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SCHOOL SITE SELECTION

Recently a midwestern suburban school district had a $4 million investment wiped out because the land on which a new high school was built could not support the building. Another school district suffered a serious financial loss when a freeway bisected one of its elementary school sites, resulting in a restricted area for future expansion and a solid barricade which blocked out half the school population. These are only two of many examples showing that poor school sites are still being selected.

Some school boards have benefited from the valuable advice and information provided by planning agencies at various stages in the school planning process, such as: information on future school needs based on population projections; condition and capacity of existing school facilities; land use and transportation plans that bear on proper school location and development timing; municipal fiscal capacity to carry out a school building program; and school location and design standards. However, many planning agencies that carry out these important school planning functions, although spotting the general vicinity for new schools on a map, stop short of recommending specific or alternative sites, or of at least offering sound procedures for selecting sites.

The planning agency is in a unique position, due to its knowledge of overall community development trends and current land use patterns, to help the school board pick good sites, adequate in size and scaled to both the community's financial ability and the board's educational policy. This report attempts to guide the planning agency toward offering positive suggestions by discussing several important factors that should be considered in selecting particular school sites -- school board policy, minimum site size, accessibility, environment, physical characteristics (soil and topography), acquisition and development costs (including utilities), and coordination with the comprehensive plan. Evaluation methods used to guage the suitability of alternative school sites -- including checklists and rating forms -- are illustrated and discussed.

SCHOOL BOARD POLICY

A first requirement for any school site selection program is a clear under-

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standing of school board educational policy. From this policy, clues can be found about the kinds of schools and school sites desired in the community. The following aims, taken from Long Range Planning and Educational Specifications for School Building Economy, published by the Connecticut State Department of Education (1962), illustrate one attempt to verbalize educational policy for an elementary school:

1. To develop the maximum potential of every child with the fullest possible knowledge regarding his mental, physical and emotional capabilities, with recognition that the school's main emphasis must be on the intellectual development. There must be included a sound and thorough training in the "tool" subjects -- reading, writing, mathematics, and use of the library -- taught continuously through the whole school experience to help develop good work habits.

2. To help the child develop a desire, respect for, and understanding of learning.

3. To provide the relatively high ratio of children who posses strong intellectual and educational capabilities with the best possible preparation for successful college and life experience.

4. To help these students who need and desire vocational courses to discover their own powers and pursue interests, especially through work experience.

5. To help create in all students a basic understanding of citizenship including economics, governmental functioning and military service.

6. To provide opportunities for individuality, for creative thinking, for the truly open mind, for the right and ability to question, and to continue emphasis on the development of leisure time pursuits, such as music and the other arts.

In a follow-up section, these broad aims are translated into instructional program requirements which have some physical dimension:

> . . . the elementary schools provide instruction in: reading, writing, speaking and spelling of the English language, arithmetic, social studies, science, health, art, physical education, music.
>
> . . . group . . . children according to ability . . . . particularly in arithmetic and reading. Such grouping requires classrooms with floor areas of at least 800 square feet. The art program is served best by the provision of an art room where major art activities and material storage can be centralized. . . .
>
> The library is an important part of each elementary school. . . .
>
> . . . . . .
>
> Other policy items of significance to a school design should be

set down as well. These might include policies on: length of school days, health services, guidance and couseling, adult education, transportation, school lunch program, public recreation programs, after-school use of buildings by public, building and grounds maintenance, purchase and storage of supplies.

Although stated generally, such educational policies will help determine important school site factors as well as desireable standards for local school building layout and size.

The school site is as important as the building. Site qualities may enhance or hinder performance of educational functions. If a school site is too small, the area for physical education activity or outdoor laboratories may have to be drastically cut. Likewise, conditions conducive to good teaching may be difficult to achieve if it is improperly located, such as near a noxious industry or noisy thoroughfare. Together, the school building and site create a setting in which basic educational policy can be accommodated, not obstructed.
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MINIMUM SITE SIZE

High priority should be given to sites large enough to accommodate the many activities to be undertaken in connection with the school program. Obviously, if the school board places emphasis on outdoor laboratories, football fields, driver-education training areas or agriculture courses, the minimum size of the school site will be considerably larger than if the policy was to contain most activities within the school building. The size of a particular site will vary further according to peak enrollment expected, land needed for future expansion, and ability of the school board to pay land acquisition and development costs.

Minimum site size standards vary from community to community. Table 1 illustrates the wide differences that exist among the states regarding minimums recommended for each type of school. Minimum standards for elementary school sites range from two acres in Delaware to 15 acres in New Mexico. For secondary schools, the range is from five acres to 45 acres, depending on whether it is a junior or senior high and whether it is located in an urban, suburban or rural area.

Table 2 shows minimum standards for school site size recommended by various local planning agencies and school authorities. Since the March 1952 ASPO Planning Advisory Service Information Report No. 36, Planning for School Capacities and Locations, there have been some changes in the minimum area requirements. The earlier report stated:

> Although acreage is related to size of school enrollments, most authorities say that the minimum land area requirement for elementary schools is five acres, with an additional acre for each one hundred pupils of ultimate enrollment. Secondary schools should have a minimum of ten acres, plus an additional acre for each one hundred pupils of ultimate enrollment.

