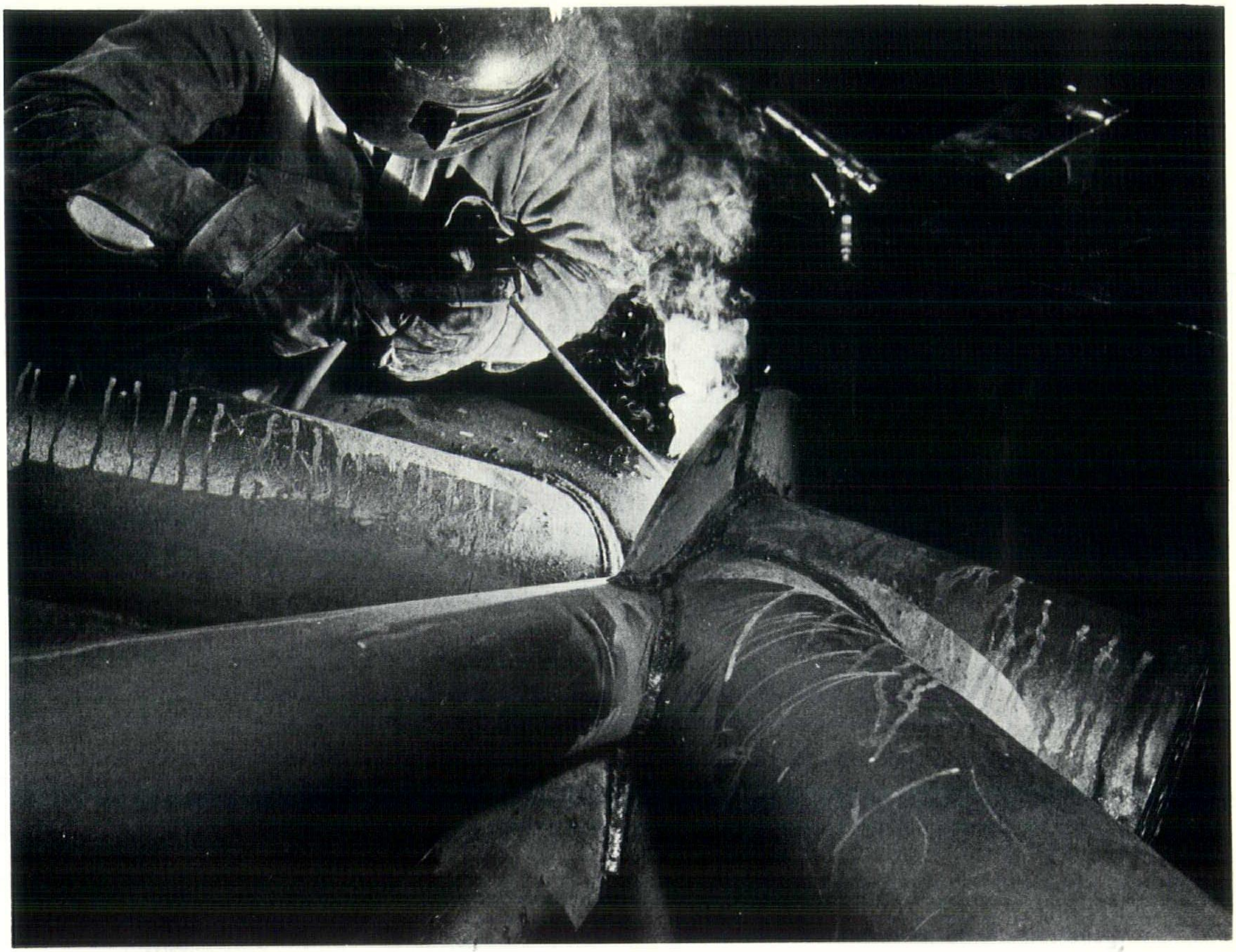
new england Architect

January – February 1972



NOTES & COMMENTS

Ariev Named Swift Modular Director

Theodore Ariev, AIA, formerly a partner of the firm King and Ariev, Hartford, Conn., has been named director of design and engineering for Swift Modular Systems, Inc., Monaco, Pa., a subsidiary of Swift Industries, Inc.

Theodore Ariev

He is a corporate member of the American Institute of Architects; member of the Connecticut Society of Architects and the New York State Association of Architects; and past secretary of the Hartford Society of Architects.

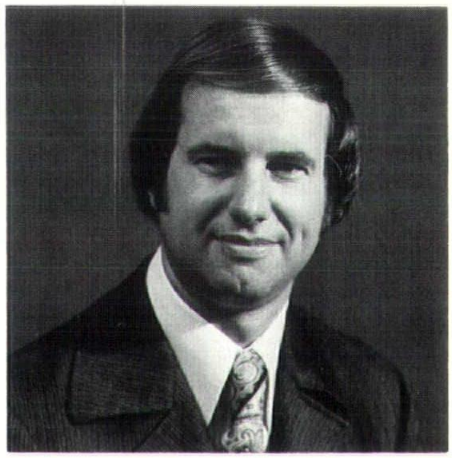
Mr. Ariev resides with his wife, Deborah and two children at 74 Seneca Drive, Mt. Lebanon, a Pittsburgh suburb.

Swift Modular Systems, Inc. is a producer of steel-framed modules for multi-family housing, commercial and institutional applications.

A native New Yorker, Mr. Ariev attained his degree in architecture from Renssalaer Polytechnic Institute in 1958. In 1970, Mr. Ariev was named project director of high rise construction for Stirling Home Corporation of Avon, N.Y., from which position he comes to his new duties.

Mr. Ariev pursued post-graduate work in Urban Studies at the University of Rochester, is a registered architect in a number of states, and is certified for registration by the National Council of Architectural Registration Boards.

Ritchie Names Morgan Director of Design



Wendell R. Morgan, Jr.

Wendell R. Morgan, Jr., AIA, has been named Director of Design of Ritchie Associates, Inc., Chestnut Hill, Mass.-based architectural and engineering firm that specializes in the planning and design of health care facilities. Mr. Morgan, 31, joined the 62-year-old organization in 1964, and was made a corporate vice president in 1969. His appointment fills a new executive capacity in the Ritchie organization, which has a branch office in Fort Lauderdale.

(Continued on page 4)

new england
Architect

January – February 1972 Volume 2 Number 9

features

departments

Photo Credits: Hutchins Photography, Cover (Loomis Institute), pages 7 (center), 8-11; Franklin Wing 6, 7 (top); Bob Sturgis, 12-14; Center Photo Service, 26-27.

Editorial & Sales Office:
Three Sheafe Street
Portsmouth, N.H. 03801
Telephone: 603-436-4503

Published monthly by the Walsh Publishing Corporation, Three Sheafe Street Portsmouth, N.H. 03801. No article appearing in this issue may be reprinted in whole or in part without permission of the publisher.
Controlled circulation postage paid at Portland, Maine. Postmaster: Please send Form 3579 to NEW ENGLAND ARCHITECT, P.O. Box 900, Portsmouth, N.H.
Fifty Cents A Copy
Subscription: Five Dollars Per Year.

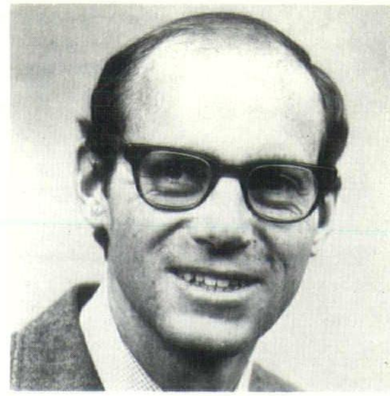
Notes *(Continued from page 2)*

Mr. Morgan will be working in cooperation with Ritchie project architects and directly with staff architectural designers on current projects, including the planning, preliminary design, and design development stages. The establishment of the post of Director of Design will put under a central control the design considerations of the medical building projects handled by the Ritchie Massachusetts and Florida offices.

A graduate of Rensselaer Polytechnic Institute, Troy, New York, he received his B. Arch, degree in 1964. Recent projects in which Mr. Morgan has been involved include The Cooley Dickinson Hospital, Northampton, Mass. (continuing care unit); Kessler Institute for Rehabilitation, West Orange, New Jersey; Winchester Hospital, Winchester, Mass. (master plan); Wesson Memorial Hospital, Springfield, Mass. (master plan); and Manatee Memorial Hospital, Bradenton, Florida (master plan).

Mr. Morgan, who lives with his family in Walpole, Mass., is president of the Walpole Lions Club. He is also a member of the Boston Society of Architects, American Institute of Architects, and the Massachusetts Building Congress.

Gary Holmes Joins Russell Gibson vonDohlen



Gary L. Holmes

Gary L. Holmes has joined the architectural firm of Russell Gibson vonDohlen as Staff Research Architect.

In this position he will provide research and consultative services in the areas of construction management, systems building, cost analysis, building codes and material selection.

The firm, which has long been aware of the benefits for its clients to be derived from the inclusion of such a position, believes new building systems and management methods, such as pre-coordinated subsystems and fast track scheduling, can now be more quickly recognized and evaluated. Research can be centralized under a single authority, therefore benefiting from previous work, and simplifying retrieval. Budgets can be more comprehensively established and maintained. Factors affecting reduced maintenance and operation costs, can be more often recognized and incorporated into the design.

Prior to joining Russell Gibson vonDohlen, Mr. Holmes was employed as a cost estimator and mechanical systems designer at Malcolm Crabtree Associates, Hartford. There he was involved in the development of a precast concrete structural system which incorporated prefabricated mechanical subsystems. He has had previous experience as a field engineer with the California office of Robert E. McKee, Inc., general contractor, and as a field engineer and estimator with Associated Construction and Engineering, Inc., South San Francisco.

A Hartford resident, Mr. Holmes is a graduate of the University of California School of Architecture.

Designing for Firesafety And Hazard Control

The Factory Mutual System plans to offer a seminar for architects, "Designing for Firesafety & Hazard Control", twice in 1972.

The course has been designed to acquaint architects with ways to integrate loss prevention engineering in the design stage of construction, eliminating the need for costly and inefficient fire protection afterthoughts when construction has been completed. As a leader in loss control technology and philosophy, the Factory Mutual System's engineering and research experience will give the architect specific knowledge about firesafe design and how it can be incorporated in current types of construction using various materials. The seminar will also cover the application of automatic sprinklers and explore solutions to preventing windstorm and explosion damage.

Included in the program is a demonstration fire at Factory Mutual's Test Center in West Glocester, R.I. Arrangements can be made for special meetings with Factory Mutual Engineering and Research personnel for discussions outside the scope of the seminar.

The two seminars in 1972 will be held on April 18-20 and October 17-19 at the Factory Mutual Engineering Corporation, 1151 Boston-Providence Turnpike, Norwood Massachusetts. Applications and further information are available from C. J. Schroeder, Director, Education Department.

Masonry Seminar April 5th at B.A.C.

The New England Concrete Masonry Association will discuss the latest developments in masonry at a seminar for architects Wednesday, April 5, 1972, at 10:30 A.M. at the Boston Architectural Center.

This seminar is supported by members of NECMA from six New England states and will feature Paul Lenchuk, Executive Director, and Henry Toennies, Director of Engineering of the National Concrete Masonry Association in Washington, who will discuss the status of the industry and details of the use of concrete masonry in high rise construction respectively.

A special guest speaker will be Arnold Kronstadt, AIA, of Silver Spring, Maryland, senior partner of Collins & Kronstadt, whose firm has had extensive experience in housing construction in 20 years. Mr. Kronstadt will discuss the use of concrete masonry in housing, stressing Ultimate Costs.

Architects are urged to contact Secretary John O'Connor, Foster Brothers, (617) 762-1622, as soon as possible in regard to reservations since seating capacity at BAC is limited.

The April 5th Seminar is the first in 30 years sponsored for Boston architects by NECMA.

LOOMIS INSTITUTE

WINDSOR, CONN.

Architects: Kenneth DeMay (of Sasaki Dawson DeMay Associates); Watertown, Mass.
Project Architect: Philip Minervino

The reading terrace (above) is located on the entrance level.

The study and reading alcoves on the upper floors of the library-learning center are cantilevered in order to give an interesting facade to the building and to form a covered walkway which is in the tradition of the other portions of the campus.

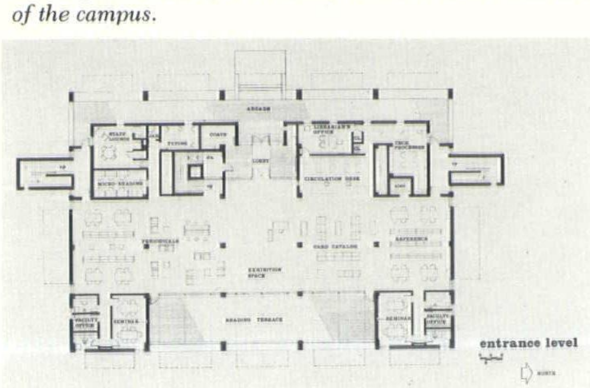
WHEN Kenneth DeMay of Sasaki, Dawson, DeMay Associates, Inc. was commissioned to design a master plan for the Loomis Institute of Windsor, Conn., it was requested that the plan, which was to include complete architectural services for a library and refectory addition, also accommodate expansion of the Loomis academic program and its merger with the Chaffee School for girls, a non-resident girls' school with an enrollment of 200.

