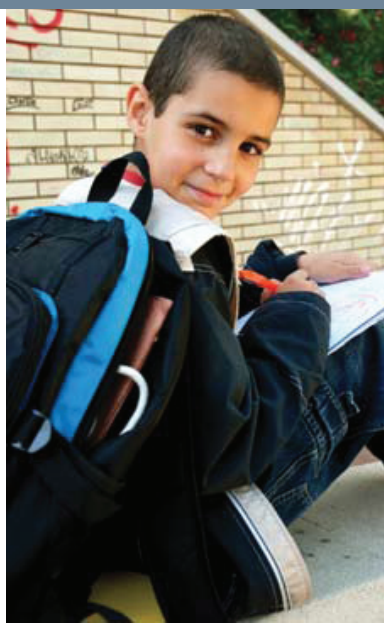
# The Complex and Multi-Faceted Nature of School Construction Costs: Factors Affecting California

## RESEARCH FINDINGS 2008





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Back Cover + Above
Project: Camino Nuevo Charter Academic Elementary. Architect: Daly Grenik. Photo: Tim Griffith

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McGraw-Hill school construction data was available to the Center for Cities and Schools through its participation in the Building Educational Success Together (BEST) community of practice, which works to ensure high quality school facilities for all children.

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# PREFACE

Public schools are essential public infrastructure assets. Their condition, utilization, and design impact educational performance and local neighborhoods. So many states, including California, face tremendous needs in modernizing their older schools and building new, high quality schools for a rapidly growing population. Recognizing this great need, the Capitol Forum sought to investigate the factors affecting school construction costs in California. The Center for Cities and Schools conducted this study because we have a keen interest in school and community planning for the built environment and because school construction costs are so central to decisions about public education infrastructure.

Policymakers need a more informed understanding of public school construction to build effective policy. In addition, a public that grasps the challenges and constraints of public school construction and renovation is more likely to sustain their support for this important public investment. Amidst a climate of increasing construction costs and increasing demands on the public purse, this study analyzes school construction processes and costs for policymakers and the public.

Public school construction is immensely complex. The amount of coordination, planning, timing, skilled professionals, and capital required to build schools is tremendous. It was no simple task to sort through public planning, design, and construction processes. This is, in part, due to the lack of quality data and information on school construction cost, schedule, and scope, but it is also because little research on these processes exists.

In this report, we translate and provide clarity on the practices and policies affecting school construction. Through the interviews, focus groups, and analysis of project level data, we did the due diligence to educate ourselves and translate the construction world to others. This report is our attempt to bring order to what is a fast-moving, high dollar value, and very important public activity. Still, continued empirical research and analysis is needed to create a deeper understanding – with clear definitions and ample information – to fully unveil the policy and practice behind public school construction

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# EXECUTIVE SUMMARY

Over the past ten years, public education construction has seen unprecedented growth and California is among the front runners driving this trend. Rising costs, however, are increasing rapidly in a wide range of areas thereby impacting school districts' ability to deliver the schools they are promising their constituents. Despite massive public investment, estimated nationally at more than $500 billion, very little research has tried to understand the actual factors driving these costs.

This research report addresses the void in understanding school construction costs by addressing two key questions:

a. What are the factors affecting school construction costs in California?
b. In what ways do these factors compare nationally and in other states?

Understanding and measuring California school construction costs is complex. A variety of unique factors affect school construction costs and these factors are likely not very discrete from one another. Rather, school construction costs are determined by a complex interplay of factors. This report describes three key areas and specific factors that appear to be driving school construction costs in California and seven comparison states: (1) regulatory structures, (2) school politics, practices, and design, and (3) market conditions.

Using a variety of methods, including focus groups, interviews, policy comparison, and statistical analysis, we sought to better understand the factors that affect school construction costs. This analysis took place over 14 months and involved three phases:

Phase 1 *Literature and Data Review on Public School Construction Costs* The study began by collecting and assessing existing literature and available public data on public school construction costs and trends.

Phase 2 *California Focus Groups and Interviews on School Construction Policy, Practice, and Costs* Focus groups and interviews with over sixty school construction professionals and policy makers were conducted to gather insight on factors affecting school construction costs from school district, industry, and state agency leaders.