Table 1

Recommended Minimum Size of School Sites and Formula for Additional Acres by States and Type of School

State	Elementary schools		Secondary schools	
	Minimum (acres)	Formula or comment for additional acreage	Minimum (acres)	Formula or comment for additional acreage
(1)	(2)	(3)	(4)	(5)
Alabama	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Arizona	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Arkansas*	10	For 360 pupils; 1 extra for each additional 100 pupils.	25	For 500; higher enrollments, 40 acres.
California*	5	Plus an additional acre for each 100 pupils.	30	Plus an additional acre for each 100 pupils.
Colorado*	5	Plus 1 acre for each 100 pupils maximum enrollment.	15	Plus 1 acre for each 100 maximum enrollment.
Connecticut	5	Plus an additional acre for each 100 pupils.	10	Too low; might well be 20 acres.
Delaware*	2	Plus an additional acre for each 100 pupils.	5	Plus an additional acre for each 100 pupils.
District of Columbia	5	.....	7	For junior high; 10–15 for senior high.
Florida*	2	Plus an additional acre for each 50 pupils.	2	Plus an additional acre for each 50 pupils.
Georgia	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Idaho*	5	Plus 1 usable acre for each additional 100 pupils.	10	Plus 1 usable acre for each 100 additional pupils.
Illinois*	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Indiana	7	Up to 200 pupils; plus 1 for each 100 pupils.	12	Up to 300 pupils, plus 1 acre for each 100 pupils.
Iowa	4	Average—4–5 acres; recommend 5 acres up.	20	Recommend 30–40 acres according to enrollment.
Kansas	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Kentucky	5	For small, 10 for large, plus 1 for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Louisiana	5	Plus 1 acre for each 100 pupils; 7 for each 200 pupils.	10	Plus 1 acre for each 100 pupils; 15 for each 500 pupils.
Maine	5	Plus 1 acre for each 100 pupils; 7 for each 200 pupils.	10	Plus 1 acre for each 100 pupils; 15 for each 500 pupils.
Maryland	8	Local board decision. 10 acres suggested.	20	For junior high; 30 for senior high.
Massachusetts	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Michigan	.....	No rule-of-thumb formula. Guide to approximate space needs is provided by State department. Larger areas required where community colleges are included in programs.		
Minnesota	8–10	For K–6; 10–12 acres for K–12.	20–25	For junior high; 30–40 for senior high or combination.
Mississippi	5	Plus an additional acre for each 100 pupils.	15	Plus an additional acre for each 100 pupils.
Missouri	5	Should range from 5–10 more acres	10	Should range from 10–20

		units.		pupils.
Nevada*	5	Usable acres plus 1 for each 100 pupils.	20	Usable acres for junior high, 30 for senior high; plus 1 acre for each 100 pupils.
New Hampshire	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
New Jersey	5	Plus an additional acre for each 100 pupils.	20	Plus an additional acre for each 100 pupils.
New Mexico	15	No formula established.	30	No formula established.
New York	5	Plus an additional acre for each 100 pupils.	10	Plus 2 acres for each 100 pupils up to 500; plus 1 acre for each 100 pupils over 500.
North Carolina	10	For 200–400; 12 for 500–600; 15 acres for 800.	12	For 299–400 pupils; 14 for 500; 16 for 600; 20 for 800; 24 for 1,000; 26 acres for 1,200.
North Dakota	5	For 200 pupils, 7 acres; 8 for 300; 9 for 400; 15 for 1,000 pupils.	10	Plus an additional acre for each 100 pupils.
Ohio	5	Plus 1 acre for each 100 ultimate enrollment.	10	Plus 1 acre for each 100 ultimate enrollment.
Oklahoma*	5	Plus 1 acre for each 100 pupils ultimate enrollment.	10	Plus an additional acre for each 100 pupils.
Oregon	5	Plus 1 acre for each 100 pupils (6 acres for 100).	10	Plus an additional acre for each 100 pupils.
Pennsylvania	8–12	Urban; rural, 10–14; suburban, 18–20.	20–25	Junior high urban; rural, 20; suburban 25–30.
			35–40	Senior high urban; suburban and rural, 40–45.
Rhode Island*	5	Plus an additional acre for each 75 pupils.	25	Plus an additional acre for each 75 pupils.
South Carolina*	10	For 500 pupils maximum, plus 1 acre for each 100.	10	Plus an acre for each 100 pupils.
South Dakota*	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Tennessee	4	For grades 1–8, plus 1 acre for each 100 pupils.	8	For grades 7–12 or 12 grades, plus an additional acre for each 100 pupils.
Texas	5	Plus an additional acre for each 100 pupils.	15	Plus an additional acre for each 100 pupils.
Utah*	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Vermont	5	For 100 pupils; 7½ for 200; 10 for 300; 11 for 500; 12–13 for 700; 17 for 1,200.	10	Plus an additional acre for each 100 pupils.
Virginia	3	For grades 1–3; grades 1–7, 4; plus 1 for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Washington*	5	Plus an additional acre for each 100 maximum enrollment.	10	Plus 1 acre for each 100 maximum enrollment
West Virginia	5	Plus an additional acre for each 100 pupils.	10	Plus an additional acre for each 100 pupils.
Wisconsin*	5	Plus an additional acre for each 100 pupils.	15	Plus an additional acre for each 100 pupils.
Wyoming*	.....	No minimums established.	.....	No minimums established.
Alaska*	5	Recommend an additional acre for each 100 pupils over original capacity.	10	Recommend an additional acre for each 100 pupils over original capacity.
Puerto Rico*	1½–2	For 8–24 classroom buildings.	4½–5	For 8–24 classroom buildings.

***Information obtained from State school building handbooks, except in States followed by an asterisk (*) which indicates that information was obtained from responses to questionnaires.**

Source: Taylor, James L., School Sites: Selection, Development and Utilization, U. S. Department of Health, Education, and Welfare, 1958, pp. 37-39.

