

Protecting Students and Staff During Renovations and Construction

According to a 2016 joint report by 21st Century School Fund, Inc., U.S. Green Building Council, Inc., and the National Council on School Facilities, state and local governments invest more capital in K-12 public school facilities than in any other infrastructure sector outside of highways. Between 1995 and 2012, K-12 and higher education captured the largest share of state and local capital investments (34%).

\$973 billion was invested by states and districts in 2014 dollars (an average of \$49 billion per year), from their capital budgets for new school construction and capital projects to improve existing schools.

However, many schools are decades old and have not had major renovations recently. Most schools built before the 1980s contain building materials now known to be hazardous to human health, such as lead in plumbing and paint; asbestos in plaster, insulation, and flooring; and PCBs in caulking and lighting.¹

Research from Education Week shows it will take **\$197 billion** to get U.S. schools into “good overall condition,” which may mean many renovations and construction in the near future.²

There are **98,158 public schools** in the U.S., according to 2016-2017 data from the National Center of Education Statistics (NCES)³



ELEMENTARY SCHOOLS
54.5% (53,584)



HIGH SCHOOLS
21.7% (21,287)



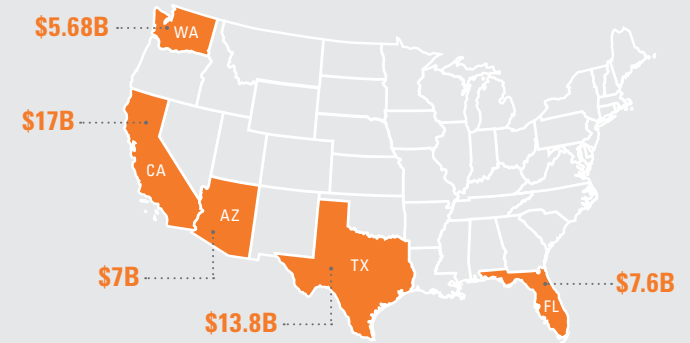
MIDDLE OR JR HIGH
16% (15,780)



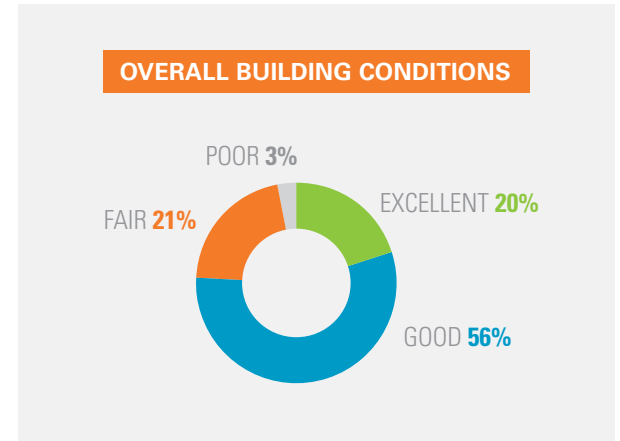
OTHER SCHOOLS
7.8% (7,507)

Top 5 states with the **highest projected costs** (2012-2024)

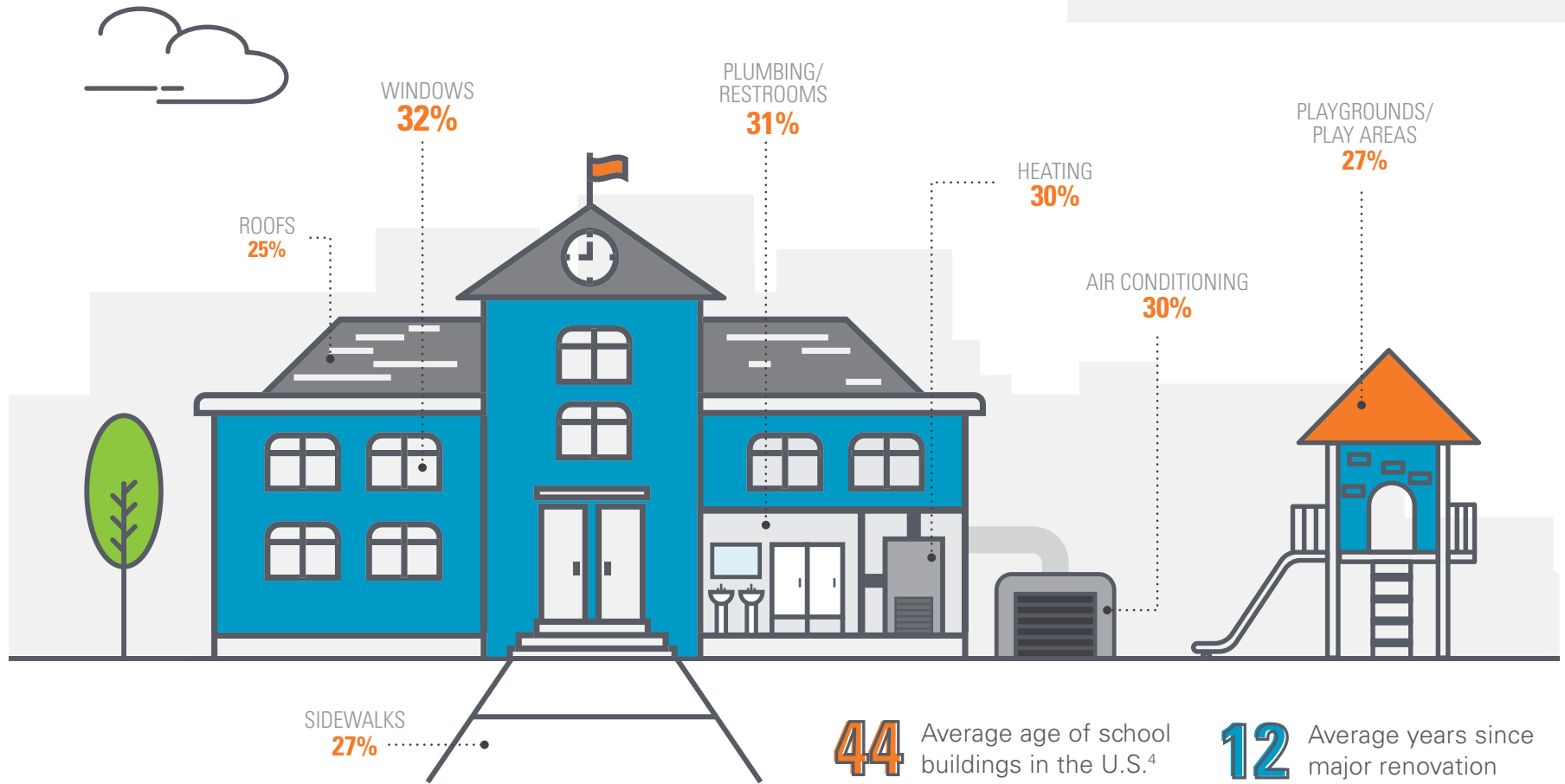
for new school construction due to increased enrollment:¹