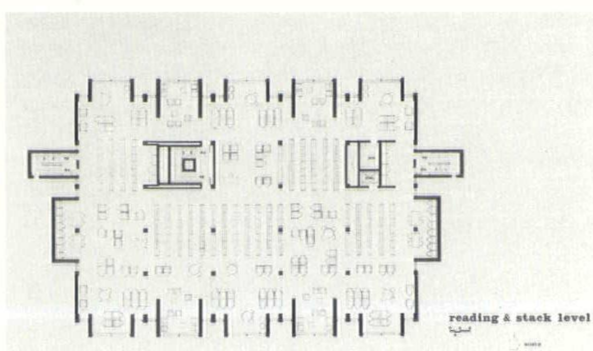
Although the total land holding of the Institute was large, most of it was in the flood plains of the Connecticut River. Only an elongated island-like portion of the highland could be developed into building sites.

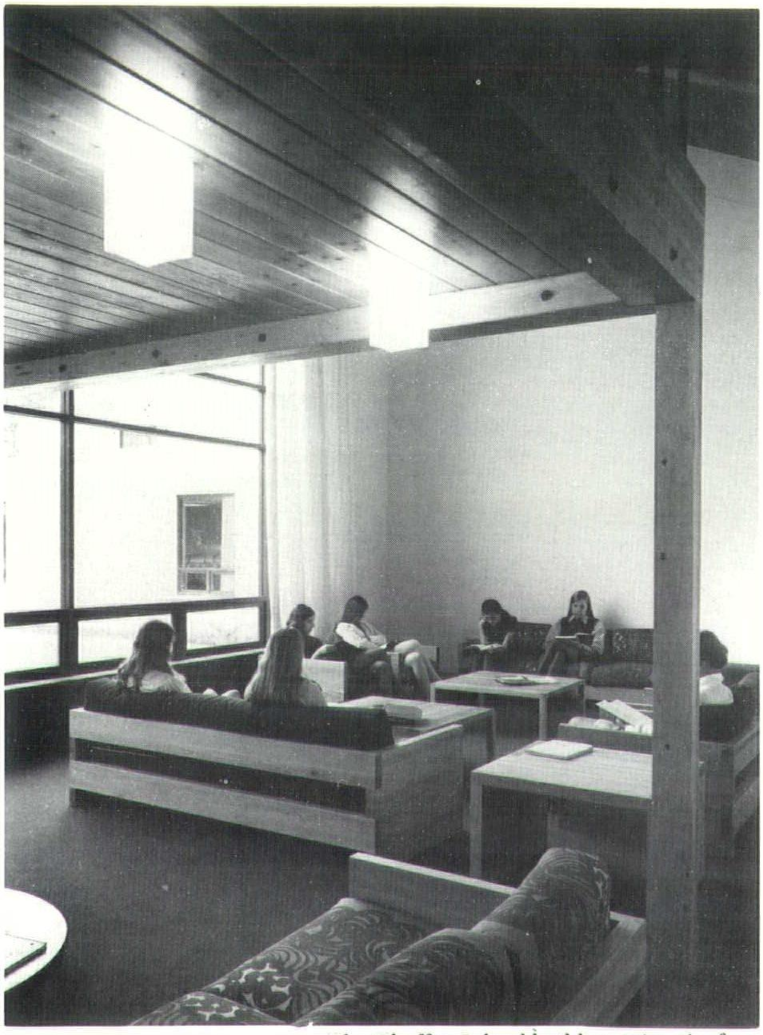
SDDA proposed that a new academic quadrangle be constructed on the south side of the existing buildings in what was then a service area. Traffic was rerouted to go around the new quadrangle instead of through it. This new grouping would contain a library-learning center, an addition to the refectory, and eventually, an auditorium. The new Chaffee School would be adjacent to this academic center and share its basic facilities.

SDDA designed buildings around the quadrangle not only to respect the scale and material of the Georgian style of the existing buildings, but also to present a strong character of their own.

The study and reading alcoves located on the upper floors of the library-learning center are cantilevered in order to give an interesting facade to the building and to form a covered walkway which is in the tradition of the other portions





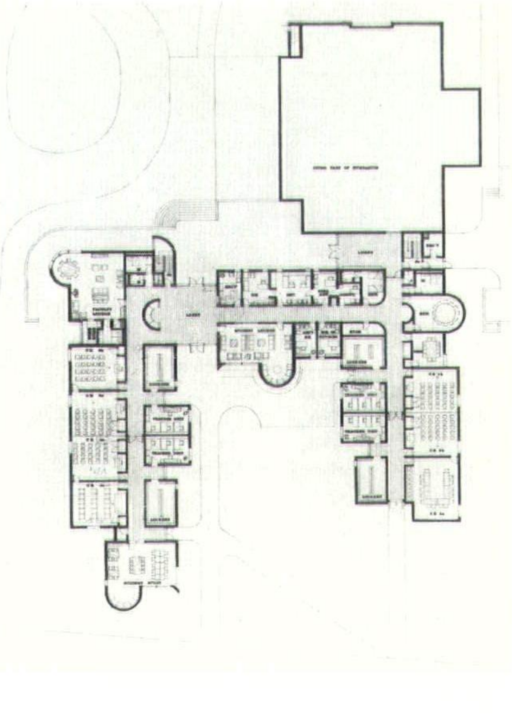


The Chaffee School building takes the form of a modified "U" with three sides forming a special space or quadrangle for the students. The northern wing is designed for expansion which will further the sense of enclosure. The two classroom wings are connected by administration facilities, student and faculty lounges, and seminar rooms. The two-story physical education assembly facility is located on the sloping portion of the site to visually maintain the low scale.

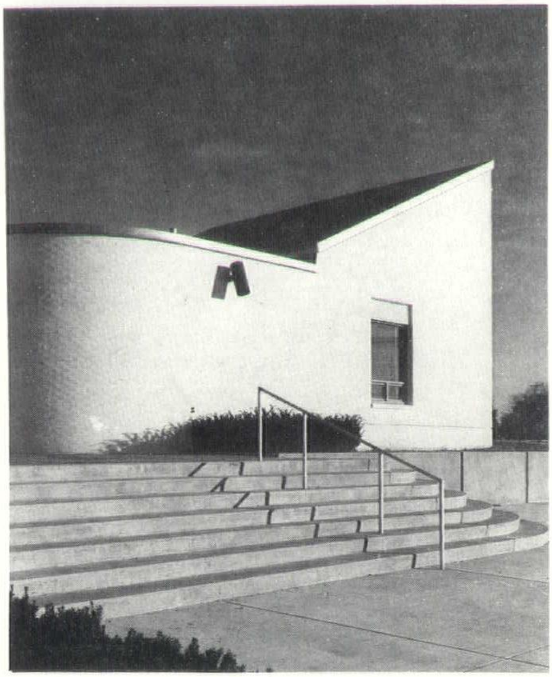
of the campus. The reference rooms, catalogs and circulation desk are on the main floor and the audio-visual facilities and a large lecture room are on the lower floor.

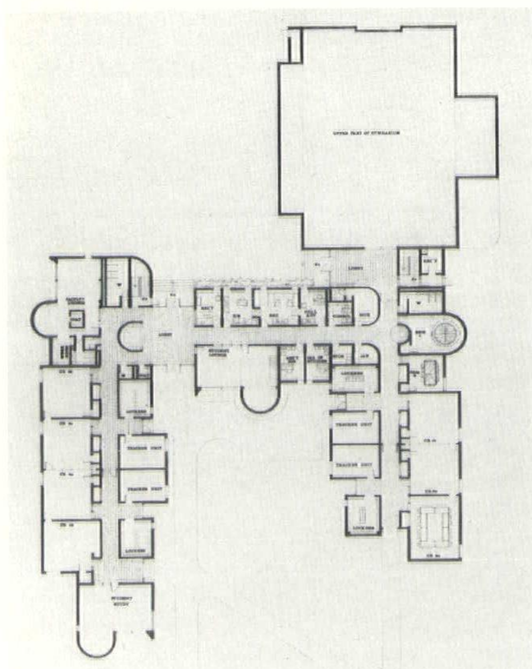
The addition to the refectory is an extension of the existing dining area. It houses a kitchen, a bookstore, and a snack bar on the lower level. Wood trusses span the dining area on the main floor to create a space in the tradition of a "Great Hall."

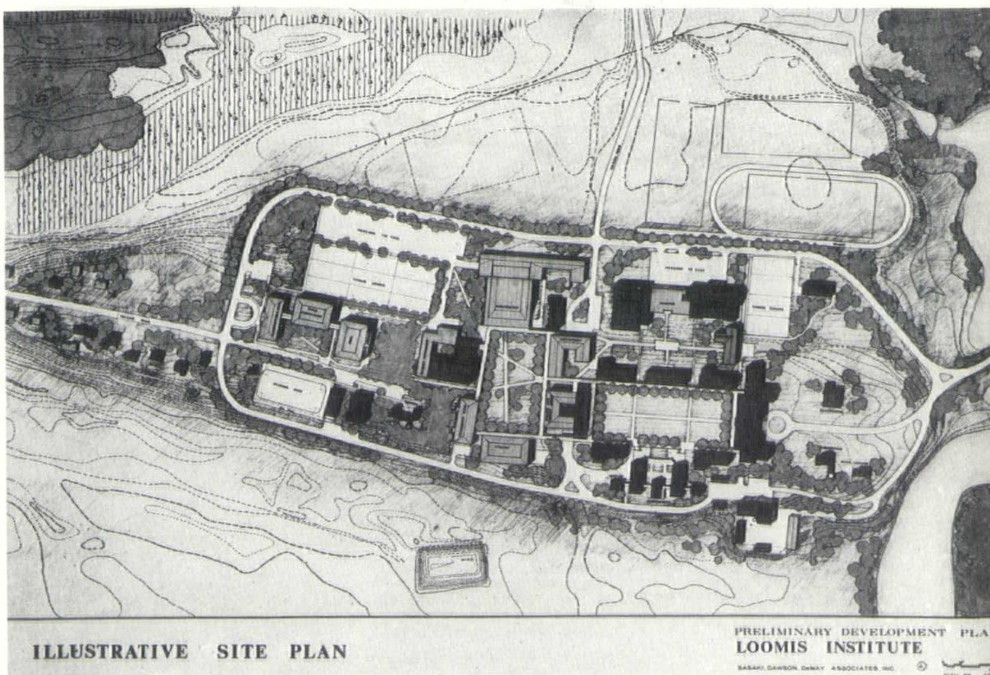
The Chaffee School for Girls was designed to have a scale and playful character of its own. The complex is an interconnected series of various spaces used for classrooms, offices, lounges, meetings and recreation.



The use of brick walls and slate roofs as well as the establishment of an open court reflected the architectural character of the existing campus. The bricks are, however, painted white to establish a sense of identity for the girls' school. The accessibility developed by the multiple exterior entrances is reinforced on the interior by locating the administrative offices on the main circulation corridor allowing direct and easy contact with the students.







A special emphasis was placed on developing a non-institutional learning environment that would interest and stimulate the students and, at the same time, encourage the development of a close student-faculty community. Because of the extensive educational support facilities existing at the boys' school, space requirements were limited to administrative facilities, a physical education/assembly area which could be accessible for use after school hours, and classroom facilities flexible enough to accommodate a variety of teaching techniques.

In the formulation of the Master Plan it was evident that the two schools should be located in close proximity to be able to effectively share existing Library, Science, Dining and other support facilities. The boys' school landholdings were extensive, but since the campus consists of an "island" of high ground surrounded by the flood plains of two rivers, only a very small portion of the property was actually available for building construction.

The site chosen for the new girls' school facilities was located at the southern end of the "island," bordered on three sides by a loop road and existing circulation paths and on one side by proposed tennis courts. A special problem then arose of achieving compatability with the existing circulation and mechanical systems as well as the architectural character of the campus while maintaining a separate identity for the new school.

The building takes the form of a modified "U" with three sides forming a special space or quadrangle for the students. The northern wing is designed for expansion which will further the sense of enclosure. The two classroom wings are connected by administration facilities, student and faculty lounges, and seminar rooms. The two-story physical education assembly facility is located on the sloping portion of the site to visually maintain the low scale. The use of brick walls and slate roofs as well as the establishment of an open court reflected the architectural character of the existing campus. The bricks are, however, painted white to establish a sense of identity for the girls' school.

The accessibility developed by the multiple exterior entrances is reinforced on the interior by locating the administrative offices on the main circulation corridor allowing direct and easy contact with the students.

