

20TH ANNUAL

SCHOOL CONSTRUCTION REPORT

NATIONAL STATISTICS,
BUILDING TRENDS &
DETAILED ANALYSIS

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A SPECIAL SUPPLEMENT TO
SCHOOL
Planning & Management

School Construction Increases for Fourth Year in a Row

Districts currently involved in more than \$40 billion in construction activity.

by PAUL ABRAMSON

SCHOOL CONSTRUCTION is once again a major player in the economy of the United States. More than \$14 billion worth of school construction — including new buildings and additions to, and upgrading of, existing buildings — was put in place in 2014, a five percent increase over the previous year and the fourth year in a row that spending for school construction has increased.

Looked at in terms of ongoing educational construction, school districts in the United States appear to be involved in almost \$40 billion worth of construction activity right now, and that is probably a low-ball estimate.

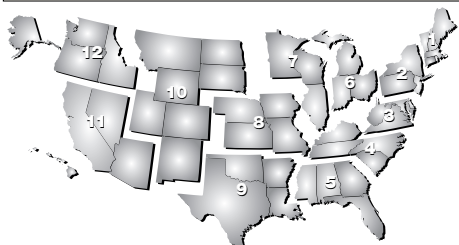
Most of the construction involves the design and building of new schools, but 45 percent of the dollars spent on work completed in 2014 was used to enlarge and upgrade existing buildings.

These are among the major findings and conclusions to be drawn from School Planning & Management's 20th Annual School Construction Report, covering activity completed in 2014 and expected to be completed or started in 2015 (see Table 1).

To prepare this report, *School Planning & Management* received information on school construction completed and underway during 2014 and planned to start in 2015 from Market Data Retrieval (MDR), a company of Dun and Bradstreet (D&B). MDR contacts school districts throughout the United States seeking information on their construction plans — new buildings, additions to existing buildings and major renovation, retrofit or modernization projects. (The three terms are used interchangeably throughout this report.) We take that information and use it



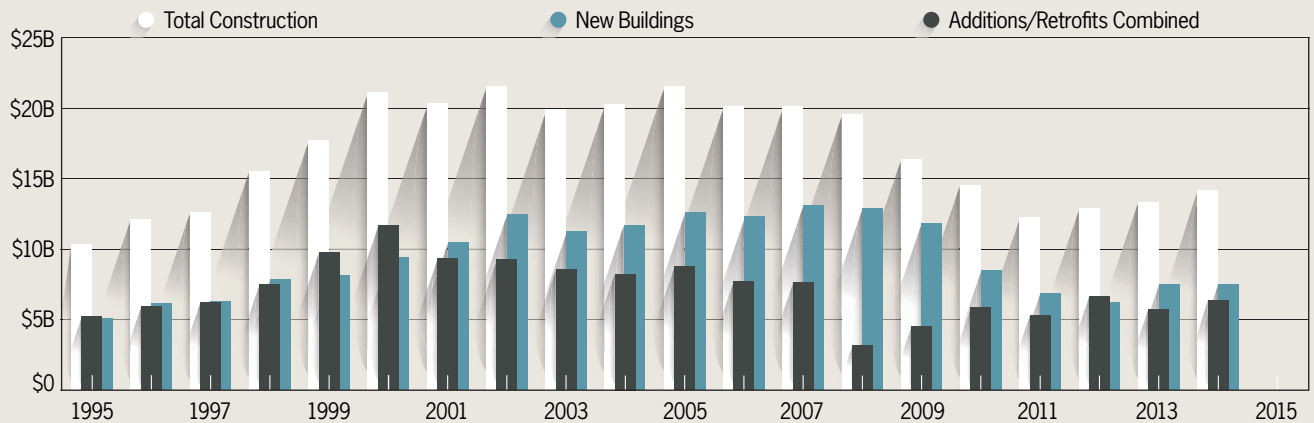
SCHOOL CONSTRUCTION REGIONS



1 SCHOOL CONSTRUCTION IN THE U.S. (\$000'S)

	2014 Completed	2015 Projected to Be Completed	2015 Projected to Start
New School	\$7,763,340	\$7,369,689	\$7,378,103
Additions	\$3,215,788	\$3,260,788	\$2,447,160
Renovations	\$3,144,737	\$2,650,839	\$2,564,428
Total	\$14,123,865	\$13,281,316	\$12,389,691

SCHOOL CONSTRUCTION COMPLETED (\$000'S), 1995 THROUGH 2014



to estimate construction on a national and regional basis, and to report on how dollars are being spent on new schools.

All of the figures published are “annual in nature.” That is, they do not accumulate ongoing construction, but rather compile information on what was completed, or expected-to-be-completed or started in a given calendar year. School districts often are involved in additional construction, but work started or completed outside the targeted years is not included. (Table 6, which details where money was or will be spent based on grade levels and purpose of buildings, summarizes all of the expected spending over a three-year period and provides a useful estimate of the total impact of school construction on the economy.)

THE NATIONAL SCENE

School districts in the United States spent more than \$14 billion (\$14,123,865,000) on construction projects completed during the 2014 calendar year. Almost \$7.8 billion of that was spent on new schools, accounting for 55 percent of the construction dollars. The balance was split between additions to existing buildings (accounting for \$3.2 billion) and the retrofitting and modernization of existing structures that accounted for \$3.14 billion. (See **Table 2**). The difference of spending for new buildings and existing ones was very close to the pattern of the previous year.

Table 2 shows the national construction

picture in 2014. It also shows how much school districts in each of 12 regions of the nation spent on construction and how they spent it. (See map on page 18. A more detailed account of regional activity begins on page 30.)

In 2014, school districts in six of the 12 regions spent more than \$1 billion on school construction. Spending in three other regions breached \$900 million, and two others put more than \$880 million in place. Only in Region 7 (Illinois, Minnesota and Wisconsin), did last year’s construction total less than \$800 million, and school districts in those three states reported that they spent more in 2014 than in the previous year.

Region 9, including Texas, Louisiana,

Oklahoma and Arkansas, was the highest spending region with just over \$2.2 billion put in place — a very slight decline from the previous year. Schools in that region were responsible for 15.7 percent of the nation’s total construction spending. Region 9 not only put more construction in place than any other region, it also led the way in spending for new school buildings, with \$1.37 billion going for that purpose. Schools in Region 9 also led the nation in spending on additions to existing schools, with more than half a billion dollars going for that purpose.