Table 2

RECOMMENDED MINIMUM ACREAGE STANDARDS FOR SCHOOL SITES

Reference Sources for Standards*	Elementary School Grades K-6, K-8 or 4-8		Junior High Grades 7-8, 7-9 or 7-10		Senior High Grades 11-12 or 11-14	
	Minimum Site Size (Acres)	Additional Acres Required for Each 100 Pupils	Minimum Site Size (Acres)	Additional Acres Required for Each 100 Pupils	Minimum Site Size (Acres)	Additional Acres Required for Each 100 Pupils
A. Minimum	5	1	10	1	20	1
Preferred minimum	6	1 1/3	12	2	25	2
B.	Size hinges to a considerable extent on educational activities planned for the site.					
C. Minimum	3		10		15	
Preferred	5 1/2		20		30	
D.	10	1	15	1	30	1
E.	5	1	20	1	30	1
F.	5	1	10	1	10	1
G.	5	1	15	1	30	1
H.	4	1	8	1	8	1
I.	10		20		40	
J.	5	1	10	1	15	1
K.	5	1	15	1	25	1
L.	5	1	20	1	20	1
M.	5	1	20	1	30	1
N.	5	1	10	1	20	1

*See Appendix D, p. 22, for key to the letter references.

Although elementary school standards for minimum site size have not changed appreciably during the past decade, those for junior and senior high schools have increased rather dramatically, in some cases 100% over what they were in 1952. The recommended size of junior high sites ranges from 10 to 20 acres, with the median being 15 acres; recommended senior high sites range from 20 to 30 acres, with the median being 25 acres. The standard formula of one additional acre for each one hundred pupils of ultimate enrollment applies for both junior and senior high schools.

If properly used, standards such as those listed in Tables 1 and 2 can be helpful to the local community. However, caution should be exercised in adopting them without considering local objectives and needs.

ACCESSIBILITY

An important principle underlying good school site selection is central location, easily accessible and convenient to the area from which the majority of the school population will be drawn. Although desirable, sometimes it may be necessary to modify the location to satisfy other conditions, as when land is unavailable in the center of the service area.

Educational policy may also affect the principle of centrality. In some school systems, courses in the natural sciences may be important enough to warrant location close to areas with botanical, biological or geological features. If vocational agriculture courses are stressed, then a site near farm land should be considered.

School accessibility is usually measured in terms of the time it takes for students to get from home to school, and the quality of the route environment. An elementary school located far from the homes of the students it serves, requiring them to walk inordinate distances and to cross many busy thoroughfares, is a badly located school. City and school officials must agree on policy relating to walking distance, travel time, and use of private and public means of vehicular transportation.

Table 3 lists some walking distance and travel time standards for elementary, junior high and senior high schools recommended by selected state departments of education and local planning agencies. It should be noted that these determinants of school accessibility -- walking distance and travel time -- will vary according to the planned school enrollment figures. Table 4 gives some recommended school and classroom capacity standards. If the maximum walking distance for elementary schools is one-half mile, but one school has to serve more students than the recommended standard for the community, then some of its students may have to walk farther or use some form of vehicular transportation to reduce travel time. Again, in particular cases, community standards governing accessibility may have to be altered.

Students in secondary schools walk greater distances and spend more time traveling to and from school than students at the elementary school level. Beyond certain distances, some school boards provide buses to transport students to schools, or they may permit students to drive their own automobiles. If the

Table 3

RECOMMENDED MAXIMUM SCHOOL WALKING DISTANCE AND TRAVEL TIME STANDARDS

Reference Sources for Standards*	Walking Distance (Miles)			Travel Time (Hours-Minutes)		
	Elementary	Junior High	Senior High	Elementary	Junior High	Senior High
A.	3/4	1 1/2	2	30 min.	1 hour	1 hour
E.	3/4	1 1/2	2	1 hour	1 hour	1 hour
F.	1/2 - 3/4	1 - 1 1/2	1 1/2 - 2			
G.	1/4 - 1/2	1 - 1 1/2	1 1/2 - 2			
H.	1/2	1	1			
I.	5/8	1 1/4	2			
J.	1/2	1	1 1/2	20 min.	30 min.	45 min.
K.	1/2	1	2			
L.				30 min.	1 hour	1 hour
M.	3/4	1 1/2	2	30 min.	1 hour	1 hour

*See Appendix D, p. 22, for key to the letter references.