The classroom facilities are divided into four academic areas to form smaller, more personal student groups. Each academic area contains:

1. A teacher unit which provides work and conference space for 3 teachers.
2. Departmental storage.
3. Locker facilities for 50 students.
4. 2 classrooms.

In addition to the regular classrooms, there are 2 seminar rooms, one of which has seating for 20 students and the other for 12.

The building also contains a student lounge and a student study. The student lounge is designed for off-hours study and relaxation with varied lounge seating, hi-fi system and a balcony area. The student study is equipped with reference books, study tables, individual carrells and lounge seating. A faculty lounge designed for both working and relaxing is furnished with lounge seating and study tables. A mimeograph room is located just off this area. Vivid colors are used throughout the building to produce a comfortable, interesting and stimulating atmosphere for students and faculty.

Chaffee School Construction:

Bearing walls: white brick.

Roof: slate.

Ceilings: exposed structural wood deck on sloped areas, hung acoustical ceilings in corridors and offices.

Physical education and assembly portions: steel frame with brick walls.

Interior flooring: carpeting throughout except in lower physical education portion where there is synthetic resilient flooring.

Windows: clerestory and large operable ones at ground level) — solar bronze glass.

Heating: baseboard radiation using steam from the existing central heating plant.

Ventilation: duct system off corridors.

Library Construction:

Poured in place reinforced concrete structure and roof.

Exposed surfaces lightly sandblasted with aggregate color selected to match existing limestone.

Poured in place concrete floors with pan ceilings.

Exterior and interior finish: brick.

Ceilings: wood and exposed concrete.

Roof: slate.

Windowframes: anodized aluminum with solar bronze glazing.

Carpeted floors.

Exterior arcades: brick surface.

Refectory Construction:

Concrete spread footings.

Cast-in place concrete floors with pan ceiling on lower level.

Brick bearing walls support heavy timber trusses with wood deck and slate roof.

Parquet wood floors in dining space.

Windows: anodized aluminum frames with solar bronze glazing.

Principal in Charge: Kenneth DeMay.

Project Architect: Phil Minervino.

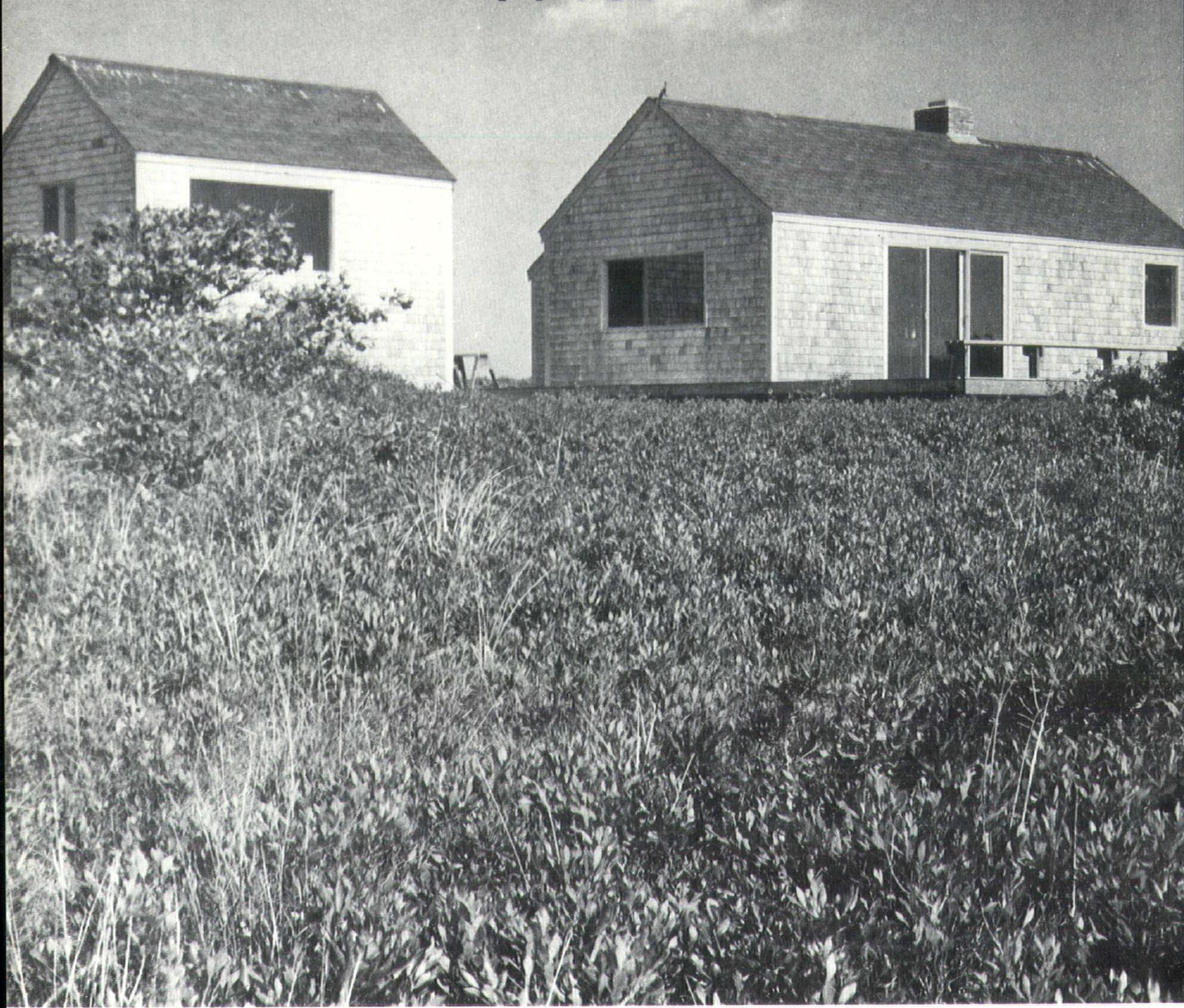
Structural Engineer: LeMessurier Assoc., Inc.

Mechanical and Electrical Engineer: Greenleaf Assoc.

Contractor: George A. Fuller.

The addition to the refectory is an extension of the existing dining area. It houses a kitchen, a book-store, and a snack bar on the lower level. Wood trusses span the dining area on the main floor to create a space in the tradition of a "Great Hall."

VACATION HOME



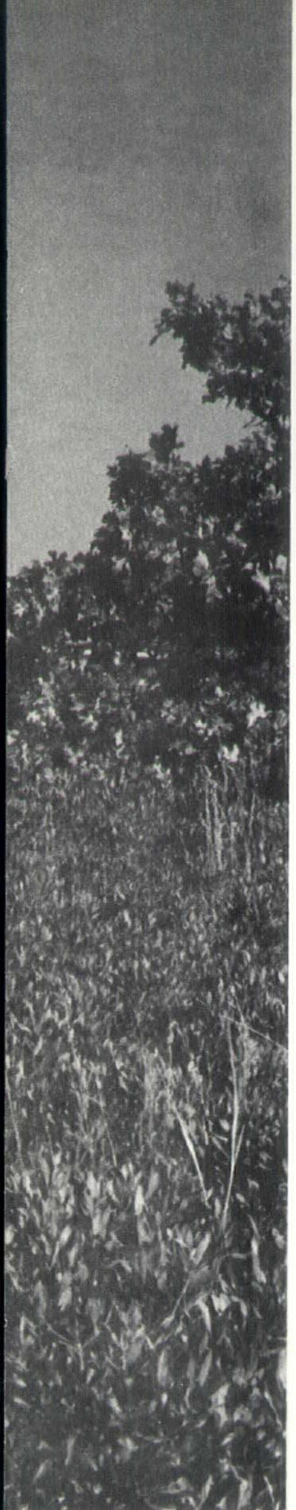
THIS vacation home was designed by Owner-architect Robert S. Sturgis, FAIA, of Feloney and Sturgis, Cambridge, as a special response to a dramatic site on Martha's Vineyard and to indoor-outdoor living with varying combinations of wind and sun.

The site is a finger of land projecting into one of the Great Ponds, looking southward to the outer beach.

A strong and steady southwest wind is typical of Island summers, with an occasional cool northwest wind in the morning and wet storm winds from the east. Depending upon the temperature and the season, one may want to find a place outdoors with more or less wind and with more or less sun.

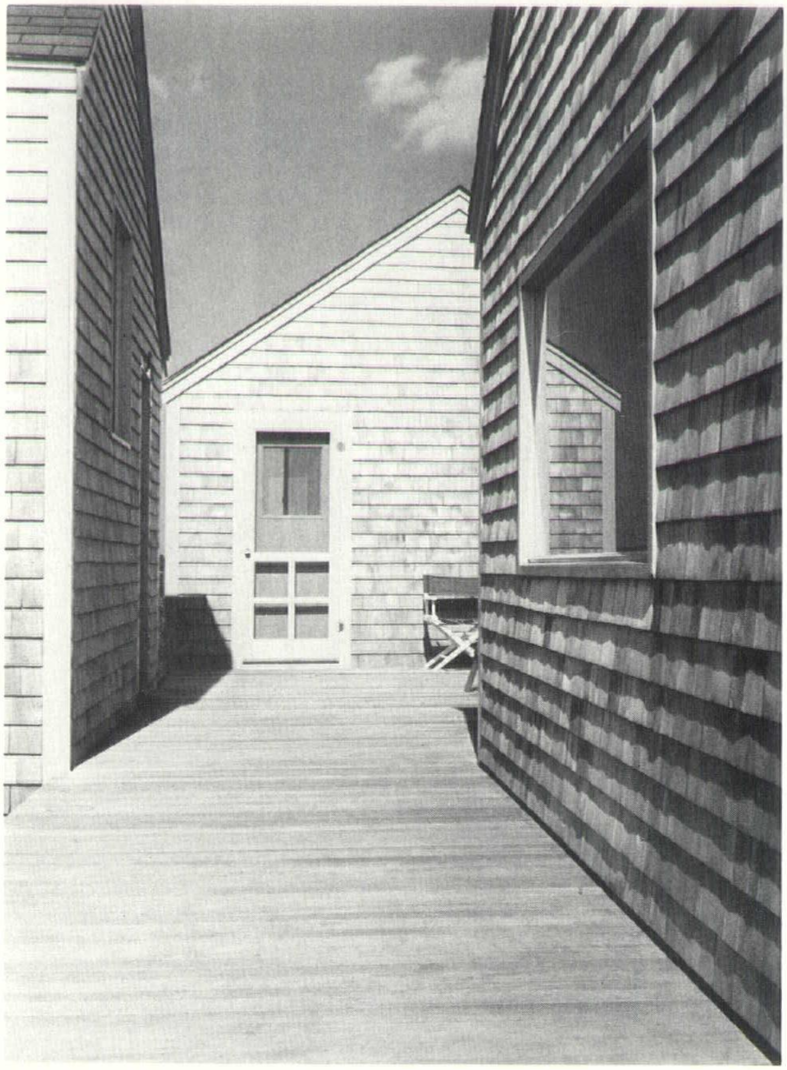
Vacation life is entirely informal. There is no electricity at this location. Weathered gray shingles are the rule and for many years the typical building was the duck hunter's camp, often consisting of an original small building with wings and outbuildings randomly clustered about.

The architectural design of the



Martha's Vineyard

Robert S. Sturgis, FAIA
Cambridge

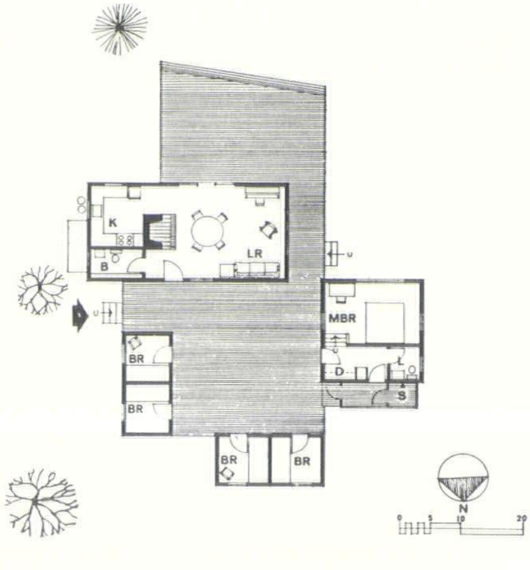


Half of the 24 x 70-foot deck is enclosed by four small buildings arranged pin-wheel fashion, making an outdoor room which provides wind screens, sun pockets and glimpses out in all directions.