Construction spending in Region 11, including Arizona, California, Hawaii and Nevada, totaled \$1.65 billion, making it the



Region	New Schools	Additions	Renovation	Total	% OF SPENDING FOR			% of Nation
					New	Addition	Renovation	
1	\$400,100	\$351,328	\$376,243	\$1,127,671	35.5%	31.2%	33.4%	8.0%
2	\$551,349	\$436,326	\$546,088	\$1,533,763	35.9%	28.4%	35.6%	10.9%
3	\$798,275	\$153,379	\$236,862	\$1,188,516	67.2%	12.9%	19.9%	8.4%
4	\$554,818	\$210,417	\$136,386	\$901,622	61.5%	23.3%	15.1%	6.4%
5	\$855,557	\$152,748	\$176,832	\$1,185,136	72.2%	12.9%	14.9%	8.4%
6	\$447,250	\$217,121	\$254,482	\$918,854	48.7%	23.6%	27.7%	6.5%
7	\$416,803	\$202,847	\$100,125	\$719,776	57.9%	28.2%	13.9%	5.1%
8	\$564,659	\$127,506	\$213,361	\$905,526	62.4%	14.1%	23.6%	6.4%
9	\$1,371,042	\$541,259	\$311,463	\$2,223,763	61.7%	24.3%	14.0%	15.7%
10	\$567,422	\$122,657	\$197,015	\$887,094	64.0%	13.8%	22.2%	6.3%
11	\$894,173	\$425,836	\$330,109	\$1,650,118	54.2%	25.8%	20.0%	11.7%
12	\$341,893	\$274,363	\$265,771	\$882,026	38.8%	31.1%	30.1%	6.2%
Nat'l	\$7,763,340	\$3,215,788	\$3,144,737	\$14,123,865	55.0%	22.7%	22.3%	100.0%

To read this table: Public schools in Region 1 (New England) completed new buildings worth more than \$400 million in 2014. They also put in place \$351 million in additions to existing buildings and spent \$376 million on renovations. School districts in Region 1 completed about \$1.1 billion of school construction in 2014 with 35.5 percent of those dollars spent on new buildings, the balance on adding to and upgrading existing buildings. Region 1 accounted for 8.0 percent of all construction dollars spent on school projects completed in the United States in 2014.

second highest spending region, a position it has held for at least a decade. Almost \$900 million went into new buildings, while \$755 million was spent on improving and enlarging existing buildings.

School districts in Region 2, including New York, New Jersey and Pennsylvania, spent \$1.53 billion on school construction — almost as much as did their counterparts in Region 11, but Region 2 districts divided their spending very differently from those in the west.

Region 2 spent almost as much on retrofit of existing buildings as it did on new buildings (\$546 million vs. \$551 million), and it spent an additional \$436 million on expanding existing buildings. It was the third highest region in terms of overall spending, but unlike Regions 9 and 11, the bulk of its money went into improving, upgrading and adding to existing buildings.

Region 2 is located, in large part, in a high-cost area of the nation where construction routinely is estimated around \$300 per square foot, so while it spends a great deal, the amount of construction completed is not nearly as great as in some of the less expensive regions including, as an example, Region 9. By the same token, unlike Regions 9 and 11 (and Region 5), population growth is not the driving force behind construction, thus the emphasis on fixing what exists rather than building new.

Region 3 (Delaware, District of Columbia, Maryland, Virginia and West Virginia) put \$1.19 billion into school construction. The bulk of that goes into new school buildings, needed to house rising populations spiraling out from Washington, D.C. into the suburbs of Maryland and Virginia, and to replace old schools that no longer serve their purpose throughout the region.



Region	New Schools	Additions	Renovation	Total	% OF SPENDING FOR			% of Nation
					New	Addition	Renovation	
1	\$724,349	\$235,960	\$316,688	\$1,276,998	56.7%	18.5%	24.8%	9.6%
2	\$514,490	\$212,626	\$258,003	\$985,119	52.2%	21.6%	26.2%	7.4%
3	\$495,592	\$288,093	\$361,802	\$1,145,487	43.3%	25.2%	31.6%	8.6%
4	\$683,241	\$217,384	\$111,936	\$1,012,561	67.5%	21.5%	11.1%	7.6%
5	\$1,516,963	\$221,485	\$96,416	\$1,834,864	82.7%	12.1%	5.3%	13.8%
6	\$322,798	\$394,069	\$226,419	\$943,286	34.2%	41.8%	24.0%	7.1%
7	\$413,465	\$359,235	\$105,779	\$878,478	47.1%	40.9%	12.0%	6.6%
8	\$148,850	\$114,670	\$131,895	\$395,415	37.6%	29.0%	33.4%	3.0%
9	\$964,900	\$513,570	\$511,003	\$1,989,472	48.5%	25.8%	25.7%	15.0%
10	\$214,295	\$43,848	\$86,204	\$344,347	62.2%	12.7%	25.0%	2.6%
11	\$976,297	\$418,147	\$247,404	\$1,641,848	59.5%	25.5%	15.1%	12.4%
12	\$394,450	\$241,701	\$197,291	\$833,442	47.3%	29.0%	23.7%	6.3%
Nat'l	\$7,369,689	\$3,260,788	\$2,650,839	\$13,281,316	55.4%	24.6%	20.0%	100.0%

To read this table: In 2015, public schools in Region 1 (New England) are expecting to complete new buildings worth \$724 million. They also expect to complete additions worth almost \$236 million and renovations valued at \$316 million. Total spending in Region 1 is projected at \$1.277 billion, with 56.7 percent of the dollars for new buildings, the balance for additions and renovations. New England is projected to account for 9.6 percent of all school construction dollars spent in the nation on schools to be completed in 2015.

Region 5, including Florida, Georgia, Alabama and Mississippi, also completed construction worth \$1.19 billion last year. This is a region where the dollar tends to go farther, and it is also a region of continued population growth. More than 85 percent of its dollars (more than \$1 billion) were spent on new schools and adding space in existing buildings.

Region 1 (Connecticut, Maine, Massachusetts, New Hampshire, Rhode Island and Vermont) was the sixth region breaking the \$1 billion mark in 2014. It is another essentially high-cost area, so while the expenditures are high, the amount of school construction actually undertaken is relatively small. Like Region 2, it spread its dollars evenly among new schools, additions and retrofit.

Districts in Region 6 (Indiana, Michigan and Ohio) reported \$919 million in completed work, with almost half going to provide new school buildings. School districts in Michigan and Ohio, in particular, report annually that they are prepared to get needed construction underway, but that funds to do important infrastructure work (and to add new space) are not available.

Region 8 (Iowa, Kansas, Missouri and Nebraska) reported spending over \$905 million on work completed in 2014. Region 8 has been increasing its educational facilities spending over the last several years. More than 62 percent of the dollars are being used to bring new schools on line.

