EDUCATIONAL SERVICE DISTRICT 112

CSG
Specialists in School Buildings

WASHINGTON STATE OFFICE OF THE SUPERINTENDENT OF PUBLIC INSTRUCTION

K-12 CAPITAL FACILITIES COST STUDY

February 3, 2017

EXECUTIVE SUMMARY

In 2016 the Washington State Legislature passed ESHB 2380 directing the Office of the Superintendent of Public Instruction (OSPI) to conduct a cost study identifying and analyzing the major sources of potential variations contributing to capital project cost differences, if any, across the state by building type: elementary school, middle school, high school, and skill centers. Educational Service District (ESD) 112's Construction Services Group (CSG) was engaged to conduct the study. The primary goal of the study was to develop an objective approach to identify the major sources of direct construction and total project cost variations.

The study identified six critical factors, listed from highest to lowest impact on cost, that the study team believes account for the majority of project cost variations for all school types across the State. Within each of these major factors reside several variables explained in more detail in the body of the study contributing to the observed total project cost variations.

1. **Market Conditions**
   There is a general belief that in a perfect market only two factors have a direct impact on construction costs: price of materials and labor costs. State law requiring prevailing wages on publicly-funded projects provides a mechanism to mitigate huge variations in labor costs. It is generally accepted that as projects increase in size, materials costs tend to remain relatively stable across the State.

   During periods of rapid growth, particularly in the major metropolitan areas, the reality is quite different. The imperfections in the market, such as limited numbers of qualified tradesmen in key construction industry sub-disciplines (e.g., steel erection, mechanical, electrical and plumbing), are exposed creating major competition for qualified labor resources, limited competitive bidder pools, and higher construction cost pressures.

2. **Programmatic Requirements**
   As school districts across the State continue to create and adopt new pedagogies, space allocation strategies have changed to meet the new demands. Typically, these changes have resulted in significant increases in space requirements. In addition, as communities throughout the State search for ways to build "essential facilities" such as spaces to serve as emergency shelters during natural disasters and/or support community recreation, joint-use of K-12 school buildings have become many communities' preferred solution to meet these demands.

   As the table below illustrates, the State of Washington's median space allocation (measured in gross square feet per student by school type) is well below the national median of new construction in all school types for the past three years. The most pronounced difference is in elementary schools, excluding combined elementary and middle or high schools, where the State median ranges from 15.0% to 38.8% below the national figure. Washington's middle and high schools range from 14.6% to 17.8% and .07% to 4.9% below the national medians, respectively.

MEDIAN SQUARE FEET PER STUDENT

	State Median (New & Existing)	2014 - 19th Annual New School Construction Report National Median	2015 - 20th Annual New School Construction Report National Median	2016 - 21st Annual New School Construction Report National Median	Average of the National Median of New School Construction Completed 2013 thru 2015
Elementary School	115	149.6	188	135.3	157.6
Middle School	148	173.3	173.4	180.1	175.6
High School	173	174.2	180	181.9	178.7
Skill Centers	138	N/A	N/A	N/A	N/A

*State Median excludes schools that include grades K-12, K-8, or combined Middle / High Schools.

**Annual School Construction Report of National Median of gross square feet per projected student enrollment provided by School Planning & Management (P. Abramson).

Table 1: Median Gross Square Feet Per Student (OSPI ICOS (2016), School Planning and Management (2014, 2015, 2016)

3. Geography

Both the State's climatic and natural geographic differences account for significant variability in construction costs for K-12 schools. For example, regions encompassing the Cascade mountain range and eastern portions of the state experience more severe winter conditions than Washington's more maritime–influenced areas. Costs for structural, heating, and ventilation systems are typically higher for school districts located in those regions subject to more extreme winter conditions. Building codes for districts located in the western portion of the State tend to be more stringent due to the higher probabilities for major seismic events. Strategies to strengthen building performance and safety during, and which support quick recovery following expected seismic events, add a premium, for example, to the costs of structural and other building systems.

Geographic location of a community also impacts costs due to the localized nature of decision making. The location of a school project means adapting to community character and culture unique to the school district in ways that influence the design, construction, operation, and financing capacity for K-12 capital projects.

NEW CONSTRUCTION		Elementary		Middle		High	
ESD	*% Diff. from WA Average*	Low Cost/GSF	High Cost/GSF	Low Cost/GSF	High Cost/GSF	Low Cost/GSF	High Cost/GSF
Washington Average	0%	$230	$309	$246	$326	$265	$344
101	0.4%	$231	$310	$231	$327	$266	$345
105	-3.9%	$221	$297	$220	$313	$255	$330
112	8.8%	$250	$336	$267	$354	$288	$374
113	6.0%	$244	$328	$244	$345	$281	$364
114	-15.8%	$194	$260	$191	$274	$223	$289
121	14.0%	$250	$353	$251	$372	$288	$392
123	-4.6%	$210	$295	$208	$311	$242	$328
171	-7.7%	$212	$285	$211	$301	$244	$317
189	17.2%	$244	$363	$245	$382	$281	$403
Add Site Costs Allowance		10.0%	12.0%	10.0%	15.0%	10.0%	15.0%
Add Indirect Costs Allowance		25.0%	30.0%	30.0%	35.0%	30.0%	35.0%

Table 2: Geographic cost variations by Educational Service District compared to the Washington State average. All costs exclude Washington State sales tax.

4. **Building Materials and Systems Design**
It is common for districts to construct new buildings with nearly identical useable (or net square foot) space requirements and have wide variances in total gross square foot area. In addition, design and installation of major building systems (such as mechanical, plumbing and electrical) in these facilities typically vary in building materials and systems quality, expected usable life (durability), energy consumption and maintenance requirements. Although the State of Washington is recognized nationally as a leader in the development of project-management-process guidelines for K-12 schools, adherence to these guidelines by local school districts is optional and variable. Consequently, there are large construction cost variances and long-term operating cost differences that can only be explained by variations in building materials and systems design approaches by local school districts.

5. **Site Development**
Typically, site development costs range between 10% to 15% of the direct construction cost of a school facility project depending on various factors such as school type, site characteristics (such as site slope, site soil attributes and resulting impact on foundation design, and wind exposure), local jurisdiction testing requirements and associated fees, off-site transportation and related

infrastructure improvements, utilities hook-up fees and amount of paving required. For some projects, the costs associated with off-site improvements exceed 15% of the direct construction cost. Other factors that contribute to atypical increases in on-site development costs include wetland mitigation, storm water management, cultural or historic resource mitigation measures, on-site transportation improvements, on-site pedestrian improvements including covered walkways and outdoor waiting areas, and removal or encapsulation of hazardous materials associated with environmental contamination.

6. **Regulatory/Jurisdiction Requirements**
   Land use approval and site/building permitting requirements have resulted in unplanned cost increases. Local jurisdictions can require projects to address land use issues that range in complexity from minor modifications to local comprehensive plans to funding major improvements that may be only indirectly related to school construction. Examples of these major improvements are traffic mitigation/improvement projects (including creation of new roads, addition of turn lanes, new traffic signals, and traffic control signage and calming measures), off-site pedestrian or storm water management improvements.

In addition to the quantitative cost variables identified above, qualitative factors were identified contributing to observed project cost variations. The impact of those measures on cost are, in large part, due to the significant authority of local school district in decision-making including (Senate Ways and Means, et. al., 2012):

- Variability among school districts in pre-planning before pursuing funding.
- Unclear expectations of school districts as to the durability of building systems impacting design decisions made at the local level, and the long term durability and efficient performance of building systems.
- Limited ability for OSPI to support or provide comparable cost information to school districts in making decisions.

There are cost advantages to the current processes, as well as disadvantages that may be more effectively normalized by the following:

- Enhancement with technical planning resources of the current OSPI Study and Survey process to assist K-12 schools in the development of capital budgets based on comprehensive pre-design or feasibility documentation for major capital projects.
- Implementation of simple baseline building “materials and systems” design guidelines, by school building type, that encourages equitable facility performance among school districts and supports design innovation.
- A stronger technical and financial understanding of the critical link between capital cost efficiencies and existing asset preservation based on building conditions assessments.
- Enhanced support for the demonstrated value of existing requirements for Value Engineering, Constructability Reviews, and Building Commissioning services during design and construction.

- Provide standard project cost planning and management tools to enable school districts to develop and monitor budgets during design and construction phases and allow for comparative analysis of cost variations over time.

The challenge, hence the proposed action items above, is to implement an approach that accounts for the major factors noted in a way that supports local decision-making, structures an ongoing process improvement framework for OSPI School Construction Assistance Program (SCAP) with active school district participation, recognizes cost adjustment factors based on local circumstances, and enhances equity among diverse local school district needs statewide.

The following study reviews in detail how and why cost variations impact projects managed by school districts as well as provides context for how cost variations compare to expected cost ranges. The study concludes with several critical observations on opportunities for more effective management of the qualitative measures and impacts on cost variability.

ACKNOWLEDGEMENTS

The Educational Service District 112 greatly thanks the Office of the Superintendent of Public Instruction for the opportunity to conduct this study, provide our analysis of the sample and data made available to us by their office, and provide key observations regarding direct construction and total project costs based on our quantitative and qualitative assessment of the information available.

Core Study Team

- Carter Bagg, Architect/Planner and Value Engineering Team Leader (Construction Services Group, ESD 112)
- Jon Bayles, Principal-Cost Planning (JMB Consulting Group LLC)
- Gina Bixby, MBA, PMP, Assistant Project Manager (Construction Services Group, ESD 112)
- Roz Estimé, Principal-Facilities Planning (Estimé Group)
- Marcia Fromhold (Capitol Solutions)
- Gavin Hottman, Assistant Superintendent for Finance (ESD 112)
- Tim Merlino, Superintendent (ESD 112)
- Casey Moore, Director (OSPI School and Facilities Organization)
- Randy Newman, Business Manager (OSPI School and Facilities Organization)
- Lorrell Noahr, Interim Director (OSPI School and Facilities Organization)
- Kirk Pawlowski, AIA, LEED AP, Director (Construction Services Group, ESD 112)
- Rod Roduin, Senior Project Manager, Security Planning (Construction Services Group, ESD 112)
- Kateri Schlessman, MPA, AICP, Consulting Study Project Director

Study Participants

State of Washington School Districts – Site Visits and Interviews

- Mercer Island School District, Dean Mack, Chief Finance/Operations Officer (Islander Middle School)
- Moses Lake School District, Eric Johnson, Executive Director of Business and Operations (Columbia Basin Skills Center)
- Mukilteo School District, Debra Fulton, Executive Director of District Support Services (Sno-Isle Skills Center & Lake Stickney Elementary)
- North Thurston School District, Mike Laverty, Director of Construction and Design (North Thurston High School, Salish Middle School, Evergreen Forest Elementary School)
- Northshore School District, Karen Mooseker, Director (North Creek High School)
- Spokane School District, Greg Forsyth, Director of Capital Projects & Planning (New-Tech Skills Center)
- Sunnyside School District, Dave Martinez, Assistant Principal (Sunnyside High School) and District Consulting Architect Gary A. Wetch, Principal, Loofburrow Wetch Architects, Yakima, WA
- Walla Walla School District, Ted Cohan, Executive Director of Business Services (SEA-Tech Skills)

- Wenatchee School District, Pete Jelsing, Director Skills Center (Wenatchee Valley Technical Skills Center)
- Yakima School District, Craig Dwight, Principal/Director (Yakima Valley Tech) and District Consulting Architect, Dennis W. Dean, Principal, KDF Architecture, Yakima, WA

Architectural Firms

- Design West Architects: Ned Warnick, AIA, LEED AP, Principal and Brandon Wilm, AIA, LEED AP, Principal
- Dykeman Architects: Tim Jewett, AIA A4LE NCARB, Managing Principal

General Construction Companies

- Fowler General Construction: Brandon Chavez, Senior Estimator
- Skanska Construction (Seattle): Alan Dunbar, Vice President of Preconstruction; Daniel Curtiss, Project Manager; Jennifer De La Pena, Project Manager; Rob Robinson, Project Executive

Scope Review Meeting Participants – Olympia, WA August 2016

- Carter Bagg, Architect/Planner Value Engineering Leader (Construction Services Group, ESD 112)
- Jon Bayles, Principal (JMB Consulting Group LLC)
- Gina Bixby, MBA, PMP Assistant Project Manager (Construction Services Group, ESD 112)
- Kim Brodie, Policy and Research Analyst (OSPI)
- Tom Carver, Program Administrator (OSPI)
- Roz Estimé, Principal (Estimé Group)
- Marcia Fromhold (Capitol Solutions)
- Brenda Hetland, Financial Consultant (OSPI)
- Jami Marcott, Budget Analyst (OSPI)
- Tim Merlino, Superintendent (ESD 112)
- Randy Newman, Business Manager (OSPI)
- Lorrell Noahr, Interim Director (OSPI School and Facilities Organization)
- Melissa Palmer, (House Office of Program Research)
- Kirk Pawlowski, AIA, LEED AP, Director (Construction Services Group, ESD 112)
- Brian Sims, (Senate Committee Services)
- Nona Snell, (Office of Financial Management)

Informal Peer Review – Vancouver, WA December 2016

- Cathy Carlson, Project Manager (Camas School District)
- Roz Estimé, Principal (Estimé Group)
- Jennifer Halleck, Facilities Planner (Vancouver Public Schools)

- Whitney Henion, Assistant Project Manager (Construction Services Group, ESD 112)
- Todd Horenstein, Assistant Superintendent Facility Support Services (Vancouver Public Schools)
- Mary Beth Lynn, Assistant Superintendent for Finance and School Operations (Battleground Public Schools) (Invited)
- Kirk Pawlowski, AIA, LEED AP, Director (Construction Services Group, ESD 112)
- Kateri Schlessman, MPA, AICP, Consulting Study Project Director
- Joe Steinbrenner, Director of Maintenance (Washougal School District) (Invited)
- Susan Steinbrenner, Director of Facilities (Evergreen Public Schools)
- Charles Stiller, Project Manager (Camas School District)

Informal Peer Review – Seattle, WA December 2016

- Richard Best, K12 Bond Program Management, Director, (Capital Projects and Planning Seattle Public Schools, Seattle, WA) (Invited)
- Gina Bixby, MBA, PMP Assistant Project Manager (Construction Services Group, ESD 112)
- Martin Chase, PE – Site Infrastructure Development – Principal (KPFF Consulting Engineers, Seattle, WA)
- Roz Estimé, Principal Facilities Planning (The Estimé Group, Portland, OR)
- Tom Fleming, CPA – Capital Program Financing – Chief Financial Officer (Educational Service District 105, Yakima, WA) (Invited)Greg Forsyth – K12 Bond Program Management, Director, (Capital Projects and Planning, Spokane Public School District, WA)
- Larry Francois - K12 Bond Program Administration, Superintendent (NWESD 189 Anacortes, WA/ Former Superintendent Northshore School District))
- Steven Goldblatt, JD - Chair Emeritus, Construction Management Department (University of Washington, Seattle, WA) (Invited)
- Cheri Hendricks - K-12 Program Planning (Broadview Associates Ltd, Seattle WA) (Invited)
- Rodd Kippen - Cost Planning, President (Pro-Cost, Seattle, WA)
- Dax Logsdon - Construction Management – Associate Director (Construction Services Group, Pasco, WA) (Invited)
- Steve Moddemeyer - Community Resilience Planning, Principal (Collins Woerman, Seattle, WA)
- Kirk Pawlowski, AIA, LEED AP - Facilities and Cost Planning, Director (Construction Services Group, ESD 112)
- Gary Quarfoth - Operations and Capital Financial Planning, Associate Vice President Special Projects (University of Washington Planning and Management, Seattle, WA)
- Rod Roduin - K-12 Security and Safety Technology (Construction Services Group, Port Townsend, WA)
- Gerald Schlatter, AIA, AUA emeritus - Capital Project Leadership and Delivery, Associate Vice President (retired) (Capital Planning and Development, Washington State University, Pullman, WA)
- Kateri Schlessman, MPA, AICP - Operations and Capital Financial Planning (Seattle, WA)
- Dave Teater - Educational Specifications and Former School District Administrator, School Facility Planner (Teater-Crocker, Inc, Seattle, WA)

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GENERAL TERMS AND DEFINITIONS

Building Life Cycle: The cycle of the building over the course of its life including the design, construction, operation, demolition, and waste treatment. This term is frequently used to understand the useful life of the building and how/when the building needs infrastructure maintenance to extend its useful life including the preventive building system maintenance required to maximize the useful life of building systems such as heating and ventilation, roofs, and electrical systems as well as scheduled inspections and services, and system component repairs and replacements. Over the course of a building's life cycle, operational maintenance costs (i.e. cleaning and routine maintenance) are relatively stable from year to year, but the annual cost of infrastructure maintenance can vary widely depending on the age and condition of a building and its component systems.

CCA: Construction Cost Allocation is established by the Washington State Legislature and is adjusted annually. The CCA is the per-square-foot dollar sum established as the as the SCAP program capital project cost per square foot metric eligible for reimbursement by the program.

CSG: Construction Services Group is a service of Educational Service District 112. CSG is a 25-year professional consulting service providing design and construction management services exclusively to K-12 with statewide staff operating from ESD offices in Vancouver, Spokane, Wenatchee, Pasco, Anacortes, and Renton.

Direct Construction Costs: A subset of Total Project Costs, direct construction costs are the costs of construction labor and materials and other costs (e.g. Washington State sales tax, overhead and profit) that are generally based upon the sum of the construction contract between owner and contractor.

Educational Service District (ESD): Educational Service Districts are regional educational support agencies partnering with the Office of the Superintendent of Public Instruction to provide key services and support to school districts, enhanced educational opportunities through partnerships with OSPI and other agencies, and educational programs and services.

Facilities Maintenance: The US Department of Education's National Center for Education Statistics (NCES) identifies five categories of maintenance:

- Emergency (or response) maintenance – the elevator breaks on the warmest day of the year, or the water main breaks and floods the lunchroom.
- Routine maintenance – maintenance required at the end of a piece of equipment's useful life.
- Preventive maintenance – scheduled maintenance of a piece of equipment.
- Predictive Maintenance – cutting edge of facility management; uses sophisticated computer software to forecast the failure of equipment based on age, user demand, and performance measures.

Indirect Costs: A subset of Total Project Costs, indirect costs are the consulting fees, architect and engineering fees, project management, furniture and equipment, building permit fees, project contingencies, bond sale costs, and other non- direct construction related costs associated with the design and construction of a capital project.

Major Renovation: This cost assumes extensive demolition and replacement of existing partitions, floor and ceiling coverings, mechanical and electrical distribution systems within the affected space, and plumbing and electrical fixtures. Replacement of heating/cooling source equipment, main supply ducts, main plumbing waste/vent piping, and medium voltage distribution system are not included. Complete remodeling may also include the replacement of the windows and correction of major fire safety and accessibility code violations.

Minor Renovation: This involves the remodeling of space for the same occupancy or for occupancy that requires a comparable or lesser degree of services or surface treatment. The primary emphasis is on utilizing existing spaces with limited partition changes and very limited changes in mechanical and electrical systems. Typically, the scope of work involves minor relocating or adding of movable partitions to improve the space utilization; patching floor, wall, and ceiling finishes; minor reallocations of existing plumbing and electrical fixtures; and adjusting the sprinkler heads and air distribution ducts, grilles, temperature control, electrical switches and outlets to conform to the new partition arrangement.

OFM: The Office of Financial Management provides vital information, fiscal services and policy support that the Governor, Legislature and state agencies need to serve the people of Washington State.

OSPI: The Office of Superintendent of Public Instruction is the primary agency charged with overseeing K-12 public education in Washington State.

Renovation / Modernization: The process of replacing, updating, or modernization of an existing building, building system, and/or infrastructure.

Rural: A local education agency located entirely within counties with a population density less than 100 persons per square mile or counties smaller than 225 square miles as determined by the Washington State Office of Financial Management and published each year.

SCAP: School Construction Assistance Program is a grant reimbursement program administered by OSPI to school districts for capital construction funding. The program utilizes a formula for the distribution of state capital funding if a local district meets established eligibility standards.

SSA: As a component of the SCAP funding formula, the Student Space Allocation is a metric established by the Legislature that determines how much physical space each student is allocated.

STEM: Science, Technology, Engineering, and Math. Frequently referred to in the context of curriculum focusing on any combination of these four elements.

Urban: A local education agency located within urbanized areas and urban clusters. Urbanized areas consist of densely populated territory containing 50,000 or more people. Urban clusters are densely populated territory with at least 2,500 people but fewer than 50,000.

Total Project Costs: The entire capital cost of constructing/building a new facility including the direct construction costs (including site improvement costs) and indirect costs.

1.0 INTRODUCTION

This study was undertaken to provide objective guidance by subject-matter experts to the Washington State Office of Superintendent of Public Instruction (OSPI) and the Washington State Legislature on the current and future state of major capital costs and the basis for variation, if any, for new public K-12 facilities throughout the state. The study began in August 2016 with an in-depth review and analysis of the financial data available within OSPI's records of approximately thirty-five (35) major capital projects. The projects in the sample include a range of major capital project types (elementary school, middle school, high school and skill centers) statewide, were greater than 20,000 gross square feet, and were generally "post-recession" projects having received OSPI School Construction Assistance Program (SCAP) capital allocations in the 2013-2015 biennium "release" period.

The following work represents a comprehensive examination undertaken within the August 2016 through January 2017 timeframe. The study team collected and assessed OSPI's capital construction data associated with the research sample, conducted formal surveys to sample school projects, toured over ten sites from the sample, conducted in-depth interviews with local school district officials, and interviewed the two architectural firms and the two construction companies responsible for delivery of the largest dollar-volume of capital projects included within the OSPI- provided research sample. In addition, the study team conducted informal peer review sessions in Vancouver, Washington, and Seattle, Washington, with statewide senior school district administrative and facilities leaders, as well as senior capital planning and budget officials from the University of Washington and Washington State University – the two largest education-institution capital development programs in the state.

The study also represents the study team's review of respected existing national and regional studies and reports specific to K-12 facilities capital costs. Finally, the study team conferred with OFM Capital staff, State House and Senate Legislative staff, OSPI Technical Advisory Committee members, and OSPI School Facilities and Organization staff on several occasions to seek clarification and refinement as well as identification of areas for further future exploration.

The work was limited to the relatively small size of the research sample provided and the time frame available to conduct data collection and assessment. However, the report is intended to provide an impactful and objective contribution in achieving an equitable approach to developing a capital project cost baseline with appropriate adjustment factors in response to variations in local labor and materials costs, local educational program requirements, and other major factors of local significance. Due to the multiple cost variations identified, the study was unable to confirm or suggest that simple metrics such as the CCA or SSA (e.g. $/SF or Student/SF) are applicable to every school district in the State. As the Senate Ways and Means Committee noted, "Washington is largely considered a "local control" state and neither one size nor one cost fits all (2012).

2.0 PROJECT OVERVIEW

2.1 STUDY BACKGROUND, SCOPE AND LEGISLATIVE INTENT

Over the past decade, Washington State's local school districts have passed more than $12B in Unlimited Tax General Obligation (UTGO) bonds. Theses voter-approved bonds are repaid with property tax revenue over a 20 to 30 year period to fund K-12 capital construction (M. Prussing, ESD 112 Bond Advisory Services, personal communication, December 29, 2016). During this same period, the escalation of construction costs in the market place have at times exceeded the Office of Financial Management's (OFM) projected 3% escalation highlighting the challenge of forecasting public capital debt requirements to meet local school district capital needs. The continued climb in K-12 capital project costs statewide has highlighted a critical component of OSPI's current capital assistance funding program formula: Construction Cost Allocation (CCA). Established in a different construction environment, the current allocation, even with annual adjustments, remains significantly lower than the actual total capital project costs incurred by school districts.

During the supplemental 2016 Washington State Legislative Session, the Legislature passed Engrossed Substitute House Bill 2380 requiring OSPI to conduct a cost study identifying and analyzing the major sources of potential variables contributing to capital cost differences, if any, across the state by building type: elementary school, middle school, high school, and skill centers. OSPI was requested to contract with Educational Service District 112's Construction Services Group (CSG), a 23-year professional consulting service providing design and construction management services exclusively to K-12 with statewide staff operating from ESD offices in Vancouver, Spokane, Wenatchee, Pasco, Anacortes, and Renton, to conduct an objective and technical assessment of a sample of new K-12 and skill centers capital projects throughout the state. The study requested review of capital cost variations based on project size, enrollment, school type, specialized facilities, durability, site requirements, and other related design and construction process factors, which may contribute to variations in capital costs.

2.2 CURRENT K-12 AND SKILL CENTERS FACILITIES AND CAPITAL FUNDING ENVIRONMENT

According to OFM (2015), Washington State's population has grown by 18% over the past ten years and is projected to grow by another 2,250,000 people by 2040. The number of school age children is projected to grow by an average of 9,200 persons per year through 2025. Data from the US Department of Education's National Center for Education Statistics (NCES) has projected a 15-26% enrollment change in the State of Washington between FY 2012 and FY 2024; one of seven states with the highest "percent projected enrollment change" category (2016).

The projected growth in school-age population has, and appears likely to, increase demands on existing assets and new public-funded K-12 and skill centers facilities in the State. "In January 2009, OSPI conducted a survey of districts to identify the outstanding need for school repairs. One hundred and seventy-nine districts identified a need for school repairs totaling $1.8 billion, or roughly $16 per instructional square feet" (OSPI Facilities Maintenance and Operations: Classified Adequacy Staffing Report, December 2010). Combined with space capacity/utilization factors related to class-size-reduction initiatives, the State will sustain demand for new and modernized/renovated facilities, and minor capital improvement facilities projects in nearly every school district in the state.
Local school districts have limited options to fund the significant capital costs of new schools and/or major renovations. At the same time, Washington's current upward trending economic cycle has contributed to an approximate 400% increase in the dollar volume of local voter approved capital bond

measures from 2011 to 2016 in both low-wealth and high-wealth school districts (Christine Thomas, 2016, OFM staff presentation to the House Capital Committee). In addition, numerous school districts throughout the State are currently involved with "pre-bond" planning efforts targeted towards potential bond referenda in 2017 and 2018.

2.3 THE STATE'S ROLE IN K-12 AND SKILL CENTERS CAPITAL FUNDING

The State of Washington provides major capital funding assistance to qualifying school districts in the form of a School Construction Assistance Program (SCAP) administered by OSPI's School Facilities and Organization group. Funding is based on a predetermined formula by OSPI's School Facilities and Organization group that incorporates an analysis based on a school district's unhoused student enrollment need and current history of grant awards to the local district. Following this assessment, capital grant amounts are established on a space-based eligibility per student, Student Space Allocation or SSA, and the application of an annually adjusted capital allocation per square foot to a qualifying project known as the Construction Cost Allocation or CCA.
"The percentage [of grant support] varies by the local district's ability to raise funds measured in terms of assessed value per student," by including an application process of an annually-adjusted "State Funding Assistance Percentage" based on property valuation and student population for each State of Washington school district. As a granting process, SCAP is a voluntary, formula-driven capital funding assistance opportunity for those school districts who have successfully secured local capital funds.

"The percentage varies by the local district's ability to raise funds measured in terms of assessed value per student."

Considered by school districts a "leveraged" or "matched" capital grant program, if a school district can meet the SCAP program funding formulae requirements, the SCAP grant provides a "match" to local school districts and reimburses the district grantee for a discrete level of SCAP recognized costs according to the formula. In addition, OSPI administers wide-ranging, often one-time, grant programs including STEM Grants to support new laboratory science and career concentration courses, K-3 Class Size Reduction Grants, Emergency Repair Grants, Healthy Kids/Healthy School Grants, FEMA-funded Pre-Disaster Mitigation Planning grants, and Lead Remediation Grants, among others. School districts also pursue capital funding by use of non-voted bond authority, capital levy referenda, and via various grant programs available from both private and public technology or energy-conservation rebate programs.

Skill centers are funded in their entirety through the State of Washington biennial capital budget process with state capital resources. Capital funding requests are administered by OFM via a competitive funding request process, and are funded similar to Community Colleges and Technical Education, although the skill centers' proposals to receive state-funded capital and operating resources require partnership agreements among multiple local school districts as a condition of the resource allocation process.

2.4 APPROACH TO IDENTIFYING PUBLIC K-12 AND SKILL CENTERS COST VARIATIONS COMPARED TO EXPECTED COST RANGES

Variations in capital construction costs were developed based on the professional experience of the study team using a combination of sources including analysis of the available OSPI SCAP project construction cost information grouped by ESD and space distribution by school type, data from several industry and peer-review observations, statewide data, and a limited literature review of national trends.

The study proceeded in three distinct phases:

- Phase I: Data Collection and Analysis of OSPI Sample Schools
- Phase II: Comparison to Expected Cost Ranges
- Phase III: Identification of Major Cost Factors and Qualitative Impacts

At the onset of the study, OSPI provided a sample of twenty-four (24) school projects and eleven (11) skill centers projects that included greater than 20,000 GSF of new construction and were released for funding, or approved through the SCAP program for reimbursement, in the 2013-2015 biennium (Appendix D). These schools represented less than 2% of all publicly funded schools in Washington State (OSPI ICOS, 2016). The sample size limited the ability to distinguish between unique project attributes to typical K-12 and skill centers projects and clearly identify the variations in school construction costs. Given this constraint, the study gathered additional data in the time available to compare cost variations and gain an understanding of key trends. Although the study sample provided great insight in terms of programmatic space distribution and schedule of values, the sample had other significant limitations because it was not a random sample. Consequently, the sample was not representative based on geographic distribution. For example, there were only three middle schools in the sample and two were located in ESD 121. The elementary schools in the sample were concentrated into an area of less than 50% of the ESDs. Fifty percent of the high schools in the sample were located in ESD 121.

To compensate for the limitations of the study sample, the study team incorporated and analyzed statewide K-12 construction projects over the last decade. In addition, the team conducted work sessions with peer groups, interviewed industry experts, and reviewed available literature referencing national trends. This information was used to provide anecdotal observations at the local, state, and national level to identify generalized trends and variables. The approach included the incorporation of major renovation data due to the interrelationship of K-12 construction between new construction costs and renovation costs within the sample data. The approach, restricted by a combination of sample size and time, has nevertheless begun to address construction cost variations and includes critical observations that could result in more effective management and control of public-sector capital construction costs.

3.0 DATA COLLECTION AND ANALYSIS OF OSPI SAMPLE SCHOOLS – STUDY PHASE I

A sample of twenty-four (24) elementary, middle, and high school projects were identified by OSPI to serve as the content for the study. Eleven (11) skill centers projects, some with multiple phases, were also included. Projects in the OSPI provided sample were identified as participants in the SCAP program, were intended by OSPI to be current by using new construction projects based on recent funding release years, and, in size, were greater than 20,000 gross square feet.

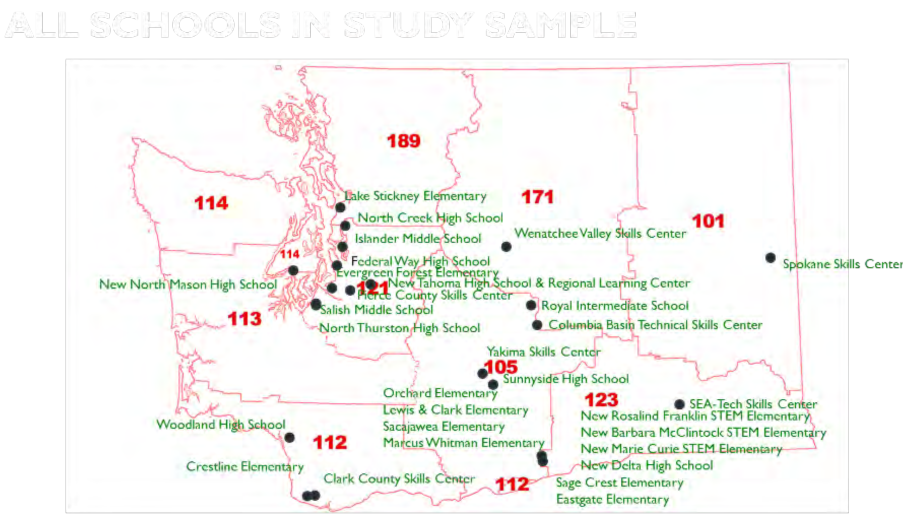


Figure 1
OSPI Provided Capital Project Sample – Statewide Distribution

Following OSPI's identification of funding and providing formal notice to proceed, data collection was initiated in August 2016. Financial information reported by school districts to and developed by OSPI served as the source data for the study. OSPI provided three types of information during the first phase of the study.

First, the approved budgeted total project cost as noted on OSPI's D-10 document was provided. The form is used to review projects, and if approved by OSPI, provides authority for a school district to solicit bids for the construction of a capital project.

Second, OSPI provided the D-7 document for most of the projects in the study sample. This form was submitted, often with the assistance of a consulting architectural firm, to report square feet by space type. Required by OSPI in a standard template, space program information is expected to be consistent with the national standards identified in the OSPI Facilities Manual (see Appendix E) although it is unclear if the standard has been appropriately followed.

Third, when available, OSPI provided the most recent "Schedule of Values" submitted by a school district's project general contractor as a critical component of their payment invoice, and then if approved by the school district submitted to OSPI for OSPI review and approval prior to reimbursement by OSPI to the district.

The information from these three sources were compiled in to a comprehensive data set for the study and used to analyze the quantitative space and financial factors for each of the sample projects. As a starting point, this information was used to assess trends in program, size, and cost identified in the tables and charts below of the sample projects.

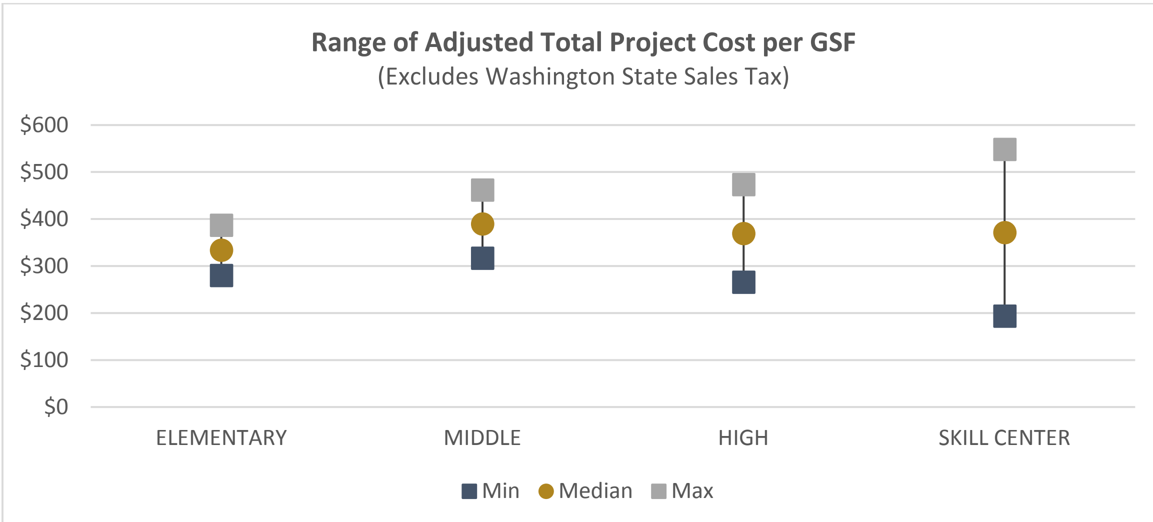


Figure 2
Study sample Total Project Cost per gross square foot ranges by building type

To normalize capital costs, the sample projects were analyzed using total project costs excluding Washington State sales taxes. This exclusion was due to the authority of local jurisdictions to utilize special use district sales taxes creating a variable tax amount among school districts in the sample. The schedule of values from the most recent pay application for each project was used to collect the baseline final cost, or in some cases, the projected final cost. The ENR Building Cost Indexes (BCI) in Seattle (1978-2016) were then used to index cost data to the first quarter of 2017. Specifically, the BCI was utilized because it is more applicable to structures and includes local prices for Portland Cement and 2 X 4 lumber as well as the national average price for structural steel. Seattle's BCI uses local union wages, plus fringes, for carpenters, bricklayers, and iron workers.

There are some limitations to the ENR Construction Cost Index (CCI) in that it utilizes four inputs – cement, lumber, structural steel, and labor. It does not capture all factors influencing project costs. Rather, it provides a snapshot of general cost trends. Consequently, the CCI represents an average and may not capture local pricing effects stemming from local competition or local discounting practices. It also may not capture variations attributable to building components and systems since it is calculated using the same weight for labor and materials. However, these limitations are addressed as cost factors by evaluating other sources as shown in Section 5.0 Factors Contributing to Cost Variables.

The total project costs for each project were normalized to provide a practical benchmark when considering costs relative to the study's issuance date in February 2017. For three of the projects, site acquisition was included in the total project cost. All other projects either excluded site acquisition as part of the project or were projects constructed on building sites on existing school district property. The minimum and maximum total project cost per gross square feet indicated the range of costs per project whereas the median provided limited insight into the typical costs for the sample by building type.

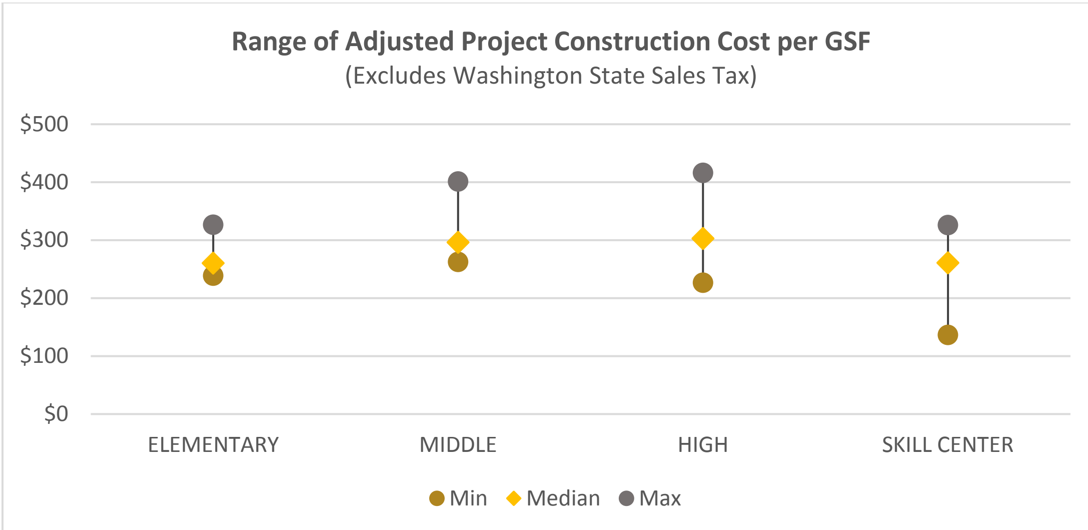


Figure 3
Direct Construction Cost per gross square feet

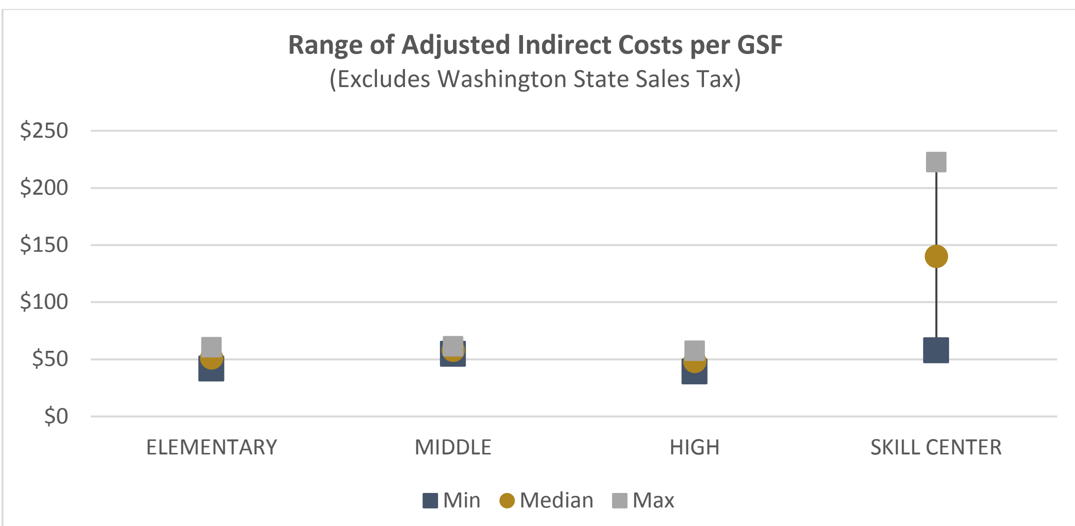


Figure 4
Indirect Project Costs per gross square feet

This information was further separated into direct and indirect construction costs. The sample clearly included “outliers” challenging any assumption that the sample was representative. For example, the indirect cost range for a high school project based on industry expectations should be around 30%-35%. Projects reported through SCAP processes indicated the percent of indirect costs outlined in Table 3 below.