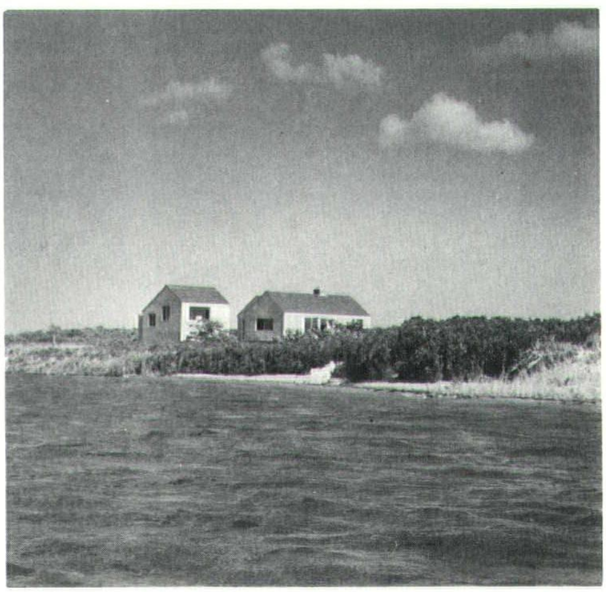
Sturgis house starts with a 24 x 70-foot deck floating over the huckleberry bushes. Half of the desk is enclosed by four small buildings arranged pin-wheel fashion, making an outdoor room which provides wind screens, sun pockets and glimpses out in all directions.

The other half of the deck is open to the south and the long view of the main pond and the outer beach.

The main unit includes a living-dining room, brick fireplace and chimney, kitchen and lavatory. Utilities are clustered for easy winteri-



The main unit (above right) includes a living-dining room, brick fireplace and chimney, kitchen and lavatory.



The site is a finger of land projecting into one of the Great Ponds, looking southward to the outer beach.

zation in the future.

The master bedroom is raised two-and-one-half feet as a lookout, with boat storage underneath. It includes a dressing room and lavatory, and an outdoor shower which also opens off the common deck.

The sleeping capacity is brought up to a total of ten by the remaining two buildings, each of which consists of two small bedrooms containing double decked built-in bunks.

The unfinished interiors are characterized by the rough pine exterior siding except for maple flooring and vertical cedar boards on the few partitions. Water supply is from a driven pipe well via hand-started gasoline motor, pump and pressure tank. Range, refrigerator, hot water tank and lights in the major rooms are fueled by propane gas.

THE 929 HOUSE

CAMBRIDGE, MASS.

CONSTRUCTION is scheduled to start this month on The 929 House at 929 Massachusetts Avenue, Cambridge, designed by Egon Ali-Oglu and Brattle Street Associates, architects and planners, Cambridge.

Designed in a systematic method developed by Brattle Street Associates, a building system for structure, exterior skin and interior components will be used, according to Egon Ali-Oglu, architect-in-charge.

This high rise apartment tower, located on a constricted site on a major urban thoroughfare, contains appartments and professional suites. At ground level a large open plaza fronting on the main street provides public open space.

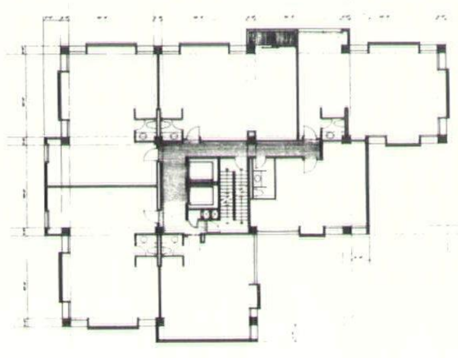
Most of the site is used for underground parking on a spiral ramp which was required to meet city parking requirements on such a constricted site. Also, several zoning variances were successfully obtained from the city to permit the project to proceed on an economically viable basis.

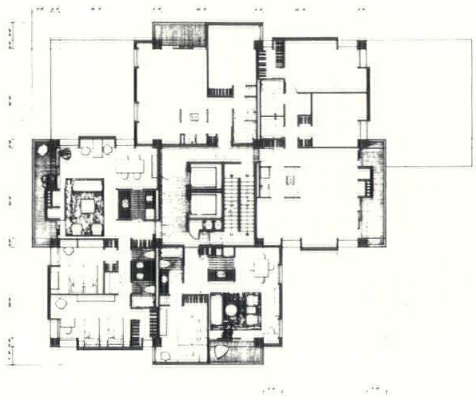
The facility will house 94 dwelling units, consisting of studio, one bedroom and two-bedroom apartments, and some 10,000 square feet of professional suites space. Ninety underground parking spaces will be included.

Owner of the project is MacDavis Realty of Cambridge.

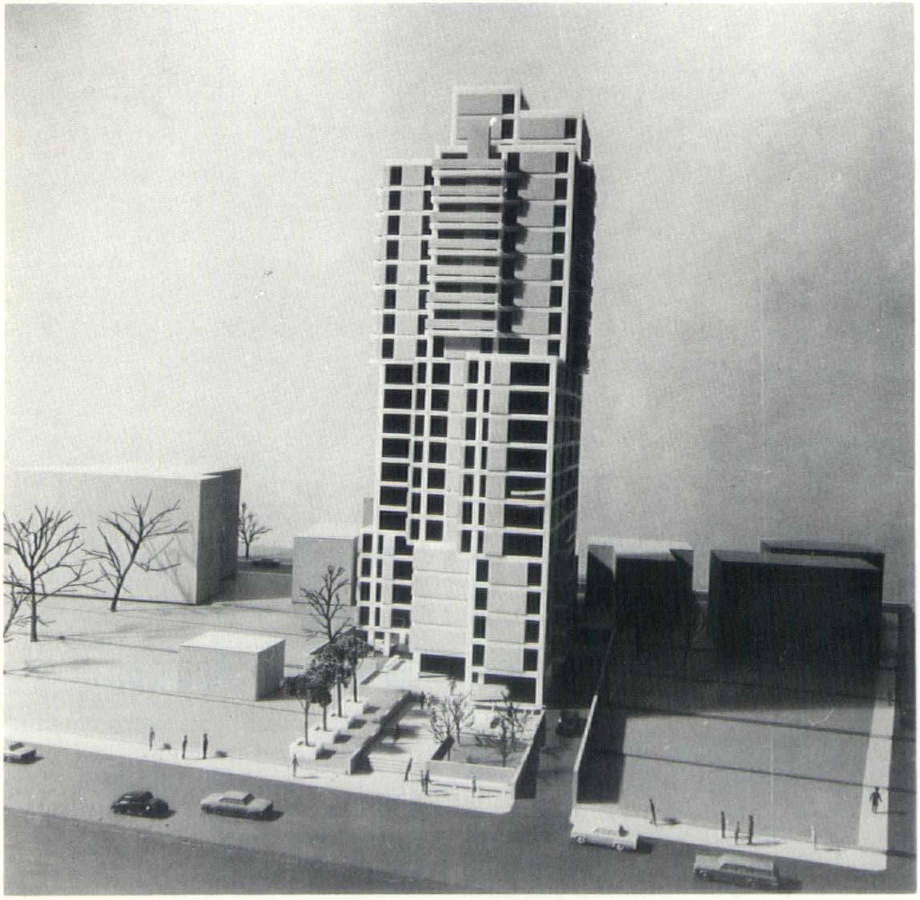
Contractor is MacBell Construction Company, Cambridge.

Structural Engineers are T. J. Ecsedi Associates of Toronto, Canada.





The drawings above show several plan configurations within the same planning grid.

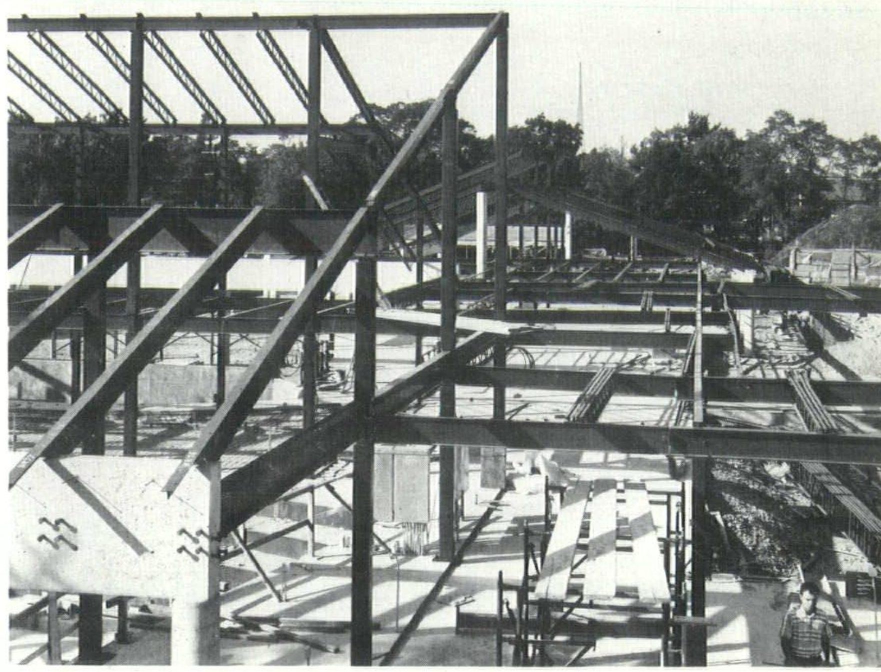


Egon Ali-Oglu
and
Brattle Street Associates
Cambridge

TABOR ACADEMY CENTER

MARION, MASS.

Hugh Stubbins Associates
Cambridge, Mass.



THE first major construction step in a 30-year master plan to rebuild nearly century-old Tabor Academy, college preparatory private school for boys, has begun here. Tabor is one of four Naval Honor Schools in the United States.

Now at about 35 percent completion is the framework for what will be this school's new $3-million Academic Center, to be located on one of four "use-zones" established under the master plan.

The 57,890-square-foot Academic Center, scheduled for occupancy next September, will be the focal point of the 70-acre campus of the "new" Tabor Academy. It will contain all the teaching facilities for seven languages, humanities, mathematics and sciences, along with administration offices, lecture halls and faculty offices.

Design of the Center provides for a one-level structure with a two-level science and mathematics wing to the south. And though it may be considered essentially as a single structure, the Center has the general appearance of a small community of at least five small-scale interconnected buildings.

A key consideration in the design was that the architecture had to "fit" the town of Marion, according to Hugh Stubbins, President, Hugh Stubbins and Associates, Cambridge, Mass., architect for the project.

He points out that the town is a small residential village — winter population approximately 3,000 — located 60 miles south of Boston on the shores of Sippican Harbor, an estuary of Buzzards Bay. Its houses date to late eighteenth and early nineteenth centuries — its granite wharves from sailing vessel days — "a truly New England atmosphere," Mr. Stubbins notes.

"We sought to preserve that scale through use of a pitched-roof 'vocabulary.' In doing so, we came up with a visually small-scaled building consisting of a number of one- and two-story pitched roof 'pavilions' serving different education functions."

"Uppermost in our mind was the development of what might be called 'the academic village concept.' In following up this concept, careful consideration was given to the spaces between the pavilions to provide a series of related small-scale outdoor spaces and courtyards."

"As a result," concludes Mr. Stubbins, "we were able to achieve an economical structure with a unique configuration that indeed fits the character and small scale of town and campus."

A combination of structural steel and reinforced concrete columns and beams — with steel roof joists throughout — constitute key framing elements for the relatively simple interconnected structures that make up the Academic Center.