Table 4

RECOMMENDED MAXIMUM SCHOOL AND CLASSROOM CAPACITY STANDARDS

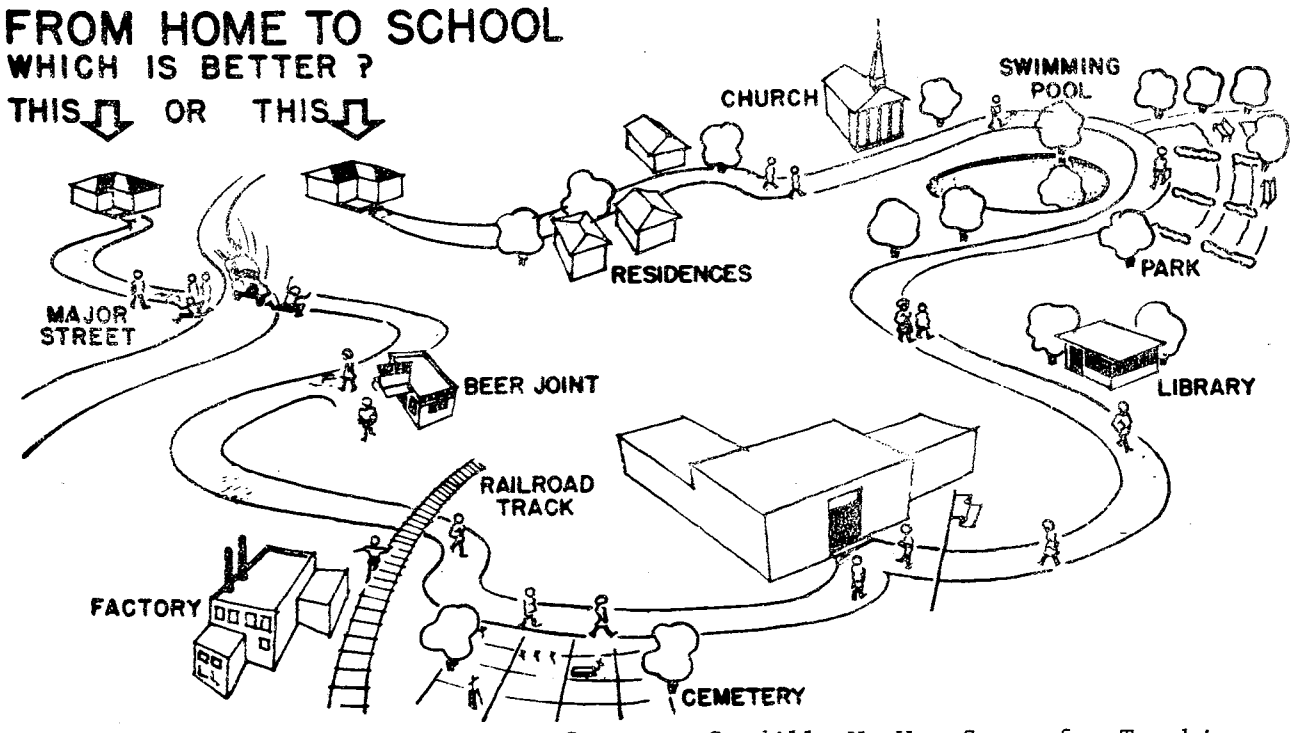
Reference Sources for Standards*	School Capacity - (Pupils)			Classroom Capacity		
	Elementary	Junior High	Senior High	Elementary	Junior High	Senior High
B.	350					
C.	600-800	1,000-1,200	1,700-2,000			
D.	600	800-1,000	1,200	30	25	20
F.	350-600	700-1,500	1,000-2,000	33	30	28
G.	650	750	1,500			
I.	180-600	400-600	1,000-2,000	20	24	40-80
J.	180-400	300-550	300-750	28-30	22-25	25
K.	230-900	750-1,500	900-2,500			
L.				25	25	25
M.	500			25	25	25
N.				25-30	25-30	25-30

*See Appendix D, p. 22, for key to the letter references.

board sanctions use of automobiles by students, then school sites must be larger to provide the necessary parking area.

Another aspect of accessibility is related to the physical characteristics of the trip to school. Are children required to cross dangerous thoroughfares and railroad tracks, or to walk through congested industrial and commercial areas? Are paved sidewalks of adequate width provided for students to walk on in their journey to school? These and other factors shown in Figure 1 should be considered when determining how well a proposed school site rates in terms of accessibility.

Figure 1



Source: Candill, W. W., Space for Teaching.

ENVIRONMENT

The immediate environment surrounding the school should be safe, pleasant, reasonably attractive and conducive to learning. The school site and its surroundings play an important part in developing a proper student attitude towards education; they should stimulate rather than hinder pupil creativity and imagination. Since dust, noise and physical hazards are attributes generally associated with congested areas, crowded residential districts should be rejected, if at all possible, in favor of more open surroundings. This principle is more difficult to follow in built-up urban areas, where open sites free from harmful surroundings are at a premium, than in suburban areas.

If outdoor classes are included in the curriculum, the school's environment may pose two kinds of problems -- on-site interference and off-site interfer-

ence. On-site interference with outdoor classes and laboratories may occur if the school is used to full capacity. For example, if physical education classes are held each period of the normal schoolday, the noise may be so intense that academic classes also held outdoors will be distracted, perhaps even disrupted. Natural barriers should be preserved to prevent conflict between outdoor activities. If possible, the site should be designed so that spatial separations and landscape barriers in the forms of vegetation and topography reduce on-site conflicts.

Off-site interference with school operations may develop from having incompatible adjoining land uses. Noxious industries, busy commercial areas and high-volume thoroughfares can be detrimental neighbors to the school. Usually schools function best in clean, quiet and wholesome surroundings.

Zoning can protect a new school built in a relatively undeveloped area from future harmful off-site influences. Before a school site is selected, both the existing land use and zoning maps should be reviewed to determine the compatibility of existing and permitted land uses. If the zoning map shows that adjoining lands are zoned for high-intensity incompatible uses, then either a new site should be selected or an attempt made to rezone the surrounding area for more compatible uses.

PHYSICAL CHARACTERISTICS

Physical characteristics represent one of the most critical factors involved in school site selection. Good soil conditions will minimize the cost of installing foundations or pilings to support the structure. The engineering properties of soils are: load-bearing qualities; susceptibility to frost action; shrink-swell potential; percolation rate; and trafficability.

An example of the importance of engineering properties of soil can be illustrated by the shrink-swell potential of the site under consideration. Structures located on soils subject to shrinking and swelling may have continuous problems due to the breaking or separation of underground pipelines. According to the United States Soil Conservation Service, a number of communities have reported savings of more than $200,000 as a result of moving the proposed school site a short distance to an area with more stable soil.

