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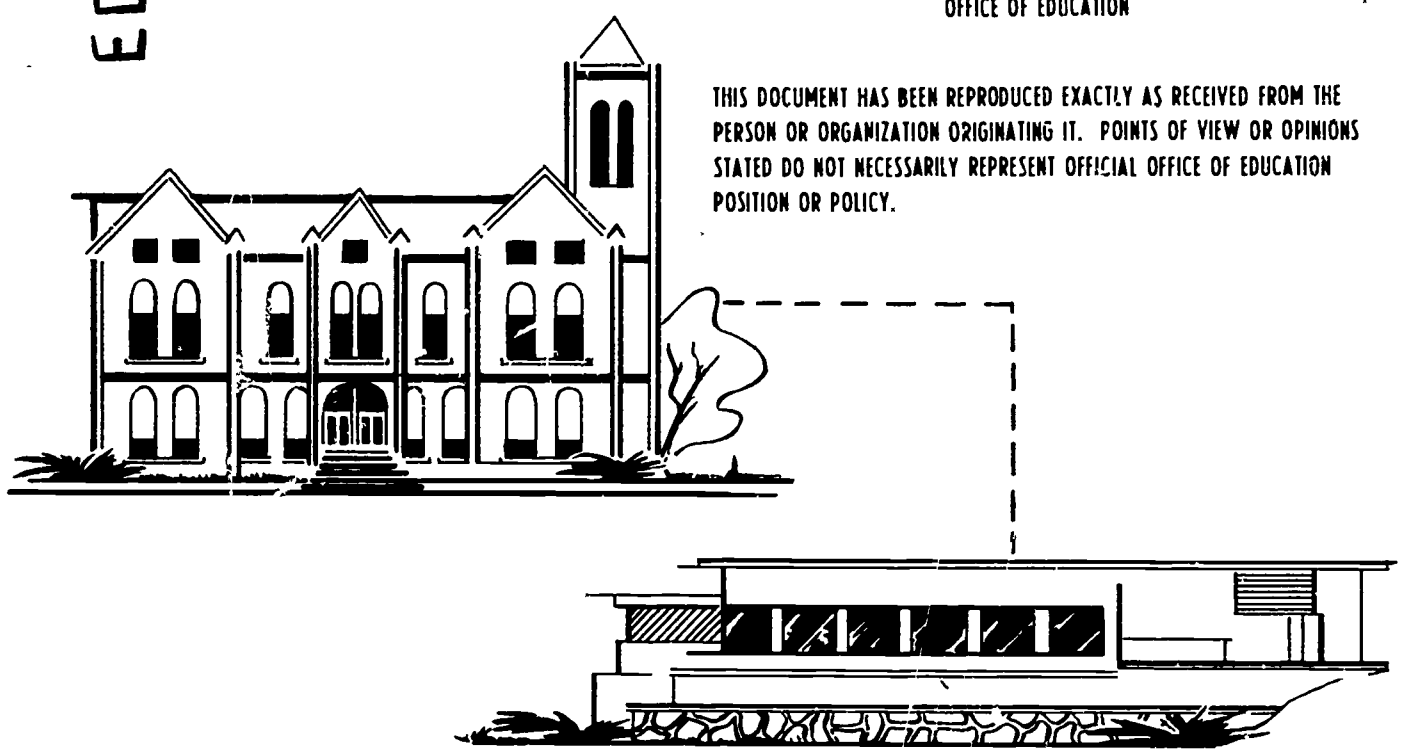
ABSTRACT

The first of the three parts in this research bulletin is devoted to definitions and policy establishment. Terms defined are remodeling, rehabilitation, modernization, and repair. Part II is an inventory of questions to be asked before a decision is made to rehabilitate an existing school structure or construct a new building. Maintenance, operation, custodial time requirements, and safety are alsc considered. Part III emphasizes the importance of public relations tc make the public aware of rehabilitation needs and financial considerations. (RH)

"Rehabilitation of Existing School Buildings or Construction of New Buildings?"

CRITERIA FOR BOARDS OF EDUCATION, ADMINISTRATORS AND SCHOOL BUSINESS OFFICIALS



RESEARCH BULLETIN NO. 2

by
E. B. SESSIONS, Ph.D.

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INTRODUCTION

At a meeting of School Business Officials held in Miami, Florida, October, 1959, it was decided to investigate the possibilities of a study to develop a "set of criteria" to assist school administrators and boards of education when confronted with the above question. The idea was approved by the Association of School Business Officials' Directors, when presented to them by Mr. Thomas B. Kent, Minneapolis, then Chairman of the Maintenance and Operations Research Committee.

