DOCUMENT RESUME

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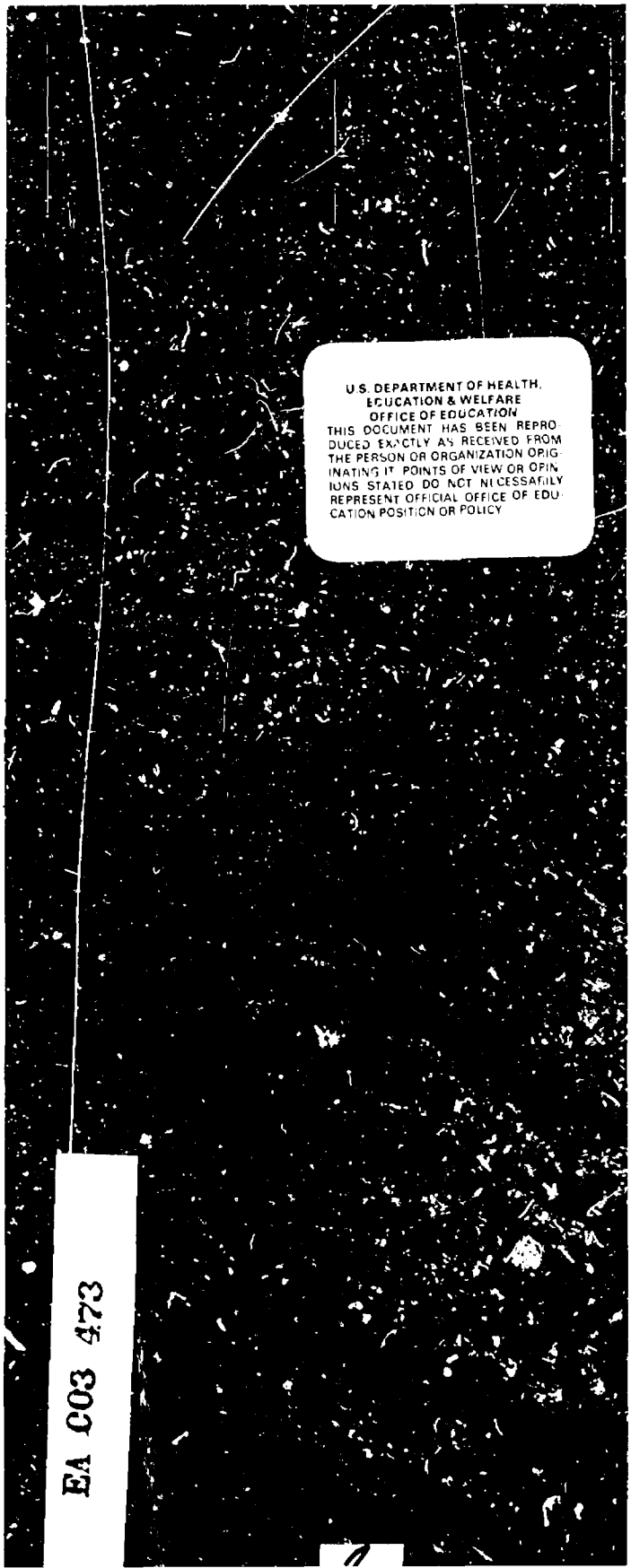
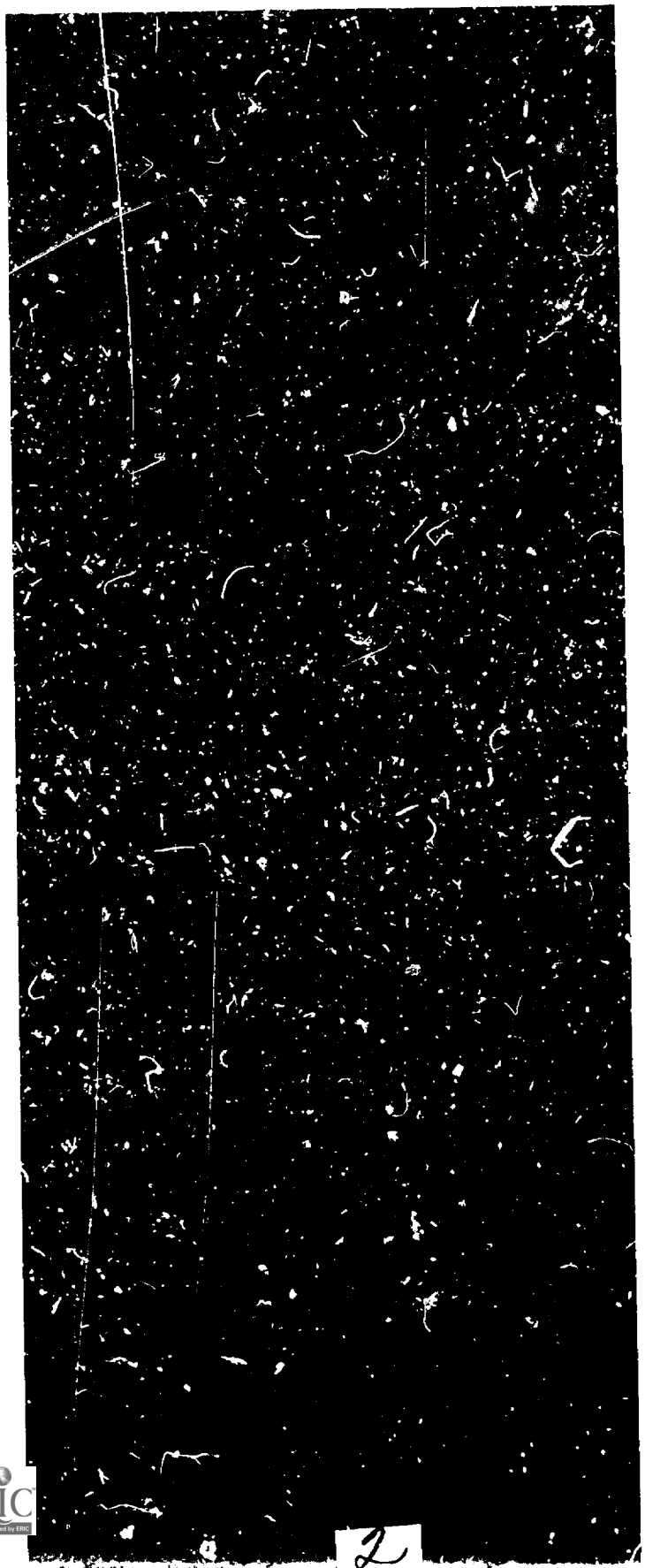
ABSTRACT

This report presents two proposed facility designs for the only regional community college in Maryland as well as the program objectives and the nature of the planned 2-year program. Recognizing the need for paraprofessional education at the junior college level, Chesapeake College proposes to embark on a major marine technicians training program. Floor plans, illustrations, and space tabulations are included for both the proposed Marine Science Training Center and the student housing facilities. Student housing consists of cabin type modules to provide single occupancy rooms, and is designed for short term housing, overnight accommodations for students stranded by inclement weather, or weekly/monthly occupancy for those attending special courses. (Illustrations may reproduce poorly.) (Author/MLF)





FOREWORD
PREFACE

We at MFE realized from the beginning that here was a rare opportunity to research in depth two unusual facility types not generally associated with the community college. While apparently dissimilar in function, the two types are in this case related in a close cause-and-effect fashion, which will be brought out in the report.

While it is never possible to cite individually all who have helped, it is appropriate to acknowledge here the contributions of the staffs of three organizations, Woods Hole Oceanographic Institution, Rosenstiel School of Marine and Atmospheric Sciences, University of Miami, and the Library of the American Institute of Architects.

These investigations were directed towards a general solution to Chesapeake College's somewhat unique requirements. The designs illustrated do not constitute a finally accepted building program -- this must await a further evaluation of the availability of funds, curricula requirements and the building limitations imposed by various agencies. Nevertheless, the report will have served its purpose if it points a positive direction towards which the College can embark on its continuing phases of facility evolution.

It is further hoped that the approaches shown will be of value to other institutions which might have similar concern in whole or in part, and that our findings will expand the material available to those who are engaged in continuing research efforts to achieve better facilities for ever-expanding educational programs.

William L. Ensign

William L. Ensign
McLeod, Ferrara & Ensign

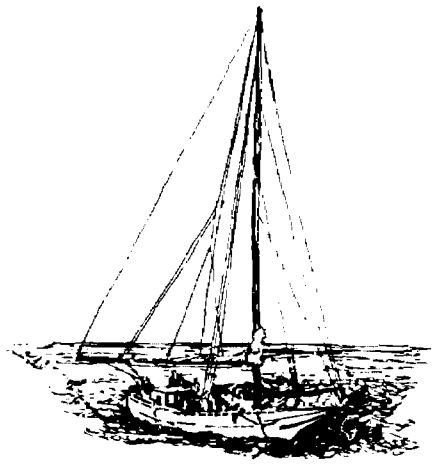
The College, founded in 1965 through the combined efforts of the State of Maryland and Caroline, Kent, Queen Anne's and Talbot counties, is the only regional community college in the State. In 1968, the College moved to its permanent campus on 170 acres near historic Wye Mills.

The abundance of water throughout the four counties has provided for the citizens of this area a means of livelihood for many years through the gathering of many varieties of seafood, including oysters, clams, crabs, and finfish. The processing of this bounty from the Bay and rivers, especially in freezing and canning, is becoming increasingly important as national food chains move in to manage small businesses and increase the market for Eastern Shore seafood products.

A new dimension which increases the necessity for a facility to study the local marine resources is added by the proposed construction by the Federal Government of the Chesapeake Bay Basin Study which will include a hydraulic model of the Bay and an associated technical center. The estimated cost of this project is approximately fifteen million dollars. When complete, it will provide great opportunities for educational cooperation between the College and the scientists involved in the extensive study of the Bay. There will also be employment opportunities for technician graduates of the marine science program in either the project itself or related research. All community colleges realize that a duplication of specialized programs and facilities is wasteful. The location of Chesapeake College provides a unique opportunity to concentrate on a junior college program of Marine Science Technician Training. State support for this program will be solicited. As a beginning step, twenty-five acres of waterfront land has been donated by The Wye Institute. Further progress in this direction has been made by the financing of this study through funds made available by EFL.

George Silver

Dr. George Silver
President, Chesapeake College



BACKGROUND

Since Captain John Smith first charted its waters in 1608, the Chesapeake Bay has been the true focus of life for citizens in the Tidewater Counties. This great estuary, the largest on the Eastern seaboard, with over twenty-six thousand miles of shoreline, creeps like an ink blot up the myriad rivers and inlets and pervades the very soul of the land.

The Bay serves as an avenue of commerce to the major ports of Baltimore and Hampton Roads. Ninety-five miles up one of its rivers, the Potomac, lies the Capital of the United States. The major shipyards of Newport News, Norfolk and Portsmouth and several smaller boatyards continue the tradition of fine marine construction and repair. Fishing, oystering, clamming and crabbing are the traditional occupations of thousands of Chesapeake watermen, and the Bay is home to one of the few remaining working sailboat fleets in the world. Marine recreational activities with all the attendant facilities of marinas, restaurants, and service centers are rapidly growing in economic importance.

