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A BEACH RESORT: CLUB AND APARTMENTS

Signature redacted

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Thank you.

ABSTRACT

A BEACH RESORT: CLUB AND APARTMENTS

Thomas F. Marshall

...submitted for the degree of M. Arch. in the Department of Architecture on August 18, 1952.

As man's technology develops, his environment becomes increasingly mechanized. The leisure time gained must be utilized to maintain a proper perspective on self and society. The seashore, free of major mechanization, provides a spot conducive to reorientation.

A development combining the apartment and club functions gives a more inclusive and integrated beach life. Apartment tenants have full use of club facilities while maintaining the privacy of an individual home. The club gains financially from the patronage of resident guests in addition to the regular members. The reciprocal relation of club and apartment will help to bring prices for accommodation and recreation within the range of the average vacationer.

This thesis examines the problem of the beach resort and submits an architectural solution for the physical and psychological needs.

Arch

Thesis

1952

August 15, 1952

Pietro Belluschi, Dean
School of Architecture and Planning
Massachusetts Institute of Technology
Cambridge 39, Massachusetts

Dear Dean Belluschi:

In partial fulfillment of the requirements for the degree of Master of Architecture, I submit my thesis,

A BEACH RESORT: CLUB AND APARTMENTS.

I respectfully request your acceptance and approval.

Sincerely,

Signature redacted

Thomas F. Marshall
241 Westgate West
Cambridge, Mass.

Rotch (arch) Nov 7, 1952

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To the following persons I wish to express my sincere gratitude for their help and cooperation in the preparation of this thesis:

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Mr. H. Morse Payne

Miss Lyndl Thorsen

My wife Barbara, whose assistance and understanding made this year of graduate study possible.

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INTRODUCTION

INTRODUCTION

My first contact with the beach occurred only four years ago. Having lived the major portion of my life in the environment of sparsely wooded rolling plains, with few natural lakes, the experience of the sea was an exciting one. Perhaps it was more intense coming in my more mature years, as it did.

Also, being unaccustomed to the buildup common to the North Carolina beaches, it may have been harder for me to accept the travesty committed by man on a site of such natural splendor. I had been working in architecture for a number of years before first visiting the ocean frontage, which certainly sharpened my critical eye. During my stay in North Carolina, I visited all the major beaches and a few

of the smaller residential beaches; I gained a love for the sea and the surf, and a high degree of architectural interest in the beach house and beach architecture.

Although the beach resort might not seem, at first thought, a problem of great architectural significance, I protest that it is. Man is gaining more and more leisure time. His science is striving to give him more production with less effort, fewer working hours per day and per year. This effort is futile unless man puts his newly gained time to good use. Man is producing a machine culture to free his hands and his mind, but he must guard against taking on the cold and automatic nature of his machinery. To this end, the sea shore and its development is important because it provides reorientation, play and relaxation. It is a spot free of the machine environment, where man can renew contact with nature and enjoy its beauty and tranquility.

To the degree that I am able to create a healthful and esthetic solution to good life on the sea shore, this problem has significance.

THE REGION

EASTERN NORTH CAROLINA

THE REGION

I chose the North Carolina region for this study for several reasons. It was the locale with which I was best acquainted, from which I had made observations and drawn conclusions. The beaches are less cluttered than those of the northern states and relatively undeveloped. The subtropical climate provides a longer season, making the economics of commercial development more feasible for a rental project. The water is warmed by the Gulf Stream making the surf bathing more attractive than at most northern shores. The strands are wide and the sand clean, with shallow slopes which make surf bathing pleasant and comparatively safe.

Of the southern states, I believe North Carolina to be the most promising. It is coming forward more rapidly than any of the other southern states economically, has a forward-looking and progressive program of development. The following excerpts from a North Carolina publication are revealing (the southeastern states mentioned therein are Alabama, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee and Virginia):

Wealth:

> "North Carolina has always been relatively a poor state. Its early development had lagged behind that of its sister states, and terrific losses of wealth had occurred in the Civil War. In 1900 the estimated value of tangible wealth was...only $360 per capita...The per capita amount was only 31% as great as that for the United States as a whole.
>
> "By 1937, the last year for which estimates by states are at hand, the relative position of North Carolina was materially altered...The per capita amount was exceeded only in Kentucky and Virginia...The per capita amount was, in 1937, 58% of the national average.
>
> "The rate of increase in North Carolina has been materially greater than that for either the country as a whole or for any other states in the region. In fact, in the increase of total wealth from 1900 to 1937, North Carolina led all other states ($682,000,000 to $4,641,000,000).
>
> "However, in spite of the much greater rate of increase, North Carolina in 1937 was 17th among

the states in total wealth and 41st in per capita wealth. Also, in 1944, the state was 17th in total estimated income and 44th in per capita income, with $689 per capita (national $1117).

Population:

"Another very satisfactory figure in the development of North Carolina is that for growth in population. From 1900 to 1940 the population of the state increased 88½%. This rate of increase exceeds that of any other southeastern states except Florida...In 1940, North Carolina was 11th among the atates in total population, and the largest state in the southeast by an appreciable amount.

Agriculture:

"From 1899 to 1940 the annual value of crops increased from $68,624,912 to $241,538,779, an increase of 251.8%. In the same period, some eight states had a higher percentage in increase, but only three states, California, Iowa, and Texas, had a greater increase in dollars...In 1940, North Carolina was sixth among all states (in value of crops)...and first among the southeastern states. In fact, the total for North Carolina was 57% greater than that for the next highest southeastern state, Georgia.

Manufacturing:

"...In 1939 North Carolina was tenth among the states on the number employed in all manufacturing (from 19th in 1900); 13th on total salaries and wages paid; 12th on total value of products (from 28th in 1900); and 13th on value added by manufacturing (from 27th in 1900). North Carolina was first among the southeastern states by an appreciable amount. 1.

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1. A.J. Maxwell, "Some Aspects of Economic Development in North Carolina Since 1900," Department of Tax Research, State of North Carolina, January, 1946.

North Carolina has a great industrial potential as is shown by the recent location of large textile and chemical plants in this location. Dupont has established a large new plant near Raleigh, North Carolina, and the hydrogen bomb plant is just below the state line, in Aiken, South Carolina. North Carolina is the world's largest producer of textiles, tobacco, and wooden furniture. She has the third largest furniture market in the world, next only to Chicago and New york.

The people of North Carolina patronize their beaches with fervor. Those who are financially able establish residences on the beach and drive weekly back and forth to check their businesses. Young people drive down nearly every weekend, and gather for parties. The beach is the favorite spot for conventions, fraternity parties, and similar group functions. The favorite summertime job for students is one on the beach, working for board and room or less. The dream of the white collar worker is to own "a place at the beach."

The enthusiasm of the North Carolinian for the beach, the development plans of the state, its growth

and industrial potential, the increasing wealth and general prosperity....all these factors combine to make beach development a good opportunity and promising architectural problem.

THE SITE

THE SITE

The "Outer Banks" of North Carolina are a thin string of islands and sand bars bounding North Carolina's 320-mile Atlantic coastline. At Hatteras, the banks extend 30 miles into the ocean, and reach to within 12 miles of the Gulf Stream, which tempers the climate so much that citrus fruits grow--much further north than they are usually found.

Behind the Banks are several salt water sounds. The combination of ocean and inland waters in close proximity makes North Carolina's Outer Banks a notable sports fishing area--and in season waterfowl shooting is prime. The proximity of the Gulf Stream makes the area the best big game fishermsn's spot north of southern Florida, providing such fish as the dolphin, marlin, sailfish, amber-jack, kingmackerel, and barracuda. On the inner side of the reef, freshwater

sounds, bays, river and canals offer large mouth bass and other prizes to attract anglers.

The Outer Banks, long isolated from the mainland, offers interesting sociological contrast. The fishing villages are populated with descendants of shipwrecked sailors and pirates, and these people still speak in an Old English dialect. The banks are strewn with the remains of ships which were blown or drifted into the treacherous reefs.

Kitty Hawk lies near the only highway connection between the mainland and the Outer Banks. It is near the center of all tourist activity, and thus is an ideal stopping-off place for visitors.

Twelve miles south of Kitty Hawk lies the bridge to Roanoke Island, the site of the first English settlement in America, Fort Raleigh. The ancient earthen fort has been restored, and replicas of log buildings as used by the colonists have been built, one being a museum. The fort and museum are open daily. In a waterside amphitheatre, Paul Green's symphonic drama, "The Lost Colony," is an attraction to people from all over the eastern

seaboard. Some well known critics have boosted the production:

> The Lost Colony has made an extraordinary and versatile use of spectacle, sound, pantomine and cadenced speech.
>
> Brooks Atkinson, N.Y. Times

> The Lost Colony is an impressive exhibit in a gorgeous setting...It is a profitable vacation pilgrimmage.
>
> Burns Mantle, N.Y. Daily News

> Worth seeing, not only because of its historical interest, but because of its intrinsic beauty.
>
> Eleanor Roosevelt, My Day

At Kitty Hawk, the memorial to the Wright brothers rises above Kill Devil Hill where they made the first airplane flight. Both Fort Raleigh and the Wright Memorial are maintained by the National Park Service, which also plans a National Seashore Park along the Outer Banks from Kitty Hawk to beyond Ocracoke.

The Outer Banks have a longer season than most beaches because of the excellent hunting and fishing during the winter season. Game birds are plentiful in the inland sounds and bays, as well as on the islands, bringing hunters during the winter months from all over the country.[1]

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1. Information about Outer Banks from pamphlets published by the State Travel Bureau, Dept. of Conservation and Development, Raleigh, N.C.

PROHIBITED AREA

PROHIBITED AREA

sand dunes

sand dunes

HOUSE(W. GABLE)

Jarvisburg

Occ ev 10 sec 35 ft "43"

piling

piling

FL ev sec 15 ft "43"

HOUSE

Newbern Landing

marsh

Jews Quarter I

marsh

Thorofare I

Webster Cr

marsh

Mamie

Pig Pt.