Except for some correspondence and a discussion meeting at the St. Louis convention, in 1960, very little was done until the annual meeting in Toronto, 1961. The problem was again studied by the Maintenance and Operation group and a committee appointed to meet with the Association Directors. The members of this committee were: William M. Swisher, Phoenix; Chairman, Maintenance and Operations Committee. Mr. Norman Hutton, Toronto, Canada, and Donald D. Cunliff, Los Angeles. Again the Directors approved and a Research Committee appointed. Dr. E. B. Sessions, The Ohio State University, Columbus, Chairman; Mr. Cunliff and Mr. Hutton members. Later Mr. John T. Lucas, Kettering, Ohio; was added to the Research Project Committee.

After much correspondence, study, and discussions, Dr. Sessions prepared a report for the Dallas Meeting: "Rehabilitation of Existing School Buildings or Construction of New Buildings."

This tentative twenty-four page report was in questionnaire form and dealt with problems of school building rehabilitation under four headings: Educational Obsolescence, Site and Location Obsolescence, Structural Obsolescence, and Additional Considerations.

Early in the study of this problem and a survey of the many replies received from School Business Managers, it became evident that two approaches to the problem should be considered. First: The over-all or extensive studies the boards of education and the administrators must make in establishing the policies regarding construction of new buildings and/or the rehabilitation of existing structures. Second: The problems that must be answered by the business manager or someone representing the school administration when a specific school building is being considered.

It is realized that the above two categories cannot be established with finality. The policies developed by the school administration will govern the decision of the director in dealing with a specific building. It is also assumed that the problems encountered in a specific setting may call for alterations in established policies.

A third section is added which must be a part of the total considerations in dealing with new or rehabilitated buildings.

This report can only be used as a guide for boards of education and administrators. Because of multitudinous types of school districts; the many differences in educational policies and practices; divergent financial responsibilities and school laws, etc.; no definite statements are made. Instead, the report presents questions arranged under various headings which should be considered in determining whether to rehabilitate an existing school structure or construct a new building.

PART I

REHABILITATION (MODERNIZATION) OF EXISTING SCHOOL BUILDINGS OR CONSTRUCTION OF NEW BUILDINGS?

Definition of Terms

The terms used in building rehabilitation and construction have been defined by Dr. Nelson E. Viles as follows:[1]

Remodeling is commonly thought of as a change in structure.

Rehabilitation is usually thought of as a general overhauling of the complete building or a major section thereof the better to adapt it to continued use for the school program.

Modernization programs may involve some remodeling and some rehabilitation. The modernization programs are designed primarily for the purpose of adapting existing facilities and spaces to meet the needs of changing educational programs.

Repair programs are essentially what the name implies.

For the purpose of this study, *rehabilitation* will include *modernization*. *Rehabilitation* will indicate a change which affects the major part of a structure, the objective being *the improvement of educational opportunities.*

Two salient facts emerge from the preceding definitions:

1. School buildings which are rehabilitated undergo a structural change to improve the educational program.
2. Rehabilitation may involve remodeling, repair, and improvement of the service systems, acoustical treatment, site development, etc., but it entails much more than this kind of change. Although the repair of an old heating plant, the reconditioning of used school furniture, or the blacktopping of play areas do affect the educational opportunities for pupils, the effects are only incidental in respect to the entire educational program in a particular building. Such improvements, therefore, do not constitute rehabilitation in the sense used here.

In determining the effectiveness of a particular school building, structural soundness should not be the only criterion. Except in the case of a fire, a flood, or an earthquake, school buildings seldom become structurally unsuited for attendance. In fact as the building gets older, safety factors are often improved when compared to what they were originally, with the installation of modern heating plants, more adequate wiring, and modern fire-fighting equipment.

If evaluated in terms of educational requirements, many school buildings fall short and perhaps should have been abandoned or rehabilitated years ago. "Most school buildings become obsolete long before the structures themselves deteriorate."[2]

Handler points out that there ar four major check-points of school building obsolescence: (1) educational, (2) site, (3) location, and (4) building structure and service systems.

[1] Nelson E. Viles, *School Buildings: Remodeling, Rehabilitation, Modernization, and Repair,* Federal Security Agency, Office of Education, Bulletin 1950, No. 17. Washington, D. C.: U. S. Government Printing Office, pp. 1-2.

[2] Benjamin Handler. "Economic Planning for Better Schools." Ann Arbor: Publications Distribution Service, University of Michigan.

It has been pointed out in the introduction that this report is divided into major divisions, one for boards of education and administrators and the second dealing with problems encountered in a specific situation. The four types of school building obsolescence as stated by Handler will be used in each section.

