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ABSTRACT

North Carolina school districts thinking about building new educational facilities are legislatively required to conduct an analysis that compares the costs and feasibility of building the new building versus renovating an old building. This document contains the cost and feasibility forms suggested for use in this analysis. The forms provide a checklist and rating system to evaluate the feasibility of renovating buildings, and if the feasibility analysis is not conclusive, doing a cost comparison. (GR)

Feasibility and Cost Analysis

North Carolina Dept. of Public Instruction
301 N. Wilmington St.
Raleigh, NC 27601-2825

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INTRODUCTION

COST AND FEASIBILITY OF RENOVATING OR REPLACING AN OLD SCHOOL BUILDING

GS 521C-521 requires a local school board to submit its long-range plan for meeting school facility needs to the State Board of Education every five years . These plans must consider the cost and feasibility of renovating old school buildings instead of replacing them. No analysis is required at this long-range plan phase. When a school board implements a plan to build a new school that will replace an existing facility, a **FEASIBILITY AND COST ANALYSIS** form must be submitted for each building being replaced. The analysis should be done early, preferably prior to (but not later than) the submittal of preliminary review plans. Send the analysis, along with photographs of the building (copier images are satisfactory, if clear), to:

NCDPI, School Planning
Education Building, 7th Floor
301 N. Wilmington St.
Raleigh, NC 27601-2825

The Department of Public Instruction is required to submit a copy of the analysis and the photographs to the North Carolina Historical Commission. The Department of Cultural Resources is a good resource for identifying new uses for facilities over fifty years old which no longer meet the educational program needs of the local school system. For their assistance, call Renee Glendhill-Earley, environmental review coordinator, at 919/733-4763.

The Feasibility And Cost Analysis forms are provided as a guide. Other formats may be used, but comparisons must be based on useful life and cost per student. The goals of the forms are:

1. Define "renovation" so that comparisons are uniform.

2. Make cost comparisons valid by comparing costs per year of useful life for program and support spaces or costs per student served per year of use.

3. Provide a system of evaluation that can, in many cases, be done by school system personnel without hiring outside consultants.

The forms establish the following levels of analysis:

1. A checklist and rating system (partS II-A and II-B) are provided to evaluate the feasibility of renovating buildings. The system is designed to establish categories that can be used by school system personnel.

2. If the feasibility analysis is not conclusive, a cost comparison (part III) is done. Cost analysis may require the services of an architect or engineer.

Complete the general information on page 3 and part II-A "Feasibility Analysis-Building" for each building under consideration. Complete part II-B "Feasibility Analysis-Site" for each site, unless it remains in use for the new facility. (Only parts which are applicable to the project under consideration need be submitted.)

Do not submit forms unless one or more building(s) will be demolished at the site of a new school or replaced with a new school at a new location and no further use of the old facility is identified. These forms are not required for renovation projects.

COMPARATIVE DESCRIPTION

This criteria is intended to give local school facility planners a uniform criteria for the description of their school buildings. It should simplify the task of individual school evaluation and long-range planning. The descriptions below consider the age, type of construction, apparent condition and design adequacy, life expectancy, feasibility of renovation, and mechanical adequacy. When evaluating a building, consider how it compares to other school buildings across the region or state.

Excellent	Buildings which are of quality construction, of good design to (long-range) accommodate a modern educational program, and flexible enough to be adapted to changing educational programs. Excellent physical condition. Modern mechanical systems with air conditioning typical. Meets all modern code requirements including handicapped use requirements. Analysis will indicate renovation or alteration feasible, if required.
Very Good	Buildings of sound construction, above-average condition, adequate (long-range) in design for a modern educational program and affords some flexibility to accommodate changing programs. Analysis will indicate renovation feasible. Meets present-day building code requirements, but may have handicapped code deficiencies. Mechanical systems adequate.
Good	Buildings of average construction which meet minimum building code (short-range) requirements. Design is generally adequate, but may have some features which are inflexible and limiting to educational programs. Average physical condition. May not provide handicapped accessibility. Mechanical systems average or better. Analysis will indicate renovation is usually feasible.
Fair	Buildings of marginal adequacy in construction and condition. Design (short-range) is typically inadequate for a modern educational program and too inflexible to be adapted. May not meet present-day code requirements and may not provide handicapped accessibility. Mechanical systems may be obsolete and in poor condition. Feasibility and cost analysis will indicate major renovation probably not economically feasible. Typically, should only be maintained for health and safety until replaced.
Poor	Buildings which are structurally and educationally inadequate in construction, design and flexibility. May not meet present-day code requirements for existing facilities, including handicapped accessibility. Mechanical systems may be obsolete or inadequate. Feasibility and cost analysis will indicate renovation or modification is not economically feasible nor recommended. Should be phased out as soon as possible.

