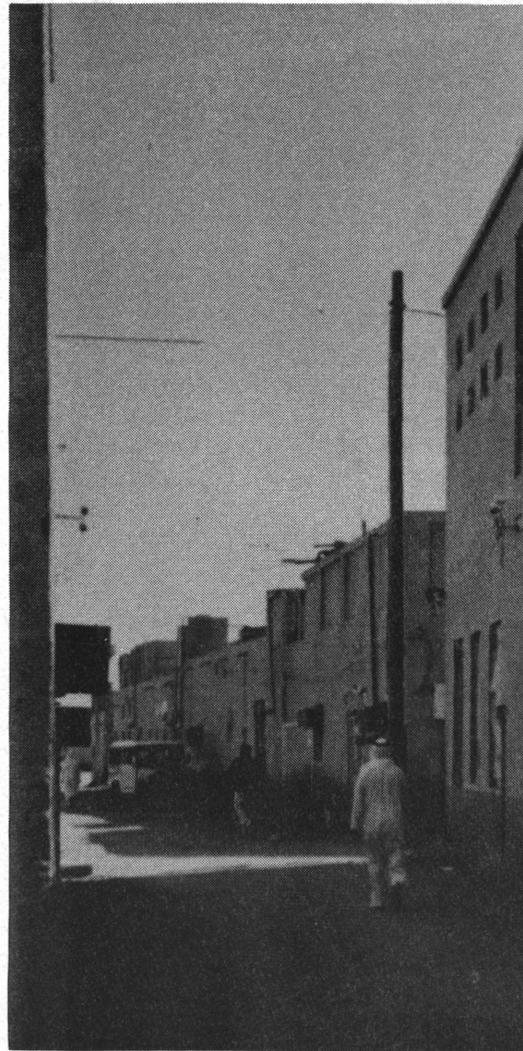
The English translation of these verses in *Surat al-Rum* is:

[In the name of God, Most Gracious, Most Merciful,] 17. So (give) glory to God, when ye reach eventide And when ye rise In the morning; 18. Yea, To Him be praise, In the heavens and on earth; And in the late afternoon And when the day Begins to decline.²

These times mentioned in the Holy Qur'an are the hours when the five canonical (daily) prayers are performed: *al-Fajer*, the early morning before sunrise; *al-Dhuher*, when the day starts to decline just after noon; *al-Aser*, in the late afternoon, midway between noon and sunset; *al-Magreb*, just after sunset; and *al-Esha'a*, after all evening twilight has faded from the horizon, the hour indicated for rest and sleep. They are the striking stages in the passage of the sun through our terrestrial day, as well as stages in our daily working lives.

Friday prayer is a very significant event in the Moslem society. The following verses of *Surat al-Jumu'a* in the Holy Qur'an, reveal the importance of this event:

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
 يَا أَيُّهَا الَّذِينَ ءَامَنُوا إِذَا تَوَدَّىٰك لِلصَّلَاةِ مِن يَوْمِ الْجُمُعَةِ
 فَاسْعَوْا إِلَىٰ ذِكْرِ اللَّهِ وَذَرُوا الْبَيْعَ ذَلِكُمْ خَيْرٌ لَّكُمْ إِن كُنتُمْ
 تَعْلَمُونَ ﴿١﴾ فَإِذَا قُضِيَتِ الصَّلَاةُ فَانْتَشِرُوا فِي الْأَرْضِ
 وَابْتَغُوا مِن فَضْلِ اللَّهِ وَاذْكُرُوا اللَّهَ كَثِيرًا لَّعَلَّكُمْ تُفْلِحُونَ
 ﴿٢﴾ وَإِذَا رَأَوْا تِجَارَةً أَوْ لَهْوًا انفَضُوا إِلَيْهَا وَتَرَكُوكَ قَائِمًا قُلْ
 مَا عِندَ اللَّهِ خَيْرٌ مِنَ اللَّهْوِ وَمِنَ التِّجَارَةِ وَاللَّهُ خَيْرُ الرَّازِقِينَ ﴿٣﴾



The English translation of what Allah has said in *Surat al-Jumu'a* in the Holy Qur'an is:

[In the name of God, Most Gracious, Most Merciful,] 9. ye who believe! When the call is proclaimed To prayer on Friday (The Day of Assembly), Hasten earnestly to the Remembrance Of God, and leave off Business (and traffic): That is best for you If ye but knew! 10. And when the Prayer Is finished, then may ye Disperse through the land, And seek of the Bounty Of God: and celebrate The Praises of God Often (and without stint): That ye may prosper.³

Friday is Moslem's holiday, mainly day of congregation. Moslems gather once a week at noon (around *al-Dhuher* prayer) to express unity through their participation in a common community worship. This worship consists of *khot'bat al-Imam*, a sermon from a leading speaker reviewing the community's spiritual life during the past week and offering advice on the straight path of God and then prayer.

Privacy in Islam is sacred; privacy in the home is a moral requirement. Allah has said in *Surat al-Nur* in the Holy Qur'an:

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ

يَا أَيُّهَا الَّذِينَ ءَامَنُوا لَا تَدْخُلُوا بُيُوتًا غَيْرَ بُيُوتِكُمْ حَتَّىٰ تَسْتَأْذِنُوا
 وَتُسَلِّمُوا عَلَيْهَا ذَلِكُمْ خَيْرٌ لَّكُمْ لَعَلَّكُمْ تُدَكَّرُونَ ﴿٢٧﴾
 فَإِن لَّمْ تَجِدُوا فِيهَا أَحَدًا فَلَا تَدْخُلُوهَا حَتَّىٰ يَبُذَّبَ لَكُمُ الْوَيْلُ
 قِيلَ لَكُمُ ارْجِعُوا فَارْجِعُوا هُوَ أَزْكَىٰ لَكُمْ وَاللَّهُ بِمَا تَعْمَلُونَ
 عَلِيمٌ ﴿٢٨﴾ لَيْسَ عَلَيْكُمْ جُنَاحٌ أَن تَدْخُلُوا بُيُوتًا غَيْرَ مَسْكُونَةٍ
 فِيهَا مِنْتَع لَّكُمْ وَاللَّهُ يَعْلَمُ مَا تُبْدُونَ وَمَا تَكْتُمُونَ ﴿٢٩﴾
 قُلْ لِلْمُؤْمِنِينَ يَغْضُؤْنَ مِنْ أَبْصَارِهِمْ وَيَحْفَظُونَ أَرْوَاحَهُمْ
 ذَلِكَ أَزْكَىٰ لَهُمْ إِنْ اللَّهُ خَيْرٌ لِّمَا يَصْنَعُونَ ﴿٣٠﴾ وَقُلْ لِلْمُؤْمِنَاتِ
 يَغْضُضْنَ مِنْ أَبْصَارِهِنَّ وَيَحْفَظْنَ فُرُوجَهُنَّ وَلَا يُبْدِينَ
 زِينَتَهُنَّ إِلَّا مَا ظَهَرَ مِنْهَا وَلَا يَضْرِبْنَ بِحُمُرِهِنَّ عَلَىٰ جُيُوبِهِنَّ
 وَلَا يُبْدِينَ زِينَتَهُنَّ إِلَّا لِبُعُولَتِهِنَّ أَوْ آبَائِهِنَّ أَوْ
 أَوْ إِخْوَانِهِنَّ أَوْ بَنِي إِخْوَانِهِنَّ أَوْ بَنِي أَخَوَاتِهِنَّ أَوْ نِسَائِهِنَّ
 أَوْ مَا مَلَكَتْ أَيْمَانُهُنَّ أَوِ التَّبِيعِينَ غَيْرَ أُولِي الْأَرْبَابَةِ مِنَ
 الرِّجَالِ أَوِ الطِّفْلِ الَّذِينَ لَمْ يَظْهَرُوا عَلَىٰ عَوْرَاتِ النِّسَاءِ
 وَلَا يَضْرِبْنَ بِأَرْجُلِهِنَّ لِيُعْلَمَ مَا يُخْفِينَ مِن زِينَتِهِنَّ وَتُوبُوا
 إِلَى اللَّهِ جَمِيعًا أَيُّهُ الْمُؤْمِنُونَ لَعَلَّكُمْ تُفْلِحُونَ ﴿٣١﴾

The English translation of these verses of Surat *al-Nur* in the Holy Qur'an is:

[In the name of God, Most Gracious, Most Merciful,] "27. ye who believe! Enter not houses other than Your own, until ye have asked permission and saluted Those in them: that is Best for you, in order Ye may heed (what is seemly). 28. If ye found no one In the house enter not Until permission is given To you: if ye are asked To go back, go back: That makes for greater purity For yourselves: and God Knows well all that ye do. . . 30. Say to the believing men That they should lower Their gaze and guard Their modesty: that will make For greater purity for them: And God is well acquainted With all that they do. 31. And say to the believing women That they should lower Their gaze and guard Their modesty: that they should not display Beauty and ornaments except what (must ordinarily) appear Thereof; that they should Draw their veil over Their bosoms and not display Their beauty except To their husbands, their fathers, Their husbands' father, their sons, Their husbands' sons, Their brothers or their brothers' son, Or their sisters' sons, Or their women, or their slaves Whom their right hands Possess, or male servants Free of physical needs, Or small children who Have no sense of the shame Of sex; and that they Should not strike their feet In order to draw attention To their hidden ornaments. And O ye Believers! Turn ye all together Towards God, that ye May attain Bliss."⁴

The purpose of the Islamic teaching regarding permission for entering a house and exchanging salutations in a courteous manner is to ensure the privacy of the house. Also, the Islamic requirement for modesty applies to men as well as to women. Because of the difference between the sexes in nature and social life, there is a greater emphasis on privacy for women than for men, particularly in terms of the required dress and covering of bosoms

The design of the Moslem community should encourage all those who live in it to practice the way of life in which they believe, the life according to the Doctrine of Islam. Thus, contemporary architecture and urban structure should not rely only on physical materials, but should also express the valuable principles of Islamic culture. Islam emphasizes that each community is a family which leads to the importance of the Islamic community's architectural environment which is based on the relationships of individuals within their society according to Islamic laws.

The search for the hidden dimension which ordered and formed Kuwaiti culture can be successfully conducted if the culture's identity is understood and its roots are carefully examined. This understanding helps in continuing the true and valuable principles of traditional Kuwaiti architecture in a positive direction.

The search for the key to understanding the identity of order in an Islamic context lies in full comprehension of the concept of unity and its influence on the Islamic culture, architecture, and urban structure.

A comprehensive investigation of the success of Kuwait's past can provide a guide to the equation for fitness.



(b) Traditional Architecture:

The notion of order is derived from the architecture and urban fabric of the old town of Kuwait.

Today, functional standards are higher and more complex than those applied in the past when simplicity was the image of life. The dream of innocence is of little comfort to us; our problem, the problem of living under complex constraints, is new and all our own.

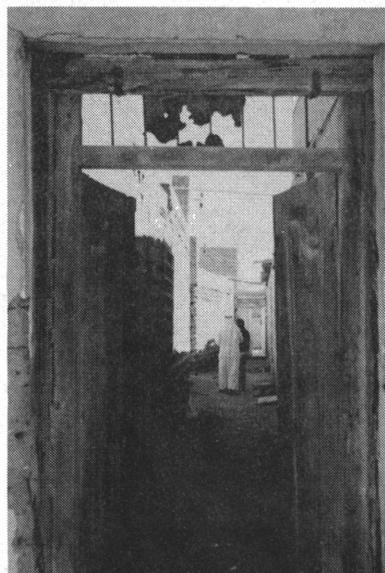
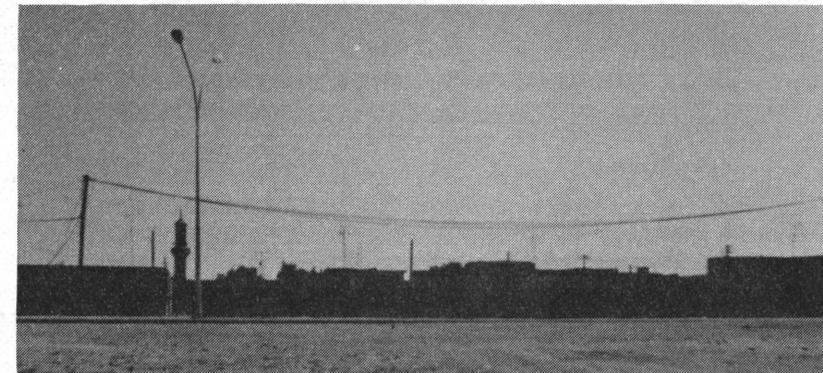
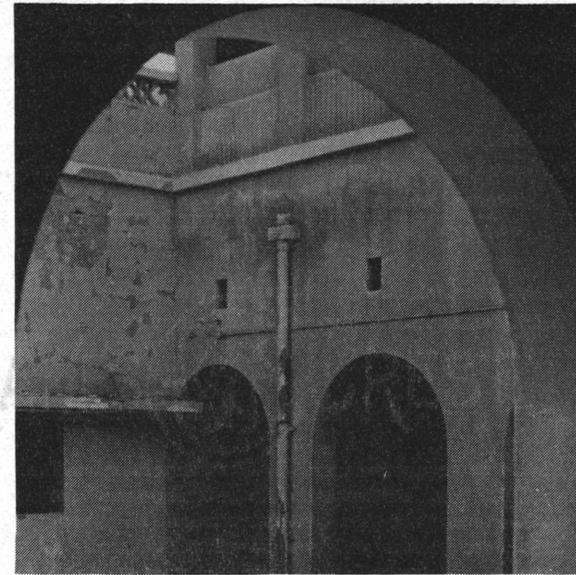
The people of Kuwait combined a wide imagination with the sense of unity and with a determination to attain harmonious order; only their resources were primitive.

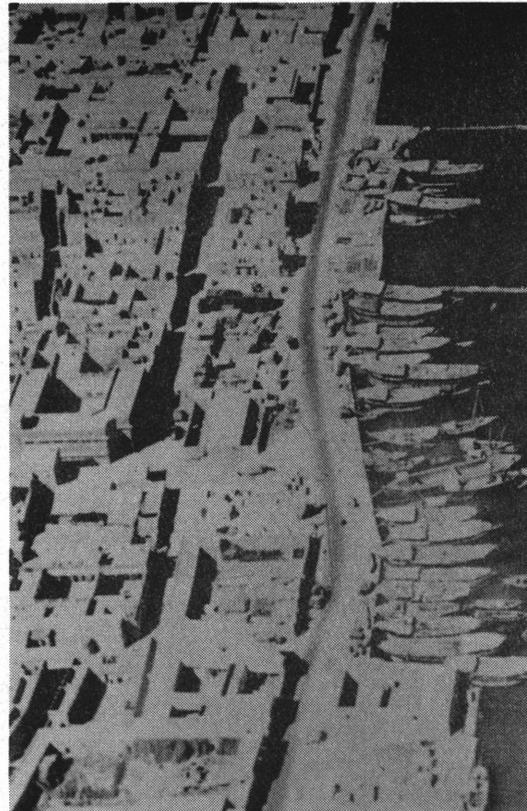
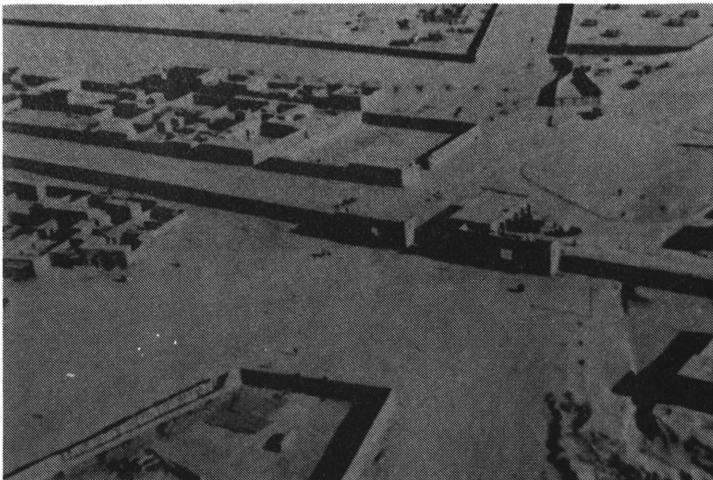
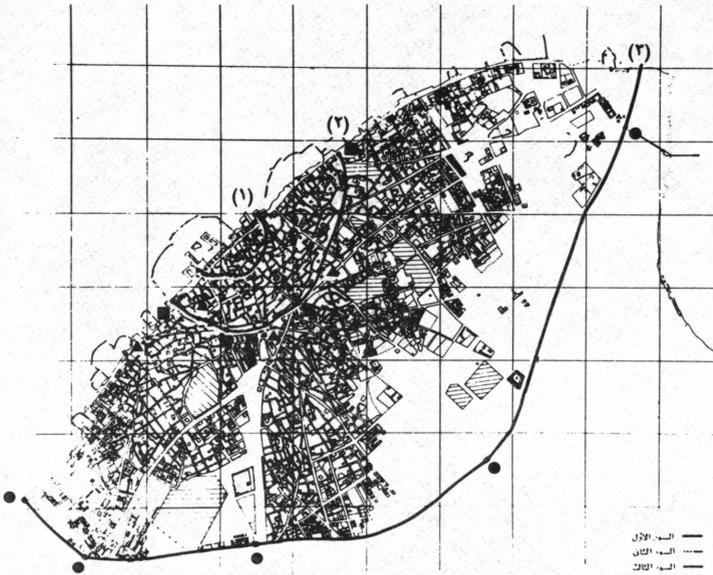
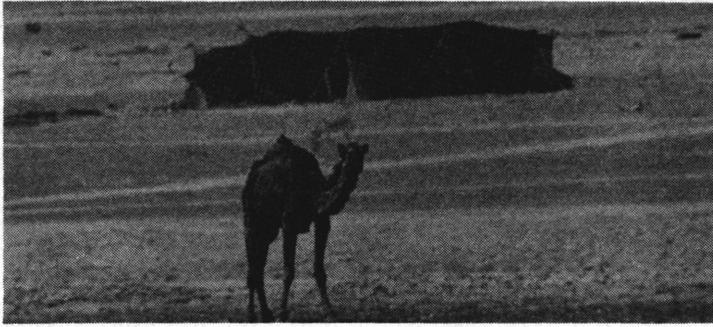
Nader Ardalan and Laleh Bakhtiar in their book, *The Sense of Unity*, state:

The development of Islamic principles to express unity through the organization of quantitative and qualitative space and shape in human settlements has assumed three observable systems of order-making: natural, geometric, and harmonic. Each system is dependent upon the others, but does not preclude development in time for any of the systems, each can be discerned even today. They are three fundamental ways by which man shapes his environment.¹

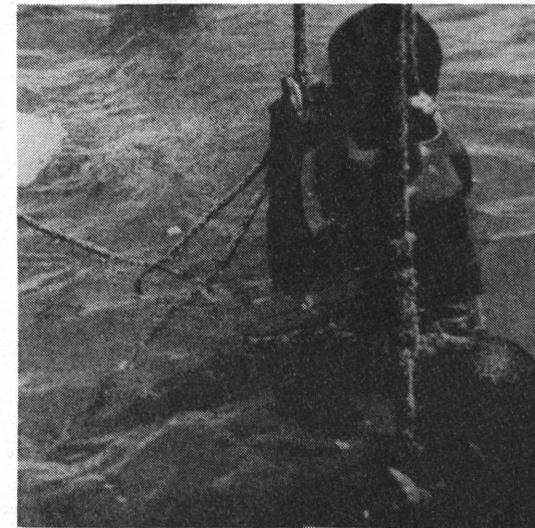
The order of the architecture and urban structure of Kuwait's traditional town expresses unity through harmonic interaction between man and his spiritual and physical surroundings.

