Comment

Education

by EDWARD M. MUSGROVE, AIA
President of Northwest Region, Council of Education Facility Planners, International

This issue features a field for architects that has long been one of the largest of the profession — Education.

In most parts of the country, schools are being closed and architects involved with education are forced to broaden their markets to other areas. In Washington we have not yet experienced a severe decline in the planning and construction of primary and secondary educational facilities.

During the last biennium, the office of Superintendent of Public Instruction provided approximately $130 million of state aid for school construction. For the 1981-82 biennium, $113 million is planned. Each dollar of state funds adds to over two dollars of local funds. It is not a booming, growing market for architects. However, great needs exist in the field and its efforts are vital to success. Eighty-five percent of educational facilities in operation today will be in existence in the year 2000. The need for energy conservation, improvements in the maintenance and operations of the physical plant and update of the educational environment are evident and are sure to create commissions.

Educational facilities are one of our nation’s finest resources, yet they are under utilized. Planning for their improved use and greater horizons is required. To develop and keep abreast with needs in this field require our dedicated and earnest efforts. The Council of Education Facility Planners, International, is an organization that brings the educational planner and architect-engineer together to develop improved facilities. I believe firms that are involved or have desires to plan educational facilities or other similar institutional environments should participate in this organization.

Our nation’s future is dependent on our youngsters. Their environment will surely influence their lives. Schools can be the demonstration ground for the concern for energy conservation, community, arts and ecology. Improvements and new directions for educational environment lay mainly in our hands. We must take a leadership role.

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Value engineering, integrated design, regulations, advanced planning, life cycle costing, and energy management are just a few of the ideas under study by the office of the Superintendent of Public Instruction.

Early requests from school districts indicate a continuation of major school facility construction in the 1981-83 biennial period. Over 300 million dollars in state matching requests at an average of 50 percent indicates 600 million dollars worth of construction over the coming two year period. Using 7 percent as the average A/E fee, architects and engineers in the State of Washington will be competing for approximately 42 million dollars in fees.

As construction costs continue to climb, more and more attention is being devoted to the goals of saving costs, saving time, and at the same time improving quality. The School Facilities Cost Stabilization Program within the office of the Superintendent of Public Instruction (SPI) is in the process of implementing ideas that will achieve these goals.

Utilizing an advisory board, School Facilities Cost/Advisory Board, made up of representa-tives of various organizations such as the Washington State School Directors, the Washington Council of Architects, the Consulting Engineers Council of Washington and the Associated General Contractors, SPI has established 41 ideas of ways to meet the program goals. These 41 ideas have been prioritized and are presently undergoing study and implementation.

Idea No. 2 — Value engineering which is a creative, organized approach whose objective is to optimize the total cost (life cycle) and/or performance of a facility is a major idea under study. CH2M-Hill Northwest is presently under contract with SPI to develop procedures and step-by-step methods of utilizing value engineering within the rules and regulations of the State Board of Education.

The V.E. approach is a creative effort directed toward the analysis of functions. It is concerned with the elimination or modification of anything that adds cost to an item without adding to its function. During this process all expenditures relating to construction, maintenance, operation, replacement, etc., are considered. Through the use of creative techniques and the latest technical information regarding new materials and methods, alternate solutions are developed for the specific function. In contrast to cost cutting by simply making smaller quantities or using fewer or cheaper materials, V.E. analyzes function and methods.

Another effort of the program designed to meet the goals is the "School Facilities Development Procedures Manual." Robert T. Olson, AIA is currently under contract with SPI as the technical writer for the manual. This manual will offer procedural and technical guidelines for effective action in planning and constructing new school facilities in a cost-effective manner. The manual is also intended to provide a guide to the services offered by SPI and to the procedures required for obtaining state assistance in school building construction from the State Board of Education.

The various chapters will contain many of the other 41 ideas such as integrated design, regulations, advanced planning, life cycle costing and energy management.

In summary, SPI is looking forward to the future construction needs of the school districts, but is concerned about the amount it will cost, the time it will take, and the quality of the end product. Architects, engineers, and users are encouraged to get involved in this effort either through your organization or individually.
Education

13 Elementary Schools for Spokane

School facilities in many of our older communities have, because of their age, become obsolete from an educational viewpoint and uneconomical from an operational standpoint. Recognizing this, the voters of Spokane's School District #81 approved a $32,000,000 bond issue in the spring of 1978 to reconstruct 13 existing elementary schools dating from the 1890's and early 1900's. The funds were used to acquire additional property to bring the sites up to approximately 40% of the State recommended area for elementary schools, and to construct completely new buildings and site facilities.

