North Carolina local public school boards have the statutory responsibility for operating public schools and for entering into contracts for design and construction of their schools. This document presents examples of plans for school buildings planned or constructed during the last few years, as of 1981, representing a wide range of educational philosophies and design solutions. Elementary, Middle, and High School buildings are included. Each offering provides the floor plan, photographs or line drawings of the school, and contractor information. Concluding the document are lists of schools that have: thermal storage; active solar systems; and hydronic heat pump systems. (GR)
SCHOOLS OF INTEREST

DIVISION OF SCHOOL PLANNING
NORTH CAROLINA DEPARTMENT OF PUBLIC INSTRUCTION
In the State of North Carolina, the statutory responsibility for operating the local public schools is delegated to county and city boards of education. A board of education is a policymaking body and has the legal responsibility and authority for entering into contracts for the design and construction of local public school system buildings.

Charged with this responsibility, a conscientious school board, as well as a successful superintendent, keeps abreast of recent developments and trends in public education, utilizes every source of professional information, and plans continuously for the improvement of the educational program. Along with the highest quality of educational decision-making, the alert school board secures the best design talent available.

Effective and intelligent planning and design does not occur accidentally but through a thoughtfully-prepared process that is sensitive to local conditions. This publication presents several projects which reflect that process. The process usually includes preparation of educational specifications, analysis of educational specifications, development of a design program, design program schematic plans, plan development, and evaluation and review of plans. This process provides a framework for systematic, purposeful planning and permits the flexibility necessary for adaptation to local need or special conditions.

We commend this publication to your attention. Along with the four previous issues of SCHOOLS OF INTEREST beginning June, 1971, by the Division of School Planning, it can serve as the basis for an effective and imaginative school planning program to strengthen and improve building programs. The Staff of the Department of Public Instruction is available for consultation and assistance in any aspect of the planning process.

June, 1981

A. Craig Phillips, State Superintendent
N.C. Department of Public Instruction
We are pleased to present several examples of floor plans for buildings constructed during the last three years. Selecting just a few schools for this publication from among the many notable designs constructed in North Carolina is difficult. There are others which are worthy of presentation each time we prepare an issue of SCHOOLS OF INTEREST. Almost all administrative districts have a new school or an addition to an older school which is of particular educational or architectural interest. Quality professional planning and design services are readily available to all school boards.

The schools presented here represent a wide range of educational philosophies and design solutions. These preferences and objectives blend with the capabilities of local design services and educational objectives to produce more variety than is ordinarily believed to be the case. Each community may express its own individuality and educational preference. The public school planning process is remarkably responsive in this respect.

The process of public school programming, planning, and design has matured during the period of the 1973 Public School Facilities Fund. Plan relationships can be a matter of choice as well as tradition. Special program facilities are included or anticipated wherever local educational preferences dictate. Room sizes, arrangements, and relationships, can and do vary as much as the perceptions of educators, architects, and school boards. The latest educational or architectural trends are usually reflected in a new school building somewhere. Also, many school facility design efforts have provided experience and information which are useful when applied to other building types. This variety of building design solutions is illustrative of the democratic complexity and evolutionary responsiveness of public education.

Lacy M. Presnell, Jr., Director
Division of School Planning
N.C. Department of Public Instruction

June, 1981
NEW SCHOOLS AND ADDITIONS
JULY 1977 TO JUNE 1980

CANDLER ELEMENTARY SCHOOL ADDITION

<table>
<thead>
<tr>
<th>ADMINISTRATIVE UNIT</th>
<th>SCHOOL</th>
<th>CAPACITY</th>
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<td>New Elementary Schools, 1977-80</td>
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<td>Carteret County</td>
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<th>New Junior High Schools, 1977-80</th>
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<tr>
<td>Davie County</td>
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<td>Person County</td>
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<th>New High Schools, 1977-80</th>
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<tr>
<td>Guilford County</td>
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<tr>
<td>Warren County</td>
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<td>Wilkes County</td>
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A. CRAIG PHILLIPS, State Superintendent
North Carolina Department of Public Instruction