Indirect Project Costs as a Percent of Total Project Costs	ELEMENTARY	MIDDLE	HIGH	SKILL CENTERS
Minimum	15%	13%	12%	30%
Median	15%	15%	13%	35%
Maximum	16%	17%	15%	41%

Table 3
Indirect Project Costs as a Percent of Total Project Costs excluding Washington State sales tax

Representative high schools were visited to more directly assess the low indirect project cost by the study team and an on-site review was conducted with the responsible school district administrator. The architect-of-record for the project was also interviewed in-person by the study team to more accurately assess the basis for the very low construction cost per square foot.

To further understand the variations in capital costs by school type, the team reviewed the gross square feet of each project as well as the average gross square feet per projected enrollment for each school type. Projected enrollment for these schools may include enrollment for existing space if the project included a new addition and renovation of existing facilities.

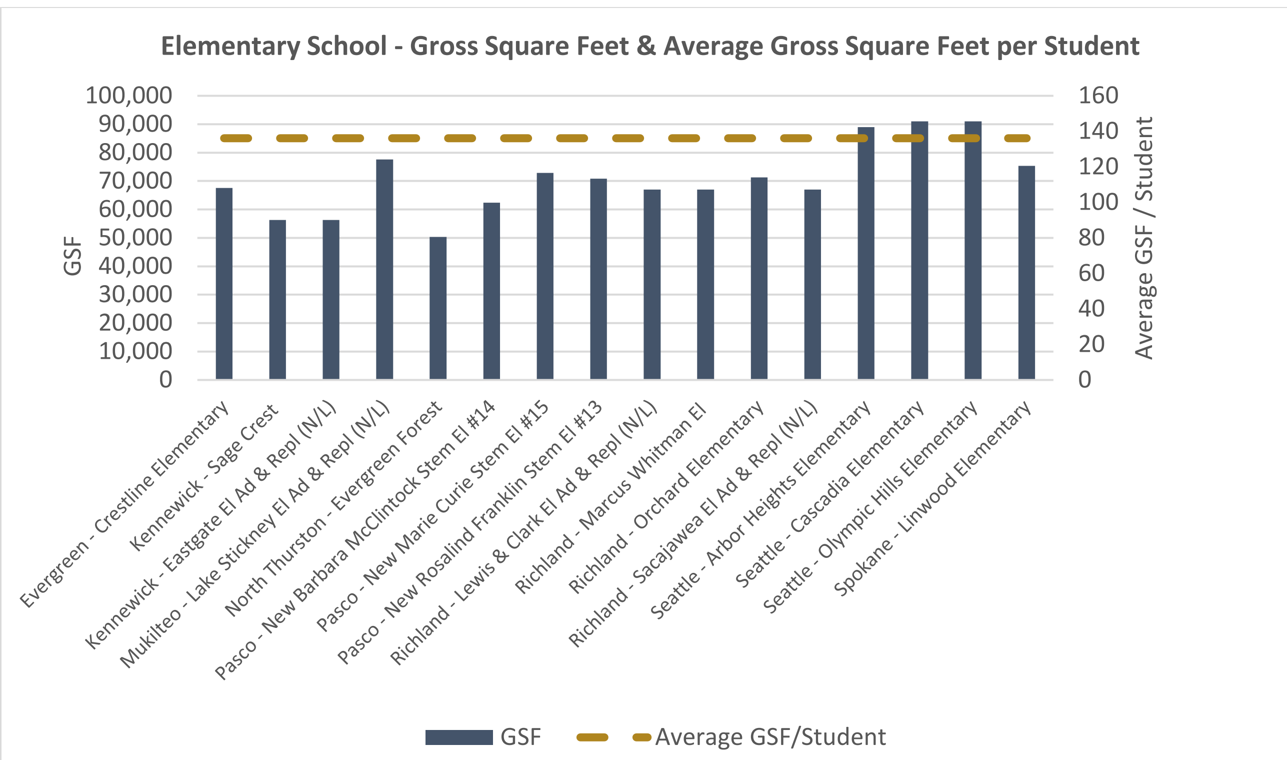


Figure 5
Elementary School GSF and GSF/Student – OSPI Sample + Spokane Linwood Elementary, Seattle Cascadia Elementary, and Seattle Olympic Hills Elementary

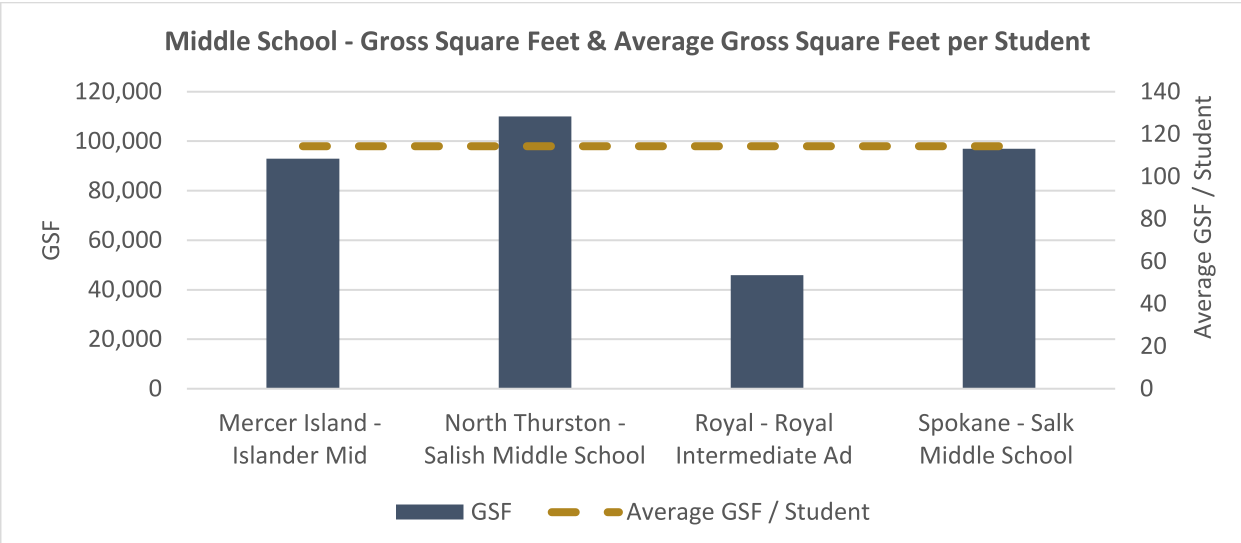


Figure 6
Middle School GSF and GSF/Student – OSPI Sample + Spokane Salk Middle School Data

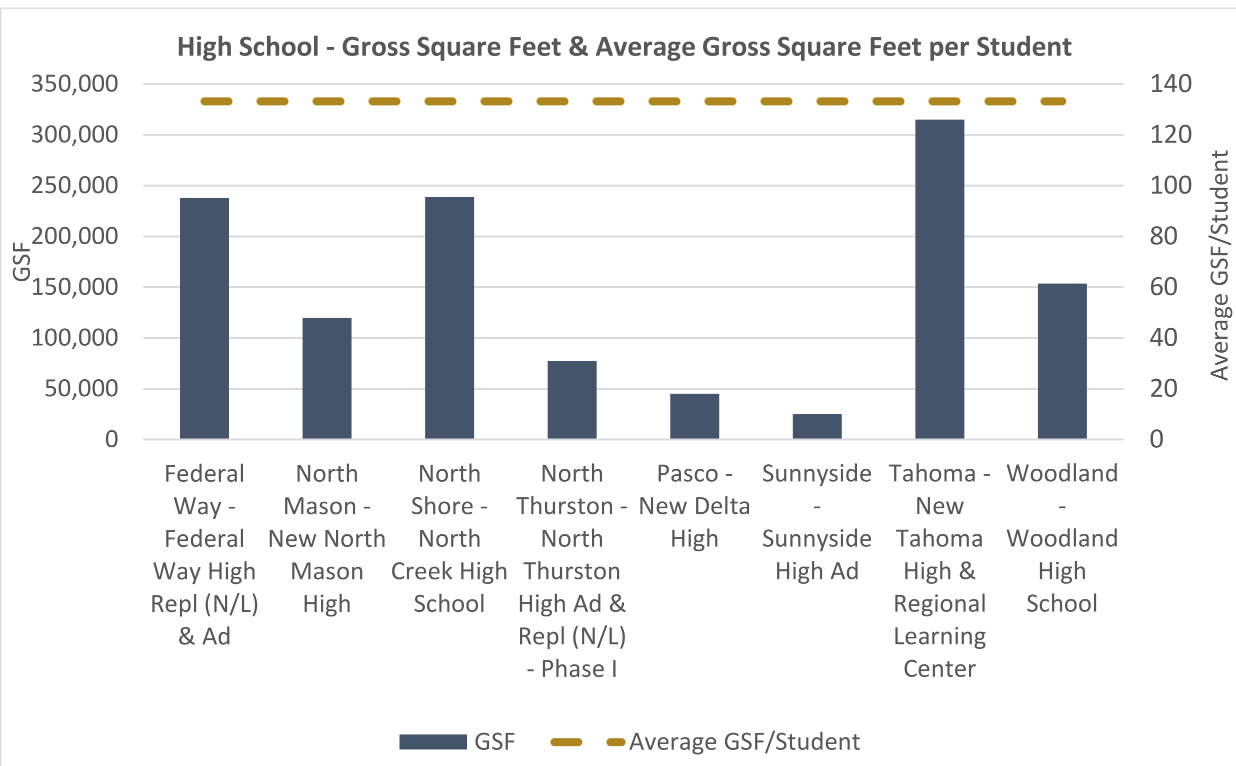


Figure 7
High School GSF and GSF/SF – OSPI Sample

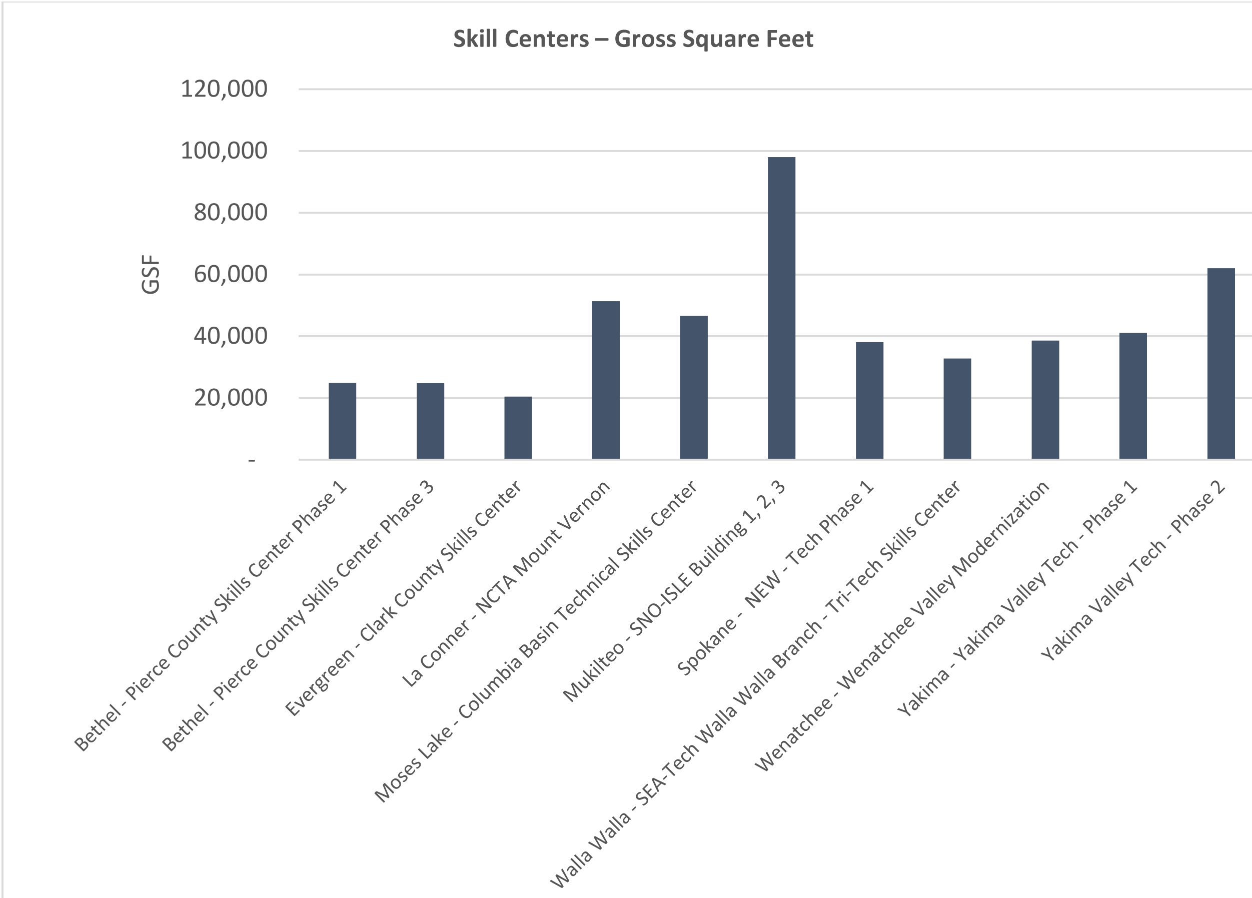


Figure 8
Skills Center GSF – OSPI Sample

Projected versus actual enrollment information was unavailable from OSPI for the skill centers projects in the OSPI sample, limiting the ability to identify an average GSF per student. Skill centers project their enrollment five years post construction and are expected to meet their projection as a condition of funding. The size and scope of the skill centers projects within the sample varied greatly and capital construction costs included renovations of and additions to existing facilities as well as stand-alone entirely new construction.

Due to the timing of the construction project activities and when project financial information was reported to OSPI, several key data points had not yet been reported during the initial analysis of Phase I of the study. To gather supplemental information and fill the gaps in the existing OSPI data, a formal survey was developed by CSG and distributed to the local district administrators by OSPI for each project in the study sample. A sample of the formal survey is provided in Appendix B. The survey was distributed via OSPI administration in early September and received a response rate of approximately 74%. The survey responses added to the SCAP reported financial and space information to fill as many gaps in the existing OSPI source data as possible.

Each local school district that responded to the survey was invited to participate in face-to-face or telephone interviews. Of the total study sample, 26% of the schools participated in these follow-up reviews with the study team providing a more detailed understanding of the programmatic scope of their individual construction projects and specifically, background on those conditions the data suggested may have been cost outliers. During this phase, nuances about each school were discovered such as unique site requirements and/or locally-governed program priorities.

Despite the time constraints in which to conduct the study, members of the study team conducted site visits to approximately ten projects for a more detailed review of representative examples and outliers within the project sample. The site visits provided more detailed information regarding educational programs and philosophies as well as building and site design conditions. Urban and rural sites, as well as sites on the east and west side of the Cascade Mountains were visited to understand potential climatic and geographic influences on construction cost variations.

4.0 EXPECTED COST RANGES BY FACILITY TYPE AND SPACE PROGRAM ACTIVITIES – STUDY PHASE II

An expected cost range by school type and new construction or renovation was developed by reviewing the current trends against industry and national benchmarks. These ranges helped identify the cost variables of the sample capital projects by allowing a comparison of observed costs compared to expected costs. Due to the local influence on school construction projects, the expected cost ranges were developed first by identifying a typical range by space type, then a statewide average for typical school construction. Further down, geographic variations to the expected cost ranges are explored along with local factors to be considered. Due to the nature of the wide variations in site costs and indirect costs to projects, construction cost ranges were developed excluding site costs, indirect costs, and Washington State sales tax. Below the construction cost ranges are percentage cost allowances developed to be incorporated with the construction cost for typical site costs and typical indirect costs to achieve a total project cost range excluding Washington State sales tax.

Skill centers present a unique situation in both their benchmarks and their construction. As such, the expected cost ranges for skill centers are project specific. Their individual review appears to be important for their approval process since the programmatic elements and scope of work ranges significantly in addition to encompassing the cost variables discussed below.

4.1 EXPECTED COST RANGE BY SPACE PROGRAM TYPE FOR ELEMENATARY, MIDDLE, AND HIGH SCHOOLS

For new construction and renovations, a cost range by space type was developed. Based on the sample of school projects and benchmarks, each school type, elementary, middle, and high, was assigned an approximate area distribution of the total gross square feet. The tables below demonstrate the different impacts to construction a school project will have depending on the program distribution.

NEW CONSTRUCTION

	Estimated Direct Construction Cost Range (Excludes Washington State Sales Tax)	
Space Type	**Low Cost/GSF**	**High Cost/GSF**
STEM / Laboratory	$400	$500
Cafeteria	$300	$425
Classroom	$250	$350
Library	$280	$350
Learning Resource Center	$270	$320
Assembly / Multi-purpose	$375	$450
Service / Support	$250	$300
Student Services	$250	$300
Physical Education / Gym	$250	$320
Office	$250	$300

General Support	$170	$220
Covered Play Area	$90	$120
Add Site Costs Allowance - Elementary Schools	10%	12%
Add Site Costs Allowance - Middle & High Schools	10%	15%
Add Indirect Costs Allowance - Elementary Schools	25%	30%
Add Indirect Costs Allowance - Middle & High Schools	30%	35%

**Allowance costs multiplied to the costs above. For example, a 12% site cost allowance would be added to the construction costs.*

Table 4: New construction dollar per square foot by program/space type with associated site cost allowance and indirect cost allowance.

RENOVATION

	Estimated Direct Construction Cost Range (Excludes Washington State Sales Tax)	
Space Type	**Minor Reno. $/GSF**	**Major Reno. $/GSF**
STEM / Laboratory	$250	$450
Cafeteria	$150	$350
Classroom	$75	$250
Library	$80	$350
Learning Resource Center	$270	$320
Assembly / Multi-purpose	$375	$450
Service / Support	$250	$300
Student Services	$250	$300
Physical Education / Gym	$250	$300
Office	$250	$300
General Support	$170	$220
Covered Play Area	$90	$120
Add Indirect Costs Allowance - Elementary Schools	20%	25%
Add Indirect Costs Allowance - Middle & High Schools	25%	30%

**Minor and Major Renovation Construction Cost Range does not include major building wide infrastructure upgrades or replacements.*

Table 5: Renovation construction dollar per square foot by program/space type with associated site cost allowance and indirect cost allowance.

4.2 WASHINGTON STATE COST RANGE BY SCHOOL TYPE

Based on the cost range by space program, a statewide average range of construction costs were developed for each school type. Construction costs exclude Washington State sales tax, site costs, and indirect costs. A project allowance has been added to the table below to reach the total project cost that includes a range of typical site costs and indirect costs. Costs outside of the typical range for special or extraordinary conditions are not included.

NEW DIRECT CONSTRUCTION*	Elementary		Middle		High	
	Low Cost/GSF	High Cost/GSF	Low Cost/GSF	High Cost/GSF	Low Cost/GSF	High Cost/GSF
Washington State Average	$230	$309	$246	$326	$265	$344
Add Site Costs Allowance	10.0%	12.0%	10.0%	15.0%	10.0%	15.0%
Add Indirect Costs Allowance	25.0%	30.0%	30.0%	35.0%	30.0%	35.0%

RENOVATION*	Elementary		Middle		High	
	Minor Cost/GSF	Major Cost/GSF	Minor Cost/GSF	Major Cost/GSF	Minor Cost/GSF	Major Cost/GSF
Washington State Average	$120	$251	$151	$276	$177	$299
Add Indirect Costs Allowance	20.0%	25.0%	25.0%	30.0%	25.0%	30.0%

**All dollars per gross square foot (GSF) exclude Washington State Sales Tax.*

*** Minor and Major Renovation Construction Cost Range does not include major building wide infrastructure upgrades or replacements.*

Table 6: New and renovation construction dollar per square foot by Washington State Average with associated site cost allowance and indirect cost allowance.

4.3 GEOGRAPHIC COST VARIABILITY

Review of the study sample indicated geographic differences in capital cost, however the sample did not provide conclusive evidence. A review of construction expenditures of residential and basic commercial construction (excluding high-rises) in major urban centers across the state provided a factor applied to school construction to identify regional cost differences. At least one, sometimes more than one, urban center from each educational service district was used to identify variances. A range of costs based on these geographic differences is intended to include low cost or high cost areas. Similar to the tables above, all construction costs exclude Washington State sales tax and an allowance for typical site costs and indirect costs are identified at the bottom of the next table.

NEW CONSTRUCTION*		Elementary		Middle		High	
ESD	*% Diff. from WA Average*	Low Cost/GSF	High Cost/GSF	Low Cost/GSF	High Cost/GSF	Low Cost/GSF	High Cost/GSF
Washington State Average	0%	$230	$309	$246	$326	$265	$344
101	0.4%	$231	$310	$231	$327	$266	$345
105	-3.9%	$221	$297	$220	$313	$255	$330
112	8.8%	$250	$336	$267	$354	$288	$374
113	6.0%	$244	$328	$244	$345	$281	$364
114	-15.8%	$194	$260	$191	$274	$223	$289
121	14.0%	$250	$353	$251	$372	$288	$392
123	-4.6%	$210	$295	$208	$311	$242	$328
171	-7.7%	$212	$285	$211	$301	$244	$317
189	17.2%	$244	$363	$245	$382	$281	$403
Add Site Costs Allowance		10.0%	12.0%	10.0%	15.0%	10.0%	15.0%
Add Indirect Costs Allowance		25.0%	30.0%	30.0%	35.0%	30.0%	35.0%

*All dollars per gross square foot (GSF) exclude Washington State Sales Tax.

Table 7: New construction dollar per square foot by geographic differences compared to the Washington State average with associated site cost allowance and indirect cost allowance.

RENOVATION*		Elementary		Middle		High	
ESD	*% Diff. from WA Average*	Minor Cost/GSF	Major Cost/GSF	Minor Cost/GSF	Major Cost/GSF	Minor Cost/GSF	Major Cost/GSF
Washington State Average	0%	$120	$251	$151	$276	$177	$299
101	0.4%	$121	$252	$121	$277	$177	$300
105	-3.9%	$116	$241	$114	$266	$170	$288
112	8.8%	$131	$273	$164	$301	$192	$325
113	6.0%	$127	$266	$129	$293	$187	$317
114	-15.8%	$101	$211	$96	$233	$149	$252
121	14.0%	$131	$286	$133	$315	$192	$341
123	-4.6%	$110	$240	$107	$264	$161	$285
171	-7.7%	$111	$232	$109	$255	$163	$276
189	17.2%	$128	$294	$130	$324	$188	$350
Add Indirect Costs Allowance		20.0%	25.0%	25.0%	30.0%	25.0%	30.0%

*All dollars per gross square foot (GSF) exclude Washington State Sales Tax.

***Minor and Major Renovation Construction Cost Range does not include major building wide infrastructure upgrades or replacements.*

Table 8: New renovation dollar per square foot by geographic differences compared to the Washington State average with associated site cost allowance and indirect cost allowance.

4.4 EXPECTED RANGE OF COSTS FOR SKILL CENTERS

Skill centers vary significantly in their programmatic elements creating a wide range of costs. The table below demonstrates the very wide range of educational program components of skill centers in the sample. The quality and design of the skill centers also ranged significantly. For example, the Walla Walla skill center resides on the Walla Walla Community College Campus and was designed to fit within the college campus whereas other skill centers encompass different design elements reflective of their programs and/or location. The diversity in program and design creates a wide cost range due to the multitude of technical variables and flexible infrastructure systems required in these facilities in addition to all of those listed in the cost variable section of the study.

PROGRAMS	Wenatchee - Wenatchee Valley Modernization	Spokane - NEW - Tech Phase 1	Evergreen - Clark County Skills Center	Moses Lake - Columbia Basin Technical Skills Center	Walla Walla - SEA-Tech Walla Walla Branch - Tri-Tech Skills Center	Bethel - Pierce County Skills Center Phase 1 & 3	La Conner - NCTA Mount Vernon	Yakima - Yakima Valley Tech - Phase 1 & 2	Mukilteo - SNO-ISLE Building 1, 2, 3
Animation Technology		X							X
Applied Algebra/Geometry								X	
Applied Medical Sciences			X				X		
Auto Collision/ Repair/ Services/ Technology	X	X	X	X		X	X	X	
Aviation/Aerospace Technology			X			X			
Biomedical		X							
Broadcast Media Production		X							
Building & Design	X								
Business Admin/Legal Medical Office			X					X	
Cinematography & Production	X								
Computers, Servers & Networking /Web Development	X	X				X		X	X
Construction Technology	X	X	X	X		X	X	X	
Cosmetology/Hair Design	X	X	X	X		X		X	X
Criminal Justice/Public Safety/Law Enforcement	X	X	X	X		X	X	X	X
Culinary Arts/Management	X	X	X	X		X	X	X	X
Cyber Security		X							
Dental Assisting		X	X				X	X	X

Diesel Technology			X						
Digital Media					X				
Electrical Systems Technology					X			X	
Electronics Engineering Technology									X
Fashion & Merchandising			X						X
Fire Science and EMS	X		X	X		X	X	X	X
Healthcare/Medical Careers		X		X	X	X		X	X
Homeland Security			X						
Industrial Robotics		X						X	
Information Technology Systems, Service & Support			X						
Manufacturing		X		X	X				
Marine Services							X		
Metal Fabrication/Boeing								X	
Mobile Electronics		X							
Multimedia Design		X		X					
Pre-Engineering Technology			X	X				X	
Pre-Pharmacy Technology						X			
Pre-Veterinary Technology / Assisting / Animal Care		X				X	X	X	X
Summer School								X	
Travel and Hotel Management		X	X						
Video Game Development	X	X		X		X	X		X
Welding		X			X		X	X	
Work-Based Learning				X					

Table 9: Skill Centers programs as identified by each skill centers' websites.

5.0 FACTORS CONTRIBUTING TO COST VARIATIONS

The study incorporated data gathered from the sample of school projects, statewide information, peer and industry interviews, and a literature review of recent articles and reports to understand the most impactful cost factors at this time. The factors identified are not conclusive. Rather, additional factors play a role in the cost of construction either indirectly or at such a localized level to not feasibly be captured in this study without creating significant new data.

IDENTIFICATION OF MAJOR COST FACTORS

A California State Allocation Board 2000 study compared two new elementary schools that were nearly identical in site conditions, total project cost, cost per square foot, and cost per student but were considerably different in space plan layout, the choice of building materials, and the building structural and mechanical, electrical, and plumbing systems. With the extremely detailed cost data available for their study, they were able to reveal numerous differences not apparent in the summary metrics of total cost, cost/SF, and student/SF. The analysis revealed that the project with the more expensive building shape used the less expensive building materials and systems, indicative of a shorter life cycle; and the project with the less expensive building shape, was designed with more expensive, more durable and therefore longer life cycle, building materials and systems.

The California study observed that while each design team had created solutions successfully meeting the budget and program goals provided to them, each school district with their design team had arrived at two very different solutions. The study concluded that the most cost-efficient and innovative design approach for each of the two school districts would have been to design and build the less-expensive building shape with the more-expensive materials and systems.

This example highlights variations in approaches to design and construction of K-12 publicly funded facilities. To further evaluate the variations, the study team interviewed the two architectural firms and the two construction companies responsible for delivery of the largest dollar volume of capital projects included within the OSPI-provided research sample. In addition, two informal peer review sessions were held, one in Vancouver, Washington, and another in Seattle, Washington, involving statewide senior school district administrative and facilities leaders, as well as senior capital planning and budget officials from the University of Washington and Washington State University.

Washington is one of several states witnessing significant net migration and, in key areas of the state, a very active institutional building construction marketplace. To understand these attributes within the national and regional context, a limited and focused literature review was conducted to assist the study team identify key trends across the nation and region specific to cost variations.

The following six cost factors, ranked from highest cost impact to lowest cost impact, were identified from the observations and data analysis contained within the study.

5.1 MARKET CONDITIONS

There is a general belief that in a perfect market only two factors have a direct impact on construction costs: price of materials and labor costs. State law requiring prevailing wages on publicly funded projects provide a mechanism to reasonably mitigate major variations in labor costs. It is generally accepted that as projects increase in size, the materials costs tend to remain relatively stable across the State.

During periods of rapid growth, particularly in the major metropolitan areas, the reality is quite different. The imperfections in the market, such as limited numbers of qualified tradesmen in key construction industry sub-disciplines (i.e. steel erection, mechanical, electrical and plumbing), are exposed creating major competition for qualified labor resources, limited competitive bidder pools, and higher construction cost pressures.

The cost factors and explanations below explore the various factors related to market condition that are likely to have the greatest impact on capital construction costs.

Cost Factor	Explanation
Local Market Conditions	The supply and demand influences on local markets impacts the availability of labor and materials, which then affects the cost of construction. Most notable in recent years, construction in the Seattle area has limited the availability of labor and materials driving up the cost of bids to do the work. Interviews with industry leaders including construction firms and cost estimators reinforced these observations. During the interview process, multiple school districts and industry leaders identified the timing of work in the cyclical high and low construction years and escalation as being among the primary drivers of costs. Cost variations within Educational Service Districts (ESD) are noted in the table below. ESD 189, which includes the San Juan Islands, had the greatest cost variation compared to the statewide average.

ESD	*% Diff. from WA Average*
Washington State Average	0%
101	0.4%
105	-3.9%
112	8.8%
113	6.0%
114	-15.8%
121	14.0%
123	-4.6%
71	-7.7%
189	17.2%

Table 10: Percent of Cost Variation Among Washington Educational Service Districts to Washington average

Project costs have escalated on average 2.9% a year since 2006 with high construction cost years at 5.5% and lower years at 0.1% (Engineering News Record BCI, 2016). OFM uses a statewide escalation amount of 3% applied to state-funded construction projects. In some years, true escalation is above, and in other years below, OFM's amount.

The timing of any given project from conception to occupancy extends over multiple years. During market conditions when escalation is unplanned and/or increases at higher than anticipated rates, school districts face difficult decisions: project scope reductions, increasing project contingencies, deferring work, adding local reserves, or a combination of each to balance budget, scope, and schedule. In periods of slower than anticipated escalation, the project budget may benefit. Either way, the amount of time it takes to move a project from conception to completion extends exposure to the impacts and cost risks inherent to the dynamic circumstances usually associated with both the capital and construction marketplace.

Capital project schedules were also identified as a market-related cost variation factor. Although the timeline for the entire project process is long, the construction schedule in the sample projects were repeatedly condensed to be open in time for the following school year. The impact of a condensed construction schedule together with the aggregated one-time mid-year release of SCAP funds was often cited as reducing a school district's flexibility to respond to market conditions such as labor shortages, backordered supplies, or long lead times on materials by "spreading out" bid dates thereby have an opportunity of increasing labor and material availability. The current circumstance continues to result in increased overtime and oversight costs incurred to ensure that the project maintains its schedule to accommodate district project cash flows and mitigating impacts to teachers and students associated with a mid-year occupation of improved or new facilities.

5.2 PROGRAMMATIC ELEMENTS

Throughout the interview process participants identified cost variability as the result of a school district's approach to meet their region's specific educational needs. Some of these factors are outside the control of the school districts whereas others are within their control but may be in response to an external pressure.

As school districts across the State continue to create and adopt new pedagogies, space allocation strategies have changed to meet the new demands. Typically, these changes have resulted in significant increases in space requirements. In addition, as communities throughout the State search for ways to build "essential facilities" such as spaces to serve as emergency shelters during natural disasters, joint-use of K-12 school buildings have become the communities' preferred solution to meet these demands.

Cost Factor	Explanation
Delivery of Education *"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." (Planning & Management)*	National trends indicate school design is moving in two directions: back to the single corridor with rooms on both sides or alternative collaborative and untraditional spaces. Consulting Principle Gregory Stack (2016) for NAC Architecture identified these trends best noting the different directions as impactful to design. Facilities with robust and adaptive infrastructure and cross-curricular classrooms allow students to explore multiple subjects in one setting. Some schools are going as far as to combine schools with other community services (libraries, police stations, arts centers, etc.) for the benefit of education and economic use of tax dollars. Other schools, to a lesser degree, are heading toward school designs reminiscent of earlier 20th century. What school districts have observed, and NAC Architecture among many others have recently identified, is reflected in national and regional trends. According to the 20th Annual School Construction Report (Planning & Management, 2015), the national median square feet per student in new facility construction has consistently increased over the past nineteen years. This increase reflects the changes in how education is delivered and learning occurs in many school districts via an increasingly interactive environment among students and teachers with an environment of more adaptable and flexible school facilities. According to a recent report by the Bill & Melinda Gates Foundation (2014), students have seen significant gains in learning outcomes based on personalized learning. To provide personalized learning, more than three-quarters of teachers within the study reported that classrooms with easily moved furniture supported this change in teaching approach. Between one-quarter and one-third reported additional physical features such as larger open instructional spaces, breakout spaces, and that non-traditional furniture also facilitated personalized learning. As the table below illustrates, the State of Washington's median space allocation (measured in gross square feet per student by school type) is well below the national median of new construction in all school types for the past three years. The most pronounced difference is in the elementary schools, excluding combined elementary and middle or high schools, where the State median ranges from 15.0% to 38.8% below the national figure. Washington's middle and high schools range from 14.6% to 17.8% and .07% to 4.9% below the national medians, respectively.

MEDIAN SQUARE FEET PER STUDENT	State Median (New & Existing)	2014 - 19th Annual New School Construction Report National Median	2015 - 20th Annual New School Construction Report National Median	2016 -21st Annual New School Construction Report State of School Construction National Median
Elementary School	115	149.6	188	135.3
Middle School	148	173.3	173.4	180.1
High School	173	174.2	180	181.9
Skill Centers	138	N/A	N/A	N/A

*State Median excludes schools that include grades K-12, K-8, or combined Middle / High Schools.

**Annual School Construction Report of National Median of gross square feet per projected student enrollment provided by School Planning & Management (P. Abramson, 2014, 2015, 2016).
Table 11: Median SF per Student

Higher education teaching has increasingly moved toward breaking larger cohorts into smaller groups to work on projects and topics. As these trends, have gained traction in K-12 education, design professionals are increasingly asked to incorporate "breakout spaces" or other approaches in the design of K-12 building resulting in different types of spaces to accommodate groups gathering in more flexible and therefore more usable spaces adjacent to or embedded within forme circulation spaces, accommodating a wide range of multiple uses.

Grade Configuration and Curriculum Focus

The age groups, size, and level of specialty within the school contribute to programmatic differences between school types. Classes within grades may be configured differently with specialized spaces unique to the learning requirements of cohorts. For example, elementary students typically remain in their primary home room most of their school day, only moving to specialized music or art rooms as needed. In comparison, high school students change rooms between classes or time blocks to receive instruction.

In general, high school educational programs are more complex and therefore more expensive to accommodate the program spaces and activities within than middle schools; middle schools are more expensive than elementary schools. As noted above one of the reasons for this is the increased specialization and advanced teaching facilities as a student moves from lower to upper grades. For example, as illustrated in the table below, high schools use approximately 20% of their space for STEM/Laboratory programs compared to less than 3% for elementary schools and the cost per square foot is higher for these types of spaces.

Space Type	Elementary School Area Distribution	Middle School Area Distribution	High School Area Distribution
STEM / Laboratory	2.8%	7.2%	19.9%
Cafeteria	6.1%	14.1%	8.1%
Classroom	55.7%	35.0%	28.1%
Library	4.2%	5.0%	2.2%
Learning Resource Center	0.1%	0.0%	0.3%
Assembly / Multi-purpose	1.7%	0.9%	3.9%
Service / Support	2.0%	4.1%	4.8%
Student Services	2.1%	2.1%	3.3%
Physical Education / Gym	8.2%	23.1%	21.7%
Office	5.1%	5.5%	6.0%
General Support	10.8%	1.9%	1.6%
Covered Play Area	1.1%	1.0%	0.0%

Table 12: Program area distribution by school type and space type

Self-contained spaces for special education, art rooms, wood shops, acoustical needs for music programs, and a variety of others require specialized design and materials. Schools vary in self-contained or specialized spaces based in general on demographics, local educational program decisions, and geographic location.

School size also plays a role as depicted in the table below in that the larger the school, the smaller the allocation of square feet per student. When asked about this trend, Facility Directors identified that many programmatic elements, such as a principal's office, are constant regardless of the enrollment size indicating an economy of scale - the larger the enrollment the more efficient the space allocation metric and therefore the lower capital cost per student. However, representatives from larger-sized schools suggested that higher enrollment did not necessarily indicate an improved teaching/learning environment or more successful learning outcomes.

GROSS SQUARE FEET PER STUDENT BY SCHOOL SIZE AND TYPE			
School Type	Enrollment Category	Rural Gross Square Feet per Student	Urban Gross Square Feet per Student
Elementary (K-6)	<100	278	n.a.
Elementary (K-6)	100 – 500	129	137
Elementary (K-6)	>500	98	105
Middle School	<100	452	n.a.
Middle School	100 – 500	183	234

Middle School	>500	137	156
K-8	<100	653	n.a.
K-8	100 – 500	170	161
K-8	>500	138	180
K-12	<100	664	n.a.
K-12	100 – 500	262	112
K-12	>500	155	148
Middle School / High School	<100	802	n.a.
Middle School / High School	100 – 500	214	163
Middle School / High School	>500	166	147
High School	<100	522	324
High School	100 – 500	220	146
Skill Centers	100 – 500	n.a.	139
Skill Centers	>500	n.a.	122

Table 13: School type by gross square per enrollment grouped into school size, urban and rural (OSPI ICOS, 2016).

Technology Infrastructure

Changes in technology infrastructure requirements by building code officials, new pedagogy models, and desire of local communities continue to accelerate impacting the range of capital construction costs. The changes include provision of new distribution systems to the complexity of system hardware, training, and long-term maintenance agreements. Security technology, LED screens in addition to white boards or chalk boards, and wireless capabilities all increase the amount of electrical power, electrical power redundancy, cabling, wireless distribution hardware, and the need for the space and sophisticated environmental cooling systems for dedicated rooms to support new data processing components. Based on recent K-12 projects, the following table outlines the wide range of technology systems currently being integrated within new construction and renovation projects.

Facilities	Data Network Systems	Security Systems	Voice Systems	Audio Visual Systems	Radio Systems
Outside Plant Conduits & Vaults	Network routers, firewalls and switches	Video surveillance system	Phone System	Intercoms, Clocks & Bells	Ground mobile radio system (GMR portable radios)
MDF & IDF spaces	Servers and software	Access Control	Audio Teleconferencing	Event PA System	Bus radio system and repeaters
Cable tray and conduit	Data cabinets and UPSs	Intrusion detection		CATV, MATV & SAT	Distributed antenna systems
Generator	Structured cabling systems	Mass Notification		Digital Signage	

Fiber optic tie cables, school site-to-core data center	Wi-Fi systems			Classroom audio enhancement	
Theater lighting control	Point to Point Data Links			Classroom Assistive Listening	
	Point of Sales			Broadcast Facilities	
				Video Tele-conferencing	
				AV Presentation Facilities	

Table 14: Various types of technology infrastructure that may be incorporated into a project

In addition to technology infrastructure, the student/computer ratio has increased to 1:1. For example, the Evergreen School District in Clark County currently uses approximately 10,000 computers and is moving to a 1:1 ratio of computers among all students and staff (G. Aerts, personal email communication, 2016). This program decision will increase the number of computers acquired and operating to nearly 26,000 – a significant new demand on institutional technology infrastructure. To accommodate the accelerating use of digital technologies, school districts will be required to make significant investments in capital improvements, e.g. data centers, and large continuing equipment investments for effective and sustainable data network systems. Capital improvements will also include renovating or creating new space within instructional spaces for storage, usage, the addition of wireless systems including redundant routers, as well as expansion of electrical systems capacities to accommodate the increased electrical plug-load created by the proliferation of new hardware.

Life Safety and Security Infrastructure

The safety and security of students within a school facility, on a school campus, or enroute to or from school activities remains the highest priority during the design and construction of K-12 facilities. The OSPI School Facility Design Safety Guidelines, published January 23, 2015, are designed to assist school districts create, “safer schools to address active shooter situations”. It states that, “School district construction or remodeling projects that are greater than 40 percent of the existing building (either by square footage or value) are required to consider school safety in plans and designs (RCW 28A.335.010(2)).”

There is a clear trend over the past ten years for incorporation of increased life-safety and security measures that exceed the building code’s minimum requirements. These measures impact capital project costs as they are incorporated within both new and renovated facilities. The measures range widely from relatively low-cost limited and controlled access points through landscape and/or building design, deliberate space configurations within buildings, special door hardware systems, glass break sensors, card-access systems, and panic alarms at strategic locations, to high cost bulletproof glass and complex security camera monitoring systems linked to local 911 agencies.

	Building and site design that carefully controls access into school facilities and on school campuses requires a significant departure from the more simple open-style school buildings and campuses. The more open-style schools had exterior circulation between building pods, open campuses, and fluid movement in and out of the buildings at multiple ingress and egress points. Increasingly, schools are enclosing circulation spaces and shifting toward self-contained campuses with limited and controlled points of entry.
Local Programmatic Elements / Joint-Use	In peer review discussions conducted with school officials and design and construction leaders, each consistently noted the increasingly complex range of programmatic elements shared between community use as well as instructional use. One example included the construction of multiple play fields in addition to what the school would normally require for a school's physical education or after-school athletics programs. Another example is the use of school facilities after regular school hours for community meetings, music or theatrical performances, and others which require architectural and engineering design solutions requiring the ability of the school to close building areas off from one another, warming kitchen capacity or concession activities, and other space and building system requirements that impact construction costs.