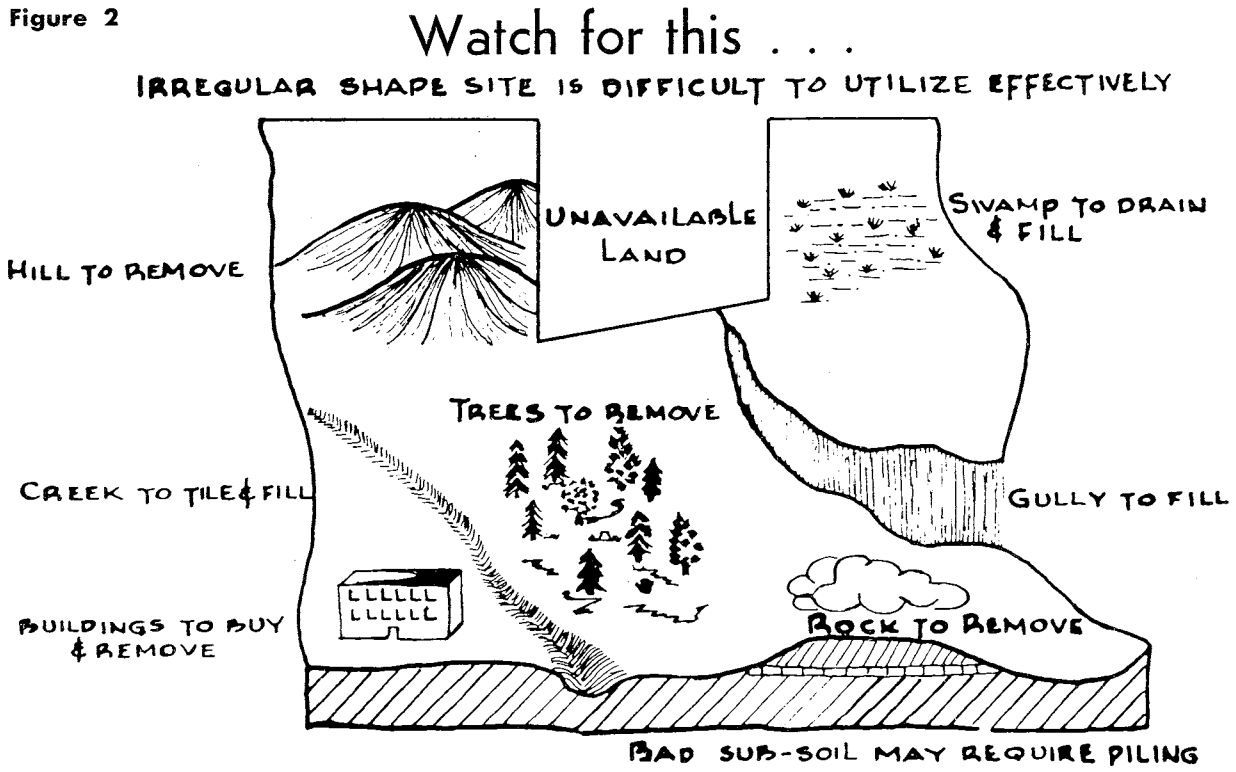
The topography of a site may hinder or aid proposed school activities. The site must be sufficiently elevated to avoid drainage from surrounding areas and adequately pitched to shed its own surface water quickly. Sites should not be located in flood plains or areas of poor drainage. The soil should dry rapidly, and areas of high erosion should be avoided, if at all possible. Sites that require excessive cut or fill are also to be avoided.

Areas of excessive rock out-croppings and extensive rock ledge foundations are undesirable for economic reasons. Rock excavation and blasting for foundations and service lines are costly. However, occasional rock outcroppings and uneven surfaces, in an otherwise excellent site, need not count too heavily against it. These minor shortcomings may often be easily corrected or even turned to advantageous use through imaginative site design.

ACQUISITION AND DEVELOPMENT COSTS

Site costs must include both purchase price and development costs for realistic evaluation. Consideration of acquisition cost alone can lead to serious errors in comparing the merits of alternative sites. Therefore a comparison table, listing both acquistion and development costs, should be prepared for each site under consideration. Development costs include clearing and grubbing, demolition and removal, earthmoving, rock removal, utility installation (water, electric, telephone and sewage disposal), and landscaping. Figure 2 illustrates some site development costs to consider.

Figure 2



Source: Economics from A to Z in Planning and Building Schools, New York State Commission on School Buildings, 1953, p. 10.

One major item often neglected is the cost of transporting students to school, which should be computed for the student body over at least a ten year period. Such costs, which the school board will have to incur, may prove quite expensive over the long-run, useful life of the school.

An additional factor to consider, beyond the original acquisition and development, is the cost of acquiring land needed for future expansion.

Generally, it is good practice to compute costs also on a usable acre basis. If a portion of a site is scenic, but because of rough topography is unusable, it should not be included when figuring the cost per usable acre of land. Consideration of both cost per acre and cost per usable acre will give a better idea of the respective merits of the sites involved.

COORDINATION OF SITE CRITERIA

Planning agencies are usually well equipped to furnish valuable assistance and advice in the school site selection process. Many of the studies and investigations undertaken in their normal course of activity -- land use, population, topographic, land value analysis -- can yield extremely useful data in assessing the pros and cons of alternative school sites.