But for the Eastern Shore counties the Bay has had other influences. The very presence of this massive physical barrier has tended to isolate the area from the urban problems of the neighboring cities of Baltimore and Washington and the growing suburban sprawl being experienced by communities on the Western Shore. However, with the northern waters already spanned by the 5 mile long Chesapeake Bay Bridge between Annapolis and Kent Island, and more links being contemplated, it is only a matter of time before the Eastern Shore will be caught up in the expanding pressures of the twentieth century megalopolis.

Hopefully, the time gained by this natural insulation will enable the heirs to this historic peninsula to undertake a regional plan, which can harness their natural resources in a manner which will not destroy the values and traditions of their heritage.

The establishment of Chesapeake College in its entirety, with its Marine Science Training Center in particular, is part of this preparation.

FATHOM ONE:
MARINE SCIENCE AND TECHNOLOGY
THE MARINE ENVIRONMENT

Until recently, the ocean depths, remote and foreboding, were the subject only of mysterious legends of sea creatures and lost civilizations. But oceanographic discoveries and scientific advances within the last few decades have made it increasingly clear that the exploration and exploitation of the marine environment is a distinct practical possibility, indeed necessity, and within the technological capabilities of this and the following generations.

The impact of this realization rivals the achievements and journeys into outer space in its dramatic excitement and appeal to the minds of men.

With the area of the seas covering almost three quarters of the earth's surface, and the volume of this gigantic body of water being approximately fourteen times that of all the land above sea level, it is not difficult to understand how harnessing the almost unlimited potential marine resources could affect the socioeconomic, political and military postures of all nations.

Today the study of the seas -- once the domain of the oceanographer -- is arousing worldwide interest, and commands the attention of specialists in almost every field of human experience: geopolitics, science, law, engineering, medicine, agriculture and art.

Underscoring the awakening national awareness is a recent report by a presidential Commission on Marine Sciences, Engineering and Resources. This document presents a comprehensive picture of our involvement in the oceans and, in fact, the total environment. It recommends the establishment of a new operating agency to be known as the National Oceanic and Atmospheric Agency (NOAA) which would report directly to the President and would integrate six now separate Federal departments:

The Coast Guard

The Environmental Science Services Administration, including the Weather Bureau.

The Bureau of Commercial Fisheries and parts of the Bureau of Sports Fisheries and Wildlife.

The National Sea Grant Program of the National Science Foundation.

The Great Lakes Survey of the Army Corps of Engineers.

The National Oceanographic Data Center.

Estimating that by 1980, the proposed agency's requirements would be for a two billion dollar annual operating budget and for fifty five thousand personnel, the report dramatizes the importance of meeting future manpower needs by an active program of specialized training in the Marine Sciences and Ocean Engineering at all levels of education.

Employment opportunities in the local region also appear to be promising. In addition to the extensive shipping and seafood activities already mentioned, major enterprises such as Westinghouse's Ocean Research and Engineering Center have moved plants to the northern banks of the Bay. The presence of the U. S. Navy, including the Academy at Annapolis, is strongly felt. Other Federal, State and Interstate agencies offer career potentials in marine research programs.

Recognizing the need for para-professional education at the junior college level, Chesapeake College proposes to embark on a major Marine Technicians training program which will, it is hoped, act as a catalyst for opening up further employment opportunities throughout the Tidewater region.

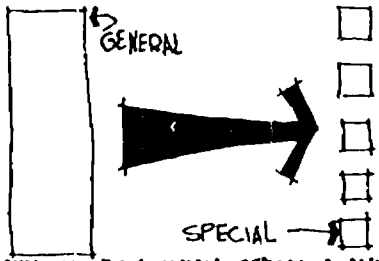
EDUCATION AND TRAINING OF MARINE SPECIALISTS

The many approaches taken by various colleges in developing curricula for technical education have spanned a wide spectrum, ranging from board generalization on the one end, to narrow specialization on the other.

Many factors, both educational and economic, affect the scope and content of particular programs. But, since programming needs to precede facility planning, it had to be determined what point on the spectrum Chesapeake College would occupy.

At that time we were not concerned with fixed commitments as to specific course offerings, but rather with the establishment of parameters -- an educational philosophy which would be firm enough to allow facility criteria to be developed, yet flexible enough to adjust to evolutions in teaching techniques or specific program demands.

In an attempt to narrow the broad and almost incomprehensible scope of the sea sciences into more identifiable segments, the following category definitions were made. Purists may question the breakdown which does not, for one thing, separate science and technology. Nevertheless, within each of these groupings there is need for para-professional occupations, and whether or not there are overlaps is a matter of semantics only.



TECHNICAL EDUCATION SPANS A WIDE SPECTRUM RANGING FROM BROAD GENERALIZATION TO NARROW SPECIALIZATION

Categories of Marine Science and Technology

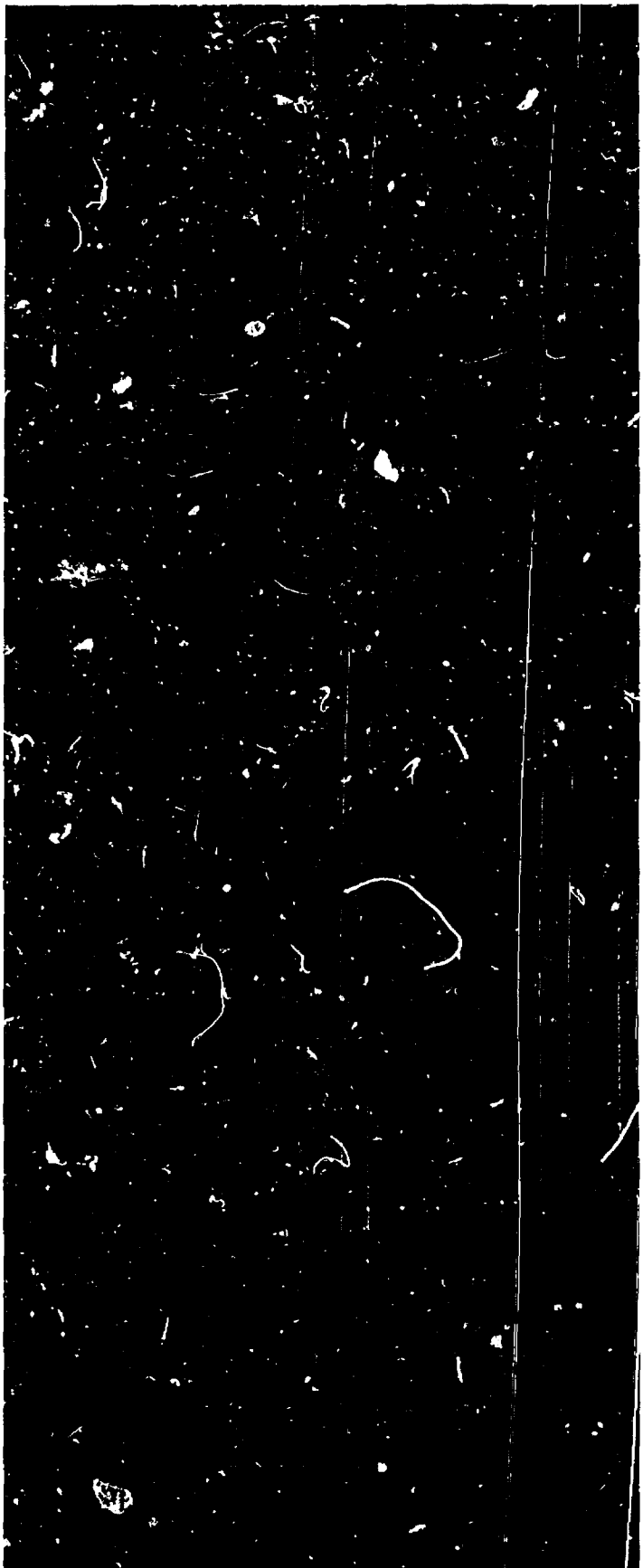
MARINE BIOLOGY - The Study of all living organisms in the oceans and waters of the world.

PHYSICAL & CHEMICAL OCEANOGRAPHY - The study of those aspects of the ocean which include the composition, temperature, pressure and circulation of water in motion.

MARINE GEOLOGY & GEOPHYSICS - The study of the sea floor including submarine topography and sedimentation, and the interaction between land, sea and atmosphere.

FISHERIES AND SEAFOOD TECHNOLOGY - In addition to the biology of fishes, this category includes the technology of aquaculture, seafood processing, management and control of fishery products and fishing methods and equipment.

OCEAN ENGINEERING AND TECHNOLOGY - This broad subdivision encompasses electronic and oceanographic instrumentation, underwater acoustics, data transmission and processing, technical illustration, meteorological measurements, navigation, marine corrosion, underwater construction, ocean vessels, offshore mineral and petroleum operations, diving, boat and ship repair, desalination and water purification and undersea expeditions.



Within each of the aforementioned categories there is a need for trained, proficient specialists at all educational levels.

In the past, however, studies in the oceanographic sciences have generally been carried out at the postgraduate level, and curricula requirements are, therefore, well developed for candidates for Masters' or Doctors' Degrees.

On the other hand, very few universities offer full-scale baccalaureate programs in these subjects, but recommendations for undergraduate preparation for a future marine scientists centers around the premise that the student should obtain a degree in one of the basic sciences, with elective minors being selected from his particular marine specialty field.

The Rosenstiel School of Marine and Atmospheric Sciences, University of Miami has suggested several undergraduate courses designed to prepare students for its own postgraduate programs in Physical & Chemical Oceanography, Marine Geology and Geophysics, Marine Biological Science, and Fisheries Sciences.

Although such an academically oriented curriculum might have only a limited relevancy to a technician training program, it is interesting to note the broad range of subject matter pertaining to the educational preparation for one or another of the four science categories.

The following list is a compilation of all the "required" or "suggested" courses:

PHYSICS	CHEMISTRY:
General Physics	Principles of Chemistry (Inorganic)
Mechanics	Qualitative Analysis
Thermodynamics	Quantitative Analysis
Modern Physics	Physical Chemistry
Electricity	Organic Chemistry
Hydrodynamics	Biochemistry
Theoretical Physics	
ZOOLOGY:	MATHEMATICS:
Introductory or General Zoology	Algebra
Invertebrate Zoology	Trigonometry
Comparative Vertebrate Anatomy or Vertebrate Zoology	Analytical Chemistry
Embryology	Calculus
Physiology	Differential Equations
Parasitology	Statistics
Histology	BOTANY:
Genetics	General
Microscopy and Microtechnique	Phycology
Ichthyology	Bacteriology
Limnology	ENGLISH:
GEOLOGY:	Composition
General Geology	METEOROLOGY:
Paleontology	General Meteorology
Petrology	MARINE SCIENCES:
Optical Mineralogy	Introduction to Marine Biology
Field Geology	Introduction to Oceanography
Structural Geology	FOREIGN LANGUAGES:
Physical Geology	German
Historic Geology	Russian
Stratigraphy	French
Sedimentation	

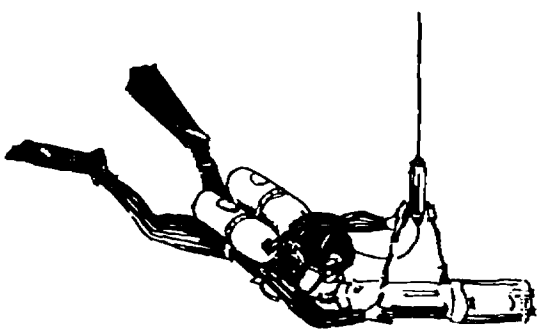
For admittance to its program in Ocean Engineering, the School requires a Bachelor of Science degree in Civil, Electrical, Industrial or Mechanical Engineering, with suggested courses in Introductory Oceanography, Marine Biology, Marine Geology, Underwater Acoustics and Oceanographic Measurements.