School districts in Region 4 (North Carolina, South Carolina, Kentucky and Tennessee) spent slightly more than \$900 million on construction in 2014, most of it for new schools. This is a region that, before the recession, boasted of its political and financial commitment to improvement of its educational program and fa-

cilities. The current political leadership of the region may not have the same commitment.

Region 10 (Colorado, Montana, New Mexico, North Dakota, South Dakota, Utah and Wyoming) districts doubled their construction spending in 2013 from the previous year and increased their spending again in 2014, putting almost \$900 million in place. Oil and marijuana have provided increased funds in several states in the region. Is this being translated into improved educational facilities?

Region 12 (Alaska, Idaho, Oregon and Washington), which in 2010 was the nation's lowest spending region, increased its spending for a few years then dropped back in 2013 but turned things around again in 2014, spending almost \$900 million spread rather evenly among new schools (\$342 million), additions (\$274 million) and upgrades (\$266 million).

Region 7 (Illinois, Minnesota and Wisconsin) increased its spending in 2014, but at \$719 million total, is the lowest spending of the twelve designated regions. Considering the region's population and the educational reputation of the states, this is somewhat surprising and may reflect problems related to the collection of data. *(More detail on regional spending is shown in the regional tables on pages 30 through 32.)*

WHAT'S UNDERWAY NOW?

Table 3 examines construction that school districts say they will complete in calendar year 2015. If these projections are accurate, total construction this year will fall almost \$1 billion below

Region	New Schools	Additions	Renovation	Total	% OF SPENDING FOR			% of Nation
					New	Addition	Renovation	
1	\$554,058	\$114,286	\$64,973	\$733,316	75.6%	15.6%	8.9%	5.9%
2	\$721,201	\$151,154	\$121,397	\$993,752	72.6%	15.2%	12.2%	8.0%
3	\$1,236,651	\$89,849	\$269,316	\$1,595,816	77.5%	5.6%	16.9%	12.9%
4	\$348,519	\$57,213	\$94,115	\$499,847	69.7%	11.4%	18.8%	4.0%
5	\$748,718	\$306,931	\$286,196	\$1,341,844	55.8%	22.9%	21.3%	10.8%
6	\$412,133	\$104,435	\$167,073	\$683,641	60.3%	15.3%	24.4%	5.5%
7	\$238,748	\$81,571	\$92,829	\$413,147	57.8%	19.7%	22.5%	3.3%
8	\$255,798	\$566,372	\$549,745	\$1,371,915	18.6%	41.3%	40.1%	11.1%
9	\$1,030,359	\$359,073	\$274,061	\$1,663,493	61.9%	21.6%	16.5%	13.3%
10	\$250,372	\$236,745	\$241,303	\$728,420	34.4%	32.5%	33.1%	5.9%
11	\$915,717	\$218,203	\$152,812	\$1,286,732	71.2%	17.0%	11.9%	10.4%
12	\$665,830	\$161,329	\$250,609	\$1,077,768	61.8%	15.0%	23.3%	8.7%
Nat'l	\$7,378,103	\$2,447,160	\$2,564,428	\$12,389,691	59.6%	19.8%	20.7%	100.0%

To read this table: In the year 2015, school districts in Region 1 (New England) expect to start construction on new buildings worth \$554 million. They also project starting work on \$114 million in additions to existing buildings and on renovations valued at \$65 million. Altogether, school districts in Region 1 predict they will start \$733 million worth of school construction in 2015, with 75.6 percent of the dollars devoted to new schools, the balance to additions and renovations. Region 1's spending will be about 5.9 percent of school construction spending projected to start in 2015.

what was spent in 2014. That may turn out to be true, but it is probably a false reading.

An examination of projections and reporting over the last 19 years shows that districts are often reluctant to provide (or researchers fail to seek) full information on projects underway. Many districts report

that they have projects nearing completion, but with no data on cost or type, so they cannot be included in the compilations.

Last year, in the same time frame, school districts projected that just \$10 billion worth of school construction would be completed in 2014. Now, with reports on

completed construction in hand, those projections proved to be off by more than \$4 billion! If the same pattern holds true next year, 2015 could be a banner construction year with as much as \$16 billion possible. Only time (one year) will tell.

LOOKING AHEAD

Table 4 reports on construction that is projected to start this year, and it is subject to the same limitations. School districts often will not provide estimates of expected construction costs, so while there are many reports of construction expected to get underway, the majority of them have no dollars attached. At best, when one knows the grade level, the size and the geographic location, one can guesstimate the cost, but that is a dangerous game that I do not play. It may be that state or local approval of spending is yet to come (the information was collected a year and more ago) or that districts may know what they hope to spend but will not put it in writing.

The bottom line for the moment is that Tables 3 and 4 are informed projections, not facts, and they can change and be



National Medians	\$/Sq. Ft.	\$/Per Student	Sq. Ft./Per Student	No. of Students	Building Size (Sq. Ft.)	Building Cost
Elementary Schools	\$211.55	\$43,693	188.0	624	84,700	\$16,269,543
Middle School	\$242.96	\$43,635	173.4	612	118,500	\$26,500,000
High Schools	\$235.29	\$49,000	180.0	1,000	173,727	\$45,000,000
Low Quartile	\$/Sq. Ft.	\$/Per Student	Sq. Ft./Per Student	No. of Students	Building Size (Sq. Ft.)	Building Cost
Elementary Schools	\$178.57	\$28,902	149.4	552	75,000	\$12,800,000
Middle School	\$196.72	\$35,524	147.4	470	80,290	\$20,000,000
High Schools	\$194.74	\$32,126	148.2	650	120,000	\$25,900,000
High Quartile	\$/Sq. Ft.	\$/Per Student	Sq. Ft./Per Student	No. of Students	Building Size (Sq. Ft.)	Building Cost
Elementary Schools	\$267.50	\$59,789	204.5	735	103,000	\$16,283,000
Middle School	\$270.91	\$57,395	195.4	899	150,000	\$39,100,000
High Schools	\$348.92	\$66,758	222.8	1,400	267,000	\$80,000,000

To read this table: The national median cost per square foot for construction of an elementary school completed in 2014 was \$211.55. Cost per student was \$43,693 and the median school provides 188.0 square feet per student. One quarter of all school districts (the low 25 percent) spent \$178.57 per square foot or less for its elementary school construction while one quarter of all districts spent \$267.50 per square foot or more. The median high school completed in 2014 cost \$45 million and the median middle school cost \$26.5 million. (Based on data from 80 Elementary Schools; 40 Middle Schools; 112 High Schools.)

wrong. They tend to be low. While during the “boom years” districts seemed anxious to proclaim that they were building, recent experience shows that now many school districts prefer to keep their construction plans under wrap until the work is fully funded or completed. Many others protect their information by lumping all construction together. My own reading of the data on hand is that the projected figures are low, and that when we report what has been accomplished in the next few years, the totals will be higher.