The existing land use map provides a quick, accurate check of potential school sites that meet minimum acreage standards. Obviously, the planning agency can best determine how well school sites fit within the fabric of the comprehensive plan: e.g. their relation to major utilities, streets, and areas of prime residential growth potential. Information on the environmental qualities of the area surrounding the school site is also obtainable from land use surveys and the zoning map. Community facilities plans developed by the planning agency provide information about the planned location of public utilities.

Many planning agencies assemble data on the soil and topographic conditions of the community. Aerial photographs also comprise a valuable source of data. With such information, the physical characteristics of alternative sites -- an important factor to consider in selection -- can be more easily determined. Because planning agencies frequently collect and map property assessment data and keep close tabs on the real estate market, they are also excellently suited to provide ready information on school site costs.

Occasionally, school boards are unaware of the fact that the planning agency is a repository of much information that can be used in the school site selection program. Under such circumstances, it is strongly recommended that the planning agency make known its qualifications and seek to extend its assistance.

SITE SELECTION PROCEDURE

All too often, planning agencies, when asked to prepare a plan for future school facilities, end up with recommendations as to the general locations of new schools based on a limited, unsystematic analysis. The following is a typical recommendation from a school planning report:

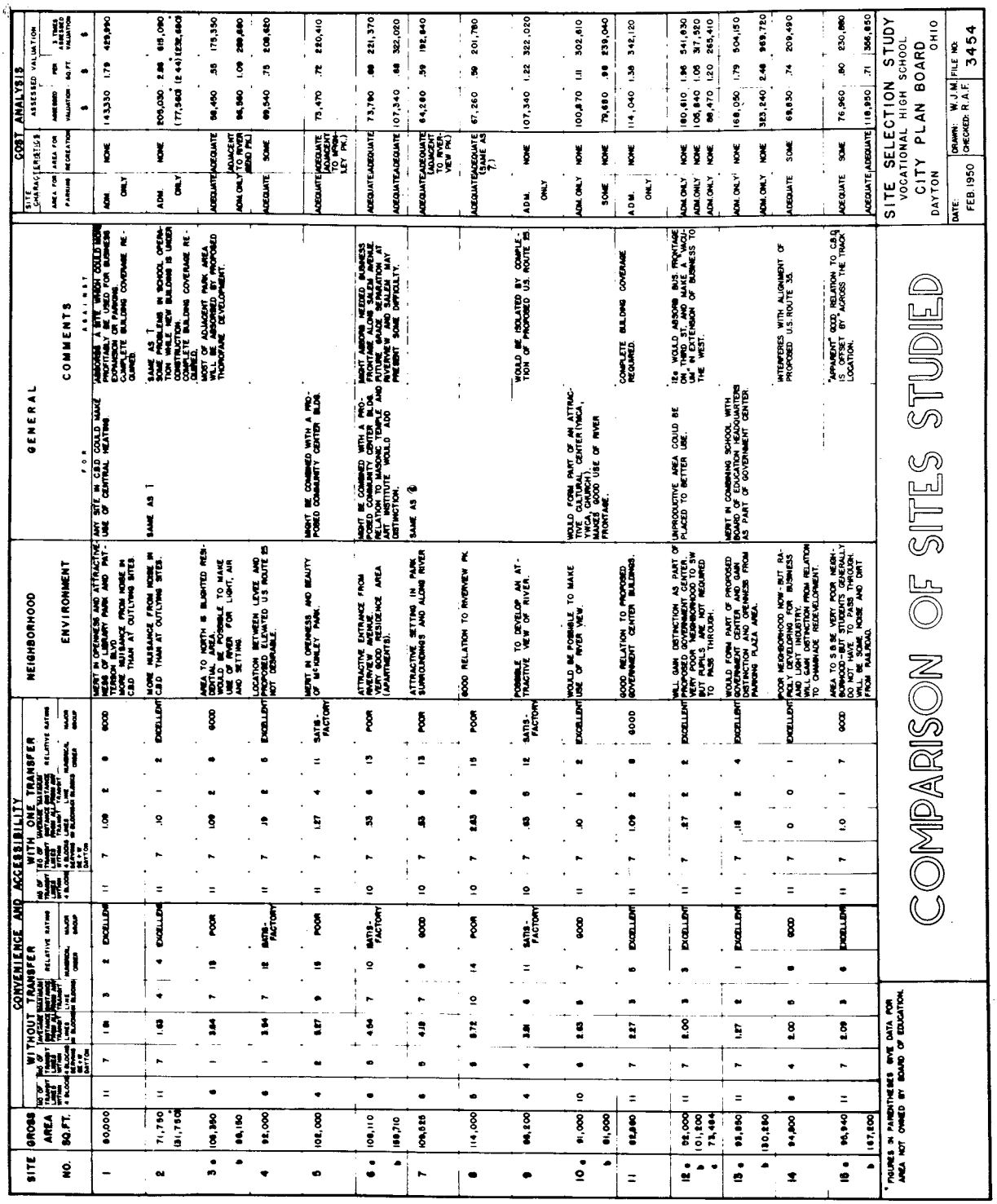
> The school site should probably be located in Neighborhood No. 9 where it would serve an existing population concentration, and where it would be centrally located to the pupils being transported from Neighborhoods No. 8 and 10.

Note that no specific site suggestions are made within Neighborhood No. 9. Furthermore, of all the site selection factors discussed previously, the only one that is considered is accessibility -- a centrally located school in relation to the population to be served.

This report has urged that planning agencies, partly because they can make such an effective contribution, should attempt to be more specific in recommending sites for new schools. To do this properly, a systematic procedure of site evaluation is needed. Several approaches have been used.