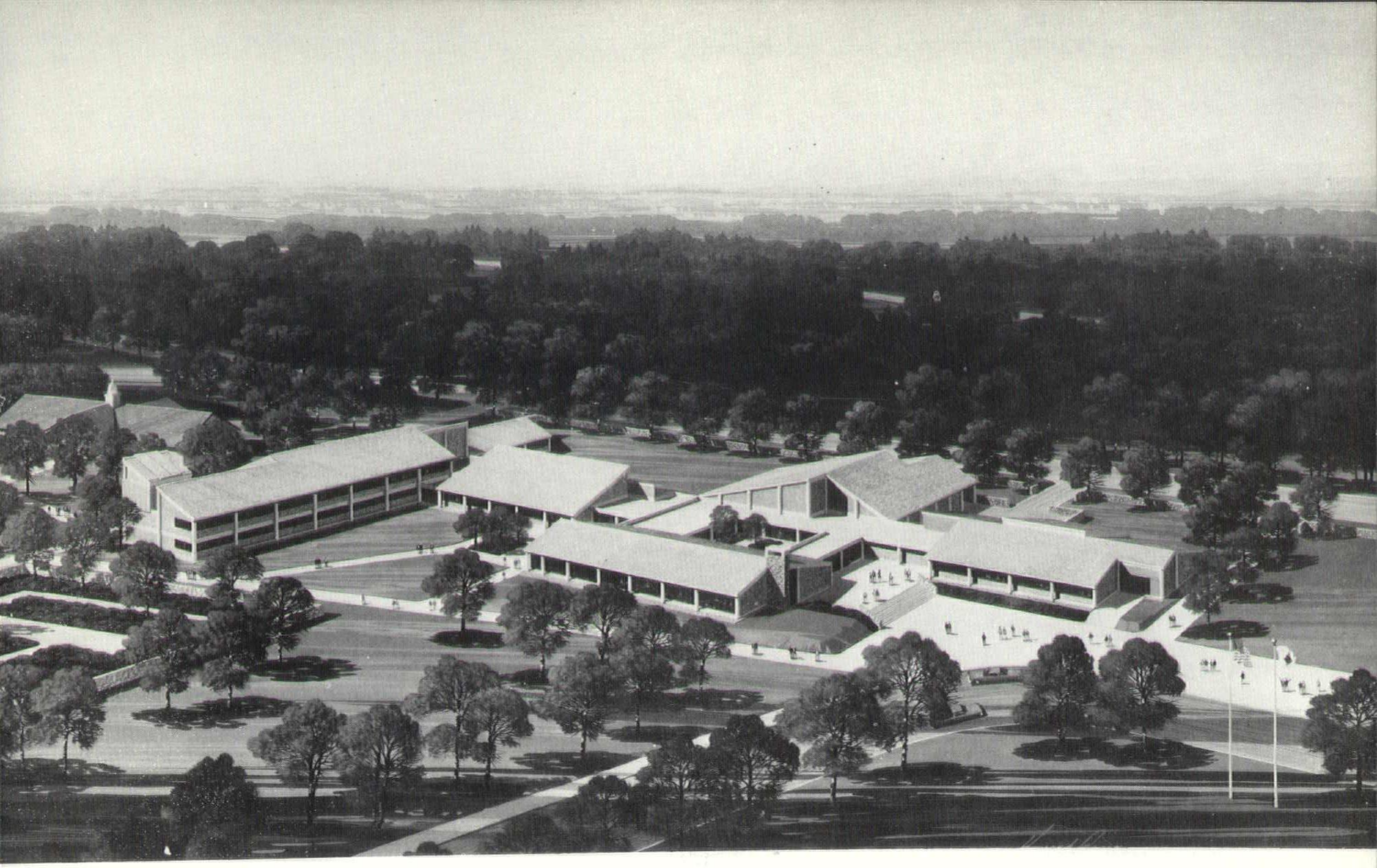
One hundred tons of structural shapes, supplied by Bethlehem Steel Corporation, are being fabricated for the Center by Providence Steel and Iron Co., Inc., Providence, R. I. Bethlehem also supplied a portion of the steel reinforcing bars, fabricated for the project by Plantations Steel Company, Warwick, R. I.

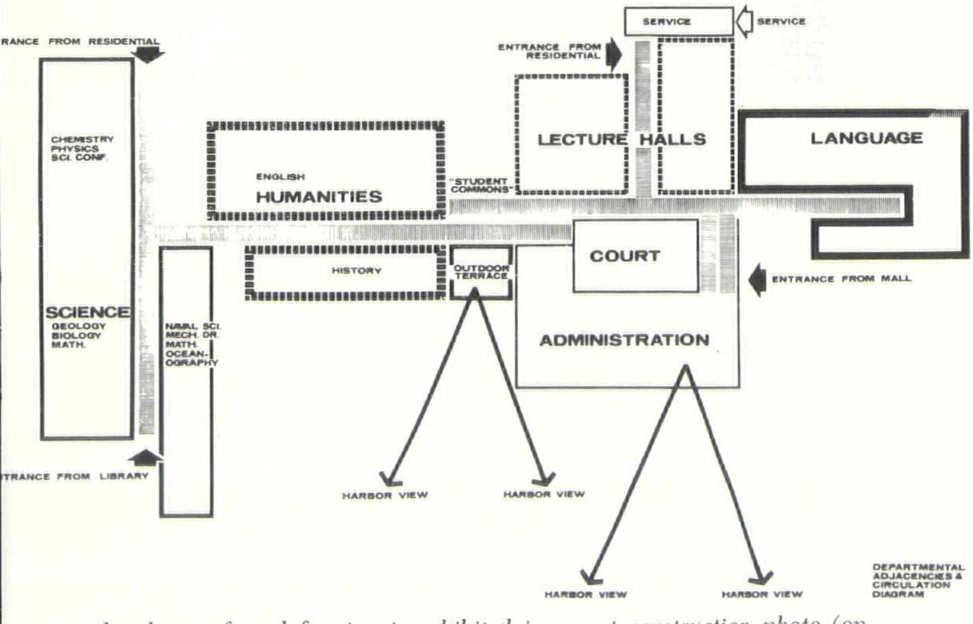
Commenting on the structural aspects of the new facility, William Thoen, a partner with the engineering firm for the project, LeMessurier Associates, Cambridge, notes:

"A light steel and bar joist structural system closely related to a conventional wood-framed New England dwelling evolved naturally from the architectural form. In fact, a wood frame might have been used, except its cost premium for code fireproofing and insurance made it more costly than a similarly framed non-combustible structure.

To complete the small-scale community effect of the Academic Center, both its roof and wall framing ultimately will be clad in cedar shingles.

Completion of the Academic Center is one of the initial key goals in implementing Tabor's master plan for orderly improvement of the school as projected to the year 2000. More than $21 million is expected to be spent on the overall plan, which includes the linking together of Sip-





Liberal use of steel framing is exhibited in recent construction photo (opposite page) taken this past fall of $3-million Academic Center project at Tabor Academy, Marion, Mass.

One hundred tons of steel for the framework, now about 35 percent completed, were supplied by Bethlehem Steel Corporation, and fabricated by Providence Steel and Iron Co., Inc., Providence, R. I. Bethlehem also supplied a portion of the steel reinforcing bars, fabricated for the project by Plantations Steel Company, Warwick, R. I.

General contractor is Sullivan, Foster, Inc., New Bedford, Mass. Architect: Hugh Stubbins and Associates, Cambridge, Mass. Engineer: LeMessurier Associates, Cambridge. Project is being carried out under the guidance of Tabor Academy's Centennial Building Committee.

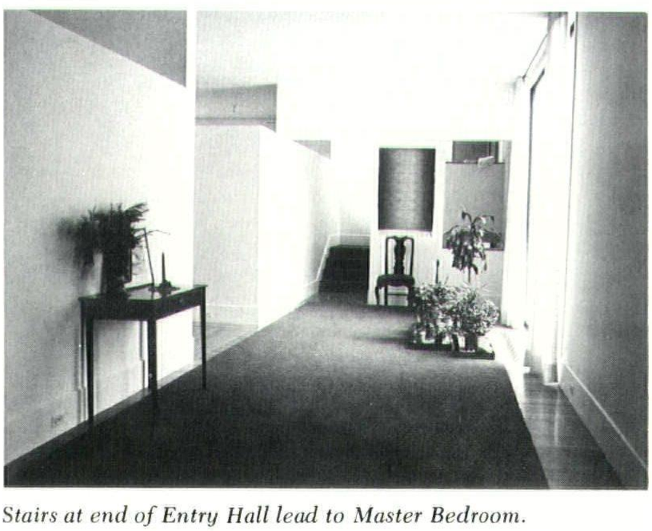
pican Harbor (Zone A), the waterfront (Zone B), the Academic Center (Zone C) and expanded housing (Zone D).

More than 1-½ years' work went into development of the school's master plan by the Hugh Stubbins and Associates firm, working closely with Tabor's faculty, trustees and LeMessurier Associates. Paul Grayson, associate in the Stubbins firm, served as project director on the Academic Center and master plan.

The Academic Center project is being carried out under the guidance of Tabor Academy's Centennial Building Committee, Harvey Williams, chairman. Responsible for architectural coordination and overseeing construction is Donald B. Wing, secretary of the Centennial Building Committee. General contractor for the project is Sullivan, Foster, Inc., New Bedford, Mass.

Tabor Academy headmaster is James W. Wickenden. More than 400 boys in grades 9 through 12 are currently enrolled at the Academy. The Academic Center is planned for an enrollment of 500 students to allow for growth. Tabor opened with a full enrollment last September.

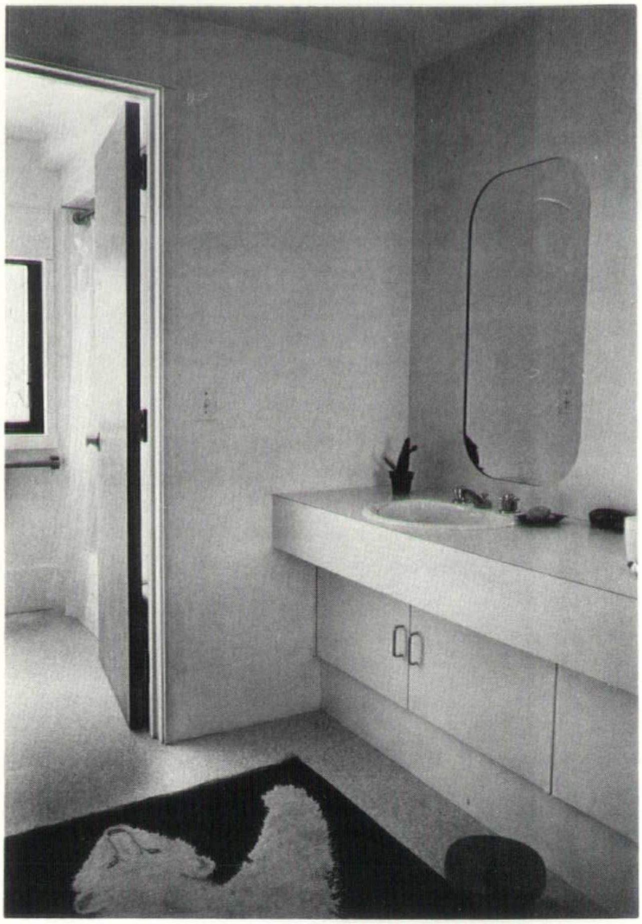
PRIVATE RESIDENCE



Stairs at end of Entry Hall lead to Master Bedroom.

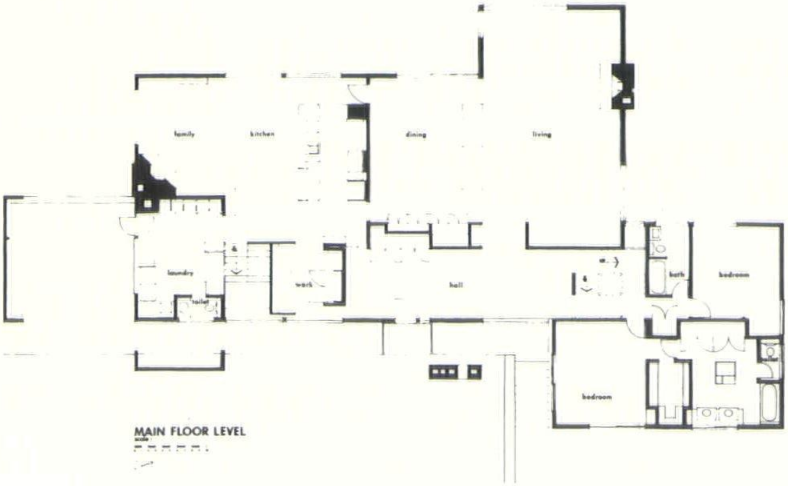
ALL the living areas in the five-bedroom residence designed by Brigham / Eldredge / Limon / Hussey of Boston are on the upper level, the main entrance to which is flanked by two significant design components — a large, lovely old oak tree on one side and two brick-sheathed chimney masses on the other — both of which reflect quite vividly the sensitive and mutually complementary solutions conceived by both the architect and the landscape architect, Carol R. Johnson, of Cambridge.

Outwardly, the house itself is a



Brookline, Mass.

Brigham/Eldredge/Limon/Hussey, Boston

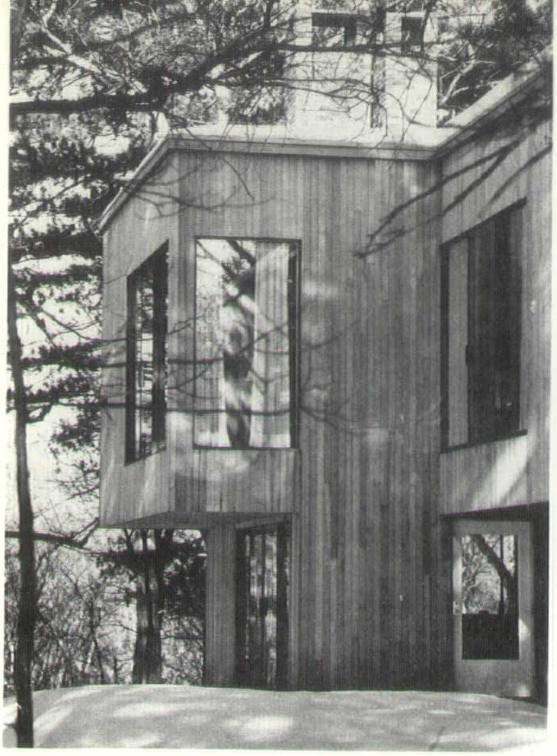


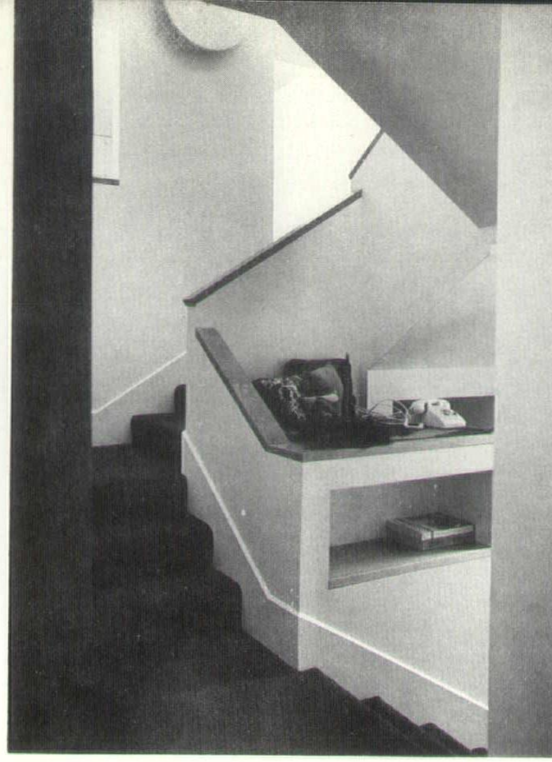
Day-to-day family activities were related directly to the kitchen (top left).