NEW SCHOOLS IN 2014

Table 5 provides a profile, on a national basis, of new schools in 2014. The figures shown in Table 5 are medians. That means, for example, that among elementary schools built and reported during 2014, half of them cost \$211.55 per square foot or more, and half cost \$211.55 per square foot or less. By using medians rather than averages, we are able to minimize the influence of special schools that may be extremely expensive or inexpensive, or cases where reporting is faulty.

Table 5 shows that in 2014, the median

elementary school in the United States cost \$211.55 per square foot to build. Median spending was \$43,693 per pupil and the median elementary school provided 188 square feet for each student. The median elementary school reported was

designed for 624 students and encompasses 84,700 square feet at a total cost of \$16,269,543. Note that in finding medians, each variable is looked at separately, so that the school that cost \$211 per square foot is not necessarily the same one that



2014 Completions	Elementary	Middle	High	District	Total
New	\$2,543,260	\$1,765,522	\$3,299,110	\$155,447	\$7,763,340
Additions	\$1,173,513	\$503,164	\$1,452,399	\$86,713	\$3,215,788
Renovations	\$1,196,369	\$483,423	\$1,180,012	\$284,933	\$3,144,737
Total	\$4,913,142	\$2,752,108	\$5,931,522	\$527,093	\$14,123,865
% of Year's Dollars	34.8%	19.5%	42.0%	3.7%	100.0%

2015 Expected Completions	Elementary	Middle	High	District	Total
New	\$2,127,897	\$2,464,364	\$2,767,428	\$10,000	\$7,369,689
Additions	\$948,931	\$388,684	\$1,923,173	\$0	\$3,260,788
Renovations	\$1,107,922	\$434,833	\$1,108,084	\$0	\$2,650,839
Total	\$4,184,750	\$3,287,882	\$5,798,685	\$10,000	\$13,281,317
% of Year's Dollars	31.5%	24.7%	43.7%	0.1%	100.0%

2015 Projected Starts	Elementary	Middle	High	District	Total
New	\$2,802,273	\$1,225,357	\$3,297,440	\$53,033	\$7,378,103
Additions	\$545,003	\$322,897	\$1,579,260	\$0	\$2,447,160
Renovations	\$678,137	\$462,693	\$1,423,597	\$0	\$2,564,428
Total	\$4,025,414	\$2,010,947	\$6,300,297	\$53,033	\$12,389,692
% of Year's Dollars	32.5%	16.2%	50.9%	0.4%	100.0%

Total	Elementary	Middle	High	District	Total
New	\$7,473,431	\$5,455,244	\$9,363,978	\$218,480	\$22,511,132
Additions	\$2,667,447	\$1,214,745	\$4,954,832	\$86,713	\$8,923,737
Renovations	\$2,982,428	\$1,380,949	\$3,711,694	\$284,933	\$8,360,005
Total	\$13,123,306	\$8,050,938	\$18,030,503	\$590,126	\$39,794,873
% of Year's Dollars	33.0%	20.2%	45.3%	1.5%	100.0%

To read this table: Of the \$7.76 billion spent on new buildings in 2014, \$2.5 billion was for new elementary schools, \$1.7 billion was spent on middle schools and almost \$3.3 billion on high schools. About \$155 million was spent for such new buildings as gymnasiums, maintenance and bus garages and administrative centers. Total construction completed in 2014, including additions to and maintenance of existing buildings was \$14.1 billion.



spends \$43,693 per pupil or that was planned for 624 students.

Looking at middle schools, the median cost is \$242.96 per square foot. Median spending per pupil was \$43,635 and the median middle school provides 173.4 square feet per student. The median number of students in middle schools built in 2014 is 612 and the building size is 118,500 square feet. The cost is \$26.5 million.

The median high school cost \$45 million and provided 173,727 square feet. It was designed to accommodate 1,000 students. The median high school provides 180 square feet per student at \$49,000 for each student. The cost per square foot was \$235.29.

WHAT NEW SCHOOLS COMPLETED IN 2014 AND 2015 WILL PROVIDE

(Percent of new schools that reported facility, by grade)

Median costs for elementary and middle schools in 2014 are generally higher than those found a year ago. One weakness of these annual reports is that there is no control in terms of where projects occur, their size or their function. The figures shown reflect that group of new schools that were reported as completed in a given year, in this case 2014.

FINDING YOUR FIT

The median figures found in the first section of Table 5 may be significant to your district. (Caution: Though they are shown as exact numbers, they are based on estimated costs, size and students, and should be used only as estimates.) But depending on your location, your district's aspirations, the labor market and many other factors, the national median may not apply to you.

If your district is in a high-cost area or feels that it is a high-quality district in terms of how it spends its money and how it builds its buildings, you may want to look at the high quartile numbers, at least in terms of cost and space per student. They show that 25 percent of new elementary schools being built cost \$267.50 per square foot or more. Last year, one-quarter of the elementary schools provided almost 205 square feet or more per student. At the high school level, 25 percent of the districts will spend \$66,758 per student or more, and one-quarter of all the new high schools last year cost more than \$80 million, housed more than 1,400 students and encompassed at least 267,000 square feet.

The low quartile, also shown in Table 5, is the point at which 75 percent of the reporting schools are higher and 25 percent are lower. Thus, 25 percent of elementary schools were completed for \$178.57 per square foot or less. Twenty-five percent of the new elementary schools provided fewer than 149 square feet per student and the low quarter of all reporting school districts built their elementary school for less than \$13 million.