5.3 GEOGRAPHY

Both the State's climatic and natural geographic differences account for significant variability in construction costs for K-12 schools. For example, regions encompassing the Cascade mountain range and eastern portions of the state experience more severe winter conditions than Washington's more maritime–influenced areas. The costs for structural, heating, and ventilation systems are typically higher for school districts located in those regions subject to more extreme winter conditions. Building codes for building structural systems in districts located in the western portion of the State can be more stringent due to the higher probabilities for major seismic events. Strategies to strengthen building performance and safety during and after a seismic event that will allow for quick recovery and reoccupation add premium to the costs of structural systems which only meet the minimum requirements required by building code: life safety and evacuation, not reuse.

Location, grouped within the broader factor of geography, also impacts the cost of construction in that community character and culture unique to the school district will influence the design, construction, and cost of K-12 capital projects.

Cost Factor	Explanation
Climate	The climate of Washington State ranges from dry summers to heavy snow or rain in winters resulting in a wide range of relative humidity, thermal range, and winds factors that influence the design of efficient and durable building

envelope, site design, and energy conservation solutions. Washington is also regularly subject to high wind, rain and snow events that result in snow live load design, lateral force design conditions, effective design of roofs and other school facilities impervious services.

The ecological diversity within the state means that school districts must design, build, and operate their facilities in recognition of their specific local requirements. For example, a school located near the Olympic rain forest will need to manage their storm water design differently than a school district based in the dry plateau country of the Columbia Basin. Likewise, the structural capabilities of school in the Methow Valley must withstand the structural live loads associated with snow while a school building in Anacortes must withstand high winds and marine conditions impacting lateral structural loads and corrosion. The impact of the climate varies for each geographic region but adds varied costs to a wide range of building materials and systems.

Disaster Resilience and Community Joint Use

Several participants in the peer review meetings noted the importance of schools as community resources during disasters. Schools are frequently used to provide shelter or food during a range of disaster events from wildfires to power outages. In many cases, the schools are built to not only withstand these events but must also return to their typical functions within days or weeks after the event happens.

As a community resource during disasters, local public schools can be designed to withstand, recover, and provide community support. The Ocosta School District decided to build the first vertical tsunami refuge – an evacuation tower that will allow students, staff, and teachers to have an area of refuge in the event of an extreme earthquake that would result in a tsunami. The pilings, structural support to withstand earthquakes and tsunamis, and ability to hold 1000 people add significant costs. These were discretionary for the school district and not a building code requirement. School districts throughout the state may decide to incorporate disaster resilience within their projects exceeding the minimum requirements within the current local building codes to allow the facility to withstand and support beyond life preservation, and allow recovery and use of their facilities following major wild fires, earthquakes, and severe wind events.

Seismic Structural Requirements

Seismic structural requirements beyond the code minimum life-safety requirement that allow the building to function after an expected earthquake event can add one to two percent in structural systems costs beyond the current State of Washington building codes for local school districts. As noted in the opening statement for this section, schools are often expected to serve as a place of refuge for a local community during and after disasters including earthquakes. Thus, school districts may be expected to have their facilities fully withstand the “expected” events (although not the “maximum” event) and the seismic structural requirements for both new construction and renovation projects will result in increased capital costs.

Anticipation of Future Growth

Many school districts in growing areas of the state anticipate further growth in their student population. According to the Office of Financial Management, the school age population between 5-17 years will increase approximately 14% by 2040 (2015). Some schools noted in the survey that their communities support large capital bonds only once every 30 years. In order to accommodate future growth during this 30-year time period, it has been identified that some school districts build future capacity with their current projects conducting preliminary design investigations for future phases. These studies may result in the local school district anticipating future growth resulting in larger building systems or increased space capacity in central facilities such as libraries, cafeterias, and other shared or core instructional facilities. The incorporation of future growth in current bond measures and capital budgets varies widely across districts.

Community Design Requirements

Schools are encouraged to engage residents and neighbors in the design development and review process as many schools are located within neighborhoods that want to enhance or improve their own neighborhood's character. Design processes should support the objective of effectively integrating the school within the character of the neighborhood as well as provide a clear avenue for community engagement. However, this process also can lead to site and building design decisions which can have significant capital cost impacts. In one school district, parents and neighbors did not like how the school district had proposed to design the road construction to the school, and, as a result, the project required design changes delaying approval of the land use and building permits. The school ended up placing the road directly on the school site which required redesign of other site development components. Another example is the use of exterior building façade materials. Some communities encourage use of building materials that represent exterior imagery such as metal panels and glass in lieu of less expensive brick masonry, concrete block, or cement siding materials. These aspects of community engagement with building and site design vary widely among different local schools and school districts across the state.

Schools frequently engage in design review processes with their local communities to encourage engagement which acknowledges and reinforces the local financial support they have received for their projects respecting the very local nature of schools. Public design review processes may, at times, increase consulting and design costs as multiple designs are proposed and reviewed as the best design solutions are pursued.

Pre-Planning Process

The current OSPI Facilities Manual notes that the use of master planning and pre-design are critical tools to be used by a school district to conduct thorough and detailed "due diligence" on capital projects before they request funding by the local community and state taxpayers and are under construction. In the sample of school projects reviewed only a handful appeared to have had a pre-design feasibility study completed. In fact, pre-planning varied significantly between communities and project location. The absence of this more detailed pre-planning phase negatively impacts the project two-fold. First, local jurisdictions and serving utilities working in partnership with the school district, are unable to sufficiently plan for the infrastructure needed to support the school project, such as roads, streetlights, or storm water management, which can surprise project budgets with unexpected or unknown costs, often significant. Second, major project decisions are made only during the typically compressed design process impacting the quality of the design, the quality of design documentation to achieve good construction marketplace bids, and, potentially, the anticipated project completion date.

Local Funding Capacity

According to the 2016 "State of Our Schools" report, K-12 public school construction nationally is largely funded by local taxpayers. In Washington State, the study found that state support accounted for 10-25% of the total project costs and that there is limited, if any, federal capital support for facilities, except for Early Learning Centers. The ability to fund school construction and renewal is generally tied to the relative wealth of a local community.

The perceived and voter-approved actual limits to local funding and the impact on construction costs was identified by cost planners on the study team as having significant influence on the design planning process, life cycle value, and scope of work decisions made by school districts. For example, independent cost planner professionals noted that wealthier school districts were more likely to incorporate curtain wall glazing whereas less wealthy school districts would incorporate a lower-cost storefront glazing system. The initial capital cost of a curtain wall is higher but, as described in more detail below, may offer a longer, more cost effective life-cycle reducing long term capital for a school district. Thus, local funding capacity and the decisions based on perceived or actual funding limitations impacts the building construction.

The study attempted to correlate property value with school funding since Washington State schools typically fund construction from property taxes. However, the inclusion of commercial property taxes into the data limited the ability to isolate and correlate individual wealth. The 2016 national "State of Our Schools" report noted that wealthier school districts have a greater debt capacity and that less wealthy school districts are inhibited in their ability to fund debt.

5.4 BUILDING MATERIALS AND SYSTEMS DESIGN

Washington State is a national leader in establishing life-cycle and high performance building guidelines for public agencies and K-12 schools. School capital projects that participate in OSPI SCAP and that are greater than 5,000 square feet are required to incorporate high performance features into their project design and construction by using either the LEED (Leadership in Energy and Environmental Design) checklist or using the WSSP (Washington Sustainable Schools Protocol), a self-certifying tool.

The initial or first capital cost impacts associated with implementation of these requirements does not appear to have been previously studied and there is insufficient data available from OSPI, but national studies suggest that total building costs and square foot costs are within the range of expected costs for similar but non-LEED certified buildings (Mapp, et. al., 2011). This may not have been the case ten years ago, or prior, when adopted model building energy codes, storm water management, and other natural resource design requirements were less rigorous than they are today. According to previous studies, the majority of increases in costs to meet the high-performance building requirements are due to increases in project indirect cost attributed to additional professional design fees and administrative overhead, and, less so, direct construction costs.

Public agencies including school districts are responsible for ensuring that energy conservation and renewable energy systems are considered in the design phase of major facilities by completing an energy life-cycle cost analysis (ELCCA) as described in Revised Code of Washington (RCW) 39.35. In support of the state statute, the State of Washington Department of Enterprise Services publishes a guideline recommended as a tool for use by public agencies in identifying a selection of the best or low life-cycle cost alternatives during the design of their school facilities.

Cost Factor	Explanation
Design Guidelines	Capital project design is subject to a careful balance of budget, schedule, design scope of work, site constraints, life-cycle performance or quality of building systems and materials, and school district preferences. In addition, many aspects of design appear to be related to other cost variables such as oversizing building systems in anticipation of future growth and the often-significant design discretion provided by school districts to their consulting architect/engineer teams regarding selection of building system components and functional performance requirements. For example, one project in the study sample included a building “curtain wall system” intended to support a natural daylighting design strategy for a school in western Washington. In comparison, it was noted to the study team that a rural high school in eastern Washington is more likely to use a much less expensive “storefront window wall” system which has a lower cost per square foot to achieve a nearly identical design goal. The following summary identifies a typical but very simplified range of building materials and systems that are used at the discretion of the local school district in the design of school facilities:

Building Component	Lower Initial Cost | Lower Longevity	Higher Initial Cost | Higher Longevity
Structural System	Wood Frame	Steel or Concrete Frame
Wall | Roof Insulation	Building Code Minimum	Enhanced Insulation - More than Code
Building Exterior Siding	Fiber Cement Board Siding	Masonry | Metal Panel
Exterior Glazing	Individual Windows or Storefront System	Curtain Wall System
Roofing System	SBS 2-Ply System	TPO 1-Ply System
Interior Framing	2x Wood Frame	Metal Stud Frame
Stairs	Pre-Engineered Stair Systems	Custom Designed and Fabricated Stair
Interior Wall Finish	All Gypsum Wall Board and Paint	Gypsum Wall Board and Paint, Tile in Restrooms, Wainscot at Corridors
HVAC/Controls	Furnace for Each Room - Heating Only	Ground Source or VRF Heat Pump
Lighting and Controls	Fluorescent - Code Minimum	LED - Connected to Daylighting Controls
Security Systems	Finish Hardware - Code Minimum	Enhanced Access Control and CCTV Monitoring

Table 15: Building Components – Qualitative Comparison

From site visits and interviews it is clear, despite a small study sample, building design configurations and selected materials and systems are extremely diverse in educational program activities, cost, or space metrics making a comparative cost assessment impossible without a more exhaustive detailed analysis of individual building design components and their actual construction costs.

There were differing opinions expressed to the study team regarding the responsibilities of designers, builders, school districts, and regulatory officials in capital project delivery. None of the available data provides evidence of one party having a dominating accountability for a project's cost without other contributing factors.

Rather what appears to be consistently missing is the presence of an early and simple design planning process that concisely documents scope of work, schedule, and detailed capital cost models as well as guidance on best practices for building system performance and design. This basic yet important documentation can serve as the baseline for a formal agreement on the key components and objectives of projects, identification of the decision-making process by the school district, and serve as a critical benchmark or guideline for the school district to share and manage the diverse team of planners, designers, builders, and school and community stakeholders based on a clear scope of work, a clear timeline, and, perhaps most important, a clear, comprehensive, and realistic total project cost target.

Life Cycle Cost Analysis and Energy Management

Washington has adopted a modified International Energy Conservation Code. RCW 19.27A.160 states that residential and nonresidential construction permitted under the 2031 state energy code must achieve a seventy percent reduction in annual net energy consumption, using the adopted 2006 WSEC as a baseline.

Energy-efficiency measures impact construction costs in multiple ways including increased first-time expenditures that reduce life cycle costs by reducing school utility expenses over the long life of the building project. For example, the newly adopted energy code requires a dedicated outdoor air system supplying ventilation independent of heating and cooling systems. While this will benefit students with fresh air and improved indoor air quality it increases construction costs by requiring additional mechanical system equipment and other building system components.

Consistent with the requirement that school districts are responsible for ensuring that energy conservation and renewable energy systems are considered in the design phase of major facilities by completing an energy life-cycle cost analysis (ELCCA), the combination of experienced design professionals, sound construction practices, and demonstrated professional building commissioning will reduce life-cycle operating costs and increase a school district's building systems performance (reducing the need for minor capital improvements). At the same time, implementation of good life cycle measures will require more capital project budget than the use of poor life cycle measures.

The following identify key building system components and processes which must be carefully reviewed early in the design phase of a K-12 capital project to achieve objective and concise life cycle alternatives and energy management analyses for K-12 school facilities:

Building Envelope

- Continuous Insulation
- Air Infiltration Measures
- Entry and Exit Vestibules
- Higher performance glazing systems
- Demonstrated Successful Daylighting Strategies from Case Study Research

Mechanical Systems

- System selection
- Motor efficiencies
- Ventilation systems
- Dedicated outdoor air systems
- Economizer systems
- Kitchen exhaust systems

- Energy recovery
- Domestic hot water system efficiencies
- Enhanced controls

Electrical Systems

- Electrical-Use Sub Metering – By floor, area, or other increment for measurement and conservation purposes
- High Efficient power (motor) and lighting systems
- Enhanced controls

On-Site Renewable Energy Systems

- Solar-thermal systems
- Photovoltaics systems

In addition to the increased direct construction cost for a facilities project (versus poor life cycle or limited-energy management measures), the following items will add indirect costs of the project:

- Life Cycle Cost Analysis
- Energy Conservation Modeling
- Enhanced or Retro Commissioning of Building Mechanical, Electrical and Plumbing Systems (MEP)

Sustainability Measures

Related to the energy conversation efforts, OSPI SCAP requires uses of either the Washington Sustainable Schools Protocol (WSSP) or Leadership in Energy and Environmental Design (LEED) checklists to identify building components that support the state's goal for energy reduction. The scorecard measures a variety of factors including use of sustainable materials, water use reduction, daylighting, and indoor air quality. As noted in previous studies, additional indirect costs have been identified including consultant fees to plan and design aspects that incorporate sustainability measures such as on-site renewable energy sources requested by a local school district as well as additional project administrative costs to develop and monitor checklist progress and outcomes.

Cost estimators noted a trend in higher-wealth school districts to embrace additive sustainability components as a showcase for education whereas school districts in lower-wealth school districts are more likely to meet, rather than exceed, minimum sustainability requirements. The study team was unable to quantify those anecdotal observations in the study sample due to insufficient data being submitted to OSPI.

Asset Preservation

School districts identified the need to incorporate into capital project budgets sufficient resources to acquire higher versus lesser quality building systems to mitigate the need for accelerated replacement and in general, significantly reduce labor and utility operating costs. However, in interviews, the desire to build a 50-year building compared to a 20- year building varied. Some districts

	felt strongly that a 50-year building would serve them best because it would minimizing future costs; whereas others identified a 20- year building as more effective due to the changing educational pedagogy and technology requirements as well as a willingness to "trade-off" more space now for a building that will not function as effectively due to short life and accelerated building materials and systems wear and tear, and typically limited capital resources for replacement and repair. A nationally-recognized, although very rarely achieved, general facilities standard for annual capital investment in minor capital repair and replacement across all facilities is annual capital investment in existing facilities at two percent of the current replacement value (CRV) of a school district's assets as determined by property insurers. Although most, if not all, local school districts are unable to meet this standard currently, many also struggle to prioritize a district's limited capital resources to support a regular facilities preventive maintenance and replacement program that will reduce their existing deferred maintenance backlog. Often, when a school district considers a major capital project – new or renovation – it is not uncommon for the project to incorporate repairs and replacement of deficiencies, failed site infrastructure or building systems that are in need of scheduled replacement or systems are only able to run "to failure" without replacement prior to failure.

5.5 SITE IMPROVEMENTS

Typically, site development costs range between 10% and 15% of the direct construction cost of a school facility project depending on various factors such as school type, site characteristics (such as site slope, site soil characteristics and resulting impact on foundation design, and wind exposure), local jurisdiction testing requirements and associated fees, off-site transportation and related infrastructure improvements, utilities hook-up fees and amount of paving required. For some projects, the costs associated with off-site improvements exceed 15% of the direct construction cost. Other factors that contribute to atypical increases in on-site development costs include wetland mitigation, storm water management, cultural or historic resource mitigation measures, on-site transportation improvements; on-site pedestrian improvements including covered walkways and outdoor waiting areas, and removal or encapsulation of hazardous materials associated with environmental contamination.

Cost Factor	Explanation
Site Requirements	The specific location of school facilities, proposed or existing, significantly impacts the site work and associated capital costs required. Site requirements for the purposes of this study are grouped by typical and atypical. Typical site work would assume "greenfield" or site and building construction with no significant slope, wetland mitigation, storm water, liquefiable soil, or other hazardous conditions. Assume typical pilings, ease of excavation and soil removal, grading, and in the finishing phases - sidewalks, parking lots,

loading/unloading areas, preparing for landscaping. Nationally, site work for school construction is assumed to be approximately 10-15% of the cost of construction. However, many schools face unique circumstances and much higher costs due to the need for special foundations, or hazardous materials mitigation such as contaminated soils, wetland mitigation due to development in or near delineated wetland areas, or historic or cultural resource mitigation among other site circumstances.

In the sample study, the North Creek High School building site straddled the urban growth boundary, requiring two separate development requirements and mitigation of a wetland on the proposed development site. The solution for the school was to relocate the wetland to one of the sites of the urban growth boundary, and design the building to be constructed and operated on the other side of the urban growth boundary. However, this decision resulted in the need for significant and costly site improvement across the entire property with added permitting and the relocation of a wetland.

This example from the OSPI-provided study sample of schools is not unusual. According to research findings from AIA California Council (2008), land availability nationally for schools remains and is an accelerating challenge. In urban areas, schools pay a premium for their locations, sometimes tearing down houses or other buildings to build new facilities, or they are forced to purchase land requiring costly remediation of on-site hazardous materials. Both conditions result in increased site work costs.

In more rural settings, schools also face land use restriction issues such as agricultural land preservation or building adjacent to neighborhoods that do not welcome transportation or other perceived impacts to quality of life – site lighting, student activities noise, and view corridors impacted. In these circumstances, the district and/or local jurisdictions may include additional site improvement including building new or altering existing roads and/or access/egress to/from the school, adding stoplights and street crossings, or using sites that require specialized soil mitigation. Frequently, storm and sanitary sewer, power, natural gas or potable water connections to central community systems are also not available burdening the project with the expense of extending these services to the site or funding development, if allowed, for onsite sanitary and storm water sewer and water systems.

Although the national benchmark for site work is between 10-15%, the sample schools included site work up to 20% of the construction costs. Not surprising, when reviewing the schedule of values and conducting site tours, many of these sites had major site development requirements leading to the increase in costs.

5.6 REGULATORY / JURISDICTION REQUIREMENTS

The impact of local regulatory and jurisdiction requirements varies by geographic area but due to its complex nature and sometimes significant impact in costs, this cost variable was identified separately. Regulatory requirements may range from land use permitting processes to Title IX compliance.

Land use approval and site/building permitting processes impact projects in two main areas. First, land use, specifically, the Growth Management Act (GMA) requirements, impact where school districts are able to construct new facilities. For example, in a legislative report to the House Environment Committee (January 2017), seventeen school districts identified GMA-induced challenges. Secondly, local jurisdictions apply conditions on permit approvals to require projects to fund improvements indirectly related to school construction such as traffic mitigation/improvement projects (including creation of new roads, addition of turn lanes, new traffic signalization, and traffic control signage and calming measures), as well as off-site pedestrian and storm water management improvements.

Cost Factor	Explanation
Local and State Land Use Requirements	In Washington State, local jurisdictions manage their land development regulations within the context set forth by the state. Twenty-nine counties are required to or have opted to develop a comprehensive plan set by guidelines in the Growth Management Act (GMA) (APA-Washington, 2016). GMA impacts over 95% of the population within Washington (MRSC, 2016). In January 2017, a legislative report to the House Environment Committee identified seventeen school districts with immediate or near-term impacts from GMA. For many of the school districts in the report, student population growth was projected to exceed current capacity and the proposed land for development fell outside of the urban growth boundary. GMA and the corresponding comprehensive plans restrict uses outside of urban growth boundaries. The impact for the school districts ranges from higher costs or inability to purchase land within the urban growth boundary to delayed issuance of permits until the school districts are allowed to build outside of the urban growth boundary. For this reason, local regulatory requirements vary between sites. Schools, particularly newly constructed schools, may be impacted by the municipal or county comprehensive plan such as impacts by urban growth boundaries, zoning requirements, or critical and shoreline areas. The comprehensive plans identify the rules for development within each community and each school development.
Required Off-Site Improvements	Schools may be asked, as part of their projects, to fund or construct public facilities because of new or additions to existing school construction. For example, if a school is planned on the “edge of town” and there are no or insufficient roads to the school, the project may be required to fund building

	the roads, extending sewer and public utilities, and contributing to or implementing traffic mitigation measures such as traffic lights and stop signs. Some jurisdictions require the storm water generated from impervious and other school facility site surfaces, be managed entirely onsite adding significant capital costs to a project whereas other jurisdictions do not. In many instances, it was reported that many projects were required to fund costs related to school-facilities-based impact within the jurisdiction such as additional traffic mitigation measures, additional sidewalks, and other "conditional" improvement permitting approvals.
Archeological and Culturally Significant Sites	As part of the State's Environmental Policy Act (SEPA), the Department of Ecology (2016) requires an environmental review of the project sites. Typically, the review is conducted as part of or in addition to a land use permit submission. SEPA includes a historic and cultural preservation section to identify potential historical or culturally significant impacts due to construction. If there is indication of a culturally or historically significant impact, further studies such as archeological studies, are required. These costs are typically included in the indirect cost allowance but may add additional costs should additional studies or mitigation measures be needed. On occasion, even if there is no determined impact prior to construction, during construction cultural artifacts may found. In these cases, the construction site must go through various procedures to identify and preserve, when required, the culturally significant artifacts, historic resources or sites adding unanticipated costs to the overall project.
Accessibility / Barrier Free Design	Local school districts comply with requirements of the Americans with Disabilities Act Accessibility Guidelines (ADAAG), WAC 51-50, International Building Code (IBC) and ANSI 117.1. While a school district may not be required to bring existing facilities into compliance, implement Universal Access principles throughout their campuses and buildings, nor create accessible digital environments for their students and teacher who may be sight impaired, a school district may choose to go beyond the minimum requirements. When so choosing, the construction costs to implement these "beyond the compliance" requirements exceed project constructions for those districts who chose to be compliant with current requirements.
Title IX Compliance	Compliance with Title IX, a civil rights law that prohibits gender-based discrimination in public and private schools receiving federal funds, has an impact on school construction costs. The standard for compliance is quality, which means the quality of facilities and equipment must be on a par for both boys and girls sports. Practice and competitive facilities must be built to comply with the law and accommodate both girls' and boys' sports proportionate to enrollment of students. This increase in the participation and access for girls in

	sports results in a higher need for space and facilities to achieve the required proportional parity (American Association of University Women, 2016).

6.0 OBSERVATIONS ON CAPITAL PROJECT COSTS

STATE AND LOCAL CAPITAL COST MANAGEMENT STRATEGIES: SCHOOLS ARE LOCAL AND SO IS DECISION MAKING

Nationally, the landscape for state roles and responsibilities in providing cost management strategies for public school facilities is changing and moving toward the following items:

- Site and building design guidelines that result in long-lasting facilities.
- Baseline funding by building type with adjustment factors for specific site environmental conditions, geographical location, and local regulatory compliance requirements for off-site improvements (State of Alaska Department of Education and Early Development, 2016).
- More expert-level technical assistance to local school districts in the early or pre-design planning stages prior to and immediately following successful bond measure passage.

Nationally recognized, the State of Washington's key cost management strategy requires school districts to prepare formal and independent (from the architect/engineering consultant team) value engineering and constructability review studies and building commissioning for state-funded capital projects (WAC 392-343-075 and 392-343-080); however, it was noted that neither school districts nor their architect/engineering consultants often acknowledge the significant value these activities add to project affordability and improving the function of facilities design. It was also noted this is the only "cost containment" tool in place in Washington to ensure projects are sufficiently flexible, right-sized, and have acceptable life-cycle cost assumptions.

At the same time, it is clear that states and school districts are working together to ensure local control remains firmly in place for critical aspects of planning, decision making, procurement, and oversight. The shared national goal among state agencies and local school districts appears to be how to best ensure that there is greater equity across school districts and that each local school district provides cost-effective and functional facilities designed, constructed, and maintained to meet a balance of long-term and cost-efficient facilities operations, educational, and community objectives.

A series of observations regarding cost management strategies to address variations in school construction costs were developed over the course of the study. Key observations were captured during the December 7th informal peer review meeting in Seattle with statewide private and public sector K-12 capital facilities subject matter experts, interviews with architectural firms and construction companies, and during site visits, surveys, and discussions with school district representatives throughout the state.

6.1 OPPORTUNITIES AND CHALLENGES

- **CAPITAL COST EFFICIENCIES AND LINKAGE TO EXISTING-ASSET PRESERVATION**
  Through SCAP, Washington has achieved significant progress in school facilities conditions and capacity, yet work remains to be accomplished to best retain the value secured by SCAP that will result in continued improvement in safe and healthy teaching/learning conditions for students, teachers, and communities.

The thirty-five states who distributed state capital funding in 2014 for K-12 school facilities are seeking more efficient use of capital to meet the facilities needs of local school districts (Center for Cities + Schools, 2014). For example, capital cost efficiencies are being considered by the State of Wyoming through selective rebalancing of major maintenance and minor capital support in concert with major capital investments (21st Century School Fund, 2015). One primary reason for this approach in Wyoming appears to be evidence that "low-wealth districts often get trapped in a vicious cycle; underspending on routine and preventative maintenance in the short term leads to much higher building costs in the long term".

Even with adequate spending on routine maintenance, buildings and grounds deteriorate. During the life-space of a typical K-12 capital project with structural and building exterior materials designed to last 50 years, a school district will need to replace all of the following components at least once: roofs, windows, and doors; boilers, chillers, and ventilation systems; and plumbing and electrical systems, among others (Filardo, 2016).

- **DESIGN GUIDELINES**

The 2016 national study "State of our Schools: America's K-12 Facilities" noted that there are no national standards for K-12 public school facilities conditions and capital investment; "Rather, communities use annual school district operating budgets, educational facilities master plans, bond referenda, and capital budgets to determine what they need for their public school facilities, and then set priorities based on what they can afford."

Given the critical importance of these local processes, absent site and building design guidelines it is very challenging, if not impossible, to measure (as this study has attempted to do), the adequacy and/or cost effectiveness of individual project or state-wide facilities capital spending and investment in the State of Washington or elsewhere throughout the country. At the same time, it has been noted in studies, specific to the State of California's Department of Education School Facilities Planning Division, that the increased use of highly detailed State-based design and construction specifications has limited potential cost effective design innovations and may, at times, have resulted in increased bid costs by contractors due to unnecessary complexity.

States use a mix of "standards," "guidelines," "regulations," and "best practices" – sometimes quantifiable and precise; other times they are provided for general guidance. Regardless, the rigorous and ongoing use of case studies and the dissemination of the lessons learned from those projects that inspire a community and its students and teachers from an affordable, sustainable, and functional operations perspective, is critically important to creating the essential baseline metrics for every K-12 facility and at the same time bridging the tensions between state "requirements" and local school district accountability for their school facility conditions and service performance for their communities.

- **K-12 TEACHING AND FACILITIES HAVE CHANGED: NATIONAL, STATE, AND LOCAL FACILITIES CAPITAL COST IMPACTS IN 2017**

The "State of our Schools: America's K-12 Facilities" study also summarized the key educational program elements currently having major impact on the demonstrated increase in capital facilities costs.

Existing Building Systems Renewal: Replacement of systems at the end of their useful lives; new health and safety standards in response to expanded knowledge and needed protections; and increased awareness of energy and carbon smart reduction strategies including lighting, ventilation, and noise control on human health and learning outcomes.

Existing Building and Site Alterations: Accommodation for new special education and accessibility requirements, expansion of early childhood education, integration of instructional and administrative technologies, class-size reduction, and enhanced safety and security design improvements.

Educational Program Changes: Changing academic goals and standards in the sciences and career technology fields; serving special needs students and the physically-disabled, expanded early childhood education, and increased technology requirements for building systems and hardware viewed as integral to learning, teaching, assessment, and management; building improvement to enhance natural and man-made disaster resilience from high wind and seismic events, floods, fires, cyber and human attacks; and the often increased use of the local school grounds as an important joint-use with local communities and municipalities.

For example, decisions by a local school district to enhance the structural seismic requirements or build a tsunami evacuation tower within a project may be components above and beyond the current applicable "model building code" (recognized by the building code officials as minimum requirements). Although these projects will have added design and construction costs beyond the building-code minimum requirements, one local school district official noted: "The way I help my community cope with that cost is that I tell them that we don't just build schools, we also build disaster recovery centers at the same time." The community will also have the ability, given the enhanced resilience-engineering, to reuse the building after the disaster event that is not the case if the building was designed and constructed to meet the building code which only supports a life-safety and evacuation standard, not reuse after an expected event.

- **ENHANCING PRE-PLANNING TECHNICAL SUPPORT TO BETTER MANAGE COSTS BEFORE A PROJECT IS FUNDED**

Providing more in-depth technical assistance to local school districts in the early or pre-design planning stages prior to and immediately following successful bond measure passage is a strategy adopted or under consideration by many states. The Massachusetts School Building Authority (MSBA) founded in 2004 acknowledges the importance of the early planning stage in achieving affordable, financially sustainable, and energy efficient K-12 school facilities.

> *"The MSBA recognizes the importance of Educational Planning on the planning, design, and construction of adaptable designs that are responsive to the needs of teaching and learning now while providing future flexibility to accommodate changes in learning environments and delivery*

methods during the useful life of the school. To support districts and educators in the exploration, of concepts and options for proposed projects, the MSBA offers resources which may prove helpful in initiating local discussions regarding current educational programming and potential improvements that could be realized as part of a proposed project. (Massachusetts School Building Authority, 2016)."

Currently, each school district in the State of Washington may apply every six years for a limited grant to utilize the current OSPI Study and Survey process to establish or update a long-range facilities master plan and educational specifications and a facilities condition assessment. There is limited substantive technical planning support available to individual school districts from state agencies.

Smaller school districts typically engage prime consultants – usually architectural firms – who may or may not have sufficient experience to develop efficient school facilities or the ability to develop effective total project capital cost models. Larger school districts typically utilize their own professional facilities planning staff who may have the expertise to develop facilities plans and associated capital costs.

- **RESILIENCE OF THE BUILT ENVIRONMENT – SCHOOL FACILITIES AS LONG TERM COMMUNITY INVESTMENTS**

Local communities invest in the future while often seeking a measurable return on their financial investment in their built environment and human resources. Joint use of school facilities for many school district is critical to their mission. Whether a performance art facility, access to indoor and outdoor recreational and sports facilities, or providing sound nutritional support to district students, a school district's facilities are responsive to not only a district's educational mission, but the health and welfare of the community's citizens, particularly the safety, security, and well-being of its school age populations.

A recent publication from "School Design Matters" (Stack, 2016) noted: "From a facilities standpoint it is likely that a greater number of traditional 'cells and bells' will be demanded in some regions…other areas will to explore creating spaces and partnerships in their community with businesses and others that support more progressive learning models." Each community has surprising and special characteristics that support and enhance the role of school facilities.

Finally, in partnership with new state and federal agencies and financial resources, school facilities in nearly every community may have the opportunity to provide a refuge and an area of support in response to natural or man-made disasters, as well as serve as important areas for new public health initiatives. In partnership with the State of Washington, there may be great value in ensuring that each school's mission and its facilities are recognized as playing a critical role in not only its instructional and educational mission but in building strong communities.

6.2 NEXT STEPS

The study team wants to acknowledge the great capacity of our local school districts to construct sound facilities to support their educational mission. They do so typically with constrained financial resources, and they have typically experienced successful outcomes when based on application of the following best practices. These practices are encouraged to be adopted by more school districts:

- Development of a concise and integrated facilities development plan based on educational program needs.
- Rigorous prioritization of capital needs based on realistic capital project budget models and objective bond revenue projections.
- Innovative building and site design solutions by expert architect/engineers that integrate high functional performance and durability with community pride in the investment of time and money.
- Detailed functional understanding of existing facilities conditions, performance, and remaining effective life.
- Expert-level project and construction management assistance.
- Use of sound construction procurement processes and experienced general contractors with a demonstrated record of success.

Given the limited size of the research sample and the nature of detailed source data from both the school districts and OSPI, a large range of additional assessments and tools were suggested or requested during the course of the study by study participants. Suggestions offered provide more clarification regarding the quantitative and qualitative variations in capital costs, square feet, and building and site infrastructure design factors.

Continued and ongoing assessments, development of tools and policies in the following areas would support a more rigorous analysis and more clear understanding of capital cost data to assist creating effective cost management strategies, innovative options, and clearer accountability in the use of state capital resources for K-12 capital facilities:

- Annual identification, evaluation and dissemination of national, regional, and local best-practice and innovation case studies for use and review by school districts and K-12 architect/engineering and construction industry representatives.
- State-provided data warehouse for independent life cycle cost models, identifying technically-feasible energy systems, building envelope systems, interior building materials, and disaster-resilient structural systems (to support post-event recovery and reuse of the building) used each year in Washington State school construction.
- State-provided net present value (NPV) analytical tools for each school district’s comparative financial evaluation of ‘anticipated life” of their planned school facilities such

as the NPV of building a 20 year, 30 year, or 50 year building to support school districts' financial decision making.

- Availability of simple and concise K-12 pre design study documentation for local school districts requesting state capital funds.
- State-provided data warehouse for local school districts 1) detailed final project capital cost information for all state preK-12 projects, and 2) actual direct construction and indirect project cost savings achieved by each project through application of currently required value engineering studies, constructability reviews, building commission, and the Washington Sustainable Schools Protocol (WSSP).
- Independent assessment of potential cost savings for local school districts through the use of standard templates for professional services and construction contracts.
- Independent assessment of the cost of building new versus renovation of existing K-12 or adaptive-reuse of non-K-12 facilities as a condition of state capital funding.

APPENDIX

State Building Construction Account—State. $1,702,000
Prior Biennia (Expenditures). $0
Future Biennia (Projected Costs). $0
TOTAL. $1,702,000

Sec. 5003. 2015 3rd sp.s. c 3 s 5012 (uncodified) is amended to read as follows:

FOR THE SUPERINTENDENT OF PUBLIC INSTRUCTION

Capital Program Administration (30000165)

The appropriation in this section is subject to the following conditions and limitations:

(1) The superintendent of public instruction shall publish to its web site and report to the office of financial management, the appropriate committees of the legislature, and the legislative evaluation and accountability program a list of local school district projects submitted for school construction assistance within seven business days of the grant program deadline. The report must be updated within seven days following the superintendent of public instruction's final grant award decisions. Prior versions of the report must be maintained on the web site in order to monitor changes in estimates as the grant process progresses. The report must include, but not be limited to:

(a) School district;

(b) Project name;

(c) Estimated square footage by proposed project type;

(d) Estimated total of all project costs and estimated total construction contract cost;

(e) Funding sources and election dates, if applicable; and

(f) Intent to front-fund the project.

(2) The superintendent of public instruction shall provide to the office of financial management and the legislative evaluation and accountability program committee in electronic database form the following:

(a) Study and survey information beginning with grants awarded July 1, 2015, or later; and

(b) All available inventory and condition of schools data.

(3) The office of the superintendent of public instruction shall contract with educational service district 112 construction services group to perform an analysis of school construction costs. The

analysis must include a significant sample of new ((~~and modernization~~)) school construction projects completed over the past ten years, with costs adjusted for construction inflation. The analysis must determine the major sources of variation in total school construction costs among different kinds of projects, districts, and regions. The analysis must estimate the cost difference due to variations in:

(a) The size of the project including the size per expected enrollment;

(b) ((~~Whether it is a new school or modernization project;~~

~~(c)~~)) Whether it is an elementary school, middle school, high school, or skills center;

((~~(d)~~)) (c) The extent of specialized higher cost facilities such as laboratories, shops, performing arts and indoor athletic facilities;

((~~(e)~~)) (d) Delivering specialized programs at skill centers including but not limited to: Dental and medical assisting, mechanical and engineering programs, first responder training, culinary programs, cyber security, and others;

((~~(f)~~)) (e) Site requirements;

((~~(g)~~)) (f) Durability of construction materials, finishes, building system components, and general life expectancy of the building; and

((~~(h)~~)) (g) Other design and construction feature that may contribute to cost variations.

(4) The office of the superintendent of public instruction must prepare a report on the findings from subsection (3) of this section and submit the report to the appropriate committees of the legislature and the office of financial management by September 1, 2016.