The urban structure of the old town of Kuwait is noted for the harmony among its small units. There were no distinguished works of architecture per se in that old town, but it is misleading to view architecture of significance as solely found in the masterpieces of the past. The Kuwaitis "simple though they were, made a town from courtyards, colonnades, thick walls, shady lines and whitewash that was utterly in harmony with life in a hot climate and the rhythms of day to day existence under the merciless light from cloudless skies, just as others similarly poor, had made the old settlements of Muscat, Bahrain, Algiers, and those as far away as southern Spain."²



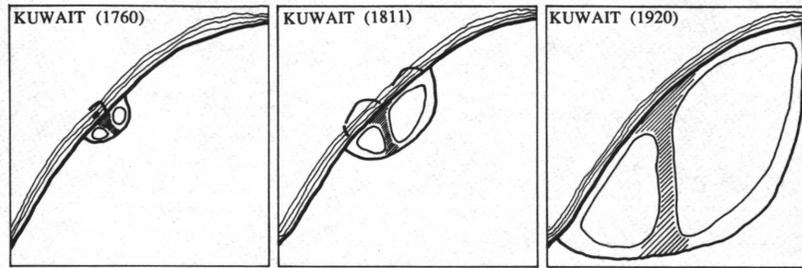


The desert and the Arabian Gulf are Kuwait's natural boundaries. Kuwait as a desert town has a unique profile and a unique relationship with the Gulf. It is outwardly closed to the desert and inwardly open to the Gulf. The Kuwaitis enclosed their town with a radial wall, the fence of Kuwait, to shelter it from their enemies and to separate it from the desert. Kuwait thus became a town of the sea. The people of Kuwait changed from men of the desert to men of the Gulf through trading, pearl diving, and fishing. Kuwait is a perfect example of people successfully adapting to the laws of nature by consciously ordering the form of their city. By understanding the natural habitat around them, they can consciously integrate the town's urban structure and architecture with the natural forces of their physical and cultural context.



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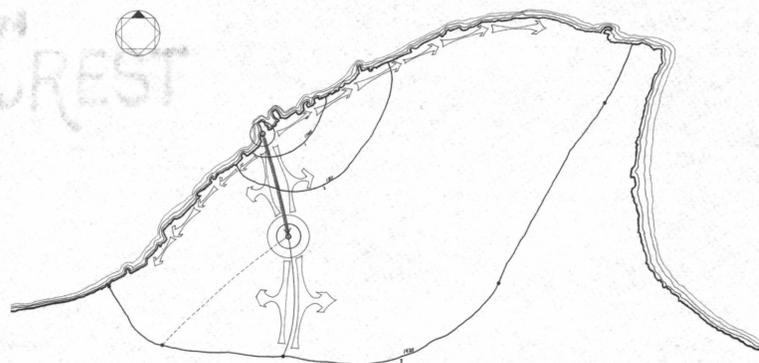
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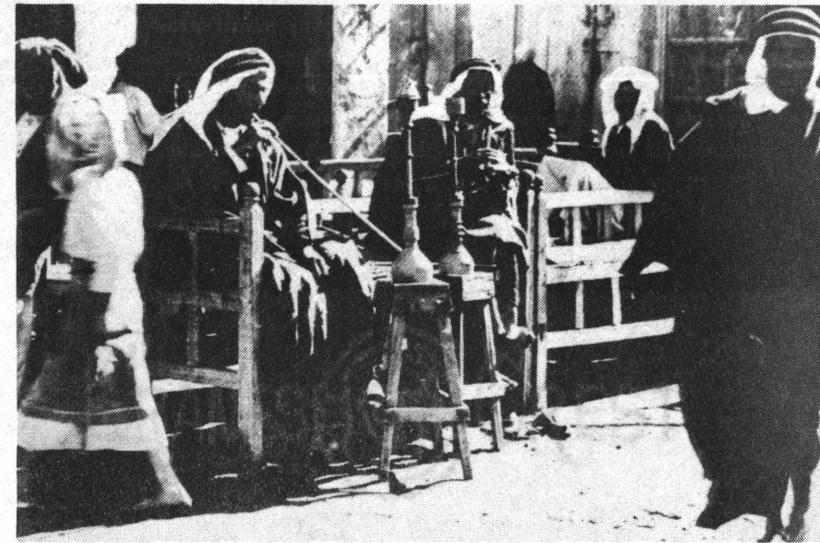
The Islamic cities that evolved by growing outwardly from a central point, usually in *al-Jami'a* mosque and the seat of government, created a city with a circular form. Usually the walls on its perimeter defined the cities' positive shape in space. The concept of *souq* is developed in these cities. The development of this concept is a natural response to the city's growth from one center to another, as a point in space travels linearly in time until it rests in another point in space, a new center. The spinal system of pedestrian walkways created between these two centers in the city is the *souq*, and all major activities of the city run along it.

This system of spine, or adjustment towards a moving point, introduces a more significant planning design which until recently has permitted growth and modification as natural facts of being and adaptation. The concept of *souq* is described in the book *The sense of Unity*:

As the bazaar [the *souq*] grows, the vital backbone of the city evolves, and the pedestrians' streets leading into the city's body proper insert themselves as ribs. Within this structure and in proximity to the skeletal center, the vital organs of the city develop: bath houses, schools, granaries, bakeries, water cisterns, tea houses, and the numerous stores of the merchants and craftsmen. This structural form represents the religious, political, financial, and social integration of the traditional [Islamic] city.³



Kuwait is no exception. The differences between Kuwait and other Islamic cities, though, are caused by its natural boundaries, the Gulf and the desert, creating a city with a semi-circular form. This form first grew from an original center which was the *al-Seif* palace, the seat of government, and *al-Fordhah*, the original sea-port. As the old town was growing, a linear *souq* developed connecting the original center with a new center, *al-Sofat*, and oriented in the direction of the main town gate (*baw'wabat al-shamiah*). *Al-Sofat* was not only a center for the general gathering of the people in the city, but also an open area and a meeting place where all the paths coming from the different gates to the city intersect.

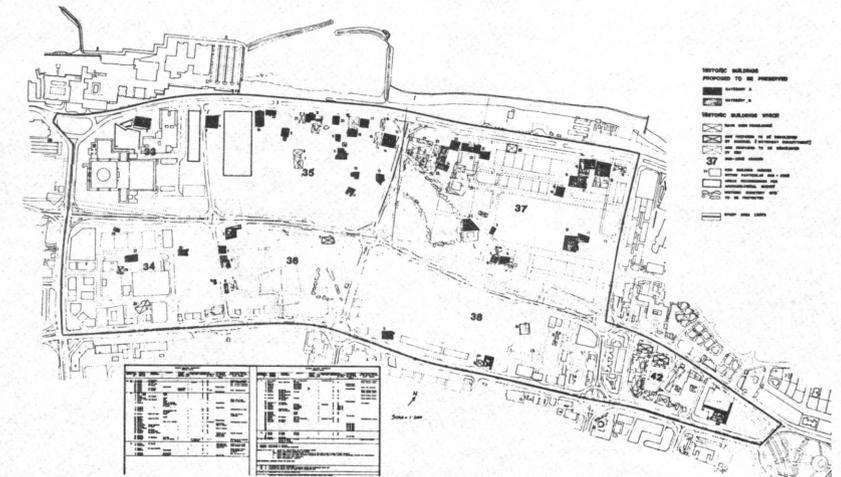
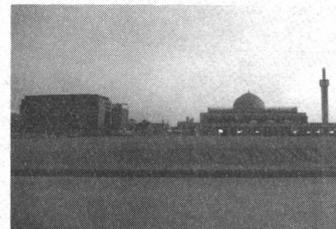
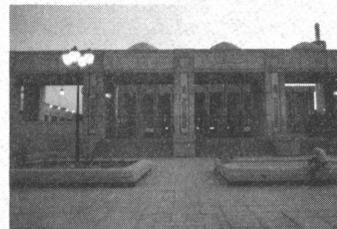
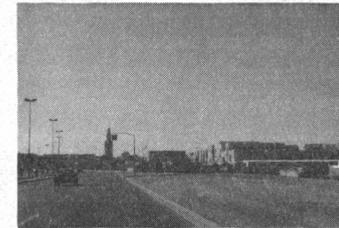
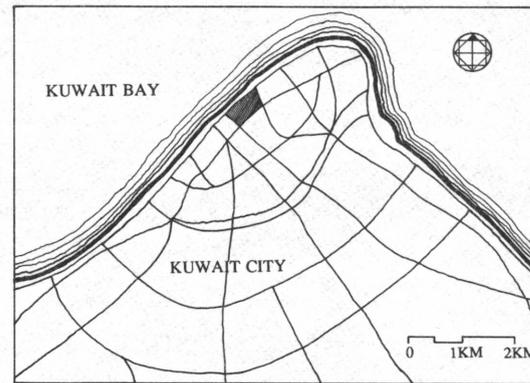
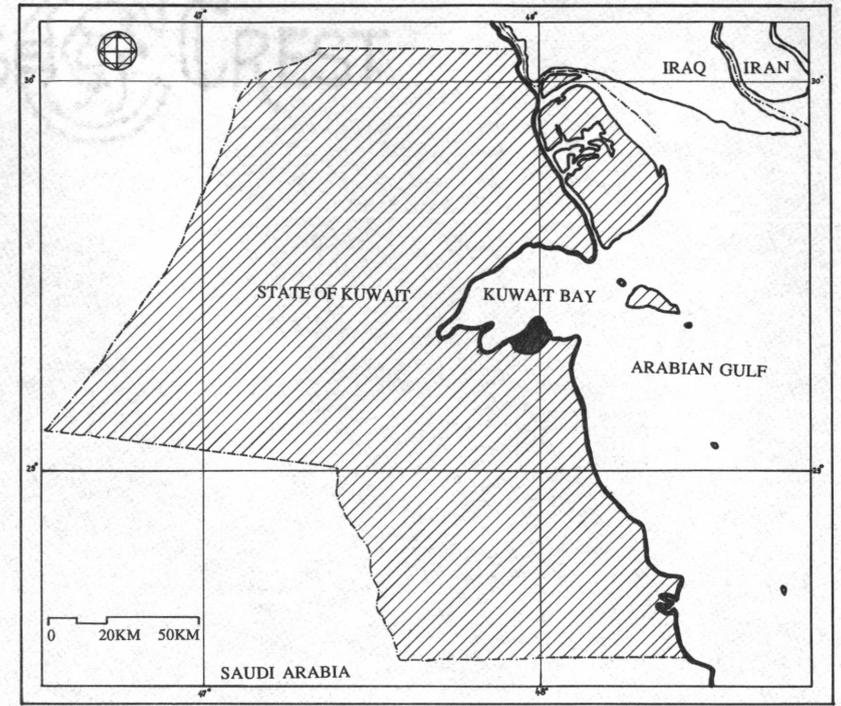
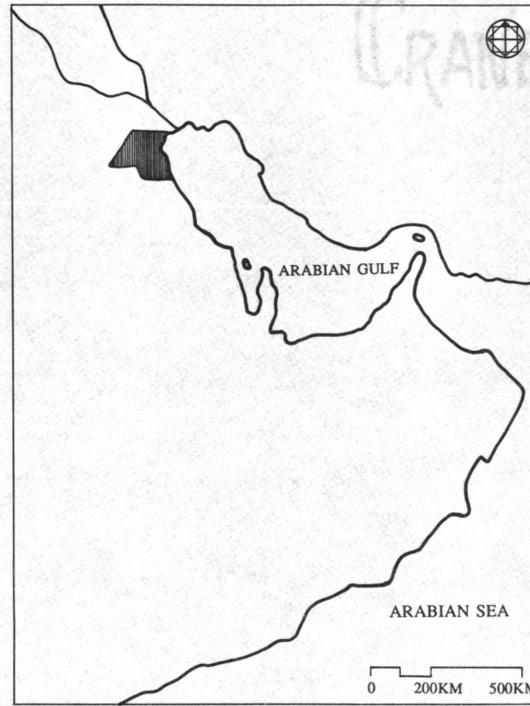


(c) Site:

Kuwait is located in the northern corner of the Arabian Peninsula at the north-west extremity of the Arabian Gulf. Kuwait lies between latitude 28°N and 30°N and between longitudes of 46°E and 48°E. Its total land area is estimated at 6,960 sq mi (17,818 sq km). Kuwait shares its northern and western borders with Iraq and its southern and southwestern borders with The Kingdom of Saudi Arabia. On the east, the coastline is 176 mi (290 km) long. The terrain is almost flat desert with no rivers or streams. Kuwait International Airport has a latitude of 29° 13'N and a longitude of 47° 58'E.

The site is zone 8/ sector 35 and part of sector 38 of *Sharq al-Seif* area (according to the Municipality of Kuwait). It has an approximately rectangular shape, with an average length of 560 meters along the northeast and southwest and an average width of 300 meters along the northwest and southeast. This site is a valuable piece of urban property due to its sensitive location in Kuwait City. Therefore, the desire of the Kuwait government is to explore alternative housing forms that would allow the economical use of available area while still utilizing privately owned individual houses. In addition, the government intends to develop on this site the reconstruction of a traditional village of Kuwait.

The site is located in the *al-Seif* palace area, the original center of the old town of Kuwait, and near most of the important and sensitive public buildings. These buildings, based on proximity to the site, are: the Grand State Mosque, *al-Jami'a* mosque, and the Ministry of Planning Buildings are to the southwest; the Ministry of Foreign Affairs Building to the west; the Stock Exchange Building and the *souq* of Kuwait area to the south; and the seat of government, *al-Diwan al-Amiri* and *Majles al-Wozara'a*, buildings to the northwest. Arabian Gulf Street lies along the site's northern perimeter, and across from the site is the Arabian Gulf seafront.