The Establishment of School Policies Regarding School Buildings

An attempt is made in this section to present statements, questions, and ideas which will assist the school boards and administrators in formulating a stated policy which will be a "guide post" in determining what to do in a specific building situation as well as being applicable to all building problems in a school district. These policies are often called "codes," "rules and regulations" or "adopted board statements."

Educational Obsolescence. The following statement is taken from Handler:

> This is probably the most important — and least tangible — way in which a school becomes obsolete. It occurs at that moment when teachers and other schoolmen conclude that they are unable to use modern teaching techniques in a given building.
>
> Educational obsolescence often takes place even before the school administration recognized it 'since not all administrators have kept themselves completely up-to-date concerning educational needs.'
>
> Educational obsolescence runs into another obstacle — it is difficult to explain to the public. In the first place, many new techniques remain 'controversial' long after the majority of school districts are using them. And when a taxpayer sees a perfectly sound building — and is told it must be replaced — it is not surprising that he is skeptical.[3]

It is easy to determine whether or not the heating plant is performing adequately, whether the plumbing is obsolete, or if the site is inadequate. Educational obsolescence is more difficult to determine. A substantial school building is a good building in the minds of the public. A common argument is: "Our 50-year old building is better than the one I went to as a boy." The problem is further complicated because administrators have been so busy with finances and increased enrollments that the requirements for the educational program are often not understood or studied.

Boards *should* and do ask if the "new ideas," "new techniques," or "new machines" are determined by educational needs that will really help boys and girls, or if they are just fads.

It could easily happen, and undoubtedly does, that the board of education uses a worn-out heating plant, unsafe or inadequate electric wiring, or a poor roof as the reason, or some combination of these as multiple reasons, for improving or abandoning a school building. It has been pointed out that structural defects are the least compelling reasons for abandoning a building. These and fire hazards can usually be corrected. Because, according to Handler, these offer legal grounds for condemning a building or for rehabilitation, they are most often used for justification. But if only these reasons for change are evident, then no matter how good the building becomes structurally, the educational opportunities are still obsolete. Educational obsolescence should take precedence over structural obsolescence when considering the rehabilitation or abandonment of a school building. The following questions may serve as a guide in determining educational needs:

1. In determining what is required in a certain building, either an old structure or a newly planned one, do you really study the educational needs?

[3] *Ibid.*

2. Does the administrative staff supply the required educational information to the board?
3. Is sufficient time spent in evaluating educational needs before the decision is made?
4. Do you have a council, committee, or study group working in your district to help determine the educational needs?
5. Does this group have time, financial backing, and sufficient educational understanding of the school board's problem?
6. Do you, as administrators, appreciate the work of such groups and evaluate the group's recommendations before making a decision?
7. Do you get educational information from universities or from college of education personnel?
8. Is it recognized that the study of educational requirements for a senior high school are more time-consuming than for the elementary division?
9. Do you think it necessary or advisable to obtain help from "specialists" from the universities, state departments, or recognized private agencies?
10. Is consideration given to changing demands on the curriculum – e.g., shop-electronics, the use of science and language laboratories, etc., – that have a direct effect on the physical facilities?

Many major and minor items need to be considered when stulying the educational necessities which must be provided in a new or rehabilitated school building. Many of these are structural in nature but educational in purpose. For example, there is general agreement that the old type of classroom, 22 x 30 feet (660 square feet of floor space) is not adequate for a good modern educational program.

It is safe to assume that all school administrators and board members have ideas, some fixed and some fluid, regarding the physical requirements of a new or rehabilitated school building. Fortunate is the school district which has a written and adopted set of policies regarding the educational requirements that must, within reason, be provided in the physical structure of each school building in the district. Although the adopted policies cannot be followed exactly or in toto when considering the rehabilitation of an old school building, it seems reasonable to expect that if cafeteria facilities, audiovisual rooms, adequate office space, conference rooms, etc., are provided in most of the school buildings in the district, these should be provided in the rehabilitated buildings as well.

Site and Location Obsolescence. Site and location obsolescence are closely related. Modern eduational practices are demanding larger outside play spaces than were considered when many old buildings were constructed.

The actual size of the site needed to facilitate a modern physical education or play-activity program may vary in different locations. A larger out-door play area might be necessary in a state with many days of pleasant weather as compared with a northern community where during the school year there are relatively few days fit for outside play.

The National Council on Schoolhouse Construction recommends considerably larger school sites than were provided in the past. It recommends that wherever possible a minimum of five acres plus one additional acre for each 100 pupils in an elementary school, anl minimums of twenty to thirty acres, respectively, plus one additional acre for each 100 pupils in a junior or senior high school be added.[4]

[4] National Council on Schoolhouse Construction. *Guide for Planning School Plants.* Nashville: the Council, 1958, p. 23.