FEASIBILITY AND COST ANALYSIS

(Rev. 4/9/98)

A comparison of the feasibility and cost of constructing a new school building with that of renovating the old school building(s) that it would replace (in accordance with G.S. 115C-521, amended by H.B.1001, 1993).

Date: _____

Administrative Unit: _____

School Name: _____

School Address _____

_____

School Code: _____

DSP School Number: _____

Grades Served: _____

Approx. Capacity: _____
(when renovated)

Site will be reused ☐ sold/transferred ☐

Building Number: _____
(from Property Accounting)

Year Constructed: _____

Building Area:(sq.ft.) _____

No. of Stories: _____
(including occupied basement/ground floor)

No. of Regular Classrooms: _____

Other Program and Support Spaces in Building(list and indicate number of each): _____
_____
_____
_____
_____
_____
_____

"RENOVATION" IS DEFINED AS FULL RENOVATION TO BRING THE BUILDING(S) INTO GENERAL COMPLIANCE WITH CURRENT BUILDING AND HANDICAPPED CODES: BUILDING ENVELOPE (windows, roofing, interior finishes, exterior walls, etc.); PLUMBING, MECHANICAL, AND ELECTRICAL SYSTEMS WILL BE IMPROVED (or replaced) TO CURRENT STANDARDS; AND PROGRAM AND FUNCTIONAL SPACES WILL BE MADE TO APPROXIMATE CURRENT SPACE STANDARDS.

I. BUILDING DESCRIPTION

Using a School Planning report or a local evaluation of the building(s) based on the example comparative descriptions on page 2. _____

Describe in general the reason for the proposed action concerning the existing schod building(s). _____
_____
_____

Replacement of major buildings evaluated as very good to excellent long-range facilities requires a more detailed justification.

Proceed with **Feasibility Analysis** and/or **Cost Analysis** on following pages.

II. FEASIBILITY ANALYSIS

II-A. FEASIBILITY ANALYSIS - BUILDING

A. **Educational Program Adequacy -** Typical size of classrooms and other functional spaces compared to the N.C. Public School Facility Guidelines.
- o 85% to 100% of current guidelines = **6**
- o 75% to 85% of current guidelines = **3**
- o Less than 75% of guidelines or classrooms less than 600 sq.ft. = **0**

_____

B. **Historical or Architectural Significance -**
- o Listed on the National Historic Register or of significant regional architectural interest = **2**
- o Strong local historic interest or sentiment or an example of good school design = **1**
- o No particular historical value or architectural interest = **0**

_____

C. **Safety and Code Compliance**
- o Generally meets building code requirements (1978 or 1991 code) = **4**
- o Needs some modifications in order to meet current bldg. code requirements = **2**
- o Needs substantial modifications to meet current building code requirements = **0**

_____

D. **Relationship to Other Buildings on Site** (including proposed additions)
- o Single building or buildings connected with enclosed corridors = **2**
- o Well organized campus plan, buildings connected with covered walks, interior corridors = **1**
- o Multiple buildings, not connected, some exterior corridors = **0**

_____

E. **Handicapped Accessibility**
- o Generally meets state or ADA handicapped code requirements and is suitable for use by physically handicapped persons = **2**
- o Needs some modifications to meet handicapped code requirements and to be used satisfactorily by physically handicapped persons = **1**
- o Needs substantial modifications to be used satisfactorily by physically handicapped persons (e.g. elevators, lifts, new toilet rooms, etc.) = **0**

_____

F. **Physical Condition of Building** - (structural, roof, exterior walls, windows, doors, interior partitions , ceilings , flooring)
- o Very good condition, only minor repairs required = **4**
- o Moderate repairs required, some replacements (e.g.. new windows or roof) = **2**
- o Structural problems or extensive repairs required, replacement of several systems required (new ceilings, roof, windows, exterior wall repair, moving interior partitions, etc) = **0**

_____

G. **Mechanical and Electrical Systems** - (plumbing, heating, air conditioning, electrical service, lighting, telecommunications, fire alarm, computer)
   - o Good plumbing, central heating and air conditioning; safe, efficient electrical service and lighting; operable fire alarm and telecommunications =**4**
   - o Moderate repairs and some replacements required (example: may need new air conditioning or lighting, but plumbing, heating and main electrical service in good condition) = **2**
   - o Extensive repairs and/or replacement of several systems required =**0**

_____

H. **Hazardous Materials** - (asbestos, lead, radon, indoor air quality)
   - o Asbestos and other hazardous materials either not present or stabilized =**2**
   - o Minor problems with hazardous materials, management program in progress =**1**
   - o Asbestos or other hazardous materials present in building requiring removal =**0**

_____

Total score (A through H) for building _____

A TOTAL SCORE OF 18 OR MORE INDICATES GOOD FEASIBILITY FOR RENOVATION. A TOTAL SCORE OF 12 OR LESS INDICATES POOR FEASIBILITY FOR RENOVATION. PROCEED WITH SITE ANALYSIS.