Because the District has had no building program in recent years, experienced staff was not available to administer this extensive program. Therefore, the firm of Heery Associates of Atlanta, Georgia, was retained to provide construction program management for the project. The first of the project schools was occupied in September of this year, 21 months after the selection of the architects. The final school is scheduled for occupancy by March of 1981.

Upon Heery's recommendation, a program for a prototypical elementary building (K-6) of approximately 50,000 square feet, to house approximately 550 students, was developed. Analysis of the sites had indicated sufficient similarity, as well as similar program needs within the District, to validate the appropriateness of a prototypical approach.

Three architectural firms were selected to enter a compensated competition for the prototypical design. The submittal of the Northwest Architectural Company (NAC) of Spokane was selected based on its overall adherence to program requirements, adaptability to systems bidding for the 13 projects, and overall design considerations.

The approved design is a building with a partial second floor containing 9 of the required classrooms and mechanical space. The ground coverage and dimensions of the building were kept within limits which allowed its application to the existing playground area or newly purchased site areas at each of the 13 schools. Existing buildings were left in operation until completion of the new facility, then demolition of the old facilities provided space for the new playground areas.

In order to meet the restricted time schedules, allow winter construction to proceed, and maximize procurement by systems bidding, the buildings are designed with a steel frame with site cast precast concrete panel exterior walls extended to footing level to form their own foundation walls, metal siding at second story areas, and a metal...
13 Elementary Schools for Spokane continued

roof system over rigid insulation board. The schools contain gas fired central heating systems, with air conditioning.

The program required separate conventional classrooms with operable walls between approximately 2/3 of the teaching spaces. A metal stud and drywall partitioning system, together with the steel frame, provides for future flexibility of redefining classroom spaces, opening to corridors for open plan configurations, or similar changes as may be dictated by future educational approaches.

In addition, certain sites required slightly fewer or additional classrooms, with the potential for removal or addition of classrooms at all sites without adversely affecting the design of the building. A “core facility”, including the Gymnasium, Multi-Purpose Room, Music Room, Art Room, Library, administrative and support facility spaces, together with the second floor classrooms, provides the basic unit. Classrooms are then provided adjacent to two sides of this core, with the flexibility of adding classrooms at any of three locations of the building. In addition to the flexibility, this configuration provides a one story element at three sides of the building, providing a scale consistent with the adjacent residences.

Through a series of neighborhood meetings, residents selected from four potential roof colors and three potential concrete finishes for the exterior panels for their particular neighborhood. These variations, together with the siting and landscaping variables, provides a degree of individuality to the buildings. Limited use of glass areas, overhangs at the classroom window areas, and attention to insulation and construction details has provided a highly energy-efficient facility.

Program requirements further dictated a wide range of flexibility of access to various combinations of spaces for community use, while securing the remainder of the building. In addition, the City of Spokane funded a 16' x 48' extension to the gymnasiuems to provide facilities more suited to operation of adult recreational programs by the City Parks Department. This participation was consistent with the historical cooperation in Spokane of the recreational use and siting of schools adjacent to public parks for joint community usage.

The "systems" concept of construction was utilized to its fullest on the project. An early evaluation identified elements common to all 13 buildings that could be contracted on a systems basis in order to expedite overall scheduling, save money by volume buying, or standardize components for ongoing maintenance savings. Fourteen separate bid pacs were issued,
resulting in 36 separate “systems contracts” being issued for materials and/or work on the 13 schools; however, in order for the General Contractors to maintain their traditional control on the site, the system contracts were then subdivided and assigned to the General Contractor as a part of the general construction bidding process. Schools were “packaged” in groups of two in order to respond to the bonding capacity and construction capabilities of the contractors in the Spokane area, with the option of bidding separately on the individual schools. This process resulted in 10 general construction contracts being issued for the 13 schools. However, subsequent bidding by contractors successful on early projects resulted in 6 General Contractors, three Mechanical Contractors, and three Electrical Contractors doing the work on all 13 schools.