Harbinger

Sampson Pt.

Powell Pt.

Point Harbor

REF

Martin Pt.

Jean Guite Cr

BEACH RESORT

WRIGHT MEMORIAL
SWING BRIDGE
HOR. CL. 40 FT.
VERT. CL. 4 FT.

Kittyhawk

Shellbank Pt.

marsh

Long Pt.

Bermuda I

Kittyhawk Bay

Colington Cr

North Pt.

Eagleton

marsh

Killdevil Hill

WRIGHT MONUMENT

KILLDEVIL HILL CG NO 173

Colington

Colington I.

Buzzard Bay

DEFENSE
AREA
KEEP
CLEAR

Haulover Pt

SAND
DUNES

Jockey Ridge

Mann Pt.

Engagement
Hill

Nags
Head

Seven
Sisters

NAGS HEAD CG NO 174

COLINGTON I SHOAL
FL ev 4 sec 14 ft vis 6 M

CROATAN
FL ev 5 sec 38 ft vis 11 M
(BELL Sept 15 to June 15)

N4 10 FT JUNE 1951

RED SECTOR

Caroon Pt.

Mashoes

Peter Mashoes Cr

Reeds Pt.

FL ev 4 sec "42"

N.W. Pt.

FORT RALEIGH
"LOST COLONY"

Weir Pt.

Baum Pt.

6 FT JUNE 1951

10k FL

Manteo

C. H.

TANK (ELEV.)

Shallowbag Bay

FL ev 4 sec "32"

Ballast Pt

FL ev 4 sec "31"

marsh

marsh

SWING BRIDGE
HOR. CL. 40 FT.
VERT. CL. 6 FT.

FL Rev 4 sec "26"

Sand Pt.

Ashbee Hbr

marsh

FL ev 4 sec "21"

Broad Cr

Broad Cr. Pt.

FL ev 4 sec

Wanchese

CHY.
LARGEST HOUSE

Oyster Cr

FL ev 5 sec

Baum Cr.

Haulover Pt

Caroon Pt.

Mashoes

Peter Mashoes Cr

ong Pt.

ast Lake

Reeds Pt.

cypress

Redstone Pt.

FL ev 5 sec

Ferry

Manns Hbr

Manns
Harbor

Fleetwood Pt.

Callaghan Cr.

marsh

BLOCKADE SHOAL FL ev 5 sec

10 FT JUNE 1951

RED SEC

theast Prong

SCALE 1 / 80,000

MAGNETIC

VAR 6° 30' W (1952)

NO ANNUAL CHANGE

PAMLICO SOUND

ROANOKE ISLAND

ROANOKE SOUND

BODIE ISLAND

sand flats

Character of the Beach

The Outer Banks form a continuous beach along the coast. The appearance of the natural beach is desolation; the sand piles up in large dunes, and vegetation is squat and stunted. The trees assume twisted and gnarles postures, quite fascinating in their weatherbeaten aspect. Marsh grasses grow wherever they can get sustenance.

The banks widen at Kitty Hawk, and there are extensive forests at this point. The trees serve to station the shifting dunes, as well as provide pleasant contrast. Vegetation grows well if given the benefit of fertilizers and care, making the creation of an oasis in the sands a possibility.

The U.S. Weather Bureau gives the following figures for monthly rainfall and temperature (1951) from the stations at Kill Devil Hill and Manteo, N.C.

	RAINFALL	TEMPERATURE
Jan.	1.49	45.4
Feb.	.95	44.4
Mar.	2.31	52.6
April	.76	60.9
May	5.14	69.1
June	3.86	75.9
July	7.59	77.7
Aug.	.61	78.7
Sept.	2.71	73.4
Oct.	.85	63.3
Nov.	1.47	53.7
Dec.	3.73	46.3

The surf bathing season lasts for seven months, with not excessive rainfall during these months. Temperatures during the winter months remain high enough to permit use of the resorts for fishing and hunting parties, conventions, and vacationers.

The Kitty Hawk area has a year-round drawing power, a sizable colony of permanent residents who would support a club of this nature, the advantages of being close to the mainland while central for beach activities. The area is in constant growth, with extensive highway plans by the state and a proposed national park nearby.

APPROACH TO THE PROBLEM

APPROACH TO THE PROBLEM

Philosophical Aspects:

In introducing man's works into nature, we must strive not to destroy the original beauty of the site. This is especially true when building in a wild and desolate spot, where the very desolation is part of the spot's attraction. There is a peculiar untouched loveliness and power in the long stretch of lonely beach, particularly on the Outer Banks of North Carolina. Man, however, does not remain long in such primitiveness; he feels the need of shelter, of companionship and a touch of the civilization he has left behind. In providing shelter, man detracts something from the wildness but adds comforting evidence of his own existence.

A question of design philosophy arises in the

consideration of inserting this shelter--does man attempt to blend his work in with nature, or does man speak boldly by creating a definite contrast with natural forms? It is my belief, and approach to this problem, that the final answer must lie between the extremes. Man, as conqueror of his environment, need not camouflage his dwelling. Blatancy, on the other hand, has never been accepted by the sensitive man. Both contrast and harmony gain response, and never so much singly as when used jointly.

Through choice of material and architectural form, the beach resort may reflect the designer's empathy with the natural environment. The forms of the waves, the undulating sand dunes or even the gnarled vegetation may find reflection in the architecture. Contrast could be achieved by use of bright colors, cultivated vegetation, and geometrical forms against a background of nature's free-flowing lines.

Motivations of Beach Goers:

People go to the beach for a variety of reasons. Paramount among these is probably sunning and surf bathing. Fishing and boating account for another

percentage. There are those who go for rest and relaxation, to vacation away from the crowded city. Many group activities take place at the beach--the college fraternity party, the club convention, and the reunion, for example. Many people arrive at the beach because they just wanted to "get away," to take a trip. The mass exodus to the beach each week-end from the large cities is evidence of the attraction of the sea.

Existing Facilities:

Most of the existing facilities at the beaches tend to frustrate rather than to satisfy the beach-goer. Highly developed beaches are crammed with little boxy houses side by side on tiny parcels of land, leaving the sea invisible when twenty-five yards from the beach. It is a repetition of the disorder from which the traveler has sought to escape.

The popular beaches are so crowded that it is impossible to really enjoy the beach or the sea. Again, it is a repetition of the crowded city street, and offers no relief. The commercial boardwalk with its noise and confusion of bingo games, shooting galleries

and beer joints destroys the natural beauty of the beach environment.

Because of the short season, the hotel establishments must charge high prices. Two to three bedroom oceanfront "cottages" or apartments rent for as much as $150 a week during July and August at Kitty Hawk, which is relatively undeveloped. Decent accommodations are out of range of the average beachgoer. The clubs are exclusive and have prices to match.

I feel that there is a great need for facilities at the beach which will satisfy the desires which bring people to the beach. The resort should offer privacy as well as opportunity for the gregarious to socialize. The resort club should be available to the people whose beach activities are limited to one or two week vacations. I feel that such a development is possible at Kitty Hawk.

THE PROGRAM

The best solution to the beach club and apartment problem would be that one which would best provide for all the different classes of beah goers, best fulfill their needs and desires. It would be a very flexible establishment providing privacy, quiet and peaceful recreation, and at the same time it would give opportunity for the more zestful guests to express their energies. It must accomodate large parties without losing the nature of a restful spot for the small family group.

Clubs of this type ordinarily must cater to high income groups. It is my hope that this does not have to be the case, and that the ordinary tourist can enjoy the pleasure of club life. It is my proposal, therefore, that in conjunction with the club,

apartments be constructed. Patrons renting the apartments would have full use of the facilities of the club, a tremendous incentive for renting the apartments, guaranteeing maximum occupancy. The club and apartments would be closely related economically. Occupants of the apartments, offered use of the beach club, would insure full patronage of the bar, snack bar, and restaurant. The income from club and apartments would be heightened by their mutual relationship.

Non-resident members of the club would come from families on the nearby mainland and owners of beach cottages desiring use of the club's recreational and social facilities. It is estimated that one hundred member families would keep the club in domestic scale, and yet be a feasible economic membership.

Financial Analysis:

In order to obtain backing for such a project, it must be shown that the return on the investment will be at least as high as that resulting from equal investment in other fields. Income must be sufficient to cover the expense of operation, a return on the

capital invested, and an amount sufficient to amortize capital loss over the economic life of the buildings.

Richard U. Ratcliff, in his book Urban Land Economics, points out the following factors in costs which must be charged against gross revenues.

> Costs of interest and depreciation are functions of the amount and nature of the capital invested in the enterprise; other costs, such as expenditures for fuel and maintenance, are required for the productive operation of the property....The costs of modifying land in its natural state to prepare it as a site for a building are substantial. First comes the processing of the surface, involving clearing, grading, and draining. Then there are the costs of accessibility arising from the provision of roads and sidewalks and the installation of essential utilities such as water and electric service connections. Another set of costs must be incurred to cover heat, utilities, maintenance and repair, and rent collection losses. Insurance is an additional cost, which is incurred whether or not the property is occupied, and property taxes constitute a substantial burden which must be carried regardless of occupancy. 1

On a beach site, the processing of land is a minimum. Problems of drainage and grading are practically nonexistant, because of the nature of the sandy soil. Chemical stabilization of the sand will provide roads of sufficient strength for the drives and walks required in the development. Mr. Ratcliff

1. Richard U. Ratcliff, Urban Land Economics, New York: Mc Graw-Hill Book Co., Inc., 1949, p. 337.

continues:

> The property owner rightly expects to receive an entrepreneurial return on his total investment. In addition, the enterprise will not be sound unless his capital investment is preserved; it must be returned to him out of the proceeds of operations during his ownership, plus what he recovers through disposition. From the moment anew building is completed there is a complex set of forces that conspire to reduce its productivity. The structure itself deteriorates physically over time; it becomes gradually obsolete design....Operating costs tend to rise as the structure becomes older, vacancies increase, the rental rate drops. Eventually there comes a time when revenues no longer cover the costs of operation, and the economic life of the building is at an end. But the land remains, and generally has some value. It is the difference between this terminal value and the original capital investment including land that represents the loss in value that must be covered out of earnings during the ecomomic life of the building. This cost is generally recognized in the accounting of the owner by an annual depreciation charge, an amount that is estimated to be sufficient to cover the loss in value during the productive life of the property. 1

It follows that the construction of the club and apartments must be such as to minimize the maintenance and depreciation costs, recognizing economy in first costs. Depreciation is generally computed over a 25 - year period; however, with the acceleration in weathering conditions on the beach, perhaps the safest period for our purposes would be twenty years.

