

Wake County Public Schools
February 2021 (cost in 2021 base year \$s)

Cost Model Estimating Guide

School Cost Analysis

WCPSS staff prepared cost model construction estimate templates (2021 base year \$s) for elementary, middle, and high schools. The cost model provides construction cost estimates per program area. The estimates for furniture, custodial, child nutrition, etc. were provided by the responsible person in each department. These estimates need to be adjusted for renovations and site constraints.

The following is a recap of definitions and values (2021 base year \$s) that were used in developing budgets for each project.

Demolition

Minor Surface removals of architectural elements only (marker boards, hooks, and other wall attachments). Includes removal of carpet and VCT tile, doors, cabinetry, repainting and wallpapering, etc. Debris removal managed by hand tools and pushcarts. Life Safety upgrades to be considered at this level of demo as well (i.e. non-invasive routing of pipes, conduit, wiring, etc.). Unit cost estimated to be **\$3.05/sf. \$2.19/sf** for classrooms only.

Moderate Either includes or bypasses altogether the scope for Minor demolition. Includes the removals of ceilings, ceramic floor tile, and devices contained therein. Includes the removal and replacement of M.E.P. devices and fixtures **without** re-routing of rough-in. Doors and frames, windows, and other architectural elements to be removed. Selective demolition of partition walls (non-demising) with standard stud framing. Debris removal managed by manual labor, push carts, and small motorized equipment. Unit cost estimated to be **\$5.30/sf.**

Major Either includes or bypasses altogether the scopes for Minor and Moderate demolition. Involves radical selective demolition of architectural elements, stud framing, masonry walls, concrete cutting, etc. Includes the removal of M.E.P. equipment, devices, fixtures, **and** related rough-in work. Debris removal managed mostly by motorized equipment. Unit cost estimated to be **\$6.91/sf.**

Complete Building demolition and removal, including recycling of materials. Unit cost is estimated at **\$6.34/sf.**

Renovation:

Minor Renovation: 30%

Replacement of architectural elements only (marker boards, hooks, and other wall attachments) along with the replacement of carpet and VCT tile, doors, cabinetry, repainting and wallpapering, etc.

Moderate Renovation: 50%

Either includes or bypasses altogether the scope for Minor renovation. Includes the removal and replacement of ceilings, ceramic floor tile, and devices contained therein. Includes the removal and replacement of M.E.P. devices and fixtures without re-routing of rough-in. It may include the addition of new sprinkler work and/or relocating existing heads. It may also include the removal and replacement/reset of doors and frames, windows, and other architectural elements.

Major Renovation: 70%

Either includes or bypasses altogether the scopes for Minor and Moderate renovation. Includes the removal and replacement of M.E.P. equipment, devices, fixtures, and related rough-in work. Involves complete interior demolition of a space to its core and shell condition. It may include converting one type of space to a more expensive type of space (i.e. classroom to lab).

Sitework Cost for Renovation Projects.

Use the percentage of new and renovated square footage in the project compared to the total campus square footage. That percentage is then applied to the lump sum cost of site development **for a new elementary or middle** as appropriate.

Generally no additional items need to be added to the site cost for extra parking or canopies, etc. unless the amount of new and renovation is a small percentage of the entire campus. No additional factors (size, complexity, etc.) are to be added to the estimates. **For high schools**, use site cost per square foot for a high school times the major renovation square footage times the major renovation factor of 0.70 **plus** the new construction square footage times the site cost per square foot **plus** the list of site specific improvements to be made as listed in the program.

If preliminary design has been done (as opposed to using a generic model number), then the model may be adjusted up or down accordingly.

New Construction on Existing School Sites:

New construction on an existing site is more expensive than new construction on a new site. Based on past experience, the new construction cost should be increased by **17% on an occupied campus** to account for this difference and **14% for a vacated existing campus**. For vacated high school campuses, **the factor can be as low at 10%**.

Sitework Cost on New Sites

If specific information is known about a site (rock or smaller than normal or larger than normal, etc.) or preliminary design has been done, then the model may be adjusted up or down accordingly. Otherwise, the generic site budget is used.

For new **Elementary School Projects**, Cumming recommends a planning budget of **\$9,810,079** for a typical school site. If the location and size of the school is determined, a more accurate budget could be established using approx. **\$499,258/acre**.

For new **Middle School Projects**, Cumming recommends a planning budget of **\$18,256,765** for a typical school site. If the location and size of the school is determined, a more accurate budget could be established using approx. **\$513,137/acre**.

For new **High School Projects**, Cumming recommends a planning budget of **\$26,522,677** for a typical school site. If the location and size of the school is determined, a more accurate budget could be established using approx. **\$490,644/acre**.