Tops of nearby trees are clearly visible through floor-to-ceiling glass in Living Room (center left).

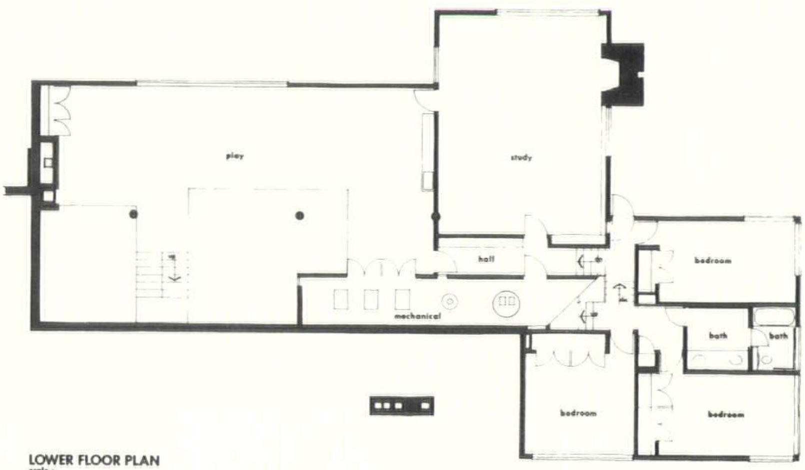
Bathroom (upper right) is adjacent to the Master Bedroom.

All the living areas in the five-bedroom residence are on the Upper Level (floor plan, left).





During formal entertaining, the clients' children have access to the Study (above left) directly below the Living Room. Childrens' bedrooms are on the Lower Level (floor plan right).



LOWER FLOOR PLAN

strong horizontal element designed to complement the tall elderly oaks and pines that surround it and virtually grow right up to the structure on all sides.

The plan and its specific relation to the site, especially to the large oak tree which demarcates the tree/slope line and an open field on top, evolved through a long series of schematics and conferences. The two chimney masses are actually flues for three gas-fired furnaces and a hot water heater.

It was decided not to incorporate a garage directly into the house in order to keep the apparent size and scale down. Accordingly, the two-car garage was placed far enough from the house so that no exterior enclosed space developed.

Weighing the importance of privacy and the separation of family activities against the need for bright interior spaces with room enough to accommodate large semi-formal entertaining (especially extended family gatherings), the architects related more of the day-to-day family activities directly to the kitchen, without isolating the more formal dining and living areas, which were placed to one side of the bedroom/hall/family kitchen axis.

During formal entertaining, the clients' children, three girls aged seven through ten, have access to the study area beneath the living room.

Principal in charge: Christopher Hussey. Structural Engineer: Weidemann, Brown, Inc. Landscape architect: Carol R. Johnson. Mechanical Engineer: Robert J. Barstow. Contractor: M. P. Horan & Co. Construction: Wood frame.

Materials: Cedar siding, V-joint, Western red; standard aluminum dark bronze double glazed sash; drywall.

Heating: Package warm air burners with humidifiers.

ONE FEDERAL STREET

Boston

The Architects Collaborative Cambridge, Mass.

THE National Shawmut Bank of Boston has announced plans for the construction of its new headquarters building, One Federal Street, 38 stories high and rising 520 feet above the Hub's downtown district.

This impressive structure, designed by The Architects Collaborative of Cambridge, will cover the entire city block bounded by Federal, Franklin, Devonshire, and Milk Streets in the heart of Boston's financial district. Excavation for the new building's foundation will begin after demolition of the old First National Bank building now occupying over half of the 1⅓-acre site. Razing of this 11-story structure is expected to take approximately six months.

The building has two elements: a base and a tower, which are merged into a continuous form. The base provides the large work space required by utilizing the site to its utmost. Deep undercuts penetrate the building from the street level to as high as the fourth floor allowing continued pedestrian traffic and preventing a solid wall effect which would block movement. Pedestrians move under and through, becoming involved and experiencing the building as a sculpture. The base has a height of only 110 feet and reflects the scale of the older buildings in the area.

A pre-cast architectural stone, pebbly in texture and of light tint covers the fireproofed steel framework of the new building which will enclose over 1.2 million square feet of space.

Extending over 400 feet along Federal and Devonshire Streets, the lower eight floors form a symmetrical base for the off-center 30-story tower rising above. The base floors, each about 50,000 square feet in area, are best suited to efficient bank operations.

The three below-grade levels, in addition to housing several of the Bank's operational and mechanical departments, will contain parking spaces for about 250 cars.

A penthouse-type floor just below the 520-foot mark, will top off the 30-story tower, which contains 28 floors of modern office space, each approximately 25,000 square feet in area. Present space requirements call for the Bank to utilize all the space in the eight floors of the base as well as the first three in the tower leaving 25 floors in the tower as rental area for prospective tenants and Bank customers. The 12th floor of the tower will house much of the mechanical machinery required to operate the building. It is possible that the penthouse floor (38th) may become a "private club" type restaurant.

When completed in late 1974, it is estimated that One Federal Street will provide working space for 7,000 people.

Structural engineer: LeMessurier Associates, Inc.

Mechanical engineer: Jaros, Baum and Bolles, Inc.

General contractor: Turner Construction Company, Inc.

Consulting Engineers Council of New England Names Five Top Engineering Projects

FIVE winning projects in the annual engineering excellence awards competition were announced last month at a special awards dinner held at the Museum of Science in Boston, Massachusetts.

The awards are presented each year by the Consulting Engineers Council of New England for en-

The five-level parking facility for 5400 cars serves the Boston Logan International Airport. Each level covers an area of approximately seven acres and is divided into bays of 120 feet by 100 feet in which the drainage, electrical distribution and lighting, and parking stall configuration are integrated with the structural concept.

gineering projects which demonstrate a "high degree of merit and ingenuity and contribute to technical, economic or social advancement."

Engineering firms and their clients receiving the awards were:

Praeger - Kavanagh - Waterbury,

Boston, Mass.; Colonel S. H. Bingham Inc., Boston, Mass. and the Mass. Bay Transportation Authority for engineering of new subway tunnel underneath the Charles River in Boston.

Haley & Aldrich, Inc., Cambridge, Mass., and New Hampshire Dept. of Public Works and Highways, for scientific advances and cost savings achieved in design of embankments for Interstate 95 interchange at Portsmouth, New Hampshire.

Nichols, Norton & Zaldastani, Inc., Boston, Mass. and Mass. Port Authority for innovations in construction of new 5400-car parking garage at Logan International Airport.

Edwards & Kelcey, Inc., Boston, Mass. and Maine Highway Commission for environmental impact study of proposed U. S. Route 1A highway improvement in Harrington, Maine.

Camp Dresser & McKee, Boston, Mass. and Bangkok Municipality of Thailand for unusual design and construction techniques used in construction of stormwater pumping station in Bangkok, Thailand.

Judges for the competition were: Monsignor Francis J. Lally, editor, The Pilot; Ciprian Pauroso, regional engineer, American Institute of Steel Construction; Jean Holtz Kay, feature writer, Boston Globe; James P. Archibald, structural engineer, Portland Cement Association; and Michael D. Giggey, engineering student, Tufts University.

The awards were presented by John J. Walsh of Barnes and Jarnis, Inc., Boston, Mass., chairman of the awards committee.

Parking Facility Logan International Airport

Engineers: Nichols, Norton and Zaldastani, Inc.

Capacity: 5400 cars on five levels.

Gross Floor Area: 1,600,000 square feet.

Completion: September 1971.

Total Cost: $11.5 Million.

The project consists of a five-level parking facility for 5400 cars serving the Boston Logan International Airport. Each level covers an area of approximately seven acres and is divided into bays of 120 feet by 100 feet in which the drainage, electrical distribution and lighting, and parking stall configuration are integrated with the structural concept.

Construction proceeded in two stages. Stage I included the foundation and first three levels. Stage II added the top two floors two years later. Owner requirements were to design a low cost structure and to maintain parking in operation throughout all phases of construction. These objectives were achieved through innovations in construction procedures and development of two new structural units.

The system of construction utilizes a combination of cast-in-place concrete frames in conjunction with precast long span floor elements.

During the second stage of construction, the use for the first time in the country of heated fiberglass reinforced plastic forms and a specially designed gantry cut the required working force in half.

The structure features new precast prestressed concrete beam and deck units. Both were invented for this project to satisfy the requirements of the program. Because of their unique characteristics these members have been very favorably received by the industry.

The final result is an impressively low cost of $2150 per car space, especially when consideration is given to the unusual amount of piling required by the nature of the subsoil, the cost occasioned by elaborate phasing requirements and the complexities involved in the erection of the additional top floors over an existing facility which remained in operation.

Environmental Impact Study

Edwards and Kelcey prepared one of the first Environmental Impact Statements undertaken by the Maine State Highway Commission. Performed under the new National Environmental Policy Act, it also is one of the first in the country. Because of the unique nature of this type of study, the consultants were requested to prepare guidelines for future similar studies. The Federal Government now requires an environmental impact study and statement for all Federally aided projects.

The Edwards and Kelcey project researched the beneficial and adverse effects of a proposed improvement to a portion of U.S. Route 1A in Harrington, Maine. Unique aspects such as wildlife habitat, primary productivity of saline estuaries, effects of changes in the water table, air pollution, and natural views are weighed in the study of four alternate locations.

The report explains the socio-economic factors relating to the quality of life for the inhabitants of Harrington and the safety and convenience of the travelers using Route 1A. The report further explores the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity. Irreversible and irretrievable commitments of resources are discussed.

This study presents the essential facts which will be used by more than thirty Federal, State, and local agencies and special interest groups for their review in weighing the desirability of the highway improvement.

Rama IV Pumping Station And Tunnel

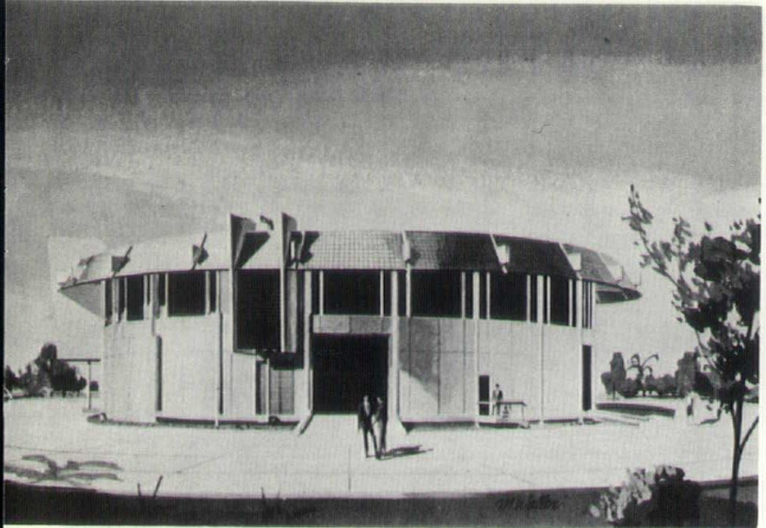
With the construction of a $3.5 million circular Stormwater Pumping Station and 11-ft-diameter tunnel, an important section of Bangkok, Thailand will hereafter enjoy freedom from flooding.