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1. Op. cit. p.352

To minimize costs of operation, thought must be given to ease of service and cutting the required staff to a minimum. The turnover of guests in the apartments requires maids to clean and furnish linen; the restaurant and bar require a staff of cooks and waiters; a janitor is needed to care for the mechanical equipment of the buildings and swimming pool and clean the club and surrounding area.

It seems worth while on a beach location of this nature to build more expensively, with a view toward a longer period of useful life. The beach never loses its attraction, and the land will probably gain in value as the beach sites become built up. Care must be taken to preserve the sands of the beach, which in some locations are swept away over a period of years. It might be necessary to build groins to break the sweep of the surf over the beach, although the Kitty Hawk beaches are generally free of the lateral currents which do most of the damage. It is often less expensive and safer to replenish the beach when necessary than to endanger the surf bathers with groin systems.

By making some very rough approximations, it is possible to arrive at a preliminary economic analysis .

Initial costs:

club proper...	15,000 sq. ft. $20.00/sq. ft.	@...	$300,000
cananas.....	7,400 sq. ft.	@...	74,000
pool.....			15,000
fishing pier.....			10,000
boardwalks and terraces.....			10,000
roads.....	2500 lin. ft. $15.00/lin.ft.		37,000
apartments.....	960 sq. ft. $10.00/sq.ft. $9,600/apt.	@...	384,000
Total construction cost.....			$830,500
Land cost, considered residual....	1200 lin. ft. $15.00/frontage ft.		($18,000)

Operating expenses:

staff salaries.....		$52,000
manager.....	1 @ 6,000/yr.	
cooks.....	2 @ 4,000/yr.	
bartenders..	1 @ 4,000/yr.	
waiters.....	4 @ 3,000/yr.	
busboys.....	4 @ 3,000/yr.	
janitor.....	1 @ 4,000/yr.	
maids.....	2 @ 3,000/yr.	
utilities.....	$200.00/month.....	2,400
maintenance.....		2,000
advertising.....		10,000
miscellaneous costs.....		5,000

15% economic rent.....$124,600
return on investment
morgage payments
amortization
insurance, taxes

Total operating expenses.....$196,000/yr.

Income:

membership fees...100 families..30,000
@ $300/yr.

cabana rental.....58 @ $50/mo...23,000
8 mo. period

apartment rental.....90,800
75% occupancy for 12 mo. period
at an average rent of $60/week

income from restaurant, bar,
fishing pier, equipment rent....81,200

Total income.....$196,000/yr.

The income from such services at the restaurant and bar are difficult to estimate. Such income must equal the figure named if the project is to be slovent. Any amount over this figure will be excess profit. Mr. Clim, manager of the dining room and bar of the Sheraton Plaza Hotel in Boston, Mass., estimates that the bar should clear a profit of 31%. He believes that restaurant service must be kept simple, with minimum overhead, to clear a reasonable profit. The snack bar, he predicts, will be a larger money

maker than the restaurant, since there are no expenses for linens, waiters, menus, expensive china replacement and the like.

The apartment rentals are estimated from information furnished by Mr. David Stick, real estate agent of Kill Devil Hills, N.C.; two to three bedroom ocean front apartments or cottages rent from $90.00 to $150. during July and August, $60.00 to $100.00 during June and September, with lower rates for those which remain open in October and start again in April and May. Winter rates for those remaining open are around $30.00. For the apartments of this resort, offering the use of club facilities, I estimated a rental scale of this order:

January	$30.00
February	30.00
March	40.00
April	70.00
May	80.00
June	90.00
July	100.00
August	100.00
September	90.00
October	70.00
November	40.00
December	30.00

These rentals are will below the average resort price for the height of the season, while the winter months prices are about equal.

Atmosphere of the Club:

The general spirit of the beach club is one of gaiety and of play, yet it must also provide areas of relaxation. Those who have been out in the hot summer sun on the beach will want a shaded and enclosed spot for relief. After the vastness of the ocean, enclosure is comforting and relaxing. However, the guests have come to enjoy the ocean primarily, and the club must provide vistas over the sea and beach.

The atmosphere of the club, therefore, will be one of alternate openness and enclosure, giving striking contrasts. This can be accomplished in varying degrees; translucent screens of various materials could provide halfway illumination, so that the transition between light and dark space is not too harsh or blinding.

The use of plants and shrubbery will help to create the feeling of coolness and informality in the club. Outside the club it would be worthwhile to nurture trees and shrubs; the contrast of the greenery against the sand hills and dwarfed trees

would add to the club's attraction. Bright colors help create the atmosphere of gaiety and festivity, but should be used with restraint, as accents. The general color scheme will be of cool colors: blues, greens, whites, and grays, in subdued shades. Proper use of color and greenery will help impart the playful and carefree spirit the club should give.

Analysis of Club Facilities:

The club divides its functions into three basic categories: the active, the inactive, and the service facilities. Active functions would include the swimming pool and cabanas, badminton, surf swimming, tennis, shuffleboard and sun bathing. The more inactive functions include dining, drinking, lounging and dancing. (Dancing has been included in the inactive functions because it will be an evening function of the club. There would probably be a juke box and dancing on the terrace for the younger guests during the day.) Services include the kitchen, bar, snack bar, dressing rooms and locker room, bait house, equipment rental, mechanical equipment housing for the swimming pool, air conditioning and heating for the club

and janitor's maintenance rooms (including linen storage, etc, for the maids) .

The active and inactive public functions meet at the snack bar and at the liquor bar. The liquor bar must serve a dual purpose; it must be a quiet place for relaxation, and at the same time, a spot for bathing-suited members to pick up refreshment. It is thought therefore, that the bar might be split into two levels, the lower level being physically and functionally halfway between the active and inactive areas of the club.

Lounges:

The lounging areas of the club are many. The open terrace around the swimming pool and deck games must be considered lounging area as well as the enclosed lounge and bar and deck space. The primary purpose of the enclosed lounge is quiet space for conversation, reading and comfortable sitting. It will probably be most used in the evening for sitting out dances, playing cards and gathering socially. During the evening the center switches to the dining area, the ball room and dancing area on the terrace, and bar.

During the day, the lounge is a retreat for those who have had a sufficiency of sun and sand, the older members who want conversation, and such activities. It must provide seclusion from sun and sea, at least in part of its area. It should also give a generous view of the ocean and the beach for those desiring these features.

Dining Room:

Space requirements in the dining area vary greatly with the time of year. Parties make added demands on the dining room capacity. The space must be very flexible to avoid having a dining space too large for the average needs of the club. The logical way to provide this flexibility is to open the dining space, the dance floor and the lounge into one large area, dividing this area with screens and curtains. The space can be divided as needed, and the arrangement calls for only adequate scheduling of events. Large banquets would not be held on the same night as large dances, in other words. Outdoor dining is generally popular at the beach, especially so if the level of the dining room is above

the blowing sand. The dining terrace should be so located as not to interfere with the view of the ocean from the interior dining space.

I have estimated that the seating space of the dining area should accommodate 150 persons, this being the maximum for ordinary occasions. This would require a combined area of approximately 2,000 sq. ft. to be provided by dining terrace and dining room. This number of people would be one per member family (100) and one per apartment (150). Since each apartment will have cooking facilities, it is unlikely that more than one third of the guests would dine out on the same evening except on the weekends. The member families provide a similar case, since many of them will live in the vicinity and not likely to eat at the club more than one night a week. Activity at the club will reach its peak during the weekends; sufficient space must be provided so that the dining activity will not absorb all of the lounge space, which will probably need maximum space at these same times. The snack bar will feed a number of the guests, and supplement the dining room.

Dancing:

It is customary for beach clubs to have nightly dances. These are often held outdoors on a terrace, and are very pleasant. Drinks are served at the tables. It is possible that an orchestra may play on weekends, and space should be provided for one. The dances are very informal; the attire is usually sport clothes, and almost anything goes with the younger set. The younger guests will probably dance on the terrace near the pool, leaving the more formal lounge area to the less spirited. This separation will probably suit everyone concerned.

Active Functions:

The active functions of the club will most likely center around the swimming pool and game area, the beach and cabanas. During the day this area will receive the heaviest use, the indoor facilities becoming secondary. It is essential that the active group have immediate access to the snack bar and liquor bar to satisfy their refreshment requirements. The cabanas would be served from the bar by busboys, as would the tables on the terrace surrounding the pool, and

overlooking the beach. At the same bar area, there should be a few tables for those wishing to escape from the glare. It is hoped that this central bar can provide for all the drinking areas of the club.

Swimming Pool:

A swimming pool is included in the program because it is very refreshing to have a good swim in salt-free water while at the beach. The ocean is sometimes frustrating to those desiring to swim. Many people are never quite at ease while in the ocean---the sea life can be troublesome, and the surf is usually too heavy for any prolonged swimming activity. The pool is an ideal spot to rid oneself of the sand and salt accumulated on the beach, and it would also provide swimming at night, when the ocean is sometimes dangerous, and always frightening. A disinfectant pool and shower should be stationed at the entrance to the pool.