While a majority of schools surveyed by the National Center for Education Statistics said school buildings were in “good” to “excellent” condition overall, **sizable percentages said key facets of those facilities rated “fair” or “poor”**.³



KEY FACETS RATED “FAIR” OR “POOR”



44 Average age of school buildings in the U.S.⁴

12 Average years since major renovation

Renovations and New Schools may be Hazardous to Students

Renovations and new schools are exciting, but it's important to understand the safety risks and hazards that may impact students and staff if work is being done while school is in session.

Healthy Schools Network, Inc. shares these environmental hazards that can occur during school renovation and construction:⁵

- Lead-contaminated debris
- Asbestos fibers and fiber glass
- Construction equipment fumes (diesel fuel)
- Toxic product fumes (paints, sealant, glue, varnishes)
- New furnishings and equipment fumes (carpet, plywood, copiers)

Additionally, these materials can include components which are known to be harmful to human health:

- Volatile Organic Compounds (VOCs) (glues, paints, floor finishes, other construction materials)
- Polybrominated Diphenyl Ethers (PBDEs) (materials with halogenated flame retardants, including foams and finishes)
- Polyvinyl chloride (PVCs) plastics (flooring, plumbing, wall coverings and partitions)
- Polychlorinated biphenyls (PCBs)

Another potentially harmful material is crystalline silica, which is a common mineral found in the earth's crust. According to OSHA, materials like sand, stone, concrete and mortar contain crystalline silica. Very small particles (silica dust) are created when cutting, sawing, grinding, drilling or crushing stone, rock, concrete, brick, block and mortar. Inhaling the very small particles can cause serious health problems, such as incurable lung disease, lung cancer, chronic obstructive pulmonary disease (COPD) and kidney disease.⁶

Because children are still developing, they are more vulnerable to environmental hazards. Additionally, they eat, drink and breathe more per pound of weight than adults and have a lower ability to protect themselves from exposure to environmental hazards, which means their safety is critical during school renovations and construction.⁵

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Solutions

Due to the dangers of silica dust, OSHA developed standards for the construction industry to reduce the negative health impacts, which includes creating silica dust exposure control plans and using wet and dry sweeping practices to remove silica dust particles from the air. Three techniques for managing silica dust include:



	WET SWEEPING	WATER FLOODING	DRY SWEEPING WITH HEPA FILTRATION
DUST CONTROL METHOD	<p>A continual spray of water provides a shield of moisture on side brushes</p> <p>Effective in most applications</p>	<p>Water contains silica dust, preventing it from becoming airborne, a scrubber then removes wet dust from the floor</p>	<p>Dry system provides a 99.97% filtration efficiency to .3 microns</p> <p>OSHA-allowable method when other methods are not feasible</p>
TENNANT PRODUCTS	<p>Sentinel®, S30, S20, M20 WOC, M30 WOC</p>	<p>M30 WOC, M20 WOC, T20, T17, T16, T12, T7, 5700, 5680, T500/T500e, T300/T300e, T2, T1B, T1</p>	<p>800, S30, S20, 6100, S10</p>

KEEP YOUR STUDENTS SAFE DURING RENOVATIONS AND CONSTRUCTION

As a recognized industry leader, Tennant Company has made it our mission to change the way the world cleans. With products and solutions designed to help create a cleaner, safer, healthier world, we can help you build a cleaning program that keeps students and staff safe during your renovation or construction projects.

CONTACT US TO FIND A HEALTHY SCHOOL SOLUTION



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¹ <https://kapost-files-prod.s3.amazonaws.com/published/56f02c3d626415b792000008/2016-state-of-our-schools-report.pdf?kui=wo7vkgV0wW0LGSjxek0N5A>

² <https://www.edweek.org/ew/section/multimedia/data-us-school-buildings-age-condition-and.html>

³ https://nces.ed.gov/programs/digest/d18/tables/dt18_216.10.asp

⁴ <https://nces.ed.gov/pubs2014/2014022.pdf>

⁵ http://www.healthyschools.org/data/files/Renovation_and_Construction_Guide.pdf

⁶ <https://www.osha.gov/dsg/topics/silicacrystalline/>