The following questions regarding site obsolescence should be considered:

1. Are the above standards acceptable?
2. Does your board have its own standar . regarding the size of school sites?
3. How far will you deviate from these sta. .ards when considering rehabilitation of an old building?
4. Do you believe that a larger site is needed in certain geographical locations than in others?

Location obsolescence is affected by many more factors than is site. Some of these are:

1. Changes in school population
2. Age structure of the community
3. Land use
4. Expansion of business and industry resulting in displacement of houses
5. Apartment dwellings
6. Traffic problems
7. School transportation facilities
8. Movement to suburban areas

Any one of the above factors may become a major problem in regard to location obsolescence. When examined in the total picture of rehabilitation, the location of a specific school building is second only to the educational advantages or disadvantages involved. The following questions should be considered in relation to each item.

1. *Changes in School Population*
   a. Do you make a detailed and complete study of the changes in the school population for the area to be served by a particular building?
   b. Do you have spot maps which show the residence location of each pupil in the area affected?
   c. Do these maps show for a certain year the grade in which each pupil was enrolled?
   d. Do you keep a yearly spot map showing the residence location of pupils in the entire school district? If not yearly, how often is this data obtained?
   e. Do you show on your spot map the grades or at least the divisions of the school system – e.g., kindergarten, primary grades, middle grades, etc.?
   f. Do you obtain the necessary information regarding the children of preschool age who live in the particular area?
   g. Do you have the information regarding the birth rates in your district and do you attempt to interpret this information in terms of the specific area?
2. *Age Structure of the Community*
   a. Is the particular building located in an area where the homes are occupied by older people?
   b. What is the ratio of the families of child-bearing age to those beyond this age?
   c. Do you attempt to get the information for items a and b before making a decision about rehabilitation?
3. *Land Use*
   a. Do you obtain from the city, information regarding zoning of the area affected?
   b. Have you investigated the current patterns of small businesses, stores,

motels, service stations, etc., that may be developing along one, two, or more streets in the particular area?

4. *Expansion of Business and Industry*
   a. Is it important to know what is happening at present and what might happen during the next 10 to 20 years? (This may involve consultation with city, town, and county planning commissions.)
   b. Is it possible or necessary to get an opinion from the executives of businesses or industries in the area regarding their expansion plans?
   c. Should school districts, except in unusual circumstances, rehabilitate buildings on a site surrounded, to a greater or lesser degree, by industrial plants?
5. *Apartment Dwellings*
   a. Do you find that the ratio of school children to family units is lower for apartment dwellers than for individual homes?
   b. Do you have the data to show the number and types of apartment houses in a specific area?
6. *Traffic Problems*
   a. Must children cross busy streets with heavy traffic to get to school?
   b. Do you have all available information regarding the plans of state, county, or city administrative units for future highway construction right-of-ways?
7. *School Transportation Facilities*
   a. Is it important to know what types of transportation can be considered: (1) private utilities or city owned; and (2) school-owned bus transportation?
   b. Under the present rulings of the board regarding walking distances, can all children living in the specific area walk to the school?
   c. Will the size and shape of the attendance area influence the answer to statement b?
   d. If the school district does not furnish transportation, is there public transportation for children living beyond normal walking distances?
   e. Does the school district furnish school-controlled buses for children living beyond walking distance?
   f. Do you make studies of the yearly cost, per mile, for transporting children in school-owned buses?
   g. Would you consider transporting pupils from a specific area to another school center? Would a public-relations problem result?
   h. Would you consider two or three "runs" for a bus – morning and afternoon – in order to transport more pupils per bus? (This might mean, "off scheduling," regarding the time for opening and closing the school.)
   i. In considering the possibility of transporting all pupils in a specific area to another building, do you realize that transportation is a yearly cost?
   j. Is it important to equate the yearly transportation costs plus the cost of housing the pupils at another school center with the allocated yearly cost (perhaps 20 years) for the rehabilitation structure?
8. *Movement to Suburban Areas*
   a. Although the movement to suburban areas may be a part of the school-population study, is it being considered in relation to the rehabilitation of an old school structure?
   b. Are figures available showing suburban-area growth and the location of the homes which suburban dwellers have vacated?

c. Do you have figures showing the trends of suburban development and their effects upon the entire district population? How will these trends affect certain areas?

The following is a quotation from Charles Gibson, Chief, Bureau of School Planning, California Department of Education:

> "The crux of the problem is, gentlemen, that, no matter what program a school is designed against, there is only one thing we can be sure of – it isn't going to be that way in fifteen years. And the way we're building schools, the school is going to be there for 100 years . . . Your buildings are going to have to serve a lot of whims and foibles and changes of emphasis. So the basic emphasis in any design, in my opinion, is the ability of the physical plant to adjust economically and simply to shifts in space use."