Unfortunately, the training of marine technicians at the two-year college, whether within career-oriented, transfer or continuing education programs is a relatively new phenomenum in American education, and is not as firmly rooted as is the preparation of the professional marine scientist or ocean engineer.

There are probably not many more than two dozen junior colleges offering full scale marine programs now, although undoubtedly many will soon be entering the field as manpower shortages are felt.

An incomplete survey indicates that most of these colleges grant Associate Degrees at the end of a two-year curriculum. The following programs, many quite similar in content, if dissimilar in title, are now in effect at one or another junior college.

Fishery & Marine Resources
Commercial Fishery Techniques
Marine Electronics and/or Instrumentation
Marine Diving
General Marine Technology
Oceanography
Aquatechnician Program
Marine Biology Technology
Marine Survey Technology
Marine Engineering Technology



Generally, there has been a dominant emphasis on the physical science aspects of marine life. Most institutions concentrate on a core program which emphasizes basic foundation courses, leaving the specialized and occupational instruction to later employers. Some add optional training skills to the second year curriculum.

As an example, The Miami-Dade Junior College in Florida offers three two-year marine programs in Electronics Technology, Survey Technology and Engineering Technology. Common required courses of these programs include:

Orientation
Technical Mathematics
Algebra and Trigonometry
Physics with applications
Expository Writing
Technical Report Writing
Social Science
Introduction to Oceanography
Marine Electricity
Marine Engineering Practices
Ocean Measurements
Seamanship
Skin and Scuba Diving
Sailing or First Aid

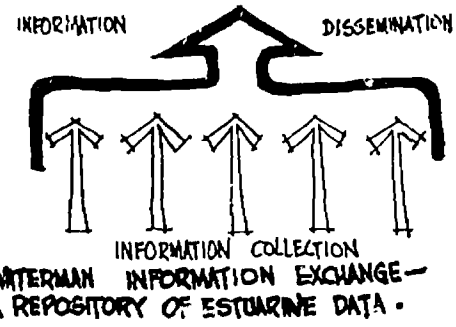
Specialized courses in Electronics Technology feature D. C. Circuits, A. C. Circuits, Network Analysis, Vacuum Tube Fundamentals, Fundamentals of Transistors, Transistor Circuits, and Pulse and Digital Circuits. Survey Technology adds additional courses in Oceanography, Ocean Movements and Internship or Field Problems, while Engineering Technology concentrates on Marine Surface Operations, Marine Engineering Practices and Internships or Field Problems.

Marine Field Activities: These will expose the students to the fundamentals of oceanography, both estuarine and high seas, of corrosion and fouling, of small boat handling and piloting, of marine instrumentation, and of sea life in its natural element. These programs will be suitably centered at the river site and will be supplemented by field trips to federal, state and industrial facilities, and possibly by exchange programs with other institutions.

In-service Summer Training: This integral part of the academic program which will be performed for pay will earn the student scholastic credit while he does useful work on the water or in the laboratories of cooperating agencies or companies.

Research Projects: The College intends to conduct applied research projects at a technological level at which students can actively participate. These projects will be funded generally by outside organizations or individuals, and will be geared to the practical needs of the Bay's watermen.

Individualized Programming: Realizing that fundamental courses alone will not answer the diverse demands of individual students or employers, the College intends to establish an academic climate which will change the fundamental faculty-student relationship from one of lecturer-listener to that of counselor-inquirer. In other words, to move from a descriptive method of teaching, to the analytical and problem solving approach. Thus, students with special needs or interests may structure their own programs with the advice of counselors, and advance themselves by a series of individual sequential projects or studies. This will provide an almost unlimited number of curricula options.



Chesapeake Bay Waterman Information Exchange

In conjunction with the Marine Technology Program, the College proposes to operate an Information Exchange Center at the Marine Station. This will be accessible by land and water and will serve the following purposes:

Be the marine resource center for the technology programs at the College.

Be a comprehensive source of information on estuarine subjects in general and Chesapeake Bay matters specifically.

Issue a regular periodical aimed primarily at the waterman who makes his living on the Bay.

Maintain a telephone watch service to answer inquiries at all times.

SPACE REQUIREMENTS

The architectural space requirements which were developed from the broad educational program were as follows:

INSTRUCTIONAL AREAS

To accomodate the basic core programs, facilities include:

A general marine laboratory, with related project and preparation areas.

A river water specimen holding tank.

A group lecture room with projection equipment, which would also serve as an orientation center for the general public, and visiting school classes.

Additional areas required for individual or specialized learning situations are:

'Mini-labs' where continuing student research projects can be performed. A central preparation-storage room would service these.

Seminar rooms.

RESOURCE CENTER

A resource center, acting as a satellite to the main college library, would provide support to the marine oriented program. Stored here should be current marine periodicals and publications. In addition, A/V materials and specimens could be prepared and catalogued. Eventually, a data retrieval system, connected with the main library, might be installed. This center would also serve as the Waterman Information Exchange. The general requirements are for:

A Study-reading room with individual carrels.

A Material storage room.

a specialist's office and work

ADMINISTRATIVE & FACULTY AREA

To support the programs and receive the public, these facilities are indicated:

Reception Area

Offices

Conference Room

Work Room

Lobby-exhibit gallery

SERVICE FACILITIES

All buildings require servicing spaces, but in this instance, some of the requirements are somewhat unique to educational institutions.

Locker rooms for divers and boat operators.

Work shops for boat, engine and instrument repair. These would serve also as instructional areas.

Boat docks and storage sheds.

Snack bar with vending machines.

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TABULATION OF SPACES:

A Refinement of the Program

The following areas resulted from the development of the program of requirements:

NO.	SPACE DESIGNATION	UNIT AREA Sq. Ft.	NET AREA Sq. Ft.	TOTAL AREA
UPPER LEVEL				
1	General Marine Laboratory	1,500	1,500	
1	Storage & Project Room	400	400	
1	Preparation Room	300	300	
1	Office	100	100	
	Net Area Marine Lab Cylinder			2,300 sq. ft.
4	Mini-labs	225	900	
2	Seminar rooms	225	450	
1	Central preparation & storage room	650	650	
	Net Area Mini-Lab Cylinder			2,000 sq. ft.
1	Lecture Room	600	600	
1	Rear-Screen Projection Room	300	300	
1	Study-reading room	700	700	
1	Material Storage Room	400	400	
1	Media Specialist's Office	150	150	
1	Work Room	150	150	
	Net Area Resource Center Cylinder			2,300 sq. ft.
1	Reception Area	150	150	
1	Office	230	230	
4	Offices	120	480	
1	Work Room	230	230	
1	Conference Room	450	450	
	Net Area Administration Cylinder			1,540 sq. ft.
1	Lobby-exhibit gallery	3,000	3,000	
	Net Area Gallery Core			3,000 sq. ft.
	TOTAL NET AREA - UPPER LEVEL			11,140 sq. ft.
LOWER LEVEL				
1	Work Shop	1,200	1,200	
1	Storage Room	500	500	
1	Mens' Locker Room	500	500	
1	Womens' Locker Room	250	250	
1	Storage Room	150	150	
1	Snack Bar	1,700	1,700	
1	Specimen Tank	2,800	2,800	
	TOTAL NET AREA - LOWER LEVEL			7,100 sq. ft.
AUXILIARY FACILITIES				
	parking spaces			
	feet of boat docks with equipment shed.			
	TOTAL GROSS ENCLOSED AREA			25,000 sq. ft.

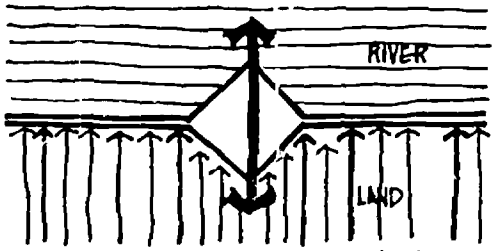
DESIGN PREMISES

Just as it was recognized that the program itself was unique, it was felt from the beginning that the building design should reflect this status. But in a subdued sense, for after all, the purpose of the center is to educate in subjects related to the sea -- a source of deep traditions.

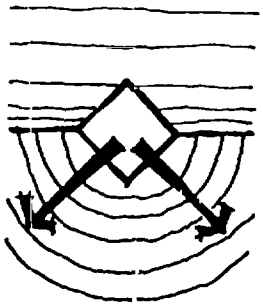
We conceive of it, therefore, not only as a shelter which would provide for all the functional needs of the program, but one which would, we hope, cater to the spirit of the seafarer.

Certain design objectives were established. For example, it was felt that the physical structure should span the gap between land and water, symbolizing the bridging of the two environments. Also, it should stand on its own from the beginning, a complete entity portraying an image of permanence and strength withstanding the forces of the natural elements. At the same time, it should serve as the nucleus for future growth, but, hopefully, always without losing its identity by a thoughtless encroachment of cancerous expansion. Finally, it must serve the needs of its users -- not only physical, but the emotional as well.

If these objectives can be attained the building design will be functional in the true sense -- and be successful architecturally.



A SYMBOLIC BRIDGE BETWEEN THE WET & DRY ENVIRONMENTS.



AN ENTITY UNTO ITSELF & A NUCLEUS FOR GROWTH.

