



Facility Condition Assessment Report

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pps.net/fca

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AVAILABLE UNDER SEPARATE COVER:¹

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¹ Underlined text throughout this document is hyperlinked.

DISTRICT PORTFOLIO

Portland Public Schools (“PPS” or “the District”) manages approximately 9 million square feet of building area across 700 acres of real estate. See table 1 below for an overview of the configuration, count, and gross square footage of District-sites. Additionally, [Appendix A](#) details the age, gross square footage, and configuration of individual campuses.

TABLE 1

Configuration	Count	GSF
HIGH	10	3,002,692
ELEMENTARY	40	2,486,232
MIDDLE	13	1,273,541
K-8	18	1,235,518
PPS ADMINISTRATION	5	527,245
LEASED TO OTHERS	4	159,774
ALTERNATIVE	2	106,294
SPECIAL ED	3	94,256
HEAD START	3	87,370
TOTAL	98	8,972,922

The facilities in the District’s portfolio have been in service anywhere from less than two years to nearly 120 years. Newer facilities have few immediate needs for repair or reinvestment. The older facilities have aged components beyond their service life, obsolete or no longer energy efficient. Many facilities have received at least partial reconstruction since their initial construction date.

In addition to permanent structures, the District operates 71 modular buildings, totaling 131 classrooms and over 200,000 SF Net instructional area. Like the permanent building portfolio, these modulars are aged: on average, the installation date of District modulars is 1980.

Building Age

Building age, in particular, is an important determinant for the condition of District buildings. Nearly one-half of District buildings were constructed before World War II. Many of these structures still operate systems from their original construction date. The risk of system failure in these buildings is high, to say nothing of the maintenance and energy costs associated with operating older building systems. Table 2 below outlines the significant growth periods in school

construction². Building-age, as it relates to facility condition, is detailed in [Appendix C](#). Additional historical details can be found on the District's [Historic Building Assessment](#) page.

TABLE 2

Building Characteristic	Count	Year/ Percent
AVERAGE PRIMARY CONSTRUCTION DATE	-	1944
MEDIAN PRIMARY CONSTRUCTION DATE	-	1949
CONSTRUCTED BEFORE 1930	38	39%
CONSTRUCTED BETWEEN 1930 AND 1960	42	43%
CONSTRUCTED BETWEEN 1961 AND 1990	9	9%
CONSTRUCTED AFTER 1990	9	9%

The facility condition assessment data outlined primarily reflects an aged building stock and further demonstrates the magnitude of capital investment necessary to align the District's physical infrastructure with modern design and construction standards. These data are intended to serve as the foundation for strategic planning around physical infrastructure, ultimately supporting Portland Public Schools' ongoing mission to elevate our community's health, dignity, and well-being.

² The primary construction dates presented here include forecasted completion dates for Madison HS, Benson Polytechnic Campus, and Lincoln HS. Construction dates for Kellogg MS and Smith ES were not included in this table.

FACILITY ASSESSMENT SUMMARY

In the Spring of 2018, Portland Public Schools selected AECOM to implement a comprehensive Facility Condition Assessment (FCA) of District-owned assets covering 8.1M gross square feet across 94 educational sites³.

The objective of the FCA is to accomplish the following goals:

- Calculate Facility Condition Index (FCI) Scores for buildings, including FCI scores for individual systems.
- Prioritize building systems based on need, observed deficiencies, remaining useful life, and classify each system based on a recommended timeframe for when these systems should be replaced.
- Create one central depository of data on critical building systems
- Update previous Americans with Disabilities Act (ADA) Accessibility Studies

Following the assessments, a recommended corrective action for each observed deficiency was developed. If an action was required within four years, remedial repairs were priced and given a severity category and priority.

The issues identified in the FCA will likely impact current operations and future growth or expansion capabilities. The result of the FCA is a database of system deficiencies with estimated remedial costs. It provides the groundwork for analysis that supports the District's institutional planning and decision-making process by making accurate facility information accessible. The database also enables the District to generate multi-year capital spending plans to implement the proposed upgrades and replacements.

Assessment Overview

The findings in this report are based on nationally recognized facility condition assessment approaches, methods, and best practices to evaluate the physical condition of educational and support structures. This assessment included all permanent buildings, site and ground features, athletic fields, athletic facilities, and other permanent administrative, maintenance, warehouse, or ancillary buildings such as storage or equipment buildings. Modular buildings were evaluated as single components rather than aggregated systems.

Regarding building systems, assessment teams evaluated the following:

³ Sites recently modernized or actively being modernized were not included in this assessment. These include: Grant HS, Madison HS, Benson Polytechnic Campus, and Lincoln HS. The District owns one vacant site: Smith ES; Smith was similarly not assessed as part of the facility condition assessment.