Part II

REHABILITATION OF A SPECIFIC BUILDING

After the board of education has determined the educational requirements and answered the questions regarding site and location, it must come to grips with the main problem: *Can a specific building be rehabilitated to adequately meet the educational needs?* It is assumed, of course, that the physical fitness of the structure has been previously determined. The adequacy of specific facilities must now be examined.

Service systems are usually thought of as mechanical equipment. This equipment, in practically all cases, wears out or becomes obsolete long before the structure itself deteriorates beyond repair. Extensive repairs or complete replacement of various items in the service-system category must be made periodically, whether or not the building is scheduled for rehabilitation. In considering rehabilitation, the following questions regarding service systems should be asked:

1. Are heating plants usually considered first when rehabilitation is suggested?
2. Can the present heating plant be used for 10 to 15 years without extensive repairs, or is complete replacement necessary?
3. Is it more expensive to install a new heating plant in an old building than in a new structure?
4. Is it true that the plumbing throughout the old building is in need of major overhauling?
5. Do you find that types of toilet fixtures, location of toilet rooms, and drinking fountains are often a problem in an old building?
6. If new buildings have running water in regular classrooms, can this be provided in the rehabilitated building? Is it necessary?
7. Do your plans call for toilet rooms in the lower primary grades and kindergarten rooms?
8. Have you investigated the costs of an entire overhauling of the plumbing facilities in an old building?
9. Do you have comparative figures, obtained from past experiences, to estimate these costs?
10. Will this school building need a complete revamping of the entire electrical system?

11. Will the impact of electrical facilities for school buildings – ranging from office machines, cafeteria equipment, teaching machines, and scientific apparatus to electric pencil sharpeners – force you to re-evaluate the percentage of the total cost which should be spent for electrical facilities? "Code Requirements"
12. At least three questions regarding the electrical installations within a school building must be considered:
    a. Is it possible for school people to know the demands that will be made on the electrical system in a school building during the next 15 to 20 years? Should the building meet these somewhat vague demands?
    b. Will greater demands for electricity and the increased number of electric machines increase the safety hazards in the building?
    c. Is artificial lighting fast replacing natural window lighting in school buildings as well as in other buildings?

Listed below are some of the questions that ought to be considered regarding rehabilitation:

1. If cafeteria facilities including inside eating area and faculty dining room are provided in most of the school buildings, should these facilities be provided in the rehabilitated building?
2. Can adequate cafeteria facilities be provided to meet the needs of the number and level of pupils and teachers to be served?
3. Will there be adequate indoor recreation space and outside play areas?
4. Are audiovisual rooms and equipment provided? All classrooms darkened or special areas?
5. How far will your board deviate regarding the size of a classroom?
6. What about auditorium or multi-purpose rooms?
7. Is sufficient office space for administration and special services – e.g., for student body, financial manager, etc. – being provided?
8. Are counseling offices, clinics, and health rooms provided? What about special exercise rooms for the physically handicapped?
9. Do you think that showers and dressing rooms are necessary for the elementary grades? If so, can an adequate number be provided?
10. Are teachers' conference rooms, work rooms, and rest rooms included?
11. Have the acoustics problems been thoroughly studied?
12. Is an adequate library provided?
13. What about classroom fixtures, such as cabinets, bulletin boards, chalk boards, etc.?

MAINTENANCE, OPERATION, AND CUSTODIAL-TIME REQUIREMENTS

The requirements of efficient maintenance do not appear in the actual first expenditure and thus are often overlooked. These items must be charged to the yearly budget. For example, a recent study of the time schedule for all custodial operations in each school building in a city school district disclosed a number of expenses for custodial time which could have been eliminated by proper planning.

The following questions regarding maintenance must be considered:

1. Should the third story of any school building be rehabilitated?
2. Is it true that in figuring custodian time, it is generally found that stairways are among the most time-consuming work the custodian does?
3. Are the following items, excluding stairways, studied regarding the time it takes custodians to do the daily work?
   a. Types of floors
   b. Closets and storage space
   c. Slop sinks
   d. Transporting of equipment from one floor to the floor above
   e. Entrances
   f. Hall and corridors
   g. Furniture
   h. Toilets and rest rooms
   i. Yard care
   j. Location of trash containers
   k. Location of electric fixtures for operation of power equipment.
4. Does your district have a time schedule figured for each custodial operation and has the time schedule been applied to this particular building?
5. Will the individual classrooms in the rehabilitated building be large enough to make easy cleaning possible?
6. Keeping toilet rooms and fixtures clean and sanitary requires a large block of the custodian's time. In this rehabilitated school building, are the toilet rooms and fixtures comparable to those found in modern buildings?
7. Clear hallways and play spaces are easy to clean. Is this considered before rehabilitation occurs?
8. Are the food-preparation and serving areas easy to clean?
9. Will the operational costs of the feeding program be excessive because of poor layout?
10. Will it be possible, under rehabilitation, to maintain a master plan for proper physical relationships between facilities; for good student – flow pattern and adequate ingress and egress for students; and for buses, delivery trucks, and fire equipment?