JAMES T. BURCH, Assistant Superintendent
Administrative Services Area

LACY M. PRESNELL, Jr., Director
Division of School Planning
PREVIOUS SCHOOLS OF INTEREST

1 BOONVILLE ELEMENTARY
2 CANDLER ELEMENTARY
3 GARDNERS ELEMENTARY
4 HARRIS ELEMENTARY
5 IRA B. JONES ELEMENTARY
6 LANDIS ELEMENTARY
7 MARY C. WILLIAMS ELEMENTARY
8 MAYSVILLE ELEMENTARY
9 PELHAM ELEMENTARY
10 PEMBROKE ELEMENTARY
11 TROY ELEMENTARY
12 WILLIAM ESTES ELEMENTARY
13 APEX MIDDLE
14 CROSSNORE-NEWLAND MIDDLE
15 FERNDALE JUNIOR HIGH
16 MACON MIDDLE
17 WEST CABARRUS MIDDLE
18 ATHENS DRIVE HIGH
19 CHAPEL HILL HIGH
20 COLUMBIA HIGH
21 TARBORO HIGH
22 CONOVER SCHOOL
23 SOUTH CENTRAL REGIONAL EDUCATION CENTER

HIGH POINT
MACON COUNTY
CABARRUS COUNTY
CHAPEL HILL
TYRRELL COUNTY
TARBORO
NEWTON-CONOVER
MOORE COUNTY

PREVIOUS SCHOOLS OF INTEREST

12
A school formerly having several substandard buildings dating to 1917 and a site divided by through drives has been transformed into a modern facility. Skillful landscape design has made this a successful project. The area between retained buildings and new construction is now the focus of the campus. In addition to functioning as a multi-purpose outdoor area, it also draws attention away from the age difference of the buildings. Specialized spaces required by a modern program were provided in the new construction.

Administrative Unit          Yadkin County
Superintendent              Paul E. Welborn
Grade Organization          K-8
Approximate Capacity        472
Square Footage              15,000 sq. ft.
Opening Date                September, 1977
Architects                  Bonson Hobson & J. H. Benton
Structural Engineers        Browning-Smith Associates
Mechanical Engineers        McKnight-Smith Engineers, Inc.
Electrical Engineers         Stephen T. Hocsak & Associates
Existing buildings are characteristic of 1950's double-loaded corridor schools. The addition extends school planning tradition by using spacious central corridor commons areas around which are grouped the customary self-contained classrooms. The photograph shows one of the commons areas. Central clerestory daylight illumination is shared by adjacent classrooms by means of partial window walls which face corridors. The new library is located conveniently to new and existing classrooms. Site elevation changes are accommodated by means of exterior and interior ramps.
An old school site with only a gymnasium suitable for retention has been transformed into an attractive modern facility. One of the important features of this project is the carefully preserved trees. Large deciduous trees not only provide a completed landscape design, but also contribute to the energy efficiency of the building. Probably the most important feature of this plan is that there are no interior classrooms. Even the centrally located media center has a view to the outside. Thoughtful designers and school administrators do not confine students in windowless classrooms for the entire school day.

Administrative Unit: Wilson County
Superintendent: W. O. Fields, Jr.
Grade Organization: K-5
Approximate Capacity: 400
Square Footage: 32,000 sq. ft.
Opening Date: August, 1979
Architects: Skinner-Lamm
Structural Engineers: W. H. Gardner, Jr. & Associates
Mechanical and Electrical Engineers: Fenner & Proffitt, Inc.
Administrative Unit: Rutherford County
Superintendent: Douglas L. Pearson
Grade Organization: K-8
Approximate Capacity: 750
Square Footage: 75,000 sq. ft.
Opening Date: April, 1981
Architects: Padgett & Freeman
Structural Engineers: Sutton & Kennerly
Mechanical Engineers: Mechanical Engineers, Inc.
Electrical Engineers: Bullard Associates