- Structure
- Exterior enclosure
- Roofing
- Interior construction
- Stairs
- Interior finishes
- Conveying
- Plumbing
- HVAC
- Fire protection
- Electrical
- Site Improvements
- Athletics

To ensure consistency in the collected data, the assessment team evaluated District assets using pre-established, standardized criteria. All assessments were performed per [ASTM E2018](#) guidelines. Documents reviewed in preparation for the investigation included District work order data, floorplans, historical reports, and previous ADA assessments.

The assessments required the use of specially-trained personnel and distinctive methods and approaches to the work. AECOM personnel and sub-consultants conducted the physical condition assessment of the buildings and grounds and prepared the overall findings. In addition, AECOM incorporated the local knowledge and expertise of District maintenance and operations representatives, custodians, and extensive input from facility operations managers to develop individual facility assessment reports and findings.

The data was collected without intrusion, relocation, removal of materials, exploratory probing, use of specialized protective clothing, or any special equipment (lifts, fall protection, etc.) and did not necessitate lockout/tag-out procedures. AECOM did not access roofs without built-in access or secured ladder, nor pitched roofs. In situations where roofs were not accessible, recommendations were developed based on the walk-through assessment of the interior, vantage points from higher building elevations nearby (if possible), dialogue with onsite personnel, and client feedback information such as roof age and known issues.

Each team member used identical condition assessment criteria to assess the condition of building systems to ensure data collection consistency. The condition assessment criteria guided the assessment of each facility system and major assets. Team members utilized the system age and observed deficient conditions to assess the building systems. Each system was rated from one to five according to the system age and observed deficiencies, with a rating of five being 'Excellent.'

System Classification

Data collected for each system aligned to [UNIFORMAT II](#) standards for building classification. Elements, as defined here, are major components common to most buildings and facilities. Elements usually perform a given function, regardless of the design specification, construction method, or materials used. Using UNIFORMAT II ensures consistency in the economic evaluation of building projects over time and from project to project. It enhances project management and reporting at all stages of the facility's life cycle—planning, programming, design, construction, operations, and disposal.

This report uses four hierarchical levels of definition. Starting from Level 1, the largest element grouping, it identifies Major Group Elements such as the Substructure, Shell, and Interiors. Level 2 further subdivides Level 1 elements into Group Elements; similarly for Levels 3 and 4.

A significant benefit of performing an economic analysis based on an elemental framework instead of a material-based classification is the reduction in time and costs for evaluating alternatives at the early design stage.

Cost Models

The results of the condition assessment were provided to cost estimators to prepare program level opinions of costs for the suggested remedy of the physical deficiencies that were observed. As part of AECOM's assessment process, estimators worked with field teams to properly identify and price recommendations. Costs were organized into two categories:

I. Short-term deficiency corrections for assets requiring immediate or near-term repairs. These would include broken assets, missing equipment, or items or components that are otherwise in a state of disrepair. The cost estimation experts developed estimates for the resolution of identified deficiencies. Special consideration was made to ensure estimates included the best approach to resolving identified deficiencies.

II. Asset full replacement for assets at or near end of typical design life. These are modernization deficiencies based on the system or asset conditions observed in the field, combined with an engineering estimate of the asset's remaining useful life. These would include HVAC equipment, plumbing fixtures, electrical equipment, elevators, interior finishes, exterior enclosure, roof coverings, etc. which function normally but are, or will soon be, beyond design life. They are functional, however need to be identified as candidates for future capital replacement.

Cost estimates as developed are intended for budgetary planning and future project prioritization and utilize industry-standard RS Means data. These rough order of magnitude estimates are based on zero percent design. As such, the preliminary estimates provided have a wider range of projected accuracy. The estimated cost of identified deficiencies is \$614,073,845 (inclusive of ADA) in 2020 dollars.

RSMMeans uses a project location to adjust costs by using factors. The location cost factor for a same location may differ for materials, Installation, and Labor Disciplines. The average location cost factor applied to PPS estimates was 1.02298 based on RSMMeans historical cost index for the city of Portland. Labor items were adjusted to the latest Davis Bacon prevailing wage rates.

These cost estimates should only be construed as preliminary. Actual costs will vary depending on the type and design of suggested remedy, quality of materials and installation, system selected, field conditions, phasing, market conditions, and bid structure. These costs do not include hazardous materials removal or evaluation of other expenses that were not a part of this study.

Table 3 below provides a breakdown of markups applied, compounding to a total 62.45% overall project markup.

TABLE 3

Project Markups	Percent
General Conditions	8.00%
Phasing Requirements	1.00%
General Contractor Overhead	10.00%
General Contractor Profit	10.00%
Estimate Contingency	15.00%
Bonds and Insurance	1.00%
General Requirements	7.00%
Total	62.45%

The District followed the guidance of the Oregon Department of Education when estimating the building replacement cost. The State-recommended building replacement costs are outlined in Table 4 below. To highlight one assumption: raw budgets are extrapolated from RLB Cost Estimating Guide and recent public bid results. The Oregon Department of Education derives other assumptions from historical cost data and prevailing trends. One exception is site development costs. These costs are not included in the State’s recommendations; AECOM recommended an estimated 15% markup for site development.