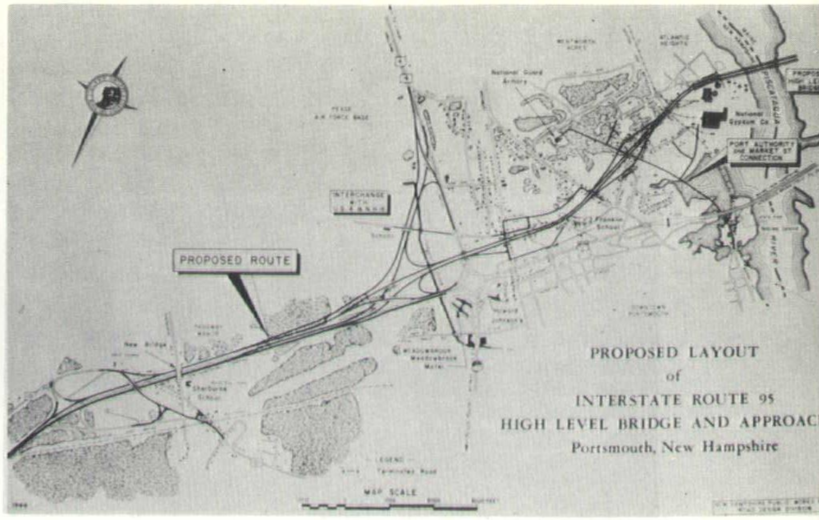
Bangkok, the capital city is located in the lower delta of the Chao Phya River at the northernmost part of the Gulf of Siam. It is situated on extremely flat terrain characterized by ground elevations of only 1.5 to 5.0 feet above mean sea level. This uniformly low elevation makes gravity drainage ineffective, and results in periodic flooding during high river flows or substantial rainfalls.

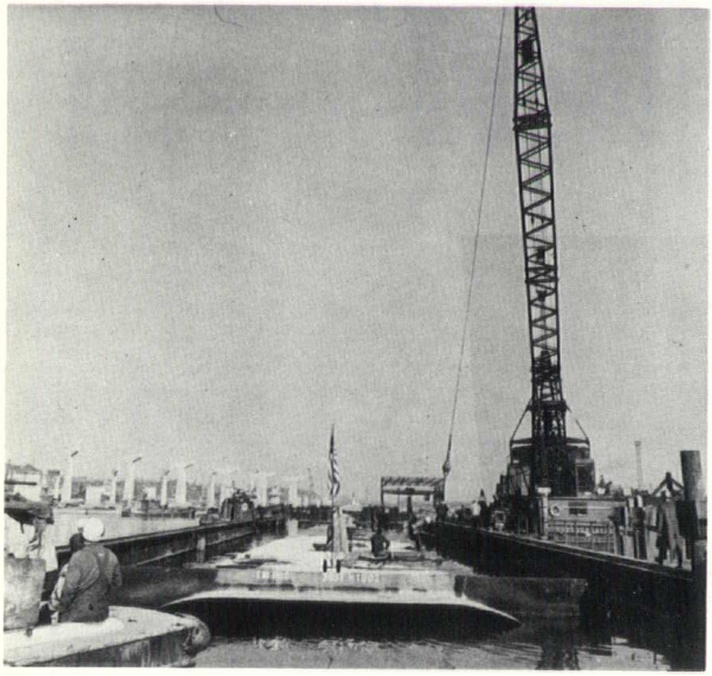
The new 390 MGD facility, engineered by Boston Environmental Consultants, Camp Dresser & McKee, is designed to alleviate wastewater and stormwater runoff problems as the first stage of an extensive drainage and wastewater program.

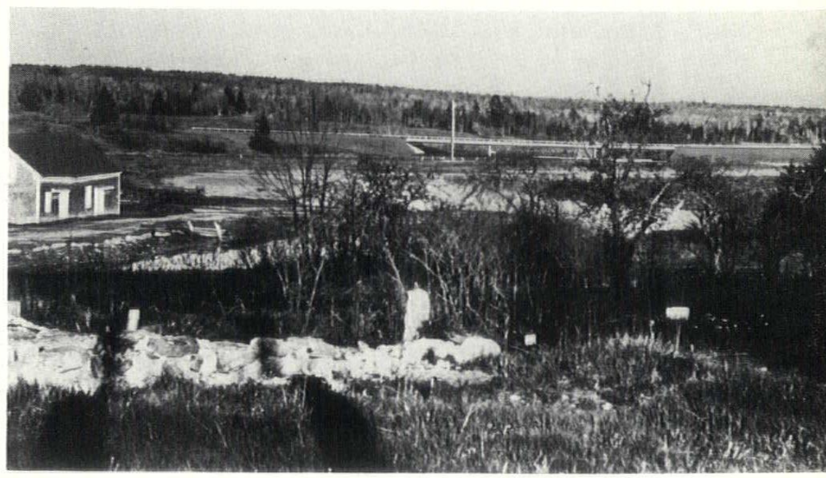
Flows will be carried to the 100-ft-diameter pumping station by means of the first tunnel in Bangkok, an 11-ft-diameter conduit more than one mile in length. Four 1,000 horsepower diesel engines will drive pumps with capacities of 90,000 GPM each. The pumps discharge through an outfall tunnel 800 feet into the Chao Phya River.

Unusual design criteria and construction techniques were required for the pumping station and tunnel because of the extremely soft clay soil characteristic of Bangkok. The soil, which is said to have the con-









(upper left) Perspective of Rama IV Stormwater Pumping Station in Bangkok, Thailand.
(upper right) Proposed layout of Interstate Route 95 High Level Bridges and Approaches.
(lower left) Completed sections of the Charles River Subway Tunnel were sunk into an excavated trench.
(lower right) Artist's conception of the proposed river crossing of U. S. Route 1A in Harrington, Maine.

sistency of "toothpaste," precludes conventional methods of tunnel and deep-foundation construction.

Charles River Subway Tunnel

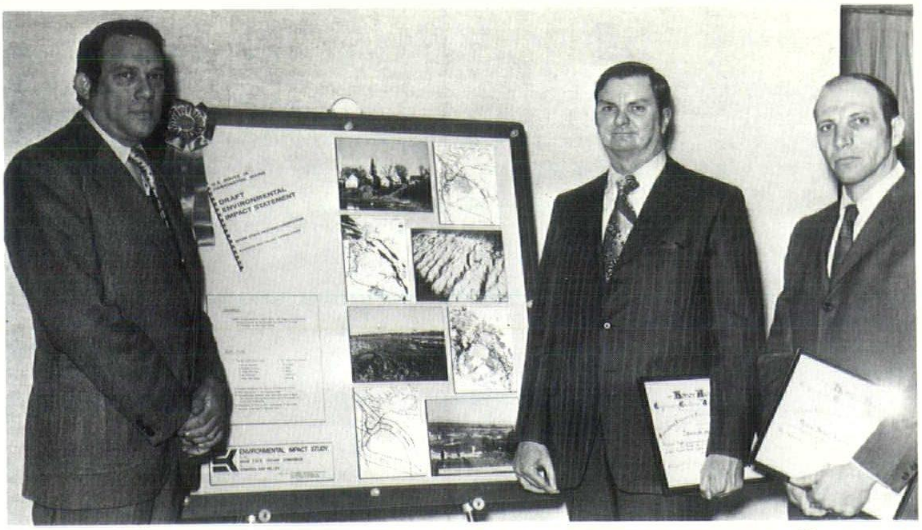
The Massachusetts Bay Transportation Authority's subway tunnel underneath the Charles River, connecting the existing Haymarket Square Station in downtown Boston to a new Community College Station in Charlestown and continuing to Malden, will eventually replace the elevated line from North Station, across the Charles River Bridge though Charlestown to Everett.

The tunnel was built by the trench method of construction. Sections of tunnel were prefabricated in Port Deposit, Maryland and towed to the contractor's fitting-out pier in Boston, where the interior concrete work was installed. At the same time, a trench was dredged in the river bottom. The tunnel sections were then towed to the site and by addition of concrete into specially prepared pockets were sunk into the trench where they were connected to previously built transition structures on the banks of the river. Connection of the sections were made with mechanical locking devices by divers. Alignment was controlled with surveying instruments by use of temporary towers on top of the sections projecting above the water surface. Backfill material was placed around the sides and over the top of the tunnel restoring the river bottom to its original condition. Watertight bulkheads between the adjacent sections were burned out and the river tunnel was complete and ready for trackwork.

The subway tunnel was built for the Massachusetts Bay Transportation Authority. Engineering plans and specifications were prepared by the firms of Colonel S. H. Bingham Assoc., Inc. and Praeger Kavanagh Waterbury. The contractor was Perini Corporation, Marine Division. Supervision of construction was by the Authority's staff under the direction of Robert G. Davidson, Director of Planning and Construction.

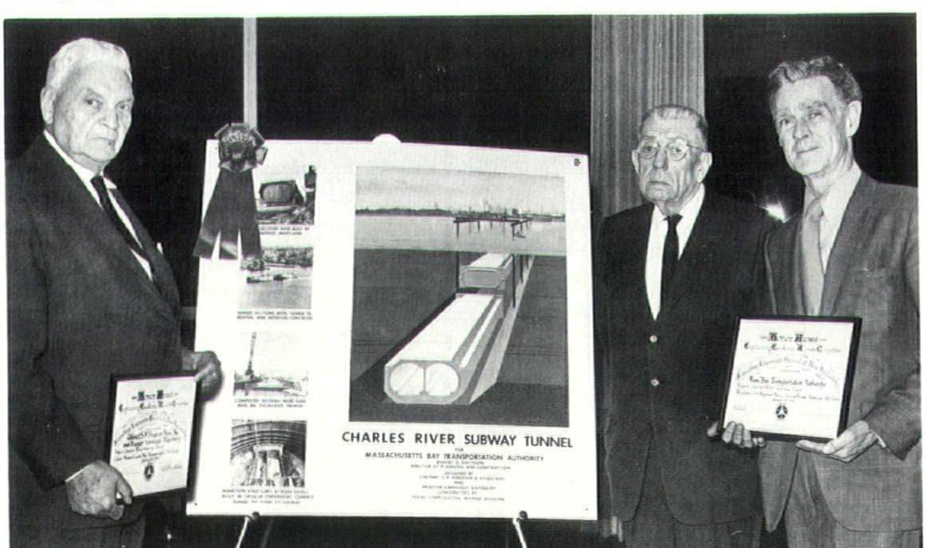
Design of Embankments For Route 95 Interchange

The Interstate 95 Interchange at Portsmouth, N.H. involved construction of some 7 miles of roadways over a swampy site which presented unusually difficult soil conditions.



Award winners for Environmental Study. Left to right, Gordon Kirjassoff, partner, Edwards and Kelcey, Inc.; Charles F. Flavin, project director, Edwards and Kelcey, Inc.; Richard Coleman, engineer-location surveys, Maine Highway Commission.

Award winners for Logan Parking Garage. Dr. Othar Zaldastani, president, Nichols, Norton & Zaldastani, left, with Thomas Kuhn, chief engineer, Massachusetts Port Authority, right.



Award winners for Charles River Tunnel. Left to right: Emil Praeger, chairman of the board, Praeger-Kavanagh-Waterbury, Colonel S.H. Bingham, retired, president, Colonel S. H. Bingham Association, Inc.; John J. McCall, associate engineer, Massachusetts Bay Transportation Authority.

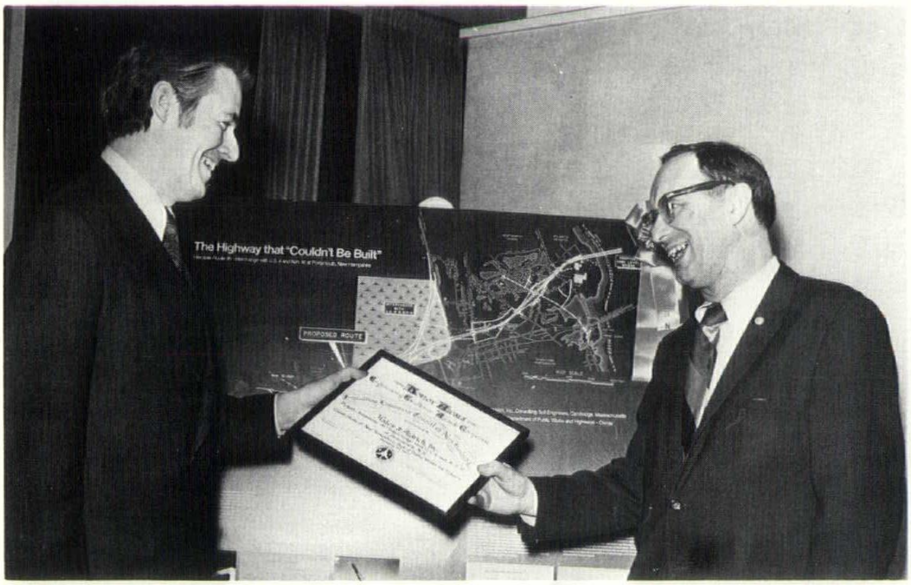
Up to 20 feet of weak, compressible "quick clay" lay beneath the swamp surface. A quick clay is one which loses much of its strength when disturbed. In this case the clay literally became a thick fluid when its sensitive structure was disturbed. The most economical design called for earth embankments up to 40 feet high — twice as high as the clay would support without sudden landslide failures. The construction schedule, to meet the completion of the adjacent high level bridge over the Piscataqua River, allowed only 3 years to construct stable roadways. But the soft clay would require at least 6 years to settle as much as 7 feet under the weight of the roadway embankments. Thus the natural soil conditions beneath the swamp clearly indicated that the required earth embankments could not be built.