SAFETY

The following statement is taken from, "The Bridge," a pamphlet published by the National Commission on Safety Education of the National Education Association, December, 1961:

> Accidents occurred slightly more often in the ar. . of 'halls and stairways' than in classrooms, despit: tiic unequal time teachers spend in these two places. 'Only 30.6 per cent of all school accidents occurred in places of instruction; 31.3 per cent in halls and stairway. The highest incidence for halls was in the academic and junior high schools; and stairways, in the elementary schools.' . . . In general, halls and stairways appear to be the places where teachers are most likely to have accidents.'
>
> Certain physical conditions seemed related to higher accident rates. The school groups with the highest accident rates, for example, were in multi-storied buildings with relatively few elevators. Other influencing factors

might have been highly waxed floors and steps, damaged steps, and overcrowded storage facilities.

. . . Do elementary school buildings whose stairs and bannisters were constructed especially for small children have higher rates of teacher falls than school buidings with bannisters and steps nearer the normal dimensions for adults?

. . . How many accidents occurred while teachers were leading classes down stairs and how many when they were not? (One out of nine teacher accidents ocurred on steps or stairways.)

. . . Would use of less slippery floor coverings and 'safer' construction of steps and bannisters, particularly in the elementary schools, cut down the high rate of falls?

The preceding quotation suggests certain questions which must be answered, with a high degree of accuracy, when rehabilitation is considered.

1. Will the rehabilitated building meet at least the minimum code requirements for fire safety?
2. Are fire escapes and fire-fighting equipment provided?
3. Is the finished building as "fire resistive," as it is possible to make it?

After the preceding problems have been considered, three vital questions must be answered in the affirmative:

1. Will all educational facilities be provided, to a reasonable degree, in this rehabilitated building?
2. Are you sure that in the rehabilitation you have not "lost" an excessive amount of space, formerly used for teaching areas?
3. Will teachers and pupils appreciate being assigned to this building?

Metropolitan Toronto School Board has a formula which establishes a ceiling cost for school construction. On the basis of this formula the optimum capacity of the school and the optimum area of the school are related to the total contract cost, including all fees, etc. which when the optimum capacity of the school is divided into the calculated contract price at $ xx per sq. ft. and fees added produces a per pupil cost.

The following forms are adapted from this Metropolitan Toronto School Board ceiling cost formula for school construction so that in effect, referring to page 12, the optimum area of schools would be that area which is acceptable to the particular board and by use of column 2, following the same procedure, one achieves a loss or gain answer in column 3. This serves as an excellent guide to determine if any addition is required by the upgrading and increased room sizes occasioned during rehabilitation to present-day standards. Similarly this applies on pages 12-13-14.

TEACHING ACCOMMODATION AND ANCILLARY REQUIREMENTS ACCEPTABLE AND PROPOSED

SQUARE FOOTAGE AREAS ACCEPTABLE TO THE BOARD EQUIPPED TO 1964 ACCEPTABLE STANDARDS JUNIOR PUBLIC ELEMENTARY SCHOOLS GRADES K-6	SQ. FT.	SQUARE FOOTAGE AREAS WHICH CAN BE PROVIDED WITHIN THE REHABILITATED DESIGN JUNIOR PUBLIC ELEMENTARY SCHOOLS GRADES K-6	SQ. FT.	LOSS OR GAIN OF ACCOMMODATION OCCASIONED BY REHABILITATION JUNIOR PUBLIC ELEMENTARY SCHOOLS GRADES K-6	SQ. FT.
Optimum area of school					
(a) Instructional space		(a) Instructional space		(a) Instructional space	
12 standard classrooms at		standard classrooms at		standard classrooms at	
1 kindergarten (incl. washrooms)		kindergarten (incl. washrooms)		kindergarten (incl. washrooms)	
(b) Ancillary space		(b) Ancillary space		(b) Ancillary space	
General purpose room		General purpose room		General purpose room	
Library		Library		Library	
Staff room & staff washrooms		Staff room & staff washrooms		Staff room & staff washrooms	
(c) Administrative areas		(c) Administrative areas		(c) Administrative areas	
Office		Office		Office	
Health room		Health room		Health room	
(d) Service areas		(d) Service areas		(d) Service areas	
Caretaking storage		Caretaking storage		Caretaking storage	
		Academic storage		Academic storage	
Mechanical services (incl. boiler, fuel storage, fan room, incinerator)		Mechanical services (incl. boiler, fuel storage, fan room, incinerator)		Mechanical services (incl. boiler, fuel storage, fan room, incinerator)	
Electrical services & transformer room		Electrical services & transformer room		Electrical services & transformer room	
Pupil washrooms		Pupil washrooms		Pupil washrooms	
Walls		Walls		Walls	
Corridors		Corridors		Corridors	