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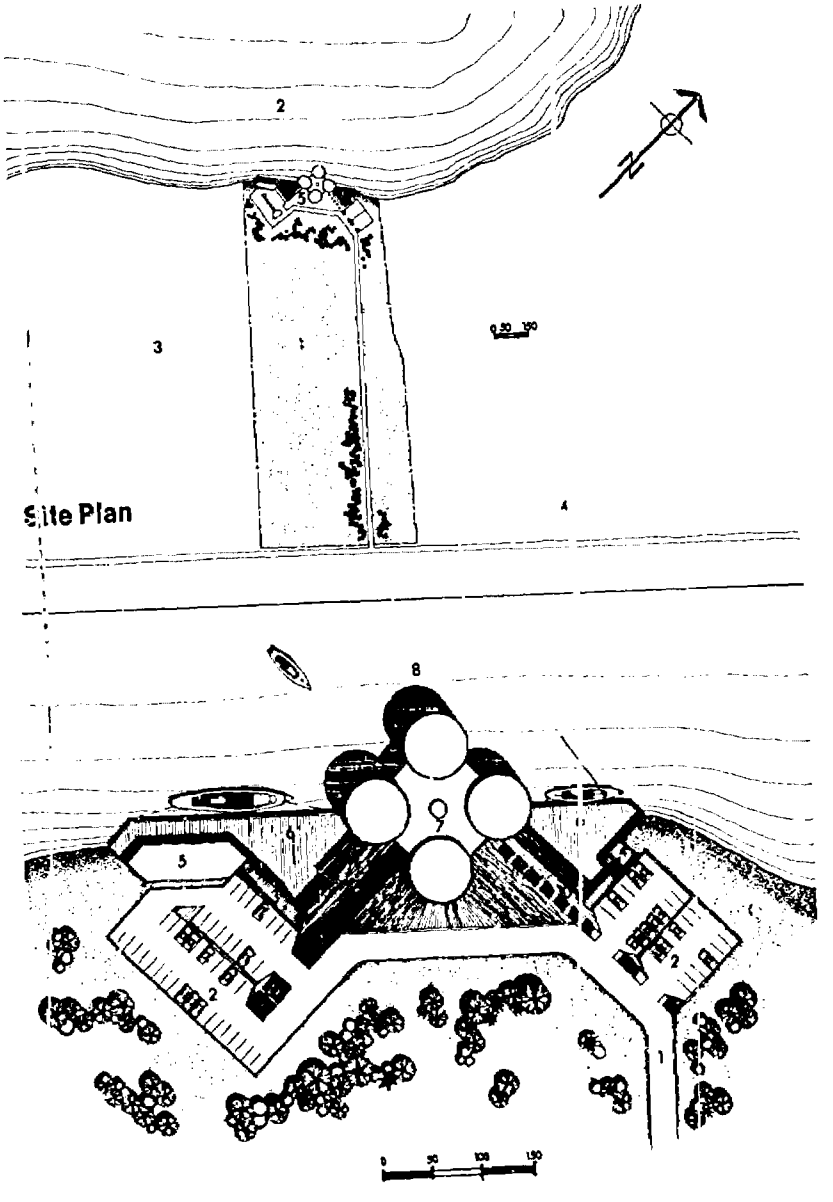

Plot Plan
Marine Science Training Center

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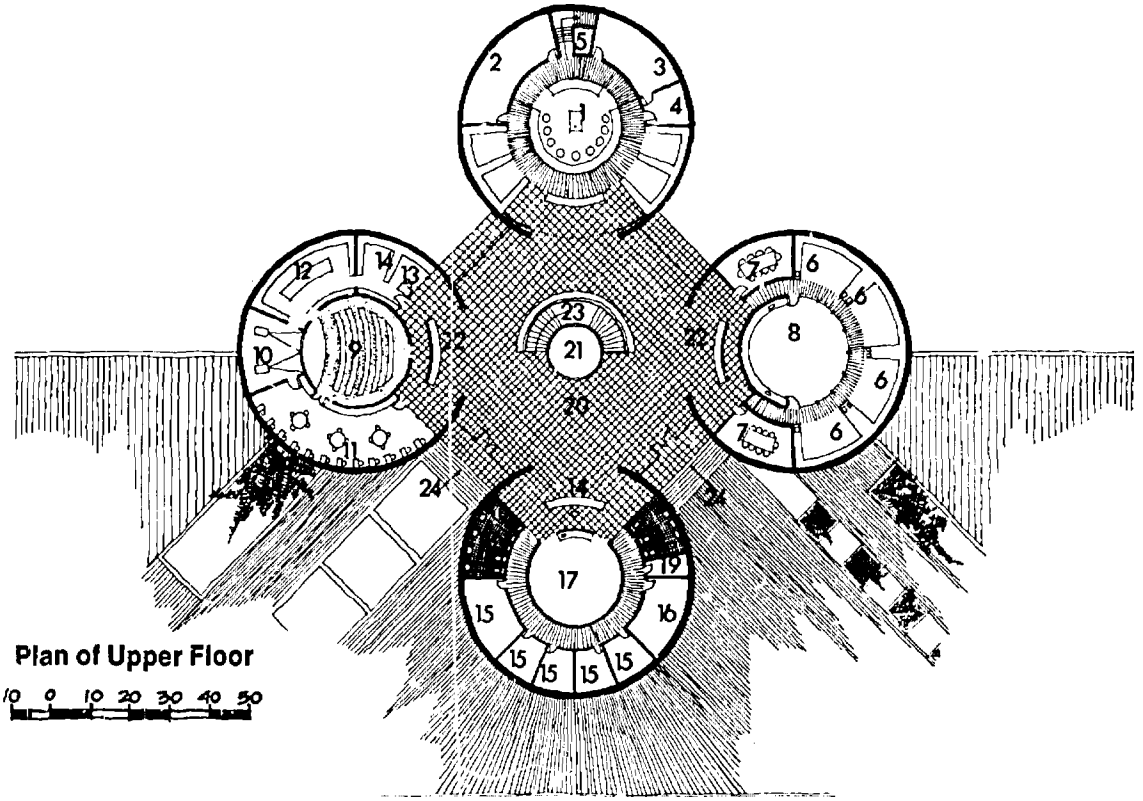
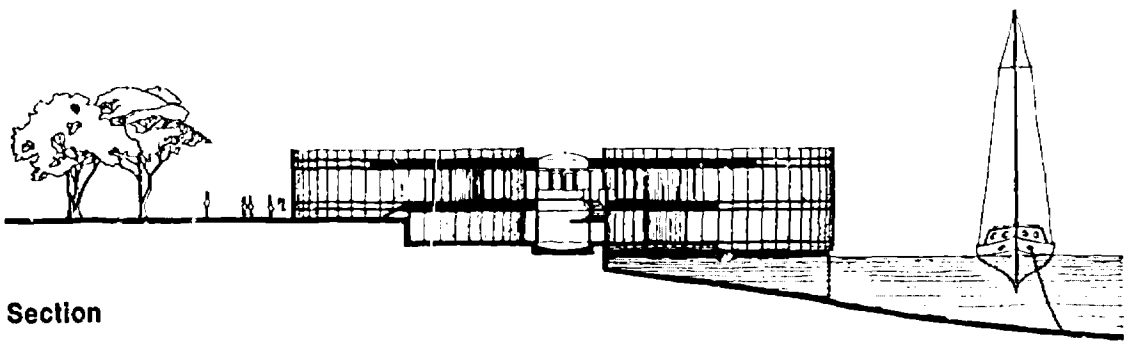
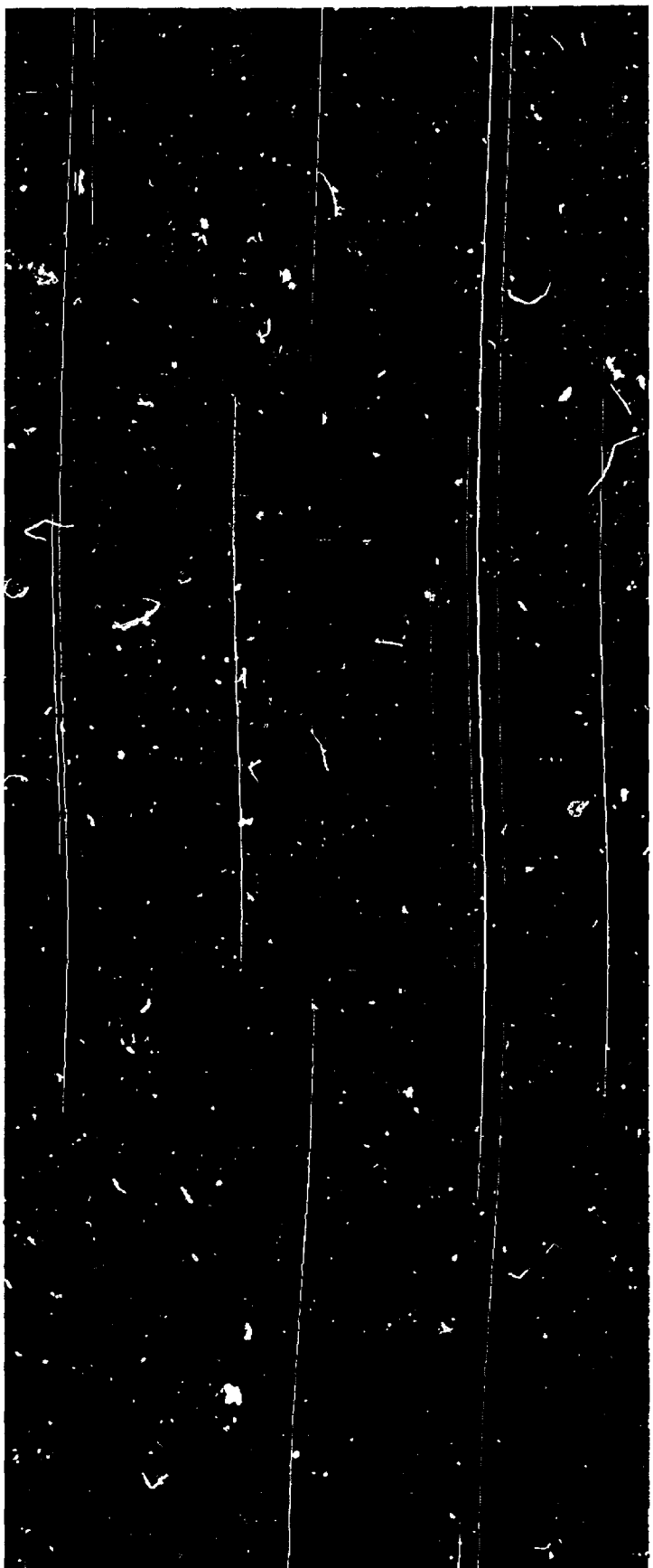
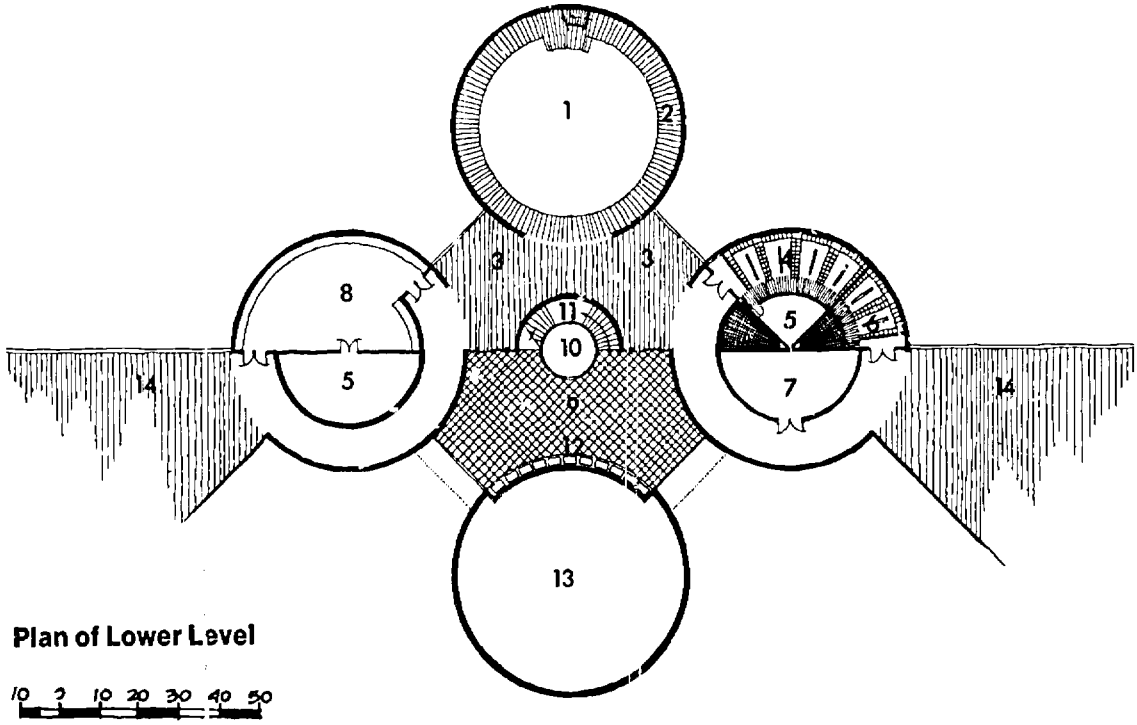