		Elementary	Middle/JHS	High School
Core Facilities	Classrooms	100.0%	100.0%	100.0%
	Library	95.8%	95.4%	97.7%
	Media Center	84.0%	93.6%	97.7%
	Computer Lab	97.5%	98.2%	100.0%
	Science Lab	16.0%	100.0%	95.5%
	Music	95.8%	98.2%	94.7%
	Arts/Crafts	100.0%	94.5%	93.2%
	Gymnasium	93.3%	95.0%	95.5%
	Multipurpose Room	12.6%	5.7%	5.3%
	Stage	10.1%	25.7%	76.8%
	Auditorium/Theater	6.7%	22.9%	76.2%
	Special ed/resource	96.6%	100.0%	95.5%
	Fine Arts	0.8%	5.7%	17.2%
	Home Arts	0.0%	2.3%	56.0%
	Industrial Tech.	0.0%	0.0%	7.3%
	Vocational Shops	0.0%	2.9%	18.2%
Photo Lab	0.0%	0.0%	0.7%	
TV/Radio Studio	0.0%	0.0%	3.3%	
Support Facilities	Offices	100.0%	100.0%	100.0%
	Infirmery/Clinic	100.0%	95.0%	100.0%
	Cafeteria	97.0%	92.0%	100.0%
	Kitchen	100.0%	93.0%	97.7%
	Hall Lockers	13.4%	100.0%	97.7%
Technology Support	LANs	100.0%	100.0%	100.0%
	Fiber Optics/Cable	100.0%	100.0%	100.0%
	Technology Lab (digital)	0.8%	11.4%	27.3%
	Language Lab	0.0%	0.9%	11.4%
	WANs	100.0%	100.0%	100.0%
Athletic Support	Locker Rooms	1.7%	86.2%	93.2%
	Bleachers	13.4%	94.3%	93.2%
	Track	0.0%	2.9%	15.9%
	Field House	0.0%	0.0%	6.8%
	Fitness Center	0.0%	4.7%	21.9%
	Tennis	0.0%	0.0%	6.8%
	Pool	0.0%	0.0%	4.5%
	Stadium	0.0%	0.0%	9.1%
	Athletic fields	5.0%	67.9%	75.0%
	Playground	90.8%	2.9%	6.8%
Other Facilities	Day Care/Nursery	12.6%	0.0%	0.0%
	Elevators	11.8%	17.5%	54.3%

THE TOP TEN ADDITIONS BY SCHOOL TYPE

(Percent of school additions reported to contain facility)

Elementary	Classrooms	67.7%
	Gym	15.6%
	Cafeteria	11.5%
	Media	11.5%
	Library	8.3%
	Office	7.3%
	Kitchen	7.3%
	Music	6.3%
	Day Care	4.2%
	Special Ed	4.2%
Middle/JHS	Classrooms	47.9%
	Lavatories	40.8%
	Gym	31.1%
	Lockers	28.3%
	Library	12.7%
	Bleachers	11.3%
	Infirmery	7.7%
	Industrial arts	6.3%
	Cafeteria/Kitchen	5.6%
	Science Labs	4.9%
High School	Classrooms	32.7%
	Offices	31.0%
	Lockers	25.7%
	Bleachers	21.2%
	Locker Rooms	21.2%
	Stage	15.0%
	Athletic Fields	14.2%
	Auditorium	14.2%
	Kitchen	12.4%
	Gym	8.8%

To read this table: To read this table: 67.7 percent of additions to elementary schools contained classrooms. Classrooms were in almost 33 percent of high school additions; bleachers were included in 21.2 percent of high schools.

Once again, it must be emphasized that these are not necessarily the same school building, but the point at which, in looking at total cost or square feet per student or cost per student, one-quarter of the reporting districts are spending that amount or less.

Being in the low quartile does not suggest that the school is behind others. It may simply indicate that it is in an area with lower construction costs. Or, for example, in looking at the number of students in the school, the fact that one-quarter of all high schools are built for 650 or fewer students may be a factor of location (that's all the students there could be) or a mark of distinction (the

school was kept small for educational purposes).

The figures shown in Table 5 are based on reports from 80 elementary schools, 40 middle schools and 112 high schools either completed in 2014 or substantially finished and scheduled to open early in 2015. Keep in mind that the figures shown in Table 5 are meant as comparison points, not as arbiters of right and wrong, cheap or expensive.

WHERE TO PUT THE MONEY

Most school districts have multiple construction needs. Whether caused by an expanding student population, need for technology, questions of safety and accessibility or the need to upgrade schools built in another time, school boards are often faced with multiple demands for construction dollars.

Table 6 takes a look, in terms of dollars, at how some of those questions are being answered. It shows the school level at which construction is taking place (money is being spent) and the type of construction that was undertaken. For example, among school construction projects in 2014, 34.8 percent of the money was spent on elementary schools while 19.5 percent went to middle schools. High schools received 42 percent of the dollars spent. The balance was spent on “district projects,” generally transportation and/or maintenance buildings and athletic complexes — often including football stadiums. Occasionally, administrative headquarters were mentioned.

Table 6 also shows the purpose for which construction dollars were spent at each level. For example, of the \$4.913 billion spent last year on elementary schools, \$2.5 billion was for new buildings, \$1.17 billion was used to add space in existing buildings and almost \$1.2 billion was for renovations to existing buildings.

Table 6 also shows how districts are expecting to spend their dollars in projects being completed or starting in 2015. In general, high schools get the lion's share of the dollars.

About \$14.1 billion total dollars were expended in 2014 on school construction. There are other reporting agencies that write about ongoing school construction spending that report considerably more activity than that. Our numbers attempt to track actual work completed in a given calendar year. The difference is that the other agencies that report on the amount of activity that is taking place at a given time, no matter when it started or will be completed. The figures in the bottom section of Table 6 (Total Construction Underway) are a measure of such “ongoing activity” — projects in various states of completion — and indicate that the full impact of school construction on the economy at the present time is close to \$40 billion.

PROVIDING FACILITIES

New school buildings have great similarities. **Table 7** records the percentage of new schools completed in 2014 or expected to be

WHAT TASKS ARE MOST OFTEN UNDERTAKEN WHEN SCHOOLS ARE MODERNIZED *(Top ten by building use)*

completed this year that include specific facilities.

There are no surprises. All have classrooms and offices. Some kind of a nurse's station is a regular feature. Libraries are in all buildings, though in some they may be listed as media centers. All buildings now provide fiber optics/cable, and local and wide-area networking.

In elementary schools this year, 93 percent included a gymnasium, and 97 percent a cafeteria. Almost 13 percent list a "multipurpose room" which once was the designation of a dual-purpose space for lunch and exercise. That may no longer be the case. At least some of the multi-purpose rooms now designated appear to be additional gathering space where a variety of activities and groupings can be scheduled outside the gym and cafeteria.

It's also interesting to examine what schools no longer appear to provide. Home arts (once home economics) facilities are found in fewer than three percent of middle schools and just over half the new high schools. Industrial arts — once a staple of a middle school education (at least for boys) — has disappeared entirely from new middle schools and are in fewer than 10 percent of high schools. Fine arts facilities can be found in only 17.2 percent of all new high schools although they may be included with arts/crafts (in 93.2 percent).

Another interesting detail — more than half the high schools (54 percent) have elevators, meaning they have two or more floors. Middle and elementary schools tend to be one-story buildings.

Table 8 details information collected on additions to existing schools. It shows the facilities most often included by school type in 2014.

Classrooms were the top facilities added at every school level — not a surprise since the impetus for adding to a school is usually the need to accommodate more students. In elementary schools, gymnasiums were the second most popular addition followed by cafeterias. Hopefully that is an indication that buildings with multi-purpose (often considered multi-useless) combination spaces are finally separating physical education from eating. Although the number was not high, it is interesting that 4.2 percent of elementary schools added daycare facilities.