Phasing:

1) Minor Phasing: 2%

- a) Building occupants can be relocated to an existing interior space during construction.
- b) Minor temporary partitioning required to separate the occupant areas from construction areas.
- c) Minor building amenity improvements to be provided in temporary space to accommodate interim relocation (marker boards, desks/tables, lighting, etc.).
- d) Work to be completed in one or more areas of the building in consecutive moves/phases with a maximum of two moves/phases for construction.
- e) No temporary sitework required (i.e. walks, paths, roads, structures, etc.) to accommodate the work.
- f) No M.E.P. shutdowns and/or switchovers required to complete the work.

2) Moderate Phasing: 4%

- a) Building occupants to be relocated to multiple existing interior spaces during construction.
- b) Temporary partitioning required to separate any occupant areas from construction areas.
- c) Minor building amenity improvements to be provided in temporary space to accommodate interim relocation (marker boards, desks/tables, lighting, etc.).
- d) Work to be completed in multiple areas of the building simultaneously.
- e) Maximum of four moves/phases for construction.
- f) Temporary walks, paths, and weather structures to be provided for access routing of occupants to various areas of the building.
- g) Minimal M.E.P. shutdowns and/or switchovers to complete the work can be performed during off hours.

3) Major Phasing: 6%

- a) Building occupants to be relocated to multiple existing interior spaces during construction and/or temporary exterior structures during work.
 - b) Temporary partitioning required to separate any occupant areas from construction areas.
 - c) Extensive building amenity improvements to be provided in temporary spaces to accommodate interim relocation (life safety, water and sewer hook-ups, special construction, FF&E, etc.).
 - d) Work to be completed in multiple areas of the building simultaneously.
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- e) Maximum of six moves/phases for construction.
- f) Temporary roads, walks, paths, and weather structures to be provided for access routing of occupants to various areas of the building.
- g) Multiple M.E.P. shutdowns and/or switchovers to complete the work to be performed during off hours.

Complexity:

1) Minor Complexity: 5%

- a) Includes non-standard and/or unusual products for finishes.
- b) Multiple places of mobilization on a single site.

2) Moderate Complexity: 10%

- a) Includes non-standard and/or unusual products for finishes.
- b) Multiple places of mobilization on a single site.
- c) Site has limited areas for staging and pre-installations.
- d) Building footprint has multiple geometric configurations.

3) Major Complexity: 20%

- a) Includes non-standard and/or unusual products for finishes.
- b) Multiple places of mobilization on a single site.
- c) Site has limited areas for staging and pre-installations.
- d) Building footprint has multiple geometric configurations.
- e) Structure contains specialty support elements (i.e. non-standard steel members, long span trusses, etc.).
- f) Multiple finish materials and details for the building exterior.
- g) New work interfaces with existing structures.

Size:

1) Minor Size: 20%

- a) Project valued at \$5,000,000 or less.

2) Moderate Size: 10%

- a) Project valued between \$5,000,001 and \$12,000,000

3) Major Size: 0%

- a) Project valued at greater than \$12,000,000
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Scheduling:

For large elementary renovation projects (approx. 115K square feet) that have shorter than normal schedules due to swing solutions, a 6% premium was used for the accelerated schedule if the school was a total replacement. A 4% premium was used if it was a smaller elementary school (approx. 100K square feet) that also was a total replacement. These projects require the removal of the asbestos, demolition of the majority of the campus before construction begins, and then the construction of 100K+ square feet of new construction in a 14 month window.

Asbestos Asbestos abatement estimates were specific to the spaces being renovated and the replacement of systems that will require the removal of asbestos containing building materials. Individual cost estimates for each campus were prepared by the Environmental Health and Safety Department. Estimates include the costs associated with design, abatement and monitoring.

Lead Paint Existing buildings that were built prior to 1978 and that are scheduled for renovations have estimates that include an allowance of **\$2.73/sf for Moderate and Major** renovations for removal or containment of lead paint.

The below listed costs and factors were developed from past historical data by the departments affected or were from the planning assumptions jointly approved by the BOE and BOC.

Design Fees

New New schools have been estimated using a prototype reuse design fee equal to **6%** of the construction cost estimate.

Renovations Design fees for renovation work equal **8%** of the construction cost estimate.

Contingency

New New schools were budgeted with a **5%** construction contingency.

Renovations Renovations were budgeted with a **10%** construction contingency.

Soft Costs Soft costs include such items as land surveying, geotechnical services, material testing, reproduction costs, advertising, property accounting drawings, various vendors, utility costs, permit fees, schedule analysis, cost estimating, and miscellaneous construction costs. Figures shown below are based on historical information from prior CIP projects.

New Schools are budgeted with soft costs equal to **3.75%** of the construction cost estimate for elementary, **2.5%** for middle, and **2.25%** for high.