Plan of Upper Floor



Section





Plan of Lower Level

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iver View

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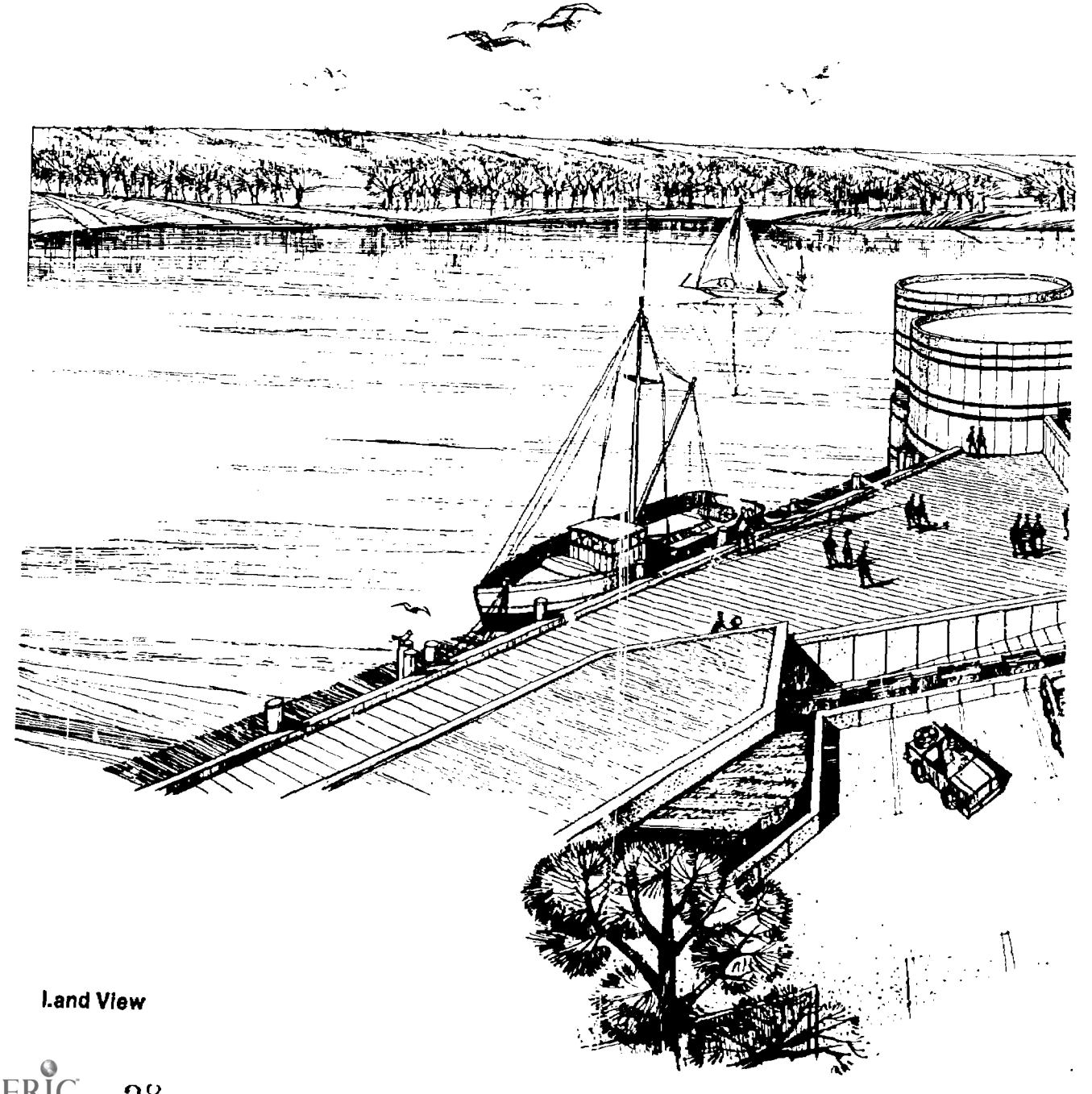
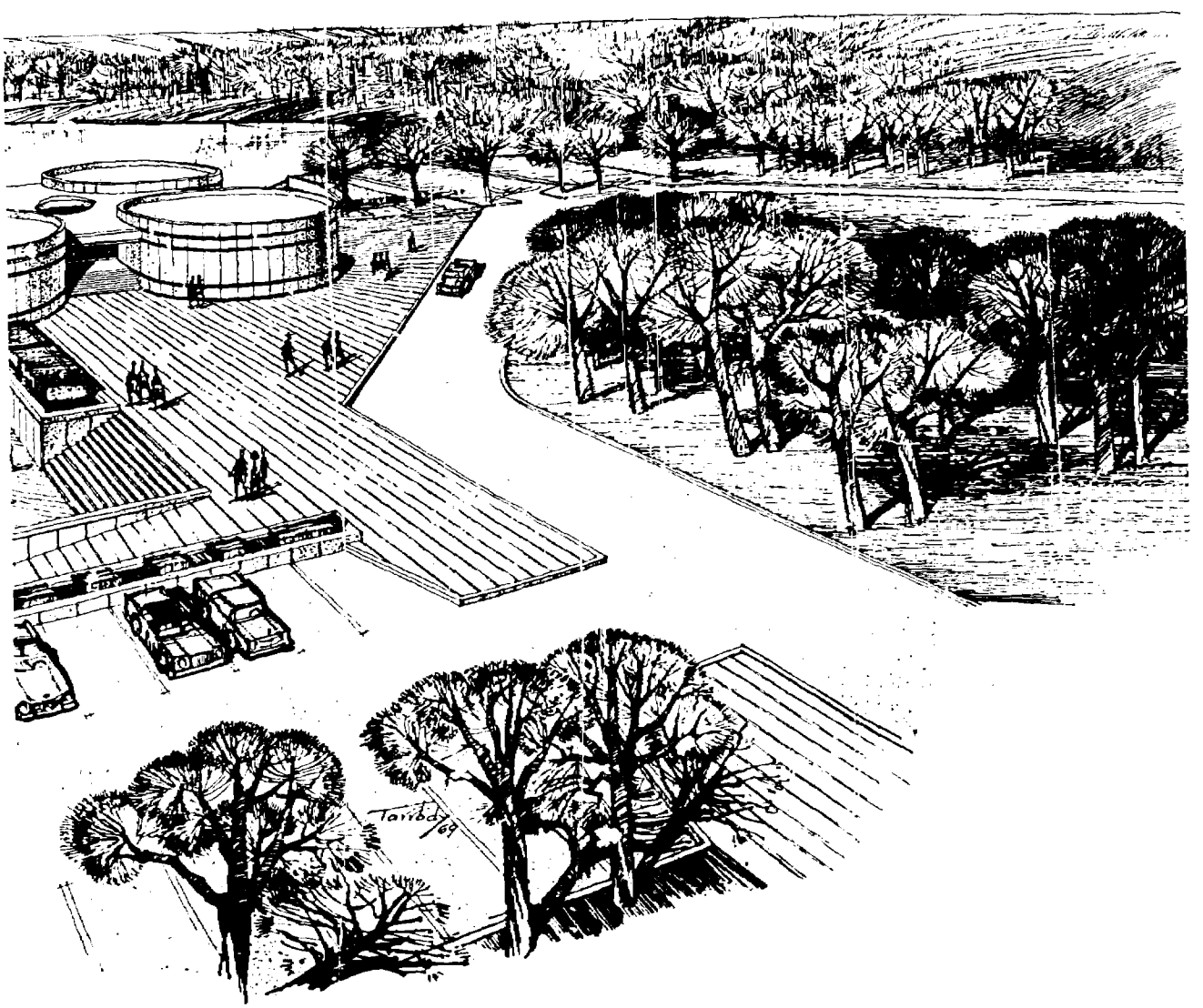
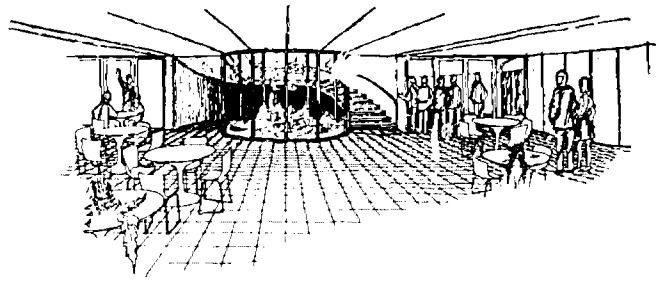
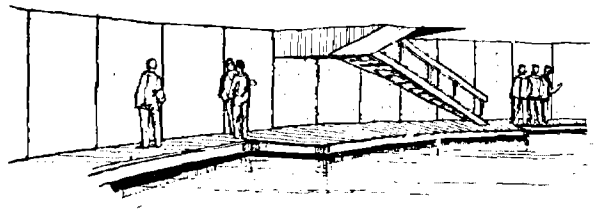