II-B. FEASIBILITY ANALYSIS - SITE

A. **Site Adequacy** - Size of site compared to the N. C. Public School Facility Guidelines.
   - o 80% to 100% of current guidelines (or additional land available) =**2**
   - o 65% to 80% of current guidelines = **1**
   - o Less than 65% of current guidelines = **0**

_____

B. **Location**
   - o Near the center of the student population served =**2**
   - o Important focus of an older neighborhood, 50% or more students live in the neighborhood = **1**
   - o Not centrally located, most students would be bussed from other areas =**0**

_____

C. **Sewer and Water Systems**
   - o Municipal or county sewer and water system =**2**
   - o On-site sewer, adequate for number of students, county water or good well with pressure tank = **1**
   - o Inadequate on-site sewer system or well = **0**

_____

D. **Parking and Traffic Control**
   - o Paved drives with auto and bus traffic separated, adequate parking =**2**
   - o Some paved drives or minor traffic conflicts, not enough parking =**1**
   - o Bus and autos use same drive or children must cross drives to reach playfields or some buildings or bus and/or auto drop-off on street, limited parking =**0**

_____

E. Playgrounds and Playfields

- o Ample, well developed playfields, gently sloping, handicapped accessible =**2**
- o Limited playfields, well developed, can be made handicapped accessible =**1**
- o Very small playfields or located across a street from the school or near a busy street or on a steeply sloping site = **0**

_____

F. Drainage

- o Good site drainage, no problems = **2**
- 0 Some minor drainage problems, can be corrected economically =**1**
- o Drainage problems, standing water on site, would be costly to correct, or in flood plain = **0**

_____

G. Environmental Problems

- o No environmental problems = **2**
- o Minor problems or possibility of minor leaks =**1**
- o Leaking fuel tank or contaminated well or problems with sewer system discharge or standing water under building or other major problem =**0**

_____

Total score (A through G) for site _____

A TOTAL SCORE OF 10 OR MORE INDICATES GOOD SITE FEASIBILITY. A TOTAL SCORE OF 7 OR LESS INDICATES POOR SITE FEASIBILITY .

IF BUILDING FEASIBILITY SCORE IS 18 OR MORE AND SITE FEASIBILITY SCORE IS 10 OR MORE, NO FURTHER ANALYSIS IS REQUIRED (UNLESS YOU CHOOSE TO DO SO). **REPLACEMENT OF THESE BUILDINGS SHOULD NOT NORMALLY BE CONSIDERED.**

IF BUILDING FEASIBILITY SCORE IS 12 OR LESS AND/OR SITE FEASIBILITY SCORE IS 7 OR LESS, NO FURTHER ANALYSIS IS REQUIRED (UNLESS YOU CHOOSE TO DO SO). **REPLACEMENT OF THESE BUILDINGS SHOULD BE CONSIDERED.**

PROCEED WITH COST ANALYSIS FOR BUILDINGS WHERE RENOVATION OR REPLACEMENT IS NOT CLEARLY INDICATED BY THE FEASIBILITY STUDY.

III. COST ANALYSIS

USE SECTION III-A FOR BUILDING REPLACEMENT; USE SECTION III-B FOR CAMPUS REPLACEMENT; USE SECTION III-C FOR REPLACEMENT OF TWO OR MORE SCHOOLS WITH A SINGLE NEW FACILITY.
(Cost analysis may require the assistance of an architect or engineer.)

III-A. COST ANALYSIS - BUILDING REPLACEMENT

A. Renovation of Existing Building -

Total cost of renovations - Attach itemized estimate
(Use Appendix "A" or equivalent, include minor additions.) $_____

Cost per sq.ft. (total cost/gross bldg. area) $_____/sq.ft.