Obviously, the soil engineers had to increase the strength of the clay significantly and also reduce the time required for settlement of the embankment fill. The key to both objectives was to provide shorter drainage paths for the water which was squeezed out of the clay as it compressed beneath the weight of the embankments. This was accomplished by sand drains — vertical columns of sand installed in the clay on a regular pattern before roadway fill was placed. Because of the very sensitive nature of the clay, the engineers selected a Dutch method of installation which cut holes for the sand drains with no disturbance of the surrounding clay. This first American application of the Dutch method produced better results than previous methods and, by its revolutionary simplicity, reduced sand drain installation costs by half.

In their solution of the problem, the soil engineers made the first practical application of several recent advances in theory and laboratory testing. These advances allowed more precise design analyses which recognized that the strength of the clay varied by more than 50%, depending upon the direction along which failure or slippage occurred. But could such innovation be justified in a $9 million project? Could soil properties derived from tests on small samples safely predict the behavior of a clay mass 20 feet thick?

To answer these questions, a full-scale experimental embankment was constructed at the site to test pre-

Award winners for Bangkok Pumping Station. Left to right: Frank Smith, vice president, Camp, Dresser & McKee, Inc. and Joseph C. Knox, vice president, Camp Dresser & McKee, Inc.



Award winners for Interstate 95 Interchange. William H. McTigue, vice president, Haley & Aldrich, Inc., left, receives award certificate from John Walsh, chairman of the CECNE Awards Committee, right.

dictions of maximum safe height of fill and to observe in nature, for the first time, what actually happens when an embankment fails. Extensive instrumentation was installed in and beneath the fill to observe soil properties before and after failure. These instruments also provided signs of incipient failure for later use as warning signals during actual construction. The test procedure validated a sophisticated design approach which saved many times its cost.

Total cost of the interchange construction is approximately $9 million. Cost savings of well over $1 million resulted from successful construction of earth embankments rather than pile supported viaducts. Construction proceeded on or ahead of schedule without one day of delay due to soil problems. Rates of fill placement were adjusted by instrument observations of actual effects produced in the underlying clay, thus assuring safety. No embankment failures occurred during construction, which was the critical period. Of perhaps greater importance than fulfillment of the client's requirements were the scientific advances achieved through observation of the first full-scale test of the theory of how failure occurs in embankments over soft clay.

University of New Hampshire
Durham, New Hampshire

SECOND ANNUAL NEW ENGLAND ASPHALT PAVING CONFERENCE

Thursday, March 23, 1972

Under the Direction of
Department of Civil Engineering
and
The Asphalt Institute
In Cooperation with

Center for Industrial and Institutional Development, University of New Hampshire
New Hampshire Department of Public Works and Highways
New Hampshire Section — American Society of Civil Engineers
Maine State Highway Commission
Boston Society of Landscape Architects
New England Construction Magazine
New England Architect Magazine
Federal Highway Administration

CONFERENCE COMMITTEE

Louis H. Klotz, *Chairman*
R. Bruce Noel, *Co-Chairman*
Richard Anderson
James Bolquerin
Ronald Ford
Robert Joubert
Michael Lastra
Walter Lovett, Jr.
Philip McIntyre

MORNING PROGRAM
(Strafford Room)

8:45 a.m. Registration

9:30 a.m. Introduction
Louis H. Klotz, *Chairman*, Department of Civil Engineering, UNH
Richard S. Davis, *Dean*, College of Technology, UNH
Thomas N. Bonner, *President*, UNH
R. Bruce Noel, *Regional Engineer*, Eastern Division, The Asphalt Institute

9:45 a.m. Refinining of Asphalt
John Watt, *Technologist*, Atlantic Richfield Co. (ARCO) Philadephia, Pa.

10:30 a.m. Coffee

(continued on next page)

10:45 a.m. **Movie — "Frost Action of Soil"**
Prepared by Cold Regions Research and Engineering Laboratory, Hanover, N.H.

Rapid Frost Heave Test and Procedures
J. Harold Zoller, *Professor,* Department of Civil Engineering, University of New Hampshire

11:30 a.m. **Full Depth Asphalt Pavements**
A. Blake Cornthwaite, Chief Engineer
The Asphalt Institute
College Park, Md.

12:15 p.m. **Lunch (Multi-purpose Room)**

AFTERNOON PROGRAM

1:15 p.m. **Movie — "Effects of Studded Tires on Asphalt Pavements" (Multi-purpose Room)**
Prepared by Ontario Road Department Ontario, Canada

Introduction by Michael Lastra, *Materials Engineer* — Region One, Federal Highway Administration
Delmar, New York

WORKSHOP SESSIONS:

1:45 p.m. **First Session**

Ia. Maintenance and Repair of Pavements (Belknap-Caroroll Rooms)
R. Bruce Noel, *Regional Engineer*
Eastern Division
The Asphalt Institute
East Orange, N. J.

Ib. Inspection and In-Place Testing of Asphalt Mixes (Hillsborough-Sullivan Rooms)
Philip McIntyre
New Hampshire Laboratory
New Hampshire Department of Public Works and Highways
Concord, N.H.

Ic. Surface Treatments (Senate-Merrimack Rooms)
Charles L. Perkins
Senior Technical Specialist
Imperial Oil Limited
Toronto, Canada

2:45 p.m. **Coffee**

3:00 p.m. **Second Session**

IIa. Maintenance and Repair of Pavements (Belknap-Carroll Rooms)

IIb. Inspection and In-Place Testing of Asphalt Mixes (Hillsborough-Sullivan Rooms)

IIc. Miscellaneous Uses of Asphalt
Louis Kaste
Chevron Asphalt Company
Perth Amboy, N. J.

4:00 p.m. **Adjournment**

REGISTRATION FORM

Second Annual New England Asphalt Paving Conference, University of New Hampshire, Durham, N.H. 03824

Thursday, March 23, 1972

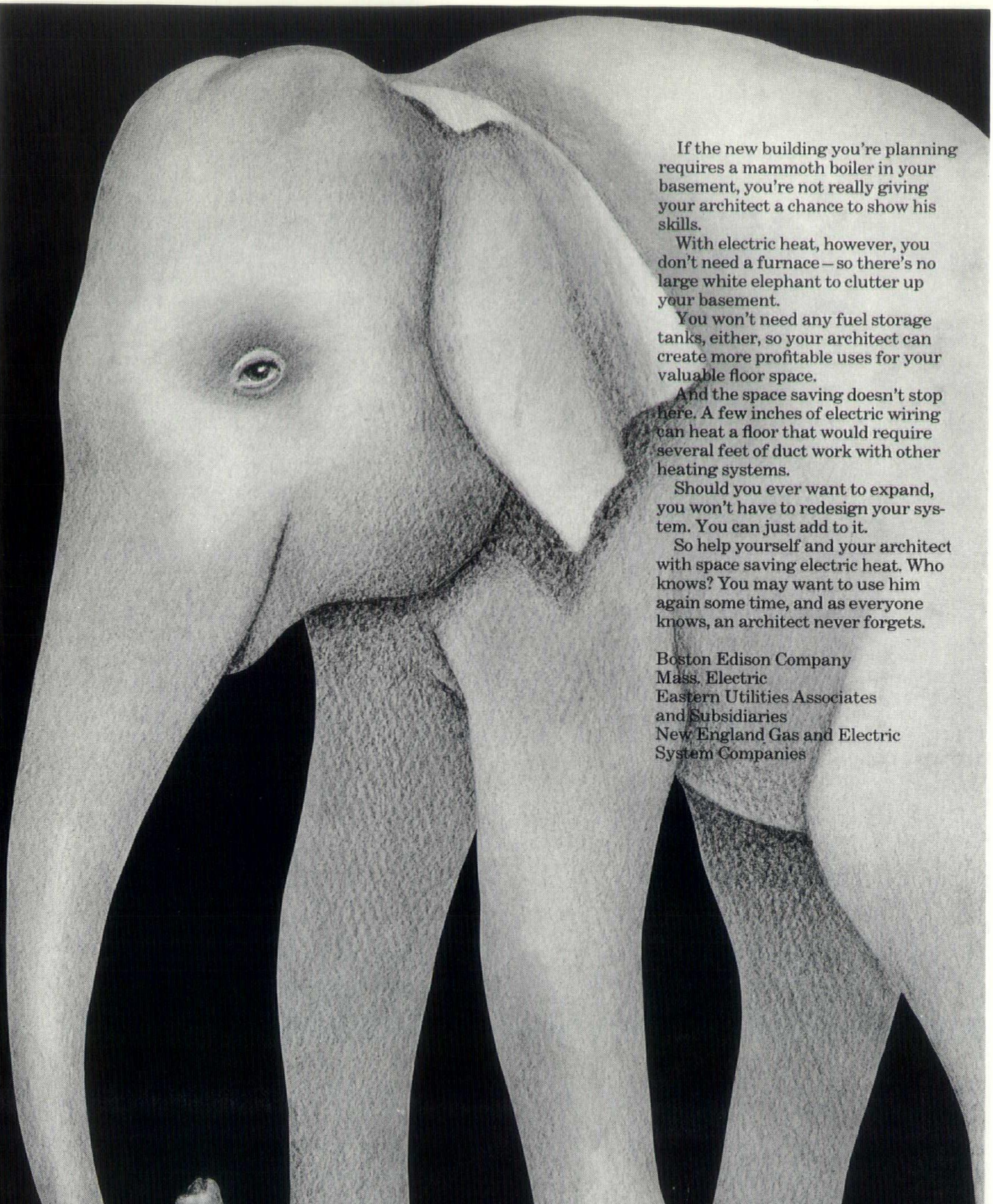
Name .... Title or Position ....

Organization .... Address ....

Registration Information: The pre-registration fee is $8.00 and includes the luncheon and coffees. Registration the day of the conference is $10.00 and luncheon cannot be guaranteed. The registration fee for students is $3.00 and includes the luncheon and coffees.

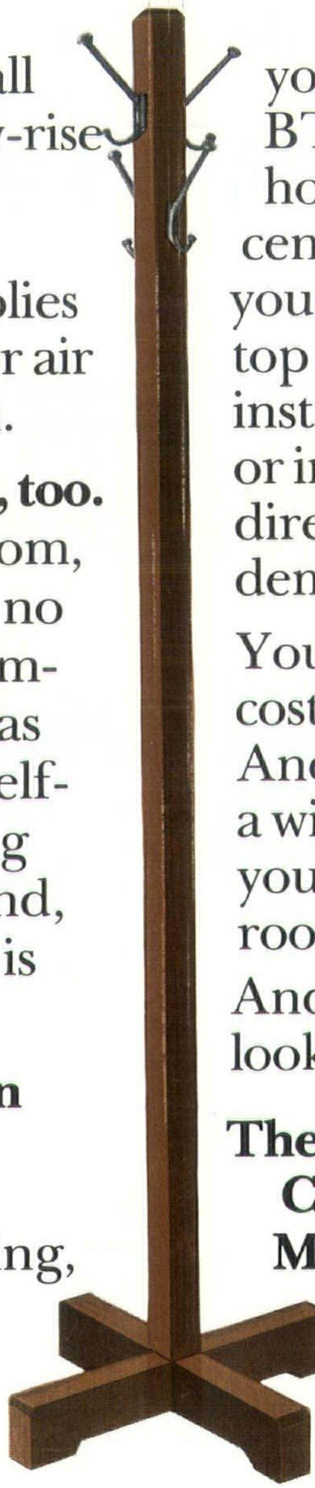
Please make checks payable to University of New Hampshire
Mail registration to: C I I D, Asphalt Conference, Kingsbury Hall,
University of New Hampshire, Durham, N. H. 03824 Tel. (603) 862-1354
Remove and return this form by March 20, 1972.

Index To Advertisers



Would you ask an architect to build around one?

A hatrack needs more floorspace than a gas heating/cooling system.



Now you can free up all the floorspace in a low-rise building. With a completely self-contained rooftop unit that supplies Natural Gas heating or air conditioning. Or both.

You save on masonry, too. You need no boiler room, no fuel storage room, no enclosures and no chimney. These Natural Gas units are completely self-contained, self-venting and weatherproof. And, of course, fuel supply is a pipe.

The less you spend on distribution, the less you spend on fuel. In a spread-out building, you can lose a lot of BTU's just getting the hot or cold air from a central source to where you need it. So these rooftop units are unitized for installation in multiple — or individually located directly over each demand area.

You can save ductwork costs and ductwork losses. And, if you want to add on a wing at some later time, you just add another rooftop unit on the wing. And they're a lot better-looking than most hatracks.

The Natural Gas Companies of Massachusetts