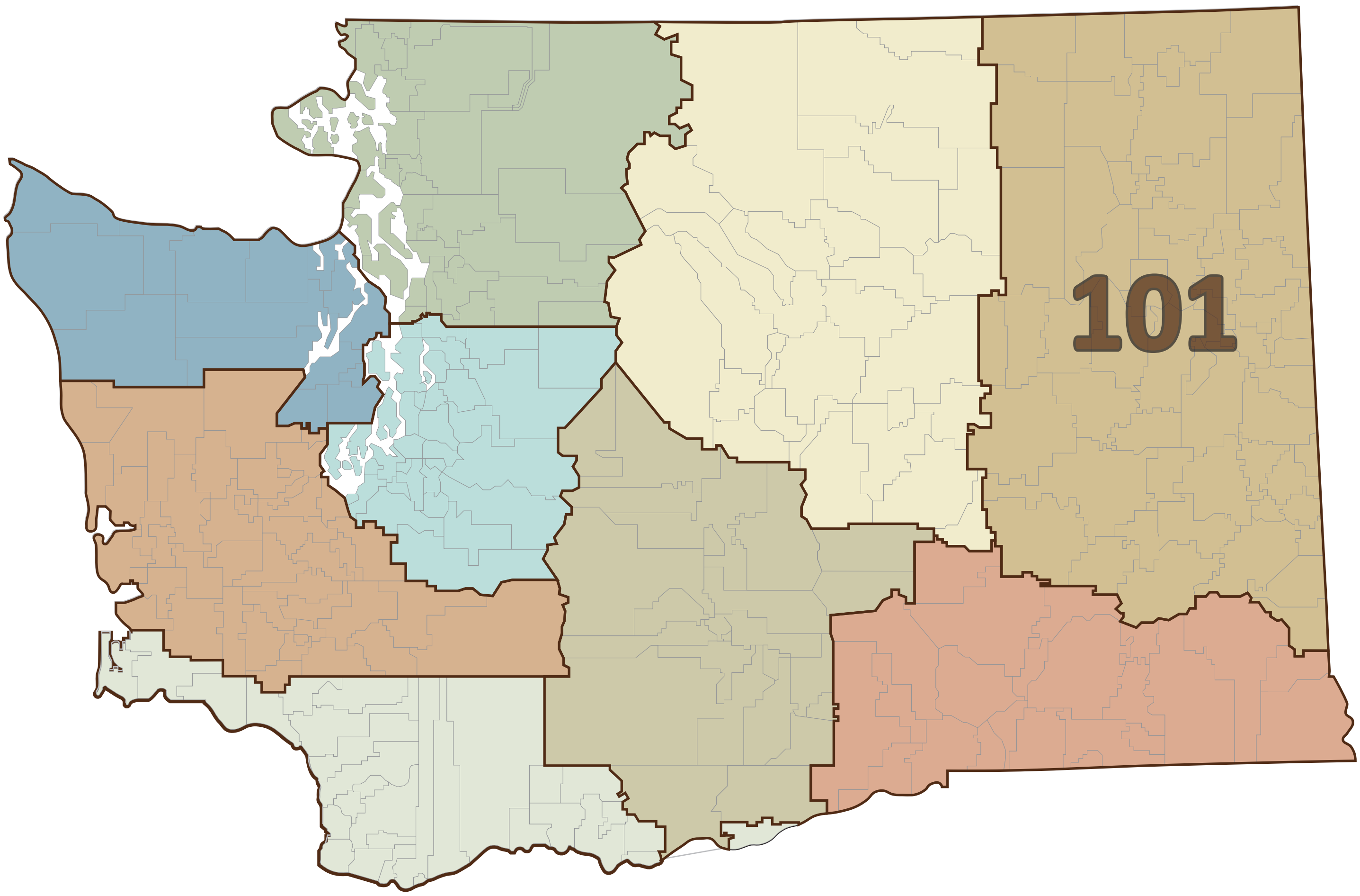
Appropriation:

Common School Construction Account—State.	((~~$2,924,000~~))
	$3,274,000
Prior Biennia (Expenditures).	$0
Future Biennia (Projected Costs).	$12,244,000
TOTAL.	((~~$15,168,000~~))
	$15,518,000

B. RESEARCH SAMPLE PROJECT SUMMARIES

ESD 101

4202 S. Regal
Spokane, 99223-7738
(509) 789-3800
http://www.esd101.net

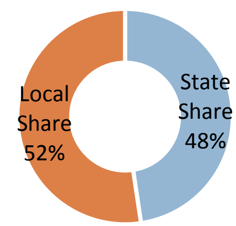


Colton School, Colton School District
Colton, Washington
Educational Service District 101

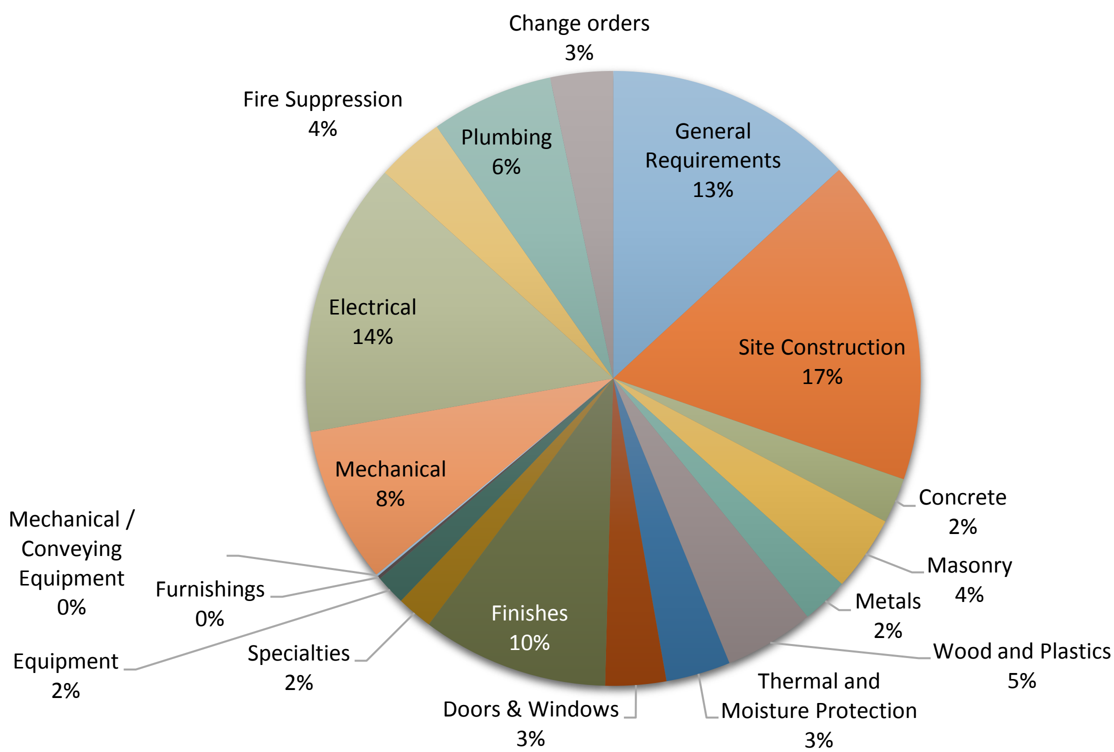
Summary of Scope:	New, N/L and Modernization	**Source:** No Data
Project Dates:	August 2014 -	
2013 OSPI State Match for Colton SD	49.46%	
2016 OSPI State Match for Colton SD	43.73%	
Student Enrollment Data (At Design/2015 OSPI Data)	177/158	
Total Project Cost per District/OSPI Records:	$11,576,469	
Total Construction Cost Adjusted Jan 2017:		
Gross Square Feet (GSF)	53,437	
Construction $/SF (excludes Sales Tax)	$185	

Project Cost:	
Construction	$9,936,611
Consultants	$1,145,126
Equipment	$281,973
Project Admin	$212,759
Other	$0
	$11,576,469

Project Cost by Share:



Schedule of Values % of Construction Cost:



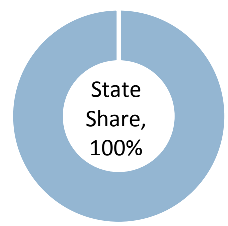
NEW-Tech Phase 1, Spokane School District
Spokane, Washington
Educational Service District 101

Summary of Scope:	Addition
Project Dates:	5/2014-8/2015
Student Enrollment Data (At Design/Projected)	750/1100
Total Project Cost per District/OSPI Records:	$13,737,188
Total Construction Cost Adjusted Jan 2017:	$10,417,444
Gross Square Feet (GSF)	38,043
Construction $/SF (excludes Sales Tax)	$274

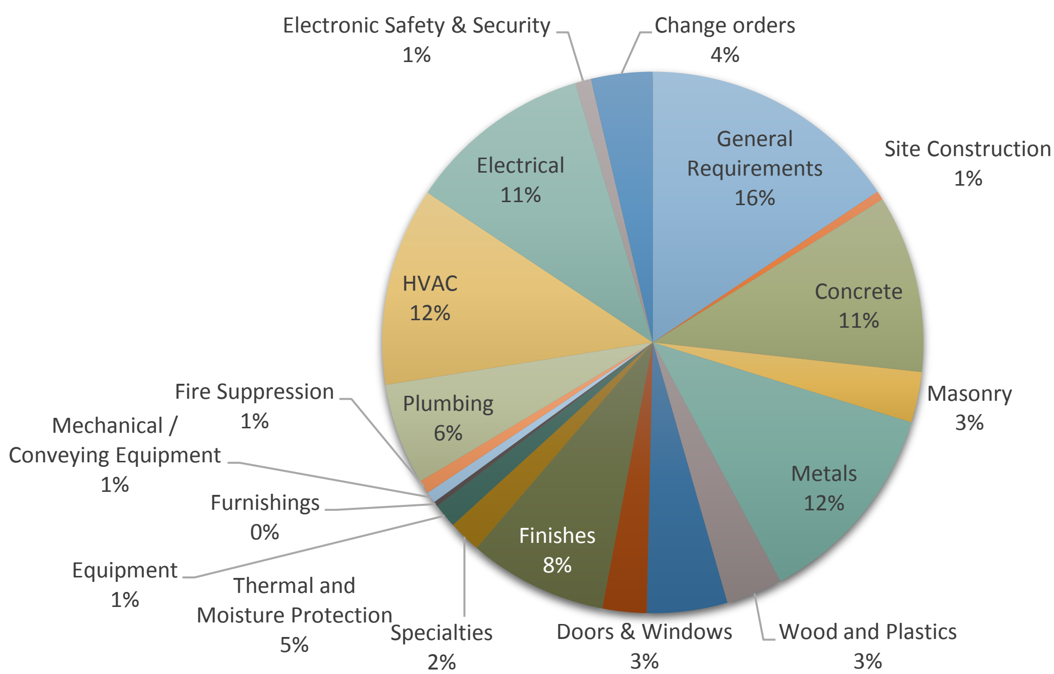
Source: Survey
Special Features: These are that the security-system and building layout were built into the design, there are multi-use spaces, and new labs to conform to Core-24 credits, and windows into the hallways from each classroom.
Challenges: Working on a site that was currently occupied with students and making the tie ins for all electrical systems.
Unique Issues: The new building was right up next to the existing site, which was in use and full of students.

Project Cost:	
Construction	$10,587,000
Consultants	$1,561,000
Equipment	$939,000
Project Admin	$575,188
Other	$75,000
	$13,737,188
Acquisition Cost:	$52,000

Project Cost by Share:



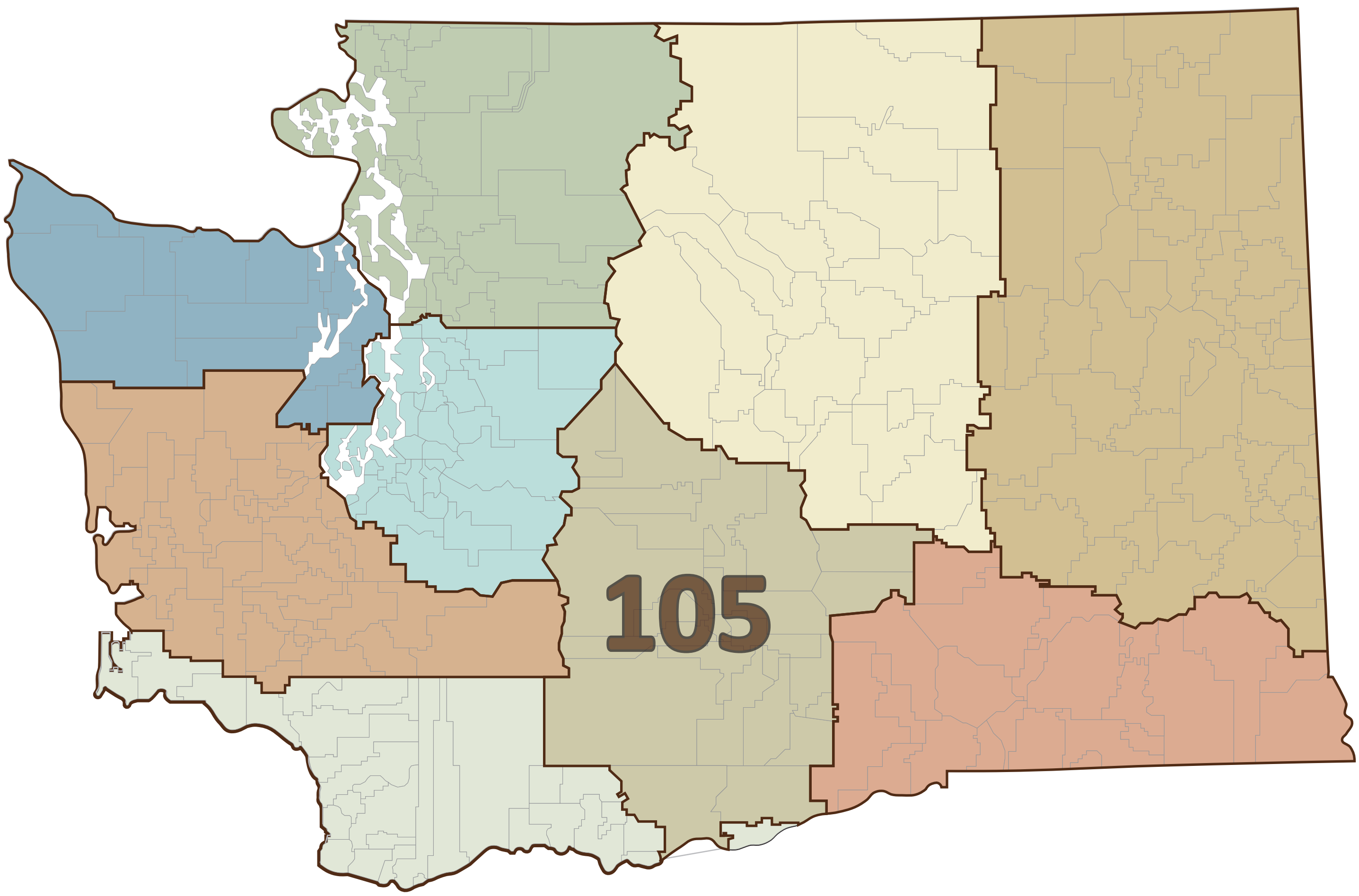
Schedule of Values % of Construction Cost:



B. RESEARCH SAMPLE PROJECT SUMMARIES

ESD 105

33 S. 2nd Ave.
Yakima, 98902-3486
(509) 454-3102
http://www.esd105.org

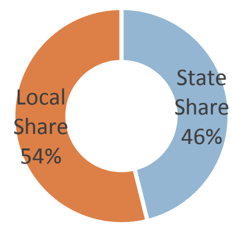


Royal Intermediate, Royal School District
Royal City, Washington
Educational Service District 105

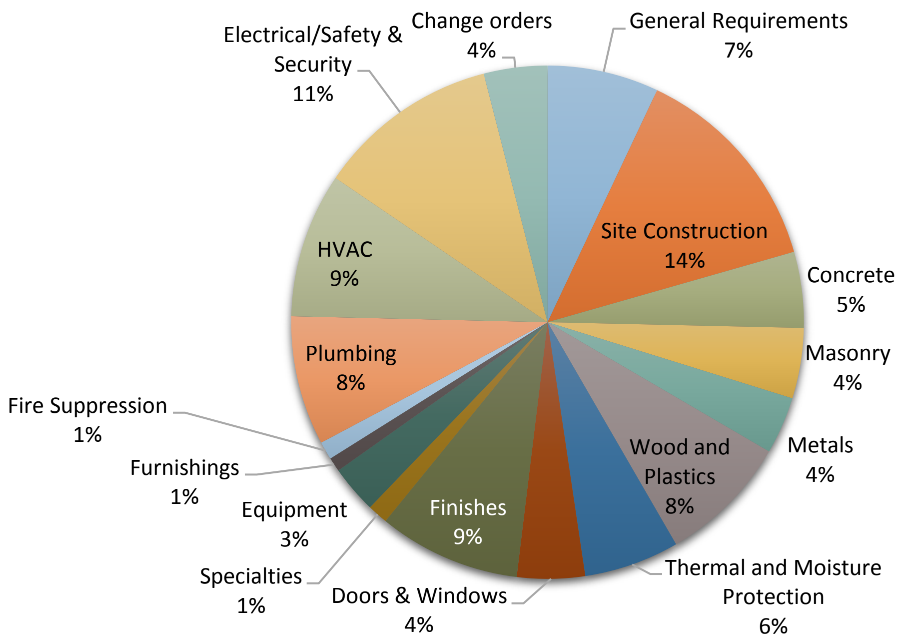
Summary of Scope:	New Construction	**Source:** No Data
Project Dates:	8/2014 - 9/2015	
2013 OSPI State Match for Royal SD	74.30%	
2016 OSPI State Match for Royal SD	76.94%	
Student Enrollment Data (2015 OSPI Data)	409	
Total Project Cost per District/OSPI Records:	$14,989,001	
Total Construction Cost Adjusted Jan 2017:	$13,578,504	
Gross Square Feet (GSF)	45,930	
Construction $/SF (excludes Sales Tax)	$296	

Project Cost:	
Construction	$13,433,629
Consultants	$1,080,879
Equipment	$240,913
Project Admin	$233,580
Other	$0
	$14,989,001

Project Cost by Share:



Schedule of Values % of Construction Cost:



Sunnyside High School, Sunnyside School District
Sunnyside, Washington

Educational Service District 105

Summary of Scope:	Addition
Project Dates:	8/2013-12/2014
2009 OSPI State Match for Sunnyside SD	88.44%
2016 OSPI State Match for Sunnyside SD	87.91%
nrollment Data (At Design/Projected/2015 OSPI Data)	1710/1854/1913
Total Project Cost per District/OSPI Records:	$6,353,090
Total Construction Cost Adjusted Jan 2017:	$5,652,131
Gross Square Feet (GSF)	24,934
Construction $/SF (excludes Sales Tax)	$227

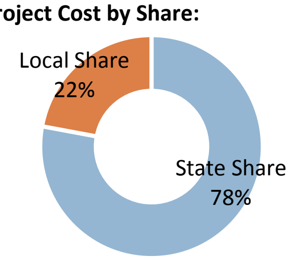
Source: Survey

Special Features: The project features natural light, high ceilings, a simpllicity of structure: i.e., stacking restrooms, repetitions, no alcoves, wainscoating, and flexible design.

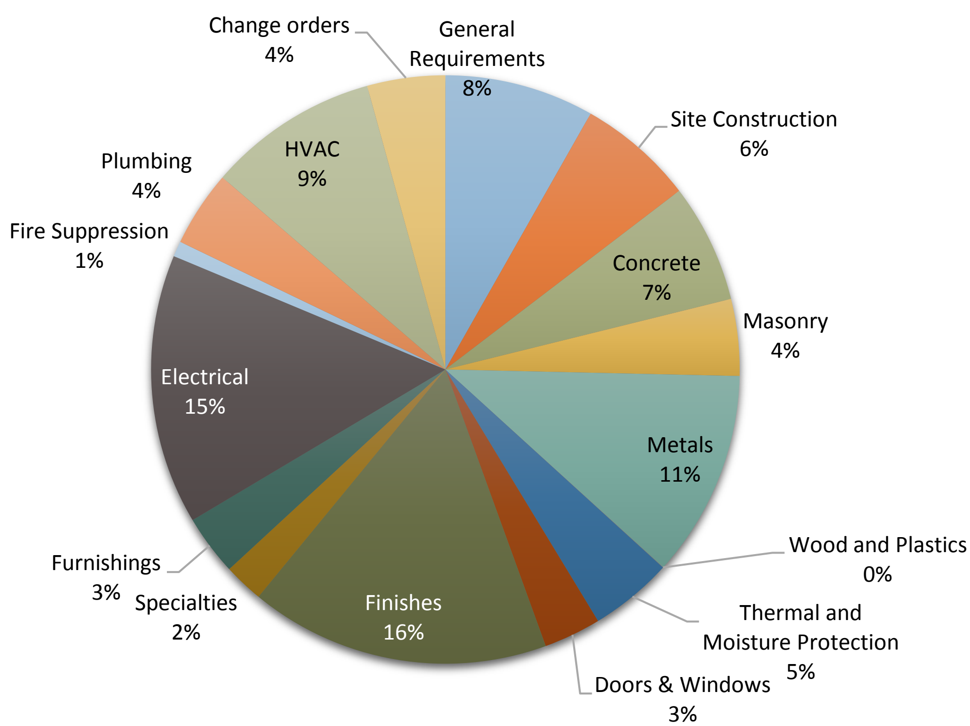
Challenges: The main challenge in the project was connecting the addition to the existing building and making the connection look seamless both outside and inside.

Project Cost:	
Construction	$5,509,571
Consultants	$508,579
Equipment	$193,747
Project Admin	$141,193
Other	$0
	$6,353,090

Project Cost by Share:



Schedule of Values % of Construction Cost:



Yakima Valley Tech - Phase I, Yakima School District
Yakima, Washington

Educational Service District 105

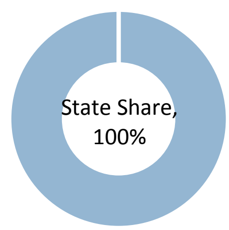
Summary of Scope:	New Construction
Project Dates:	8/2008-12/2009
Student Enrollment Data (At Design/Projected)	770/1100
Total Project Cost per District/OSPI Records:	$15,250,988
Total Construction Cost Adjusted Jan 2017:	$13,404,991
Gross Square Feet (GSF)	41,107
Construction $/SF (excludes Sales Tax)	$326

Source: Survey
Special Features: A new culinary arts program, conference center with configurable walls and a fully operational dental clinic were some of the features.
Challenges: The school was built on former fairgrounds, there were site issues with buried animals, undocumented soil that required additional over excavation. Steel was a long lead item, and impacted the schedules.
Unique Issues: The construction of an access drive as part of offsite costs was a unique issue for this project.

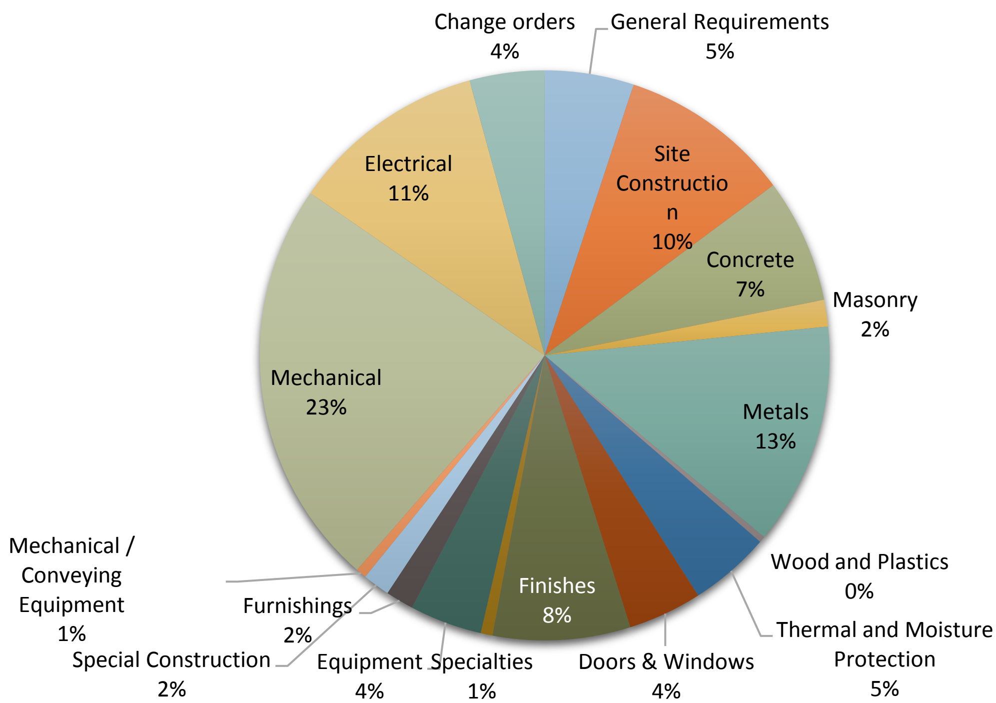
Project Cost:

Construction	$11,924,634
Consultants	$2,303,346
Equipment	$793,225
Project Admin	$239,914
Other	-$10,131
	$15,250,988

Project Cost by Share:



Schedule of Values % of Construction Cost:



Yakima Valley Tech - Phase 2, Yakima School District
Yakima, Washington

Educational Service District 105

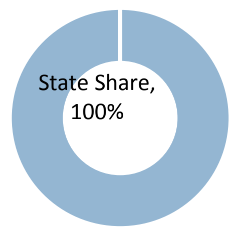
Summary of Scope:	New Construction
Project Dates:	4/2012-8/2013
Student Enrollment Data (At Design/Projected)	770/1100
Total Project Cost per District/OSPI Records:	$22,108,746
Total Construction Cost Adjusted Jan 2017:	$17,476,946
Gross Square Feet (GSF)	61,980
Construction $/SF (excludes Sales Tax)	$282

Source: Survey
Special Features: A new culinary arts program, conference center with configurable walls and a fully operational dental clinic were some of the features.
Challenges: The school was built on former fairgrounds, there were site issues with buried animals, undocumented soil that required additional over excavation. Steel was a long lead item, and impacted the schedules.
Unique Issues: The construction of an access drive as part of offsite costs was a unique issue for this project.

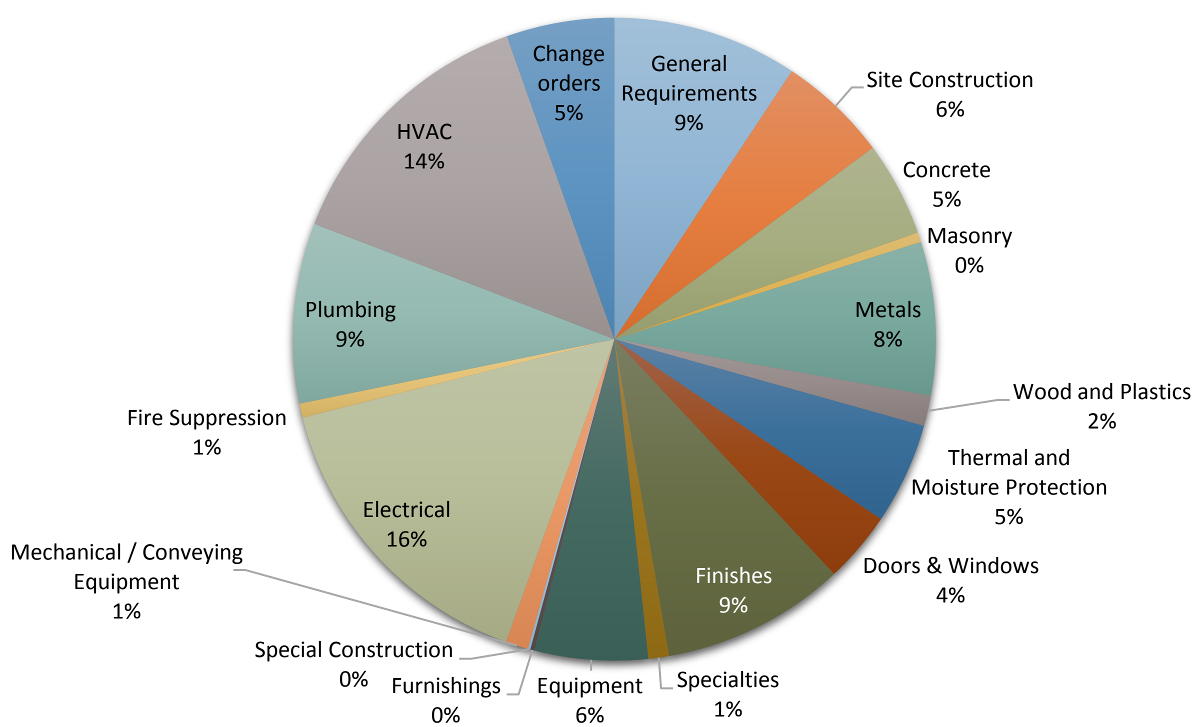
Project Cost:

Construction	$17,407,392
Consultants	$1,283,437
Equipment	$2,737,717
Project Admin	$347,307
Other	$332,893
	$22,108,746

Project Cost by Share:



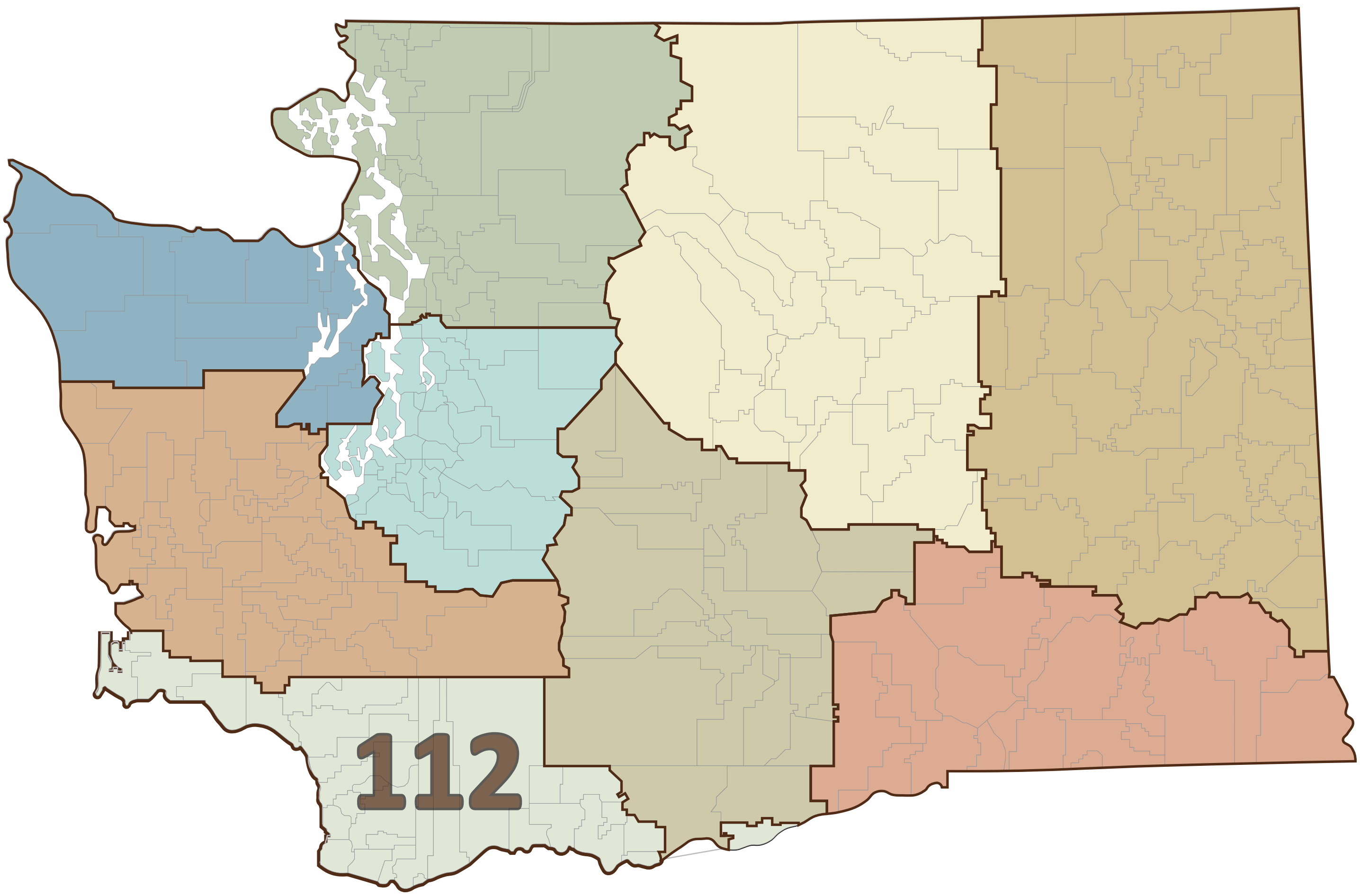
Schedule of Values % of Construction Cost:



B. RESEARCH SAMPLE PROJECT SUMMARIES

ESD 112

2500 N.E. 65th Ave.
Vancouver, 98661-6812
(360) 750-7503
http://www.esd112.org



Crestline Elementary, Evergreen School District
Vancouver, Washington

Educational Service District 112

Summary of Scope:	New Construction
Project Dates:	8/2013 - 10/2014
2011 OSPI State Match for Evergreen SD	70.95%
2016 OSPI State Match for Evergreen SD	69.46%
Student Enrollment Data (At Design/2015 OSPI Data)	495/495
Total Project Cost per District/OSPI Records:	$17,939,933
Total Construction Cost Adjusted Jan 2017:	$16,205,768
Gross Square Feet (GSF)	62,404
Construction $/SF (excludes Sales Tax)	$260

Source: Survey

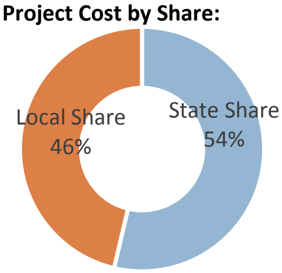
Special Features: A prototypical model was used for this school.

Challenges: They had a challenging schedule, as the original school burned in February 2013, and 24 months later new school opened.

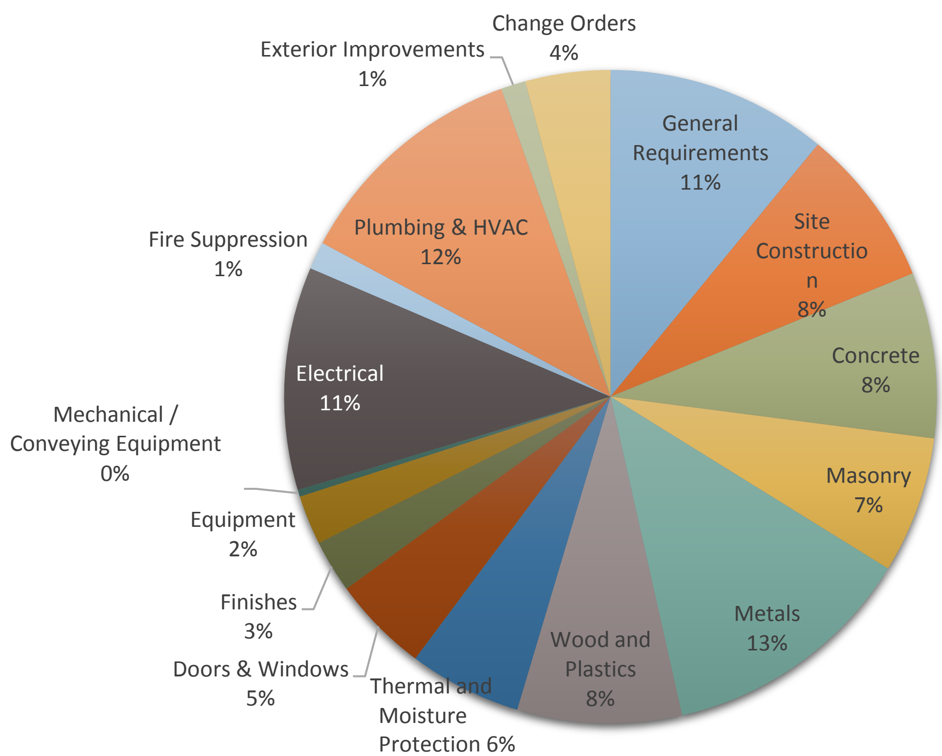
Project Cost:

Construction	$16,278,546
Consultants	$1,080,011
Equipment	$239,546
Project Admin	$341,830
Other	$0
	$17,939,933

Project Cost by Share:



Schedule of Values % of Construction Cost:



Woodland High School, Woodland School District
Woodland, Washington

Educational Service District 112

Summary of Scope:	New Construction
Project Dates:	5/2013 (Ph1)-12/2016 (Ph 2)
2013 OSPI State Match for Woodland SD	60.36%
2016 OSPI State Match for Woodland SD	63.38%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	600/890/691
Total Project Cost per District/OSPI Records:	$60,945,606
Total Construction Cost Adjusted Jan 2017:	$53,343,160
Gross Square Feet (GSF)	154,469
Construction $/SF (excludes Sales Tax)	$345

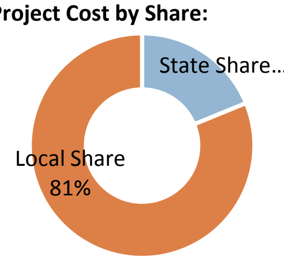
Source: Survey

Challenges: The process of obtaining wetland permits and mitigation credits was slow. They installed thousands of "geopiers" under the foundation due to liquefiable soil.

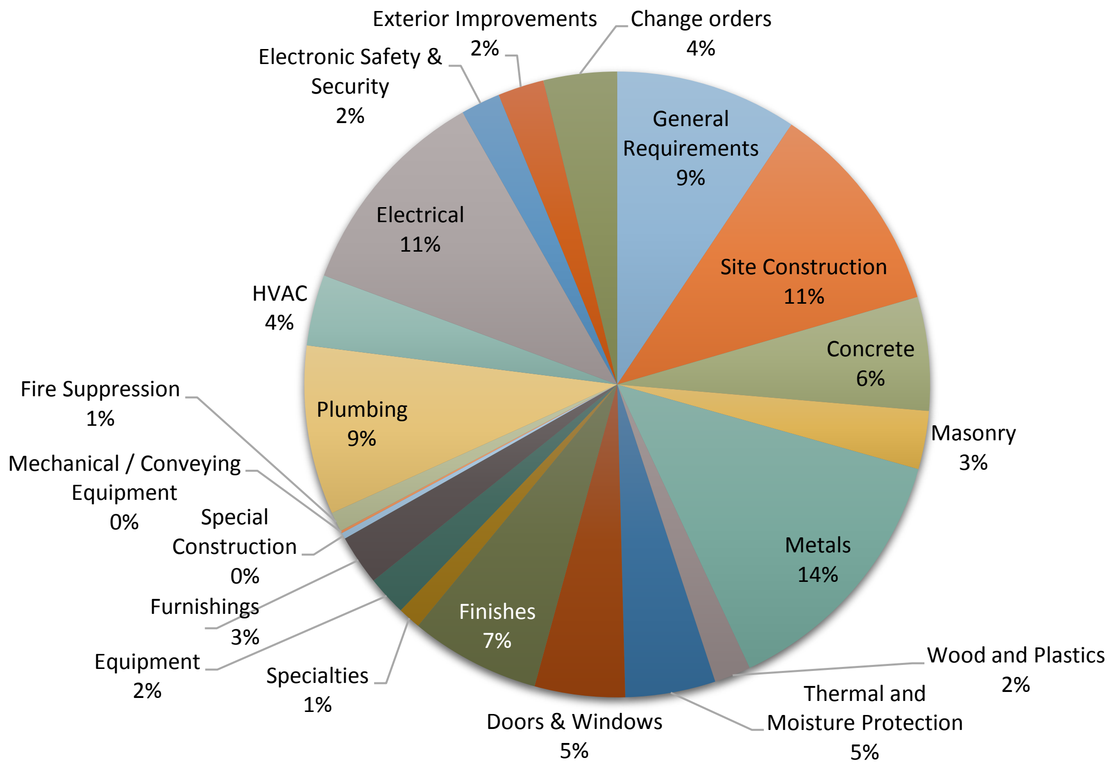
Project Cost:

Construction	$51,879,018
Consultants	$4,393,886
Equipment	$2,268,880
Project Admin	$1,028,490
Other	$1,375,332
	$60,945,606

Project Cost by Share:



Schedule of Values % of Construction Cost:



Clark County Skills Center, Evergreen School District
Vancouver, Washington

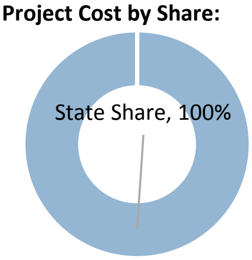
Educational Service District 112

Summary of Scope:	N/A
Project Dates:	N/A
2016 OSPI State Match for Evergreen SD	69.46%
Total Project Cost per District/OSPI Records:	$7,265,179
Total Construction Cost Adjusted Jan 2017:	$5,192,105
Gross Square Feet (GSF)	20,389
Construction $/SF (excludes Sales Tax)	$255

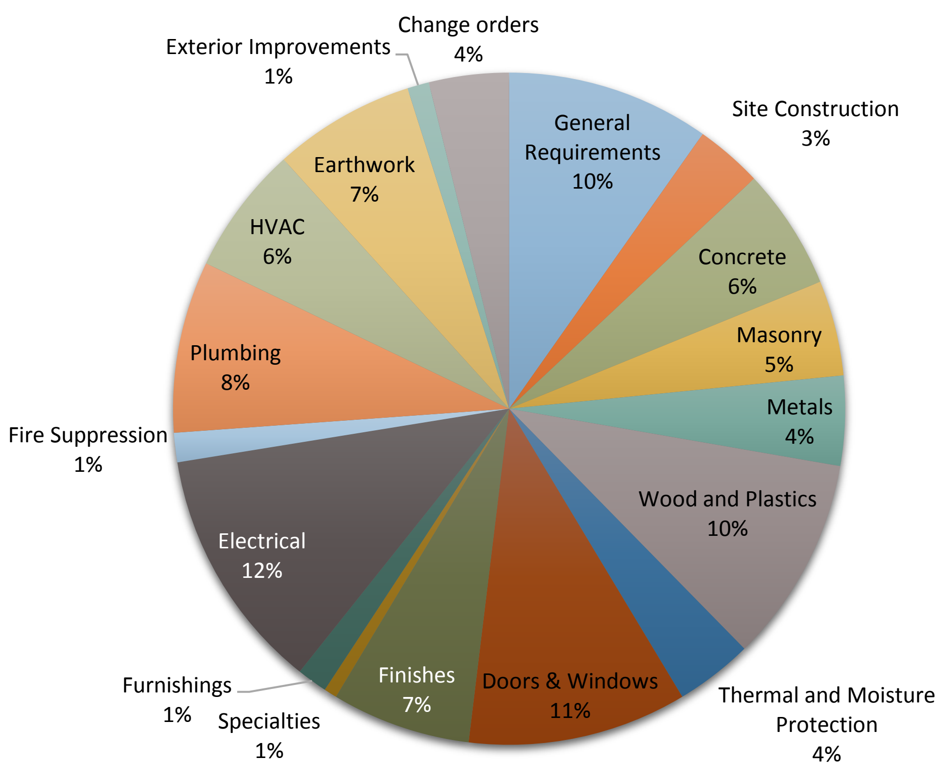
Source: No Data

Project Cost:	
Construction	$5,796,422
Consultants	$392,132
Equipment	$847,640
Project Admin	$187,000
Other	$41,985
	$7,265,179

Project Cost by Share:



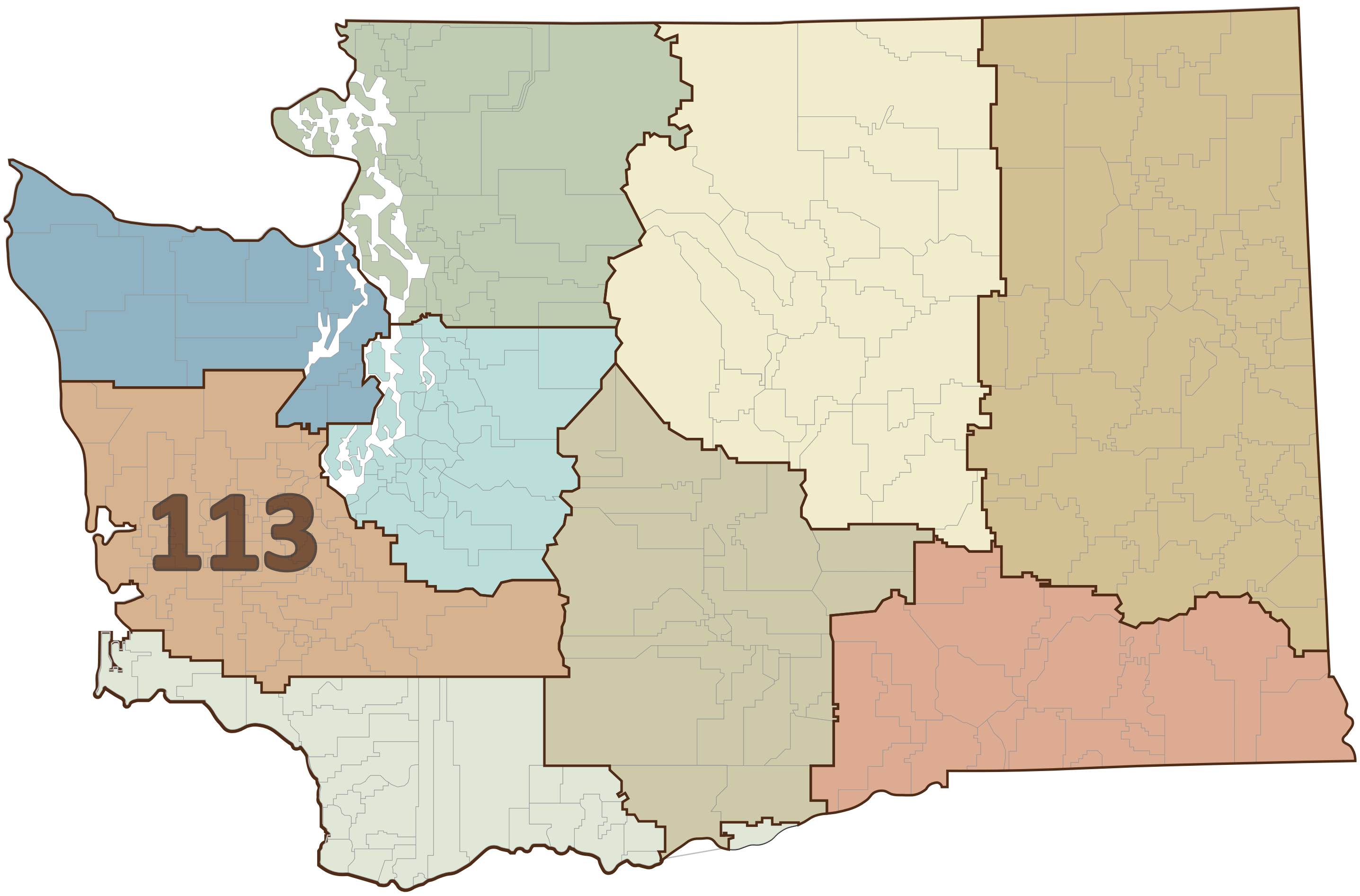
Schedule of Values % of Constrtuction Cost:



B. RESEARCH SAMPLE PROJECT SUMMARIES

ESD 113

6005 Tyee Drive SW
Tumwater, 98512
(360) 464-6700
http://www.esd113.org/



Evergreen Forest Elementary, North Thurston School District
Lacey, Washington

Educational Service District 113

Summary of Scope:	New Construction & Modernization
Project Dates:	July 2015 - ongoing
2014 OSPI State Match for North Thurston SD	60.44%
2016 OSPI State Match for North Thurston SD	60.96%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	498/518/513
Total Project Cost per District/OSPI Records:	$18,102,383
Total Construction Cost Adjusted Jan 2017:	$14,433,227
Gross Square Feet (GSF)	50,283
Construction $/SF (excludes Sales Tax)	$287

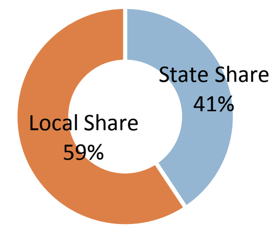
Source: Interview

Challenges: The increased civil costs due to required street improvements, stormwater ponds, and crosswalks. They incurred extra costs due to these delays.

