

# Chimacum School District

## 2021 Facility Condition Assessment

### Report Volume 1: Executive Summary



**CHIMACUM**  
SCHOOL DISTRICT

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# DEEP ROOTS BROAD HORIZONS

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Prepared by **MENG Analysis** May 19, 2023

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# Executive Summary

## Introduction

The Chimacum School District engaged MENG Analysis to update the District-wide facility condition assessment (FCA). The purpose of this assessment is to aid District staff in organizing & prioritizing maintenance backlog needs while supporting future-focused proactive facility management. Proactive facility management includes but is not limited to, planning and budgeting for short-term correction of Observed Deficiencies (ODs), and long-term major maintenance, referred to in this report as Predicted Renewals (PRs). Many other facility maintenance and planning activities are continually performed by the District, but those activities are not included in the scope of the Facility Condition Assessment.

In addition to creating this FCA report, the MENG Analysis team also completed OSPI BCA certified updates of the scoped facilities in ICOS.

The surveyed facilities included nine buildings across three sites. The total square footage of the surveyed buildings is over 230 thousand SF. These buildings represent a major public investment.

## Report Organization

This Executive Summary Report (Volume 1) presents an introduction and overview to the Facility Condition assessment process as well as summary findings across all schools. The Facility Detail Report (Volume 2) contains the database-generated subsystem level reports.

FCA Stats 2021	
<b>Number of Surveyed Facilities</b>	<b>Total SF Surveyed</b>
9	230k
<b>Total Replacement Value of Facilities</b> (2021 dollars)	<b>Total Needs - 20 Years</b>
\$107.7M	\$54.6M
<b>Total Deficiencies - 6 Years</b>	<b>Priority<sup>1</sup> Needs 6 Years</b>
\$19.2M	\$2.9 M

## Terminology and Abbreviations

To aid in understanding the data and concepts presented in this report, the following list includes definitions of common terms and abbreviations related to the FCA process.

**Facility Condition Assessment (FCA):** A structured process to document the conditions of site infrastructure and building systems. FCAs are typically performed by a multi-disciplinary team of architects, engineers, construction, and cost specialists. Facility information and condition data should be maintained in a database for ease of updating and reporting. The data should be renewed over time.

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<sup>1</sup> Priority needs include life-safety and code issue deficiencies

**Facility Condition Index (FCI):** A benchmark used to compare relative condition of facilities within a portfolio of assets; derived by the following formula:

*Note: There are a number of different methods used by various organizations to calculate that backlog. For this reason, using FCIs to compare the District's facilities to other organizations may not represent true equivalency.*

$$\text{FCI} = \frac{\text{Backlog of Maintenance \& Repair (BMAR)}}{\text{Current Replacement Value (CRV)}}$$

This assessment uses a parametric method that calculates BMAR based on the assessed condition scores. The statistical basis is a study conducted by NASA on over 10,000 surveyed facilities that evaluated the backlog of repair items relative to qualitative condition scores 1 through 5. The parametric backlog for each system is calculated based on a statistical theoretical percentage of that system that would need repair or replacement for each of the qualitative condition scores. The costs of those systems are the facility use cost models customized for the District. It should also be noted that we continually update our cost models based on current market conditions, so the CRV values in this report will differ from those presented in earlier reports.

**Life Cycle Renewal Model:** A theoretical forecast of when building systems will exceed their typical lifespan and funding will be required for renewals.

**Parametric Costs:** Parametric cost estimating is a technique that uses statistical relationships between historical cost data and other program variables such as system condition or age. Historical cost data is typically used at a high level (e.g., cost per square foot) and often represent conceptual, order-of-magnitude costs for initial planning or discussion purposes.

**Remaining Useful Life:** An estimate of the years that a facility system may remain serviceable or in operation before failure; which would then require system renewal or replacement.

**Subsystem:** The term subsystem in this report refers to a Uniformat Level 3 building systems category (e.g., B3010 - Roof Coverings; or B3020 – Roof Opening; or B3030 – Projections).