Land View

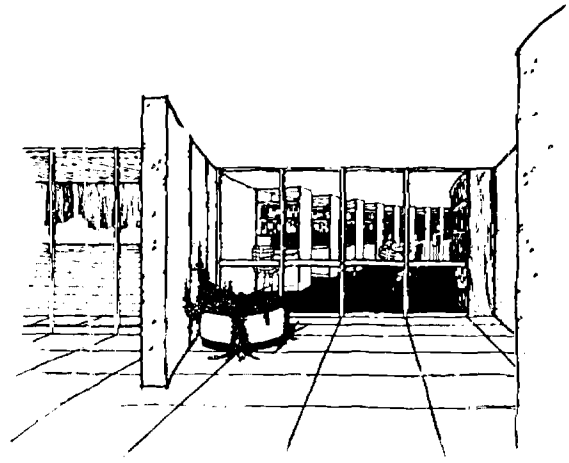




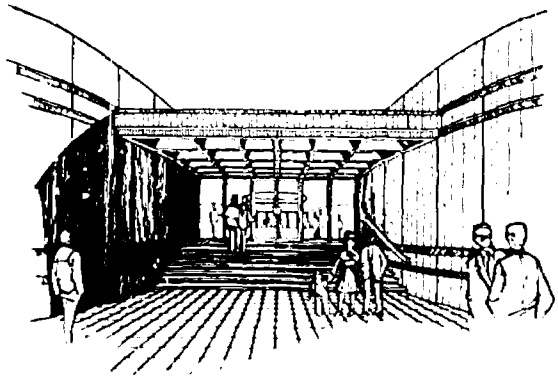
Snack Bar



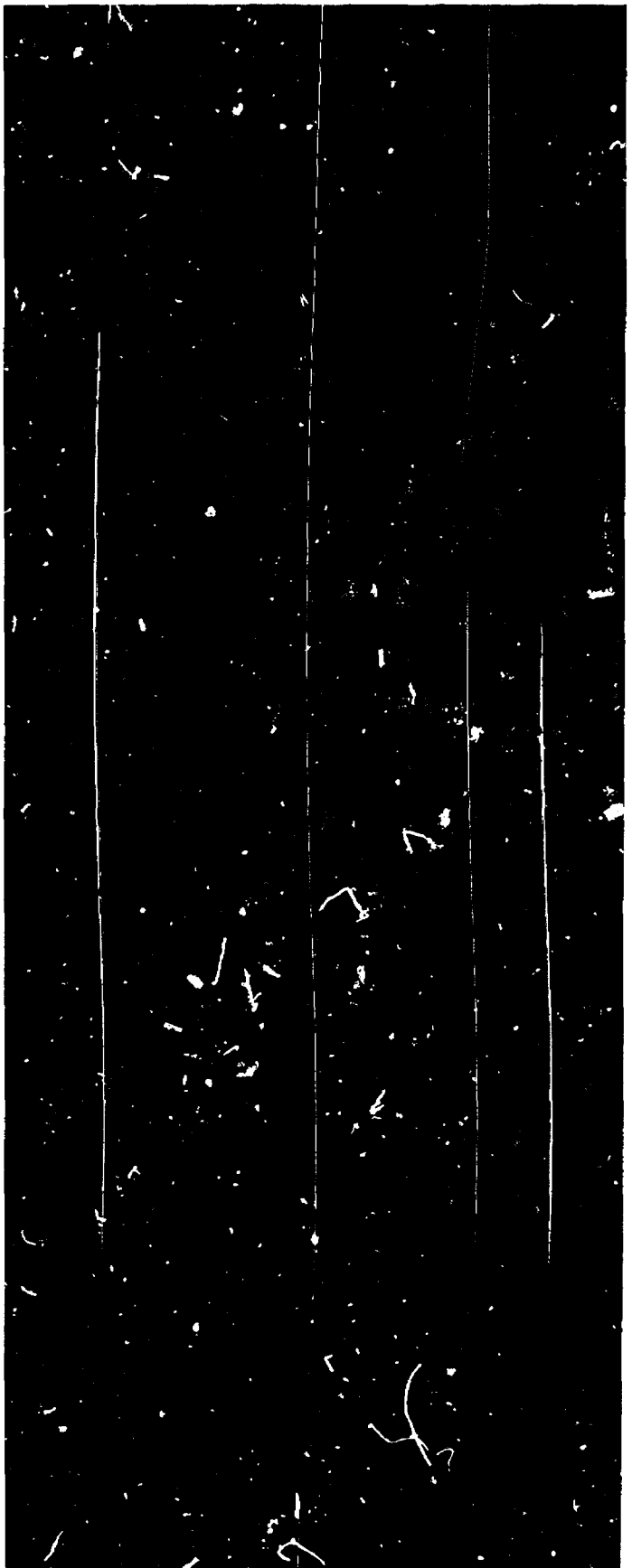
Specimen Tank



Study-Reading Room



Entrance



TRAINING VESSELS

No significant hydrospace educational program can be continued without the use of training and research vessels. They form a link in the total support system for probing, analyzing and exploiting subsurface conditions. In addition, one of the objectives in training personnel for oceanographic specialities is to expose them to the "hostile marine environment", and this understandably involves shipboard experience.

Most established marine centers operate fleets of research vessels ranging from small coastal work boats to medium tonnage ships capable of extended operations throughout the oceans of the world. Some of these vessels are owned by the institutions, others are chartered from marine corporations, and still others are loaned or otherwise subsidized by the government for particular research assignments. Shipboard operations are an expensive proposition which might easily overtax the limited resources of a smaller institution with an emerging program. Therefore, great care should be exercised in selecting suitable boats for the job at hand.

Quite frequently, well meaning benefactors donate their aging yachts to a non-profit marine agency. These boats have usually been designed with comfort and luxury in mind and have high running costs. They provide tax benefits for their donors, but are of limited operational value. Nevertheless, they can frequently be traded for more useful craft.

A desirable objective for Chesapeake College's marine science program would be to establish a working relationship with one of the government agencies operating on the Bay. Students would thereby collect and compile useful data which would not only increase their incentive, but also serve a useful purpose. Some subsidy might be expected for these services, but in order to gain it, reliable results based on regularly scheduled operations would be required.

It is not necessary to have highly sophisticated boats to run a successful training program or to collect much useful data. The prime requisites are seaworthiness, engine dependability, economy of operations, and adequate and stable working areas.

To serve the purposes of Chesapeake College, the following non-rigid but desirable requirements were listed for the initial training vessel.

Length between forty and sixty feet, broad abeam, and with shallow draft to operate within the shoal waters of the bay.

Preferably with twin screws to maneuver in the narrow estuaries.

Twin cable winches at the stern.

Large unobstructed work deck aft.

A-frame or davit for lowering or retreiving equipment.

Large doghouse with protection from the weather.

Cabin with crew bunks for three or four.

Small working lab off cabin for processing and storage of specimens.

Galley.

Accurate navigational equipment.

These qualities are not as difficult to find as might be expected. One of the most useful boats at the Woods Hole Oceanographic Institute is a converted shrimper which has been performing research missions up and down the East Coast for years. The traditional Bay built fishing boat exhibits similar characteristics and could be successfully adapted for training purposes.

In keeping with the aims of the Marine Science Training Center it would seem to be highly appropriate to have a vessel of this type either built or converted at one of the several yards on the Eastern Shore which have so firmly maintained their fine tradition of marine construction.

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FATHOM TWO:
LODGINGS FOR COMMUTING STUDENTS
THE COLLEGE'S ROLE IN HOUSING

The waves of student unrest sweeping the campuses of the country threaten to engulf the established order of academic life. Universities and colleges, beset by conflicting pressures from students, parents, trustees, alumni and the community at large are probing their internal policies and attitudes. The most hallowed traditions of many great institutions have been abandoned or at least modified beyond recognition. Some of these changes have been brought about by orderly processes, but others have been the result of bitter retreat in the face of militant student activity. This has made the present generation of youth, with its vocal insistance on being recognized as an agent of its own destiny, become the most scrutinized, analyzed and publicized group in history.

From the reports on recent college disturbances, it would appear that part of the unrest at least stems from student dissatisfaction with campus housing, and the inherent conflict with the institution's role in the regulation of non-academic life. This confrontation has revived the fundamental debate over the extent of the university's responsibility for housing its student body. The question is further intensified by economic factors - increasing operating deficits and the high costs of construction. There has never been much of an issue, however, with regard to housing at the junior or community college. Traditionally, the public two-year college has catered solely to the commuting student. This is the pattern for all community colleges in Maryland, and recently adopted guidelines preclude the use of state funds for dormitory construction. The typical student, therefore, is dependent for his continuing education on his automobile [illegible] at times assumes the further roles [illegible]dy, social center and even bunk room.

Without questioning the basic role of the community college itself, however, there are sometimes special circumstances which might warrant some form of institute-supported housing for certain types of students. Chesapeake College felt that this might be true in its case, and this formed the basis for the housing study.

The College serves a four-county geographical area which is larger than the territory of any other community college in the State, and so commuting times are frequently long and tedious. This is especially true in the winter when Bay storms whip across the peninsular, turning rural roads into hazardous arteries of ice.

In addition, the relative isolation of the campus from an urban center means that there are few suitable private accommodations available nearby, and very little possibility that the commercial community could be tempted to provide any. This works a hardship on students who want to participate in campus activities, or who have to sacrifice their class schedules to meet job commitments.

Of overriding consideration, however, is the conviction shared by many of the community colleges in Maryland that they can no longer afford to duplicate expensive specialized facilities at every campus in the State. Regional cooperate programs will have to be established, and in order to do this, housing must be made available to participating students by the sponsoring Institution.

Although the College fully recognized the inherent dangers, fiscal and social, in assuming the role of surrogate parent, it nevertheless decided, when given the fixed conditions of relative isolation, lack of private housing, limited student incomes and the regional character of the Marine Science Program, to direct its long range planning to the goal of providing some form of student lodgings.

It acted in this regard with the full understanding that funding for such a program might have to be obtained from other than State sources.

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THE STUDENT LODGER

The attitudes and habits of students are influenced to an important extent by their environment, and since housing occupies such an important segment of the physical environment of a student's daily life, behavioral scientists are taking an increasing interest in the study of student life styles within residence halls.

One such study, "Behavioral Research for Architectural Planning and Design", by Lawrence Wheeler with Ewing Miller Associates, investigated student living at universities in Indiana. Among its findings was the fact that both men and women spent about 50 per cent of their time in their own rooms as compared with about 15 per cent in classrooms and laboratories. Also, on the average, from 20 to 30 per cent of a student's time was spent studying in his own room, and this was the most desired study location. High preferences were expressed for large open student rooms with big windows where furniture could be rearranged at will, for the availability of kitchenette-lounges and food-vending machines, for locked doors to student rooms, for maximum economy to the student, for a modern exterior and for lots of utility outlets in the student rooms and lounges. Surprisingly, the study indicated that there was little difference between the requirements for men or women students' rooms, only variations in storage spaces and color preferences were noted. Of more significance was the differences in the requirements for the communal areas of residence halls, with men needing more space for active recreation but less space for formal lounges because, it turns out, they spend lots of time in the womens' lounges anyway.

Another recent environmental analysis by Sim Van der Ryn & Murray Silverstein titled "Dorms at Berkeley" looked into institutional housing at the University of California. Specifically it attempted to determine why the University's brand new high rise dormitories, whose architectural design had been called "an excellent solution of brilliant simplicity" were experiencing serious vacancy problems, with students finding lodgings out in the community.

Interviews with the students brought out the standard complaints of bad food and irksome noise, but more importantly it established that one of the major causes of discontent was the restrictive and uniform pattern of living which was imposed on them and which they felt, suppressed their individuality.

Among the conclusions reached by the study were the suggestions that:

1. There should be a redistribution of the standard dormitory spaces putting less area in formal group spaces and more in private student rooms.

2. Students rooms should permit greater flexibility in arrangement and surface decoration to encourage individual expression.

3. Regulations should be reduced as much as possible within the framework of existing mores.

These studies, it should be noted, were made at full-scale universities with graduate programs and with established residence hall accommodations. "Dorms at Berkeley", in particular, centered on a rather urbane and sophisticated student body at an institution which has had the misfortune to attract unfavorable national notice to its campus disorders. It also covered diverse groupings of residents, ranging from freshmen to graduate students.

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One statement in this latter study which indicated that the situation on the Berkeley campus might not be typical of other institutions, especially junior colleges, appeared as follows in the published report. "The dormitory serves the needs of the collegiate and vocationally-oriented students better than the needs of the nonconformist or academically-oriented students."