Building Space Efficiency Factor -
Area of program and support spaces divided by gross bldg. area. (Do not include corridors, stairs, toilet rooms, mechanical or electrical rooms, janitorial, unused or underutilized spaces, or spaces not normally a part of the program; e.g.. vocational shops or an auditorium in an elementary school, county or community offices or storage, etc. in program area.)

efficiency factor = _____

Total cost for RENOVATED BUILDING - per year of use for program and support spaces- Cost per sq.ft. divided by efficiency factor divided by useful life (assume 25-year useful life when renovated)

$_____/sq.ft./year

B. Cost of a New Building -

Estimated cost of new building - include cost of demolition of old building
(Contact School Planning for assistance.) $_____

Cost per sq.ft. (total cost/gross bldg. area) $_____/sq.ft

Building space efficiency factor _____
(assume 0.75 elem.,0.74 mdl. & high)

Total cost for NEW BUILDING - per year of use for program and support spaces-
Cost per sq.ft. divided by efficiency factor divided by useful life (assume 50-year useful life for new buildings)

$_____/sq.ft./year

COMPARE TOTAL COST PER SQ. FT. PER YEAR TO DETERMINE FEASIBILITY OF RENOVATION vs. REPLACEMENT OF OLD BUILDING. Comparison must clearly indicate the desirability of building the new building to justify replacement (e.g.. an advantage of 15% or more).

III-B. COST ANALYSIS - CAMPUS REPLACEMENT

A. Renovations and Additions at an Existing Campus -

Total cost of renovations - attach itemized estimate (Use Appendix "A" or equivalent.) $_____

Cost of additions and sitework - attach itemized estimate (Use Appendix "A" or equivalent; include additional land.) $_____

Cost of renovations divided by 25-yr. useful life = $_____**cost/year**

Cost of additions/sitework divided by 50-yr. useful life = $_____**cost/year**

Total $_____**cost/year**

Total cost for RENOVATED CAMPUS Total cost/year divided by the number of students =

$_____**/student/yr.**

B. New School -

Total cost - including site costs, less sale of old school. (Contact School Planning for assistance.) $_____

Total cost divided by 50-yr. useful life = $_____**cost/year**

Total cost for NEW SCHOOL. Total cost/year divided by the number of students =

$_____**/student/yr.**

COMPARE TOTAL COST PER STUDENT PER YEAR TO DETERMINE FEASIBILITY OF RENOVATION vs. REPLACEMENT OF CAMPUS. Comparison must clearly indicate the desirability of building the new building to justify replacement (e.g.. an advantage of 15% or more).

III-C. COST ANALYSIS - CONSOLIDATION

A. Renovations and Additions at several Existing Campuses -

Total cost of renovations -
(Include <u>all</u> schools that would be replaced.) $_____

Total cost of additions, additional land, and sitework -
(Include <u>all</u> schools that would be replaced.) $_____

Cost of renovations divided by 25 yrs. of useful life= $_____**cost/year**

Cost of additions/sitework divided by 50 yrs. of useful life= $_____**cost/year**

Total $_____**cost/year**

Total cost/year divided by the number of students = $_____**/student/yr.**

Energy Costs -
Anticipated energy cost per year for **Renovated Campuses** divided by the number of students.

$_____**/student/yr.**

Staff Salary Costs (include salary for principal, asst. principals, secretaries, clerical, cafeteria workers, custodians, and librarians; **do not** include instructional positions) -
Anticipated salary cost per year for **Renovated Campuses** divided by the number of students.

$_____**/student/yr.**

Total cost for RENOVATED CAMPUSES
(cost / student/year of use + energy costs/student/year + staff salary costs) $_____**/student/yr.**

B. New School -

Total cost - including site cost and development, less sale of old schools.
(Contact School Planning for assistance.) $_____

Total cost divided by 50 yrs. of useful life = $_____**cost/year**

Total cost/year divided by the number of students = $_____**/student/yr.**

Energy Costs -
Anticipated energy cost per year for **New School** divided by the number of students.

$_____**/student/yr.**

Cost analysis - Consolidation (continued)

Staff Salary Costs -(include salary for principal, asst. principals, secretaries, clerical, cafeteria workers, custodians, and librarians; **do not** include instructional positions) - Estimated salary cost per year for **New School** divided by the number of students.

$_____/student/yr.

Total cost for NEW SCHOOL
(cost / student/year of use + energy costs/student/year + staff salary costs) **$_____/student/yr.**

COMPARE TOTAL COST PER STUDENT PER YEAR TO DETERMINE FEASIBILITY OF RENOVATION vs. REPLACEMENT OF TWO OR MORE CAMPUSES. Comparison must clearly indicate the desirability of building the new building to justify replacement (e.g.. an advantage of 15% or more).