**System:** The term system in this report refers to a Uniformat Level 2 building system category (e.g., B30 – Roofing)

#### Commonly Used Abbreviations

AC = Asphalt concrete  
ACT = Acoustic ceiling tile  
A/V = Audio/video  
AHU = Air handling unit  
ASHRAE = American Society of Heating, Refrigeration, & Air Conditioning Engineers  
BUR = Built-up roofing  
CCTV = Closed circuit television  
CFH = Cubic feet per hour (of natural gas)  
CFL = Compact fluorescent  
CI = Cast iron

CMU = Concrete masonry unit  
CO2 = Carbon dioxide  
CU = Condensing unit  
Cx = Commissioning  
DDC = Direct digital control  
DHW = Domestic hot water  
Dx = Direct expansion  
EA = Each (measurable unit)  
EF = Exhaust fan  
EFIS = Exterior insulation finishing system  
FRP = Fiber reinforced plastic  
GI = Grease interceptor  
GSHP = Ground-source heat pump

HID = High intensity discharge (lamps)  
 HM = Hollow metal  
 HVAC = Heating, ventilating, and air conditioning  
 IT = Information technology  
 LF = Linear feet (measurable unit)  
 LED = Light emitting diode  
 LS = Lump sum (measurable unit)  
 MDF = Main distribution frame  
 OWS = Oil/water separator  
 PA = Public address  
 P-lam = Plastic laminate  
 PRV = Pressure regulating valve  
 PTAC = Packaged terminal air conditioning

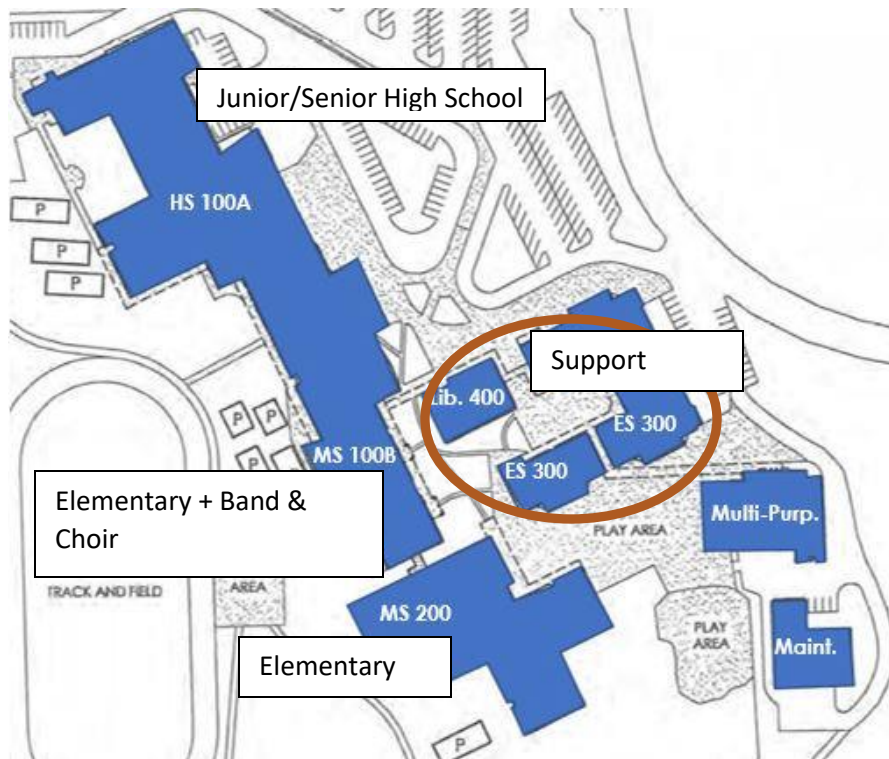
Psig = Pounds per square inch (pressure)  
 SS = Stainless Steel  
 PVC = Polyvinyl chloride  
 RTU = Roof top unit  
 RPBP = Reduced pressure backflow preventer  
 SF = Square feet (measurable unit)  
 UPS = Uninterruptible power supply  
 VAV = Variable air volume  
 VCT = Vinyl composite tile  
 VWC = Vinyl wall covering  
 VOIP = Voice over internet protocol  
 WAP = Wireless access point  
 WD = Wood

## List of Surveyed Facilities

**Table 1** lists the sites and facilities surveyed during this project. The first condition assessment was completed in 2017 when the buildings were occupied in their old configuration, therefore those names are still listed in the detailed assessment report. **Table 1** shows the old building name as well as the updated name.