ACCOMMODATION REQUIRED BY ADDITION TO OFFSET LOSS OF SPACE OCCASIONED BY REHABILITATION (IF ANY)

DETAIL

TEACHING ACCOMMODATION AND ANCILLARY REQUIREMENTS ACCEPTABLE AND PROPOSED

SQUARE FOOTAGE AREAS ACCEPTABLE TO THE BOARD AND EQUIPPED TO 1964 ACCEPTABLE STANDARDS ACADEMIC SECONDARY SCHOOLS GRADES 9 TO 13, 10 TO 13, OR 11 TO 13 SQ. FT.	SQUARE FOOTAGE AREAS WHICH CAN BE PROVIDED WITHIN THE REHABILITATED DESIGN ACADEMIC SECONDARY SCHOOLS GRADES 9 TO 13, 10 TO 13, OR 11 TO 13 SQ. FT.	LOSS OR GAIN OF ACCOMMODATION OCCASIONED BY REHABILITATION ACADEMIC SECONDARY SCHOOLS GRADES 9 TO 13, 10 TO 13, OR 11 TO 13 SQ. FT.
Optimum area of school		
(a) Instructional space	(a) Instructional space	(a) Instructional space
24 standard classrooms at	standard classrooms at	standard classrooms at .....
2 commercial classrooms at	commercial classrooms at	commercial classrooms at .....
2 music rooms	2 music rooms	music rooms
(1 vocal & 1 instrumental)	(1 vocal & 1 instrumental)	(1 vocal & 1 instrumental) .....
1 arts and crafts	arts and crafts	arts and crafts .....
5 science labs (2 chemistry & 2 phys. & 1 general)	science labs (2 chemistry & 2 phys. & 1 general)	science labs (2 chemistry & 2 phys. & 1 general) .....
2 general shops at and storage of each	general shops at and storage of each	general shops at and storage of each .....
1 home economics	home economics	home economics .....
1 double gymnasium (incl. office & bleacher space)	double gymnasium (incl. office & bleacher space)	double gymnasium (incl. office & bleacher space) .....
(b) Ancillary space	(b) Ancillary space	(b) Ancillary space
Library	Library	Library .....
Auditorium (incl. dressing rooms, stage, etc. for pupils)	Auditorium (incl. dressing rooms, stage, etc. for pupils)	Auditorium (incl. dressing rooms, stage, etc. for pupils) .....
Staff rooms	Staff rooms	Staff rooms .....
Cafeteria & kitchen (pupils)	Cafeteria & kitchen (pupils)	Cafeteria & kitchen (pupils) .....
Extra curricular activities & committee room	Extra curricular activities & committee room	Extra curricular activities & committee room ....
Dressing rooms, showers, team room	Dressing rooms, showers, team room	Dressing rooms, showers, team room .....

(c) Administrative areas		(c) Administrative areas		(c) Administrative areas	
Offices	.....	Offices	.....	Offices	.....
Guidance & counselling	.....	Guidance & counselling	.....	Guidance & counselling	.....
Health room	.....	Health room	.....	Health room	.....
(d) Service areas		(d) Service areas		(d) Service areas	
Pupils washrooms	.....	Pupils washrooms	.....	Pupils washrooms	.....
Storage space — caretaker	.....	Storage space — caretaker	.....	Storage space — caretaker	.....
athletic	.....	athletic	.....	athletic	.....
general	.....	general	.....	general	.....
Heating & mechanical services (incl. boiler, fuel storage & incinerator)	.....	Heating & mechanical services (incl. boiler, fuel storage & incinerator)	.....	Heating & mechanical services (incl. boiler, fuel storage & incinerator)	.....
Electrical services & transformer	.....	Electrical services & transformer	.....	Electrical services & transformer	.....
Corridors	.....	Corridors	.....	Corridors	.....
Walls	.....	Walls	.....	Walls	.....

PART III

ADDITIONAL CONSIDERATIONS

PUBLIC RELATIONS

There are perhaps no other items of school expenditures that the public feels as close to as the money spent for new or rehabilitated school buildings. The patron knows that he must pay the bill, and because of extra levies, usually large, or bond issues on which he must vote, the new construction or rehabilitation programs are forced upon him. He naturally assumes that he should have something to say about it. Often after much discussion, he assumes the place of an "expert" in deciding what should be done.