TABLE 4

REF	CALCULATION	COST VARIABLES	%	HS	MS	K-8	ES	ADMIN	DATA SOURCE
A		RAW COSTS		\$375	\$340	\$360	\$325	\$320	ODE
B	(A*B)	INFLATION FACTOR	14%	\$53	\$48	\$50	\$46	\$45	ODE
C	(A+B) * C	COST FACTOR	13%	\$56	\$50	\$53	\$48	\$47	ODE
D	(A+B+C) * D	SITE DEVELOPMENT	15%	\$72	\$66	\$70	\$63	\$62	AECOM
E	(A+B+C+D)	HARD COST		\$556	\$504	\$533	\$481	\$474	SQ/FT

Facility Condition Index

The Facility Condition Index (FCI) is the ratio of a building’s maintenance costs relative to replacing the building at current construction costs. FCI values range from 0.00 (Good) to 1.00 (Critical). A higher FCI indicates a greater need for remedial funding, relative to the facility’s replacement value. The District average FCI is 0.13, or colloquially, “Poor.” Sixty-two facilities rated Poor or Critical of the ninety-four sites assessed.

As a standardized scale, the Facility Condition Index is a practical basis for strategic facilities capital planning. Metrics such as the FCI give stakeholders the ability to compare the condition of similar buildings to each other, as well as establish target condition ratings. Comparing buildings against a standardized scale also highlights the buildings in the greatest need of investment.

This analysis can be used to see trends, compare the outcomes of short-term, lower budget repairs with mid- to long-term, higher-cost rehabilitations. The rehabilitation and replacements often require more substantial strategy and investment that take place over the long-term. However, operations and maintenance (O&M), repair, and smaller rehabilitation can be used to extend asset and building lives, resulting in cost savings over the long-term, up to a threshold of where O&M costs outweigh the capital investment in replacing an asset or building. This threshold will differ by strategy, constraints and drivers, and capabilities. The findings here provide the information on which to base investment decisions in these contexts.

TABLE 5

FCI	DESCRIPTION
0.01 to 0.05	GOOD
> 0.05 to 0.1	FAIR
> 0.1 to 0.3	POOR
> 0.3 to 1	CRITICAL

Priority Classes

Priority classes were developed by PPS and AECOM to categorize opportunities based on estimated years remaining. The classes are described below:

TABLE 6

Years Remaining	Deficiency Priority	Description
0-1	1 Currently Critical	Mission critical. Loss of the asset would cause complete loss of functionality or purpose. Asset has a remaining useful life of 1 year or is already beyond design life.
2	2 Potentially Critical	Service critical. Deficiencies affecting significant loss of functionality and/or purpose of major systems, asset and have a remaining useful life of 2 years.
3-4	3 Necessary but Not Yet Critical	Deficiencies which have the potential to have a minor impact on work productivity and/or efficiency and have a remaining useful life of 3-4 years.
5-10	4 Recommended for Future Investments	Not captured. Deficiency does not significantly affect building function and/or a work around is in place that would not cause serious loss of work productivity or efficiency.
10+	5 Long Term	Not captured. Future planning or modernization

Severity Classes

Severity classes were developed by PPS and AECOM to categorize opportunities based on severity. The classes are described below:

TABLE 7

Health & Life Safety	Warm & Dry	Security
Missing/ Damaged Fall Protection	Damaged Building Envelope	Damaged Openings
Damage to Egress Path	Plumbing Leaks	Aged Security Systems
Damaged Fire Suppression Equipt	Deficient HVAC Systems	
Legal/Regulatory	Delivery of Instruction	Delivery of Support Services
Deficient Alarm Systems	Interference with learning	Stained, Worn Surfaces
Trip Hazards	Deficient Lighting	Deficient Ventilation
ADA	Damaged Fixed Seating	Damaged Exterior Flatwork

KEY FINDINGS

The FCI summary tables typically serve as a high-level tool for relative facility condition analysis and comparison. See [Appendix B](#) for FCI data per campus. Appendices C-E compare campus FCIs against building age and geography, among other metrics. Likewise, Tables 8 and 9 below summarize the assessment findings based on cluster and configuration.