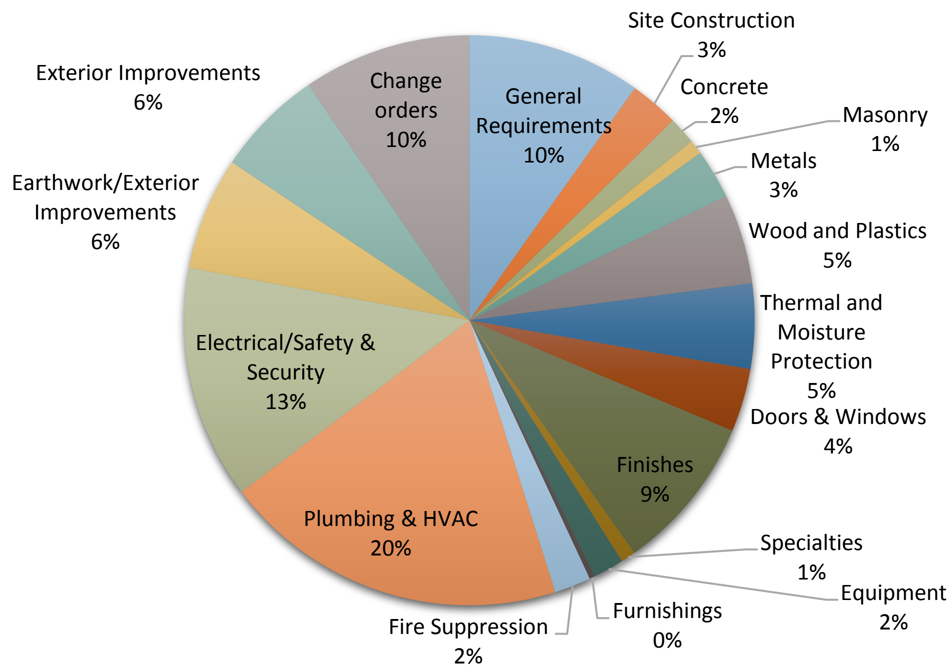
Project Cost:

Construction	$15,346,641
Consultants	$1,992,728
Equipment	$207,930
Project Admin	$310,000
Other	$245,084
	$18,102,383

Project Cost by Share:



Schedule of Values % of Construction Cost:



Salish Middle School, North Thurston School District
Lacey, Washington

Educational Service District 113

Summary of Scope:	New Construction
Project Dates:	7/2015-9/2016
2014 OSPI State Match for North Thurston SD	60.44%
2016 OSPI State Match for North Thurston SD	60.96%
Student Enrollment Data (Projected/2015 OSPI Data)	750/677
Total Project Cost per District/OSPI Records:	$34,552,574
Total Construction Cost Adjusted Jan 2017:	$28,840,344
Gross Square Feet (GSF)	110,020
Construction $/SF (excludes Sales Tax)	$262

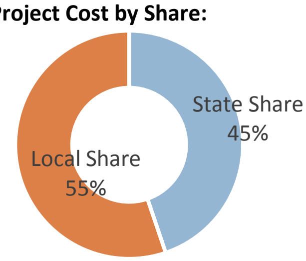
Source: Interview

Unique Issues: They installed a lighted crossswalk, there were seven construction change directives. The sitework featured stormwater and environmental set asides, the comment was made that these regulations increase the need for more land for schools than in the past.

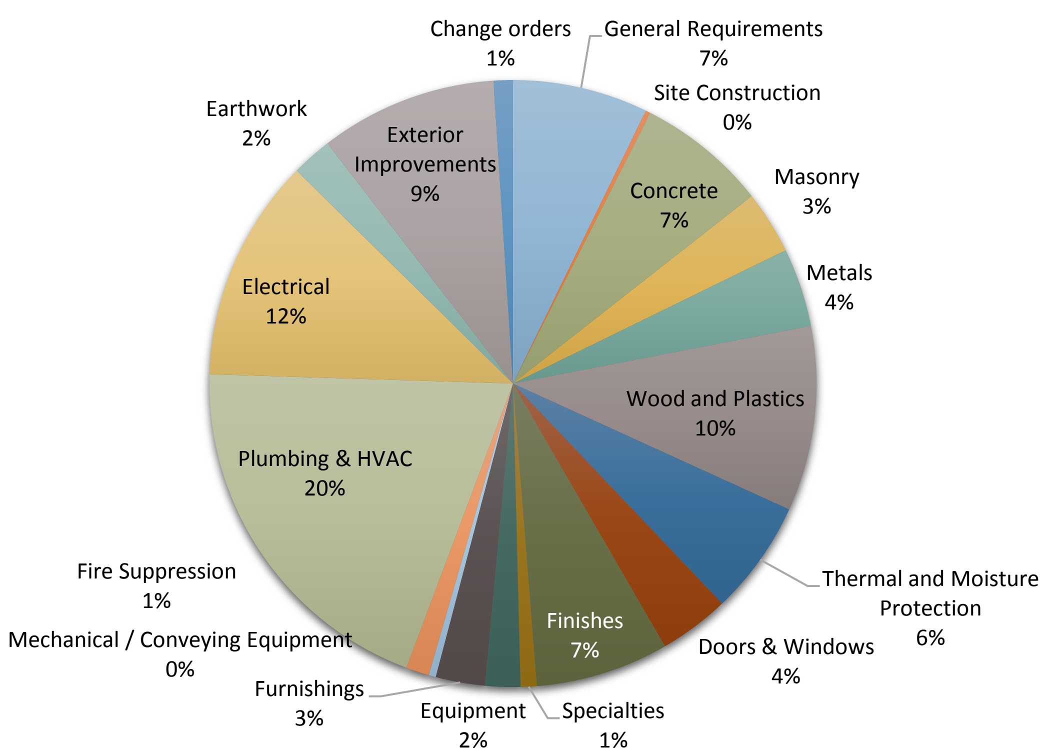
Project Cost:

Construction	$29,209,436
Consultants	$2,733,688
Equipment	$676,105
Project Admin	$760,000
Other	$1,173,345
	$34,552,574

Project Cost by Share:



Schedule of Values % of Construction Cost:



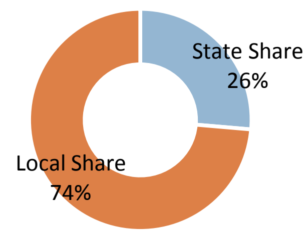
North Mason High School, North Mason School District
Belfair, Washington

Educational Service District 113

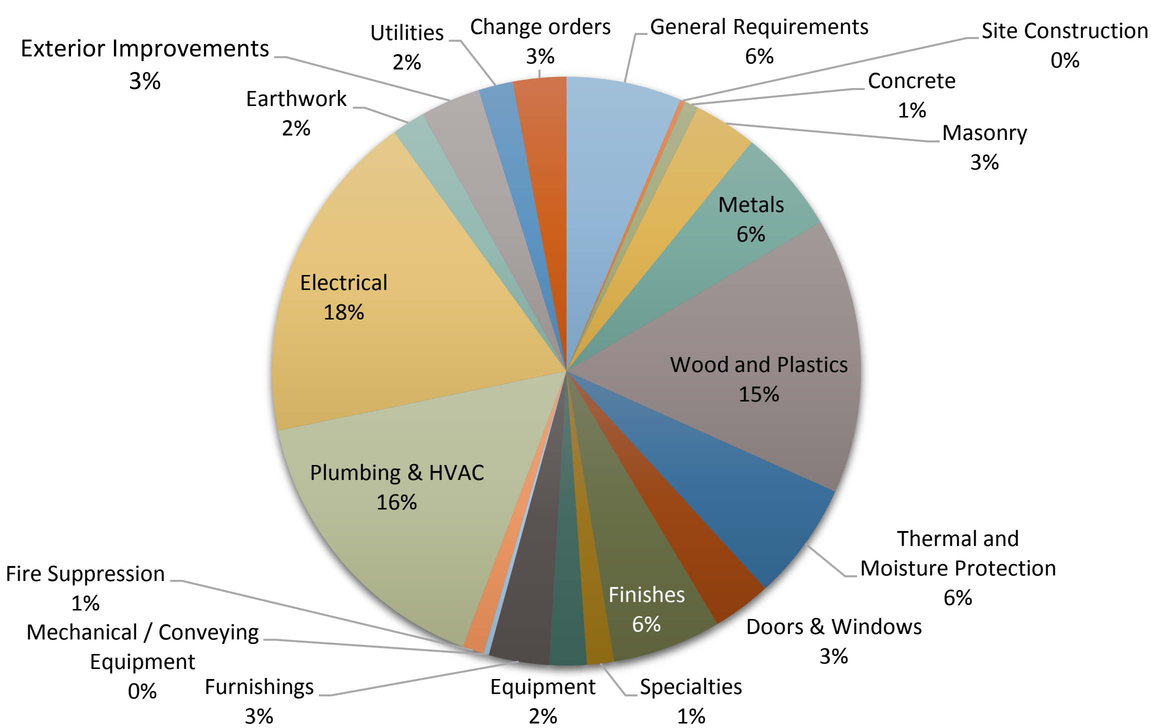
Summary of Scope:	New Construction	**Source:** No Data
Project Dates:	7/2014 - 8/2015	
2014 OSPI State Match for North Mason SD	44.48%	
2016 OSPI State Match for North Mason SD	48.74%	
Student Enrollment Data (2015 OSPI Data)	739	
Total Project Cost per District/OSPI Records:	$35,785,775	
Total Construction Cost Adjusted Jan 2017:	$31,527,263	
Gross Square Feet (GSF)	119,903	
Construction $/SF (excludes Sales Tax)	$263	

Project Cost:	
Construction	$30,933,000
Consultants	$3,397,094
Equipment	$733,496
Project Admin	$722,185
Other	$0
	$35,785,775

Project Cost by Share:



Schedule of Values % of Construction Cost:



North Thurston High, North Thurston School District
Lacey, Washington

Educational Service District 113

Summary of Scope:	New Construction
Project Dates:	7/2015 - 6/2016
2014 OSPI State Match for North Thurston SD	60.44%
2016 OSPI State Match for North Thurston SD	60.96%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	1438/1491/1504
Total Project Cost per District/OSPI Records:	$27,884,055
Total Construction Cost Adjusted Jan 2017:	$22,756,353
Gross Square Feet (GSF)	77,422
Construction $/SF (excludes Sales Tax)	$294

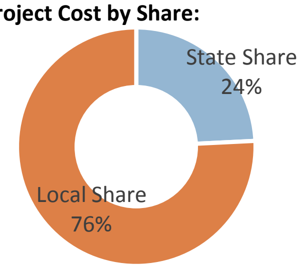
Source: Interview

Unique Issues: New stormwater regulations were in place, they were building on an occupied campus, and the project featured seismic upgrades to current codes.

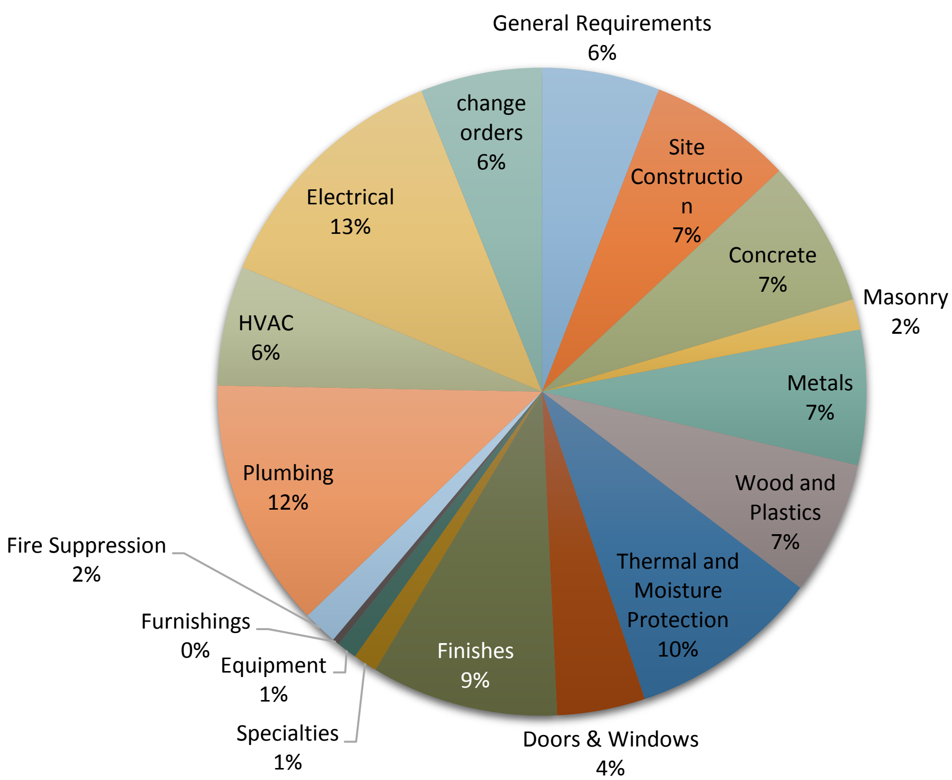
Project Cost:

Construction	$23,504,281
Consultants	$2,796,504
Equipment	$380,852
Project Admin	$1,005,127
Other	$197,291
	$27,884,055

Project Cost by Share:



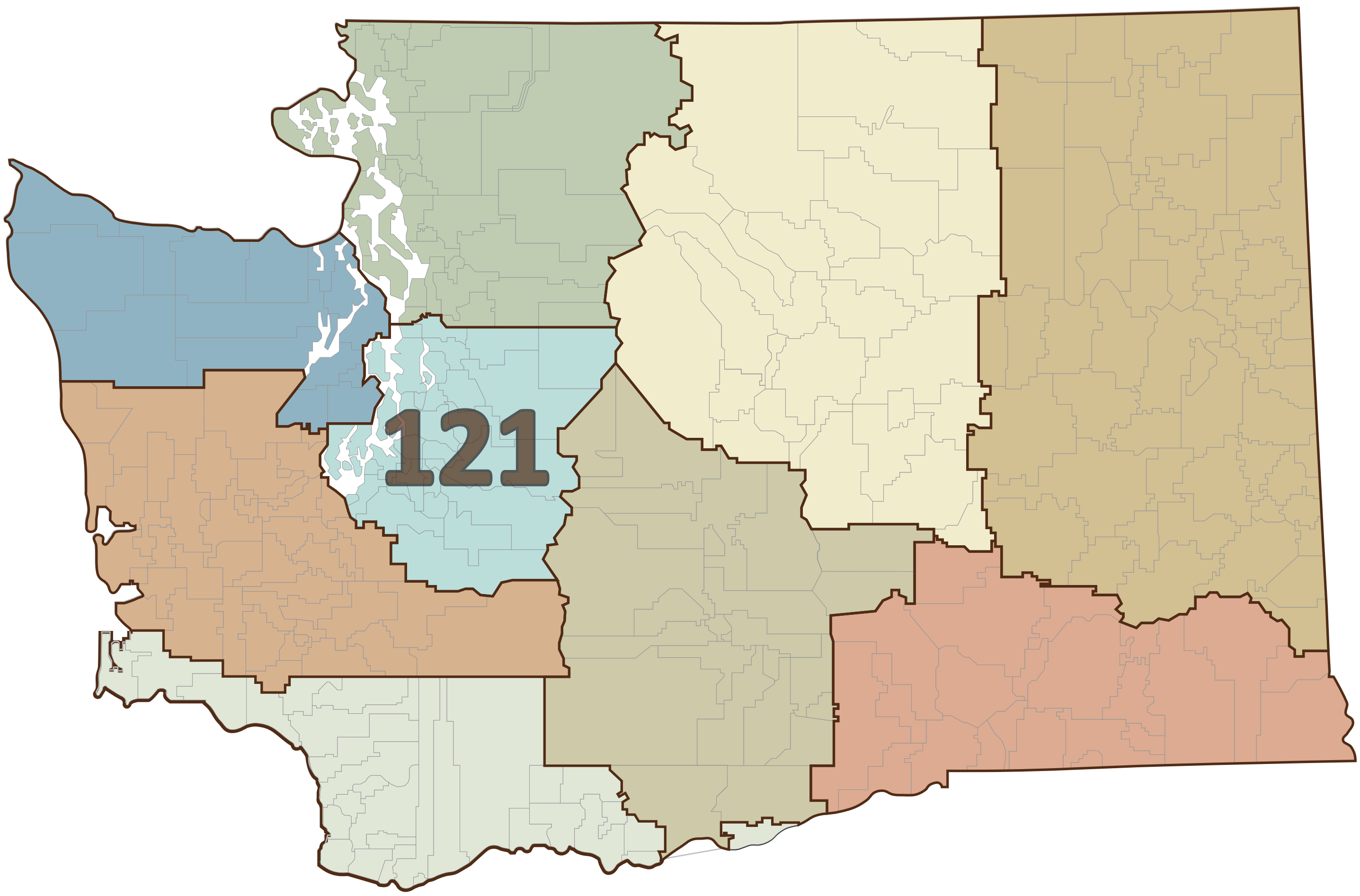
Schedule of Values % of Construction Cost:



B. RESEARCH SAMPLE PROJECT SUMMARIES

ESD 121 - Puget Sound

800 Oakesdale Ave. SW
Renton, 98057
(425) 917-7600
(800) 664-4549
http://www.psesd.org



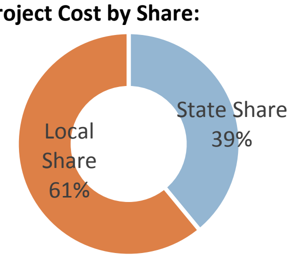
Federal Way High School, Federal Way School District
Federal Way, Washington

Educational Service District 121

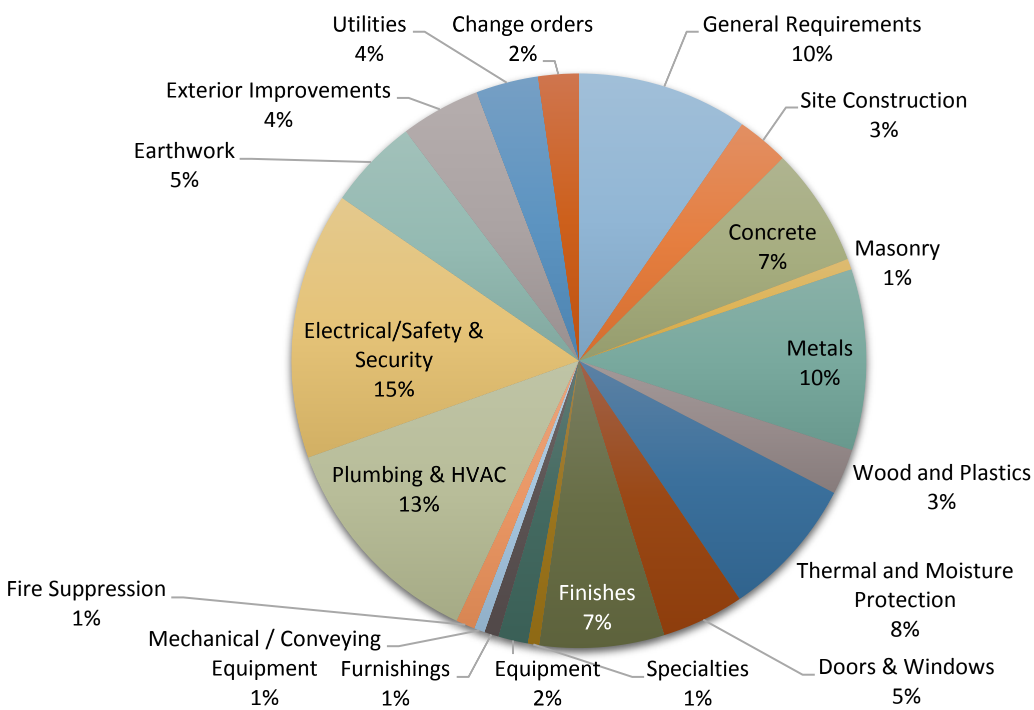
Summary of Scope:	Addition & New Construction	**Source:** No Data
Project Dates:	11/2014 - 9/2016	
2014 OSPI State Match for Federal Way SD	66.10%	
2016 OSPI State Match for Federal Way SD	65.59%	
Student Enrollment Data (At Design/2015 OSPI Data)	1636/1611	
Total Project Cost per District/OSPI Records:	$86,458,012	
Total Construction Cost Adjusted Jan 2017:	$70,619,183	
Gross Square Feet (GSF)	237,777	
Construction $/SF (excludes Sales Tax)	$297	

Project Cost:	
Construction	$73,411,354
Consultants	$6,499,562
Equipment	$1,791,207
Project Admin	$1,911,250
Other	$2,844,639
	$86,458,012

Project Cost by Share:



Schedule of Values % of Construction Cost



Islander Middle School, Mercer Island School District
Mercer Island, Wa

Educational Service District 121

Summary of Scope:	New Construction
Project Dates:	3/2015 - 12/2016
2014 OSPI State Match for Mercer Island SD	20.00%
2016 OSPI State Match for Mercer Island SD	20.00%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	1055/1200/1104
Total Project Cost per District/OSPI Records:	$43,786,883
Total Construction Cost Adjusted Jan 2017:	$37,285,229
Gross Square Feet (GSF)	93,000
Construction $/SF (excludes Sales Tax)	$401

Special Features: The building has a green roof and solar panels.

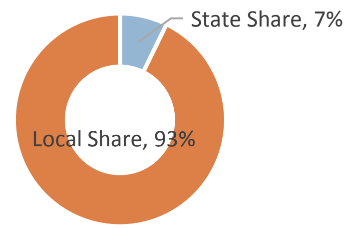
Unique Issues: There were issues with the soil, one of which was the discovery of a buried structure.

Challenges: Building on an occupied site presented a challenge.

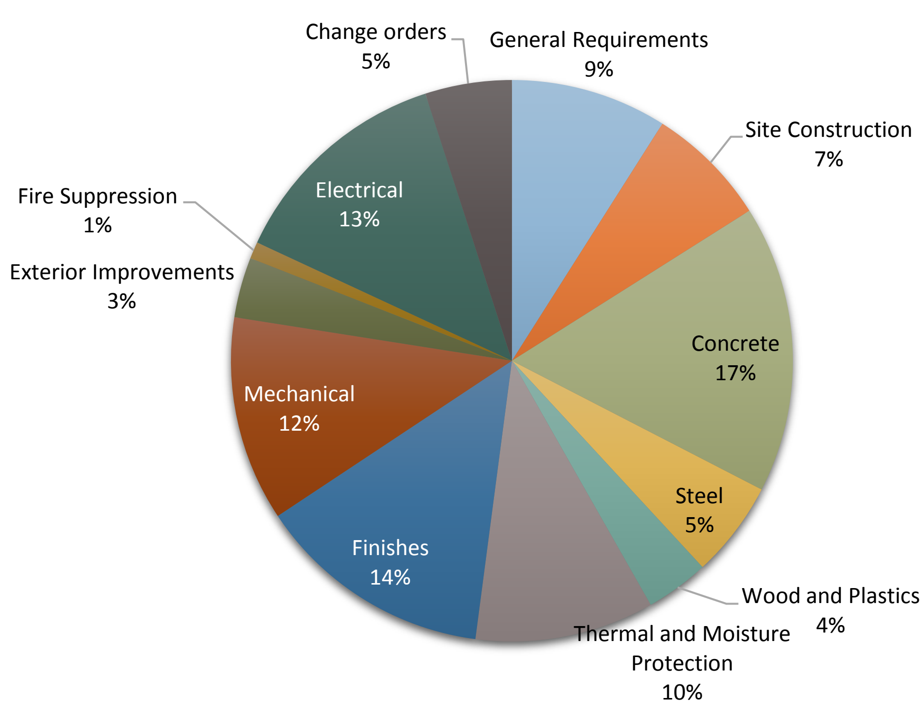
Project Cost:

Construction	$38,759,428
Consultants	$3,890,082
Equipment	$415,668
Project Admin	$354,880
Other	$366,825
	$43,786,883

Project Cost by Share:



Schedule of Values % of Construction Cost:



North Creek High School, Northshore School District
Bothell, Wa

Educational Service District 121

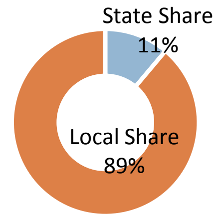
Summary of Scope:	New Construction
Project Dates:	7/2014- 10/2016
2014 OSPI State Match for North Shore SD	42.90%
2016 OSPI State Match for North Shore SD	41.64%
Student Enrollment Data (Projected)	1600
Total Project Cost per District/OSPI Records:	$110,122,799
Total Construction Cost Adjusted Jan 2017:	$99,258,658
Gross Square Feet (GSF)	238,606
Construction $/SF (excludes Sales Tax)	$416

Source: Survey
Special features: Flexible learning spaces, a wetland as a focal point supporting the curriculum, interpretive signage, geothermal heating, photo voltaic panels, black box theater, LED lighting, 3D modeling effort for construction. **Challenges:** Significant new right of way, road and frontage improvements, a large quantity of earth moving, moisure sensitive soils, jurisdictional requirements to be met, timelines for permitting, wetlands on the site, full athletic field development, and coordination with adjacent plat/home developers.
Unique Issues: Urban growth boundary splitting the middle of the site, which dictated building locations. 112 geothermal wells, expansive wetlands (1/3 of the site), as well as new public roads and improvements of roadways.

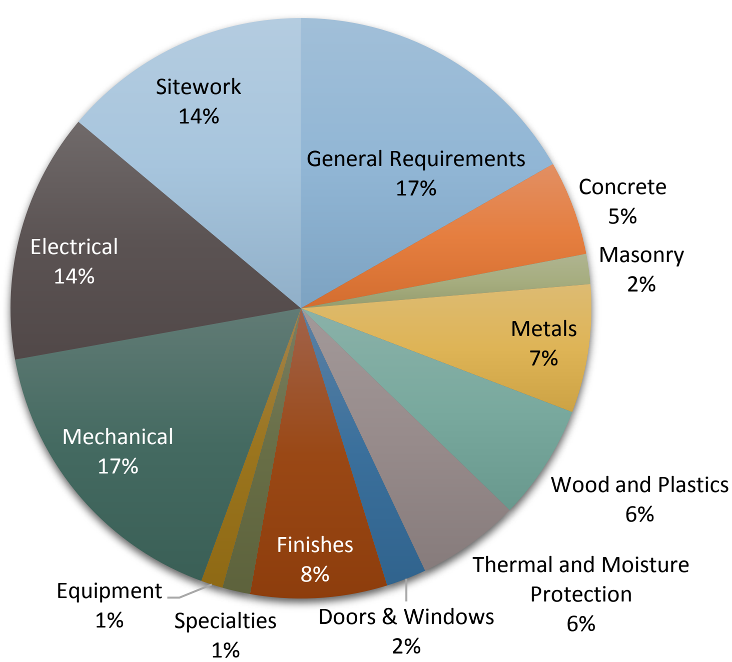
Project Cost:

Construction	$98,207,155
Consultants	$8,472,672
Equipment	$992,266
Project Admin	$843,792
Other	$1,606,914
	$110,122,799

Project Cost by Share:



Schedule of Values % of Construction Cost:



Pierce County Skills Center Phase 3, Bethel School District
Spanaway, Washington

Educational Service District 121

Summary of Scope:	New Construction
Project Dates:	3/2014 - 3/2015
Enrollment Goal: 200 FTE @ 5 years	
Total Project Cost per District/OSPI Records:	$11,609,796
Total Construction Cost Adjusted Jan 2017:	$7,929,630
Gross Square Feet (GSF)	24,800
Construction $/SF (excludes Sales Tax)	$320

Source: Survey

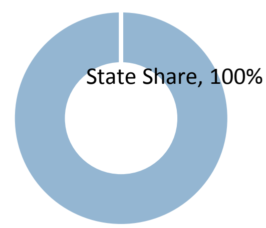
Special Features: This phase of the campus offers a great deal of space that can be used by the public/community. The state of the art culinary program, along with the design of the space, allows for students to cater events on site.

Challenges: Working on an active school site.

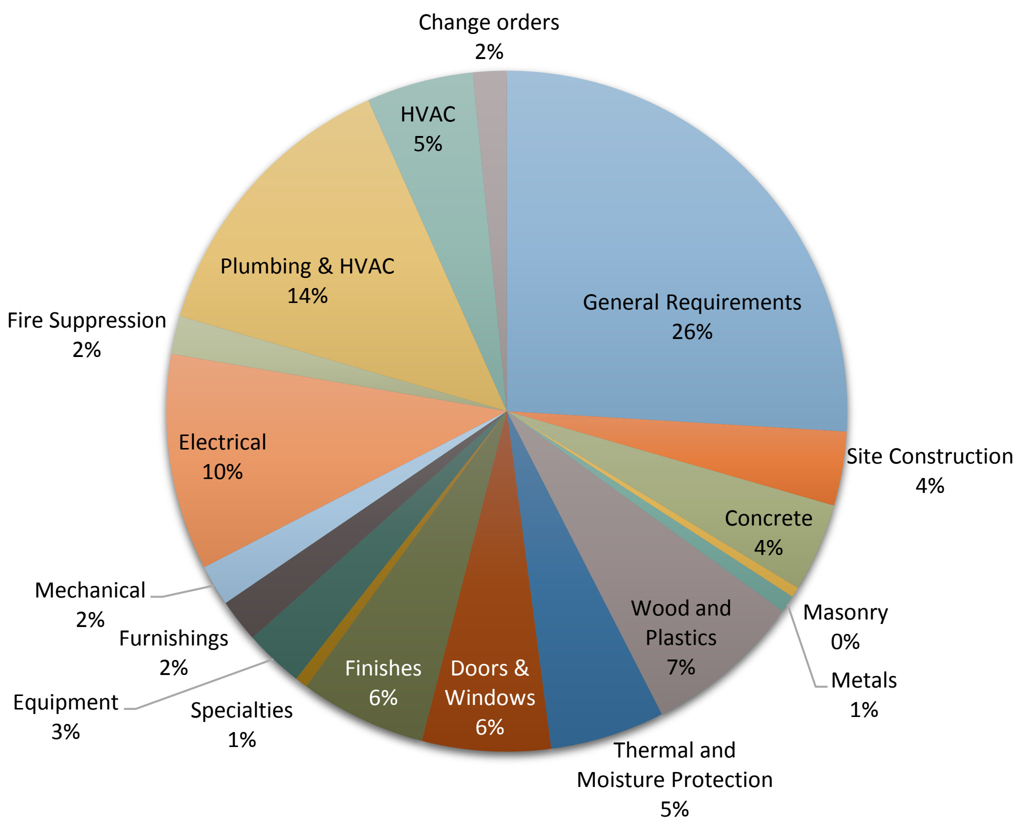
Project Cost:

Construction	$9,976,696
Consultants	$286,500
Equipment	$870,400
Project Admin	$250,000
Other	$226,200
	$11,609,796

Project Cost by Share:



Schedule of Values % of Construction Cost:



Tahoma High & Regional Learning Center, Tahoma School District Covington, Washington

Educational Service District 121

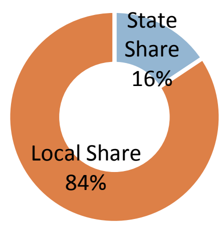
Summary of Scope:	New Construction
Project Dates:	6/2015-3/2017
2013 OSPI State Match for Tahoma SD	62.42%
2016 OSPI State Match for Tahoma SD	61.23%
nrollment Data (At Design/Projected/2015 OSPI Data)	2203/2400/1819
Total Project Cost per District/OSPI Records:	$131,214,321
Total Construction Cost Adjusted Jan 2017:	$114,367,029
Gross Square Feet (GSF)	315,000
Construction $/SF (excludes Sales Tax)	$363

Source: Survey
Special features: The project features STEM focused spaces including Robotic, Material Sciences, Tech, Sports Medicine, Auto, Mechatronics, and Project Spaces outside each classroom wing.
Challenges: These were land procurement and balancing the site.
Unique Issues: Wetlands and grade issues: the original site was a golf course with 40 ft variation in grade across the building pad.