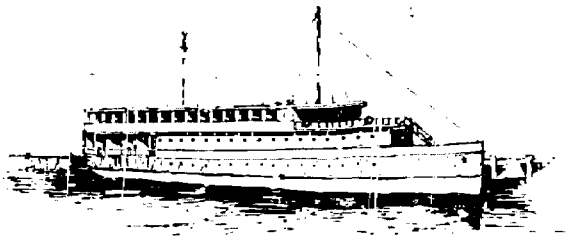
The student at Chesapeake is not likely, in fact, to mirror the attitudes of the student at one of our larger national institutions. Coming for the most part from the Eastern Shore, the student body tends to be homogenous in cultural and economic background and deep rooted social attitudes. In addition, while the college serves students of all adult ages, the majority of those in residence would be in their late teens, sharing the common experience of loosening their family ties for the first time.

The very nature of the commuting student body, its cohesive background and common outlook, along with the requirements of the educational program, led to a concept of student housing much different from that traditionally seen at most universities.

The general pattern of dormitory living is that of a home-away-from-home for a period of at least nine months per year. Such requirements for long term occupancy may in fact lead to the conflict between individual expressions of living styles and institutional regulations.

In this case, however, the need is for short-term housing. On the one hand, overnight accommodations for those students stranded by inclement weather, or those who would spend one or two nights per week to suit their schedules. On the other hand, weekly or possibly monthly occupancy for those attending special courses, or those faced with particular personal problems.

Under these circumstances, the need for elaborate supporting facilities and common areas is greatly reduced, and it was on this assumption that the design criteria was developed.



DEVELOPING THE "CABIN MODULE"--A UNIT FOR HOUSING

Starting with the precept that living space for short term occupancy can be smaller, simpler, and more economical than that for extended stays, criteria for establishing minimum space and equipment needs had to be developed.

But what could be the basis of comparison? Obviously, the overnight accommodation standards for hotels and motels are based on far too extravagent tastes. In fact, these space criteria exceed regular dormitory room sizes by some margin.

There are, though, other examples which can provide guidance. The military services, for instance, have had ample experience in mass housing, although often at austere levels. Also, the transportation and recreational industries are increasingly concerned with moving and housing large numbers of travellers at reasonable costs.

Thus we first analyzed a typical army barracks, a facility type remembered, but not fondly, by a large portion of the adult male population. The characteristic memories of barracks life concern the long orderly rows of double-stacked bunks which at reveille would disgorge reluctant hordes of men, each of whom would jolster his way into an endless line awaiting entry into the gang wash room. Following a shower, one would again join another long line moving into the mess hall. But in spite of the unpleasant associations of interminable queuing some might admit that under the circumstances barracks living offered at times a tolerable existence, and one which was probably the most economical solution to the military housing problem. The most depressing aspect of this type of life is the lack of privacy which it affords and the subjugation to enforced regimentation. These are qualities which are anathema to the academic community.

Privacy and regimentation are both subjective terms however, which in this context are subject to anaiysis and compromise.

In the case of Chesapeake College, for example, it was felt that a private "withdrawal" space was an absolute essential part of the students' living patterns. On the other hand, the typical gang washroom, which is giving way on some campuses to the private bath, was deemed an acceptable compromise. Normal class scheduling lessens the inordinate overload of facilities common in army barracks following the blowing of the ubiguitous bugle at dawn.

Having once established the requirement for an individual private area for each student lodger, the next step was to determine the functional and space specifications for such a Living-Study Unit. This unit we termed a "Cabin Module."

Although conventional housing types offered little help in formulating criteria, relevant comparisons could be made, however, with the typical youth hostel, a common and economical type of lodging in Europe and Asia. The accompanying drawing of a sleeping alcove in the Kurashiki Youth Hostel sets the minimum space per lodger at two square meters. This includes no study area. A further source of comparison was obtained from the publication "Site Selection & Development, Camps-Conferences-Retreats" published by the United Church Press. This report recommends a minimum area of fifty square feet for individual uncrowded sleeping quarters which are not used for study purposes. The purpose of the publication was to create guidelines for the establishment of religious study centers or retreats. Similar criteria pertains to sleeping areas at ski lodges and other sport camps. Other types of facilities also offer legitimate data. Sleeping accommodations on long distance trains vary in comfort and elegance both here and abroad, but none the less adequate temporary living conditions are provided in very tight quarters. There are still many who are attracted to cross country train travel without thought for discomfort. Similarly, every weekend untold numbers venture forth over trails and rivers in campers or boats undisturbed by feelings of claustrophobia.

Thus area itself - the size of the space - is not in itself the sole determinant of living adequacy. The character of the space is equally important.

From the data which was compiled from these sources a design for a Cabin-Module was developed.

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Specifically, the prototype unit provides:

An individual room for each lodger within the confines of which a student can sleep or study. Four students occupy the space encompassed within a 16'-0 x 12'-6' module, or an area of 200 square feet. Adjacent units utilize a stacked bed arrangement which increases the individual usable area, but nevertheless each unit is the equivalent of 50 square feet of floor area.

Sight privacy between the units themselves. Since the walls of the units do not extend to the ceiling, however, thereby expanding the visual outlook, the feeling of confinement so often associated with small enclosed spaces is avoided.

Individual light control over bed and desk. Low intensity general indirect illumination, is provided at the ceiling throughout the dormitory area. This will be master controlled by a time clock which will automatically turn these lights out at a specified time of night. Emergency night lights in the corridors will remain on. The bed and desk lamps are designed to direct all their light downwards in order not to disturb neighboring occupants by spillover.

Relative sound isolation. Carpeting and acoustical ceilings should reduce the reverberation time sufficiently to offer a reasonable degree of acoustical control. In addition, a certain amount of background noise, or "acoustical masking", will be built into the ventilating system. Complete elimination of all sound transmission between units will not be accomplished, however, and some administrative ground rules will have to be established concerning the use of radios, musical instruments and typewriters.

Heating and Air Conditioning - A central unit will provide heating and cooling to an entire floor. Primary air distribution will be effected through a ceiling plenum system. Limited individual control will be possible by control of reheat coils in the diffuser over each unit. The campus is all-electric already, and this power source will be continued.

Furnishings and equipment to fully equip each personal space.

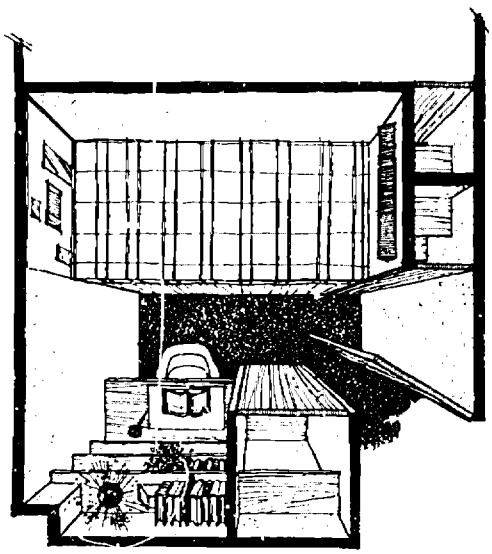
Bed - 3'-0" x 6'-6" - It includes an integral lighting fixture. A storage unit is provided under the bed.

Desk - 40" long, 24" wide and 29" high. Book shelves and reading light are provided over the writing surface. The desk will form the nucleus of a future learning center, a "wet carrel" in effect. When the college expands its capabilities in the field of media learning, terminals can be incorporated into the dormitory modules, and a unified campus retrieval system will be operated from the library-learning center.

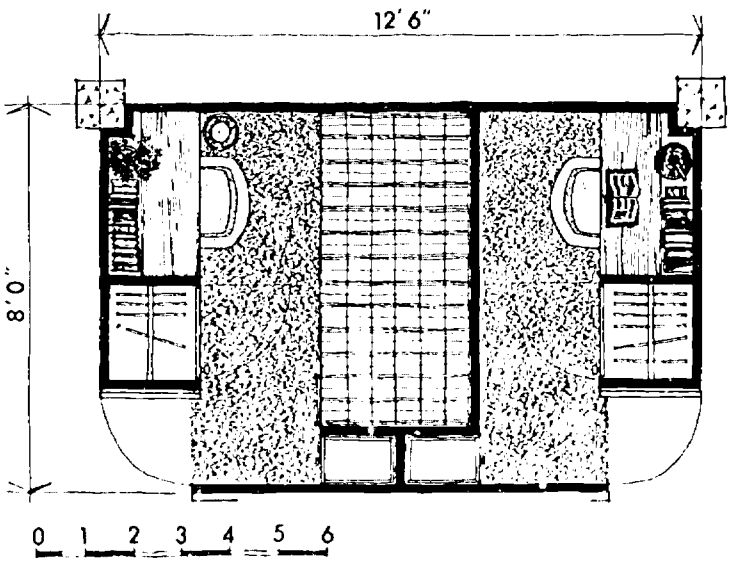
Chair - A comfortable upholstered tilt-back chair is included.

Hanging Closet - Hanging space 72" high, 24" wide and 24" deep. A tackboard surface is provided on the door.

Bureau - This small unit contains drawers, a closed cabinet and a mirror.



Cabin Module



Plan of Two Cabin Modules

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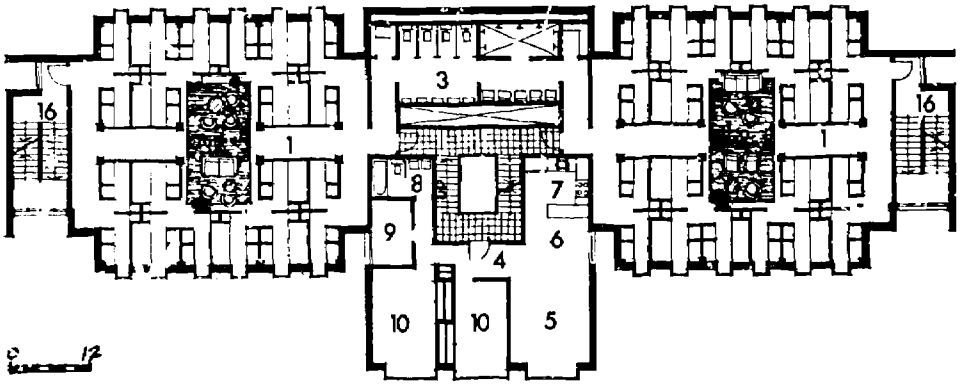
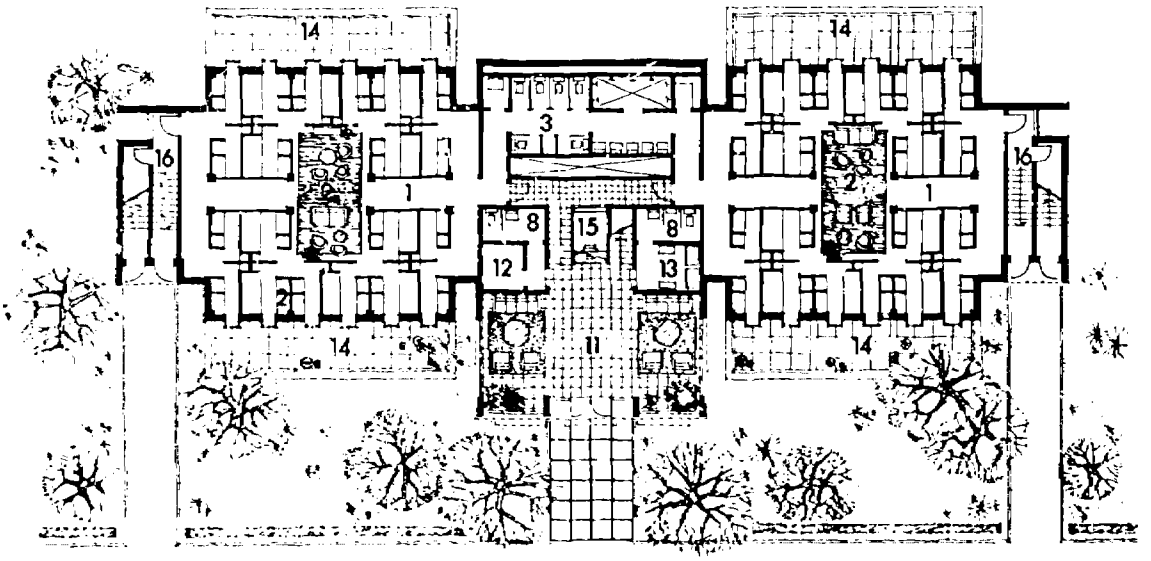