TABLE 8

Configuration	Totals		Good		Fair		Poor		Critical	
	Count	Area (SF)	Count	Area (SF)	Count	Area (SF)	Count	Area (SF)	Count	Area (SF)
ADMIN	5	527,245	1	419,802	1	29,800	2	36,568	1	41,075
ALTERNATIVE	2	106,294	-	-	1	35,945	1	70,349	-	-
ELEMENTARY	35	2,102,591	2	131,009	7	491,113	28	1,687,427	3	176,683
HEAD START	3	87,370	-	-	2	59,585	1	27,785	-	-
HIGH	10	3,002,692	6	1,863,026	-	-	4	1,139,666	-	-
K-8	23	1,649,050	1	170,638	2	154,584	13	774,646	2	135,650
LEASED	4	159,774	-	-	-	-	3	116,285	1	43,489
MIDDLE	13	1,243,650	1	87,610	3	411,423	9	774,508	-	-
SPECIAL ED	3	94,256	-	-	1	31,907	2	62,349	-	-
Total	98	8,972,922	11	2,672,085	17	1,214,357	63	4,689,583	7	396,897

TABLE 9

Cluster	Totals		Good		Fair		Poor		Critical	
	Count	Area (SF)	Count	Area (SF)	Count	Area (SF)	Count	Area (SF)	Count	Area (SF)
ADMIN	5	527,245	1	419,802	1	29,800	2	36,568	1	41,075
BENSON	1	371,189	1	371,189	-	-	-	-	-	-
CLEVELAND	12	960,531	-	-	2	153,753	9	754,574	1	52,204
FRANKLIN	18	1,300,033	1	296,719	1	31,907	15	911,313	1	60,094
GRANT	10	925,837	2	390,881	4	261,263	4	273,693	-	-
JEFFERSON	12	1,167,787	1	170,638	2	215,030	8	738,630	1	43,489
LINCOLN	9	744,537	2	354,833	-	-	5	300,444	2	89,260
MADISON	12	1,062,834	1	333,441	5	289,453	5	329,165	1	110,775
MARSHALL	1	273,646	-	-	-	-	1	273,646	-	-
ROOSEVELT	8	701,714	2	334,582	2	105,008	4	262,124	-	-
WILSON	10	937,569	-	-	1	219,281	9	718,288	-	-
TOTAL	98	8,972,922	11	2,672,085	18	1,305,495	62	4,598,445	7	396,897

Asset Condition Overview

AECOM documented the condition of 15k assets. Of those assets, approximately 7k deficiencies, including ADA, were recorded and priced. Assets with the highest associated costs were related to heat-generating systems, followed by elevators, lifts, and distribution systems. Nearly three-quarters of all deficiencies were categorized as "Aged – Exceeded Design Life." To be sure, a significant portion of District infrastructure is well beyond its intended design life; assets installed in the 1920s or 1950s present a high risk for continued reliability and serviceability.

The most common deficiency severity class was "Warm & Dry," corresponding to the District's aged mechanical systems. The most common deficiency priority class was "2 Potentially Critical," suggesting these assets have an expected remaining useful life of two-years.

The following table⁴ indicates facility condition needs, by building system, ordered by estimated total repair cost.

TABLE 10

Building System	Priority 1	Priority 2	Priority 3	Total
HVAC	\$ 16,799,100	\$ 96,311,300	\$ 89,839,200	\$ 202,949,600
Plumbing	\$ 6,532,800	\$ 40,115,800	\$ 41,419,900	\$ 88,068,500
Electrical	\$ 9,124,100	\$ 21,324,800	\$ 21,230,900	\$ 51,679,800
Roofing	\$ 4,222,900	\$ 34,105,200	\$ 7,920,800	\$ 46,248,900
Exterior Enclosure	\$ 1,572,600	\$ 19,682,300	\$ 21,615,900	\$ 42,870,800
Interior Finishes	\$ 1,498,000	\$ 20,032,900	\$ 14,686,400	\$ 36,217,300
Interior Construction	\$ 961,400	\$ 8,253,200	\$ 19,647,400	\$ 28,862,000
Site Improvements	\$ 9,300	\$ 13,883,700	\$ 10,284,000	\$ 24,177,000
Fire Protection	\$ 538,500	\$ 2,869,700	\$ 15,246,500	\$ 18,654,700
Conveying	\$ 584,400	\$ 1,059,900	\$ 1,784,500	\$ 3,428,800
Equipment	\$ 51,700	\$ 734,200	\$ 1,131,800	\$ 1,917,700
Stairs	\$ 88,200	\$ 1,365,100	\$ 106,700	\$ 1,560,000
Superstructure	-	-	\$ 566,800	\$ 566,800
Basement Construction	-	\$ 150,000	\$ 302,500	\$ 452,500
Site Electrical Utilities	\$ 12,000	\$ 225,700	\$ 44,200	\$ 281,900
Foundations	-	\$ 55,600	\$ 64,700	\$ 120,300
Site Mechanical Utilities	-	-	\$ 14,100	\$ 14,100
Grand Total	\$ 41,995,000	\$ 260,169,400	\$ 245,906,300	\$ 548,070,700

⁴ This table excludes ADA deficiencies.