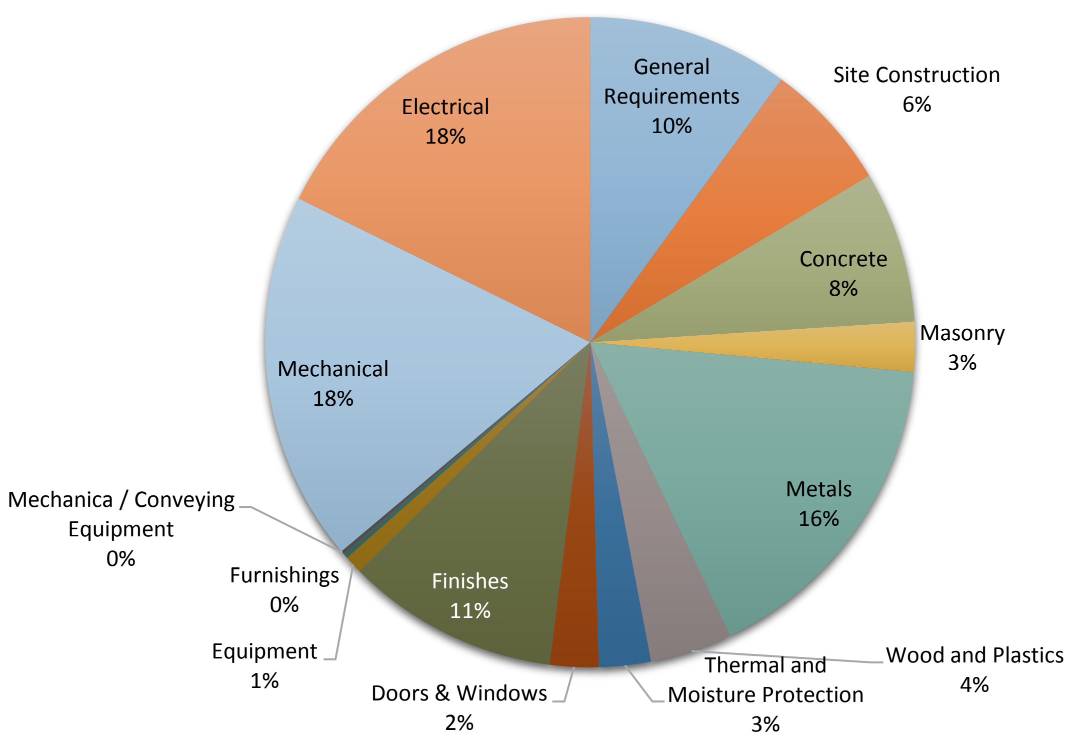
Project Cost:

Construction	$117,718,243
Consultants	$8,541,791
Equipment	$1,118,026
Project Admin	$2,799,101
Other	$1,037,160
	$131,214,321

Project Cost by Share:



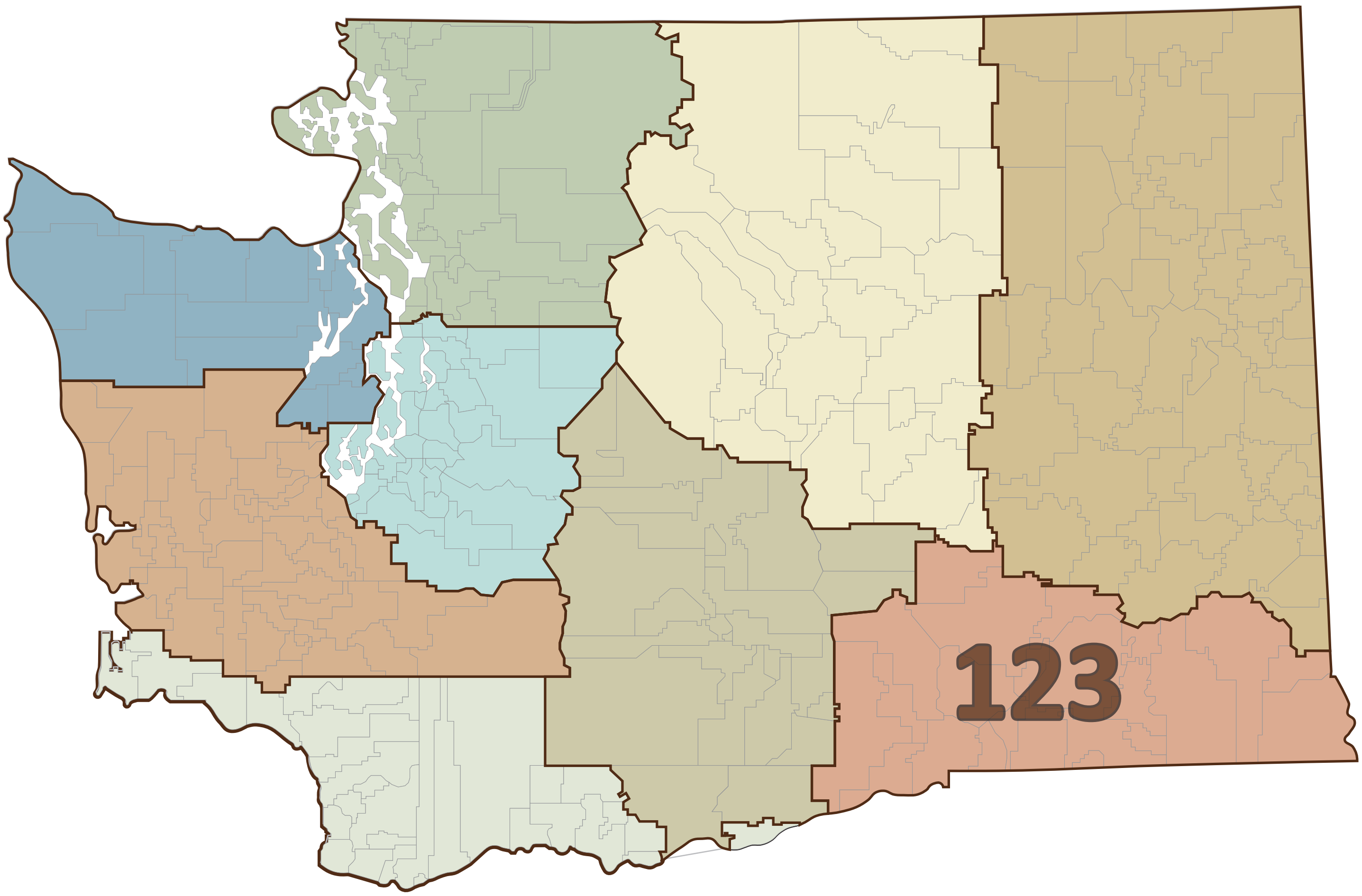
Schedule of Values % of Construction Cost:



B. RESEARCH SAMPLE PROJECT SUMMARIES

ESD 123

3918 W. Court St.
Pasco, 99301
(509) 547-8441
http://www.esd123.org

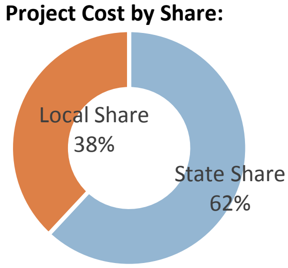


Marie Curie Elementary, Pasco School District
Pasco, Washington
Educational Service District 123

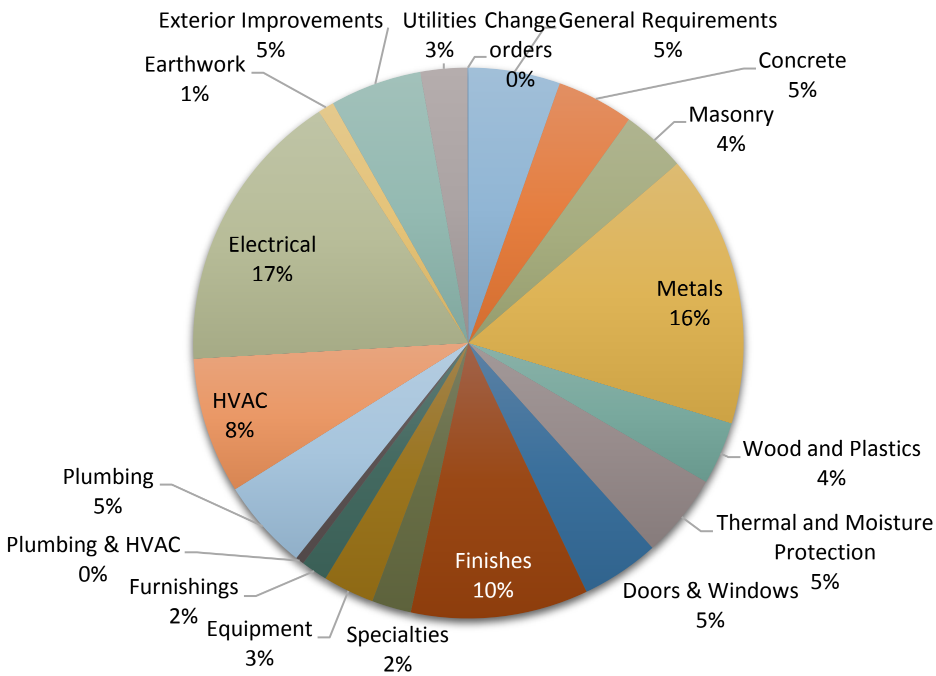
Summary of Scope:	New Constuction	**Source:** No Data
Project Dates:	7/2014-8/2015	
2013 OSPI State Match for Pasco SD	81.76%	
2016 OSPI State Match for Pasco SD	82.02%	
Student Enrollment Data (Projected/2015 OSPI Data)	900/793	
Total Project Cost per District/OSPI Records:	$21,839,503	
Total Construction Cost Adjusted Jan 2017:	$18,995,535	
Gross Square Feet (GSF)	72,847	
Construction $/SF (excludes Sales Tax)	$261	

Project Cost:	
Construction	$19,420,822
Consultants	$1,755,837
Equipment	$291,971
Project Admin	$370,873
Other	$0
	$21,839,503

Project Cost by Share:



Schedule of Values % of Construction Cost:



Eastgate Elementary, Kennewick School District
Kennewick, Washington
Educational Service District 123

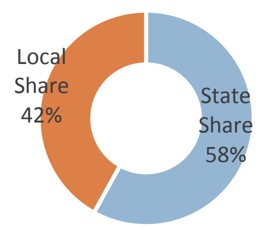
Summary of Scope:	Addition & New Construction
Project Dates:	April 2014 - August 2015
2009 OSPI State Match for Kennewick SD	79.79%
2016 OSPI State Match for Kennewick SD	77.17%
Student Enrollment Data (At Design/2015 OSPI Data)	560/551
Total Project Cost per District/OSPI Records:	$17,371,272
Total Construction Cost Adjusted Jan 2017:	$15,104,246
Gross Square Feet (GSF)	56,356
Construction $/SF (excludes Sales Tax)	$268

Source: Survey

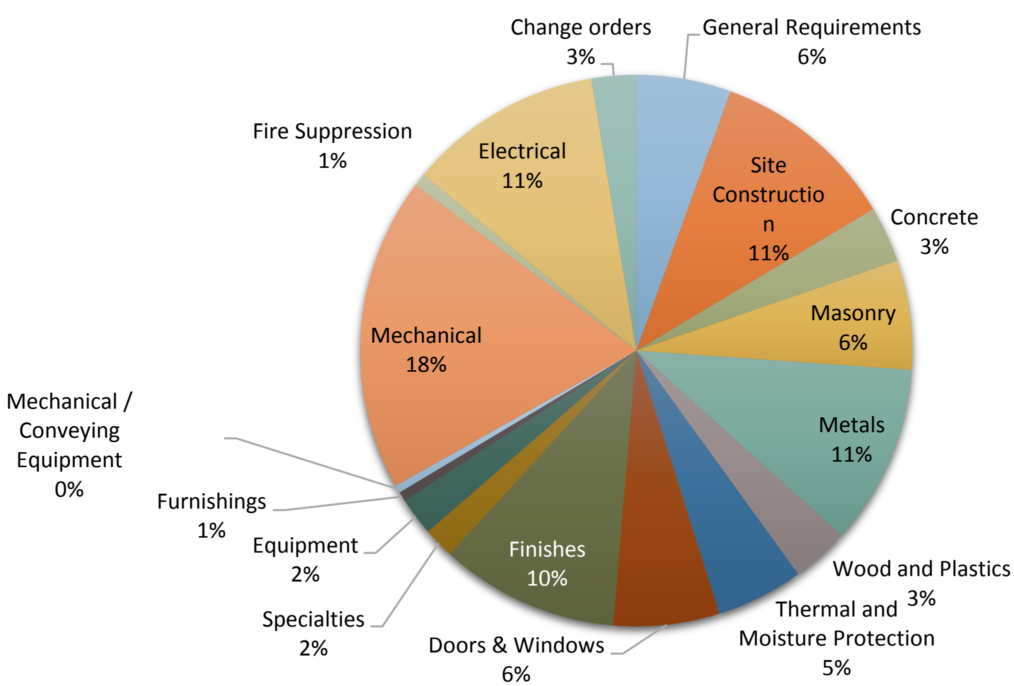
Challenges: The old school was demolished while the new school was being constructed on the site.

Project Cost:	
Construction	$15,556,930
Consultants	$949,108
Equipment	$224,664
Project Admin	$239,860
Other	$400,710
	$17,371,272

Project Cost by Share:



Schedule of Values % of Construction Cost:



Lewis & Clark Elementary, Richland School District
Richland, Washington

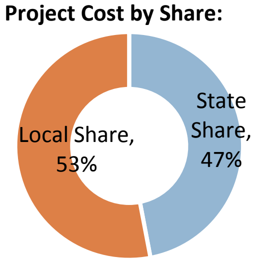
Educational Service District 123

Summary of Scope:	Construction
Project Dates:	May 2014 -July 2015
2014 OSPI State Match for Richland SD	66.02%
2016 OSPI State Match for Richland SD	70.49%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	493/630/577
Total Project Cost per District/OSPI Records:	$20,642,918
Total Construction Cost Adjusted Jan 2017:	$260
Gross Square Feet (GSF)	64,390
Construction $/SF (excludes Sales Tax)	$16,766,459

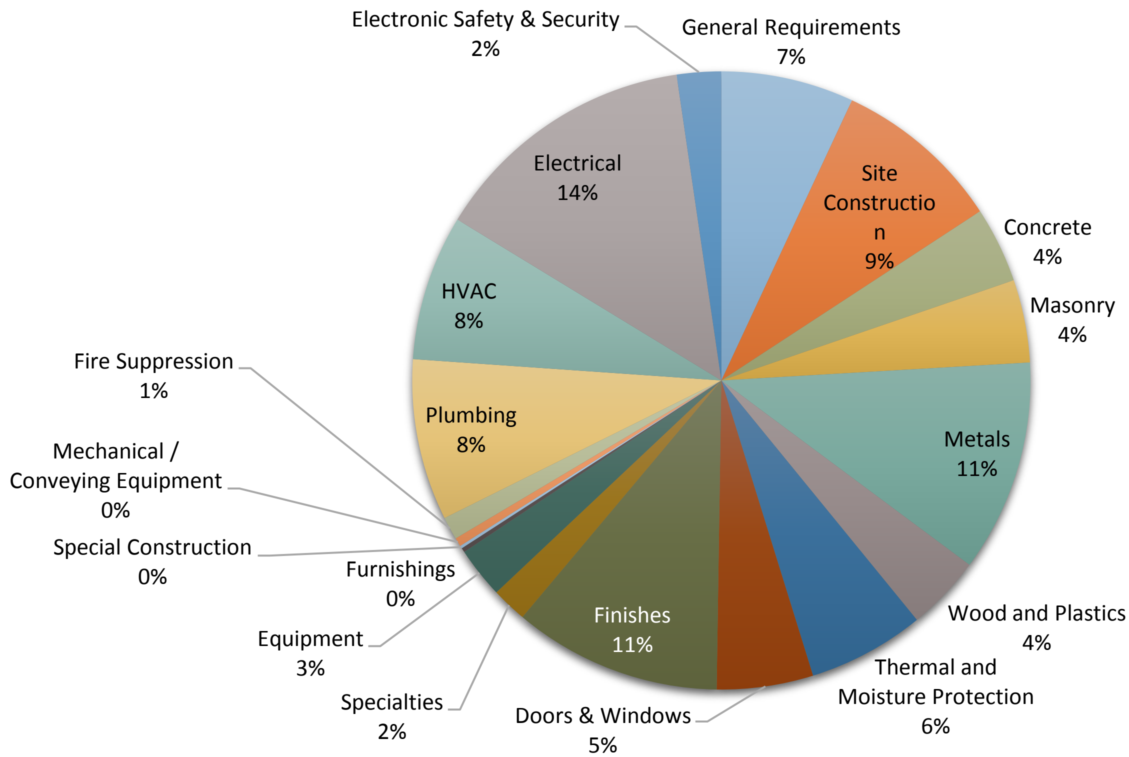
Source: Survey
Special Features: The building security, LED lighting and energy efficient systems were special features of this project.
Challenges: There was undesirable fill discovered during initial civil work.
Unique Issues: The above undesirable fill discovered was both a challenge and a unique issue.

Project Cost:	
Construction	$17,268,960
Consultants	$1,887,947
Equipment	$784,137
Project Admin	$701,874
Other	$0
	$20,642,918

Project Cost by Share:



Schedule of Values % of Construction Cost:



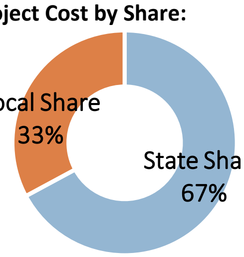
Rosalind Franklin Elementary, Pasco School District
Pasco, Washington

Educational Service District 123

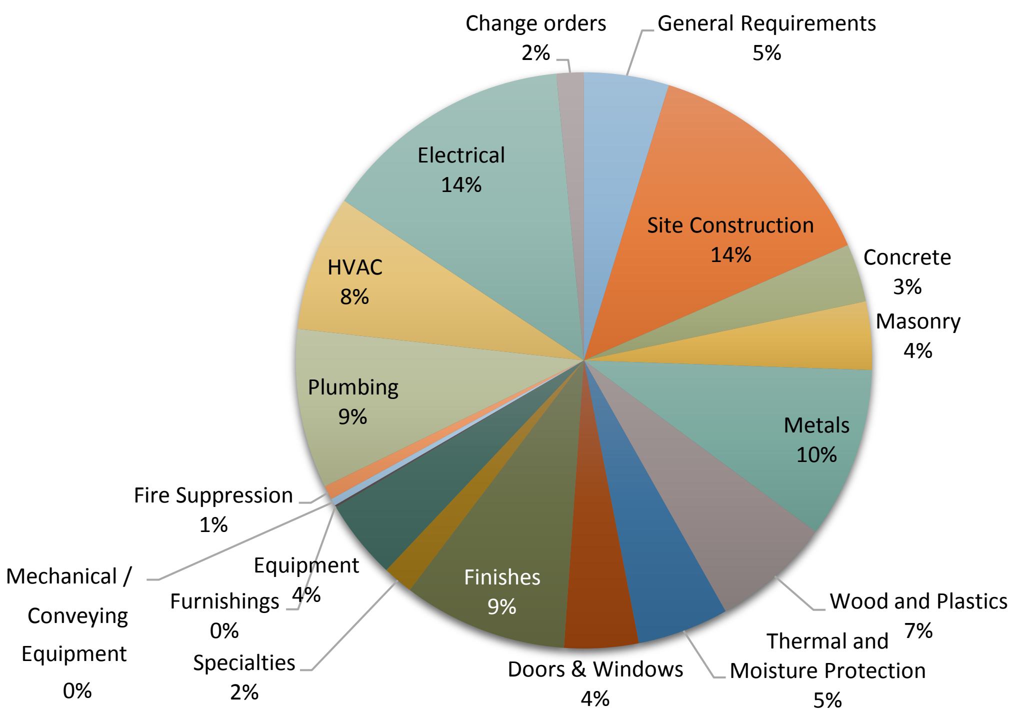
Summary of Scope:	New Construction	**Source:** No Data
Project Dates:	7/2013-7/2014	
2012 OSPI State Match for Pasco SD	84.04%	
2016 OSPI State Match for Pasco SD	82.02%	
Student Enrollment Data (Projected/2015 OSPI Data)	900/745	
Total Project Cost per District/OSPI Records:	$20,115,443	
Total Construction Cost Adjusted Jan 2017:	$17,616,280	
Gross Square Feet (GSF)	70,891	
Construction $/SF (excludes Sales Tax)	$248	

Project Cost:	
Construction	$17,614,029
Consultants	$1,959,086
Equipment	$284,131
Project Admin	$258,197
Other	$0
	$20,115,443

Project Cost by Share:



Schedule of Values % of Construction Cost



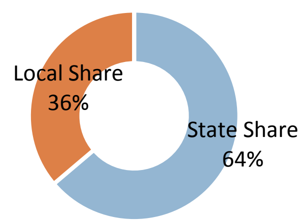
Barbara McClintock Elementary, Pasco School District
Pasco, Washington

Educational Service District 123

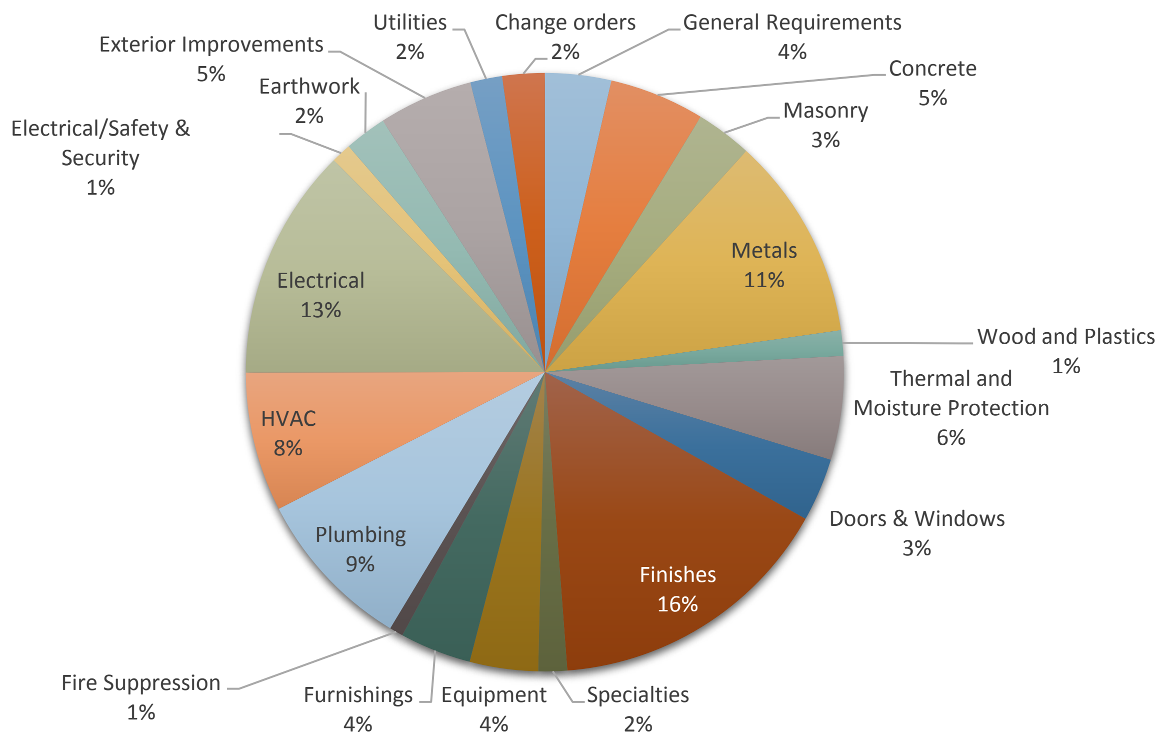
Summary of Scope:	New Construction	**Source:** No Data
Project Dates:	7/2014-8/2015	
2013 OSPI State Match for Pasco SD	81.76%	
2016 OSPI State Match for Pasco SD	82.02%	
Student Enrollment Data (Projected/2015 OSPI Data)	900/679	
Total Project Cost per District/OSPI Records:	$18,105,645	
Total Construction Cost Adjusted Jan 2017:	$14,910,951	
Gross Square Feet (GSF)	62,434	
Construction $/SF (excludes Sales Tax)	$239	

Project Cost:	
Construction	$15,980,541
Consultants	$1,420,214
Equipment	$250,235
Project Admin	$454,655
Other	$0
	$18,105,645

Project Cost by Share:



Schedule of Values % of Construction Cost:



Orchard Elementary, Richland School District
Richland, Washington

Educational Service District 123

Summary of Scope:	New Construction
Project Dates:	7/2014-8/2015
2014 OSPI State Match for Richland SD	66.02%
2016 OSPI State Match for Richland SD	70.49%
Student Enrollment Data (Projected/2015 OSPI Data)	700/658
Total Project Cost per District/OSPI Records:	$21,985,153
Total Construction Cost Adjusted Jan 2017:	$248
Gross Square Feet (GSF)	71,330
Construction $/SF (excludes Sales Tax)	$17,693,974

Source: Survey

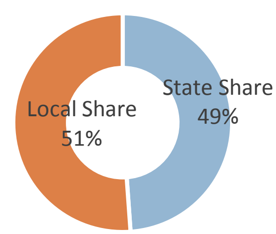
Special features: Special features of this project included building security, LED lighting and energy efficient systems.

Challenges: Some challenges were the high ground water, and storm water run off from the adjacent neighborhood.
Unique Issues: The site is on L-shaped property, and there were HOA covenant restrictions.

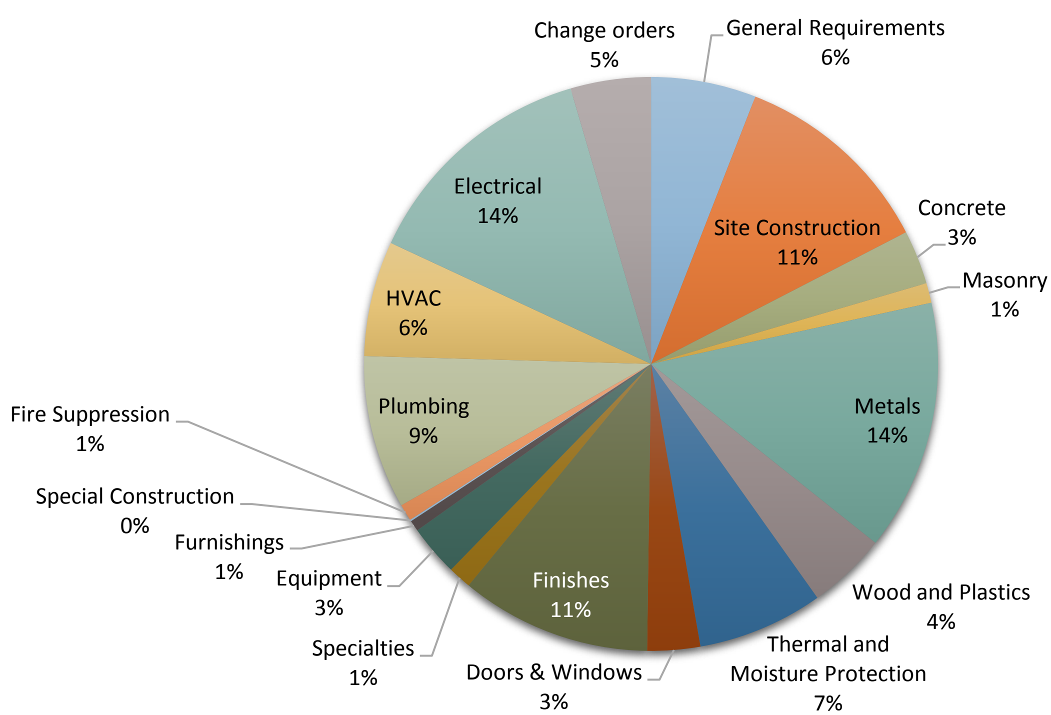
Project Cost:

Construction	$18,035,090
Consultants	$1,842,216
Equipment	$1,313,041
Project Admin	$789,517
Other	$5,289
	$21,985,153

Project Cost by Share:



Schedule of Values % of Construction Cost:



Sacajawea Elementary, Richland School District
Richland, Wa
Educational Service District 123

Summary of Scope:	New Construction
Project Dates:	6/2014 - 8/2015
2014 OSPI State Match for Richland SD	66.02%
2016 OSPI State Match for Richland SD	70.49%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	496/630/483
Total Project Cost per District/OSPI Records:	$19,691,584
Total Construction Cost Adjusted Jan 2017:	$15,896,182
Gross Square Feet (GSF)	64,390
Construction $/SF (excludes Sales Tax)	$247

Source: Survey

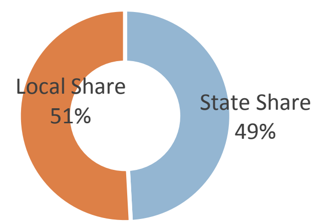
Special features: Special features of this project included building security, LED lighting and energy efficient systems.

Challenges: The school location wtih surrounding neighbors was a challenge. Unique Issues: The connection to the city sewer was re-directed during construction.

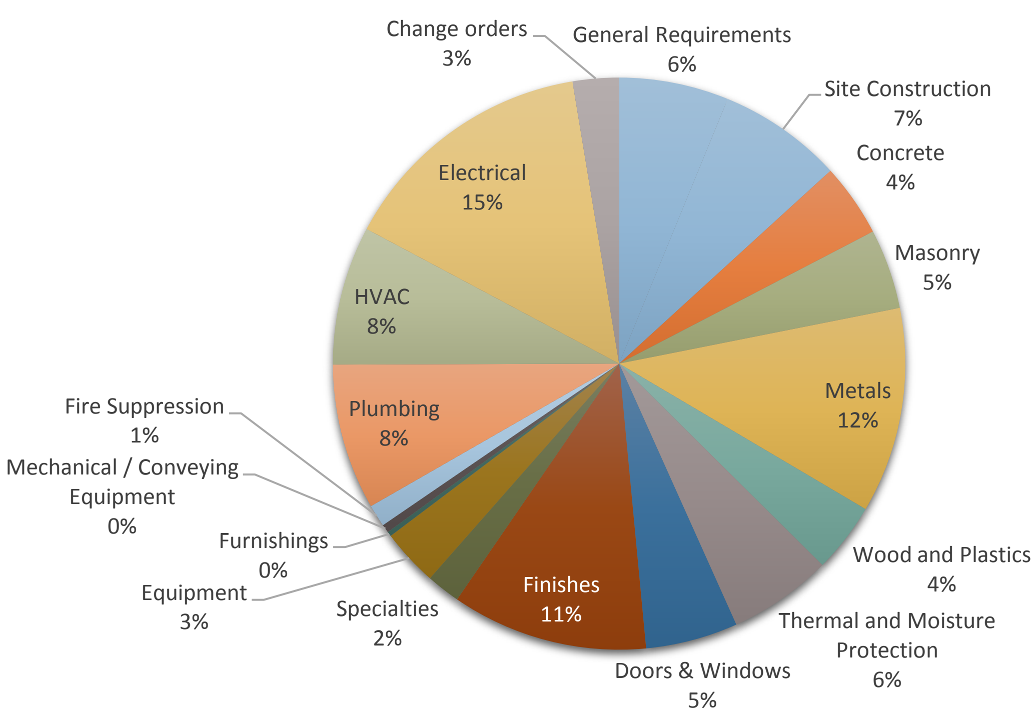
Project Cost:

Construction	$16,368,351
Consultants	$1,833,030
Equipment	$792,281
Project Admin	$697,922
Other	$0
	$19,691,584

Project Cost by Share:



Schedule of Values % of Construction Cost:



Sage Crest Elementary, Kennewick School District
Kennewick, Washington

Educational Service District 123

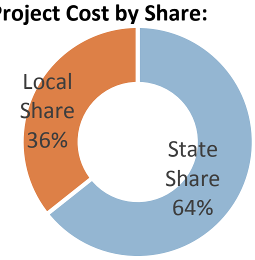
Summary of Scope:	New Construction
Project Dates:	5/2015 - 8/2016
2009 OSPI State Match for Kennewick SD	79.79%
2016 OSPI State Match for Kennewick SD	77.17%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	568/730/500
Total Project Cost per District/OSPI Records:	$16,002,565
Total Construction Cost Adjusted Jan 2017:	$14,300,799
Gross Square Feet (GSF)	56,356
Construction $/SF (excludes Sales Tax)	$254

Source: Survey

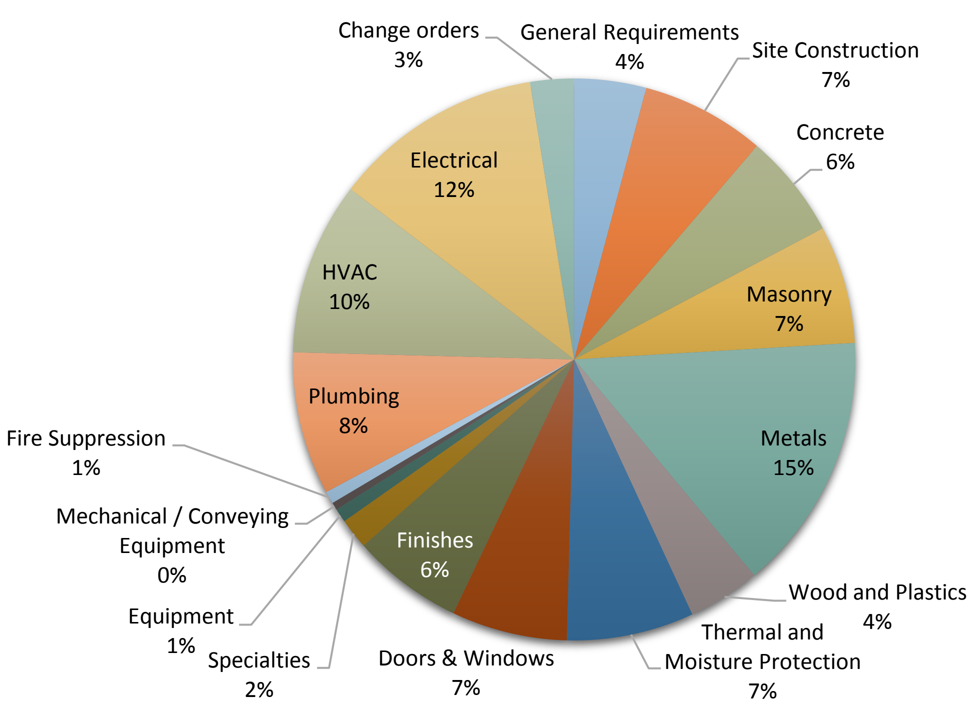
Challenges: The ground had more basalt than expected.

Project Cost:	
Construction	$14,754,660
Consultants	$779,187
Equipment	$233,043
Project Admin	$235,675
Other	**$0**
	$16,002,565

Project Cost by Share:



Schedule of Values % of Construction Cost:



Marcus Whitman Elementary, Richland School District
Richland, Washington

Educational Service District 123

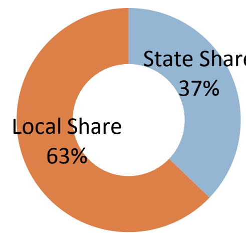
Summary of Scope:	New Construction
Project Dates:	3/2015 - 8/2016
2015 OSPI State Match for Richland SD	67.63%
2016 OSPI State Match for Richland SD	70.49%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	404/630/437
Total Project Cost per District/OSPI Records:	$20,072,279
Total Construction Cost Adjusted Jan 2017:	$16,912,768
Gross Square Feet (GSF)	64,390
Construction $/SF (excludes Sales Tax)	$263

Source: Survey
Special Features: Special features of this project included building security, LED lighting and energy efficient systems.
Challenges: The demo of the existing school, prior to construction of a new building with new mirrored orientation was one of the challenges.
Unique Issues: This was a shared site with Central Office Buildings.

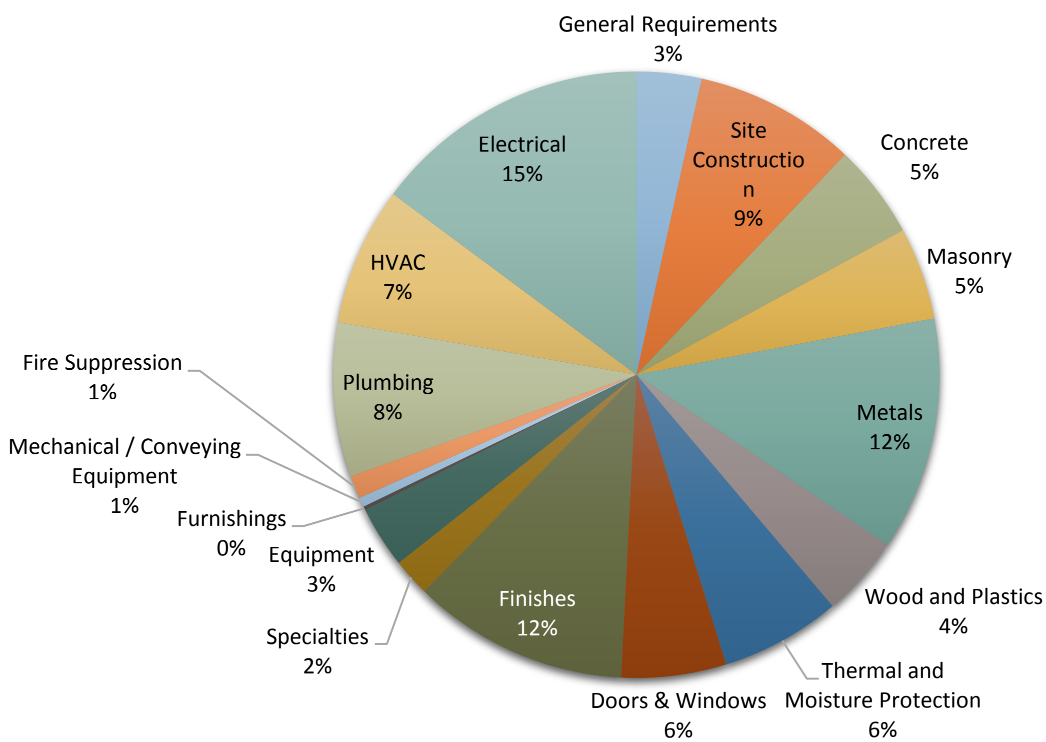
Project Cost:

Construction	$17,878,379
Consultants	$1,332,154
Equipment	$191,191
Project Admin	$480,505
Other	$190,050
	$20,072,279

Project Cost by Share:



Schedule of Values % of Construction Cost:



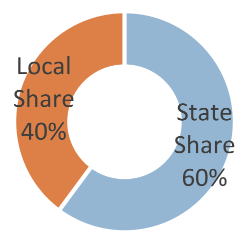
Delta High School, Pasco School District
Pasco, Washington
Educational Service District 123

Summary of Scope:	New Construction **Source:** No Data
Project Dates:	7/2014-8/2015
2014 OSPI State Match for Pasco SD	90.00%
2016 OSPI State Match for Pasco SD	82.02%
Student Enrollment Data (At Design/Projected/2015 OSPI Data)	100/300/400
Total Project Cost per District/OSPI Records:	$15,248,621
Total Construction Cost Adjusted Jan 2017:	$13,614,824
Gross Square Feet (GSF)	44,013
Construction $/SF (excludes Sales Tax)	$309

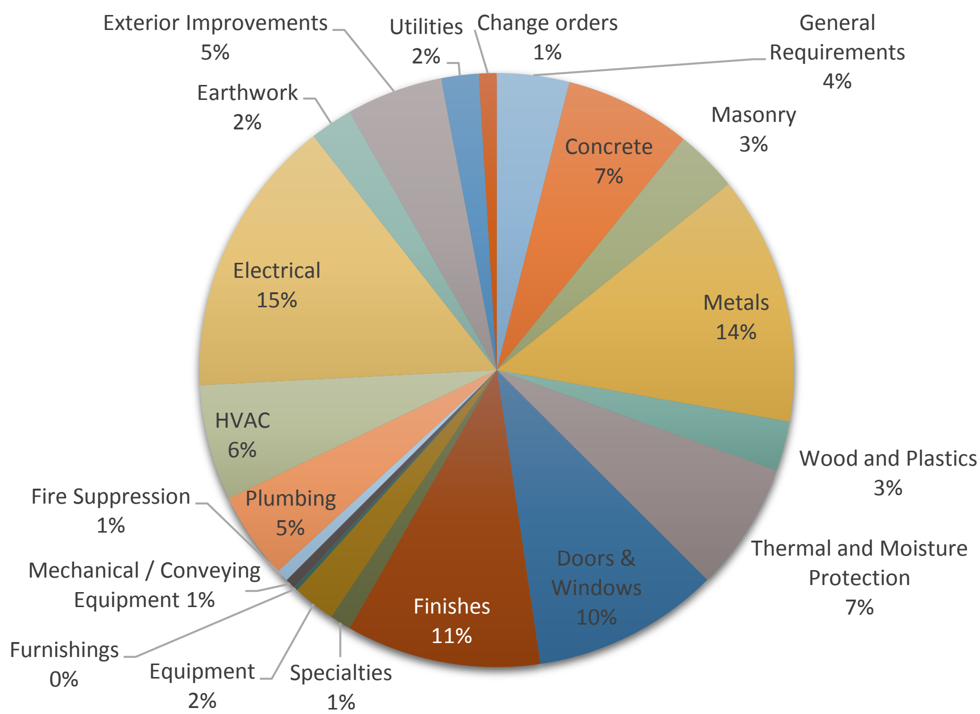
Project Cost:

Construction	$13,373,068
Consultants	$1,241,041
Equipment	$352,808
Project Admin	$281,704
Other	$0
	$15,248,621

Project Cost by Share:



Schedule of Values % of Construction Cost:



SEA-Tech Walla Walla - Tri-Tech Skills Center, Walla Walla
Walla Walla, Washington

Educational Service District 123

Summary of Scope:	New Construction
Project Dates:	2/2013 - 6/2014
Enrollment Goal: 100 FTE @ 5 years	
Total Project Cost per District/OSPI Records:	$10,303,000
Total Construction Cost Adjusted Jan 2017:	$8,726,558
Gross Square Feet (GSF)	32,771
Construction $/SF (excludes Sales Tax)	$266

Source: Survey

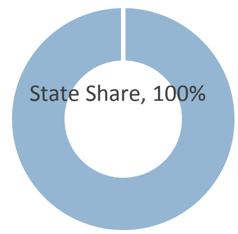
Special Features: The configurable design, water source heat pumps, mechanical mezzanine, and PV panels are some of the special features of this project.

Challenges: Designing an adaptable facility that can respond to changing educational programs was a challenge.

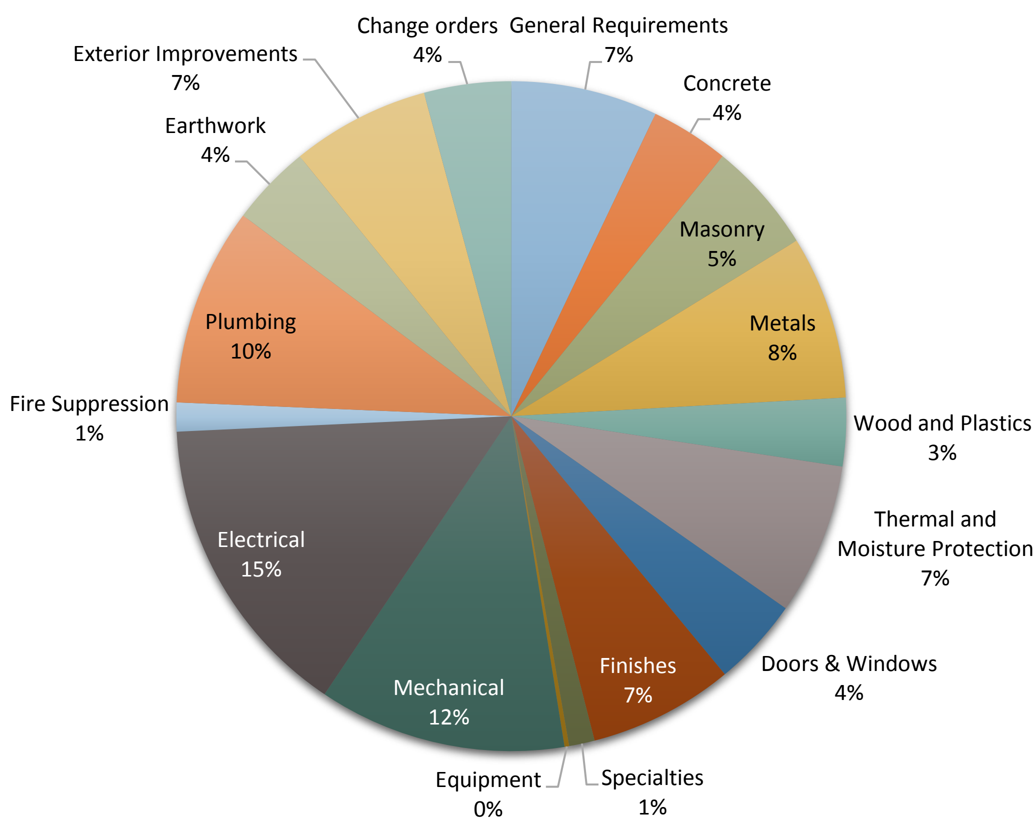
Unique Issues: The schools shares parking with the adjacent Walla Walla Community College. Some site work included unsuitable soils that had to be removed/replaced.