APPENDIX "A"

ESTIMATE OF PROBABLE COST

1. ESTIMATE OF RENOVATIONS TO EXISTING BUILDING(S)

A. FUNCTIONAL IMPROVEMENTS

-Partition & wall relocations to create spaces of at least 85% of current standards (may require gutting of interior) _____
-Improvements to circulation and functional relationships _____
-Construction of special, ancillary and support spaces to accommodate a modern educational program _____
-Other functional improvements (itemize) _____

SUBTOTAL FUNCTIONAL IMPROVEMENTS _____

B. BUILDING CODE AND LIFE SAFETY IMPROVEMENTS

(To improve safety to current standards)
-Sprinkler system _____
-H/C Toilet room improvements _____
-H/C access improvements _____
-Elevator _____
-Fire protection improvements for corridors, stairs & exits _____
-Fire alarm system _____
-Exit hardware & door replacements _____
-Elimination of dead-end corridors & other hazards _____
-Other code improvements (itemize) _____

SUBTOTAL CODE IMPROVEMENTS _____

C. BUILDING "SHELL" IMPROVEMENTS

-Roofing _____
-Masonry repairs and tuckpointing _____
-Window replacement _____
-Exterior doors and hardware _____
-Waterproofing _____
-Structural Repairs _____
-Insulation & energy upgrades _____
-Other shell improvements (itemize) _____

SUBTOTAL SHELL IMPROVEMENTS _____

D. INTERIOR AND COSMETIC IMPROVEMENTS

-Plaster repair and/or painting _____
-Vinyl tile and carpet _____
-Ceilings _____
-Ceramic tile _____
-Cabinets, Lockers, chalkboards, etc. _____
-Other cosmetic improvements (itemize) _____

SUBTOTAL INTERIOR/COSMETIC IMPROVEMENTS _____

E. INFRASTRUCTURE IMPROVEMENTS

-Plumbing lines and fixtures _____
-Heating _____
-Air Conditioning _____
-Electrical Service and distribution _____
-Lighting _____
-Telecommunications _____
-Computer wiring and technology infrastructure _____
-New kitchen equip. (hood, walk-in coolers, etc.) _____
-Other infrastructure improvements (itemize) _____

SUBTOTAL INFRASTRUCTURE IMPROVEMENTS _____

F. SITE IMPROVEMENTS

-Drainage improvements _____
-New paved parking and drives _____
-Improve playgrounds and playfields _____
-Provide handicapped access to playgrounds _____
-Site lighting _____
-Revise or replace on-site sewerage system _____
-Replace or improve on-site water _____
-Connect to county/community sewerage system _____
-Connect to county/community water system _____
-Other site improvements (itemize) _____

SUBTOTAL SITE IMPROVEMENTS _____

G. HAZARDOUS MATERIALS / ENVIRONMENTAL IMPROVEMENTS

-Removal or abatement of asbestos, lead or other hazardous materials _____
-Improvements for indoor air quality _____
-Remove, replace leaking fuel tanks and clean up site _____
-Clean up sewer system discharge _____
-Radon management _____
-Other hazardous materials/environmental improvements (itemize) _____

SUBTOTAL HAZARDOUS MATERIALS/ENVIRONMENTAL IMPROVEMENTS _____

Estimated Cost of Renovations (total of **A** thru **G**) $_____

Design fees and testing - 8.5% of building cost/site prep. _____

Contingency (7.5%) _____

Cost of additional land (if applicable) _____

Subtotal Cost of Renovations $_____

2. COST ESTIMATE OF ADDITIONS TO EXISTING BUILDING (S)

Building Area (sq.ft.) -
Area of classrooms and other functional spaces in the addition _____ sq.ft.

Add 35% for circulation, toilets, mechanical, and electrical space _____sq.ft.

Total bldg. area _____sq.ft.

Building Cost -

_____sq.ft. building area X $_____/sq.ft. const. cost = $_____

Site preparation for addition (approx. 6% of building cost) _____

subtotal _____

Design fees and testing - 7.5% of building cost/site prep. _____

Contingency (7%) _____

Cost of additional land (if applicable) _____

Subtotal Cost of Additions $_____

TOTAL COST OF RENOVATIONS AND ADDITIONS $_____

3.. COST ESTIMATE OF NEW BUILDING (S)

Building Area (sq.ft.) -
Attach copy of building program or theoretical space profile
(include 35% for circulation, toilets, mechanical, and electrical space) _____sq.ft.

Building Cost -

_____sq.ft. building area X $_____/sq.ft. const. cost = $_____

Site preparation and development (approx. 6% of building cost - elem., 10.4% - middle, 13.2% - high) _____

subtotal _____

Design fees and testing - 7% of building cost/site prep. _____

Contingency (5%) _____

Demolition of existing building _____

Less sale price of existing site or market value (if applicable) (_____)

Cost of land (if applicable) _____

Total Cost of New Building (s) $_____

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