Classroom clusters attached to a central core of supporting activities could be the pattern for planning all types of schools, one that adapts to many site conditions. The cluster and core plan allows for growth and individualization of each educational program area. Floor level and ceiling height changes can be accommodated where necessary or as architecturally appropriate. The kindergarten through eighth grade organization in this school made possible the inclusion of a regular gymnasium and a little theater.
Kindergartens always offer an opportunity to create an extraordinary environment for children. The architects met the challenge and excelled in this project. This building demonstrates the idea of children needing a school space that has visual variety, complimentary color decoration, a sense of place, and appropriate architectural scale. The laminated wood beams and wood decking contribute a great deal to the success of the project. The bilevel kiosks are strong space dividers. Kindergarten facilities need to be happy places. Ira B. Jones is a model of such a place.

Administrative Unit .................................. Asheville City
Superintendent ...................................... Donald D. Jones
Grade Organization .................................. K-5
Approximate Capacity of Addition .............. 120
Square Footage ...................................... 7,400 sq. ft.
Opening Date ........................................ January, 1976
Architects ............................................. Moore Associates
Structural Engineers ................................. Sutton & Kennerly
Mechanical and Electrical Engineers ......... Reece, Noland & McElrath, Inc.
Landis Elementary School previously consisted of four buildings of various construction dates. Planning on this site was difficult. The existing buildings were close to a highway intersection at a congested part of the property, and only one of those buildings was to be removed. The success of the project is due in large part to the modification of a ten-classroom building located north of the multi-purpose area. The standard double-loaded corridor classroom plan was widened to provide large semi-open primary spaces. The result is that three marginal facilities have been salvaged to become part of a modern facility.
Sometimes repetition of a single planning element can result in design and construction economies. Although a campus plan does not always relate well to a complex educational program, it can be used to advantage where a more structured program is expected to prevail. This school has an advantage in that each four-teacher pod is built with flexible partitioning to facilitate temporary changes. Covered walks connect all pods to the central library and activities building. An unusual feature throughout is the use of wood siding to clad the exterior of the concrete block buildings. Hip-roofs shelter all buildings.
Limited school construction budgets are always an opportunity for unconventional planning, regardless of the educational program to be housed. In this case, the designers responded by creating an architecturally simple building without resorting to the usual double-loaded corridor plan. Original site planning intended to take advantage of a nicely wooded site by using the trees for shading the building and retaining the soil. This part of the project was postponed by premature use of the bulldozer.
Here is another example of laminated wood beams and wood roof deck construction used to provide an educational setting with more than the customary architectural affects. The high sloping roofs provide space for a loft area in each of the four pods. The photograph shows the library and a special activity loft area. Additional spatial variety is expressed by means of relating floor level changes to site contours. The visual complexity of the pods and the ramped level changes are not what one expects to see in an elementary school.
Designing a large school that avoids the look and impersonality of an institution is difficult. This large school succeeds in establishing architectural scale suitable for small children by repeating a pattern of two-classroom and four-classroom clusters around a spacious core of open areas and gardens. The diagonal juxtaposition of similar areas is particularly effective. Although there is a relationship between educational programming and architectural design programming, it is not a binding relationship. School buildings are seldom used as originally intended. Education objectives change. Personnel change. Children come and go. The school building remains. It needs to have some personality of its own in order to continue to be an interesting place.