The General Contracting bid process was phased out on two to four week intervals. Extremely competitive bidding by subcontractors, as well as the prime contractors, resulted in a constant decrease of bid prices from the first schools to the last, in spite of inflationary pressures which would normally have escalated the cost of the latter schools. The total contracted amount, including change orders during construction, will total approximately $37,000,000, including complete landscape irrigation and sodding of the sites.

Although various portions of the process utilized to implement this project were resisted by the design and construction community, the overall development of the program has resulted in facilities utilizing high quality materials and construction techniques, spaces consistent with the program requirements with flexibility for internal and expansion changes, and an exciting educational environment. This was accomplished well within the original budget and within the generally anticipated time frame. Construction of all buildings within a single biennium saved the District sufficient funds in projected inflationary costs to allow them to proceed with planning for two additional schools, utilizing the same prototypical plan, within the existing bond issue funds.

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When the decision was made to build Esquire Hills School, the Central Kitsap School District #401 had some specific requests: a school that would include work spaces near classrooms, areas for small group activities, and a conference room. If at all feasible, all classrooms, including kindergarten, were to be located in close proximity to the learning resource center.

The architectural solution developed a basic classroom unit of three classrooms, a flexible open work space for teachers and support staff, a raised seating area for small groups and activities, and an adjacent conference room. The units were paired, toilet facilities added, resulting in three clusters of six classrooms each. The resource center is located near each cluster and directly across from kindergarten classrooms.

The feeling of openness which this plan engenders is enhanced by the arrangement of windows and relites which allows direct vision from the work space through the classrooms and out to the playfields or courtyards. The graphic design, created by the architect, adds to the lightness and character of the school. This cluster concept has worked so successfully, the school district recently duplicated the cluster design for its newest elementary school.

The school is wood construction with plywood webbed roof trusses for economy and span. Exterior finishes are stained cedar siding and...
trim and black masonry veneer. Typical interior finishes are veneer plaster over gypsum wallboard for durability, and vinyl wallcovering over gypsum wallboard where tackability was desirable.

The school, completed in 1979, was built at a cost of $1.89 million (54,999 sq. ft. at $34.45 psf).

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We are pleased to have been involved in the construction of the Esquire Hills Elementary School and the Wy'East Junior High School, both featured in this issue of Northwest Architecture.
Wy'East Junior High School is a single level structure designed to be in scale with the residential character of the surrounding neighborhood and to easily serve handicapped persons using the facility. The school is situated on approximately 25 acres in a rapidly developing area east of Vancouver. The 114,235 sq. ft. complex was designed to accommodate 850 students in grades 7 through 9.

The complex is divided into four separate buildings with major traffic patterns directed outside under well protected covered walks connecting all the buildings. This exterior circulation allowed the maximum square footage to be utilized into classroom spaces instead of interior corridors. The outdoor pedestrian flow also provides separation from the general classroom to the noisy activities such as shop, music and physical education. It also permits the facility to be used for community events without opening the entire school.

Each building houses programs which are complimentary to each other. The vocational building contains fine arts, shops, foods and sewing. The music building has choral, instrumental, and divisible large lecture space which seats 300. The main building is comprised of offices, student locker bays, and cafeteria around the student center on one end of the building, with general classrooms around the open media center on the opposite end. The student and media centers open into an outdoor court which can be used as a classroom during good weather or for other purposes. The fourth building is for physical education with one large gymnasium which can be divided into three smaller gyms.

The materials for the exterior — brick veneer and through wall brick units, with a metal fascia system — were selected for durability, ease of maintenance and aesthetic appeal.
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It should also be noted that there is a general population movement to the South and West from other areas of the country. The challenge for the school official is to be cognizant of what is happening in a particular school jurisdiction, at the same time remaining aware of what is happening nationally. The challenge for the school architect would seem to be predicting trends and offering school facilities consistent with the needs of clients in this changing environment.

School District Profiles

The dichotomy of the times is that school enrollments are both declining and increasing in some locales. This is reflected in declines for certain school districts of King and Pierce Counties (Shoreline 28%, Highline 26%, Seattle 26%, South Central 25%), together with others such as Mercer Island, Bellevue and Vashon Island. Increases in enrollment during the same time period (1976-1979 were Northshore 18%, Kent 11%, Lake Washington 11%, and several others. A recent study concludes that enrollment trends will continue downward as birth rates decline and populations move outward from urban and first-ring school districts in the Seattle Metropolitan area.