Games:

The beach and pool would provide for the major activity. However, it is well to supplement the

swimming sport with deck games, such as shuffle-board, and provide some tennis courts for more active play. A ping-pong table would probably receive good use. Badminton and volley ball are easily provided for on the sand, and many guests enjoy these games. A small nine-hole golf course is a possibility.

Cabanas:

The cabanas are provided for those permanent club members who would desire them. The cabana provides a place where the member can keep his beach clothing and equipment, change clothes, store whiskey, as well as giving him a little bit of personal ground. It must be fairly weather-proof, capable of being securely closed when not in use or thrown open with the least degree of effort. The roofs of the cabanas make a superb sun deck, and should be utilized.

Fishing Pier:

At this point on the North Carolina coast, where the Outer Banks project into the ocean toward

the Gulf Stream, many fine catches are made off the docks or fishing piers. It would seem logical that a club should provide a fishing pier for its members in order that they might take advantage of this natural attraction. The pier would also be a land mark and focal point for the architectural complex, which must spread out along the beach front to provide forty apartments as well as the club. The pier would be constructed openly so that passage under the pier was simple and natural.

Services: Kitchen

For the purposes of this problem, it is estimated that the kitchen will require about one third of the space of the dining room, including storage and dressing facilities for the staff. The kitchen should include bar equipment for serving tables during the evening dances. These will probably be separate from the main bar areas.

Snack Bar:

The snack bar will serve as a quick lunch and supper spot for those busy enjoying the beach activities. It should be close to the active areas of the

club and near the food preparation for the dining room, although it will most likely have separate food preparation facilities. The snack bar will provide soft drinks, fountain service and sandwiches.

Mechanical Equipment:

For off-season use, some heat would be required in the club proper. Probably the simplest heating system for this occassional use would be forced hot air, a small heater unit being provided in the mechanical equipment room. Oil would be the likliest fuel. For the hot-water needs of the kitchen and dressing rooms and toilets a heater would be needed, perhaps the same unit that heats the club.

For the swimming pool, filters and purifiers and pumps are required. These would also be housed in the mechanical equipment room.

Locker Rooms:

For those club members not renting cabanas and for guests of club members, there must be some facility for dressing and showering. The dressing

rooms for members and guests should be near the swimming pool area. Lockers will be required, together with showers and toilet facilities. Guests of cabana owners will probably use the dressing rooms provided in the cabanas.

Locker rooms must also be provided for the staff. These will be near the kitchen area, and should include shower and toilet facilities.

Bait House:

For the benefit of members using the fishing pier, there should be opportunity to purchase bait and rent fishing gear. The bait house would be in close conjunction with the pier, of course. This space need not be large, but it requires good ventilation. It is possible that the larger rods required for surf fishing will also be kept in this space, and provision must be made for this possibility.

The bait house is also the logical space for storage of rental beach equipment, such as umbrellas, rubber rafts, and the like. The house will be close to the beach area, as it is associated with the pier.

Apartments:

The occupants of the apartments should have direct access to the beach, as well as a view of the strand and sea. Since the club provides for communal activities, the apartments should be as private as possible while keeping in the party spirit. The furnishings of the apartment need not be elaborate; the beachgoer expects a change of environment. The nature of the apartment should be reflected in its furnishings and construction. Light, airy tables and chairs and " sea-shore materials " could help give the informal atmosphere desired.

A terrace overlooking the sea serves as an intermediate space between beach and apartment, a spot to shake off the sand and rest for a while. A shower is generally close by to rid oneself of salt and sand. Storage for terrace furniture should be closely accessible.

The interior space does not need to be large. The guests have come for the ocean and a great deal of their time will be spent sunning or sitting overlooking the surf, or playing at the club. The interior

must provide for sleeping, resting, and eating.

Sleeping accommodation requirements will vary considerably. Two bedroom apartments would provide for families, and allow couples to share the apartments and expenses. Overflow sleeping can be accommodated on cots or couches in the living space. This would give a flexible arrangement to care for the many combinations of folk who come to the beach together. Closets should be provided in the bedrooms, though the beach wardrobe is small. Linen storage should be provided for the use of the maids.

Cooking facilities can be simple but complete. A small apartment size range and oven, sink and small refrigerator should be sufficient. It is customary for the apartments to be completely furnished with cooking ware, silverware and pottery. Cabinet space for this permanent equipment and for grocery storage will be required.

The living space should be large enough to accommodate small parties. Any large-scale entertaining will be done at the club. A dining table

seating eight should be satisfactory for almost all apartment needs. The space should overlook the ocean, with sufficient sun protection.

The longitudinal axis of the apartment will probably have to run perpendicular to the beach, to conserve on expensive beach frontage. For the same reason, the apartments will have to develop more or less in row house fashion. A development of this type has many economic advantages, but it tends to result in a long development along the shore front, cutting off the continuity of shore to sand dune. If the apartments are raised off the ground, the apartment block is lightened in appearance; the resultant covered space provides shelter for automobiles and terrace. To further reduce the length of the apartment string, the blocks could be limited to ten or less apartments.

To provide for large parties, one apartment block could have folding partitions in the living areas, making it possible to throw the entire block open if desired. This block should be set off from the other apartments somewhat, so that the parties will not disturb the other guests.

Housekeeping will be done by the occupants of the apartments during their stay. Between rentals the apartments will be cleaned, linens changed and things generally straightened by a maid, The apartments probably would not be rented for less than a week during the height of the season; the maid service required would not be extensive.

Security:

If the club and apartments are open the year round, the problem of security is not vital. The manager will live on the property. The road into the property will be solitary, so that any approaching car would be obvious. To guard against thieves within the establishment, the apartments should be secured against easy entry, as should the cabanas. Kitchen storage and liquor storage should be equiped with locks.

Storm Protection:

The Kitty Hawk beach is out of the path of the most severe storms that sweep the Atlantic coast. By the time the storms get as far north as the Carolinas they have generally blown out to sea. However,

protection against high winds is desirable. Storm panels for the glass areas should be provided, and installation made simple. The structure must be braced to take the wind stresses, and securely anchored to the pilings and footings.

STRUCTURAL ANALYSIS

STRUCTURAL CONSIDERATIONS

The traditional beach construction has been of wood. Many old buildings stand as evidence of the merit of its use. Wood clapboarding is the predominate covering for exterior walls, while wood shingles are used for the roofing . The frame is generally built up off the sand on wood pilings or brick piers.

Recently, new materials have been developed which rival wood for use in beach construction. Concrete masonry blocks have been used extensively. Asbestos cement products promise durability. The use of glass in large sheets is becoming more prevalent, providing a durable exterior surface as well as a viewing screen. Porcelain enamel-covered metal panels have withstood beach conditions for

many years without any signs of deterioration.

For the structural frame, however, wood is still the best all-around material. An examination of our other structural materials shows that they present certain disadvantages. There have been extensive tests made by the governments of the United States and of Britain into the corrosive action of sea water on materials of various nature, with intent to discover the most durable and economical materials for dock and other maritime works. Samples of the various materials to be tested were exposed completely submerged at high tide, and in some cases completely out of the water. Observations were made at varying periods for up to ten years, and the state of the samples recorded.

One test was conducted by the U.S. Army Corps of Engineers of ferrous materials, concluded in 1947, with the following results:

> "In general, the investigation bears out the study made of existing structures--
> 1. No ferrous material was found to be entirely resistant to corrosion and sea water, although corrosion-resisting steels with the addition of molyodenum in appreciable

quantities more nearly approached the criteria.

2. Some bronzes and non-ferrous materials are resistant to sea water corrosion and some are not, but generally they are superior to ferrous metals.
3. Ferrous metals must be kept painted to prevent excessive corrosion.
4. Welded ferrous construction is satisfactory if proper welding rod and technique are used to keep plate anodic to the weld, but here again the material must be kept painted.
5. Plate steel and cast steel are about equal in corrosion resisting.
6. Cast iron is usually superior to cast steel and plate steel, and except in air exposure it is superior to alloy steels and alloy irons.
7. All of the alloy steels have much more resistance to corrosion than ordinary steels, but in submerged conditions the great tendency for the alloy steel to pit becomes and important factor. 1

Dr. Frank N. Speller, in his book Corrosion, Cause and Prevention, prescribes protective treatment for steel structures:

> Protection of steel structures exposed to atmospheric conditions usually required careful selection, application and renewal of paints every four to five years. The structure should be designed, as far as practible, to avoid inaccessible places and corners where dirt and water may accumulate. 2

Dr. Speller recommends American vermilion (basic

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1. "Materials Corrosion Investigation," Final Report, Dept. of the Army Corps of Engineers, New England Division, Boston, Mass., Eastport, Maine: 15 December 1947
2. Frank N. Speller, Corrosion, Causes and Prevention, New York: McGraw-Hill, 1951, p. 238.

chromate of lead) as the best paint preparation to inhibit corrosion. Aluminum paint has also given very exceptional results.