Administrative Unit .................. Robeson County
Superintendent ....................... Purnell Swett
Grade Organization ................... K-6
Approximate Capacity ................. 1,150
Square Footage ....................... 84,000 sq. ft.
Opening Date ........................ May, 1980
Architects ............................. Hayes, Howell & Associates
Structural Engineers .................. W. H. Gardner, Jr. & Associates
Mechanical and Electrical Engineers McMichael, McCracken
Landscape Architect .................. Eden Planning Group
The initial educational and architectural program called for an open plan school with provisions for partitioning if self-contained classrooms are needed. Each classroom has an exterior door as a secondary exit. The overall plan is compact without resorting to the negative aspects of confining children to interior classrooms. Spatial variety results from rooms of many shapes, even though the basic planning groups are rectangles formed by standard column and beam construction. Here is more evidence of imaginative planning that begins with a standard educational program and a reasonable construction budget.
All classrooms are clustered around shared work and toilet areas. These clusters provide some of the territorial identity necessary for children in large elementary schools. The clusters are arranged in a variety of patterns for spatial richness. Clusters are used as a way of planning for self-contained classrooms without the repetitiveness of a typical double-loaded corridor school. A continuous band of clerestory windows is the daylight source for major interior rooms such as the cafeteria, library, and gymnasium. The exterior shape is distinctive because of the rounded corners and because of earth bermed to windowsill height. See the energy section of this book for additional information.
The old Apex School is characteristic of many schools in North Carolina. It consists of well-maintained buildings from several eras. Its use has changed from a high school to an elementary school to a middle school. The site is very small. Cost studies suggested that old and educationally obsolete facilities could be replaced on a regular basis by modern buildings. Intensive site planning was required so that buildings and traffic patterns could be built in an orderly way without disrupting the many good educational programs already in operation. Also, the community will not lose a landmark. Good programs can continue and building design quality can be improved by means of long-range planning.
The chief determinant of a school plan is frequently the extreme change of elevation on a site. In this case, a cross slope of one hundred fifty feet determined the three-story scheme used for the Crossnore-Newland Middle School. A standard educational program is housed in a compact building which will be the hub for three adjacent buildings. The gymnasium is part of first phase work.
This school is an example of major renovation of an old facility. Several cities have similar 1920's style school buildings. Many of them have reinforced concrete frames and masonry walls, which would be expensive to duplicate at today's prices. Renovation and remodeling to accommodate changing educational programs frequently can be economically justified. Converting the Ferndale High School structure into a junior high is recycling at its best when one considers the high cost of building a new school of similar quality. Site renovations include reorientation of traffic patterns and main entrances to accommodate the gymnasium and cafeteria addition.
The distinguishing feature of this school is a large three level central core containing the library and other support facilities. The photograph shows the spaciousness of this area. Ceilings and roofs slope downward from the core to classroom houses or pods. Each pod contains a flexible open floor area to be divided as teachers require. Each grade connects to the central core through its own multi-use commons. Second phase construction will include the cafeteria, gymnasium, and music cluster, as shown on the plan.

Administrative Unit .................................. Macon County
Superintendent ........................................ Lonnie H. Crawford
Grade Organization ..................................... 7-8
Approximate Capacity ................................ 500
Square Footage ........................................... 50,000 sq. ft.
Opening Date .......................................... August, 1975
Architects .............................................. Kyle C. Boone
Structural Engineers ................................. Bowen & Feinberg
Mechanical and Electrical Engineers ............ Reece, Noland & McElrath, Inc.
When does a junior high become a middle school? Frequently the difference is only the name. For purposes of facility design, this project could be a model for both types of schools. A hilltop location is dramatized by massive hip-roofs which define two large, square classroom clusters. The hip-roofs shelter and articulate general studies classrooms in one cluster and exploratory and support facilities in the other cluster. The entrance arcades are particularly inviting. Exterior proportions and scale are distinguished by the absence of the frequently-used heavy fascia treatment which has become commonplace in school building design.
Year round community use of this school building, outdoor facilities, and adjacent Lake Johnson public areas were major planning considerations. The Raleigh City Parks and Recreation Department cooperated to help produce an outstanding example of a community school. There are activities here day and night throughout the year open to the public, including the library. When the school was planned it had the largest per pupil square footage ratio in North Carolina. The extra spaciousness has reinforced its value due to subsequent pupil attendance zone realignments. Visitors interested in construction details can see standard building materials and finishes used for best appearance and easy maintenance to produce a quality school building.