Phase 3 *Statistical Analysis of National School Construction Database* A project-level school construction cost database incorporating data from McGraw-Hill Construction, Building Educational Success Together (BEST), National Center for Education Statistics, Census, and other sources was utilized to analyze national school construction trends.

## KEY FINDINGS AND RECOMMENDATIONS

**Finding 1: School construction costs are complex, multi-faceted, and inconsistently reported.**

There are a variety of state regulatory factors, local school district and project factors, and construction market conditions that together have cumulative effects on school construction costs. These factors interact in unique ways depending on the local context, particularly school district and local and regional community characteristics.

Of particular importance to understanding and comparing school construction costs is the fact that school planning, design, and construction are highly local activities, and a large amount of variation exists in this work. This finding is supported by focus groups, the state policy interviews, and suggested by the statistical analysis. The regression results further suggest that the factors affecting school construction costs vary from state to state.

**Recommendation 1: The State of California and/or local governing entities should develop more systematic school construction cost data collection systems, guided by professional oversight, to enable appropriate cost analysis.**

To fully and empirically understand how school construction costs differ between states and the factors that affect these costs states need a standard format for consistently measuring, categorizing, and reporting school construction costs. A statewide database is not useful unless data elements, collection methodology, accuracy, and timeliness of the information are maintained. In order for the information to be consistent and accurate, it needs some level of centralized direction, training for quality data entry, and funding to maintain the system.

Making information about school construction costs public has a two-fold purpose. First, it informs parents and children about the taxpayer supported investments being made into structures in their community. Secondly, it holds public officials accountable for their planning and expenditures on new public school facilities.

**Finding 2: Three central areas of factors affecting school construction costs are: a) state regulatory structures, b) local school politics, practices, and design, and c) regional market conditions.**

Interview and focus group data reveal key elements of state regulatory structures that affect school construction costs: design and construction specifications, school facilities finance structure, public approvals process, and project management regulations. Our statistical analysis indicates that the states with greater numbers of state regulations (as measured by our School Construction Regulation Index) had higher school construction costs: the presence of school siting laws and prevailing wage laws had the most significant cost impacts, increasing cost per square foot by 12 percent and 9.6 percent, respectively.

The local political context and the choices school districts make regarding practices and design ultimately affect school construction costs. According to interviews and focus groups, there are several key elements of local school politics, practices, and design that affect school construction costs: school characteristics and design choices, school capital financing practices, public approvals process, project management, and local weather/ climate.

Regional market conditions impact all construction, and school construction is no exception. Changes in land and construction prices are a major driver of public school

construction costs. California's rapid growth and high cost of living have important consequences for public school construction costs. School construction is driven largely by enrollment growth and needs for upgrading existing schools. School districts must build schools whether market conditions are favorable or unfavorable.

**Recommendation 2: The State of California and the school construction and architecture professional community should work together to develop greater policy directives and oversight systems to guide future school construction policies and practices.**

Specific areas for collaborative work include: collectively defining "good" or "complete" school construction projects that are driven by curricular goals and outcomes and establishing tools to measure school facility quality; state offices involved in school construction should work with other comparable state-level leaders and authorities to better determine what patterns are developing across the nation and how they might differ from region to region; and policy and professional leaders should establish and publish recommendations or guidelines for effective school facilities planning, both at a district wide level and at an individual project level.

**Finding 3: School construction has not yet been studied in a rigorous or systematic way, partly due to the lack of process and data standardization in the field.**

There is very little empirical literature on school construction, its costs, or the factors that affect these costs. Available data sources currently appear to report state or regional cost trends inconsistently in terms of understanding the cost differences between states. The one national data set of school construction costs available, developed by McGraw Hill, can only be used as an estimated measure of actual final projection costs; thus are useful for assessing trends and construction spending, as done in this report, but not actual costs (see Appendix 4).

**Recommendation 3: Conduct further research on school construction that appropriately analyzes costs at the project level to provide more comprehensive analysis of all school construction cost components, drivers and results.**

Future research should focus on three key areas: first, examining school construction costs based on newly developed data sets that gather project level data, second compare school construction to other construction industry sectors, and third, analyze and compare the cost impacts of state and local policies and practices.

Project: Cragmont Elementary School. Architect: ELS Architecture. Photo: Timothy Hursley