**Table 1. List of Surveyed Facilities**

2017 Facility Name	2021 Facility Name/Use	SF
Chimacum Creek Primary Building	Chimacum Creek Primary	29,739
Chimacum Elementary Building 300	Support	29,077
Chimacum High School Building 100A	Chimacum Junior/Senior High School	77,186
Chimacum K-8 Library Building 400	Support	6,312
Chimacum Maintenance Bldg	Chimacum Maintenance Bldg	7,541
Chimacum Middle School Building 100B	Chimacum Elementary + Band & Choir	21,558
Chimacum Middle School Building 200	Chimacum Elementary	38,330
Chimacum Multipurpose Building 500	Chimacum Multipurpose Building 500	12,392
Chimacum Transportation Facility Building	Chimacum Transportation Facility	7,950



## Condition Summary

### Methodology

The field survey team included knowledgeable architects & engineers who reviewed civil, structural, architectural, mechanical, electrical, plumbing, and site infrastructure systems to a Uniformat level 3 detail<sup>2</sup>. These descriptions and scores are the basis for calculating Backlog of Maintenance and Repair (BMAR), generating the facilities' Facility Condition Index (FCI), and Weighted Average Condition Score (WACS). The team also completed ICOS data entry and review by BCA certified technical staff. Costs were developed by an experienced cost estimator familiar with K-12 construction practices and the local market.

### Facility Condition Index (FCI)

A Facility Condition Index (FCI) is an industry standard used for benchmarking and evaluating a portfolio of facility assets over time<sup>3</sup>. The FCI is the ratio between a facility's Backlog of Maintenance and Repair (BMAR) and the Current Replacement Value (CRV) of the facility. Therefore, the lower the FCI, the lower the cost of maintenance backlog in relation to the cost of a full building replacement.

<sup>2</sup> <http://www.uniformat.com/index.php/classification-of-building-elements>

<sup>3</sup> Since 1999 GASB 34 has required government agencies to improve Basic Financial Statements, including periodic Condition Assessment of capital assets; subsequent protocols were developed by GSA, NASA, States, NCUBO and others with most sharing similar definitions of BMAR, CRV & FCI.

Common industry practice is to create a scale for interpreting the FCI as a way to prioritize facility needs. Most organizations adjust their classifications of FCI to relate to their own unique criteria. For the District, we suggest the following FCI breakdown to support decision making.

- Excellent = 0.00 – 0.05 (5%)
- Good = 0.06 – 0.10 (6% – 10%)
- Fair = 0.11 – 0.20 (11% – 20%)
- Poor = 0.21 – 0.25 (21% – 25%)
- Critical = 0.26 (26% or greater)

$$FCI = \frac{\text{Backlog of Maintenance \& Repair}}{\text{Current Replacement Value}}$$

### Weighted Average Condition Score (WACS)

Every surveyed building is broken down into Uniformat categories, systems, and subsystems. The surveyors use standard criteria for scoring each subsystem from 1 to 5, where 1 is Excellent, and 5 is Unsatisfactory<sup>4</sup>. These subsystem scores are combined to a weighted average (based on importance) to the system level. A similar weighed calculation is performed at the category level, resulting in a 1-5 score for the building as a whole. This is called the Weighted Average Condition Score (WACS). Typically, the WACS and FCI track closely to each other.

For both WACS and FCI, the lower the number, the better the condition, or relative condition.

**Table 2. 2021 FCI and WACS**

Site	Facility	FCI	WACS
Chimacum Creek Primary	Chimacum Creek Primary Building	0.09	2.33
Chimacum Main Campus	Chimacum Elementary Building 300	0.17	3.19
Chimacum Main Campus	Chimacum High School Building 100A	0.13	2.72
Chimacum Main Campus	Chimacum K-8 Library Building 400	0.29	3.61
Chimacum Main Campus	Chimacum Maintenance Bldg	0.27	3.56
Chimacum Main Campus	Chimacum Middle School Building 100B	0.09	2.35
Chimacum Main Campus	Chimacum Middle School Building 200	0.11	2.50
Chimacum Main Campus	Chimacum Multipurpose Building 500	0.10	2.62
Chimacum Transportation Facility	Chimacum Transportation Facility Building	0.13	2.66

### Cost Overview

Estimated costs are *calculated* for short-term Observed Deficiencies (ODs) and *modeled* for long-term Predicted Renewals (PRs). The costs in the detailed reports show direct costs plus typical construction markups as well as project development markups (design, management, etc.).