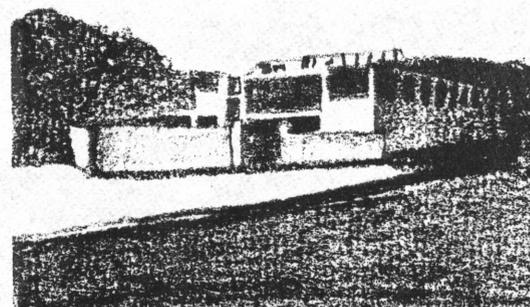
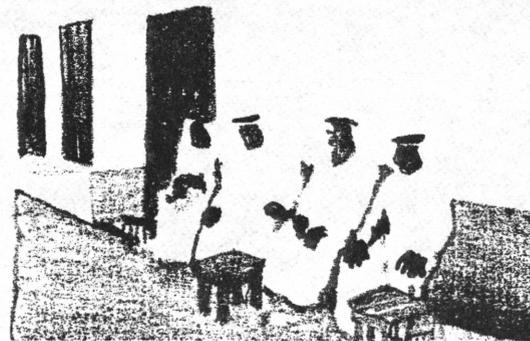
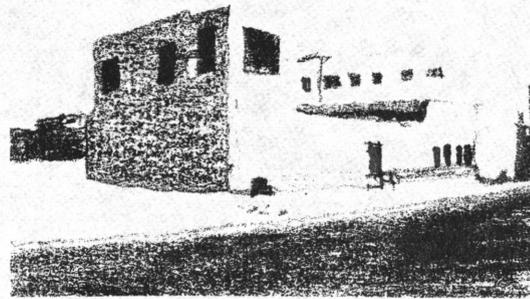
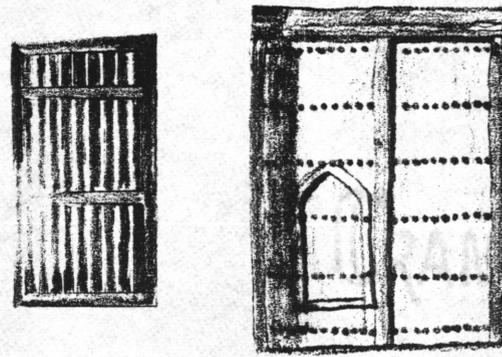
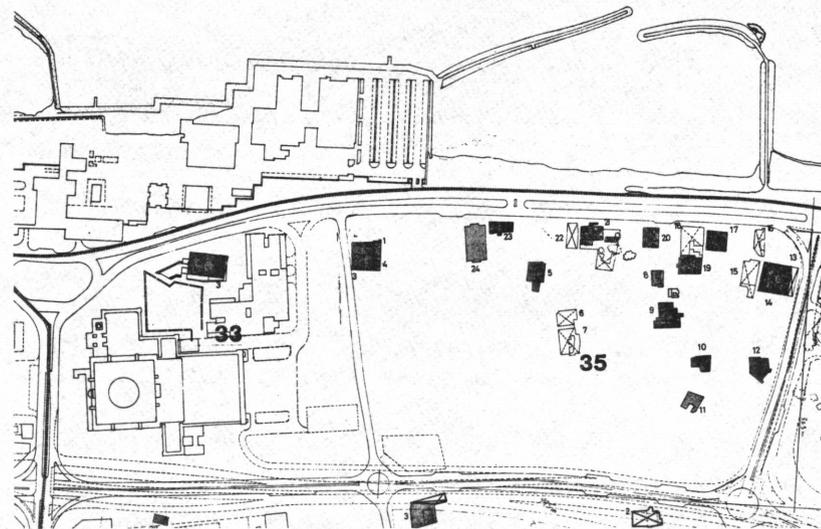


The site is historically significant, being a part of the old town of Kuwait where a few historical buildings memorialize the very early dwellers. These are preserved on the site, for instance, *diwaniat al-Nesef*, *al-Mol'la*, and *al-Shamlan*, the Dickson house, located along the Arabian Gulf Street, and several mosques. In addition, some portion of the second wall of the town of Kuwait, dated 1811 A.D., was located on the site.

(d) Climate:

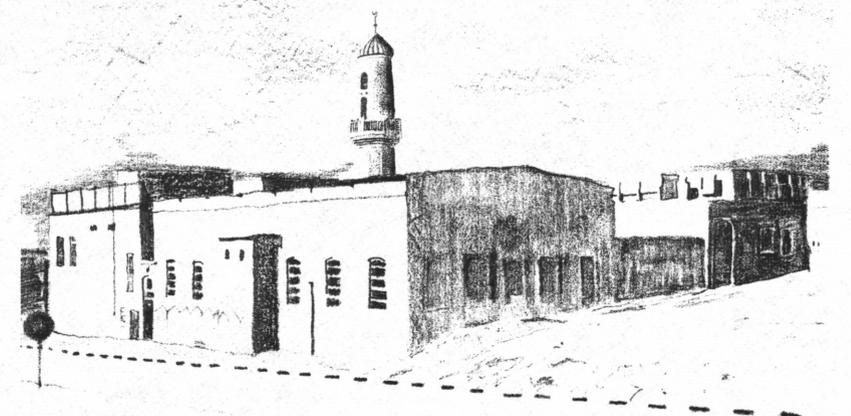
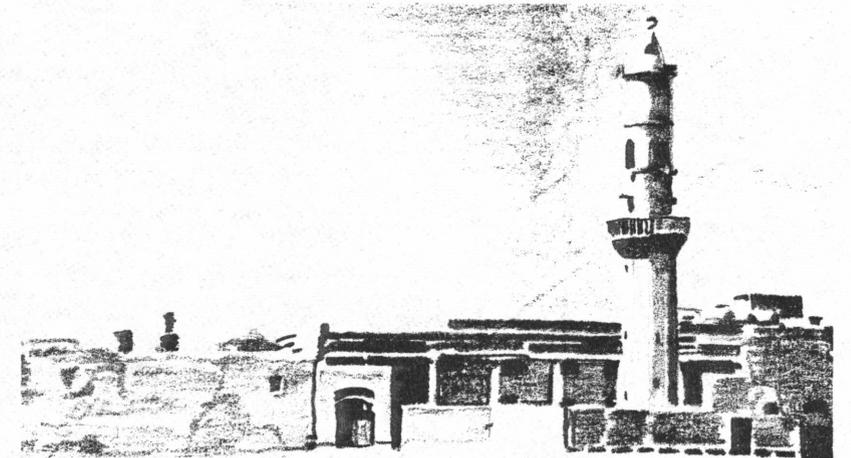
The country has an arid, subtropical desert climate. There is a wide temperature variation, ranging from an average of 8°C (46°F) in winter to an average of 45°C (113°F) in summer.

Summer, which lasts from about the 21th of May to the 4th of November, is extremely hot with temperatures ranging from 43°C (109°F) to 51°C (135°F); the prevailing winds are northwesterly. Fall, which lasts from about the 5th of November to the 5th of December, is mild with clouds, rain and cool nights. Winter, which lasts from about the 6th of December to the 15th of February, is remarkably low in temperature with clouds, rain, and cold northwesterly winds; night temperatures occasionally reach the



freezing point. Spring which lasts from about the 16th of February to the 20th of May, has gradually rising temperatures beginning with lows of 30°C (86°F) and ending this period with highs of 40°C (104°F); the prevailing winds are easterly and southeasterly, and the sea-breeze is predominant.

The major winds are from the northwest. When these winds occasionally pick up speed and create dust and sand storms, they have a bad effect on the environment. This is a significant problem, especially for the inland areas of the country where the open desert is more exposed to these winds. The site of Sharq al-Seif, due to its orientation and location on the Arabian Gulf and within the high density area of the city of Kuwait, is considerably protected from the bad effect of these winds.



4. Architectural response to the Objectives

Each objective is accomplished through the application of specific design criteria to the development of a housing community for Kuwaitis. The description of this process is followed by an evaluation of the success achieved, as related to the drawings.

Objective (a) To design a contemporary housing community for Kuwaitis on the site of the *Sharq al-Seif* area; addressing the needs of the Kuwaiti culture and physical environment.

Response:

The concerns that influenced the design put forth here are respect for the positive qualities of Kuwait and other Islamic cities' culture, architecture, and urban structure. The cultural concerns are the traditional community needs for unity, privacy and for socializing. The architectural and urban structural concerns result from environmental conditions of a typical Kuwaiti town. Thus, when designing any type of housing for an area in Kuwait, an architect must deal with the effect of intense solar heat, sunlight, and glare.

The direct sunlight admitted into a room will normally cause a significant increase in room air temperature. Balwant Singh Saini wrote:

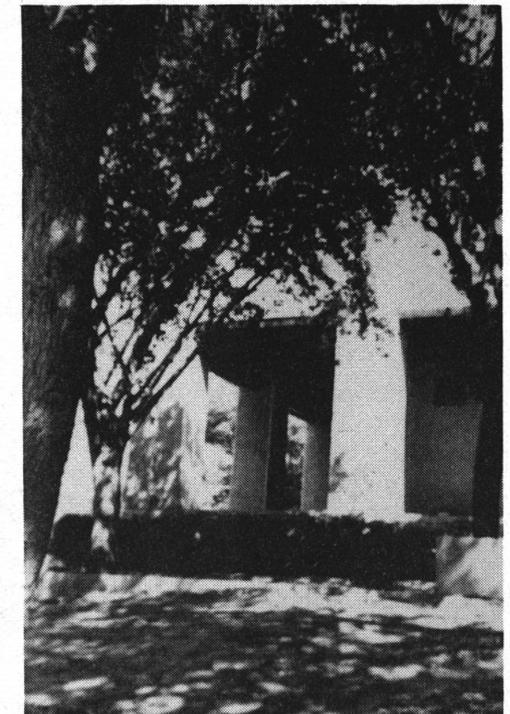
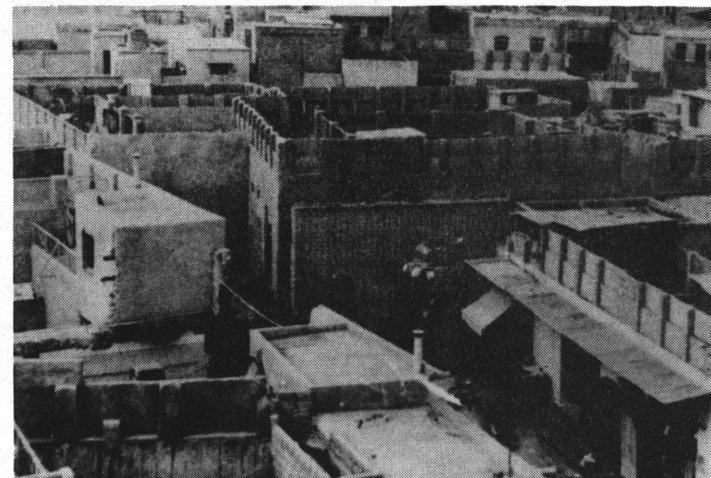
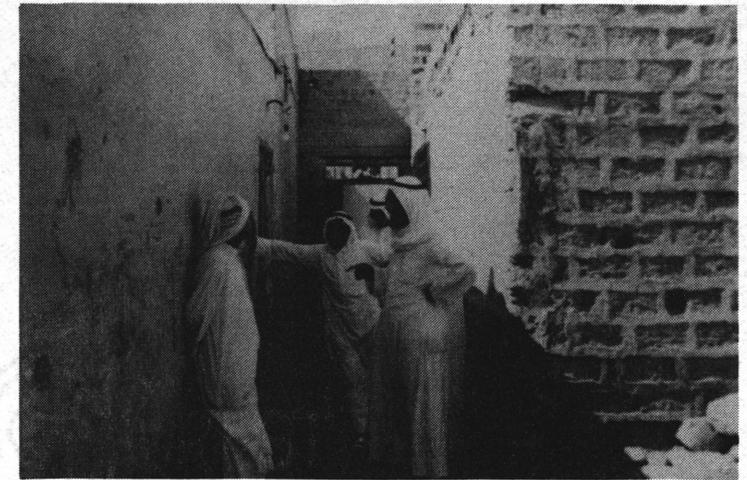
The principal problem confronting the designer in hot dry lands is how to reduce the impact of solar heat, particularly during the summer. . .Solar radiation increases the temperature of sunlit surfaces by as much as 30° to 80°F [16.6° to 44.4°C] and causes the rate at which heat will flow into a structure to accelerate. . .For comfort in hot dry lands reduction of heat takes precedence over air movement.¹

Shading for buildings is achieved by aligning a row of attached houses close to each other. This shading, along with planting, is important in reducing the heat gain effect on external walls of the buildings. Planting is a very important factor in creating a better environment. Local deciduous trees are used in the design to provide shade and shelter, to reduce glare, to act as windbreaks, and in general to provide restful areas that enhance the environmental quality of a desert region during hot seasons.

Planting has been very important in the Islamic way of life. The Palm tree is an evergreen tree called *al-Nakh'lah* in the Arabic language. It is the most popular tree in the Islamic world and is mentioned in the Qur'an describes heaven with palm trees. The use of palm trees in the landscaping of the the whole community is symbolic and esthetic more than climatic and expresses the sense of unity through a unified green appearance.

Houses are arranged in double-row patterns and attached together on three sides to achieve a compact urban structure. This type of structure is highly recommended in the hot-dry areas, because it is based on sharing common walls between neighbors. This method is effective as an energy conserving design measure in keeping the interior spaces cool by reducing the area of walls exposed to direct sun and outdoor heat.

Thus, form is the natural consequence of the forces of Islamic culture and climate. The word *house* in Arabic language is *Mas'kan* which is derived from the word *sakinah*, or rest in peace. Private homes and public buildings are all introspective, each looking inward to a controlled, protected, private courtyard. The protected interior space is the major common denominator observed in traditional Islamic cities. This traditional technique, which reduces the need for windows on



The interior spaces, designed with consideration to changes in the Kuwaiti standard of living, maintain the Kuwaiti cultural values and respond to the climatic needs. The rooms are open to a shaded courtyard of the house to maintain privacy as well as to receive daylight and ventilation. In Islamic cultures, house openings, doors and windows, are very carefully designed and located so as to assure privacy according to the Islamic teachings.

Daylight filters into most of the rooms from the northern sky and provides a uniform and low intensity light throughout the day, important in areas with intense sunlight and cloudless skies. Cool air flows in, allowing those inside to avoid direct exposure to the harsh exterior environment of intense daylight and hot air. At the same time, the depth of the room provides a soothing contrast with the intense heat and glare outside.

Eastern, southern, and western windows are designed specifically to avoid the intense light and glare discomfort from the sun which occurs most of the year. These windows are treated by using shading devices such as the *mashrabiah* and wooden lattice screen which perform the functions of moderating intense sunlight, admitting air-flow, reducing glare and providing privacy. Small windows, for light and ventilation only, are placed high in the walls where vision is not desired.

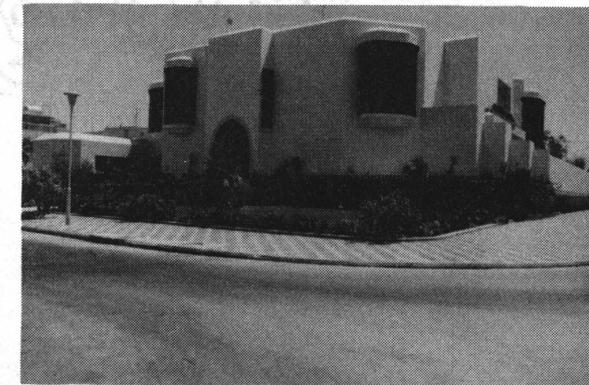
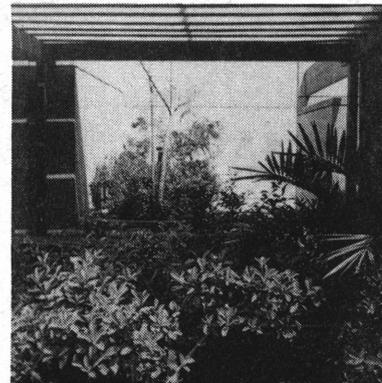
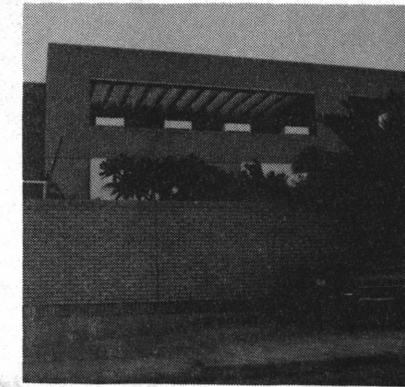
Basements are recommended in hot-dry areas, because they are effective in maintaining comfort during varying climatic conditions. In the summer, they don't get as hot as the upper floors of the house, and in winter they don't get as cold as the upper floors.

The roof of the house is the major source of heat gain, particularly in low-rise buildings in regions, such as Kuwait, with high solar exposure throughout the year. In addition to the insulation materials used in the roof slab, one method used to protect the roof is to design another roof above it to provide shade while ventilating the air gap between the slab and the ceiling.

external walls looking directly outdoors, is adopted in the design. Thus, external windows are optional and minimized, since the need to assure privacy and control over the climate prevails. The courtyard space is protected by high surrounding walls, creating uninterrupted privacy and the family's world within a world. It is the family place, a cool and quiet sanctuary, where inhabitants can practice total freedom in privacy.

Conclusion:

The design of this proposed contemporary housing community in the Sharq al-Seif area fits the current functional standards of the Kuwaitis, including all of the elements listed above.



Objective (b) To incorporate a geometry in the design process expressing conceptually the sense of unity within the following: 1. The development of a prototype courtyard house unit which fits into the whole community structure.

Response:

The courtyard is an introverted, intimate outdoor space within the house which brings the outdoors inside and satisfies cultural needs as well as climatic ones in Islamic countries.