Renovations Renovations are budgeted with soft costs equal to **3.75%**

Moving Renovation projects involving moving costs were estimated at the rate of **\$0.87/sf per move**. Cost estimate includes labor and material.

Swing Space Swing space needs for renovation projects have been identified by Facility Planners. Swing space is can be furnished by the use of temporary mobile or modular classrooms. Costs per classroom are dependent of which option is chosen for meeting the swing space need.

Cost for 1 year – increase lease cost if more than 1 year

Leased single units	\$61,000 (add \$6K per each add'l yr.)
Leased modular units	\$56,000 (add \$6K per each add'l yr.)
Relocated single units	\$60,000
Relocated modular units	\$54,000
Purchased single units	\$94,000
Purchased modular units	\$125,000

Sometimes swing space needs are handled by the use of a new school instead of using mobile and modular units. In those cases, the cost for accommodations of the school population being renovated while they are located in the new school, needs to be included in the price of the renovation. These costs can be significant when structural modifications to the new construction are required due to needed programs being temporarily transferred from the renovated school.

Furniture Furniture funds are to be used to purchase the necessary furniture associated with the project.

New School furniture budgets were developed by the Furniture Equipment Specialist and are as follows:

Large Elem.:	\$917,893 plus \$9,288 for YR
Large Middle:	\$1,826,008 plus \$9,288 for YR
Large High:	\$2,409,463

Addition & Major Renovation projects will have budgets developed specifically for that project.

Custodial

Custodial equipment funds are to be used to purchase opening day custodial equipment and supplies for new schools and for additions.

New School custodial equipment budgets were developed by Custodial Services and are as follows:

Large Elem.:	\$42,336
Large Middle:	\$70,536
Large High:	\$126,341

Addition & Major Renovation projects that basically encompass the entire campus have a custodial budget that is 60% of a new school. For projects that are replacement schools, the new school budget is used.

Minor and Moderate Renovation projects have no funds budgeted for custodial equipment replacement.

Child Nutrition

This is a cost of the basic start-up items needed to equip a standard cafeteria kitchen for a basic elementary, middle, and high school. The quantities of each item were based on the number of serving lines at each level. Both small wares needed for food production and those required for sales/cash handling are included.

Large Elem.:	\$19,000
Large Middle:	\$28,941
Large High:	\$30,137

Addition & Major Renovation projects that either add a new kitchen/dining area or do a major renovation to it have a child nutrition budget that is 90% of a new school.

Media Center

Media center funds are to be used to purchase computers, printers and software. Media center equipment budgets were developed by Media Services and are as follows:

New

Large Elem.:	\$51,271
Large Middle:	\$81,627
Large High:	\$114,736

Addition & Major Renovation projects that either add a new media center or do a major renovation to it have a media equipment budget that is 100% of a new school.

Minor and Moderate Renovation projects have no funds budgeted for media center equipment replacement.

Library

Library funds are to be used to purchase opening day collection of books for new schools and for additions that result in an increase in permanent capacity.

New School library books budget was developed by Media Services and are as follows:

Large Elem.:	\$282,546
Large Middle:	\$471,621
Large High:	\$745,786

Note: If a small elementary or middle school is built, there is a minimal amount needed for books that is not dependent on the number of students. In those cases the minimal amounts are:

Elementary:	\$218,545
Middle:	\$273,182

Additions resulting in an increase in permanent capacity have a library book budget that was developed by Media Services as follows:

Elementary:	\$355 per student
Middle:	\$355 per student

High: \$317 per student

Minor, Moderate and Major Renovation projects have no funds budgeted for the replacement of library books.

Operational & Program Equipment Operational and program equipment funds are to be used to purchase the equipment and supplies for the startup of a new school. Budgets were developed by Instructional Services and are as follows:

New	Large Elem.:	\$1,206,857 plus \$43,393 for YR
	Large Middle:	\$2,139,947 plus \$120,459 for YR
	Large High:	\$3,843,175

Addition & Major Renovation projects have operational & program equipment budget figures that were developed by Instructional Services and based on increased capacity only.

Minor and Moderate Renovation projects have no funds budgeted for operational and program equipment replacement.

Technology Technology funds are to be used to purchase file servers, routers, software and network design for new schools and additions. Budgets were developed by Technology Services and are as follows:

New	Large Elem.:	\$176,079
	Large Middle:	\$300,371
	Large High:	\$455,735

Additions \$4,371 per classroom.

Maj. Reno. Major renovations shall include a budget of **\$4,371 per classroom** for technology funds. No technology funds are budgeted for minor and moderate renovations.

Project Management

Project Management is typically calculated at the rate of 3% for all items including Program Contingency for each year. Since this is a rolling