Administrative Unit ....................... Wake County
Superintendent .............................. John Murphy
Grade Organization ......................... 10-12
Approximate Capacity ...................... 1,620
Square Footage ............................. 240,140 sq. ft.
Opening Date .............................. Fall, 1978
Architects ................................. F. Carter Williams
Structural Engineers ....................... Lasater-Hopkins
Mechanical and Electrical Engineers ....... Buffaloe, Morgan & Associates
Landscape Architect ....................... Lewis Clarke Associates
Administrative Unit ................. Chapel Hill/Carrboro City
Superintendent ........................ Pamela Mayer
Grade Organization .................. 10-12 and Community Programs
Approximate Capacity .................... 770-1,500
Square Footage ........................... 37,400 sq. ft.
Opening Date ............................ July, 1977
Architects ............................... Ferebee, Walters and Associates
Structural Engineers .................. Ferebee, Walters and Associates
Mechanical and Electrical Engineers ............................... Ferebee, Walters and Associates
Special Acoustical Consultants .......... Bolt, Baranek and Newman
At a time when community use of schools is growing, a high school arts center becomes especially important. If the arts are to be adequately provided for, facilities must be planned with a minimum of budget compromise. The individual demands of instrumental music, vocal music, graphic arts, craft arts, dance, and drama can be mutually enriched if they are housed in facilities which encourage cooperation among varying talents. The planners of this complex recognized the possibilities and built accordingly. The rest is up to the teachers, students, and community members who use the facility on a regular basis.
Persistence was the key to the successful design and completion of Columbia High School Auditorium. Sometimes the combination of a low construction budget and high expectations requires a reduced seating capacity and a different seating configuration. Continental seating creates intimacy between the audience and performers in this auditorium. Low side walls provide appropriate architectural scale. Interior finishes are smooth surfaces throughout except for side walls. Special interest is achieved by allowing interior form to follow the shape of a roofing system consisting of rigid frames and steel joists. This project proves that quality design is possible with a very limited budget.
The photograph indicates that large spaces such as gymnasiums are enhanced by direct expression of a simple structural concept. In this large room, plate girders and steel beams result in an uncluttered interior. The major design problem of gymnasium sound attenuation is solved by means of an exposed sound absorbent roof deck and slotted concrete block side walls. High intensity discharge lighting contributes to the simple design. Seamless synthetic flooring makes maintenance easier. Well-organized dressing rooms and auxiliary facilities augment a carefully designed athletic arena.
This is an ungraded special education center for Catawba County. The architect's research revealed the need for handrails in the corridor, lever-action door handles, radius corners at masonry walls, and recessed cabinets and cabinet hardware in order to minimize injury. Classroom entrances are pocketed so that retarded children will be spatially cued. Classrooms are divided into learning activity areas. Teacher work rooms have one-way glass for parent and teacher observation of pupils. Color, graphics are used throughout as part of the special identification system.
The South Central Regional Education Center is an unusually sophisticated approach to a design which required adapted use of an existing school facility. The former gymnasium, with its high volume and clear spans, is used as an envelope in which walls and floors are arranged without the structural restraint of supporting the roof. All elements of the building are honestly expressed. More school renovations and remodeling should reflect similar bold approaches to adaptive design. The Moore County School system was instrumental in providing support for this project.
SUMMER OPERATION

WINTER OPERATION

OTHER SCHOOLS THAT HAVE THERMAL STORAGE

Ashe County Career Center, Ashe County; Wilbur, Kendrick, Workman and Warren, Engineer and Architect

South Davie Junior High School, Davie County; Wilbur, Kendrick, Workman and Warren, Engineer and Architect

Nash Central Junior High School, Nash County; Fenner and Proffitt, Engineer; Dove-Knight Associates, Architect