Christopher Alexander, in his book *Notes on The Synthesis of Form*, states: ". . . indeed, the form itself relies on its own inner organization and on the internal fitness between the pieces it is made of to control its fit as a whole to the context outside."² In addition, ". . . a well-designed house not only fits its context well but also illuminates the problem of just what the context is, and thereby clarifies the life which it accommodates."³

The northern space of the house is the most desirable one. This is true with respect to the general physical environment of the region for avoiding the solar impact. This is also true specifically with respect to the *Sharq al-Seif* site's location and orientation on the shores of the bay of the Arabian Gulf for receiving sea breezes and for the view. The courtyard is most efficient in fulfilling the desire for a cool environment when it is in the northern part of the house in this particular case. The objective is to structure the houses of the whole community with courtyards oriented to the north. Therefore, the design has to be controlled in a way that makes the form of the house flexible enough to open all the houses to the north.

A great part of the challenge in the design exists in creating a system that provides a whole housing community of prototype house units with courtyards oriented to the north. The conflict lies between the flexibility needed for the unit arrangement of the whole community and the fixed orientation of the courtyard desired in each house of that community. Critchlow in his book, *Islamic Patterns*, states:

If one is about to embark on weaving some fabric in a simple repeating pattern, or on making a repeating patchwork out of similar regular pieces, or if one intending to make some tiles which should regularly repeat their pattern, one finds that one's endeavors are governed by the simple law that only a square, a triangle, or a hexagon can result if the work is to repeat regularly. Variations will emerge as experiment goes beyond the first three basic shapes.⁴

A similar belief has been expressed by a contemporary architect, an American, Walter Netsch, who states that: ". . . form came from purpose and geometry."⁵

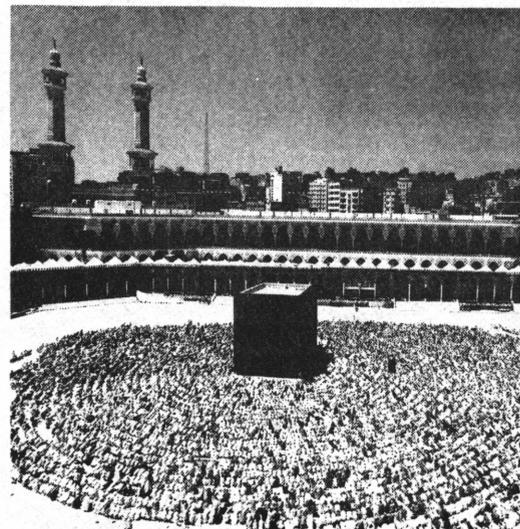
The introduction of a geometry as a tool for the design process of the prototype house unit and the layout of the whole site is the attempt to solve this conflict. This tool will help in the systematic arrangement of the repeated unit which produces the overall design.

The basics of geometry in Islam are developed from spiritual and physical shelter for unity, and are expressed by the sense of center. God has said in *Surat Al-i' Imran*:

بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
إِنَّ أَوَّلَ بَيْتٍ وُضِعَ لِلنَّاسِ لَلَّذِي بِبَكَّةَ مُبَارَكًا وَهُدًى
لِّلْعَالَمِينَ ﴿١٦﴾

The English translation of this verse in the Holy Qur'an is:

In the name of God, Most Gracious, Most Merciful, "96. The first House (of worship) Appointed for men Was that at Bakka [Mecca]: Full of blessing And of Guidance For all kinds of being."⁶



Al-Ka'aba, in Mecca, is the first house built by Prophet Sha'yeth, the son of Prophet Adam, (peace of Allah be upon them,) for worship on the face of the earth. It has been rebuilt by Prophet Ibrahim and his son, Prophet Isma'il, (peace of Allah be upon them,) without a ceiling. And then it was rebuilt with its ceiling by Qu'raysh, Prophet Muhammad, (the blessing and peace of Allah be upon him,) who shared in putting the black stone in its place, the southeastern corner.

Al-Ka'aba, as seen now, is a result of comprehensive renovations during the 16th century and during the ruling family of Al-Sa'ud in Saudi Arabia. The building of Al-Ka'aba has a cubical shape with one door on its eastern elevation, and inside it there is one circular column in the center of the room. Geographers calculated the weight of the earth and found that the axis of balance of the earth is a connecting line between two points. The first is the intersection between longitude 40°E and latitude 22°N, which is in Mecca, and second is the intersection of the facing longitude and latitude west and south which is in the Atlantic Ocean. Everything in this earth is not only rotating around the eternal axis of the earth, but also Al-Ka'aba which is located on this axis. The circular movement of Moslem people around Al-Ka'aba is eternal until the day of Judgment. This emphasizes the importance of the circle and the focus on its center. Al-Ka'aba is a symbol for the Moslems' unity and gathering around their faith. It is not only an expression of centrality in a comprehensive meaning or the central focus in terms of one architectural building, but also the Moslem's circular movement around Al-Ka'aba, part of the performance of the holy pilgrimage in *al-Omra* or in the season of *al-Hajj*, it also expresses the circle and its use in Islamic architecture in terms of directing, containing, and balance.

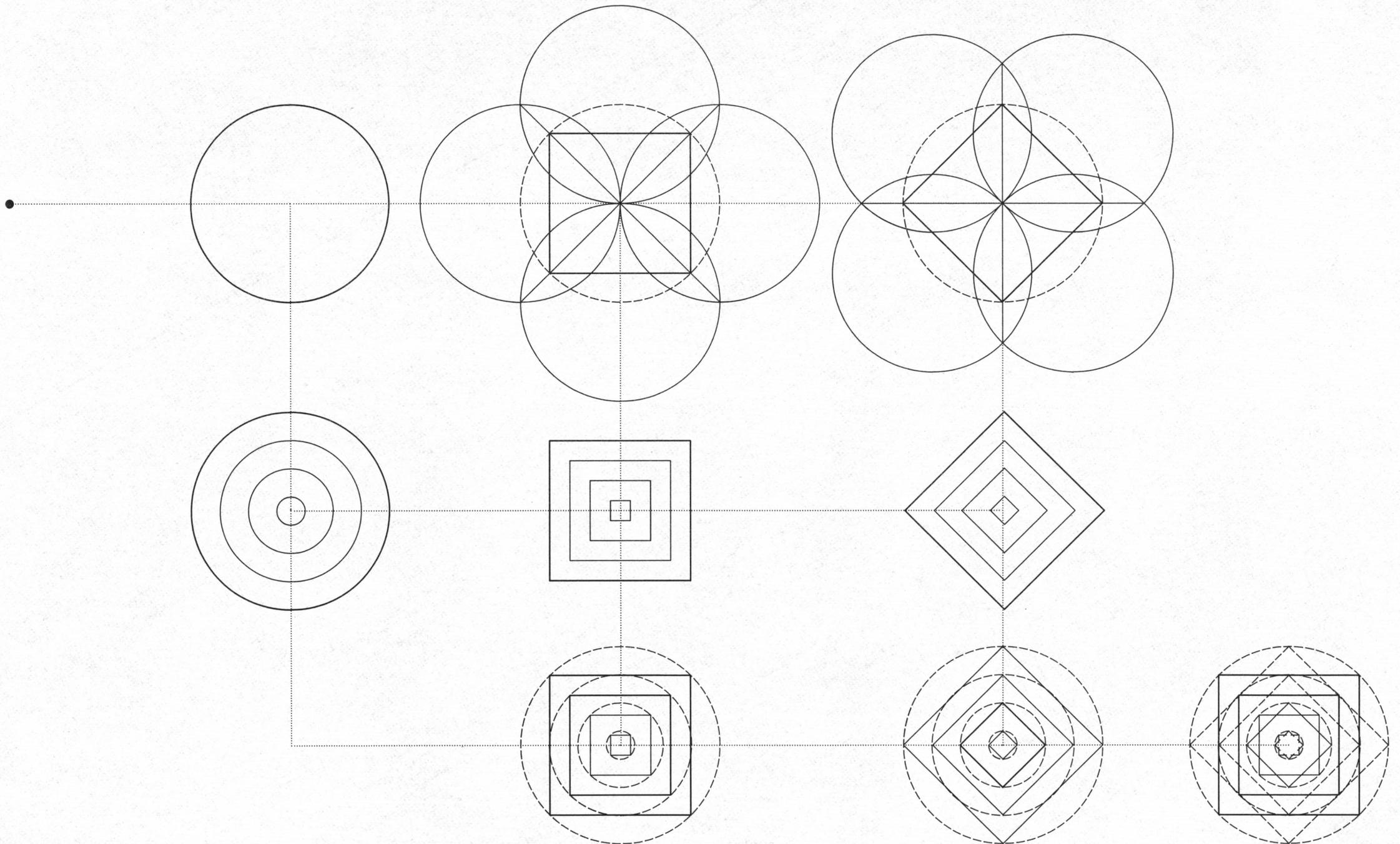
In Islamic Art, architecture, and calligraphy the geometry is artists' tool for harmonic and creative design without the restraints of numerical system. There is a strong relationship between the design of a unified structure and the geometry for that design. Geometry is the perfect tool for weaving process which creates as El-Said and Parman describe in their book *Geometric concepts in Islamic Art*: ". . . [a] perfect inter-relationships between the parts and the whole of the composition attained irrespective of mode, form or scale of expression. Hence a universality was achieved in the Islamic world which is consistent with the Islamic belief that all creations are harmoniously inter-related."⁷

Critchlow in his book, *Islamic Patterns*, also describes the primary Islamic elements of geometry, such as the central point of a circle, the circle, and the square, that:

In the mind the point represents a unitary focus of conscious awareness; in the physical world it represents a focal event which was previously uninterrupted. . . The circle is not only the perfect expression of justice - equality in all directions in a finite domain. . . Outside the concept of time, the circle has always been regarded as a symbol of eternity, without beginning and without end, just being. . . the square, the symbol of physical experience and the physical world and totally dependent for its construction on the circle.⁸

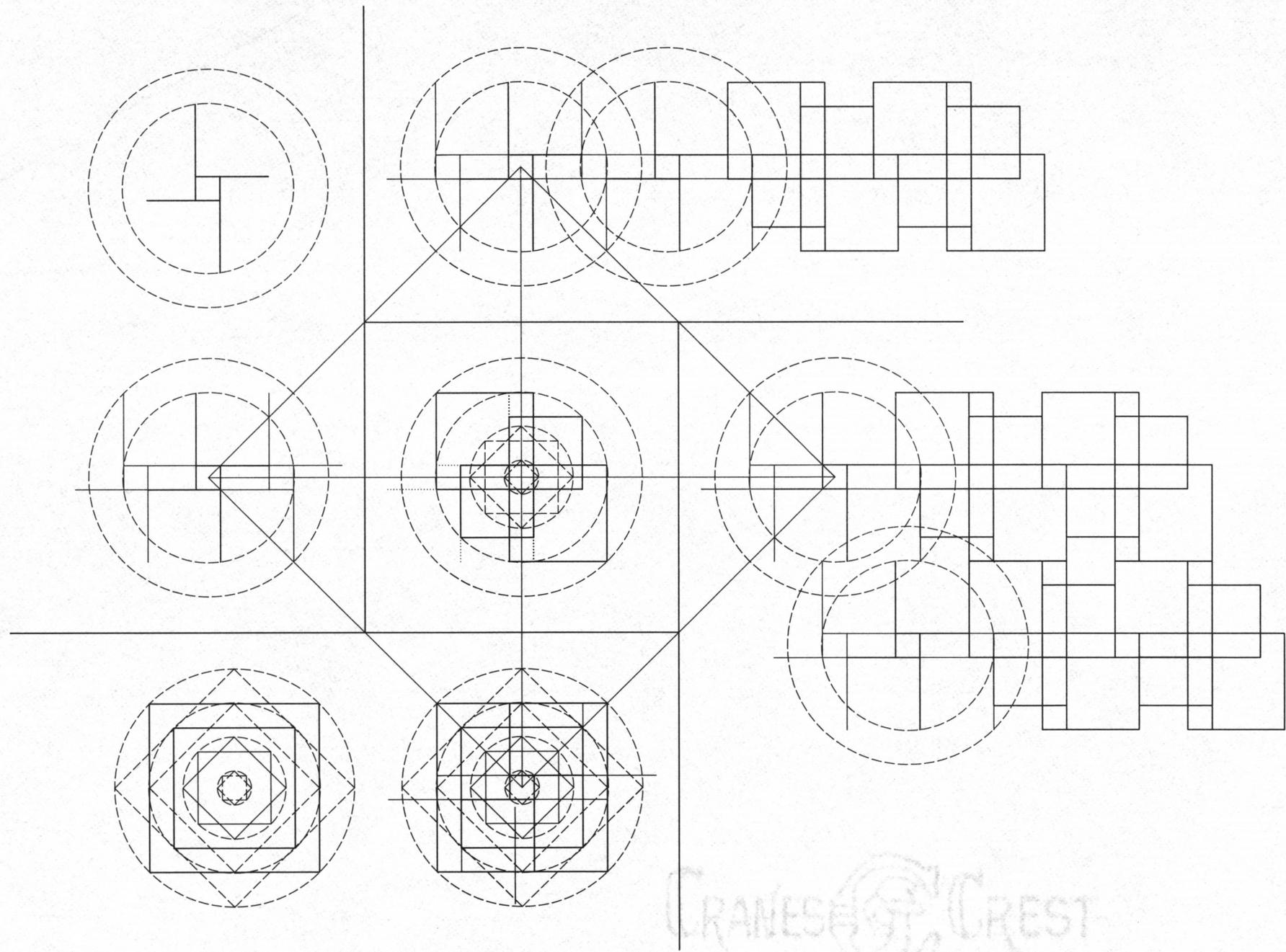
These geometric elements are fundamentals in the design process of the prototype courtyard house.

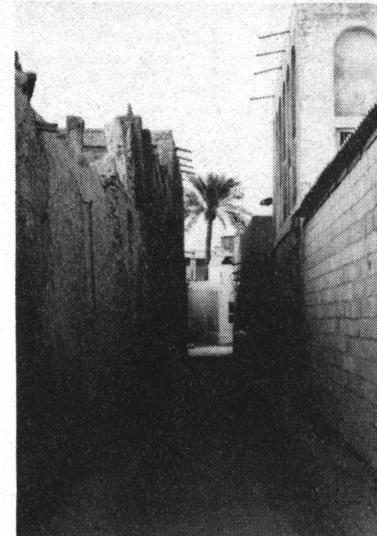
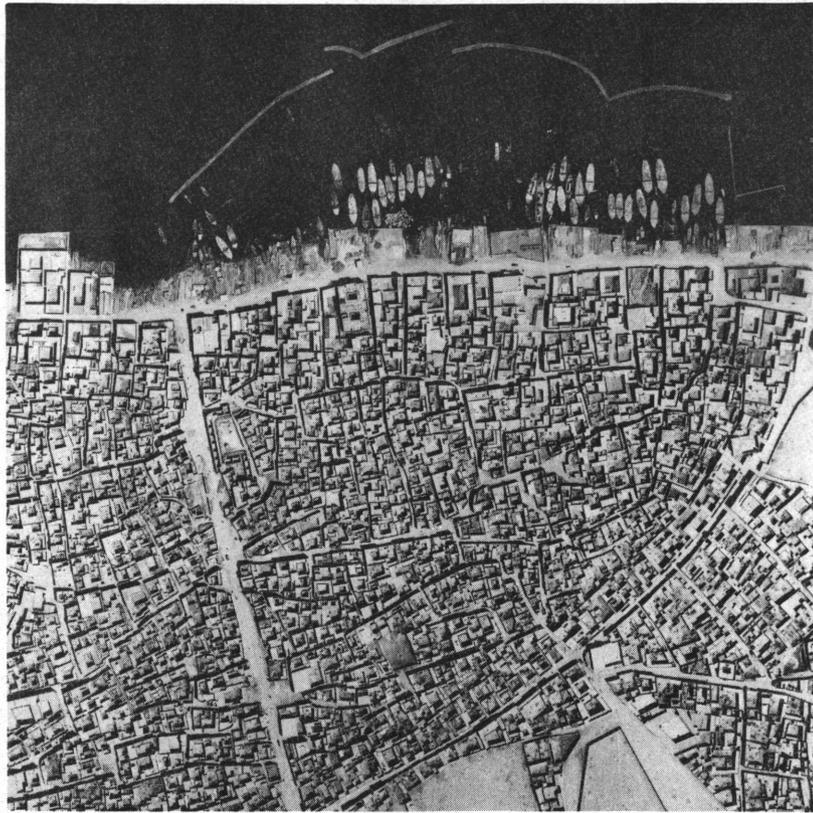
Geometry is used to design the plan of the house starting from a central point, and then generating circles from it to control the rotation of spaces in the plan. The symmetry of the circles allows for the rotation of equal spaces around the central point while maintaining the same plan pattern in each house. This permits the arrangement of the house units on the whole site while maintaining the northerly orientation of courtyard space in all the units. The central space in the house, developed from a central point, serves as a symbol for unity and source from which all other circles in the house plan are generated and controlled. This central point, in terms of geometry, is the elusive controlling point of the form of the house. Therefore, the central space is the place of focus in the house and all the rest of the spaces of the house look inward towards it.



In the design, the courtyard, a source of passive environmental control, is modified into a form which consists of two parts. The first part is an enclosed central atrium which functions as a source of indirect daylighting and selective ventilation in the heart of the house. The second part is a garden courtyard in which a pool and fountain provide evaporative cooling as well as psychological cooling effects within the house.

The architectural spaces of each house are arranged in three parts. The first is the open courtyard which is contained in the house's negative space. The second encloses the operative functions contained in the house's positive space. And the third is the atrium or the house's central space which is the intermediate space linking the other two spaces and representing the unitary uninterrupted focus of the house.