In a study to select a site for a vocational high school, one planning agency considered 15 sites, evaluating each in terms of five equally weighted factors: convenience and accessibility to users of the building; character of neighborhood environment; adequacy of parking and athletic areas; relation to present and future city development; and cost. Although no one site was recommended over the others, Table 5, extracted from the report, provides an excellent basis for making a choice.

Table 5



A more comprehensive site selection program, covering all new schools, has been underway for many years in Tucson, Arizona. The Tucson-Pima County Planning Department has played an important role in assisting the school district in selecting good sites, often well in advance of need.

In 1955, the planning department developed a detailed locational plan for future schools. New elementary, junior high and senior high school sites were delineated. Capacity and enrollment were projected for each school to 1970. The plan also outlined the action to be taken and the timing regarding site acquisition, building construction and building addition. Since that initial study, the planning department has prepared several other school plan reports to bring things up-to-date, and the school district has acquired 74 sites, providing for growth in enrollment to 1980. The results of the Tucson cooperative effort are highly commendable. Unfortunately, those reports reviewed contained no description of the site selection technique used.

The California State Department of Education is required to submit a written report and recommendations concerning new school sites to the governing board of each school district, except those governed by a city board of education. In choosing between several sites, the following criteria, as reported to the State Assembly in 1953 (Report of State Department of Education Relative to School Site Selection, per H.R. No. 133), must be considered:

1. Accessibility
   a. Travel distances -- pupil residences in half-mile walk zone. (Spot map of pupil residences must be made available upon request.)
   b. Undesirable travel conditions (no sidewalks, bad sidewalks, steep grades, business areas, industrial areas). Show number of pupils affected.
   c. Traffic flow on major streets -- show number of pupils crossing.
   d. Number of pupils crossing each dangerous intersection. Pedestrian accidents from police records.
   e. Use of public transportation -- number of pupils transported. Number of transfers required, number traveling in same direction as business people going to and from work.
   f. Possible new subdivisions, new thoroughfares or other future development that affects accessibility.

2. Environment
   a. Type of neighborhood -- present use, zoning, probable future zoning, proximity to business districts.
   b. Atmospheric conditions -- smoke, dirt, odors.
   c. Sources of noise -- factories, railroads, streetcars, trucks, radio interference, fire or police stations, hospitals, airports. (Sites proposed in the neighborhood of airports will be jointly considered by the California Aeronautics Authority and the Department of Education.)
   d. Daylight obstructions -- present and possible future (trees and buildings).
   e. Views.

f. Proximity to other public facilities, parks, playgrounds.
g. Possible future development affecting environment -- subdivisions, new streets.

A more detailed checklist is used by the Pennsylvania Department of Public Instruction to evaluate new school sites. The rater will find the form, Appendix A, handy to use, as it is organized in such a way that 'yes' and 'no' answers can be easily recorded.

All of the methods discussed thus far consider several criteria to assess the suitability of sites for new schools. Some include more factors than others; however, none weight the various criteria. Appendices B and C show site evaluation forms which do introduce the important dimension of weighting. In Appendix B, 13 items are evaluated for each site; each item is then scored on a scale from 1 to 10 (a score less than 6 for any one factor falls into a critical zone). No item is intrinsically weighted higher than others. In Appendix C, however, a definite preference is shown. Size considerations are most important, with topography, location and cost less important in that order.

Several weaknesses are apparent in these rating forms. There is no reference to the local comprehensive plan to see whether the site is consistent with the objectives, policies and proposals stated in the plan. Likewise, aesthetic features of the site are underplayed. School sites with exceptional natural features should be recognized in site evaluation rating forms.

School site rating forms must be developed according to the needs of the school board and the municipality. Many state departments of education publish guides that help local school and municipal officials to make better decisions regarding school site selection; some of the better ones are listed in the bibliography of this report.

CONCLUSION

Among the many important parts of a comprehensive school planning program, the site selection phase has received less critical attention than most. Many factors need to be considered. The planning agency can play an important role in identifying these factors, providing pertinent information to assess potential school sites, and developing a systematic basis on which to guage the suitability of alternative sites.

The quality and character of the school system will be enhanced if the planning agency makes a greater effort to help select good school sites. It is uniquely equipped to furnish this assistance.

APPENDIX A

Commonwealth of Pennsylvania
DEPARTMENT OF PUBLIC INSTRUCTION
Bureau of School Buildings

SCHOOL SITE INSPECTION
Work Sheet

I. Location: County_____ District_____ Administrative Unit No.____

1. Name and general location of site _____

_____

2. Site

a. Is near school population center Yes ____ No ____

b. Is within walking distance of what per cent of pupils to be served. Per cent _____

c. Is within the following distance in miles from most distant pupils (Circle) 2 - 4 - 6 - 8 - 10 - 12

d. Is easily accessible from improved highway Yes ____ No ____

e. Has safe means of ingress and egress Yes ____ No ____

f. Is safe distance from:

railroads	Yes ___ No ___	Heavy traffic	Yes ____ No ____
airports	Yes ___ No ___	hazardous industrial plants	Yes ____ No ____
airways	Yes ___ No ___	unslightly or non-fireproof structures	Yes ____ No ____

g. Is well removed from objectionable noises, odors and other nuisances Yes ____ No ____

h. Is readily accessible to:

electricity	Yes ___ No ___	fire protection	Yes ____ No ____
water	Yes ___ No ___	telephone	Yes ____ No ____
sewers	Yes ___ No ___		

General rating as to location:

Excellent _____ Good _____ Fair _____ Poor _____

II. Physical Characteristics:

a. Site is on high ground in relation to surrounding terrain Yes ____ No ____

b. Site is:

fairly level	Yes ___ No ___	gentle slope	Yes ____ No ____
slightly convex	Yes ___ No ___	steep slope	Yes ____ No ____
slightly concave	Yes ___ No ___	abrupt slope	Yes ____ No ____

c. Site has sufficient elevation to:

avoid flooding from streams Yes ___ No ___
Permit good natural drainage Yes ___ No ___
avoid flooding from surface water Yes _____ No _____

d. Check basic soil composition

Loam _____ Gravel _____ Limestone _____
Sandy _____ Clay _____ Farmland _____
Shale _____ Rock _____

e. Check the term which best describes the site

Farm under cultivation _____ Existing building site _____
Abandoned farm _____ Old industrial site _____
Timberland _____ City or borough lot _____
Grassland _____ Reclaimed land _____

f. The site will require clearance of (Check)

Trees _____ Stone fences _____
Brush _____ Old buildings _____
Rubbish _____

g. Site shows evidence of:

soil erosion Yes ___ No ___
swampy or wet areas Yes ___ No ___
recent fill Yes ___ No ___
abandoned wells, cisterns or cesspools Yes ___ No ___
abandoned mines or quarries Yes ___ No ___
toxic gases, smoke or obnoxious odors Yes _____ No _____
active mine, gas well, oil well Yes _____ No _____
inactive mine, gas well, oil well Yes _____ No _____
High Pressure gas or oil lines Yes _____ No _____
High tension power line Yes _____ No _____

h. General Shape

rectangular (Ratio width to length not more than 3.5) Yes ___ No ___
irregular Yes ___ No ___
Approximately square Yes _____ No _____
long axis parallel to access street or highway Yes _____ No _____

i. Site can be developed without:

a large amount of fill Yes ___ No ___
retaining walls Yes ___ No ___
extensive cut, or regrading Yes _____ No _____
culverts or bridges Yes _____ No _____
extensive grouting and shoring Yes _____ No _____

j. Road systems on site can be kept within reasonable limits of economy Yes _____ No _____

k. Estimated cost of site:

acquisition $ _____ preparation to receive the building $ _____

development $ _____

III. Adequacy:

a. Total acreage in site _____ acres

b. Total usable acreage _____ acres

c. Will site provide adequate space for:

building and approaches	Yes ___	No ___	elementary play areas (3 areas)	Yes ____	No ____
Secondary play areas:					
track, football and baseball	Yes ___	No ___	parking	Yes ____	No ____
Boys' play area	Yes ___	No ___	gardens, landscaped area, etc.	Yes ____	No ____
Girls' play area	Yes ___	No ___	probable additions	Yes ____	No ____

SCHNEIDER* SITE EVALUATION RATING SHEET

Site Desig.	Final Rating

Location _____

District _____

Local Option #1 _____

Local Option #2 _____

WEIGHTINGS	ITEMS EVALUATED															TOTAL SCORE
	Accessibility	Acquisition	Community Use	Drainage	Environment	Expansion	Population	Preparation	Topography	Traffic	Utilities	Zoning	Acreage	Option No. 1	Option No. 2	
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	
10																
9																
8																
7																
6																
5	CRITICAL ZONE															
4																
3																
2																
1																
0																

Date _____, 19____

Evaluated by _____

CALCULATION: A/B x 1000 = Final Rating

A. TOTAL SCORE	
B. ITEMS SCORED	

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APPENDIX C

RATING FORM
for
THE SELECTION OF SCHOOL SITES

H. H. LINN, F. J. McCORMICK, D. J. LEU

LOCATION OF SITE _____

SITE SIZE _____ acres

ASSESSED VALUE $ _____

APPRAISED VALUE $ _____

PRESENT OWNER _____

OWNER'S ADDRESS _____

_____

AVAILABILITY _____

_____

_____

(Insert photo of site)

RATING OF SITE

BASIC CONSIDERATIONS	IDEAL SCORE	ACTUAL SCORE	PERCENTAGE RATING 0 10 20 30 40 50 60 70 80 90
1. SIZE	400		
2. TOPOGRAPHY	250		
3. LOCATION	200		
4. COST	150		
TOTAL	1000		

GENERAL RATING OF SITE

_____

_____

_____

INSTRUCTIONS: Score items as follows: 5 = Very Superior, 4 = Superior
3 = Average, 2 = Below Average, 1 = Poor, 0 = Very Poor.
Multiply score times weight and enter result in "total" column.

BASIC CONSIDERATIONS	SCORE	WEIGHT	TOTAL	GRAND TOTAL	NOTES
I. SIZE					
1. Size		60			
2. Expansibility		20			
II. TOPOGRAPHY					
1. Elevation		10			
2. Drainage		10			
3. Soil		10			
4. Contour		10			
5. Shape		5			
6. Natural Features		3			
7. Attractiveness		2			
III. LOCATION					
1. Central Location		5			
2. Type of Neighborhood		5			
3. Zoning		5			
4. Accessibility		5			
5. Traffic Arteries		3			
6. Water Lines		3			
7. Sewers		2			
8. Electricity		2			
9. Gas Lines		1			
10. Fire Protection		2			
11. Public Transportation Fac.		2			
12. Parks and Playgrounds		2			
13. Natural Hazards		1			
14. Noise		1			
15. Odors and Dust		1			
IV. COST					
1. First Cost		10			
2. Site Development		5			
3. Building Removal		5			
4. Installation of Utilities		5			
5. Street Development		5			
GRAND TOTAL					

APPENDIX D

REFERENCE SOURCES FOR STANDARDS
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