Middle schools support their new classrooms with lavatories and are also adding gymnasiums (31 percent) and lockers (28 percent). In high schools, after classrooms and offices, the emphasis appears to be on supporting athletics (lockers in 25.7 percent of additions; bleachers and locker rooms in 21.2 percent) and athletic fields. Performance space (stage and/or auditorium) is another common addition.

Table 9 records the tasks most often undertaken when schools are modernized. Overhauling electrical systems and HVAC upgrades are a key objective at all grade levels.

Elementary (191 projects)	HVAC	45%
	Electric Overhaul	41%
	Plumbing	27%
	Roofing	27%
	Flooring/Carpet	24%
	Lighting	22%
	Security	19%
	Fire Alarms	18%
	ADA Upgrades	18%
	WANS/LANS/Fibre	18%
Middle/JHS (153 projects)	HVAC	48%
	Electric Overhaul	48%
	Lighting	35%
	Plumbing	32%
	Security	28%
	Fire Alarms	28%
	WANS/LANS/Fibre	27%
	Roofing	26%
	Flooring/Carpet	26%
	Windows	26%
High School (188 projects)	Electric Overhaul	54%
	HVAC	48%
	Lighting	43%
	Plumbing	34%
	Roofing	31%
	Flooring/Carpets	29%
	ADA Upgrades	29%
	Security	28%
	Fire Alarms	27%
WANS/LANS/Fibre	27%	

Note: Building controls, code issues and lavatory repairs were also frequently mentioned.

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Trends since 1995

A look at medians for elementary, middle and high schools from the past 20 years.

THIS IS THE 20TH YEAR that *School Planning & Management* has collected and published data on costs of new schools in the United States. Reporting is done based on medians. The number shown is more than what one-half of schools constructed cost and less than the cost for the other half (see Table 5 for more on national medians and “A Closer Look at Regions” on pages 30 through 32 for regional medians).

In 1995, as **Graph A** shows, the median school district was paying about \$104 per square foot to construct high schools; \$99 for middle schools and \$93 per square foot for elementary. Costs remained reasonably close to those numbers for the next four years, rising slightly, but still staying close

to \$100 a square foot, a little above that in high cost parts of the nation, a little below in areas where all costs tended to be lower.

And then things changed. By 2003, high school construction costs had risen to \$132 per square foot, a 25 percent increase. Four years later, in 2007, the median high school was being constructed for \$171 per square foot. In 2011, median costs for constructing a high school reached \$219. Two years ago, the cost of constructing a new high school was estimated at \$249 per square foot, a significant jump. In 2014, the median high school reporting cost \$235.29 per square foot. Why the one-year decline? It probably has more to do with the mix and location of the reporting schools rather than any significant change in construction costs.

The middle school picture was similar. From 1999 (when costs were \$108 per square foot), the price rose steadily to \$130 in 2003 and \$162 in 2007. In 2009, the median cost for a new middle school was \$187.50 per square foot, a 73-percent increase over a decade. In 2010, reported costs surged to better than \$215 per square foot, but in 2011 and 2012 they fell back to \$195. In 2013, construction costs went way up to \$221. In 2014 there was another jump, to almost \$243. Again, factors of location probably are playing a role.

The cost of constructing an elementary school has more than doubled since 1995, going from \$93 to \$211.55 today. The fact that the median among all new schools is more than \$200 per square foot is probably an accurate reflection of national costs for school construction. *(A personal aside: In 1958 — the first year in which I became aware of school construction costs — school construction at \$12-per-square-foot was considered high! Many elementary schools were reporting costs closer to \$4.)*

Graph B examines the history of construction cost per student over the same period of time. Cost per square foot is essentially controlled by outside forces. Cost per student, to some extent, can be controlled by the school district.

The simple act of increasing the announced number of students who will be served by a new school, after all, will lower the cost per pupil. It is assumed that school districts do not do this, but with the economy robbing schools of operating funds, some districts are increasing the number of students allowed per class



PHOTO COURTESY OF HUNT CONSTRUCTION COMPANY

and that, in turn, can affect the cost per student if the new standards are applied to a building under construction.

Cost in 2014 for the median high school was \$49,000 per student. Middle schools came in at \$43,635 per student and elementary schools at \$43,693. All were higher than was reported among the schools completed a year earlier.

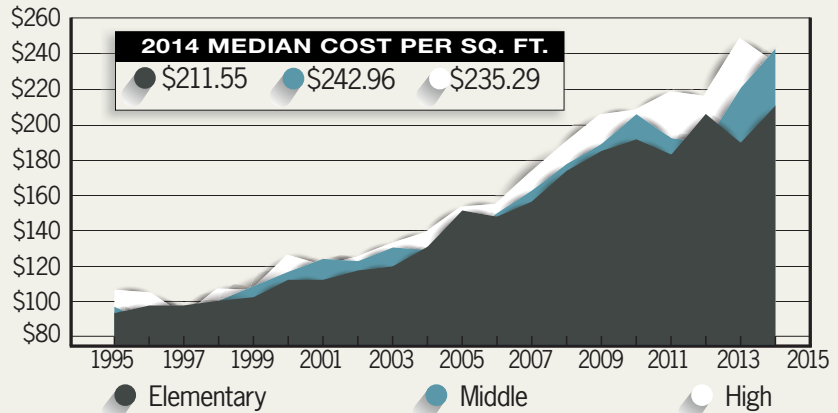
In terms of cost per student, a reporting issue needs to be resolved, or at least considered. A new high school may be planned and 800 students scheduled to enter it, so the cost is divided by 800. But in many districts, that school may be sized for a larger student body some years ahead, perhaps as many as 1,600. In that case, the cost per student really ought to be divided by 1,600, cutting the apparent cost in half.

In another common situation, the support facilities (gyms, library, science labs, etc.) are sized for a larger student body but there are enough classrooms only for the entering cohort. When the school population grows, classrooms will be added. That provides a different cost per student. Statistics can take one only so far. Each individual must apply the numbers to her own situation.