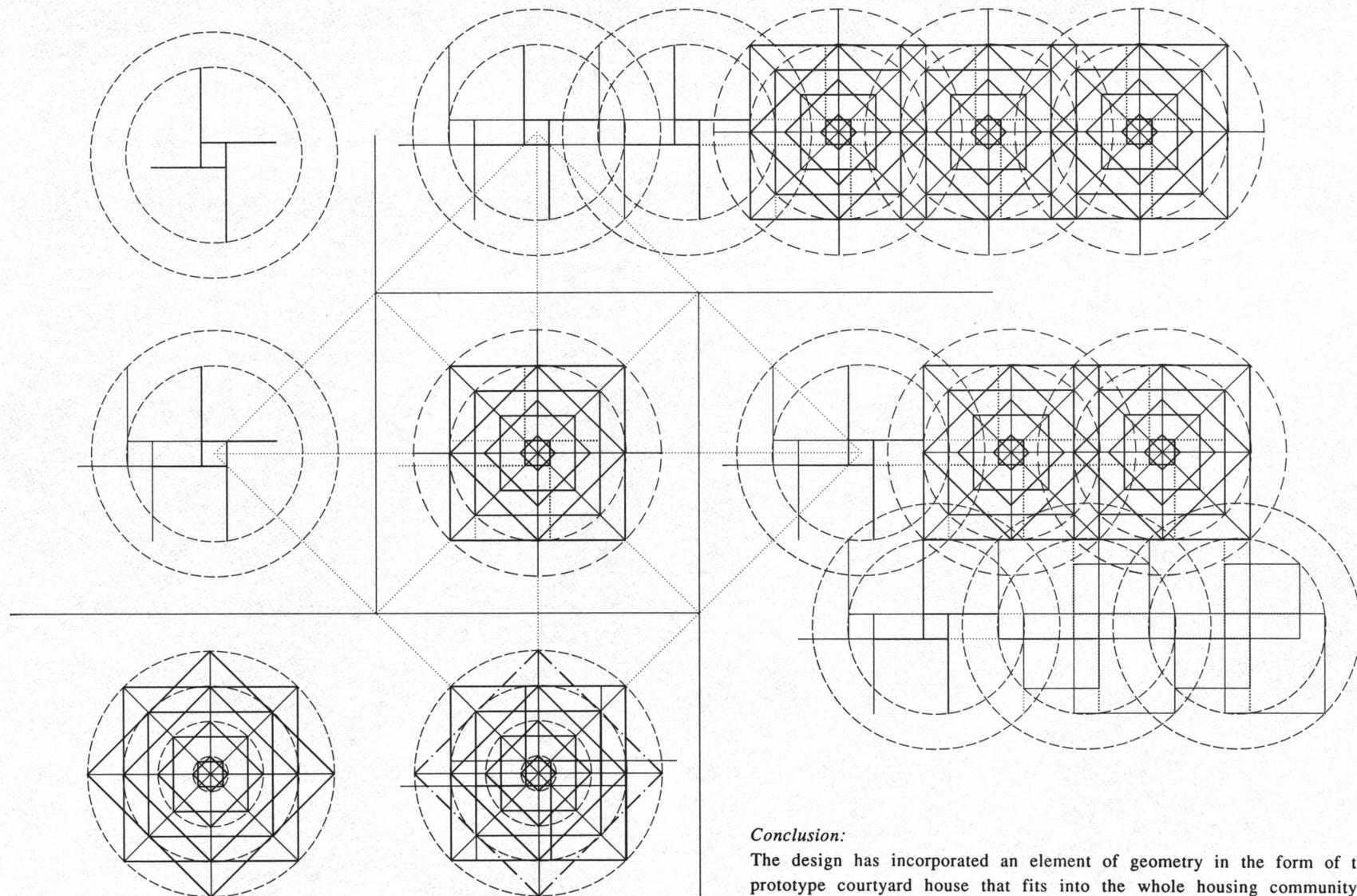


The development of the community housing design is based on three-story high courtyard houses in row patterns. Each house has direct access to both the vehicular level (the first level of the house), and the pedestrian level (the second level of the house). The net plot size of 324 m² which includes rooms and areas greater than what the National Housing Authority of Kuwait's current standards. The plan provides for individually owned houses at a relatively high density in this valuable site. Two hundred twenty five units can be designed with this form of housing.

The aerial photograph illustrates the character of the old Kuwait City which is also found in most traditional Islamic cities. In this hot-arid and composite climate zone the community is linked by narrow winding streets that continuously change direction. The narrow shaded alleyways form a pedestrian traffic network which expresses an essential sense of togetherness, comforting to pedestrians. The incidental squares of open public spaces formed by the adjoining buildings are meeting places. *Al-baraha* where two or three narrow alleyways open into a large public space is an interesting aspect of the streetscape found in each neighborhood of the traditional Kuwaiti town. Such a space was used for children's playgrounds, gatherings, and festivities, assuring the continuity of the people's way of life, a life that was charged with the intensity of social contact and the awareness of one's neighbors. Order and social responsibility grew from this interaction and life developed meaning based on human relationships.

An outdoor court is provided for each group of houses and neighborhoods, in the community to assure a pleasant, and convenient environment for socializing and recreation. Each of these areas is designated for different social and recreational activities; such as playgrounds, *majlis al-rejal* (male seating and entertaining areas), and gardens for the families. The garden in the court is an enclosed space like the human body enclosing its soul. The courts are provided with tent-covered areas: cool, shaded, and comfortable. These neighborhood courts are considered the semi-private zone in relation to the whole community structure. The *souq* area is the public zone, and the house is the private zone.

The pedestrian network illustrated in this plan consists of a series of narrow, semi-shaded alleyways which lead directly from the family entrance of each house to the covered *souq*. This *souq* is a major pathway for pedestrians which links the site with the nearby seafront and the *souq* area of Kuwait. The careful arrangement of archways framing the views and the placing of handsome entrances and windows along the narrow alleyways that do not infringe on a neighbors' privacy, further refine the concept.



Conclusion:

The design has incorporated an element of geometry in the form of the prototype courtyard house that fits into the whole housing community.

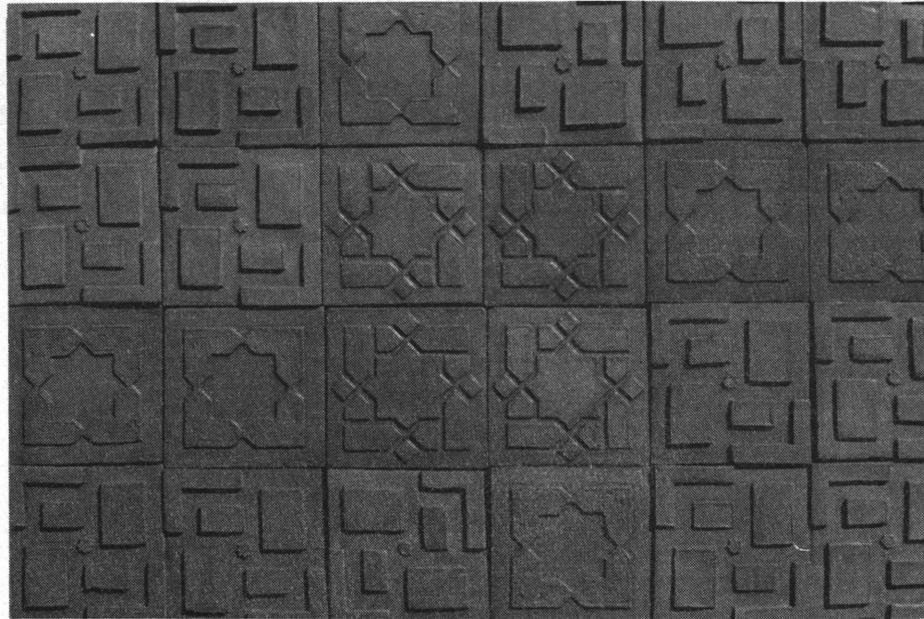
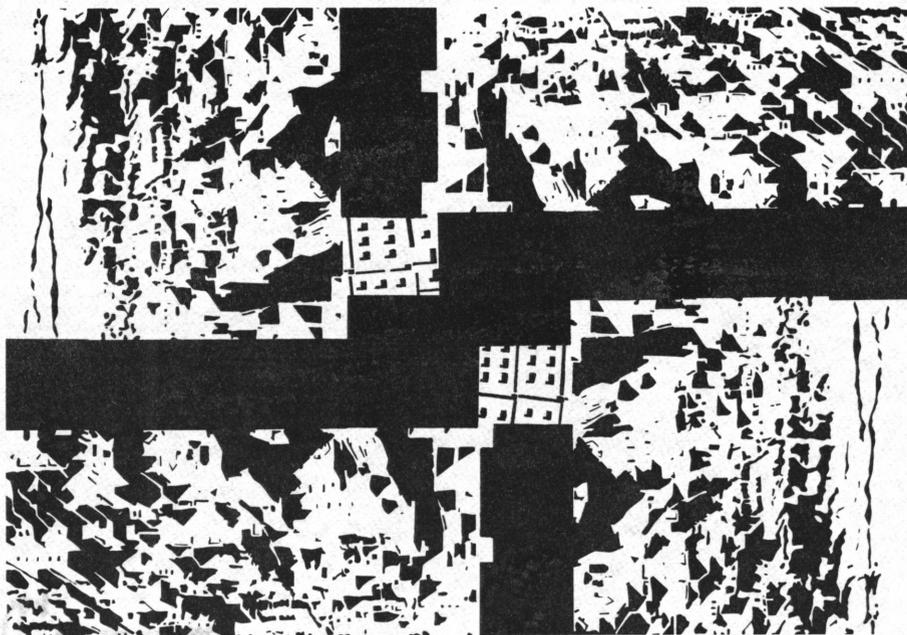
Objective (b) To incorporate geometry in the design process expressing conceptually the sense of unity within the following: 2. The design of a pedestrian linkage within the site between the old *souq* area and the nearby seafront, reminding the community of the traditional *souq* in Kuwait and other Islamic cities.

Response:

The linkage of spaces is important, as Heidegger states in his book *Poetry, Language, Thought*: "a boundary is not that at which something stops but, as the Greeks recognized, the boundary is that from which something begins its presencing."⁹

The community needs to be reminded and connected with their traditional old town of Kuwait. This can be achieved by connecting the community with the most significant places of the past, the sea and the old *souq* of Kuwait, and by creating within the community an environment that expresses and encourages continuity of the positive qualities in Kuwaiti traditional way of life.

The scheme is to design within the site a pedestrian linkage between the old *souq* area and the sea that is part of the whole community structure. In addition to this physical linkage, an environment is created that expresses the spiritual sense of unity and the concept of the traditional *souq* to the people of the community. Thus, continuity of the traditional way of life is encouraged in this contemporary community.



The pedestrian linkage is planned to connect the site diagonally from the southern corner (the closest point on the site to the old *souq* area) to the northern border (the closest point on the site to nearby seafront area).

Critchlow also describes the spinning motif within a square, another Islamic geometric pattern, as a recurring pattern in the Islamic art which combines four symmetrical shapes around a central square. This geometric pattern is not only found in Islamic art, such as wooden latticework, flat inlay, metal grillworks and paneling, but also found in the urban structure of the traditional town of Kuwait and other Islamic towns as a recurrent event within the open public spaces. This concept of the spinning motif is modified and then incorporated into the design of the community. This generates the creation of a geometric pattern which unites the entire community.

The patterns of the Islamic geometry are either static shapes, or conversely dynamic shapes. In the geometry of the community, the house is the static shape, and the weaving structure and the linkage or the *souq* are the dynamic shapes. These static and dynamic shapes are complementary and express the idea of time as an eternal stream.

In the design, the spinning motif pattern is adopted on a larger scale to the pedestrian linkage. The axis of the *souq* is kept parallel with the longest dimension of the site, while shifting the axis gradually to that dimension which is perpendicular to the axis of the *souq* towards the sea side until the linkage is completed. Geometry is also used in providing the open public spaces for the community along this path where the axis of the *souq* shifts.

This linkage system (with its public open spaces) is designed as part of the whole structure of the community and expressed with the use of geometry as an element of the whole community's urban structure. This

system is woven into the other elements of that structure, such as the prototype house units, the alleyways, and the neighborhood courts in a harmonic and unified way.

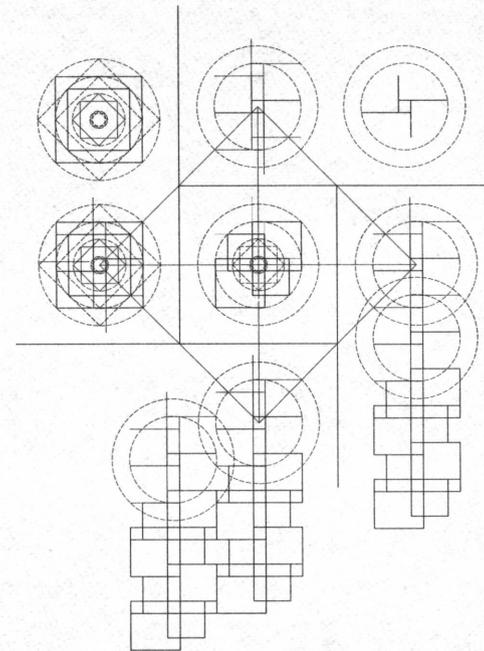
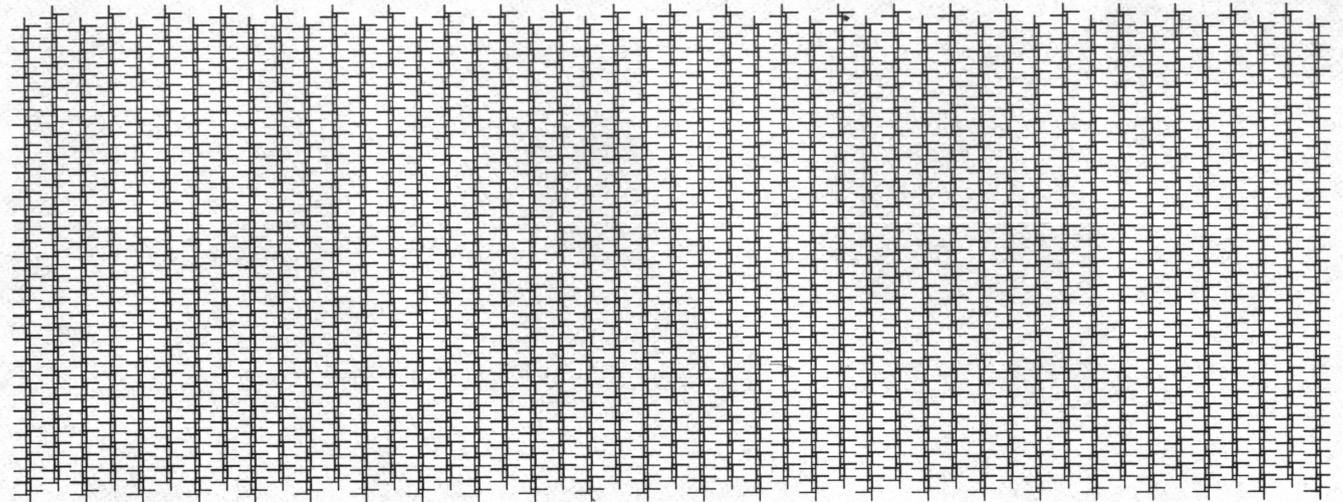
A form of traffic network evolves from that linkage system. The traffic network consists of a series of narrow semi-shaded alleyways that lead directly from the family entrance of each house to the major pedestrian pathway of the *souq* which covers the core spine of the site and expands outwardly into the community.

In this design, the vehicular traffic network is ordered by several constraints: the pedestrian pathway, the linkage between the *souq* area and the nearby seafront, and the linear nature of the site.

For the convenience of the residents, there is one vehicular access road to the site from the street on each side of the site, except on the side where the Grand State Mosque is located, to avoid vehicular traffic interference with pedestrian movement. The access from the Arabian Gulf Street functions as an exit from the site; the access from Khalid Ibn Alwaleed Street functions as an entrance; the access from Abdulla al-Ahmad Street functions as both an entrance and an exit for the site .

This vehicular traffic system is similar to the pedestrian traffic system in terms of movement despite each system being on a different level. The vehicular traffic system has two minor collector streets. The one along the side that faces the Grand State Mosque and the Ministry of Planning is conceived as a straight-line connection between the two opposite access points. This minor collector street is at the major street level at both ends and ramps down to the basement level at a point approximately in its center (above this point on the ground level the spinal pathway for pedestrians begins in the community from the Grand State Mosque side; the old *souq* area). A residential street begins from that point at basement level perpendicular to the minor collector street. Another minor collector street starts from the point where the residential street begins ramping up from the basement level to the first floor level. This street connects the site with Ibn Alwaleed Street.

The residential street works as a spinal vehicular street that is the core of the vehicular traffic system. It provides access to a series of parking courts serving the housing neighborhoods.



The parking court for each neighborhood is located under the floor of the neighborhood court. These parking courts receive their natural light and ventilation from wells located in the floor of the neighborhood courts.