It is important to clarify that 2021 – 2026 ODs should not be added to 2021 – 2026 PRs. ODs are based on known conditions that are witnessed by or disclosed directly to the field surveyors. Alternatively, PRs are based on predictive models that use industry-standard expected life data, combined with original construction or remodel dates and system scores from surveyors to estimate when a system will require renewal. Often the 2021-2026 ODs and PRs align somewhat; however, PRs may indicate a system needs renewal that is not evident from visual survey.

<sup>4</sup> A full description of the scoring metrics for all subsystems can be provided upon request.

Conversely, a model might indicate that a renewal is due based on timing, but survey conditions estimate a longer life. Therefore, ODs are generally the best short-term planning tool, while PRs are best used for long-term rough order of magnitude budgeting.

Table 3 shows the total ODs and PRs for each facility.

**Table 3. Total ODs and PRs by Facility**

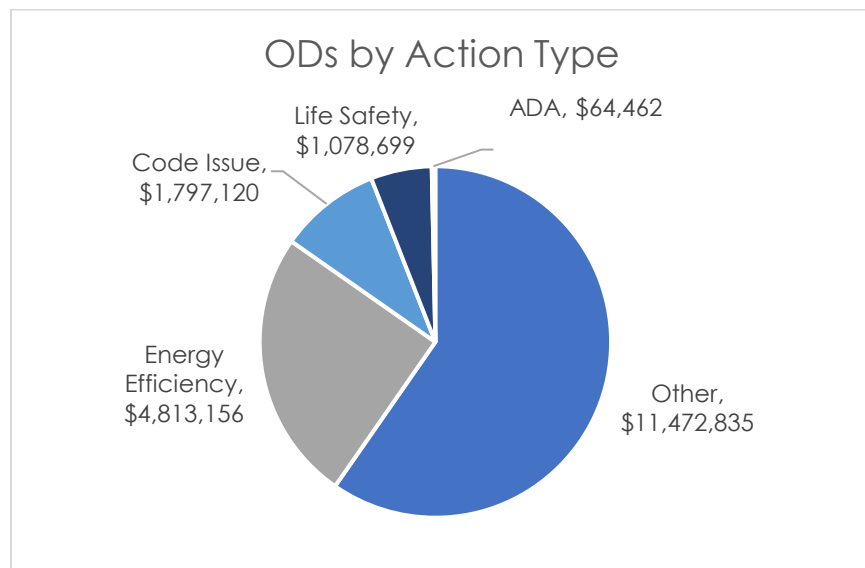
Site	Facility	Predicted Renewals	Observed Deficiency
Chimacum Creek Primary	Chimacum Creek Primary Building	\$4,135,228	\$1,210,503
Chimacum Main Campus	Chimacum Elementary Building 300	\$5,162,365	\$1,763,970
Chimacum Main Campus	Chimacum High School Building 100A	\$18,967,247	\$8,598,548
Chimacum Main Campus	Chimacum K-8 Library Building 400	\$1,361,169	\$656,903
Chimacum Main Campus	Chimacum Maintenance Bldg	\$1,355,962	\$1,508,085
Chimacum Main Campus	Chimacum Middle School Building 100B	\$2,881,870	\$1,270,440
Chimacum Main Campus	Chimacum Middle School Building 200	\$6,624,493	\$944,269
Chimacum Main Campus	Chimacum Multipurpose Building 500	\$2,460,026	\$491,632
Chimacum Transportation Facility	Chimacum Transportation Facility Building	\$1,359,715	\$826,418

### Observed Deficiencies

For a notable issue to be considered an Observed Deficiency (OD), the surveyor must think that the issue needs to be addressed within the next 5-year period, with an expected direct cost of \$5,000 or greater. Each deficiency is assigned an action type to help prioritize the order in which it should be addressed. The pie chart below shows the ODs broken out by action type.