Project Cost:	
Construction	$8,252,314
Consultants	$484,228
Equipment	$1,026,084
Project Admin	$529,636
Other	$10,738
	$10,303,000

Project Cost by Share:



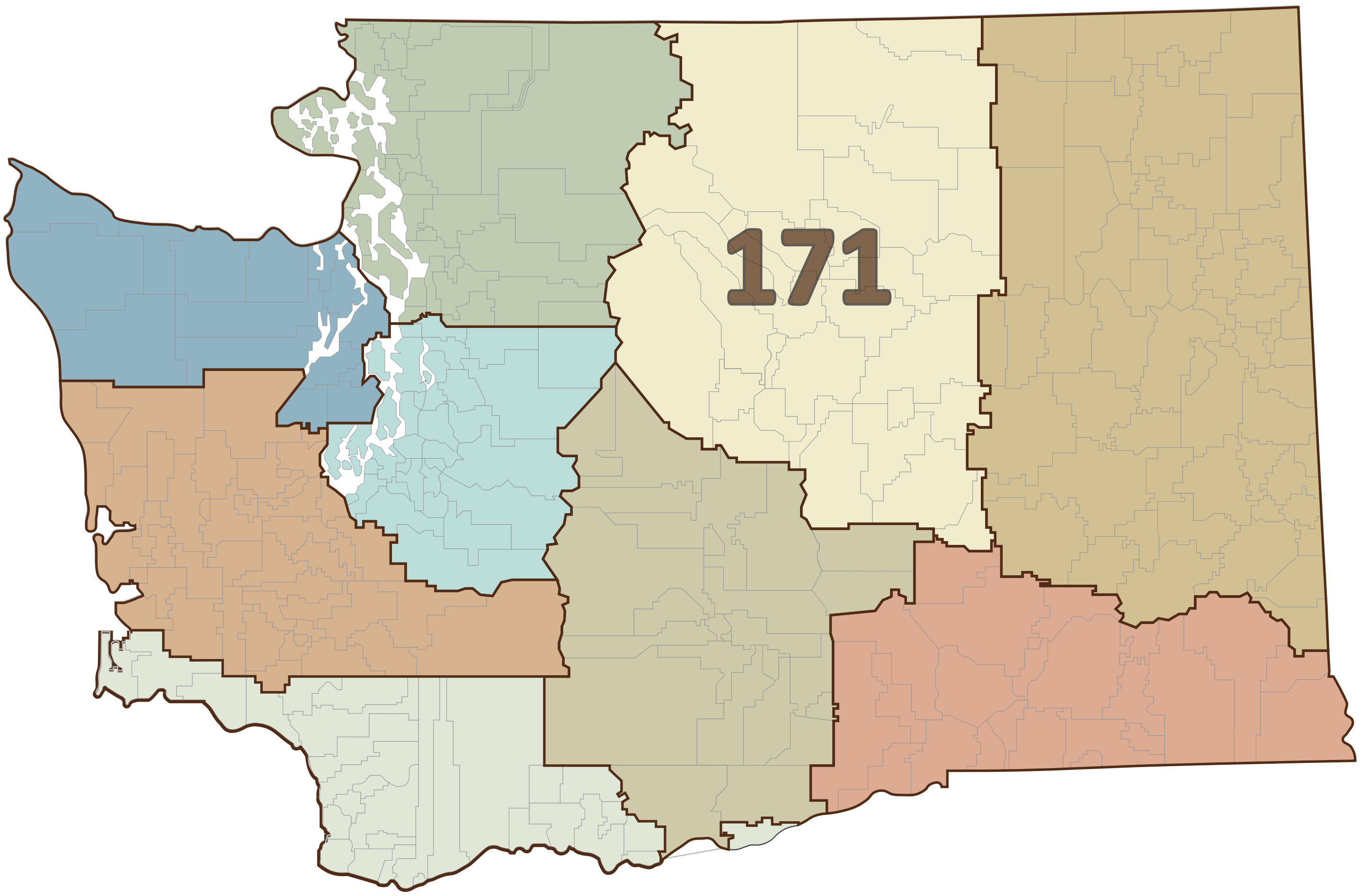
Schedule of Values % of Construction Cost:



B. RESEARCH SAMPLE PROJECT SUMMARIES

ESD 171 - North Central

430 Old Station Road
PO Box 1847
Wenatchee, 98801
(509) 665-2621
http://www.ncesd.org



Wenatchee Valley , Wenatchee School District
Wenatchee, Washington

Educational Service District 171

Summary of Scope:	Modernization and Addition
Project Dates:	November 2013-January 2015
Student Enrollment Data (At Design/Projected)	260/260
Total Project Cost per District/OSPI Records:	$9,500,000
Total Construction Cost Adjusted Jan 2017:	$6,911,057
Gross Square Feet (GSF)	50,754
Construction $/SF (excludes Sales Tax)	$136

Source: Survey

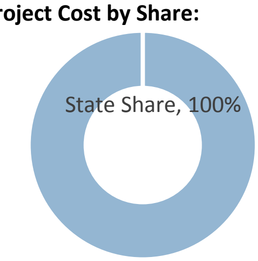
Special Features: The project remodeled an old warehouse, and relocated the auto tech program.

Challenges: The project was phased construction in an occupied building, which required education programs to move between phases. There were delays due to electrical issues, and easements.

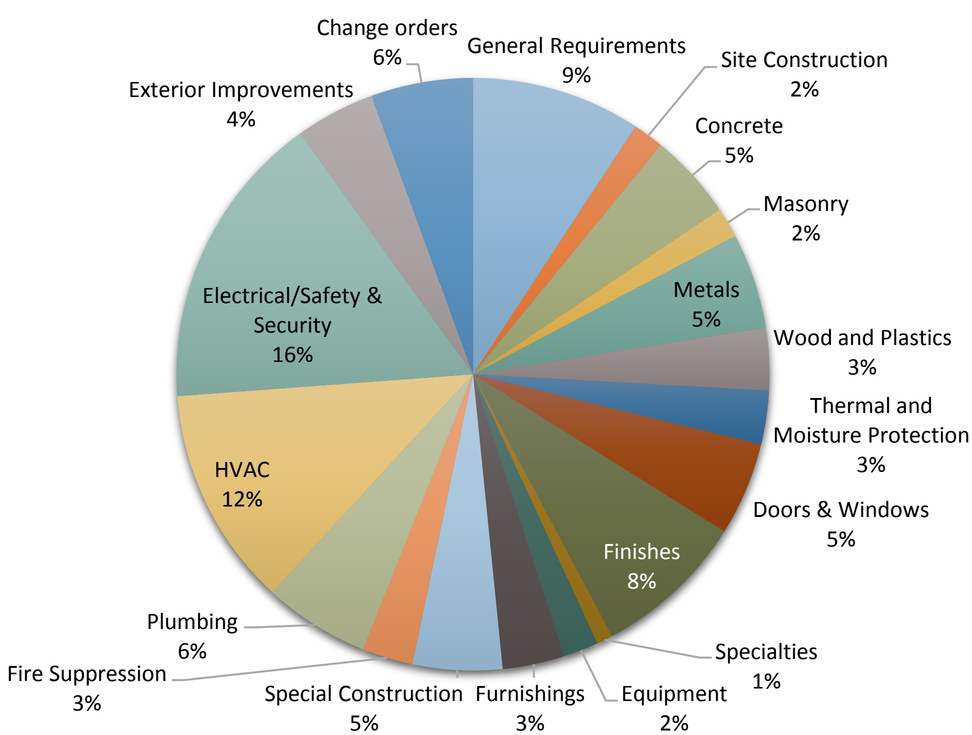
Project Cost:

Construction	$7,339,339
Consultants	$1,440,270
Equipment	$325,319
Project Admin	$303,975
Other	$91,097
	$9,500,000

Project Cost by Share:



Schedule of Values % of Construction Cost:



Columbia Basin Technical Skills Center, Moses Lake School District
Moses Lake, Washington

Educational Service District 105/171

Summary of Scope:	New Construction
Project Dates:	12/2012 - 6/2014
Total Project Cost per District/OSPI Records:	$19,211,845
Total Construction Cost Adjusted Jan 2017:	$15,166,207
Gross Square Feet (GSF)	46,563
Construction $/SF (excludes Sales Tax)	$326

Source: Survey

Special features: The solar panels generate electricity, which is then sold back to PUD. The facility is State of the Art.

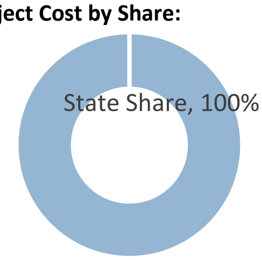
Challenges: Everything was created to industry standard, and was complex and costly as a result - i.e., ceiling height is much higher than the typical classroom.

Unique issues: $390,000 was spent on pit reclamation prior to beginning construction.

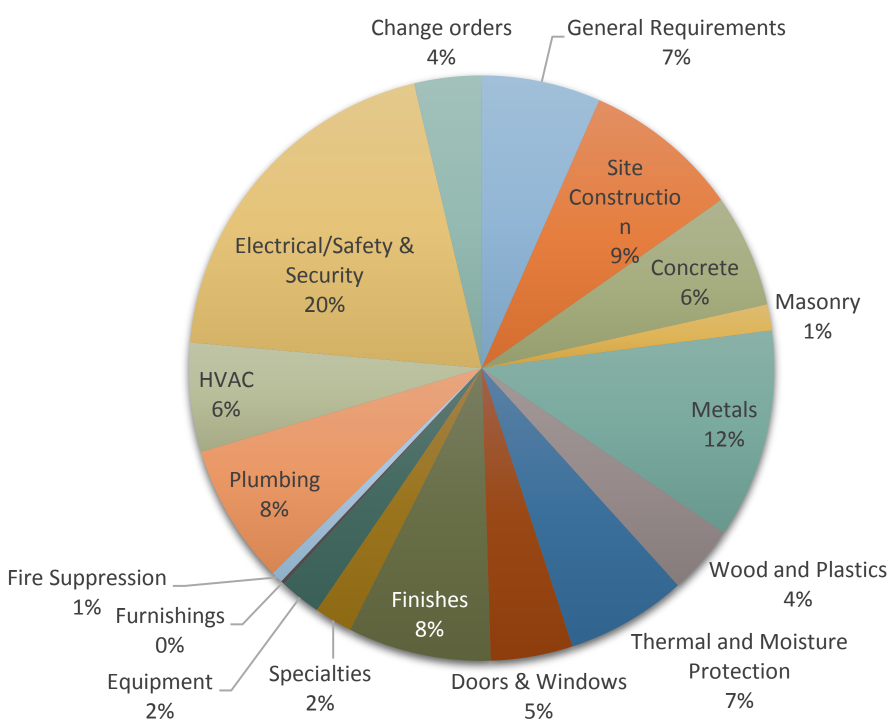
Project Cost:

Construction	$14,791,834
Consultants	$829,784
Equipment	$2,611,798
Project Admin	$329,750
Other	$648,679
	$19,211,845
Acquisition Cost:	$125,000

Project Cost by Share:



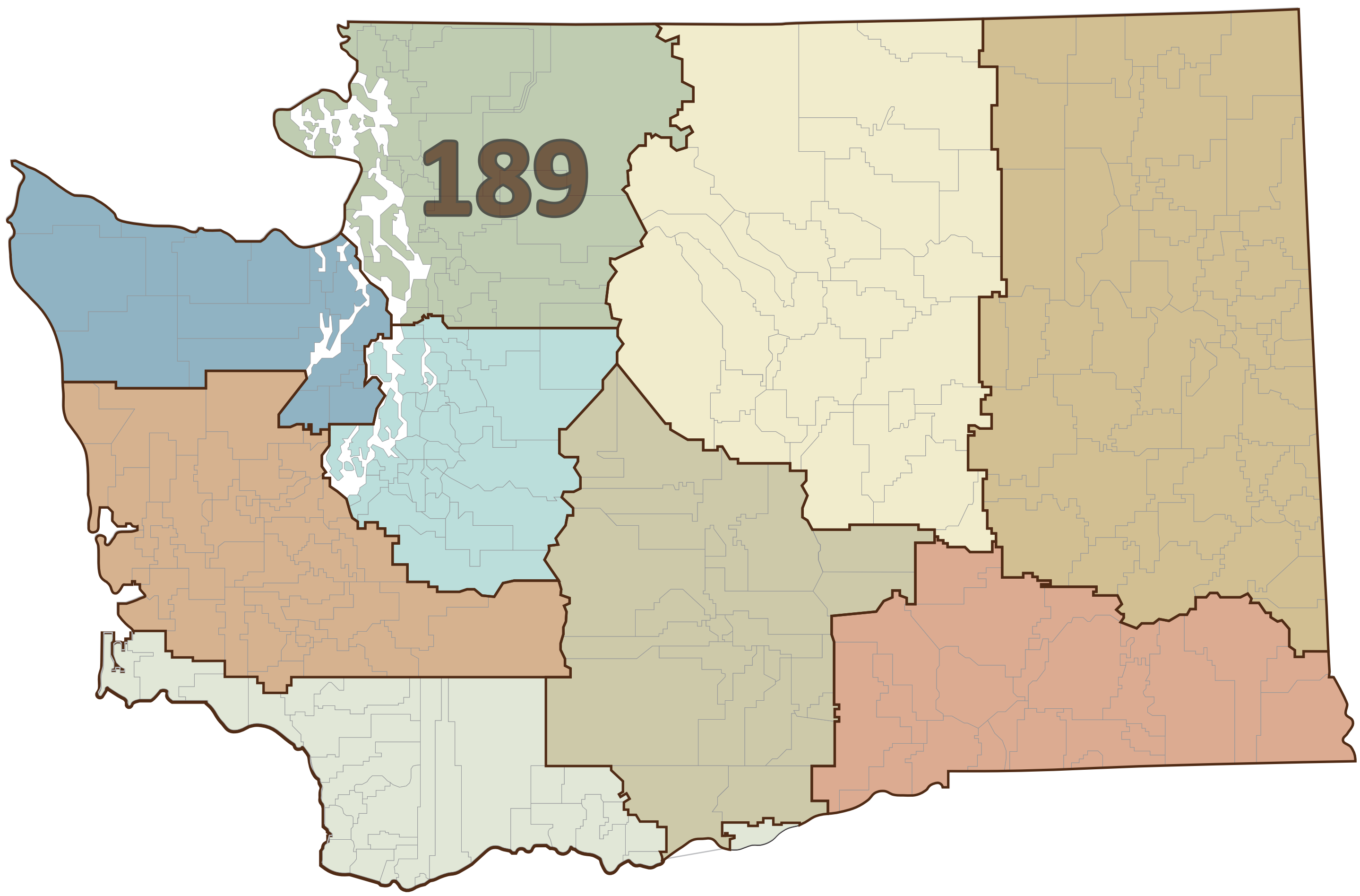
Schedule of Values % of Construction Cost:



B. RESEARCH SAMPLE PROJECT SUMMARIES

ESD 189 - Northwest

1601 R Avenue
Anacortes, 98221
(360) 299-4000
http://www.nwesd.org



Pierce County Skills Center Phase 1, Bethel School District
Spanaway, Washington

Educational Service District 189

Summary of Scope:	New Construction
Project Dates:	2/2010 (Ph1) - 2/2012
Enrollment Goal: 200 FTE @ 5 years	
Educational Service District 121	
Total Project Cost per District/OSPI Records:	$12,411,041
Total Construction Cost Adjusted Jan 2017:	$7,929,630
Gross Square Feet (GSF)	24,884
Construction $/SF (excludes Sales Tax)	$319

Source: Survey

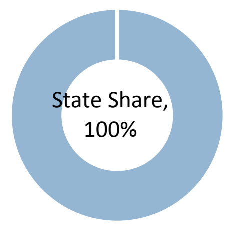
Special Features: This phase of the project included a “floating” floor in the technology classroom for access to infrastructure allowing students to change it according to the curriculum. The diversity of the building included classrooms for curriculum including Veterinarian technicians, criminal justice, health care and technology.

Challenges: Aligning construction schedule with a September school opening.

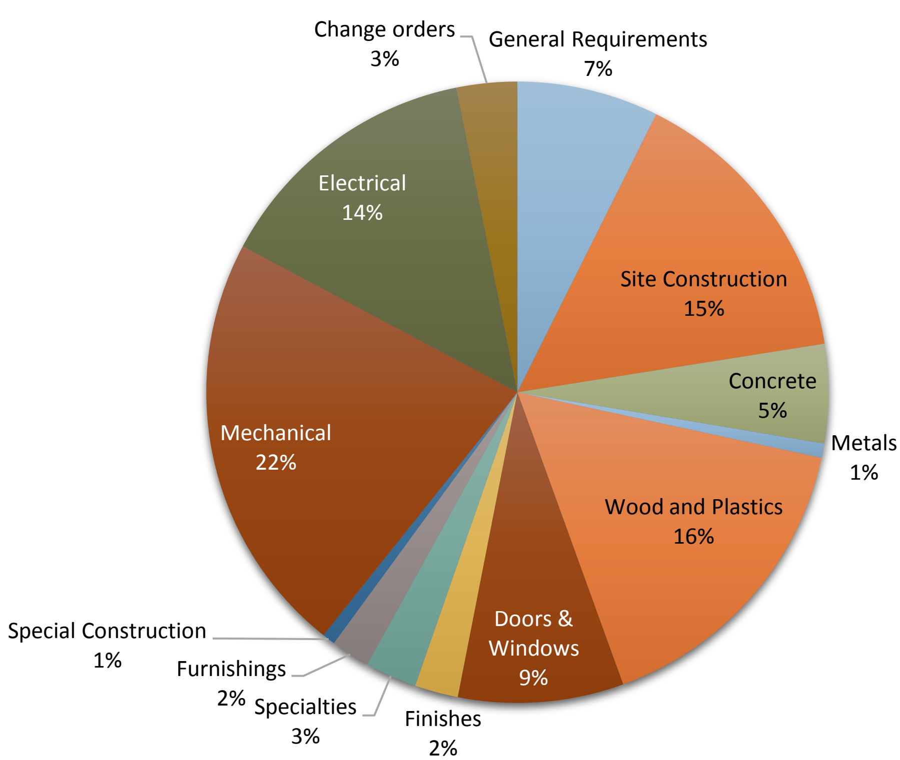
Project Cost:

Construction	$11,274,957
Consultants	
Equipment	
Project Admin	
Other	$1,136,084
	$12,411,041

Project Cost by Share:



Schedule of Values % of Construction Cost:



Lake Stickney Elementary, Mukilteo School District
Lynnwood, Wa

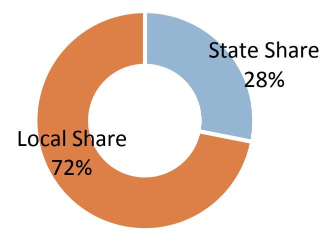
Educational Service District 189

Summary of Scope:	New Construction and N/L
Project Dates:	5/2015 -9/2016
2014 OSPI State Match for Mukilteo SD	51.16%
2016 OSPI State Match for Mukilteo SD	49.51%
Student Enrollment Data (At Design/Projected)	6523/7135
Total Project Cost per District/OSPI Records:	$31,565,770
Total Construction Cost Adjusted Jan 2017:	$25,332,546
Gross Square Feet (GSF)	77,542
Construction $/SF (excludes Sales Tax)	$327

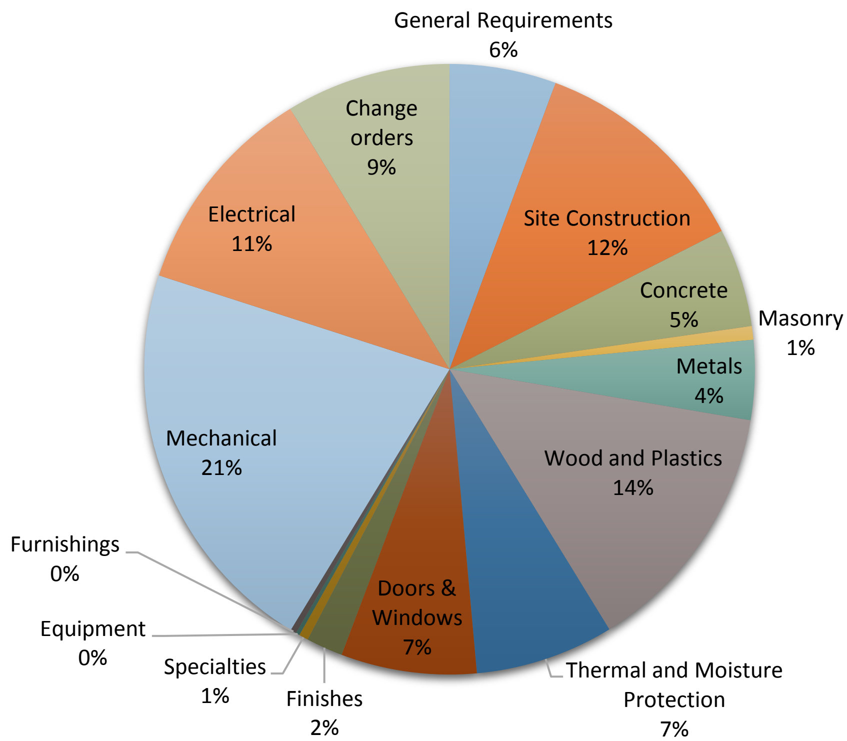
Source: Survey
Special Features: Enhanced high tech security features, daylighting/energy conservation.
Challenges: It was a wet winter, there were schedule and cost issues, issues with the permitting process and jurisdiction, and changing requirements to be met.
Unique Issues: It was costly to get fire flow to the property, water district regulations vary from needs.

Project Cost:	
Construction	$27,258,508
Consultants	$2,947,704
Equipment	$306,695
Project Admin	$399,148
Other	$653,715
	$31,565,770

Project Cost by Share:



Schedule of Values % of Construction Cost:



NCTA Mt Vernon, La Conner School District
Mt. Vernon, Washington
Educational Service District 189

Summary of Scope:	New Construction
Project Dates:	4/2009-6/2012
Student Enrollment Data (At Design/Projected)	167/747
Total Project Cost per District/OSPI Records:	$14,033,489
Total Construction Cost Adjusted Jan 2017:	
Gross Square Feet (GSF)	51,320
Construction $/SF (excludes Sales Tax)	

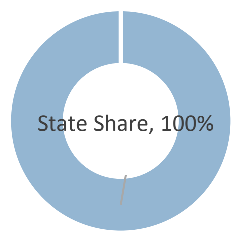
Source: Survey

Special Features: Disparate educational programs sharing common infrastructure and assembly areas.

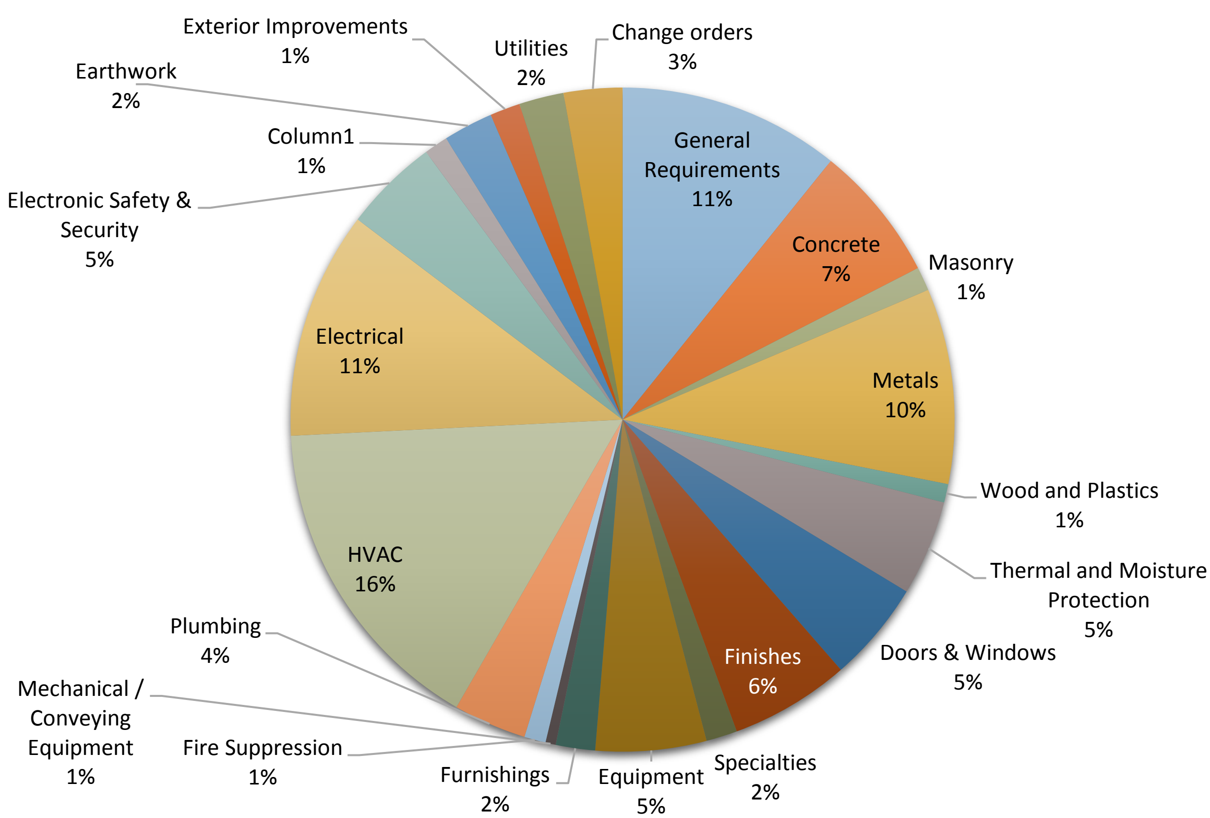
Unique Issues: Integration of primary power and other utilities with the existing campus infrastructure.

Project Cost:	
Construction	$9,089,337
Consultants	
Equipment	
Project Admin	
Other	$4,944,152
	$14,033,489

Project Cost by Share:



Schedule of Values % of Construction Cost:



Sno-Isle Skills Center, Mukilteo School District
Everett, Washington

Educational Service District 189

Summary of Scope:	Renovation/New Construction
Project Dates:	4/2009 - 8/2011
Total Project Cost per District/OSPI Records:	$25,729,243
Total Construction Cost Adjusted Jan 2017:	$16,002,855
Gross Square Feet (GSF)	97,996
Construction $/SF (excludes Sales Tax)	$163

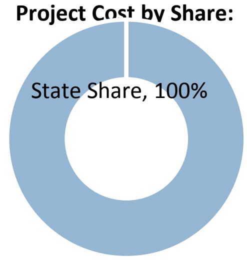
Source: Survey

Special Features: The program spaces all include storage, office, instructional space, and lab space. "Clean" industry programs are clustered together. Spaces are reconfigurable.

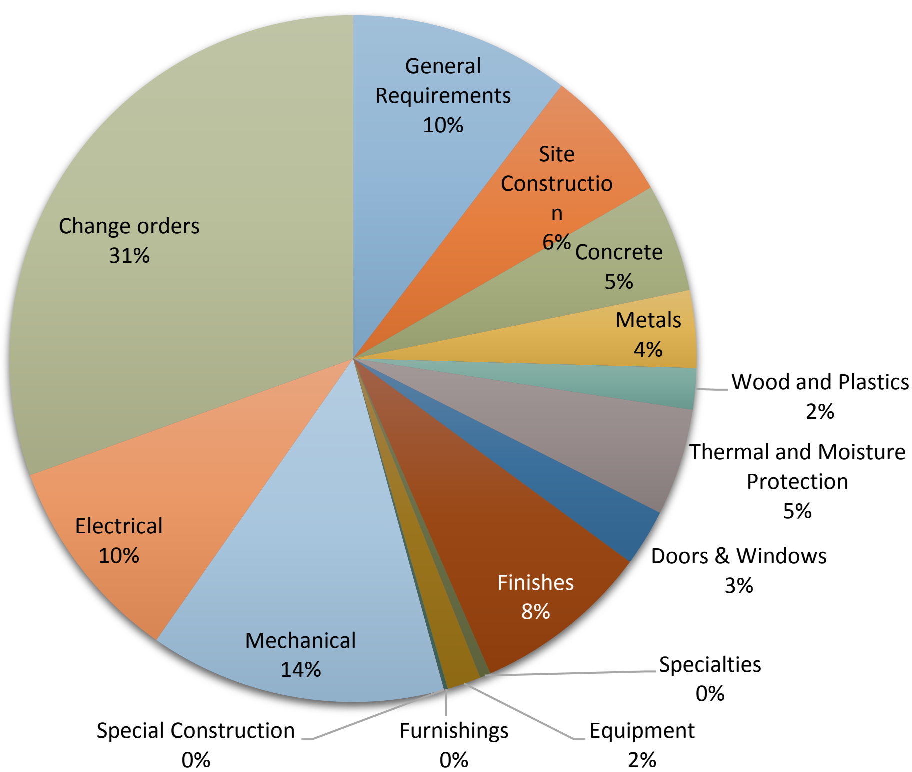
Challenges: The fire and subsequent redesign of Building 1. Bids came in low, so they reinvested remaining funds into other programs. Accounting for the insurance settlement was a challenge. The bidding of later phases, change orders, state funding and district funding was complex.

Project Cost:	
Construction	$14,315,432
Consultants	$8,904,439
Equipment	$2,017,786
Project Admin	$263,086
Other	$228,500
	$25,729,243

Project Cost by Share:



Schedule of Values % of Construction Cost:



C. RESEARCH SAMPLE SURVEY

SCHOOL CONSTRUCTION COST SURVEY OSPI/SCAP

Construction Cost Project

1. Which project is this survey in response to?
   Sno Isle Skills Center

2. Please check the box corresponding to the correct description of this school:
   Elementary School, Middle School, High School, Skills Center, Other (please specify)
   Skills Center

3. What was the total student enrollment when the design for the project started?
   NA

4. What was the projected student enrollment growth the new building would support?
   NA

5. What was the construction start date of your project?
   April 2009

6. What was the delivery method of your project? (Design/Bid/Build, Design/Build, Other (please specify)
   DBB

7. Is the project complete? (yes, no)
   Yes

8. Please indicate the completion date or estimated completion date below.
   Occupied September 2010; Final Acceptance August 2011

9. What was the primary justification for the project?
   To improve spaces for 8 programs and build new space to introduce 5 additional programs. Increase security by relocating the administrative offices to the front of the building and redesign the internal circulation of Building 1. Provide flexibility for future program changes.

10. How would you describe the bidding climate when the project went out to bid: (i.e., hot market, difficult to get interested bidders, very hungry bidders, economic downturn, etc.)
    Bidders were hungry and the project attracted bidders who usually only perform negotiated work rather than low bid government projects.

11. How many contractors submitted a bid for the project?
    8

12. What was the dollar range of the bids? (Low, High)
    $8,849,500 to $11,475,000

13. Was land purchased or donated for the building site?
    Land was received from the federal government

14. When was the land acquired for the project?
    1976

15. What was the acquisition cost, if any for the land?
    $0

16. What is the final total/gross square footage or your school building?
    102,243

17. Please provide a copy of the final space program for the new building via email to gina.bixby@esd112.org. It should list all usable spaces and the associated net area. Please indicate below whether this is in a format that can be sent via email or if we should contact you for this information.
    The D forms were completed before the fire and are not valid. ICOS information is too general to be helpful. WSU just performed an in depth review of the spaces on this campus which should be able to give you the information you need.

18. What are the special features of the project?
    Each program area included spaces for storage (needs are greater than a comparable high school program), a private office for teachers to be able to meet with industry partners, direct instructional space, and lab space – depending on the program. "Clean" industry programs were clustered together. This design would allow the space to be more easily reconfigured for future programs.

19. What was the most challenging aspect of the project?
    The fire and subsequent redesign of Building 1. Also, the bids came in low and OSPI permitted the District to invest the remaining funds back into the other programs which had not been included in the original project which resulted in ongoing programming. Accounting for the insurance settlement, the bidding of later phases, change orders, state funding, and District additional funds was complicated.

20. What are the actual total direct construction costs, including change orders?
    I'm unable to calculate this amount without extensive research. No one involved in the fiscal recordkeeping for this project is still employed in Capital Projects. OSPI records may provide better accounting than I have readily available.

21. What are the actual total project costs, including soft costs?
    I believe the costs for the Building 1 project were $19,148,000 +/-. We'd need to verify if you were to include this building in the study.

22. Were there any unique site related issues for this project? Please describe below if so.
    No

SCHOOL CONSTRUCTION COST SURVEY

OSPI/SCAP Construction Cost Project

1. Which project is this survey in response to?
   Mercer Island School District
   Islander Middle School Replacement/Expansion (Partial Replacement)

2. Please check the box corresponding to the correct description of this school:
   Elementary School, Middle School, High School, Skills Center, Other (please specify)
   Middle School

3. What was the total student enrollment when the design for the project started?
   1,055

4. What was the projected student enrollment growth the new building would support?
   The project replaced 7 Portable classrooms (182 Students) Total capacity will be 1,127 to 1200 students (depending on class size).

5. What was the construction start date of your project?
   3/1/2015

6. What was the delivery method of your project? (Design/Bid/Build, Design/Build, Other (please specify)
   Design/Bid/Build

7. Is the project complete? (yes, no)
   No

8. Please indicate the completion date or estimated completion date below.
   12/31/2016 Estimated

9. What was the primary justification for the project?
   Eliminated Portables and increase school capacity

10. How would you describe the bidding climate when the project went out to bid: (i.e., hot market, difficult to get interested bidders, very hungry bidders, economic downturn, etc.)
    Hot Market

11. How many contractors submitted a bid for the project?
    5 Contractors

12. What was the dollar range of the bids? (Low, High)
    $32,977,000 to $33,645,000

13. Was land purchased or donated for the building site?
    Purchased

14. When was the land acquired for the project?
    1950's

15. What was the acquisition cost, if any for the land?
    ???

16. What is the final total/gross square footage or your school building?
    93,000

17. Please provide a copy of the final space program for the new building via email to gina.bixby@esd112.org. It should list all usable spaces and the associated net area. Please indicate below whether this is in a format that can be sent via email or if we should contact you for this information.
    - 8 General Education Classrooms
    - 2 Shared Learning Spaces
    - 2 Science Labs/Classrooms
    - 3 Music Classrooms
    - 5 Musical Instrument Practice Rooms
    - 2 Special Education Classrooms
    - 1 Library
    - 1 Main Gym
    - 1 Auxiliary Gym
    - 1 Fitness/Health Center
    - 2 Locker Rooms (Boys/Girls)
    - Administrative Offices
    - Counseling Offices
    - Registrar Offices
    - 4 Conference Rooms (1 Large/3 Small)
    - Primary Building Entrance
    - Commons/Stage/Cafeteria
    - Kitchen
    - Staff Room

18. What are the special features of the project?
    Green Roof/Solar Panels

19. What was the most challenging aspect of the project?
    Building on an occupied site

20. What are the actual total direct construction costs, including change orders?
    Original Contract $33,645,000 plus Wash. State Sales Tax 9.5%
    Change Orders (Estimated) $3,400,000 plus Wash. State Sales Tax 9.5 %

21. What are the actual total project costs, including soft costs?
    $48,002,723

22. Were there any unique site related issues for this project? Please describe below if so.
    - Soil
    - Buried Structures

SCHOOL CONSTRUCTION COST SURVEY
OSPI/SCAP Construction Cost Project

1. Which project is this survey in response to?
   North Creek High School (New High School #4)

2. Please check the box corresponding to the correct description of this school:
Elementary School, Middle School, High School, Skills Center, Other (please specify) – High School

3. What was the total student enrollment when the design for the project started?
   See attached 2012-13 enrollment with total as well as breakdowns by school and grade.

4. What was the projected student enrollment growth the new building would support?
   1,600 (attached is enrollment projection from 2013, when the high school opens NSD will also be going through grade reconfiguration making all high schools 9-12)

5. What was the construction start date of your project? - 07/29/2014

6. What was the delivery method of your project? (Design/Bid/Build, Design/Build, Other (please specify) – GC/CM

7. Is the project complete? (yes, no) - No

8. Please indicate the completion date or estimated completion date below. – 10/21/16

9. What was the primary justification for the project? – Enrollment growth, high school allows for grade reconfiguration to help growth at multiple grade levels and multiple schools

10. How would you describe the bidding climate when the project went out to bid: (i.e., hot market, difficult to get interested bidders, very hungry bidders, economic downturn, etc.) – Warm and getting warmer. We were able to bid the majority of the scope (sub bid packages) during winter which lent itself to more aggressive bidding than normal spring market because we were the only significant project out for bid at that time.

11. How many contractors submitted a bid for the project? 6 responded to RFP, 3 selected to move on in GCCM process to Interview & RFFP

12. What was the dollar range of the bids? (Low, High) GCCM Percentage Fee + Specified General Conditions: $5,299,720 - $5,689,600

13. Was land purchased or donated for the building site? - Purchased

14. When was the land acquired for the project? – Two purchases, 11/17/11 & 02/20/12

15. What was the acquisition cost, if any for the land? - $10,000,000

16. What is the final total/gross square footage or your school building? – 238,606

17. Please provide a copy of the final space program for the new building via email to gina.bixby@esd112.org. It should list all usable spaces and the associated net area. Please indicate below whether this is in a format that can be sent via email or if we should contact you for this information.

18. What are the special features of the project?
    Flexible learning spaces of varying sizes and types, wetland as focal point and supporting curriculum, interpretive signage and using the building as a teaching tool, ground source heating (geothermal), Photo Voltaic panels, black box theatre, LED lighting, comprehensive 3D modeling effort for construction

19. What was the most challenging aspect of the project?
    Development of the significant new Right of Way (roads and road frontage improvements), large quantity of earth moving, moisture sensitive soils, jurisdictional requirements and timelines for permitting, wetlands, full athletic field development, coordination with adjacent plat/home developers

20. What are the actual total direct construction costs, including change orders?
    Project not complete, actual to date $92,410,326.05 (Budget: $106,782,676)

21. What are the actual total project costs, including soft costs?
    Project not at final completion, actual to date $111,661,517.03 (Budget $140,000,000)

23. Were there any unique site related issues for this project? Please describe below if so. –
    Urban growth boundary split the middle of the site which dictated building locations, 112 geothermal wells, expansive wetlands (1/3 of the site), new public roads and improvements of roadways

#8

COMPLETE

SurveyMonkey

Collector: Web Link 1 (Web Link)
Started: Tuesday, October 11, 2016 12:00:01 PM
Last Modified: Tuesday, October 11, 2016 12:02:56 PM
Time Spent: 00:02:55
IP Address: 68.116.31.250

PAGE 1: OSPI Construction Cost Project

Q1: Which project is this survey in response to?

Marcus Whitman Elementary Addition & Replacement (N/L)

Q2: Please check the box corresponding to the correct description of this school

Elementary School

Q3: What was the total student enrollment when the design for the project started?

404

Q4: What was the projected student enrollment growth the new building would support?

630

Q5: What was the construction start date of your project?

March 20, 2015

Q6: What was the delivery method of your project?

Design/Bid/Build

Q7: Is the project complete?

Yes

Q8: Please indicate the completion date or estimated completion date below.

August 8, 2016

Q9: What was the primary justification for the project?

Building reached end-of life period and enrollment growth.

Q10: How would you describe the bidding climate when the project went out to bid: (i.e., hot market, difficult to get interested bidders, very hungry bidders, economic downturn, etc.)

Optimal bidding time for this type of project.

Q11: How many general contractors submitted a bid for the project?

4

Q12: What was the dollar range of the bids?

Low:	15,092,000
High:	15,998,000

Q13: Was land purchased or donated for the building site?

current school site

Q14: When was the land acquired for the project?

n/a

Q15: What was the acquisition cost, if any for the land?

n/a

Q16: What is the final total/gross square footage of your school building?

64,390

Q17: Please provide a copy of the final space program for the new building via email to gina.bixby@esd112.org. It should list all usable spaces and the associated net area. Please indicate below whether this is in a format that can be sent via email or if we should contact you for this information.

Yes this will be sent via email

Q18: What are the special features of the project?

Building security, LED lighting and energy efficient systems.

Q19: What was the most challenging aspect of the project?

Demo of existing school, prior to construction of new building with new mirrored orientation.

Q20: What are the actual total direct construction costs, including change orders?

16,344,687.05 (to-date)

Q21: What are the actual total project costs, including soft costs?

21,302,975 (to-date)

Q22: Were there any unique site related issues for this project? Please describe below if so.

Shared site with Central Office Buildings.

School Construction Cost Survey

SurveyMonkey

#4

COMPLETE

Collector: Web Link 1 (Web Link)
Started: Wednesday, September 28, 2016 8:58:42 AM
Last Modified: Wednesday, September 28, 2016 9:09:19 AM
Time Spent: 00:10:36
IP Address: 164.116.157.100

PAGE 1: OSPI Construction Cost Project

Q1: **Which project is this survey in response to?**

Southeast Area Technical Skills Center

Q2: **Please check the box corresponding to the correct description of this school**

Skills Center

Q3: **What was the total student enrollment when the design for the project started?**

zero- brand new skill center

Q4: **What was the projected student enrollment growth the new building would support?**

goal is 100 FTE within 5 years of start of program

Q5: **What was the construction start date of your project?**

February 2013

Q6: **What was the delivery method of your project?**

Design/Bid/Build

Q7: **Is the project complete?**

Yes

Q8: **Please indicate the completion date or estimated completion date below.**

June 2014

Q9: **What was the primary justification for the project?**

To meet the workforce training needs of the area

Q10: **How would you describe the bidding climate when the project went out to bid: (i.e., hot market, difficult to get interested bidders, very hungry bidders, economic downturn, etc.)**

competitive

Q11: **How many general contractors submitted a bid for the project?**

11

Q12: **What was the dollar range of the bids?**

Low:	$7,522,000
High:	&8,374,233

Q13: **Was land purchased or donated for the building site?**

50 year lease with the Walla Walla Community College

Q14: When was the land acquired for the project?

september 2011 signed lease agreement to begin in 2013

Q15: What was the acquisition cost, if any for the land?

none

Q16: What is the final total/gross square footage of your school building?

29,858 sf

Q17: Please provide a copy of the final space program for the new building via email to gina.bixby@esd112.org. It should list all usable spaces and the associated net area. Please indicate below whether this is in a format that can be sent via email or if we should contact you for this information.

Yes this will be sent via email

Q18: What are the special features of the project?

The Southeast Area Washington Technical Skills Center (SEA Tech) opened in the fall of 2014 as a cooperative of six school districts in the Walla Walla, Washington area. As part of a collaboration with higher education, the skills center is located on the Walla Walla Community College Campus.