At the basement level, each house is provided with an interior garage for one vehicle besides an average of three parking in front of the garage outside the house.

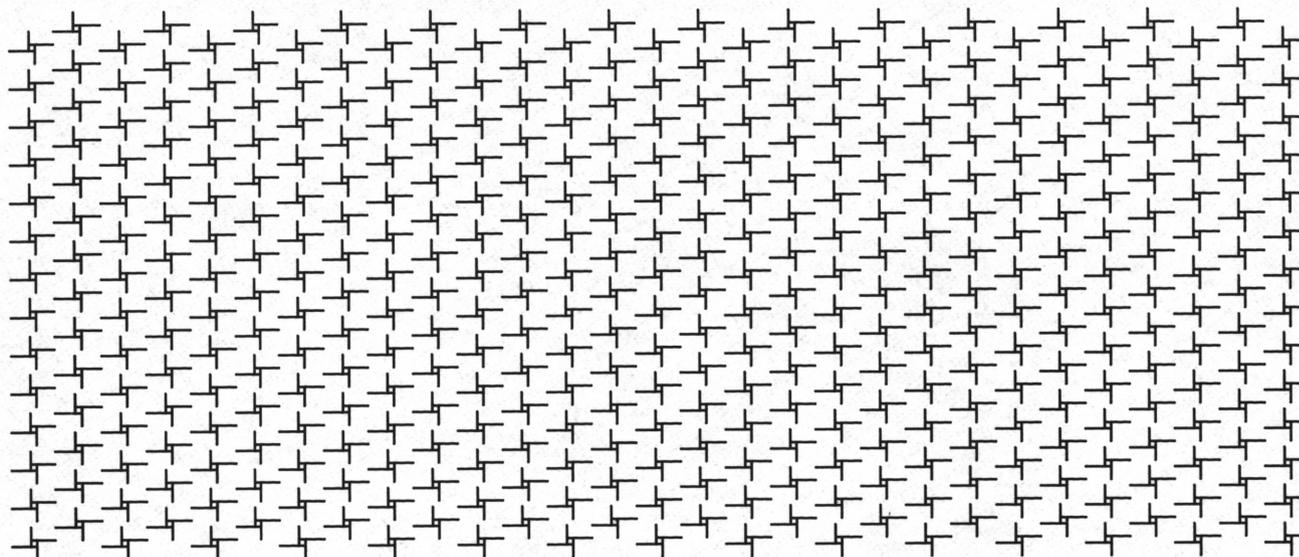
Basement parking provides the ability to isolate vehicular traffic from the pedestrian movement for safety considerations and to create a cool shaded area for comfort and convenience. In addition, this type of parking decreases the asphalt pavement surface area. This black surface, is a major contributor to heat gain from the cloudless skies in Kuwait. It stores the heat from the sun during the day and then radiates it back during the night. The decrease of such surfaces allows the increase of landscaping in place of asphalt pavement.

Conclusion:

The design of the pedestrian linkage within the site between the old *souq* area and the nearby seafront develops from the concept of the traditional *souq* in Kuwait and the Islamic cities. The pedestrian linkage not only achieves the desired linkage, but also creates a convenient, safe, and pleasant community environment for the people of Kuwait, specifically for the people who live in that community. This environment will revitalize the spirit of the traditional Islamic cities by creating pedestrian places at a scale and intensity of use of those cities which are in harmony with contextual cultural values and prevailing climatic determinants.

The pedestrian linkage incorporates geometry. This approach integrates the pedestrian linkage harmoniously within the structure of community and create a unified urban form.

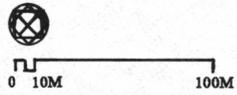
The people may walk to the Grand State Mosque from any point in the community through the system of pedestrian walkways. The actual physical movement of the people of the community when they respond to the call to prayers from the Grand State Mosque five times every day and to the call for the Friday prayer once a week will embody the sense of communal unity. The order in this design will encourage the individuals in the community to express the belief in unity of their cultural teachings through their unified actions.



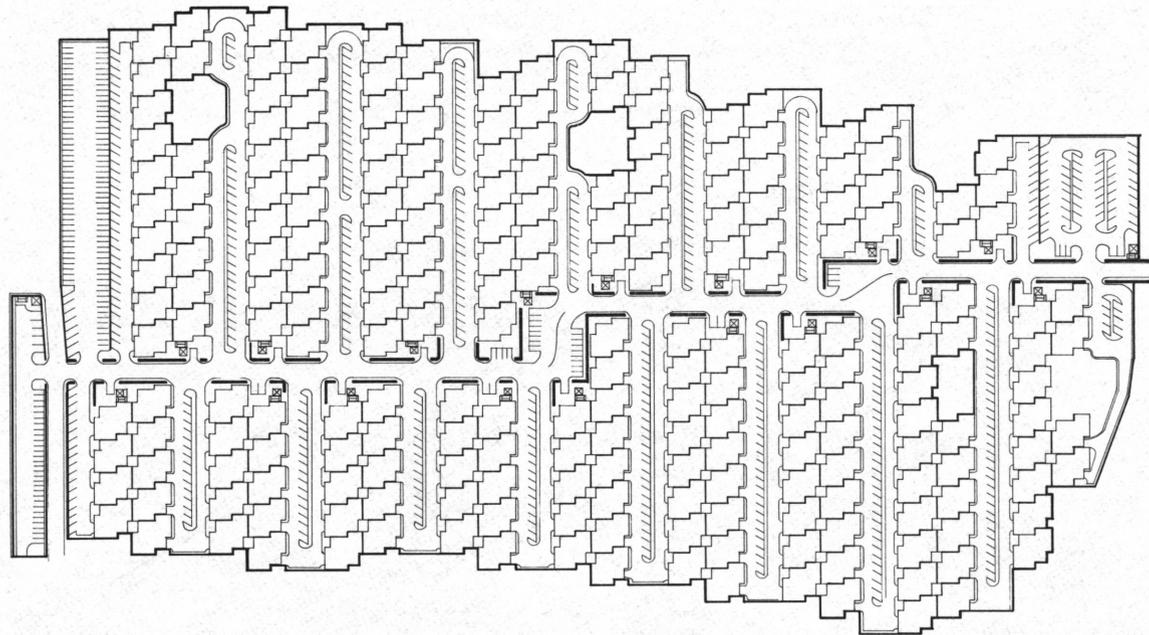
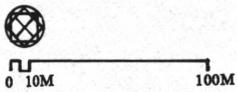
5. Drawings



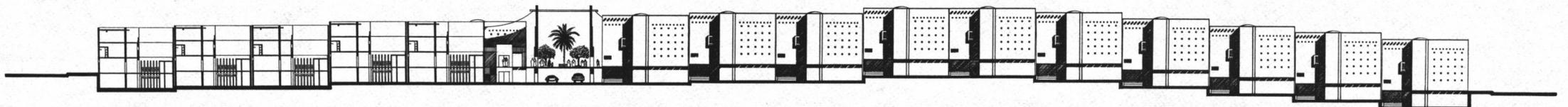
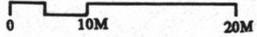
SITE PLAN (PEDESTRIAN/ GROUND LEVEL)
1. GRAND STATE MOSQUE
2. MINISTRY OF PLANNING
3. PEDESTRIAN LINKAGE/ SOUQ

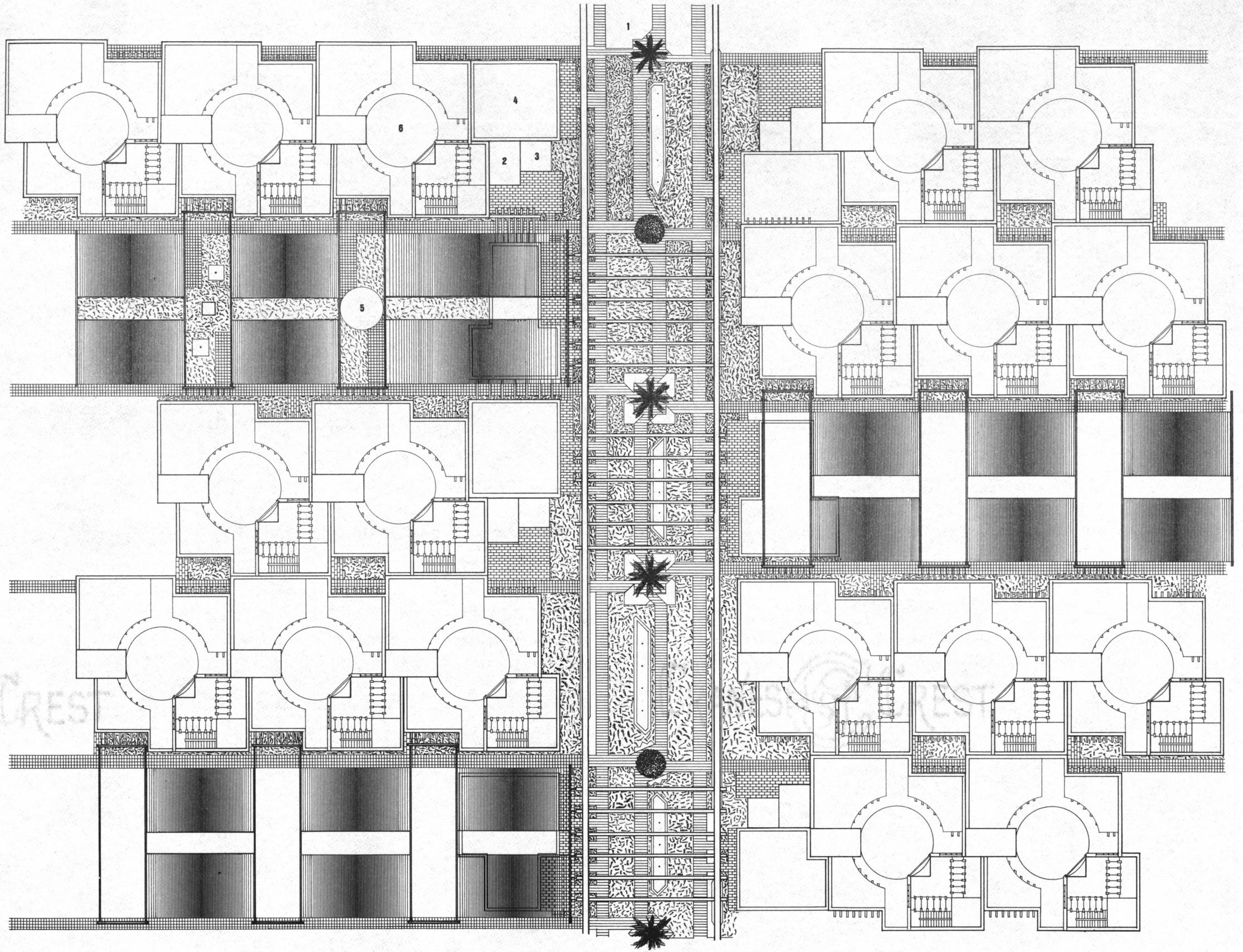


SITE PLAN (VEHICULAR/ BASEMENT LEVEL)



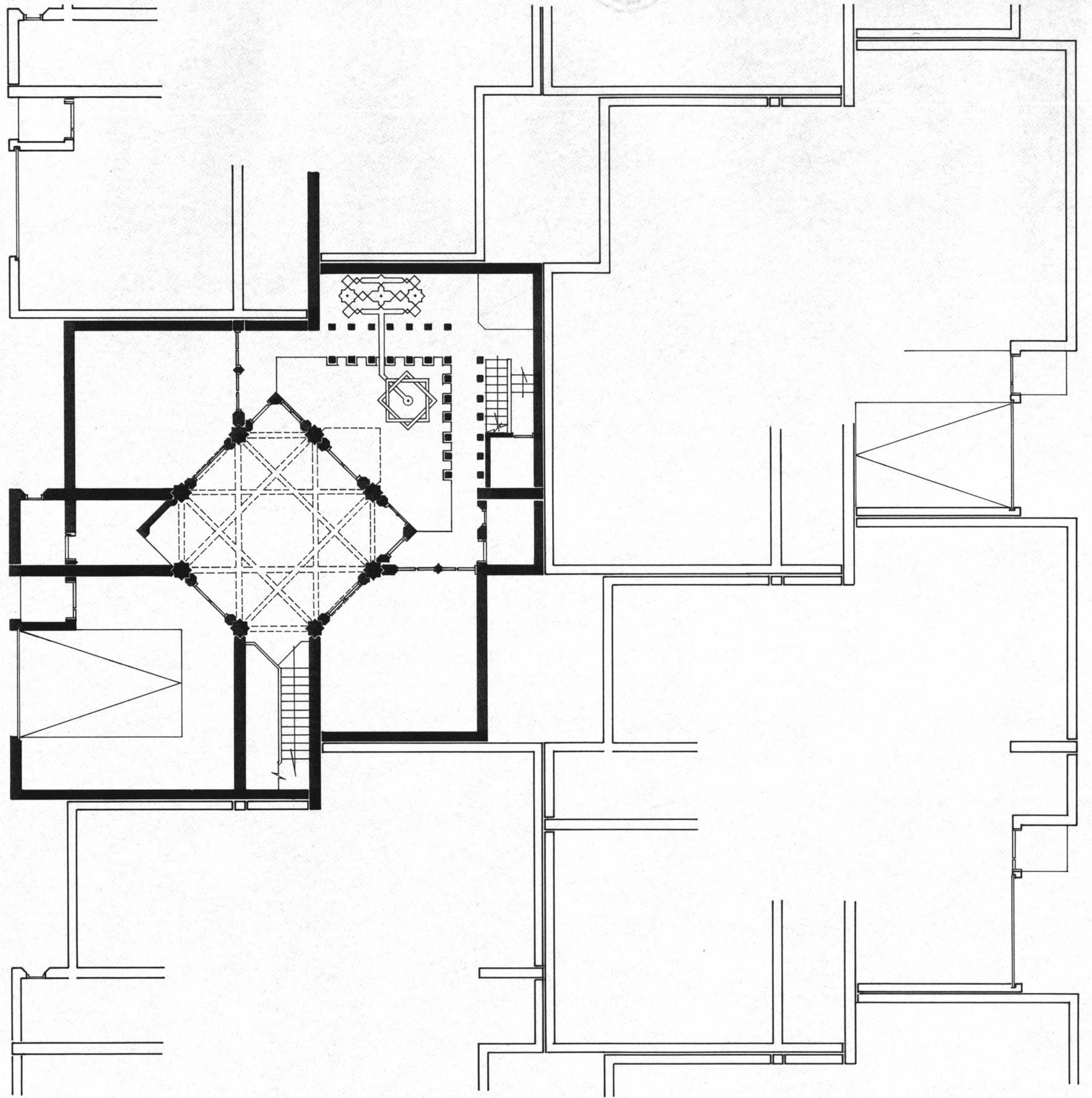
SECTION ACROSS THE COMMUNITY





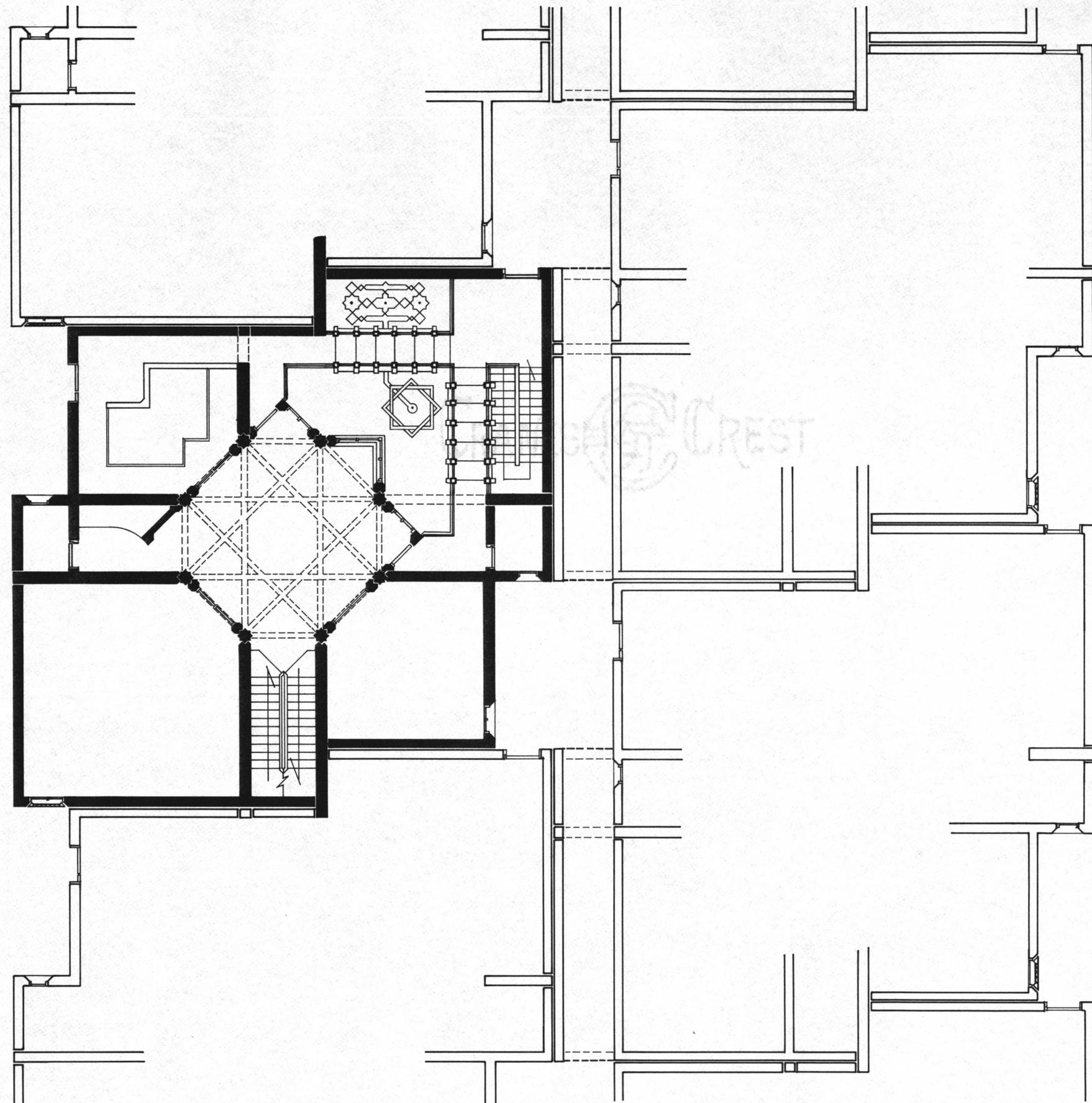
SITE PLAN (CLOSE UP)
 1. PEDESTRIAN LINKAGE/ SOUQ 2. STAIRS 3. ELEVATOR
 4. SHOP/ RESTAURANT/ ENTERTAINMENT PLACE/ LOCAL CAFE/ PUBLIC BUILDING
 5. NEIGHBOR'S COURT 6. HOUSE UNIT