Future Enrollment

On the national scale, the National Center for Education Statistics in 1978 predicted: (1) by the ends of the 1980’s, elementary enrollments will decline as much as 18% from 1970; (2) high school enrollments in the 80’s will decline by 25% from those of 1976, and (3) the number of people in the traditional college age group will decline by 25% between 1980-1994 causing an enrollment drop of 1.8 million.

At the regional levels the greatest decline in enrollments will occur in urban areas and decrease percentagewise as one moves out from the inner city. All school districts will need to exercise caution in planning for the future. Whether closing or converting an old facility or constructing a new one, there must be awareness of the "aging cycle" for every school based upon its demographic environment.

Today's community of single resident dwellings, young families with children, modern school houses, and all the accompanying traditional virtues, will become tomorrow's community of multi-resident dwellings, older families with few or no children, and a declining school enrollment combined with requests for outside financial assistance due to a decreased tax base and increased costs for various public services.

For a school district, the problem of the future is not too many — it is too few. Further, there seems to be an absence of codified strategies among officials to deal with the problem.

Organizational and Design Implications

Some observers are offering a scenario of conflict for the future in the realm of public funds. Schools and school districts will be a part of a struggle for funds and their credibility in providing both educational and community services will determine the eventual outcome.

If the public is to continue to financially support schools, it follows that these facilities should be accessible to community patrons during non-school hours. If schools remain closed during non-instructional hours, such a practice will be inefficient, wasteful, and cause problems as different sections of society increase competition for the tax dollar. If school facilities (either current or on the drawing board) do not offer public access to areas with amenities (restrooms, kitchens, etc.) they should be modified in design.

There are many examples throughout the country of the cooperative and concurrent use of school facilities. They
include such ideas as the locating of social agencies in non-occupied space of schools and contracts with recreational agencies for off-hours or holiday period utilization. In some cases, there has been the outright sale or lease to another public service organization.

A Model

Planning for the extensive use by community non-school groups is evident in the design of the new Kentwood Senior High School in a community near Seattle, by a cooperative team of school officials and consulting architects. Examples lending themselves to multipurpose use are evident throughout the design. Sports areas have been moved to the front of the building away from the traditional back-of-the-school behind heavy fencing location, making them easily accessible to foot traffic during non-school hours. The main building components are designed for community use in such a way as to afford public access while not violating sensitive instruction areas of the school. There is an internal method of control throughout the building to prevent public access to sections of the building not being used. Most importantly, there has been continuing dialogue between all elements of the school and community with the architects relative to every aspect of planning. This climate has resulted in a positive vote for additional funds for construction as well as creating and assisting with environmental impact statements. Even though the school enrollment will continue to grow, the problems associated with transitional usage by the community should be negligible since the public has been included from the very beginning.

Conclusion

Although the periods of the 50's and 60's were those of rapid growth for school populations, the next two decades will be more challenging. There are even greater rewards and satisfactions possible for all elements of a community given a high degree of sensitivity to and awareness of demographic trends on the part of those associated with the design of school facilities.

(The author has included an index of references, copies of which are available on request.)

George L. Wilson, Ed.D., is the Planning Principal for the new Kentwood Senior High School (Kent School District No. 415). He is also a member of the Adjunct Faculty, School of Education, Seattle University.
Lloyd J. Lovegren, AIA, has retired and the firm of Lovegren-Loveland and Associates, Seattle, has reorganized under the name of Loveland.

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Stapper Wyatt, Lee D. Loveland, AIA, James L. Stapper, AIA, and Scott W. Wyatt, AIA are principals in the firm. Offices have been moved to 1110 Harvard Avenue.

Dennis Kirkpatrick, AIA, has rejoined Waldron Pomeroy Polk and Smith, Seattle.

Thomas E. Gidlund has joined Howard S. Wright Construction Co., Seattle, as vice president of marketing.

Rick McGovern has been named a partner in the Tacoma firm of Erickson-Hogenson-McGovern, Architects.

The firm, in practice since 1975, is located at 110 South 131st St.

Chuck Pennington has joined RasmussenHobbs Architects/Planners as Design Coordinator. He will work in the areas of graphic design, interior design, architectural signage and design consultation. He has worked as an independent designer in the northwest for several years.

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