In a symposium held by the American Society for Testing Materials in June 1946, on the weathering of corrosion-resistant steels, the following observations were made:

> Steel containing substantial amounts of chromium are finding increased application in the fields where resistance to atmospheric corrosion is important...Inspections are showing the 18% chromium, 8% nickel steel to be giving very satisfactory service...The 18% chromium steel at Dure Beach, N.C., showed no pitting after 44 month's exposure. 1

Observations made of buildings at Atlantic City, N.J., the symposium offers this report:

> Atmospheric conditions are quite severe due to the close proximity of the ocean and the salt spray which is ever-present...On all store fronts where the stainless type steel is cleaned regularly, the metal is in fairly good condition...Where the metal receives no cleaning, small pits and some rusting can be observed. The depths of the pits was of no consequence and there were no signs of perforation of the metal....Evaporation permits the salt to precipitate, and if this precipitate is not removed within a reasonable time, it results in appreciable staining and some shallow

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1. "Symposium on Atmospheric Weathering of Corrosion-Resistant Steels," American Society for Testing Materials, June, 1946.

pitting. The 18-8, type 302, is more suited to applications of this nature than the 17% chromium, type 430....Best performance of any composition will be favored by regular cleaning and by details of construction that provide proper draining. 1

Dr. Frank Speller points out the shortcomings of reinforced concrete for beach construction:

> Concrete...is generally a most effective and permanent protection against corrosion in the atmosphere. Enough cement must be used to fill the voids in the mixture: not less than one part cement to two parts sand and four parts of a good aggregate....It is always important that the concrete be well mixed...
>
> Steel imbedded in concrete exposed to salt air near the sea is more subject to attack than in concrete completely submerged in the sea water. This is due to the fact that moist air will penetrate through porous concrete to the metal, while salt water may not. Corrosion of the reinforcing metal, covered with two to four inches of good concrete, has occurred about the high water level of concrete piers in the sea. The volume of rust formed is about three times that of the metal, so that its expansive power is usually sufficient to cause spawlings of the concrete....Where reinforcement is necessary in concrete exposed to sea air, the metal should be painted with two thin coats of a red oxide of iron paint made up with china wood oil and spar varnish, or dipped in a hot bituminous coating and then dusted with sand. After all, the best protection will be obtained by using a thoroughly mixed concrete pf proper proportion, well tamped around the bars to a sufficient thickness and cured. 2

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1. Idem.
2. Speller, op. cit.

Aluminum tends to oxidize when exposed to a salt solution, and would not be satisfactory when exposed to the continual salt spray.

Since maintenance costs reduce considerably the profit on investment, it is important to choose materials and construct the resort to minimize deterioration and required upkeep. At the same time, materials must be chosen that will not detract from the beach character of the club. Stainless steel, though it bears up rather well under beach conditions, does not seem in keeping with the atmosphere we are seeking.

Steel will require good maintenance. For the club proper, where longer spans are required, the cloumns and beams should be enclosed by the exterior skin to keep them sheltered from the spray. The frame should be readily available for inspection and painting. The apartments will utilize wood joists to span between the masonry bearing walls. All ventilating sash and window mullions will be wood to avoid the corrosion problem. The exterior skin will be of wood, concrete block, ceramic glazed tile or glass, for minimum upkeep needs.

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3. "Materials Corrosion Investigation". Final Report, Dept. of the Army Corps of Engineers, New England div., Boston, Mass. Eastport Maine, Dec. 15, 1947.

4. Speller, Frank N., Corrosion, Causes and Prevention, McGraw-Hill Co., N.Y., 1951.

5. "Cost Estimates," Government Estimates of Fair and Reasonable Cost to Contractor, Dept. of Army, Corps of Engineers, Office of the Chief of Engineers, U.S. Government Printing Office, March, 1947.

6. Beach Erosion Studies, War Dept., Corps of Engineers, Office of the Chief of Engineers, U.S. Government Printing Office, April, 1947.

7. North Carolina, The North Carolina Writers Project.

8. Annual Report, United States Weather Bureau, U.S. Dept. of Commerce, U.S. Printing Office, 1951.

STATE OF NORTH CAROLINA

DEPARTMENT OF

CONSERVATION AND DEVELOPMENT

GEORGE R. ROSS, DIRECTOR

RALEIGH

July 9, 1952

Mr. Thos. F. Marshall,
241 Westgate West,
Cambridge, Massachusetts.

Dear Mr. Marshall:

Your letter of June 28 has been referred to this Division by Mr. Ralph J. Andrews, Director of the North Carolina Recreation Commission.

We believe Kitty Hawk is the beach that you are looking for. This area is now in process of development north of the famous old beach of Nags Head, and across U. S. Highway 158 from the Wright Memorial Monument on Kill Devil Hill. South of Kitty Hawk is Hatteras Island, where plans are now being made for the establishment of the National Seashore Park.

Cottages and apartments in this area would rent from $60.00 to $150.00 a week. Lots would range from $750.00 to $3,000.

A toll road is being planned from Virginia Beach to the intersection with U. S. 158 above Kitty Hawk, and additional bridges are being planned to connect this strip of the coast with the mainland. The Currituck Greyhound Track is nearby, and bingo and all beach attractions are to be found at adjoining Nags Head Beach.

Under separate cover, we are sending you folders on Dare County and the Outer Banks, also a Highway Map, copy of the "Surfside News", local publication, and our general booklet "Variety Vacationland".

We hope that this will be helpful to you in this project.

Sincerely,

Signature redacted

Charles Parker, Director,
State Advertising Division.

C. P.
ec

cc: Mr. Ralph J. Andrews, Director,
N. C. Recreation Commission,
Education Building Annex,
Raleigh, North Carolina.

DAVID STICK
LICENSED REAL ESTATE AGENT
KILL DEVIL HILLS, N.C.

July 19, 1952

Mr. Thos. F. Marshall
241 Westgate West
Cambridge, Mass.

Dear Mr. Marshall:

I have just now received a letter from Mr. Charles Parker, copy of which he sent you, concerning your earlier correspondence with him.

Let me make certain I understand. You are not interested in actually starting a development, but rather in preparing a layout of a model development as part of your course of study. If this is correct, please feel free to call on me for any particulars I may be able to provide.

Maps can be secured from the following sources:

U.S. Coast & Geodetic Survey, Washington, D.C., Chart # 1229, Currituck Beach to Wimble Shoals, price $1.00.

U.S. Geological Survey, Washington, D.C., Topographical sharts of Kitty Hawk, Powells Point and Barco, $0.20 each. These are much larger scale than the Coast and Geodetic charts, the three of these covering only part of the area in #1229.

So far as I know these are the only detail maps available of the area as yet undeveloped north of Kitty Hawk.

Land prices in the area vary, beginning at about $10. an oceanfront foot for tracts running from sea to sound (in other words a strip 100 feet wide, extending from sea to sound, $1,000.00 or up.) However, practically nothing in the area is now for sale, a lot of it having been cut up and sold in small units, and the balance owned either by the government or by large club owners.

I hope this information is what you wanted, and I'll be glad to assist you further.

Sincerely yours,

Signature redacted

David Stick

DAVID STICK
LICENSED REAL ESTATE AGENT
KILL DEVIL HILLS, N.C.

July 31, 1952

Mr. Thos. F. Marshall
241 Westgate West
Cambridge, Mass.

Dear Mr. Marshall:

Two to three bedroom oceanfront "cottages" or apartments rent from $90. to $150. weekly during July and August, and $60. to $100. during June and September, with lower rates still for those which remain open in October and start in again in April and May. Winter rates for the few which are rented run around $30. monthly. Rates other than oceanfront are generally about two-thirds of the above.

Our main business here is from summer tourists. Spring and fall fishermen provide a secondary source of income, and we get some wildfowl hunters in the winter season.

A brochure is enclosed outlining the development my father had in mind five years ago on a four-mile oceanfront tract just north of Kitty Hawk. There are now something like 70 cottages, and the development is progressing nicely along the lines suggested.

A new cabana-type hotel at Southern Shores is the Sea Ranch... address Kitty Hawk. Year around hotel is the Carolinian at Nags Head. Entertainment provided at the Casino, Nags Head (dancing and bowling) and the Surf Club, Kitty Hawk (just starting this year with a small dance hall.)

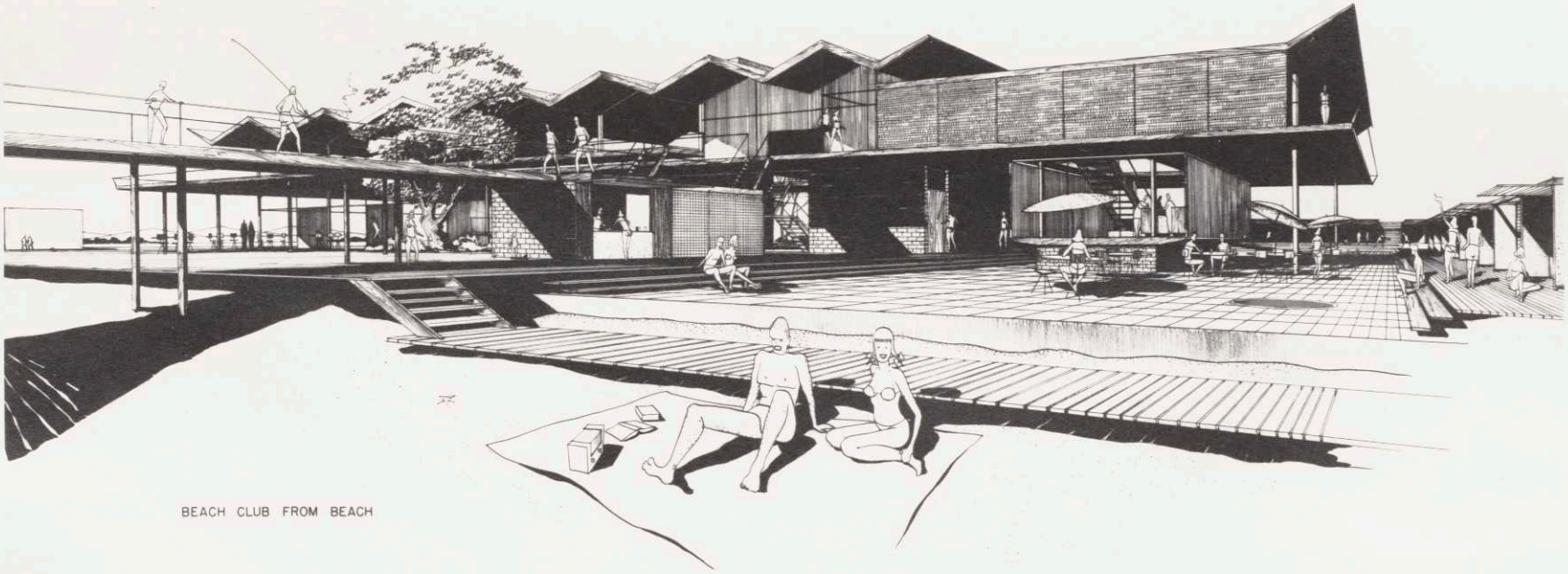
If I can be of further assistance please call on me. And when your thesis is done, if you have an extra copy I'd enjoy seeing it.