0 1KM 5KM 10KM



BASEMENT FLOOR PLAN





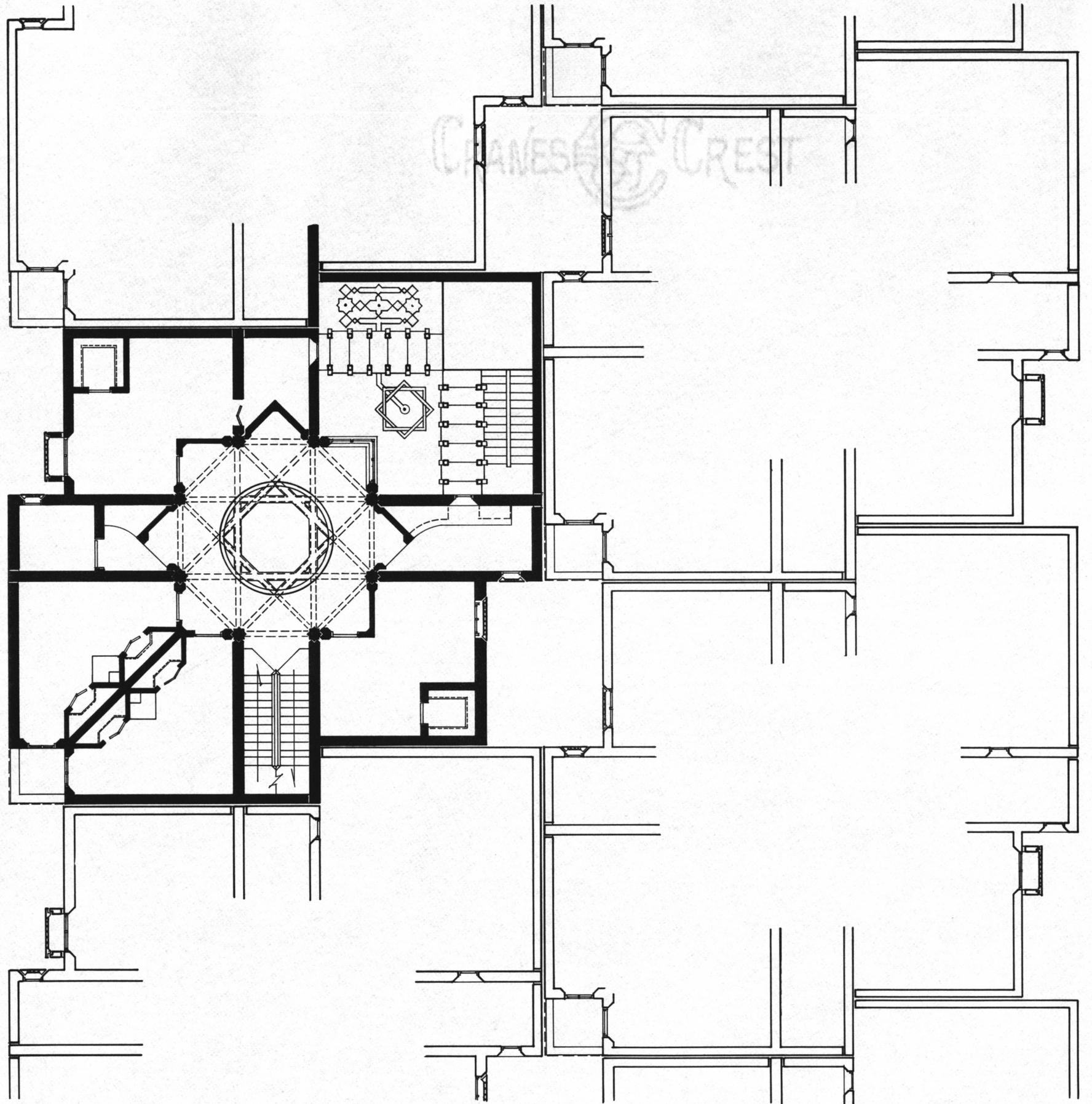
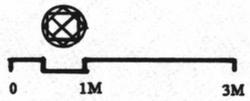
GROUND FLOOR PLAN



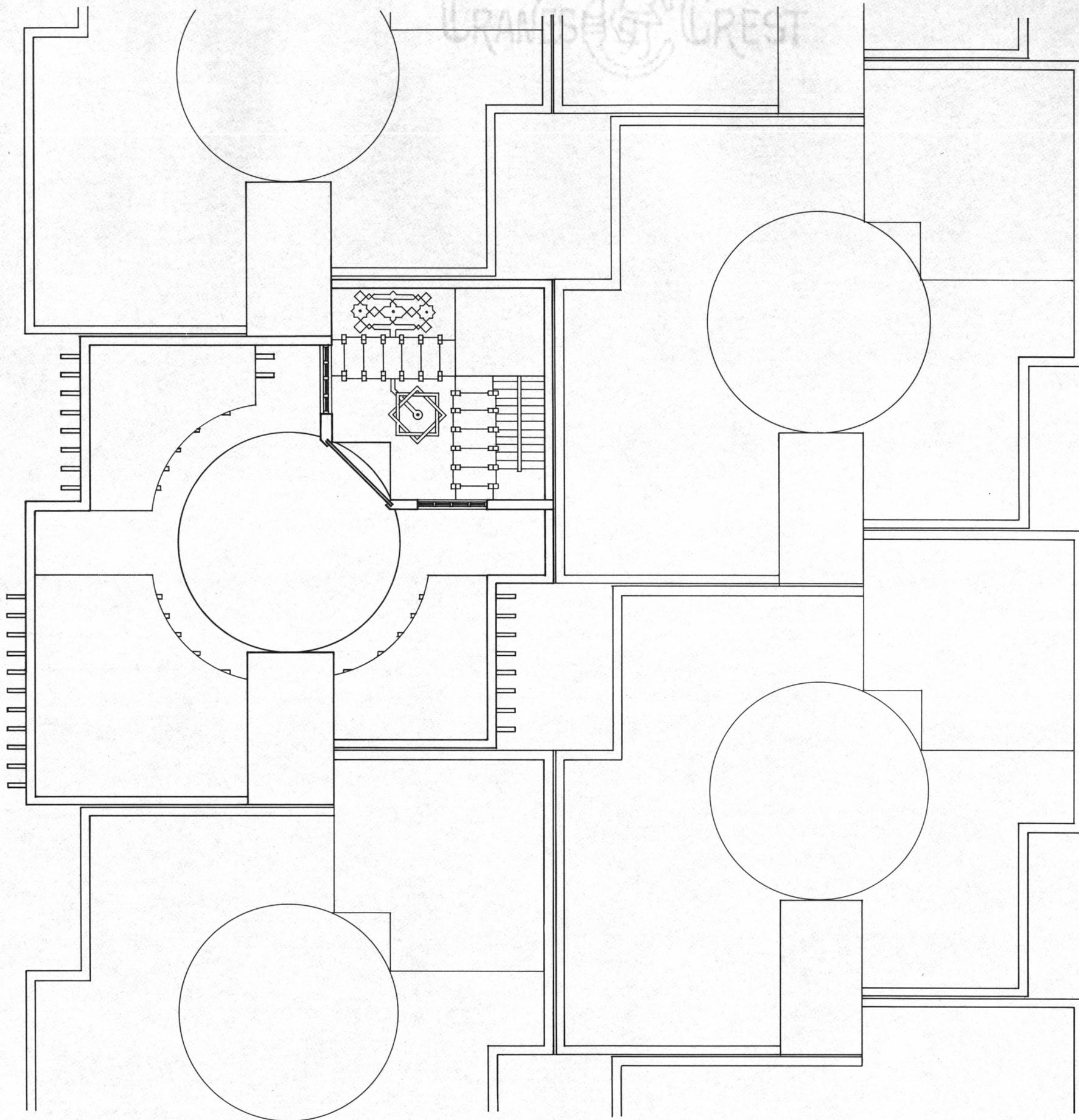
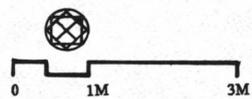
CHINESE CREST

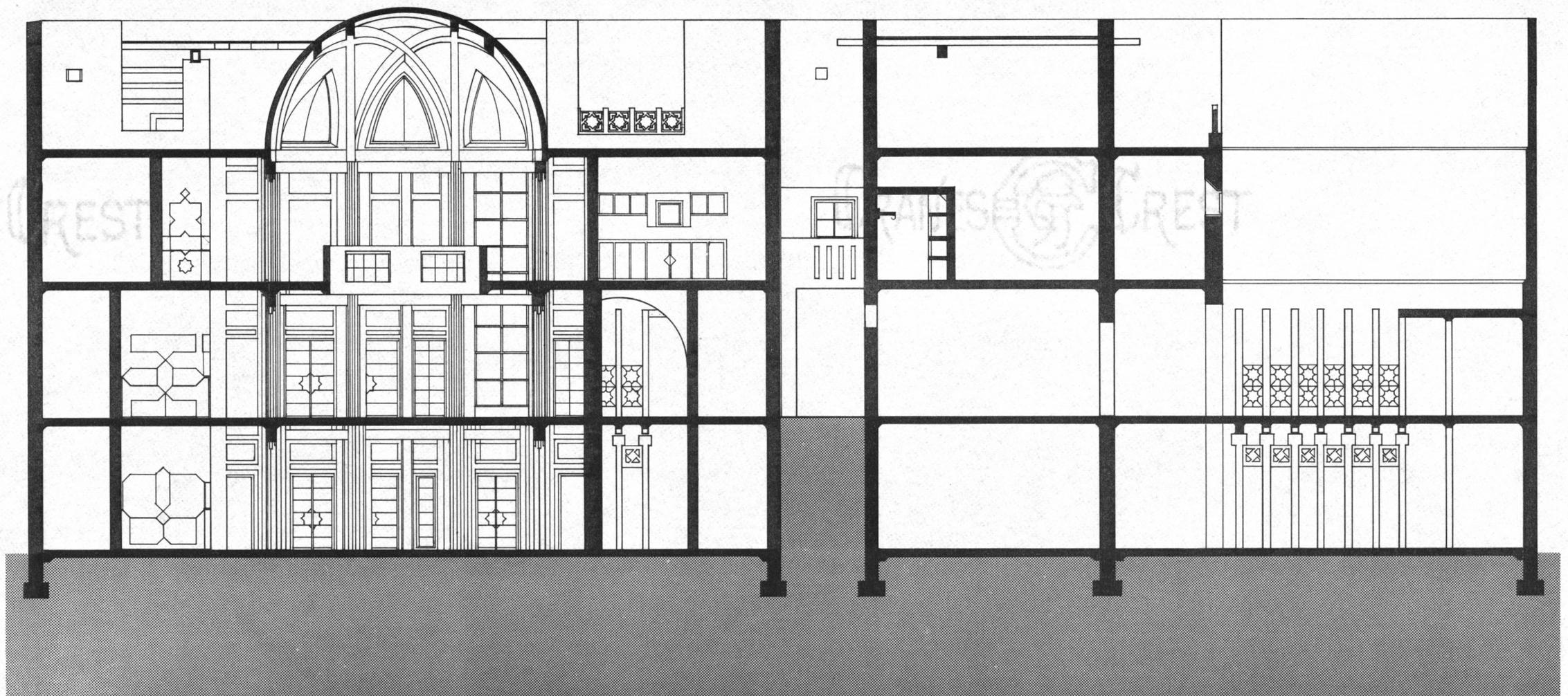
CHINESE CREST

UPPER FLOOR PLAN

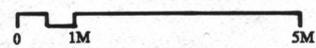


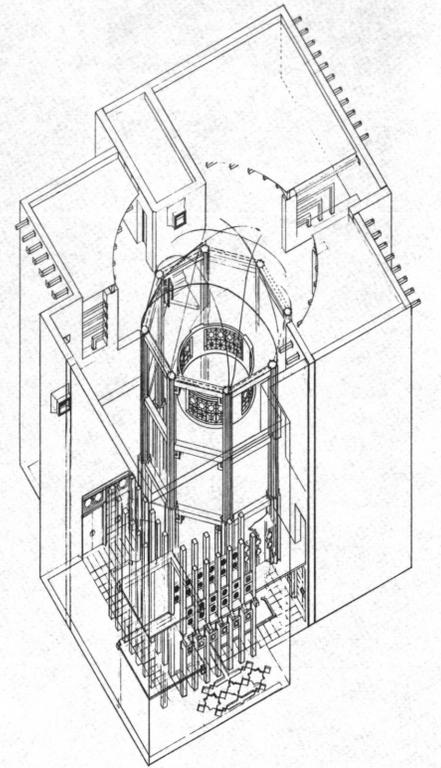
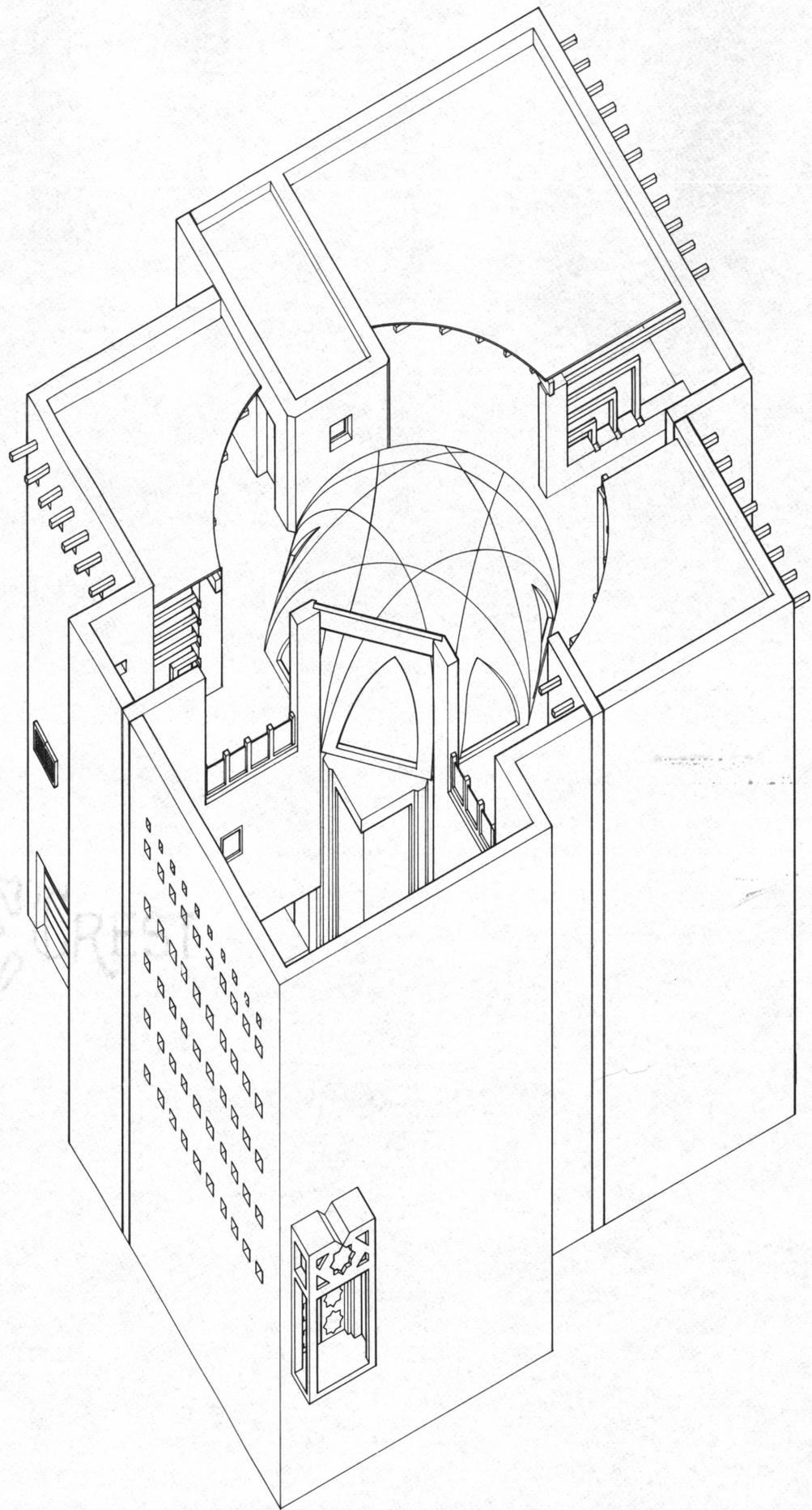
ROOF FLOOR PLAN



