GUIDELINES FOR SCHOOL PLANT DEVELOPMENT

Educational Facilities Planning
The basic concept behind educational facilities planning is a simple one. A school building is primarily a school and secondarily a building. If the "school" is not planned in terms of its purposes, its scope, and its programs, the resulting structure will almost certainly just be a "building." No architect, regardless of talent or experience in school plant design, can plan a school without guidance from the educators who will use it.

The educational facilities planning process is slow and difficult; planning that does not consider school needs beyond the immediate future places an undue burden on the present and future generations of students and taxpayers. Equally as important as long-range planning, no board should commit local and state revenues for a new educational plant that has not been planned by educators. Although the detailed procedures for educational facilities planning will vary considerably from school to school, the ultimate responsibility for the future rests with those professionals who plan today.

School Plant Planning
Planning a school plant, either a complete new school or an addition to an existing school, is a long and complex process when properly done. Remodeling and renovation of existing space can also be very time consuming to plan when all potential options for upgrading or replacement considerations are made. Suggestions made in this section are intended to provide useful, basic information and are not an exhaustive description of all available options for planning or meeting the facilities needs of a district school board.

School Size
Generally, new school centers are not recommended for fewer than 400 students in elementary schools or 100 students per grade level in secondary schools. Any school that is not large enough to justify a full-time principal, a media specialist, food service staff, and special instructional and clerical staff are economically inefficient and restrictive in program offerings. Schools that are minimally sized are very expensive to operate.

The number of students in a school is a major factor in determining the efficiency of space utilization; schools that are too small do not offer optimal instructional standards or provide economically advantageous structures. Just like small schools are not economical, very large schools are not frugal to build, maintain, or staff. The logistics of managing and maintaining an overly large school can outweigh the reasons for building mega structures (such as more extensive program offerings in science or performing arts-these functions may be offered through magnet schools, thereby meeting a district-wide or area need without the burden of managing an overly large school reconfigured to offer such services).

Optimally, elementary schools should be planned for about 800 students, middle schools should be planned for about 1,200 students, and senior high schools should be planned for about 2,000 students. Flexibility and program offerings that allow schools to offer a more educationally diverse program or structural configurations that can provide significant economic rewards should always be considered when planning new schools. However, experience has shown that by modifying elementary schools sizes by more than 25% above or below the 800 student mark is not usually cost effective or educationally practical.
Secondary schools can sometimes be subjected to 25% to 50% modifications from the recommended median point and still be practical and efficient for both educational offerings and cost savings. Very small or very large schools do not provide cost saving benefits for either construction or for day-to-day operations; therefore, limiting the size of schools to near average size is usually preferable and more practical.

**School Plant Design**

An architect is responsible for designing the building to house the school program developed through the educational facilities planning process. Usually, the architect participates in that process so that educational planning and design do not constitute separate and distinct steps. The architect uses other specialists in designing the building and the system(s) it will contain; for example, structural engineers, heating and cooling specialists, electrical engineers, and environmental specialists should be involved in the total process. Some broad guidelines appropriate to school building design are:

1. A site (plot) plan should be developed to show the most effective use of the site for present needs and to guide future expansion.
2. The site design and orientation should show awareness of the principles of “Crime Prevention Through Environmental Design” (CPTED) including natural access control, natural surveillance, and territorial reinforcement;
3. A building should be functional in design; it should meet the needs of and facilitate the attainment of the designed or planned program of the school;
4. The building must be made safe and healthful for all students and school staff personnel by observing all safety and sanitary regulations appropriate to school plants;
5. A balance should be achieved between quality and economy in construction and the anticipated maintenance and operation of the plant;
6. A building should be designed to permit economical expansion both in terms of additional classrooms and special facilities which will eventually serve the ultimate capacity of the school; e.g., media centers, cafeterias, circulation, sanitation, utilities, and administration should be built to their ultimate maximum sizes if additional classrooms are going to be needed for future expansion;
7. Adequate lighting, natural and artificial, should be provided for all instructional spaces;
8. A building should be designed to control the transient noise level; the objective in sonic design of instructional spaces is to secure the best hearing and speaking conditions without adversely affecting the surrounding or adjacent instructional programs;
9. Thermal conditioning of school spaces should be provided by economically designed systems that also render long-term cost savings in maintenance and operations.