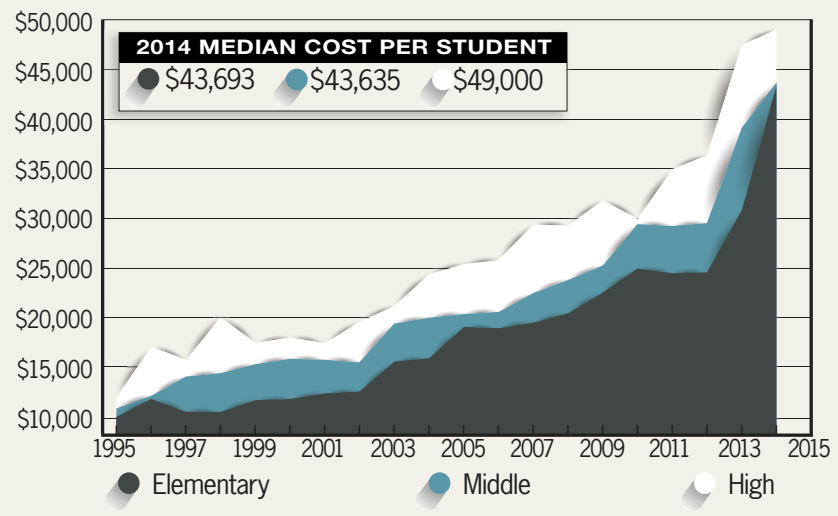
Graph C shows the amount of space each school type is allocating per student. This is an area where schools can control costs. Compared to 1995, elementary schools reporting this year providing about 80 square feet more for each pupil. In that same period, high schools have provided about 30 additional square feet for each student. Middle schools added an extra 45 square feet over the last 19 years. Of course the same questions as raised concerning cost per student pertain. Was the building planned for the number of students entering or for the ultimate number expected in later years? Either way, it is apparent that new schools today provide more space than schools constructed 20 years ago.

>> This Construction Report and the accompanying tables, etc., were compiled by **Paul Abramson**, education industry consultant for *School Planning & Management* magazine and the president of Stanton Leggett & Associates, an education consulting firm based in Mamaroneck, N.Y. He can be reached at intelled@aol.com.>>

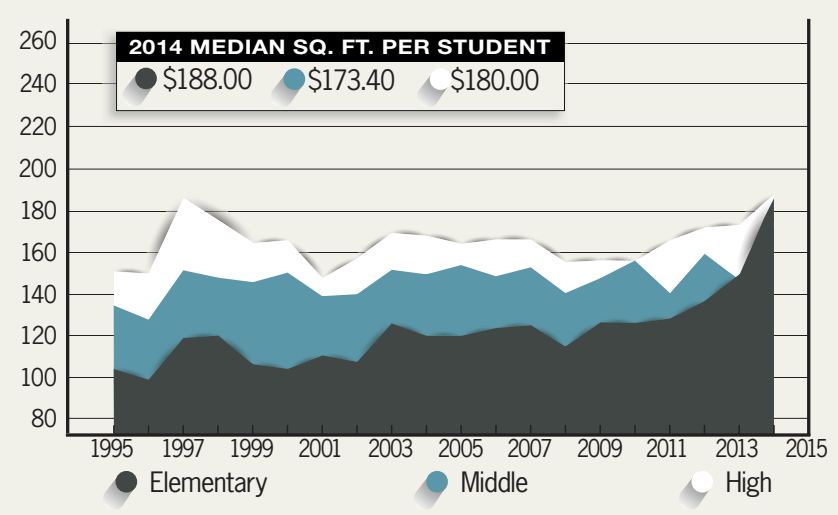
GRAPH A: MEDIAN COST PER SQ. FT., 1995-2014



GRAPH B: MEDIAN COST PER STUDENT, 1995-2014



GRAPH C: MEDIAN SQ. FT. PER STUDENT, 1995-2014



A Closer Look at Regions

A look at medians for elementary, middle and high schools from the past 20 years.

NATIONAL FIGURES are always instructive, but from the point of view of the local school administrator or school board, it may be more important to know what your neighbors are doing. *School Planning & Management's* regional figures are designed to help you do that.

On the following pages, figures are given for new school construction activity in each of 12 regions of the United States. In each region, the median is shown for each school type in terms of cost per square ft., cost per student and space per student. Also shown is the median school capacity reported, the building size and the building cost.

The purpose of this section is to provide data that can help you understand not only what your own district needs, but also what others are doing and how much their projects cost.

The national tables allow comparison with districts with similar aspirations. The regional tables allow you to measure yourself against your neighbors. With this information, you will have data necessary to make your own plans and, in many cases, to help the public understand what you are building, why you are doing it and what it is likely to cost. Remember, there is no right or wrong; these are guidelines that can be applied to your own local needs and may help in explaining and understanding them.

REGION 1 MEDIANS NEW SCHOOLS (CT, ME, MA, NH, RI, VT)

	Elementary	Middle	High
\$/sq. ft.	\$400.36	\$371.59	\$387.75
\$/student	\$86,619	\$67,628	\$80,474
Sq. ft./student	214.2	182.6	193
Students	629	1001	1118
Size (sq. ft.)	103,650	182,059	222,826
Total cost (\$000)	\$36,900	\$67,800	\$89,970

The median elementary school in Region 1 spent \$400.36 per square foot or \$86,619 for each of 629 students accommodated. Construction costs in Region 1 are higher than anywhere else (\$/square foot) but reporting throughout the region is consistent.



REGION 2 MEDIANS NEW SCHOOLS (NJ, NY, PA)

	Elementary	Middle	High
\$/sq. ft.	\$235.36	\$250.93	\$333.33
\$/student	\$43,083	\$57,940	\$63,120
Sq. ft./student	183.0	239.7	174.2
Students	602	785	600
Size (sq. ft.)	95,368	183,500	90,000
Total cost (\$000)	\$21,000	\$45,850	\$58,000

The median elementary school in Region 2 spent \$235.36 per student or just over \$43,000 for each of the 602 students accommodated. The median middle school cost \$45.85 million and housed 785 students. The median high school in the region cost \$58 million.



REGION 3 MEDIANS NEW SCHOOLS (DC, DE, MD, VA, WV)

	Elementary	Middle	High
\$/sq. ft.	\$236.67	\$198.07	\$224.47
\$/student	\$59,102	\$46,879	\$63,333
Sq. ft./student	252.6	233.7	200.0
Students	700	450	1,345
Size (sq. ft.)	79,500	92,500	300,000
Total cost (\$000)	\$25,000	\$21,450	\$80,000

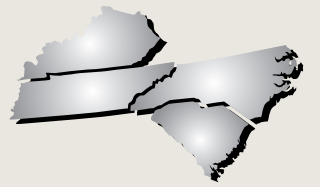
The median elementary school in Region 3 cost \$236.67 per square foot or \$59,102 for each of the 700 students accommodated. The median high school with 1,345 students was 300,000 square foot and cost \$80 million and provided 200 square foot per student.