Sincerely,

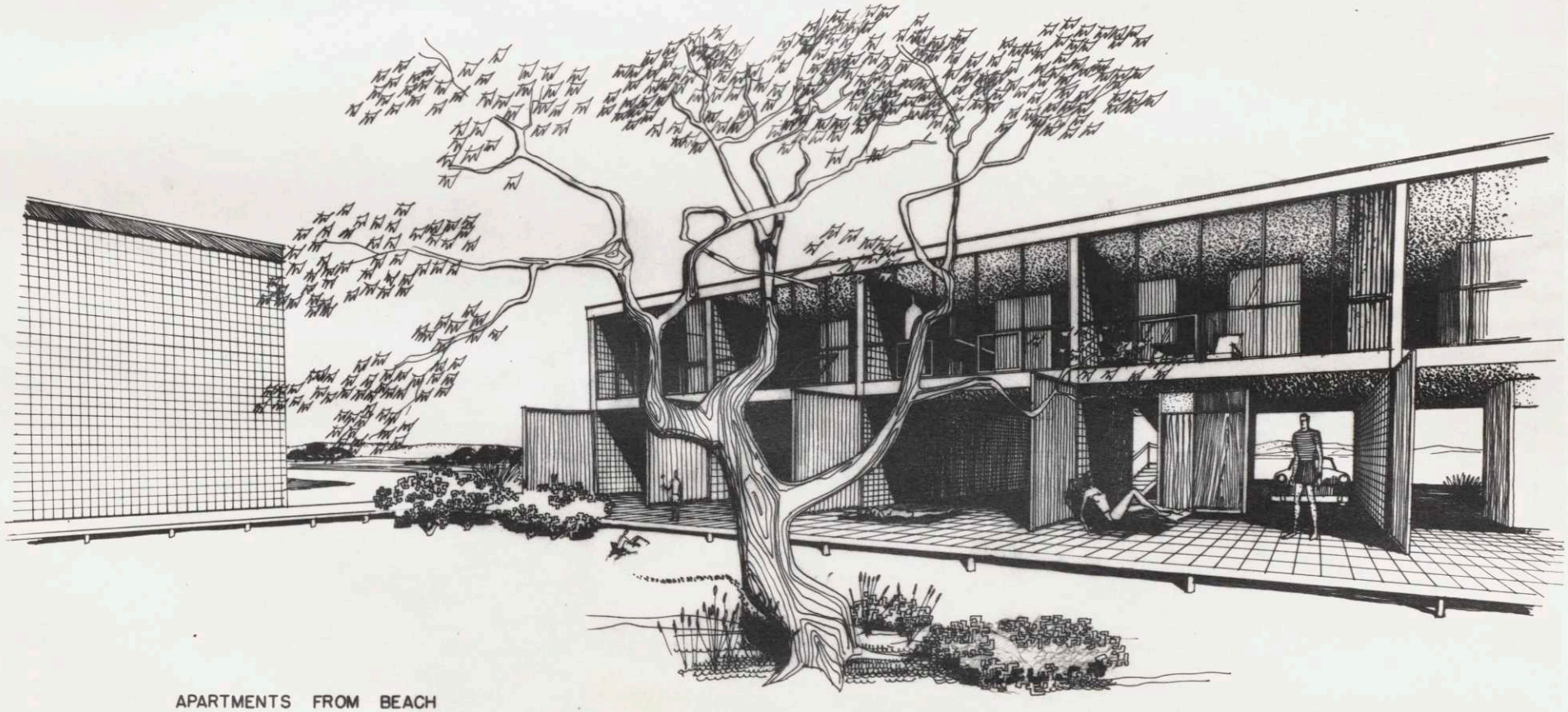
Signature redacted

David Stick

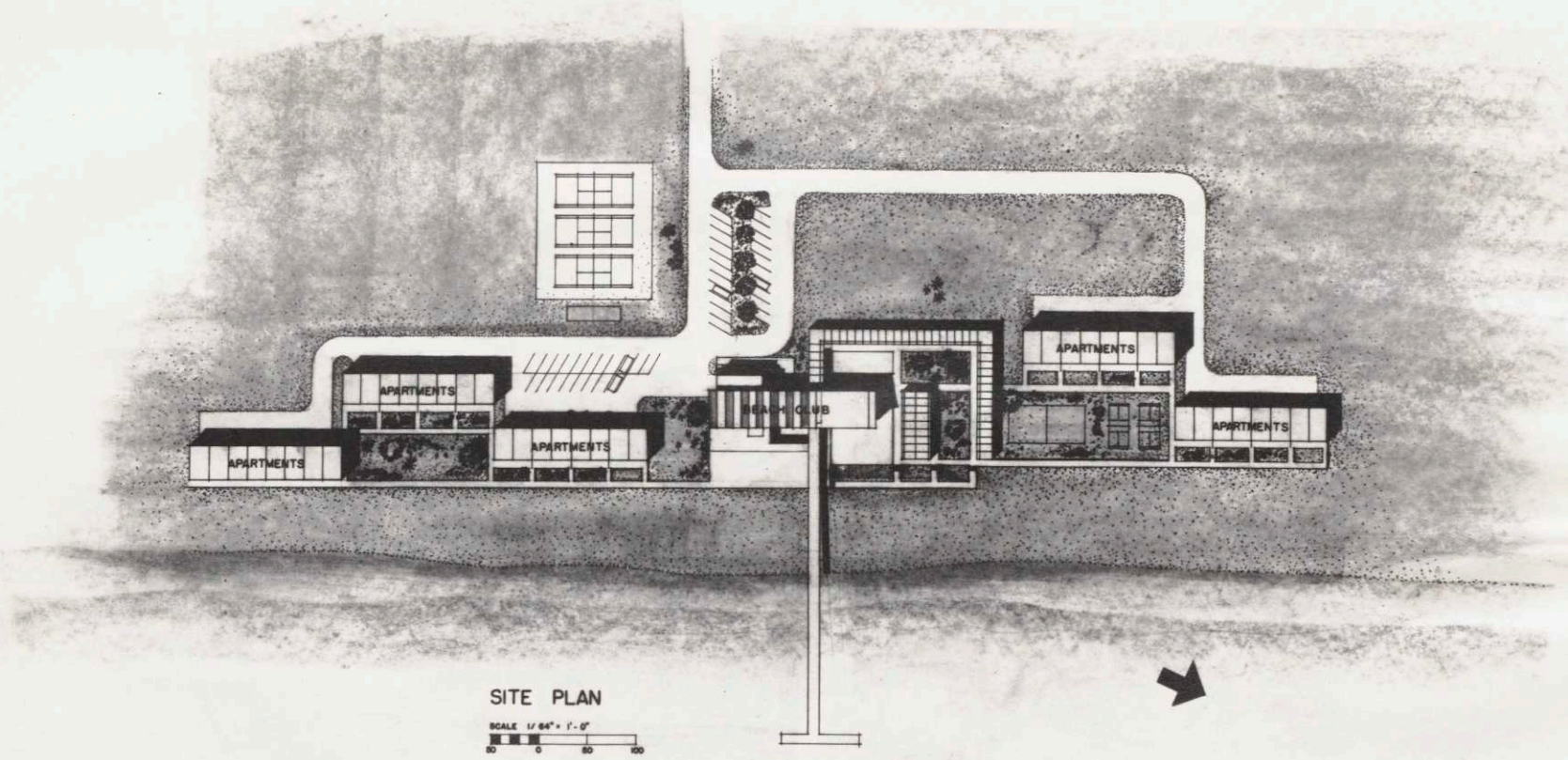
THE SOLUTION



BEACH CLUB FROM BEACH



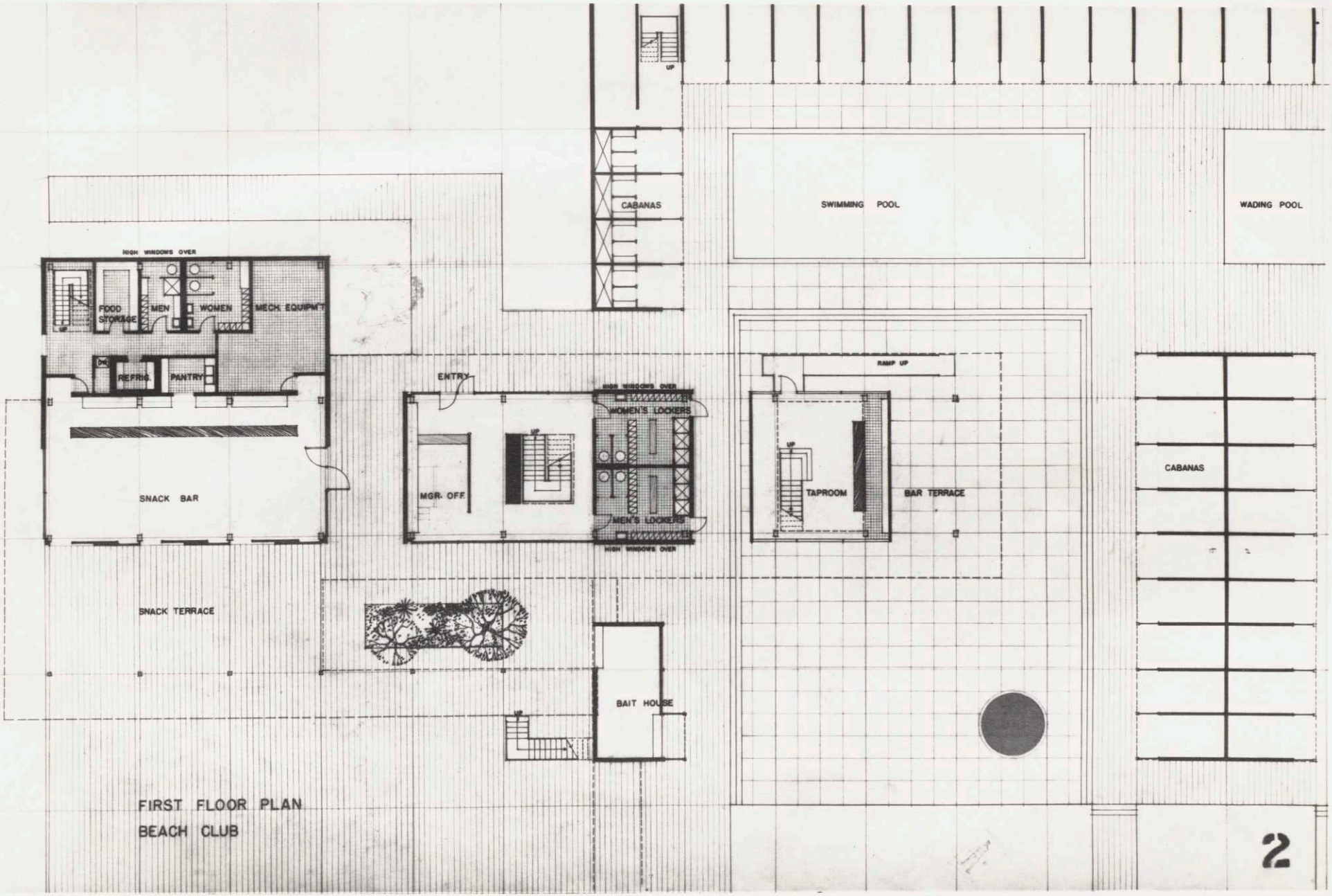
APARTMENTS FROM BEACH



a beach resort: club and apartments

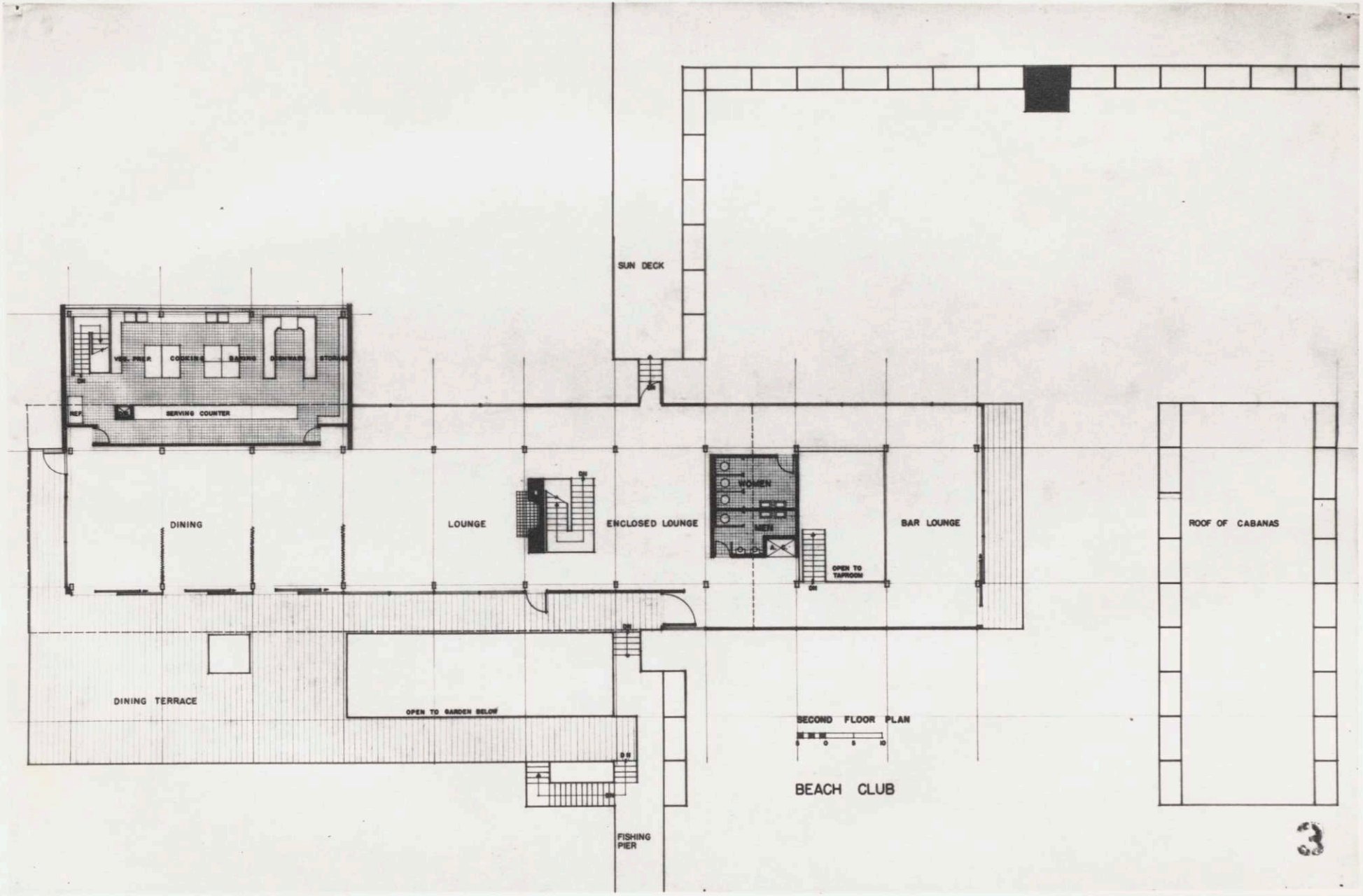
SUBMITTED IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE