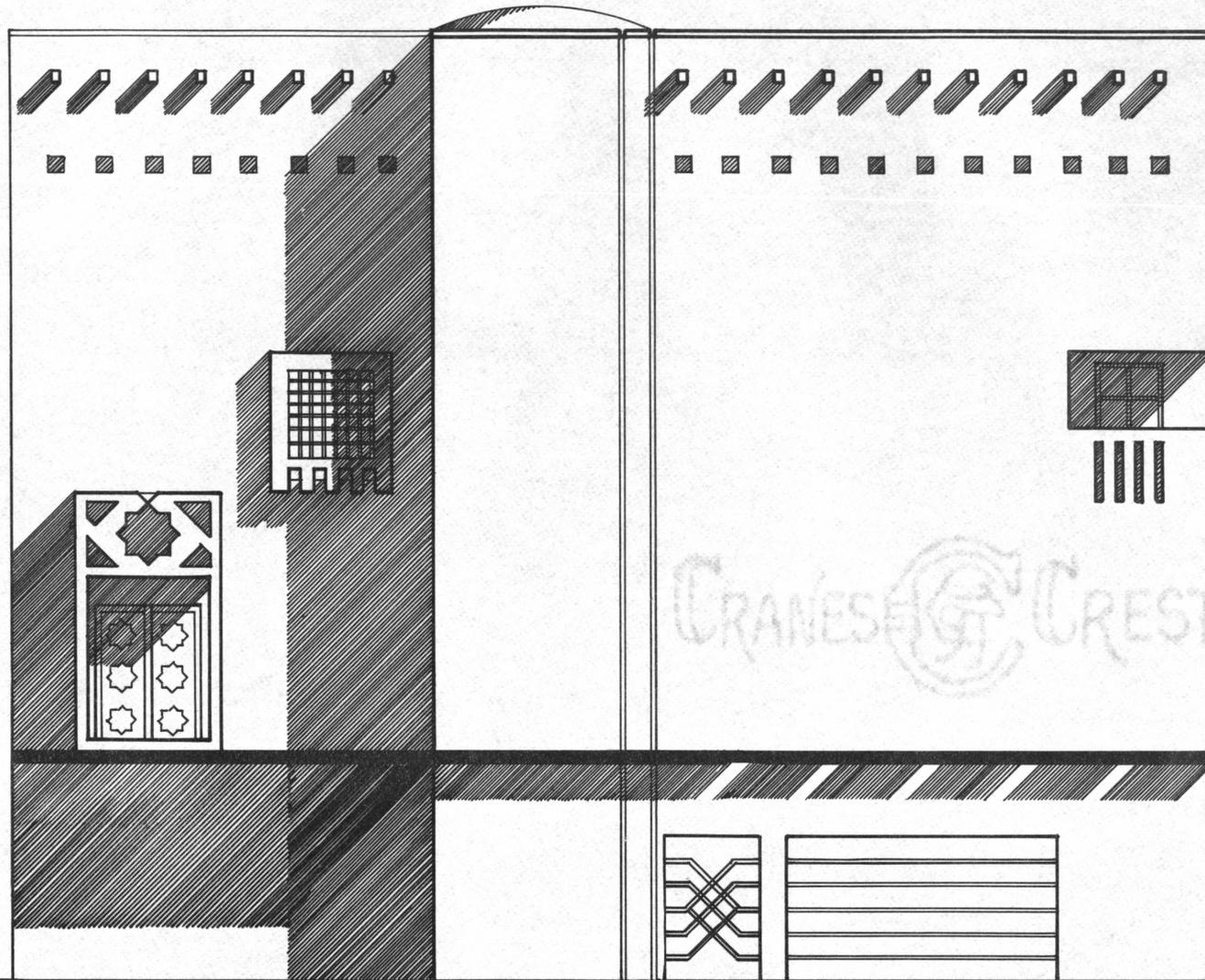


SECTION ACROSS A DOUBLE ROW HOUSES



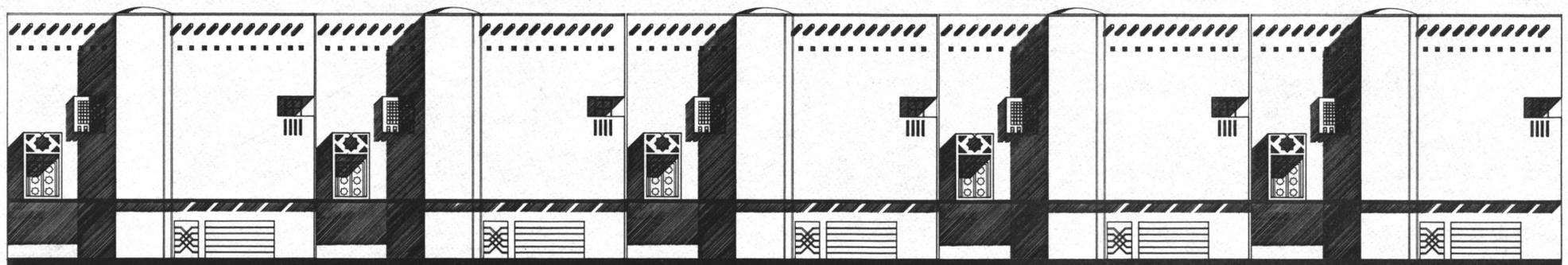


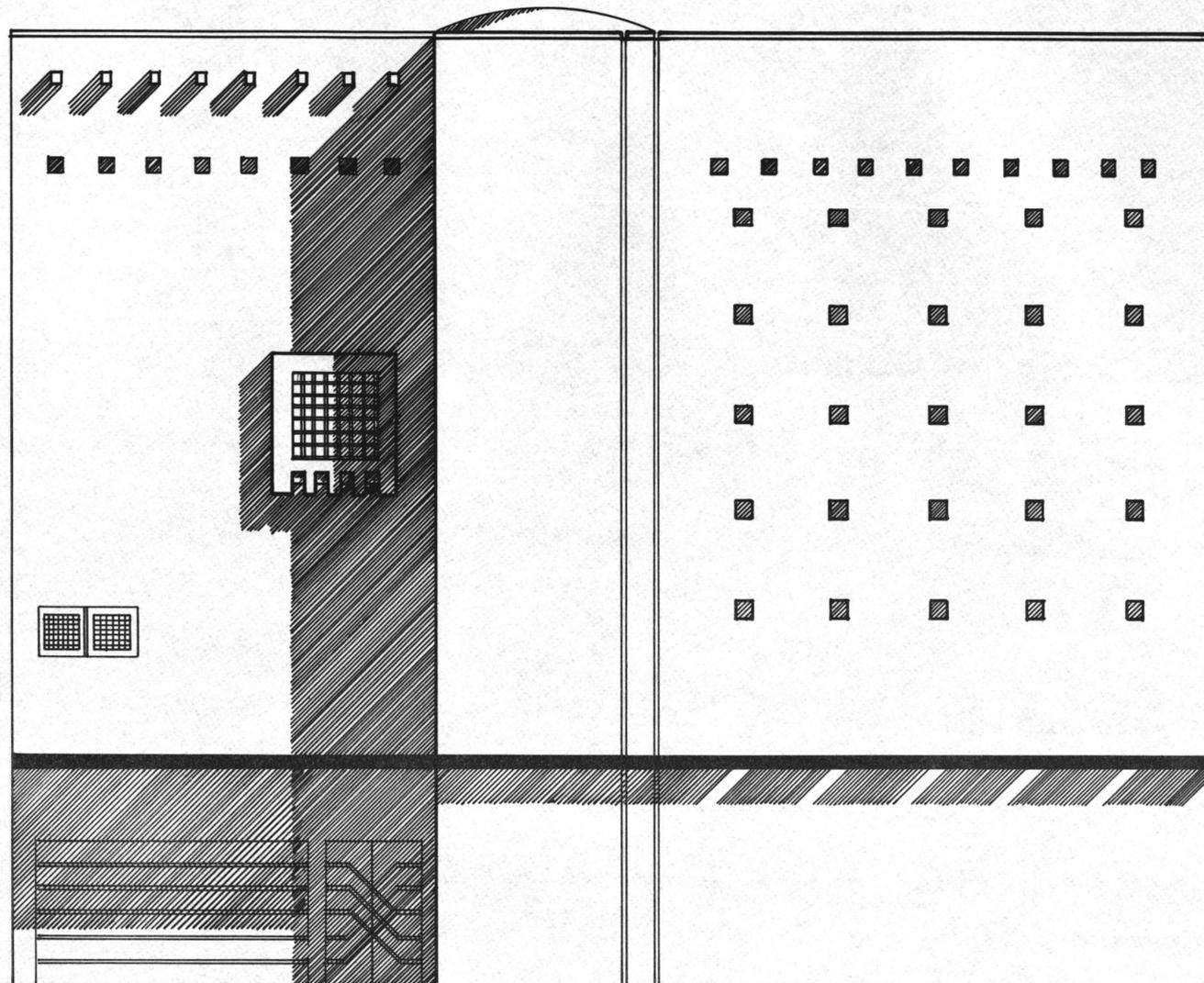
CRANES & CREST



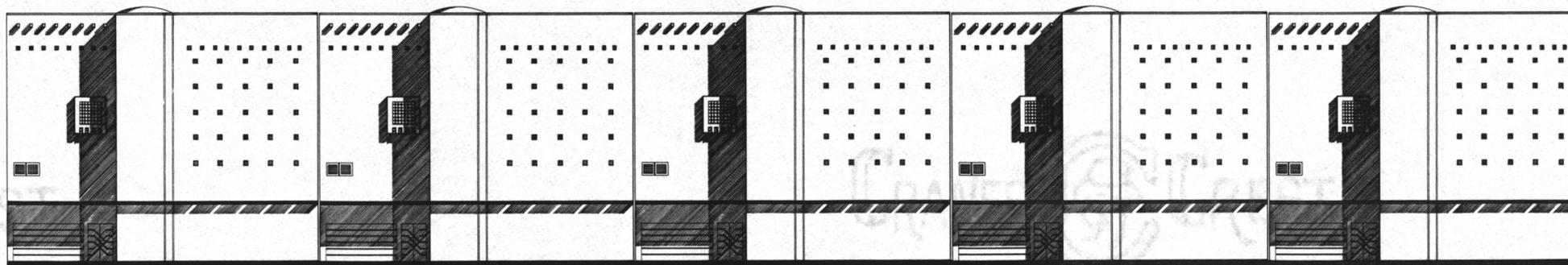
SOUTHWESTERN ELEVATION
(NEIGHBOR'S COURT SIDE)

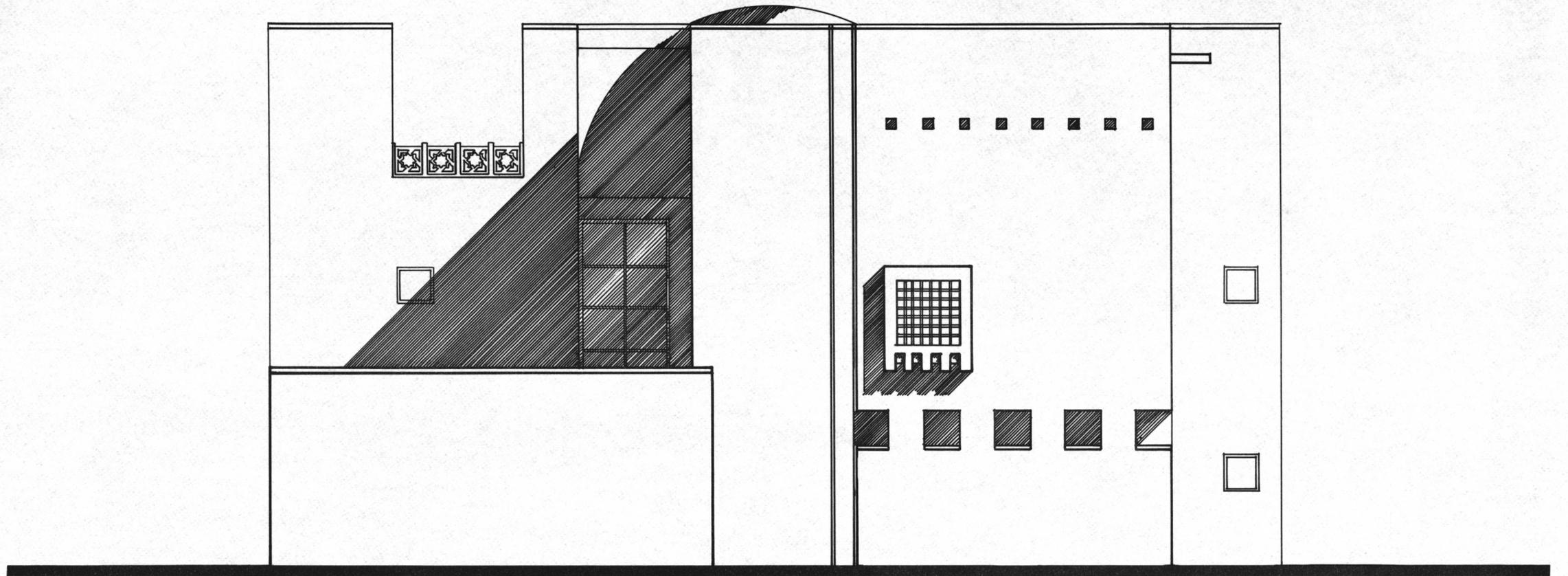
0 1M 3M



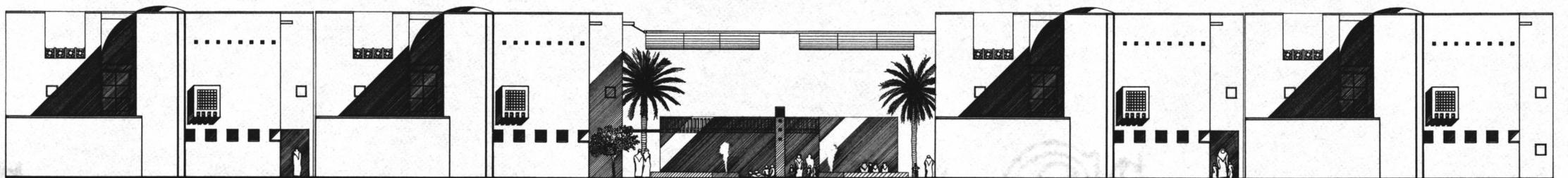


NORTHEASTERN ELEVATION
(NEIGHBOR'S COURT SIDE)



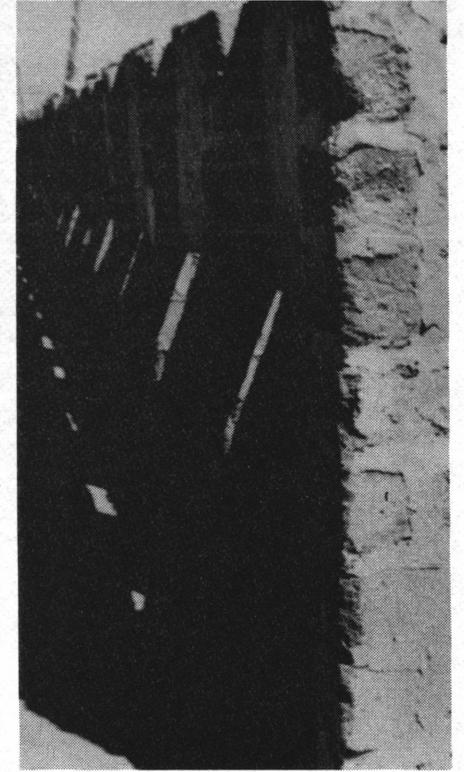


NORTHWESTERN ELEVATION
(SEA FRONT SIDE)



6. Summary

The design of the community proposed in this thesis, based on the concept of unity, illustrates the ability of traditional community concepts to work in a contemporary setting. The positive qualities of the traditional concepts have been incorporated into a contemporary design to create a harmonious environment. This environment will provide for interactions between the people of the community and the architectural spaces and the urban structure of that community, within the context of their cultural values and physical environmental needs.



SEST CREST

CRANESHST CREST

Footnotes

2. Background

(a) Cultural:

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(b) Traditional architecture:

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4. Architectural response to the objectives

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