REGION 4 MEDIANS NEW SCHOOLS (KY, NC, SC, TN)

	Elementary	Middle	High
\$/sq. ft.	\$191.56	\$248.75	\$143.04
\$/student	\$28,329	\$36,722	\$24,856
Sq. ft./student	136.0	148.5	142.3
Students	650	850	1025
Size (sq. ft.)	79,500	126,000	177,000
Total cost (\$000)	\$14,500	\$31,550	\$24,615

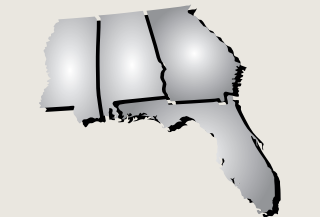
The median elementary school in Region 4 cost \$191.56 per square foot or \$28,329 for each of 650 students. The median middle school houses 850 students in 126,000 square feet. The region's median new high school housed 1,025 students.



REGION 5 MEDIANS NEW SCHOOLS (AL, FL, GA, MS)

	Elementary	Middle	High
\$/sq. ft.	\$133.33	\$194.17	\$200.00
\$/student	\$25,263	\$35,524	\$34,000
Sq. ft./student	182.2	172.7	162.2
Students	750	586	1,200
Size (sq. ft.)	90,000	103,000	160,000
Total cost (\$000)	\$12,000	\$22,000	\$50,000

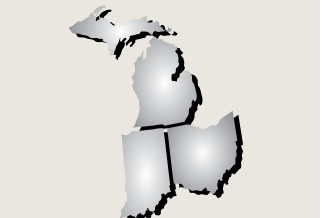
The median elementary school in Region 5 cost \$133.33 per square foot or \$25,263 for each of the 750 students. The median middle school cost \$50 million and encompassed 160,000 square foot.



REGION 6 MEDIANS NEW SCHOOLS (IN, OH, MI)

	Elementary	Middle	High
\$/sq. ft.	\$199.08	\$246.43	\$318.21
\$/student	\$28,369	\$42,944	\$41,655
Sq. ft./student	136.0	171.6	152.9
Students	587	575	875
Size (sq. ft.)	72,734	92,364	152,500
Total cost (\$000)	\$142,500	\$29,675	\$34,250

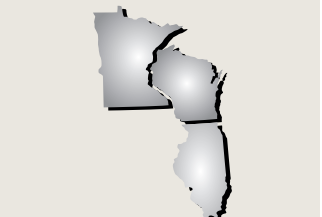
The median elementary school in Region 6 cost \$199.08 per square foot or \$28,369 for each of the 587 students. The median middle and high schools cost far more per square foot and per student and provided considerably more space per student.



REGION 7 MEDIANS NEW SCHOOLS (IL, MN, WI)

	Elementary	Middle	High
\$/sq. ft.	\$180.22	\$221.82	\$232.68
\$/student	\$45,655	\$45,951	\$39,286
Sq. ft./student	253.3	207.2	198.0
Students	675	531	1,000
Size (sq. ft.)	85,884	110,000	155,000
Total cost (\$000)	\$15,850	\$25,000	\$35,000

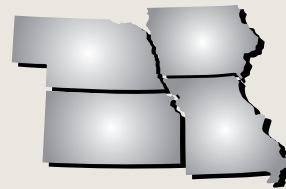
The median elementary school in Region 7 cost \$180.22 per square foot or \$45,655 for each of 675 students. The median high school cost \$35 million and houses 1,000 students, providing 198 square foot per student at \$232.68 per square foot.



REGION 8 MEDIANS NEW SCHOOLS (IA, KS, MO, NE)

	Elementary	Middle	High
\$/sq. ft.	\$160.00	\$237.89	\$215.61
\$/student	\$30,713	\$46,962	\$40,000
Sq. ft./student	240.4	183.7	191.7
Students	580	517	1,800
Size (sq. ft.)	75,000	99,000	345,000
Total cost (\$000)	\$12,500	\$27,450	\$65,000

The median elementary school in Region 8 cost \$160.00 per square foot or \$30,713 for each of the 580 students. The median high school cost \$65 million and provides 345,000 square foot for 1,800 students.



REGION 9 MEDIANS NEW SCHOOLS (AR, LA, OK, TX)

	Elementary	Middle	High
\$/sq. ft.	\$193.08	\$246.67	\$209.84
\$/student	\$33,969	\$39,278	\$40,000
Sq. ft./student	183.6	186.7	226.7
Students	718	750	800
Size (sq. ft.)	92,500	140,000	130,000
Total cost (\$000)	\$18,940	\$37,000	\$35,000

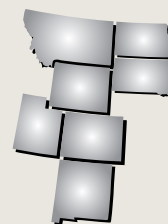
The median elementary school in Region 9 cost \$193.08 per square foot or \$33,969 each for 718 students. They provide 183.6 square foot per student and cost almost \$19 million. The median high school cost \$35 million for 800 students.



REGION 10 MEDIANS NEW SCHOOLS (CO, MT, ND, NM, SD, UT, WY)

	Elementary	Middle	High
\$/sq. ft.	\$215.00	\$236.64	\$223.04
\$/student	\$48,680	\$40,685	\$29,116
Sq. ft./student	226.4	171.9	147.8
Students	425	467	1,150
Size (sq. ft.)	73,000	80,290	168,114
Total cost (\$000)	\$12,800	\$18,100	\$41,975

The median elementary school in Region 10 cost \$215 per square foot or \$48,680 for each of 425 students. The high schools cost \$42 million and provide 148 square foot per student for 1,150 students. The median middle school has 467 students and cost \$18.1 million at \$236.64 per square foot.



REGION 11 MEDIANS NEW SCHOOLS (AZ, CA, HI, NV)

	Elementary	Middle	High
\$/sq. ft.	\$290.33	\$368.42	\$295.83
\$/student	\$54,217	\$59,322	\$45,250
Sq. ft./student	128.8	161.0	152.2
Students	500	590	1,185
Size (sq. ft.)	65,909	995,000	245,000
Total cost (\$000)	\$27,000	\$35,000	\$72,500

The median elementary school in Region 11 cost \$290.33 per square foot and houses 500 students. High schools cost \$72.5 million and house 1,185 students.



REGION 12 MEDIANS NEW SCHOOLS (AK, ID, OR, WA)

	Elementary	Middle	High
\$/sq. ft.	\$240.00	\$348.33	\$272.03
\$/student	\$50,831	\$54,625	\$46,389
Sq. ft./student	195.2	163.8	164.3
Students	650	900	900
Size (sq. ft.)	75,000	145,000	158,500
Total cost (\$000)	\$18,000	\$50,000	\$41,500

The median elementary school in Region 12 cost \$240 per square foot or \$50,831 for each of the 650 students. The median high school cost \$41.5 million at \$272.03 per square foot. The median middle school cost \$50 million, and housed 900 students.