As long as we have a democracy and pride ourselves in saying that "the schools belong to the local public," we are faced with the problem of keeping the public informed. The school patron has a *right* to know what the schools are doing and school boards and school administrators have the *responsibility* of keeping the patrons informed.

In terms of new buildings or rehabilitation projects, how does your board answer the following statements:

1. Do you wait until a specific situation becomes a necessity, or do you inform the patrons each year or each six months regarding the building needs of the district?
2. For how long a time prior to actual construction – one, two, three, or more years – do you inform the public regarding specific buildings?
3. Is it possible to tell just what information should be given to the public in entirety and which items can be generalized?
4. What facilities do you use to keep the public informed?
5. Do you have citizens' committees, citizen-school committees, school committees, or others?
6. Do the members of your board of education participate in the educational programs for the public before a bond issue or a building levy is submitted?
7. What program or programs have you used to keep your public informed regarding school needs, particularly school-building needs?
8. What is the effect on public relations if the rehabilitated building does not have one or more of the following facilities if these are provided at other school centers; cafeteria facilities, indoor play areas, ample storage, special rooms, etc?
9. All school buildings are used to some degree by the public during after-school hours. How much does this public-use factor influence a board of education in making the decision on whether or not to abandon a school center?

FINANCIAL CONSIDERATIONS

As long as the board of education spends money, the question – what will it cost? – becomes a deciding factor. An attempt has been made to call to the attention of the school administrators many questions that must be answered before a board can really know what the cost will be. Some of these are major and some minor; some are "money

costs" and some are educational costs; some are for immediate needs and some involve public good will.

All boards of education and administrators must realize that the cost of the structure and equipment (capital outlay) is actually but a small part of the money that is paid for education. The following is taken from a report prepared by Charles D. Gibson:

> The capital cost of a school building represents only 8 to 10 per cent of the total cost of education. The instructional program represents approximately 70 per cent. If the building is not planned to meet the specific needs of the instructional program, the value of the instructional dollar – 70 per cent of the total – is materially reduced.[5]

Reference has also been made to "the 50 to 60 per cent ratio of expenditure for remodeling against the cost of new construction."[6]

The following statement was made in a letter to W. M. Swisher, Supervisor, Construction and Maintenance, Phoenix Union High School, Phoenix Arizona: "We [Los Angeles] feel that when the cost of structurally strengthening and modernizing of existing buildings approaches 65% to 70% of the cost of new replacement construction we should give serious consideration to replacement." The letter is signed by Harry B. Saunderi, Administrative Coordinator.

The concept of ratio brings to mind certain questions:

1. Are the ratio figures shown above, actual or just mythical amounts?
2. Because of varying local conditions and limiting factors connected with a specific building, can any acceptable ratio figure be established?
3. Is the ratio factor used as an actual cost fact, or is it used to satisfy public opinion?
4. In attempting to figure a ratio, do boards of education include all the hidden or auxiliary costs, such as:
   a. Time element
   b. Moving of furniture and equipment while tht specific building is being rehabilitated
   c. Transporting pupils and teachers
   d. Contingencies
   e. Additional fees for architectural contingencies
   f. Miscellaneous items like office space, recordkeeping, custodial equipment, and maintenance supplies
   g. Moving or demolition of present building.
5. Do you need more information regarding ratio figures or do we have the information in the various school districts?
6. Are there provisions in your state whereby the state government assists the local district with capital-improvement money?
7. If so, does the state have inspection-of-plans control?
8. Do the state personnel who conduct inspection of plans, offer education help, or do they review the plans only for structure, safety, and materials control?

When a community is considering a rehabilitation or new-construction project, a question frequently asked is: Why is it necessary for the board of education to pay

[5] *Stock Plans For School Buildings.* Prepared for the Senate Fact Finding Committee on Education by the California State Department of Education, Bureau of School Planning; Sacramento, California.

[6] "A Detailed Analysis of Remodeling versus New Construction Costs with Complete How-to Facts on an Exceptional Remodeling Program." E. A. Traver, *School Board Journal* (February, 1960).

"all that money" for architects' fees? School offiicals should consider the following questions:

1. Does your board have its own architectural department as part of the administrative staff?
2. If the answer to question one is *yes,* does your own staff do *all* the work for a new or rehabilitated building?
3. If the answer to question one is *no,* do you have a policy in dealing with private architectural firms?
4. Do you give your architect a detailed outline of education specifications required for each building?
5. Do you believe that the services of an eficient architect is one of the least expensive items in a school building?

* * *

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SELECTED BIBLIOGRAPHY

In addition to the publications listed in the footnotes:

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