The 29,858 sf facility includes instructional program areas for a variety of educational programs including welding/manufacturing, electrical systems technology, digital media technology, and health science careers. Instructional support areas include administration offices, computer lab, and multi-purpose/classroom flex space.

In addition to a building and systems configuration that accommodates future program expansion, the design allows for re-programming within the existing shell so that educational programs can more easily respond to changing workforce needs. Lab spaces are generous in size and designed with open floor space and perimeter casework to allow adaptation through changes in furnishings. Structural systems are primarily post and beam to allow for space reconfiguration. Domestic water, electrical, and telecommunication infrastructure were run overhead for easier access and adaptability. The mechanical system uses water source heat pumps with primary equipment located on an easily accessible mechanical mezzanine.

The design met the Washington Sustainable Schools Protocol and exceeded the Washington Non-Residential Energy Code by more than twenty five percent. A 20 kilowatt rooftop photovoltaic (PV) array was installed in collaboration with Community Solar. The building integrated PV panels were manufactured in Washington and were also used as shading devices over south facing windows. The landscaping was designed using xeriscape guidelines to minimize water consumption for irrigation.

Q19: What was the most challenging aspect of the project?

Designing an adaptable facility that can respond to changing educational programs

Q20: What are the actual total direct construction costs, including change orders?

$7,942,554

Q21: What are the actual total project costs, including soft costs?

$ 10,350,000

Q22: Were there any unique site related issues for this project? Please describe below if so.

Shared parking with the adjacent Walla Walla Community College and unsuitable soils that had to be removed/replaced

D. PROJECT SAMPLE DATA AND SOURCES

D.1 SCHOOL PROJECTS TABLE

School District	Project Name	OSPI Provided Financial Information	OSPI Provided Space Information	CSG Project Survey or Personal Communication	Interview with School District	Project Site Visit
Bethel School District	Pierce County Skills Center Phase 1			X		
Bethel School District	Pierce County Skills Center Phase 3	X		X		
Colton School District	Colton	X	X			
Evergreen School District	Clark County Skills Center - Building 500 and 600	X				
Evergreen School District	Crestline Elementary	X	X	X		
Federal Way School District	Federal Way High Repl (N/L) & Ad	X	X			
Kennewick School District	Eastgate El Ad & Repl (N/L)	X	X	X		
Kennewick School District	Sage Crest	X	X	X		
La Conner School District	NCTA Mount Vernon - New Core (two campuses)		X	X		
Mercer Island School District	Islander Mid Ad & Reply (N/L)	X	X	X	X	
Moses Lake School District	Columbia Basin Technical Skills Center	X	X	X	X	X
Mukilteo School District	Lake Stickney El Ad & Repl (N/L)	X	X	X	X	
Mukilteo School District	SNO-ISLE Building 1, Building 2, Building 3	X		X	X	X
North Mason School District	New North Mason High	X	X			
North Thurston School District	Evergreen Forest	X	X	X	X	
North Thurston School District	North Thurston High Ad & Repl (N/L) - Phase I	X	X	X	X	
North Thurston School District	Salish Middle School	X	X	X	X	
Northshore School District	North Creek High School	X	X	X	X	X
Pasco School District	New Barbara McClintock Stem El #14	X	X			
Pasco School District	New Delta High	X	X			

School District	Project Name	OSPI Provided Financial Information	OSPI Provided Space Information	CSG Project Survey or Personal Communication	Interview with School District	Project Site Visit
Pasco School District	New Marie Curie Stem El #15	X	X			
Pasco School District	New Rosalind Franklin Stem El #13	X	X			
Richland School District	Lewis & Clark El Ad & Repl (N/L)	X	X	X		
Richland School District	Marcus Whitman El Addition & Repl (N/L)	X	X	X		
Richland School District	Orchard Elementary	X	X	X		
Richland School District	Sacajawea El Ad & Repl (N/L)	X	X	X		
Royal School District	Royal Intermediate Ad	X	X			
Seattle School District	Arbor Heights Elementary			X		
Seattle School District	Cascadia Elementary			X		
Spokane School District	Linwood Elementary			X		
Spokane School District	NEW - Tech Phase 1	X	X	X	X	X
Spokane School District	Salk Middle School			X		
Sunnyside School District	Sunnyside High Ad	X	X	X	X	X
Tahoma School District	New Tahoma High & Regional Learning Center	X	X	X		
Walla Walla School District	SEA-Tech Walla Walla Branch - Tri-Tech Skills Center	X	X	X	X	X
Wenatchee School District	Wenatchee Valley Modernization & Addition	X		X	x	x
Woodland School District	Woodland High School	X	X	X		
Yakima School District	Yakima Valley Tech - Phase 1	X	X	X	X	X
Yakima School District	Yakima Valley Tech - Phase 2	X	X	X	X	X

D.2 SOURCE OF DATA

Data	Source	Information Gathered
Demographic Data for School District	OSPI ICOS Data	Enrollment, % free/reduced meals, classroom teachers FTE
	Survey Responses	Enrollment data pre-design, Enrollment data projected
	School District Website	Assessed Value in School District, ESD Region
	OSPI School District Dashboard	Current Enrollment, School Type (Elementary, Middle, High)
Project Data	Survey Responses	information, dollar range of bids, number of bids, land acquisition dates, special features, challenges, unique site-related issues
	OSPI D-10	% of State Funding Assistance, Project Architect, Project Construction Management, Project General Contractor
Space Data	OSPI D-7 Form	Gross Square Feet, Net Square Feet, breakout of space usage (Direct Instructional, Instructional Support, Program Support)
	School District Space Plans	Gross Square Feet, Net Square Feet, breakout of space usage (Direct Instructional, Instructional Support, Program Support)
	Survey Responses	Gross Square feet, space program information
Project Cost Data	OSPI D-10 Form	Projected construction plus soft costs (Consultants, Equipment, Project Administration, Other)
	OSPI SCAP Payment Tracking Spreadsheet	Construction plus soft costs (Consultants, Equipment, Project Administration, Other) submitted for SCAP program
	Survey Responses	Total Project cost provided by district, land acquisition cost (if applicable)
	WSSP Reporting of Costs of Compliance	Projected and actual cost savings/increases due to WSSP compliance
Construction Cost Data	Schedule of Values (OSPI Records)	Breakout of Construction Costs by Uniformat Category
	OSPI D-10 Form	Projected construction costs
	OSPI SCAP Payment Tracking Spreadsheet	Actual project expenses for construction submitted for SCAP program
	Survey Responses	District total construction expense
Prevailing Wage Data	Washington Bureau of Labor and Industries Website	Details on prevailing wage by County in Washington State per each trade

D.3 SUMMARY OF DATA

SCAP PROJECTS

County Name	School District	Project Name	Grade Span	SCAP NEW Area	SAP MOD Area	SCAP NL Area	Excess Area	Total Area	Release Year
COWLITZ	WOODLAND	NEW WOODLAND HIGH	HIGH	83,276	-	-	73,073	156,349	2013
YAKIMA	SUNNYSIDE	SUNNYSIDE HIGH AD	HIGH	24,934	-	-	-	24,934	2013
BENTON	RICHLAND	New South Richland EL #10 Orchard	ELEMENTARY	71,330	-	-	-	71,330	2014
FRANKLIN	PASCO	New Rosalind Franklin Stem El #13	ELEMENTARY	70,891	-	-	-	70,891	2014
FRANKLIN	PASCO	New Barbara McClintock Stem El #14	ELEMENTARY	62,434	-	-	-	62,434	2014
FRANKLIN	PASCO	New Marie Curie Stem El #15	ELEMENTARY	72,847	-	-	-	72,847	2014
FRANKLIN	PASCO	New Delta High	HIGH	44,013	-	-	-	44,013	2014
GRANT	ROYAL	Royal Intermediate Ad	MIDDLE	40,072	-	-	5,858	45,930	2014
MASON	NORTH MASON	New North Mason High	HIGH	91,504	-	-	28,399	119,903	2014
BENTON	KENNEWICK	Sage Crest	ELEMENTARY	56,356	-	-	-	56,356	2015
KING	TAHOMA	New Tahoma High & Regional Learning Center	HIGH	135,184	-	-	174,981	310,165	2015
KING	NORTHSHORE	New High #4 (North Creek)	HIGH	119,978	-	-	113,597	233,575	2015
THURSTON	NORTH THURSTON	New Middle #5 (Salish)	MIDDLE	109,000	-	-	1,020	110,020	2015
CLARK	EVERGREEN (CLARK)	CRESTLINE EL AD REPL (N/L)	ELEMENTARY	17,661	-	43,995	748	62,404	2013
BENTON	KENNEWICK	Eastgate El Ad & Repl (N/L)	ELEMENTARY	10,500	-	45,554	302	56,356	2014
BENTON	RICHLAND	Lewis & Clark El Ad & Repl (N/L)	ELEMENTARY	21,064	-	43,326	-	64,390	2014
BENTON	RICHLAND	Sacajawea El Ad & Repl (N/L)	ELEMENTARY	20,373	-	44,017	-	64,390	2014
KING	FEDERAL WAY	Federal Way High Repl (N/L) & Ad	HIGH	26,462	-	196,992	14,323	237,777	2014
BENTON	RICHLAND	Marcus Whitman El Addition & Repl (N/L)	ELEMENTARY	2,909	-	43,326	18,155	64,390	2015
KING	MERCER Island	Islander Mid Ad & Reply (N/L)	MIDDLE	27,151	-	39,862	22,428	89,441	2015
SNOHOMISH	MUKILTEO	Lake Stickney El Ad & Repl (N/L)	ELEMENTARY	27,513	-	46,654	3,375	77,542	2015
THURSTON	NORTH THURSTON	North Thurston High Ad & Repl (N/L) - Phase I	HIGH	19,518	-	26,532	31,372	77,422	2015
WHITMAN	COLTON	Colton School Ad, Repl (N/L) & Mod	MULTI	2,846	46,591	4,000	-	53,437	2014
THURSTON	NORTH THURSTON	Evergreen Forest El Ad & Mod	ELEMENTARY	6,275	44,008	-	-	50,283	2015

SKILLS CENTERS

County Name	School District	Project Name	Grade Span	Total Area
SKAGIT	LA CONNER	NCTA Mount Vernon - New Core	Skill Center	33,131
YAKIMA	YAKIMA	Yakima Valley Tech - Phase 1	Skill Center	41,107
SNOHOMISH	MUKILTEO	SNO-ISLE Building 1, Building 2, Building 3	Skill Center	97,996
PIERCE	BETHEL	Pierce County Skills Center Phase 1	Skill Center	22,891
WALLA WALLA	WALLA WALLA	SEA-Tech Walla Walla Branch - Tri-Tech Skills Center	Skill Center	29,858
YAKIMA	YAKIMA	Yakima Valley Tech - Phase 2	Skill Center	61,980
CHELAN	WENATCHEE	Wenatchee Valley Modernization & Addition	Skill Center	50,754
GRANT	MOSES LAKE	Columbia Basin Branch - Wenatchee Valley	Skill Center	46,111
CLARK	EVERGREEN (CLARK)	Clark County Skills Center - Buildng 500 and 600	Skill Center	20,389
SPOKANE	SPOKANE	NEW - Tech Phase 1	Skill Center	37,978
PIERCE	BETHEL	Pierce County Skills Center Phase 3	Skill Center	26,275

D.4 OSPI INTERVIEW REQUEST

From: Kim Parsons [mailto:Kim.Parsons@k12.wa.us]
Sent: Thursday, September 15, 2016 9:55 AM
To: bwilm@designwestwa.com; nwarnick@designwestpa.com
Cc: Gina Bixby <gina.bixby@esd112.org>
Subject: Design West Architects–SCAP Projects

To: Brandon Wilm
Ned Warnick

Re: OSPI Construction Cost Study

The Office of Superintendent of Public Instruction (OSPI) has contracted with Educational Service District 112's Construction Services Group (CSG) to conduct a construction cost analysis to support, in part, the State of Washington's School Construction Assistance Program (SCAP). This analysis is in response to capital budget proviso, Chapter 35, Laws of 2016, section 5003 (attached).

A key objective of the study is to determine the major sources and causes of variation in school construction costs across the state. The scope of this analysis involves gathering and compiling information from 37 recent school projects in 21 school districts. The study is soliciting information from, and over the next 30 days will be meeting with, 21 school district representatives who are participants in the research study sample.

You're receiving this email because your company has been one of the general construction companies or architectural firms who have, by project-sample dollar volume, done the most work in the 37 project sample (attached).

Gina Bixby, the Senior Study Administrator (gina.bixby@esd112.org) will be contacting you shortly to schedule a one-hour interview with you or your designated representative and the CSG Construction Cost Study Team, within the next 30 days. The team is interested in your company's experience and perspective on a range of general issues, in addition to the individual K-12 projects you have successfully completed or nearly completed.

The research study team will be seeking your company's comments on the following:

1. Special design features of the building project.
2. Challenging features of site development.
3. Bidding climate, particularly labor and materials challenges, during the bidding period.
4. Project delivery method.

Your cooperation and assistance in this important research is greatly appreciated. The results of this study will inform and support decisions related to state capital support of school projects in the future.

Thank you in advance for your cooperation and participation in this study.

Lorrell Noahr
Interim Director
School Facilities and Organization
Office of Superintendent of Public Instruction (OSPI)
office: 360-725-4953 | tty: 360-664-3631
Lorrell.Noahr@k12.wa.us
http://www.k12.wa.us/SchFacilities/default.aspx

Notice of public disclosure
Public documents and records are available to the public as provided under the Washington State Public Records Act (RCW 42.56). This email may be considered subject to the Public Records Act and may be disclosed to a third-party requester.

D.4 OSPI INTERVIEW REQUEST

From: Kim Parsons [mailto:Kim.Parsons@k12.wa.us]
Sent: Thursday, September 15, 2016 11:43 AM
To: Phillip.Goodman@skanska.com; Mark.Howell@skanska.com
Cc: Gina Bixby <gina.bixby@esd112.org>
Subject: Skanska USA Building Inc.–SCAP Projects

To: Phillip Goodman, VP
Mark Howell, Sr. VP

Re: OSPI Construction Cost Study

The Office of Superintendent of Public Instruction (OSPI) has contracted with Educational Service District 112's Construction Services Group (CSG) to conduct a construction cost analysis to support, in part, the State of Washington's School Construction Assistance Program (SCAP). This analysis is in response to capital budget proviso, Chapter 35, Laws of 2016, section 5003 (attached).

A key objective of the study is to determine the major sources and causes of variation in school construction costs across the state. The scope of this analysis involves gathering and compiling information from 37 recent school projects in 21 school districts. The study is soliciting information from, and over the next 30 days will be meeting with, 21 school district representatives who are participants in the research study sample.

You're receiving this email because your company has been one of the general construction companies or architectural firms who have, by project-sample dollar volume, done the most work in the 37 project sample (attached).

Gina Bixby, the Senior Study Administrator (gina.bixby@esd112.org) will be contacting you shortly to schedule a one-hour interview with you or your designated representative and the CSG Construction Cost Study Team, within the next 30 days. The team is interested in your company's experience and perspective on a range of general issues, in addition to the individual K-12 projects you have successfully completed or nearly completed.

The research study team will be seeking your company's comments on the following:

1. Special design features of the building project.
2. Challenging features of site development.
3. Bidding climate, particularly labor and materials challenges, during the bidding period.
4. Project delivery method.

Your cooperation and assistance in this important research is greatly appreciated. The results of this study will inform and support decisions related to state capital support of school projects in the future.

Thank you in advance for your cooperation and participation in this study.

Lorrell Noahr
Interim Director
School Facilities and Organization
Office of Superintendent of Public Instruction (OSPI)
office: 360-725-4953 | tty: 360-664-3631
Lorrell.Noahr@k12.wa.us
http://www.k12.wa.us/SchFacilities/default.aspx

Notice of public disclosure
Public documents and records are available to the public as provided under the Washington State Public Records Act (RCW 42.56). This email may be considered subject to the Public Records Act and may be disclosed to a third-party requester.

D.5 SKILL CENTERS INFORMATION

Skill Center	Enrollment	Website
Wenatchee Valley Tech	260 Combined with moses Lake and two satellite programs	http://www.wenatcheeschools.org/wvtsc/programs.cfm
NewTech Skills Center	750 at design, 1100 projected	http://newtechskillscenter.com/#
Clark County Skills Center (now Cascadia Tech Academy)	over 1000	http://www.ccskillscenter.com/programs.html
Columbia Basin Technical Skills Center	N/A	http://cbtech.moseslakeschools.org/files/_WDDkl_/1769026be15a8d543745a49013852ec4/CBTECH_Program_Descriptions_2016-2017.pdf
SEA-Tech Skills Center	goal is 100 within 5 years	http://www.myseatech.org/
Pierce County Skills Center	200 is projected	http://www.pcskillscenter.org/domain/4391
NW Tech Mt. Vernon	167 at design, 747 occupancy load	http://nwtech.k12.wa.us/site/default.aspx?PageID=1
Yakima Valley Tech	770 at design, 1100	https://www.yvtech.us/programs/
Sno-Isle Skills Center	NA	http://snoisletech.com/

E. OSPI FACILITIES MANUAL SELECT DEFINITIONS OF SPACE

Area Calculations

OSPI uses the American Institute of Architects (AIA), Document D101 as the guideline for measuring gross square footage. The AIA's method of calculation specifics that the "architectural area of a building is the sum of the areas of the floors of the building, measured from the exterior faces of exterior walls or from the centerline of walls separating buildings."

Instructional space as defined in OSPI's School Facilities manual excludes exterior covered walkways and porches, space used by central administrative personnel, sports stadiums/grandstands, garages, warehouse space (free-standing), portable classrooms, or any other square footage not related to direct instruction or instructional support. Instructional space also excludes any space constructed from gifts that are specifically dedicated to joint use by the community, unless the space was jointly financed by two or more school districts. One-half of the gross area can be included for covered play areas.

Usable or "net" space is categorized into three types:

- Direct Instructional (classrooms, laboratories, libraries, PE, learning resources),
- Instructional Support (assembly, service and support, student services, office space) and
- Program Support (cafeteria/food service, general support, covered play area).

Areas not to be included in the net usable space is the "non-assignable spaces" include thickness of interior and exterior walls, hallways/circulation space, mechanical rooms, closets, and restrooms unless part of a locker room or accessed through a classroom.

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G. UC BERKLEY SUMMARY OF EDUCATIONAL SPACE STANDARDS IN K-12

Figure 2: Summary of Educational Space Standards

	Elementary School				Middle School				High School				Minimum essential facilities defined	Maximum grossing factor provided
	Classroom SF/student	Assumed class size	Classroom SF	Gross* Building SF standard	Classroom SF/student	Assumed class size	Classroom SF	Gross Building SF standard	Classroom SF/student	Assumed class size	Classroom SF	Gross Building SF standard		
California	**≥30 SF**	22-32	**≥960 SF**	n/a	**≥30 SF**	22-32	**≥960 SF**	n/a	**≥30 SF**	22-32	**≥960 SF**	n/a	N	N
Colorado	**35**	22	770 SF	n/a	**32**	25	800 SF	n/a	**32**	25	800	n/a	Y	N
Florida	**49**	18	882 SF	n/a	**39**	22	858 SF	n/a	**32**	25	800	n/a	N	**ES - 27% of building net square footage; MS - 32% of building net square footage; HS - 34% of building net square footage**
Maryland	n/a	n/a	n/a	**104-131 SF/student**	n/a	n/a	n/a	**130-145 SF/student**	n/a	n/a	n/a	**145-170 SF/student**	Y	N
Massachusetts	41 (estimate)	23	**900-1,000 SF**	**145-180 SF/student**	39 (estimate)	23	**850-950 SF**	**160-190 SF/student**	39 (estimate)	23	**825-950 SF**	**157-226 SF/student**	Y	**1.4-1.5 depending on enrollment**
New Mexico	**≥32 net**	13-22	**650 SF net minimum**	**104-150 SF/student**	**≥28 net**	18-27	**650 SF net minimum**	**110-170 SF/student**	**≥25 net**	21-30	**650 SF net minimum**	**130-215 SF/student**	Y	**1.3**
New York	26	≥30	**770 SF**				**None for classrooms - some provided for other spaces**				**None for classrooms - some provided for other spaces**		Y	N
Ohio	**41**	22	**1,200 (PK-K) 900 (1-6)**	**119.6-125 SF/student**	**36**	25	**900 SF**	**141-151 SF/student**	**36**	25	**900**	**156-180 SF/student**	Y	N
Texas	**≥32 (PK-1) ≥36 (2-6)**	22	**≥800 (PK-1) ≥700 (2-6)**	n/a	**≥28**	25	**≥700 SF**	n/a	**≥28**	25	**≥700**	n/a	N	N
Washington	n/a	n/a	n/a	**90 SF/student**	n/a	n/a	n/a	**117 SF/student**	n/a	n/a	n/a	**130 SF/student**	N	N

*Note: States' definitions of "gross" may differ

Note: In the table, bolded entries refer to published specific state standard/guideline; unbolded entries refer to authors calculation or estimate based on standard/guideline

Source:

Center for Cities + Schools, University of California Berkeley. (July 2016). *Building Accountability in California: A Review of State Standards and Requirements for K-12 Public School Facility Planning and Design,* Jeffrey M. Vincent, July 2016, Figure 2

H. MEETING NOTES

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MEETING NOTES

DATE:	August 18, 2016
Subject:	Discuss data sources and framework for study
Project:	OSPI School Capital Cost Study
Distribution:	Attendees (see below), Gene Emmans (OFM), Richard Ramsey (Senate Committee Services), Christine Thomas (House Office of Program Research)

Introduction

- Marcia Fromhold Meeting Facilitator – The purpose of the meeting is to ensure we move forward collaboratively, are openly sharing data, and are in agreement regarding the data sources that serve as the foundation for the study.
- Introduction of ESD 112 Study Team, individual roles in data analysis, establishing expected cost ranges, and focus on identifying variables in the cost ranges.
- Noted the existence of another group monitoring schools (TAC) and agreed the Cost Study will engage with TAC efforts, TAC will be another input to the Study.

General Discussion

- ***Timeline**:* ESD 112 Team project timeline was extended due to the contract start date of August 2, 2016. Verified extension of timeline to mid-February.
- ***Suggestions for Report Content***
  - Normalization of space guidelines and expected cost ranges of $/SF by building type.
  - Identify variable cost factors from the sample with particular focus on the variable factors associated with specialized facilities.
  - Identify project delivery methods.
  - Legislators "…need to know what they're paying for is realistic".
  - Capture the five-year enrollment projection at the project funding release date and compare with actual enrollment numbers. How many of the costs for school construction are due to school districts building larger buildings than the five-year window allows them?
  - Space variation/use analysis regarding instructional space. The question was asked whether common areas (breakout spaces/multiuse) are to be included as instructional space. It will be noted as information is provided by districts regarding use of space and space efficiency.

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Review of the Study Framework August 16 Update

Contributors and Acknowledgements (1.1)

There will be a peer review of the space program and cost planning assumptions in the study, as well as interviews with two representatives from the architecture/engineering professions and two representatives from the construction industry.

Data Sources (2.3)

The study will use OFM's Capital Budget Modeling nomenclature to categorize project costs mirroring the existing C-100 form most are familiar with, and will re-format any existing nomenclature at the OSPI or school district level to that standard.

The data sources are OSPI construction cost and other project data gathered in the course of the SCAP program administration, as well as school district interviews and surveys, interviews with industry representatives, and external comparative studies.

Information gathered from school districts will include a verification of data collected from OSPI via interviews and a survey/questionnaire.

Adjustment Factors (2.5)

Brian Sims indicated that he's interested in regional labor cost differences.

Discussion of the impact of support for school bonds by using local labor and benefiting local job market.

Discussion of escalation factor to use in analysis, Jon Bayles mentioned that the use of a fixed rate rather than one driven by market inflation would result in an underfunding and a shortfall of funds needed.

Key Observations (4.1)

A question was asked if we'd be recommending an inflation rate. Kirk referred to section 5 of the study outline, that the study may likely only provide key observations, as recommendations are outside the scope of this study.

Factors Contributing to Costs Beyond the Expected Ranges (4.1)

It was mentioned that school districts often have site development fee costs, as well as land acquisition costs. The study will gather land acquisition costs, when the land was purchased, and the current assessed/market value. There is an expectation this would drive or expose some regional variation.

Indirect cost tracking if there are any outliers in the cost arena for consultants – i.e. architects, pm and engineers.

Project delivery was discussed as a potential cost driver – will be noting any retainage issues and ongoing litigation/disputes on final settlement in the cases studied.

Change orders and basis for changes will be examined.

The study will review large spaces used for highly specialized programs as one factor in potential cost variation.

Next Step | Conclusion

It was agreed that ongoing communication is welcome and desired, either in the form of future meetings or direct communication with House and Senate Committee and OFM Capital Budget Office staff.

Attendees

Carter Bagg (ESD 112),
Jon Bayles (JMB Consulting),
Gina Bixby (ESD 112),
Kim Brodie, (OSPI)
Tom Carver (OSPI),

Roz Estimé (Estime Group),
Marcia Fromhold, (Capitol Solutions)
Brenda Hetland, (OSPI)
Jami Marcott, (OSPI)
Tim Merlino (ESD 112),
Randy Newman (OSPI),
Lorrell Noahr (OSPI),
Melissa Palmer (House Office of Program Research),
Kirk Pawlowski (ESD 112),
Brian Sims (Senate Committee Services),
Nona Snell (OFM)

Attachments: Materials Distributed at Meeting

1. August 18, 2016 SCAP Projects Sample
2. OSPI School Cost Study Framework, August 16, 2016 Update

I. IN-PROGRESS UPDATE PRESENTATION

WASHINGTON STATE OFFICE OF THE SUPERINTENDENT OF PUBLIC INSTRUCTION

K-12 CAPITAL FACILITIES COST STUDY

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IN-PROGRESS UPDATE FOR STATE OF WASHINGTON SENATE WAYS AND MEANS

JANUARY 19, 2017

PROVISO: ESHB 2380

- **Office of the Superintendent of Public Instruction (OSPI) to contract with Educational Service District (ESD) 112's Construction Services Group (CSG) to conduct a capital construction cost study.**
- **Identify construction cost variables based on:**
  - Project Size
  - School Building Type
  - Specialized Facilities
  - Durability
  - Other Related Design and Construction Factors

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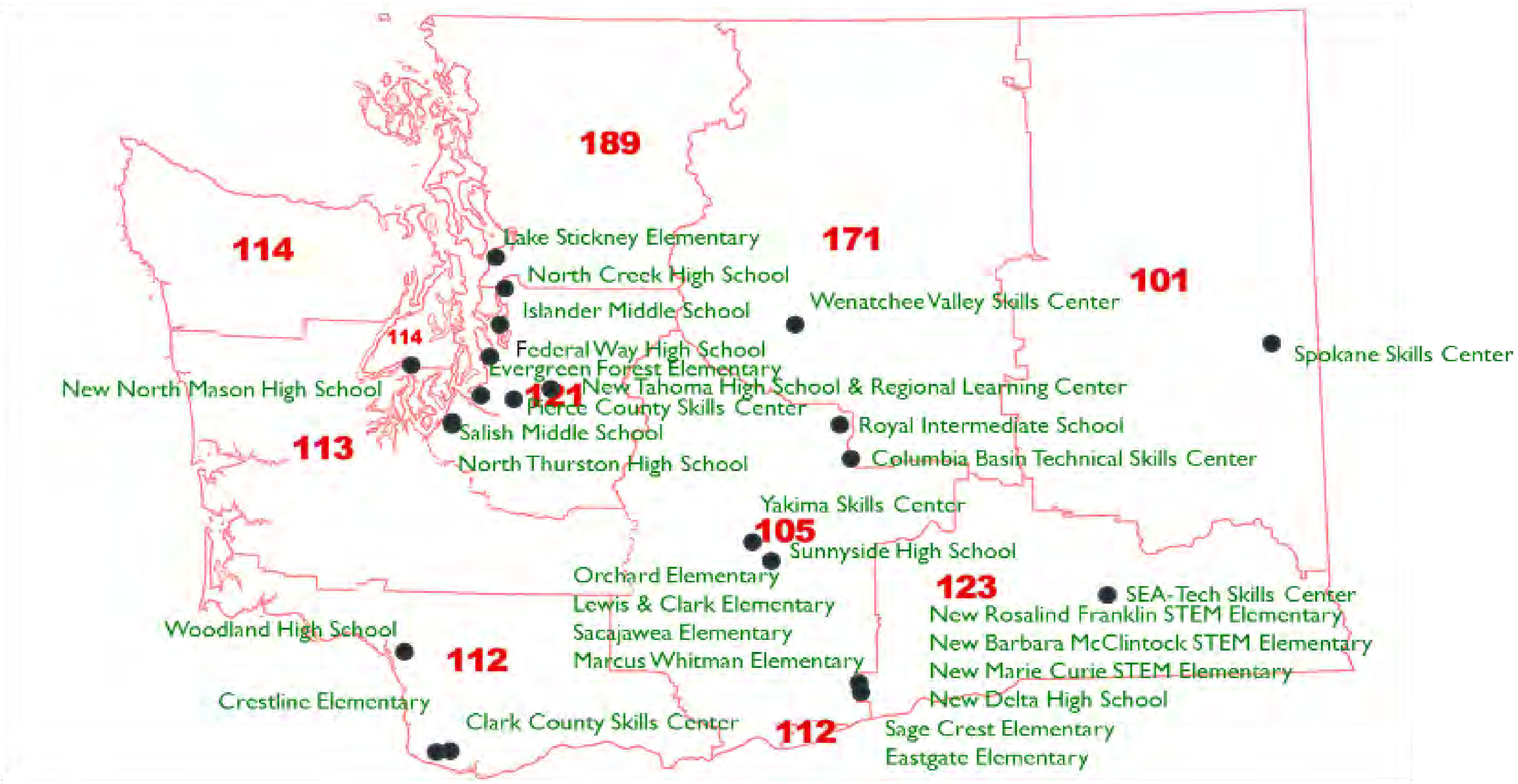
THE STUDY OBJECTIVE - REPORT DUE FEBRUARY 10

- **Objective**
  - How/Why There are Cost Variations
  - Context for the Cost Variations
  - Comparison of Costs to Expected Cost Ranges
  - Observations to Assist Future Management of Cost Variations

STUDY TABLE OF CONTENTS

K-12 SCHOOLS IN OSPI-PROVIDED STUDY SAMPLE



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STUDY METHODOLOGY

PUBLIC K-12 AND SKILL CENTERS COST VARIATIONS COMPARED TO EXPECTED COST RANGES

- Variations in capital construction costs were identified using:
  - Subject Matter Expertise of the Study Team
  - OSPI SCAP Project Construction Cost Information (by ESD and space distribution by school type)
  - Design and Construction Industry and Peer-Review Interviews/Observations
  - Statewide K12 Facilities Data
  - Literature Review of National and Regional Data and Trends
- The study proceeded in three phases:

  Phase I: Data Collection and Analysis of OSPI Sample Schools

  Phase II: Comparison to Expected Cost Ranges

  Phase III: Identification of Major Cost Factors and Qualitative Impacts

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STUDY METHODOLOGY

Phase I: Data Collection and Analysis of OSPI Sample Schools

- Analyzed OSPI Sample School capital construction data.
- Conducted formal surveys to each sample project school.
- Visited ten sites.
- Conducted in-depth interview with school districts, two architectural firms, and two construction companies (selected by largest dollar volume from OSPI sample).
- Conferred with OFM Capital staff, State House and Senate Legislative staff, OSPI Technical Advisory Committee members, and OSPI School Facilities and Organization staff.

Phase II: Comparison to Expected Cost Ranges

- Developed expected cost ranges compared to local and national reports/data.

Phase III: Identification of Major Cost Factors and Qualitative Impacts

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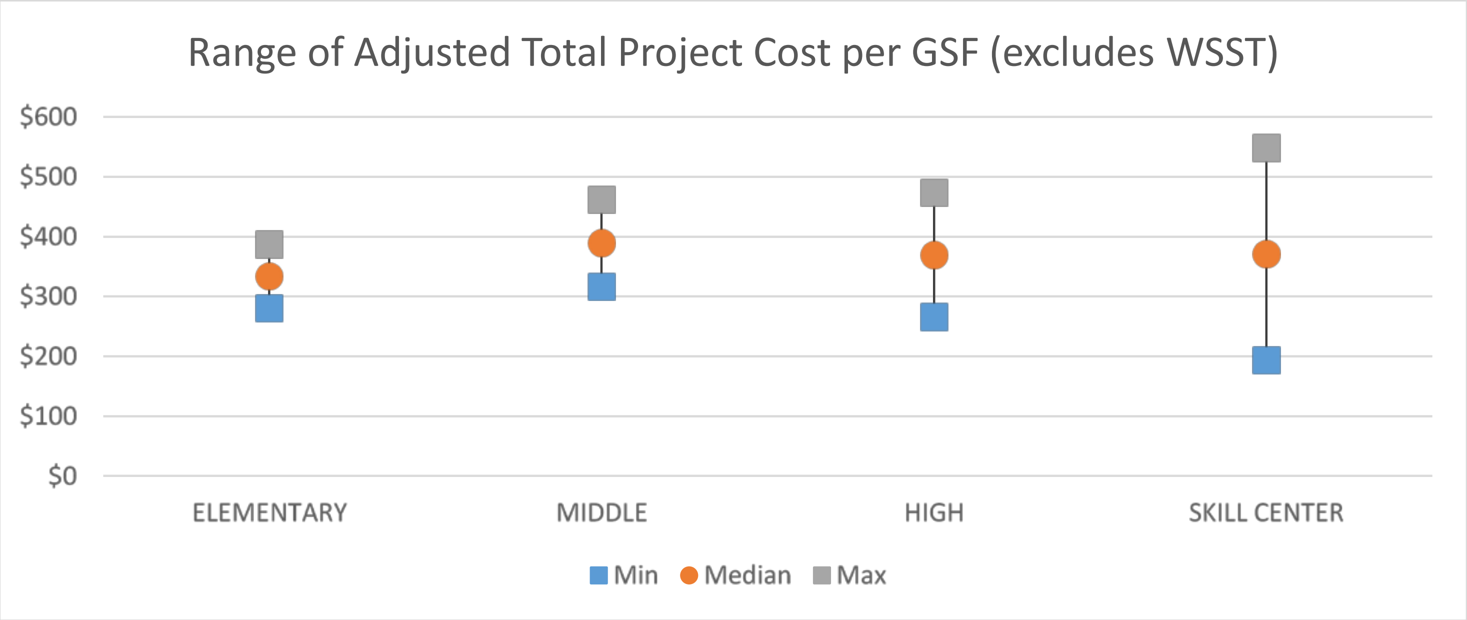
TOTAL PROJECT COSTS

- Sample projects were analyzed and normalized with total project costs excluding WSST.
- Costs were based on the actual schedule of values from the general contractor's pay application for each project.
- ENR Building Cost Indexes (BCI) in Seattle (1978-2016) were then used to index cost data to the first quarter of 2017.



QUANTITATIVE COST FACTORS: SPACE AND $

- **Six critical factors, listed from highest to lowest impact on cost.**
- **Within Each Major Factor are Several Variables.**

NO. 1 MARKET CONDITIONS

Market Conditions

- General belief that in a perfect market only two factors have a direct impact on construction costs: price of materials and labor costs.
- During periods of rapid growth the reality is quite different.
- Limited numbers of qualified tradesmen in key sub-disciplines (i.e. steel erection, mechanical, electrical and plumbing) create bidding competition and higher cost pressures.

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NO. 2 PROGRAMMATIC REQUIREMENTS

Programmatic Requirements

- **New Pedagogies = New Space Allocations**
- **State median of new and existing facilities is lower than the national median of new construction**
  - Elementary Schools = 38.8% below median
  - Middle Schools = 14.6% below median
  - High Schools = 3.9% below median

MEDIAN SQUARE FEET PER STUDENT		
	State Median (New & Existing)	20th Annual School New Construction Report National Median
Elementary School	115	188
Middle School	148	173.4
High School	173	180
Skill Centers	138	N/A

*State Median excludes schools that include grades K-12, K-8, or combined Middle / High Schools.
Table 1: Median Square Feet Per Student (OSPI ICOS (2016), Planning and Management (2016))

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NO. 2 PROGRAMMATIC REQUIREMENTS

- **Communities Build Joint Use and Resilient Schools**
  - Instructional Facilities and Spaces are being designed to serve as emergency shelters during natural and man-made disasters to aid recovery.
  - Joint-Use of K-12 School Buildings for additional community support services including recreation, public safety, public health to maximize use of space.

NO. 3 GEOGRAPHY

- **Climatic and geological differences from west to east account for significant cost variability in building systems and materials design.**
  - More Severe Winter Conditions,
  - Higher Annual Diurnal Temperature Variation, and
  - Different Relative Humidity.
- **Building code variations reflect location and impact**
  - structural systems, and
  - heating, and ventilation systems.
- **Some schools strengthen building performance "beyond-code" to be able to reoccupy facilities and recover after natural and man-made disasters**

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NO. 3 GEOGRAPHY

NEW CONSTRUCTION		Elementary		Middle		High	
ESD	*% Diff. from WA Average*	Low Cost/GSF	High Cost/GSF	Low Cost/GSF	High Cost/GSF	Low Cost/GSF	High Cost/GSF
	0%	$230	$309	$246	$326	$265	$344
101	0.4%	$231	$310	$231	$327	$266	$345
105	-3.9%	$221	$297	$220	$313	$255	$330
112	8.8%	$250	$336	$267	$354	$288	$374
113	6.0%	$244	$328	$244	$345	$281	$364
114	-15.8%	$194	$260	$191	$274	$223	$289
121	14.0%	$250	$353	$251	$372	$288	$392
123	-4.6%	$210	$295	$208	$311	$242	$328
171	-7.7%	$212	$285	$211	$301	$244	$317
189	17.2%	$244	$363	$245	$382	$281	$403

Table 2: Geographic cost variations by Educational Service District compared to the Washington State Average.

NO. 4 BUILDING MATERIALS AND SYSTEMS DESIGN

- **Districts may construct new buildings with nearly identical useable space requirements (space programs) that have wide variance in total gross area.**
- **Design and installation of major systems (such as HVAC, plumbing and electrical) differ**
  - In Quality Materials and Performance,
  - Anticipated Useful Functional Life (Life Cycle Cost),
  - Utility Consumption/Costs,
  - Maintenance Requirements./Costs
- **Despite State of Washington serving as a leader in the development of design process guidelines for K-12 schools, implementation varies significantly.**
- **Cost differences are due to variations in building materials and systems design approaches by local school districts and their architect/engineer teams.**

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NO. 5 SITE DEVELOPMENT

- **"Typical" site development costs range between 10% and 15% of the direct construction cost.**
- **For some projects site development costs far exceed15%.**
- **On-site development cost variation factors include:**
  - Wetland Mitigation,
  - Cultural Resource Mitigation,
  - Hazardous Site Stabilization Measures,
  - Storm Water Management,
  - On-site Transportation Improvements, and/or
  - Hazardous Materials Abatement.

NO. 6 REGULATORY | JURISDICTION REQUIREMENTS

- **Land use entitlement and permitting processes have been used to capitalize municipal, county, and/or local serving utility off-site improvements including:**
  - Traffic Mitigation/Improvement Projects (including creation of new roads, road widening, new traffic signalization, and signage),
  - Extending Pedestrian, Lighting, and other Neighborhood Improvements,
  - Sanitary Sewer and other Utility System Improvements, and
  - Storm Water Management Systems.

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QUALITATIVE COST IMPACTS

- **Qualitative factors contribute to observed project cost variations.**
- **There is significant authority of local school district in decision-making.**

1. Resulting in variability between school district's in pre-planning before pursuing funding.
2. Unclear expectations of school districts on the durability of building systems impacting design decisions made at the local level and long term operating costs.
3. Limited ability for OSPI to support or provide comparable cost information to support school districts in making decisions.

PRELIMINARY OBSERVATION: NEXT STEPS TO NORMALIZE COST VARIATIONS

Processes, if implemented, may more effectively normalize cost variations.

1. **Enhance technical planning to development of capital budgets based on pre-design or feasibility documentation.**
2. **Implement a facility performance baseline building "materials and systems" design guidelines, by school building type, that encourages design innovation.**
3. **Link capital cost efficiencies and existing asset preservation based on building conditions assessments.**
4. **Enhance support for Value Engineering, Constructability Reviews, and Building Commissioning services.**
5. **Provide standard project cost planning and management tools.**

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PRELIMINARY OBSERVATIONS : NEXT STEPS

- **Regular dissemination and educational support for "school design" best-practices and demonstrated innovative practices for school districts and their consultants.**
- **Creation of a net present value analytical tool to assess financial impacts to building life decisions (e.g. 20 v. 50 building life),**
- **Standard templates for professional services and contractor agreements.**
- **Independent assessments of building new v. renovation (including adaptive reuse of existing non-school buildings).**
- **Develop a data warehouse for**
  - life cycle cost models,
  - detailed capital project cost information.

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FEBRUARY 10

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