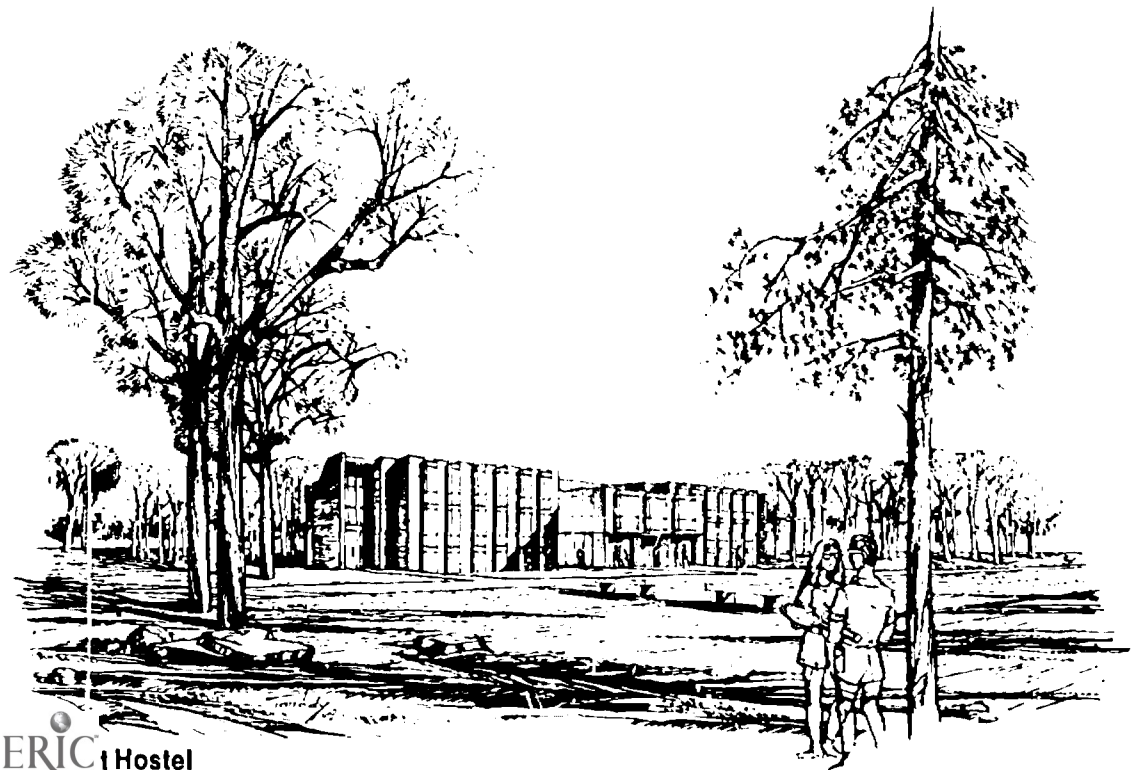
Upper Floor Plan

LEGEND

1.	20 Cabin Module	9.	Study
2.	Living Room	10.	Bed Room
3.	Toilet-Shower Room	11.	Lounge
4.	Staff Apartment	12.	Laundry Room
5.	Living Room	13.	Vending Machine Room
6.	Dining Area	14.	Court
7.	Kitchen	15.	Control Desk
8.	Bath Room	16.	Stairs



Lower Floor Plan



t Hostel

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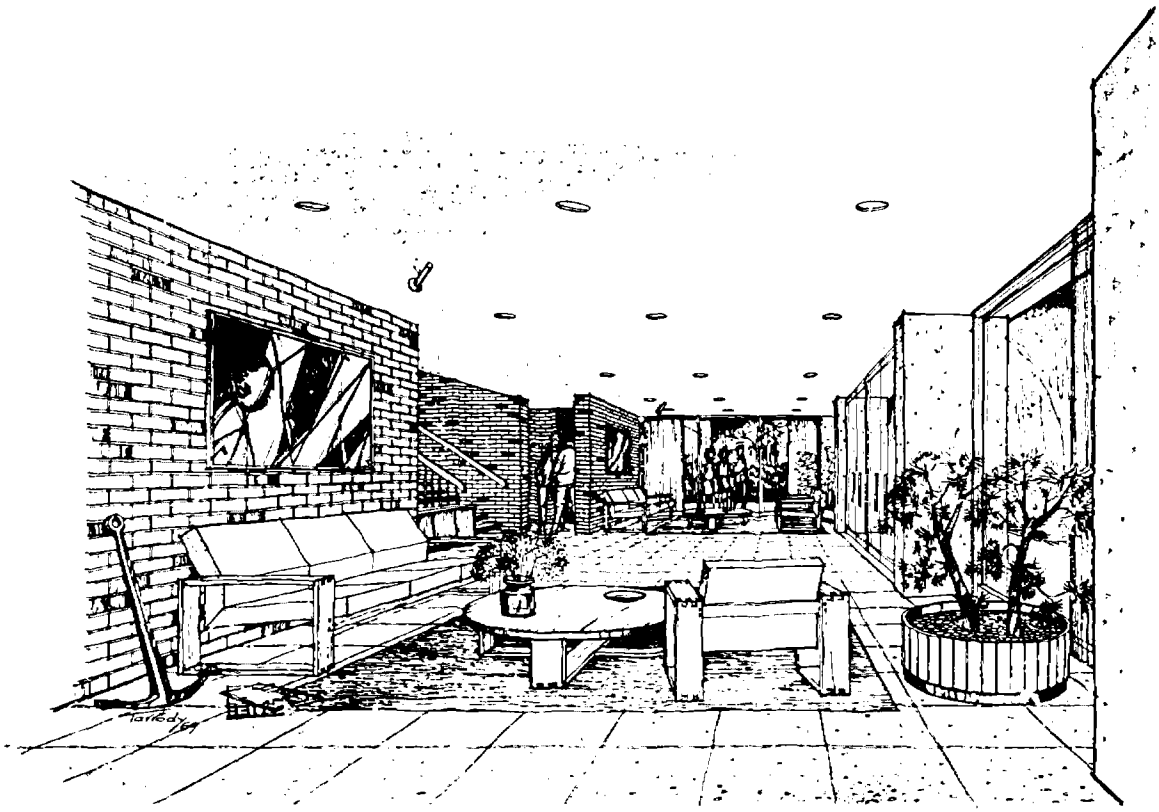

Lounge

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SPACE PER OCCUPANT

Dormitory standards at various universities vary widely, as do the number and composition of students who are housed in individual projects. Therefore, it is difficult to determine with mathematical precision what the specific size of this hostel, with its two to one ratio of men to women, and a capacity of one hundred and twenty, would be if built as a traditional dormitory.

One published rule of thumb states that the gross area per student in a typical residence hall approximates two hundred and fifty square feet excluding eating facilities. A report from EFL entitled "College Students Live Here" indicates that the average area in existing satisfactory housing for all single students, male and female, equals 246.6 gross square feet per occupant. No distinction was made between projects containing extensive common-use spaces, food service, etc. and those containing little more than student rooms.

Working with these averages and other data from representative projects and interpolating for this capacitied unit a reasonable breakdown of areas was arrived at for a conventional dormitory. Table A compares these average figures with the actual designed areas of the hostel.

Apart from the obvious savings in food service facilities effected by the use of the existing college center cafeteria, it would seem that for short-term housing, substantial reductions can be made in the areas of student rooms, and service-storage space. These reductions automatically reduce the total amount of circulation space. Other functional areas such as shower room, lounge areas and staff apartments remain fairly constant. Additional facilities such as parking garages, instructional spaces, etc. are not contemplated in the first phase of construction at Chesapeake College.

Costs for student housing have been averaging between $5000 - $6000 per single student. On the basis of the reduced area figures a savings of approximately $2500 per student might be realized.

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AFTERWORD

The strength of the Junior College lies in its ability to relate education to the particular needs of its community. By limiting the costs of attendance, by adapting its schedule to the workday timetable of the students and by providing flexible programs and services in sensitive response to individual interests or local needs, the Community College has opened up the opportunities of higher education to untold numbers of citizens previously unreachable.

Paradoxically, the same factors which add to the strength of the community college can also contribute to its weaknesses. Because the College is so closely oriented to its community, the majority of its students are graduates of the local high schools, and can have quite similar outlooks, which at times can be provincial. This in spite of the fact that the diverse age and status of the students offer so many opportunities for the cross pollination of human experiences.

The traditional junior college suffers also from the same malady which afflicts the junior high school - the sense of transitory presence. Time seems too short to establish a lasting identification between college and student. This is further aggravated by the fact that the junior college is a commuters' college, and it frequently seems that a student's participation in campus life is inversely proportional to the time he spends in daily travel.

Chesapeake College, it would appear, is in the somewhat unique position of being able to apply unconventional solutions to some of the common shortcomings of two-year institutions.

As part of the national concern with matters relating to the conservation of our natural environment, there is an established need for an estuarine program for technician training in the Chesapeake Bay region. The College is a logical institution to house and administer such a program by virtue of its location, facili- l interest. The expense of operarine Center, however, must be by more than the four counties who now sponsor Chesapeake College. The effort must be regional, and therefore broad based financial support must be sought from Federal and State agencies as well as from foundations, industries and individuals. Cooperative curriculum planning needs to be initiated with the other Maryland Community Colleges, not only for Marine Technicians but for other specialized technician training as well.

The expected influx of students from all parts of Maryland, and for that matter from other distant States, will have a dynamic influence on the life of the College. The corresponding need to house these students for short-term tenures may have more far reaching implications with regard to the numerically predominant local students. If the type of lodgings proposed can be successfully utilized, reducing costs substantially and allowing for the future phasing of similar or even diverse units, then possibly the attitudes and ambitions of the commuting student may be more positively integrated into the total fabric of Chesapeake College's being.

This at least is our hope.