North Nash Junior High School, Nash County; Proposed but not yet under contract; Fenner and Proffitt, Engineer; Dove-Knight Associates, Architect
Heating and cooling for this school is done by air handling units which are supplied either hot water, for heating, or chilled water, for cooling. The unique feature of this HVAC system is thermal storage. The outdoor storage tank is a manufactured unit that can hold 95,000 pounds of water at 200 degrees or 95,000 pounds of ice. Thermal storage was chosen for the system for the purpose of substantially reducing the demand cost factor in electrical billing. Both heating and cooling (ice making) are done with electrical energy. The thermal storage feature allows equipment and machinery to be operated at off-peak times when other electrical loads are off (unoccupied school hours). For each kilowatt hour of demand reduced, savings are more than $5.00. A 50 kilowatt hour demand reduction saves more than $250.00 on a monthly billing. Since the highest demand rate factor applies for each month of a given 12-month billing period, this storage system has the potential of contributing greatly to the reduction of electrical billing cost.

It is interesting to observe that the engineer chose to store ice rather than just chilled water. The reason is that the heat of fusion for ice (changing water to ice) is considerable, and thereby the "cold" stored in the tank is increased in great measure.
OTHERS SCHOOLS THAT HAVE ACTIVE SOLAR SYSTEMS

North Drive Elementary School, Goldsboro; Fenner and Proffitt, Engineer; Griffin-Flynn, Architect

Southwestern Technical Institute, Jackson County; Reece, Noland and McElrath, Engineer; Foy and Lee, Architect
SOLAR HEATING SYSTEM

This solar heating system consists of 120 roof-mounted collectors set in four arrays. These concentrating collectors are the focusing type that effect maximum heat pick-up. Heated water from the collectors is pumped to a converter (heat exchanger). The water heated by collector water in this first converter is then pumped to a 2,000-gallon storage tank and on to two additional converters, one of which heats domestic hot water and the other which heats heating system water. The solar heating system provides assistance to the domestic hot water system and/or the building hot water heating system when solar energy is available.

Engineers. .......... McMichael, McCracken
Architects. ........... Hayes, Howell & Associates
ENERGY SYSTEMS

CDWT

EM

THU

EV

COOLING TOWER

STRAINER

WATER CHILLER

ABSORBER

CONDENSER

WATER PUMP

QUICK CONDENSER

-45°F

CWR

HW-

LE

CHILLED WATER PUMP

AL

MAKEUP AIR SEPARATOR

122

TYPICAL PUMPS

AIR HANDLING UNIT

TYPICAL UNIT VENTILATOR

WITH ECONOMIZER CYCLE

CHEMICAL FEED SYSTEM DUAL TEMPERATURE PUMPS

SYSTEM FLOW DIAGRAM

Engineers

Mechanical Engineers, Inc.

Architect

J. L. Beam
HOT WATER/CHILLED WATER SYSTEM

Input by the school's staff resulting in a clear understanding of the project requirements along with a coordinated evaluation of the life cycle cost factors provided a very efficient, high quality mechanical system.

The two-pipe, chilled water/hot water system, incorporating a centrifugal water chiller and combination gas/oil fired boiler to serve classroom unit ventilators, provides a mechanical system that ranks extremely low in total energy use.

A separate direct expansion, multizone system with hot water heating and "economizer cycle" serves the office areas.

The system is adaptable to future active solar energy supplement due to the relatively low hot water design temperature.
LOW TEMPERATURE WATER LOOP
(65° TO 95°)
CLOSED CIRCUIT

SYSTEM WATER STORAGE TANK FOR ELECTRIC BOILER

EVAPORATIVE COOLER

BOILER

PUMP

SYSTEM WATER STORAGE TANK
TYPICAL HYDRONIC HEAT PUMP SYSTEM

Each heat pump unit (HPU) takes the delivered system water and either heats or cools with it at any given time.