DEGREE OF MASTER OF ARCHITECTURE

THOMAS F. MARSHALL

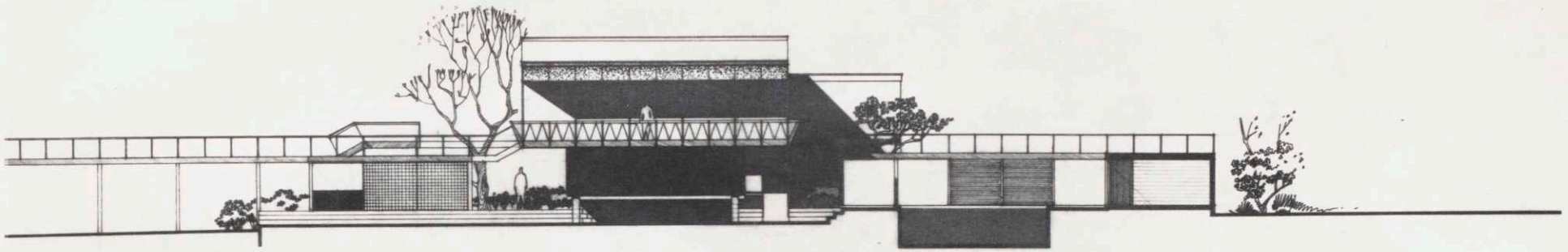


FIRST FLOOR PLAN
BEACH CLUB

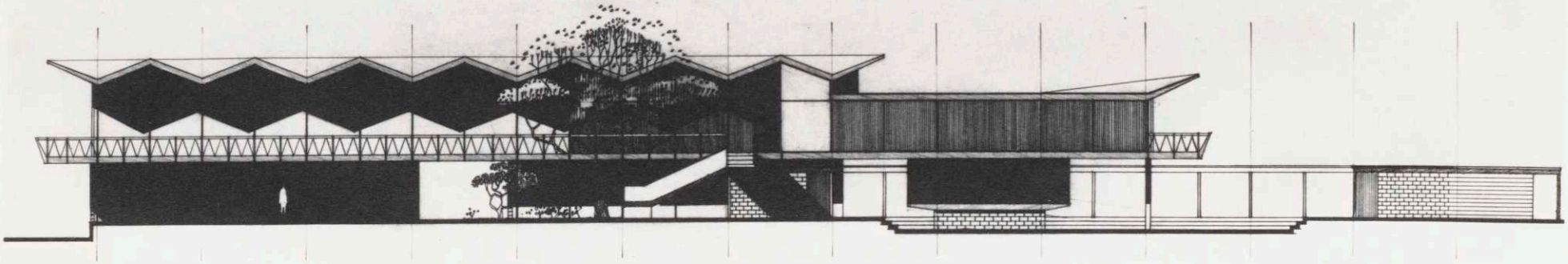
2


SUN DECK
SERVING COUNTER
REF.
DINING
LOUNGE
ENCLOSED LOUNGE
WOMEN
MEN
BAR LOUNGE
OPEN TO TAPROOM
ROOF OF CABANAS
DINING TERRACE
OPEN TO GARDEN BELOW
FISHING PIER
SECOND FLOOR PLAN
BEACH CLUB