Water in the pipe loop travels through both the boiler and the cooler constantly, but one of these is on and one is off all the time (or both may be off). The boiler adds heat to the water or the cooler takes it away to maintain the loop water temperature. The cooler can be bypassed for draining to prevent freezing. The tank can store water (and heat), from the electric boiler, to help control the demand rate factor or to use a time-of-day electric rate.

This type of system conserves energy by transferring heat from one part of a building to another, that is, from a warmer area to a colder area. Also, the system can easily utilize solar heating if desired by the addition of appropriate equipment.

PARTIAL LIST OF SCHOOLS THAT HAVE HYDRONIC HEAT PUMP SYSTEMS

Harnett Central High School and Western Harnett High School, Harnett County; Steuer and Cheatham, Engineer; Leslie N. Boney, Architect

Westover Senior High School, Cumberland County; Fenner and Profitt, Engineer; Mason Hicks, Architect

Clemmons Elementary School and Old Richmond Elementary School, Winston-Salem/Forsyth County; Consultant Engineering Service, Engineer; Fred W. Butner and Associates, Architect

Sedge Garden Elementary School and South Fork Elementary School, Winston-Salem/Forsyth County; Consultant Engineering Service, Engineer; Newman, Calloway, Johnson, VanEtten and Winfree, Architect

North Lenoir High School and South Lenoir High School, Lenoir County; Steuer and Cheatham, Engineer; Leslie N. Boney, Architect

Kinston High School, Kinston; Steuer and Cheatham, Engineer; Leslie N. Boney, Architect

Carrboro Elementary School, Estes Hills Elementary and Glenwood Elementary, Chapel Hill-Carrboro; Douglas Y. Perry and Associates, Engineer

Laney High School, New Hanover County; Steuer and Cheatham, Engineer; Leslie N. Boney, Architect

Reidsville Junior High School, Reidsville; Douglas Y. Perry and Associates, Engineer, Haskins and Rice, Architect

East Wake County High School, Wake County; Douglas Y. Perry and Associates, Engineer; Haskins and Rice, Architect
HEAT RECOVERY SYSTEM

1. RECLAIMS HEAT FROM:
   - INHABITANTS
   - BUILDING MASS
   - LIGHTS & EQUIPMENT
   - SOLAR GAIN, etc.

2. REDISTRIBUTES EXCESS HEAT FROM ONE ZONE TO ANOTHER ZONE UNIT REQUIRING HEAT.

3. DOES NOT REQUIRE HEAT FROM HEAT SUMP UNTIL EXTERIOR TEMPERATURE IS BELOW APPROXIMATELY 45 DEGREES F.

SUPPLEMENTARY HEAT SUMP USING OFF PEAK ELECTRICITY AT LOW ELECTRIC MAMM DATES.

THIS DIAGRAM IS NOT REPRESENTING THE TOTAL NUMBER OF ZONES NOR THE NUMBER OF UNITS IN EACH ZONE.

Architects and Engineers .............. Six Associates, Inc.
Mechanical Engineer .............. James M. Lorick, P. E.
School boards expect quality design. Generally boards and administrators are proud of an extraordinary design effort. They recognize the value of an artistically conceived building environment. Although it is impossible to prove and difficult to measure, a well-designed school environment contributes a great deal to the positive attitude of children and teachers. Over-designed and thoughtlessly-designed schools can interfere with good educational programs. The job of designers is to create an extraordinary ambience, one in which children and teachers feel comfortable and in which they feel like "somebody." That is their most important task.

Of course, housing the children, staff, and program is the practical purpose of building school facilities. But that is seldom all that is expected of designers, especially for new schools. Attending to the spirit of design is essential because schools are the only other place where young citizens are confined by law. Most adults can modify or escape a mediocre environment at will. School children do not have that option.

More than ever, quality design is needed in this era of public school development. Designers and school people should follow their best impulses. A better time will never come. There will never be funds without limitation for education and schools or a right time for the dream project. Each new school design project is a unique opportunity to transcend the ordinary.

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