3



NORTH ELEVATION



EAST ELEVATION

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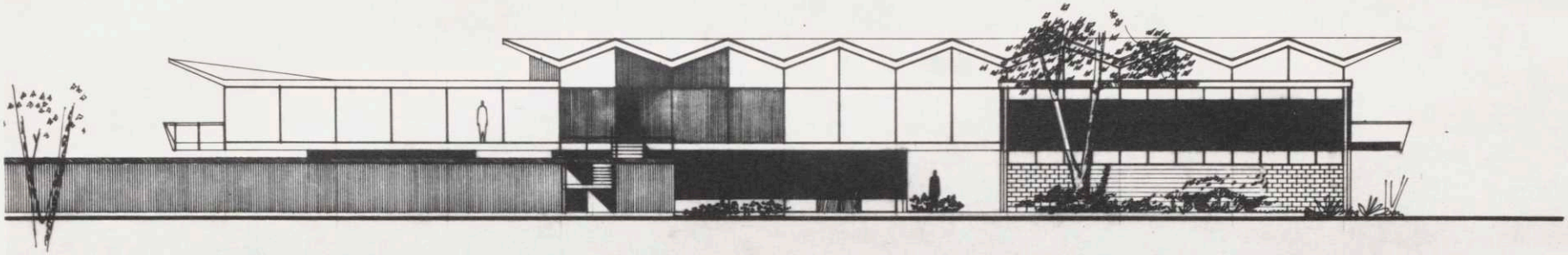
BEACH CLUB



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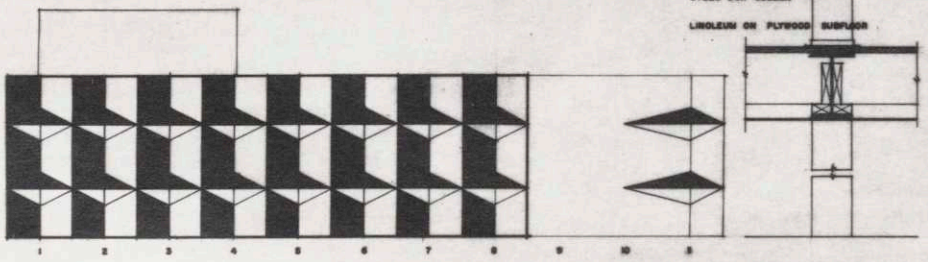
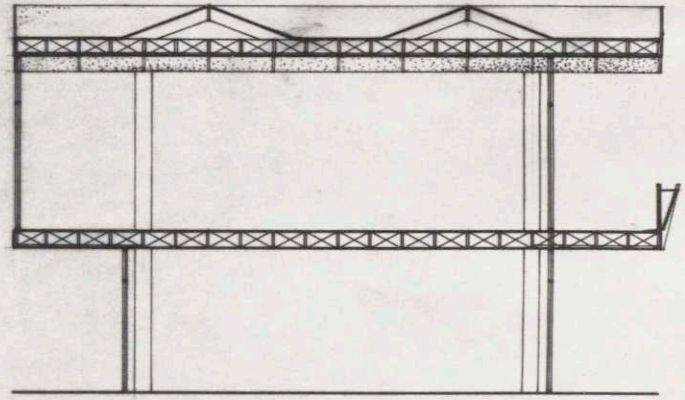
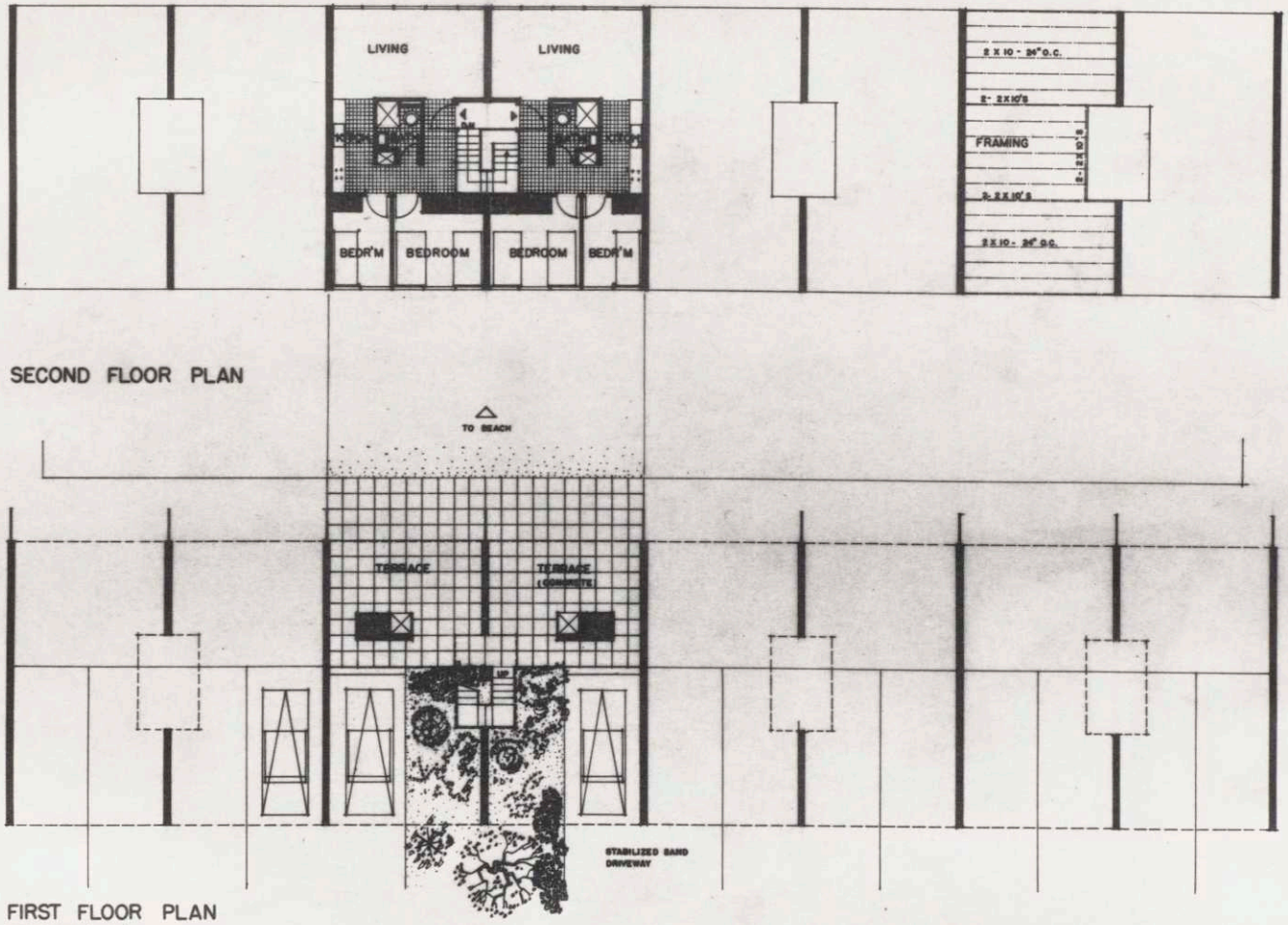


ROOF PLAN SCALE 1/16" = 1'-0"

DETAILS SCALE 1" = 1'-0"



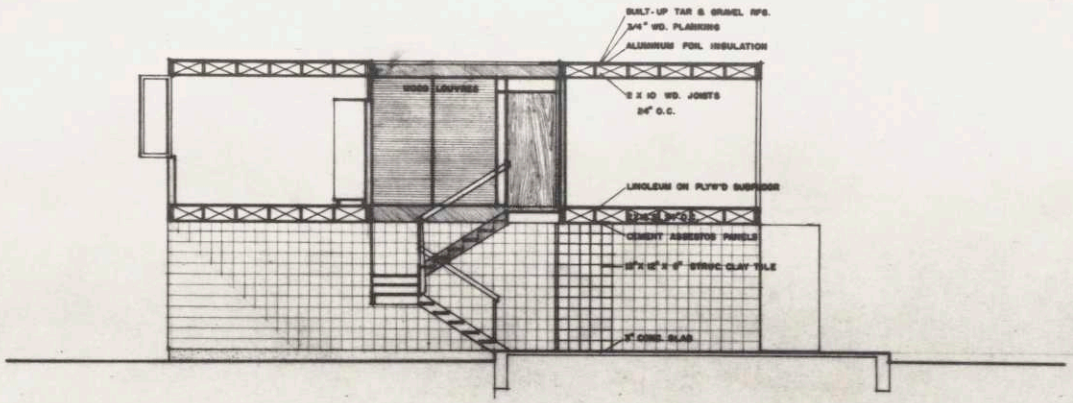
CROSS SECTION SCALE 1/4" = 1'-0"



SECOND FLOOR PLAN

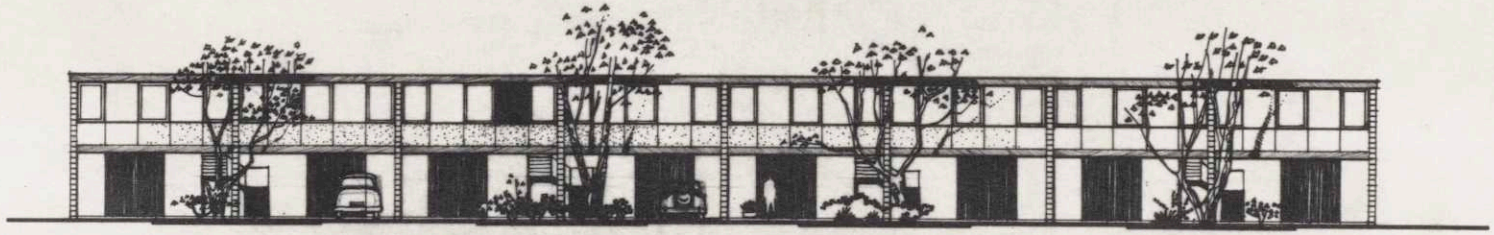
FIRST FLOOR PLAN

TYPICAL APARTMENT BLOCK



CROSS SECTION AT STAIR

SCALE 1/4" = 1'-0"



WEST ELEVATION

TYPICAL APARTMENT BLOCK