For the 2021 FCA, ODs total approximately \$19.2M.

**Figure 2. Observed Deficiencies by Action Type**

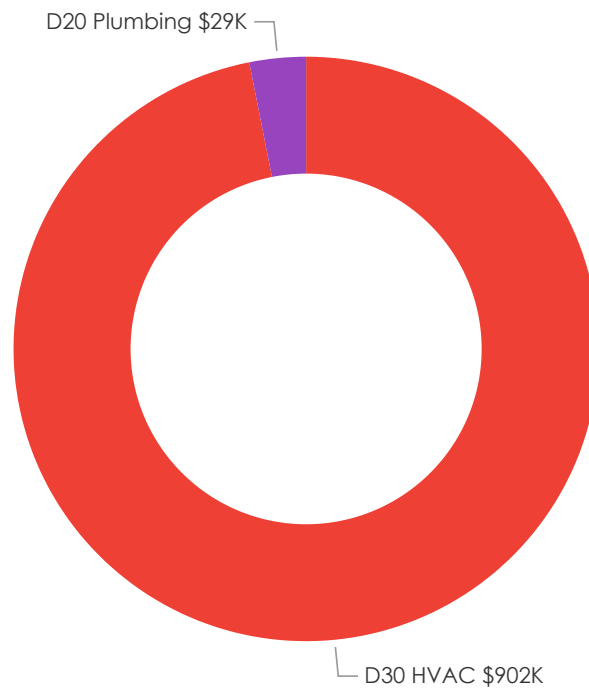




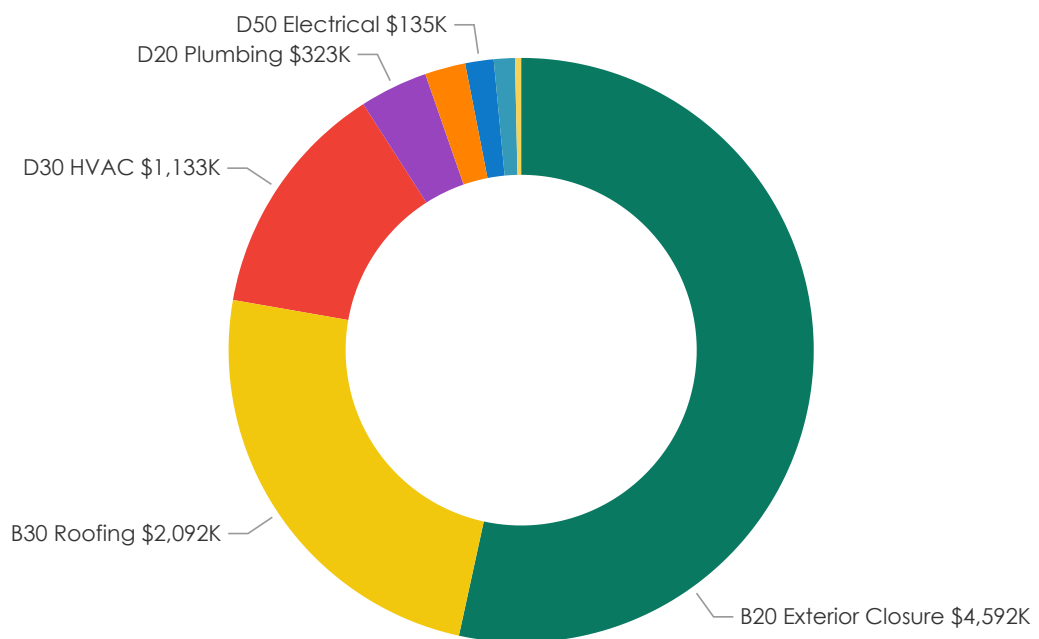
Priority ODs are those in the "Safety and Security" and "Code Issue" categories, which total nearly \$2.9M. Detailed descriptions, photos, and cost estimates of these deficiencies can be found in the Facility Detail Report (Volume 2).

Pages 8 to 12 show a graphic representation of the ODs by Site, broken out to Unifomat Level 2 Systems. These graphics can be viewed in greater detail in the Microsoft BI Dashboard that accompanies this report.

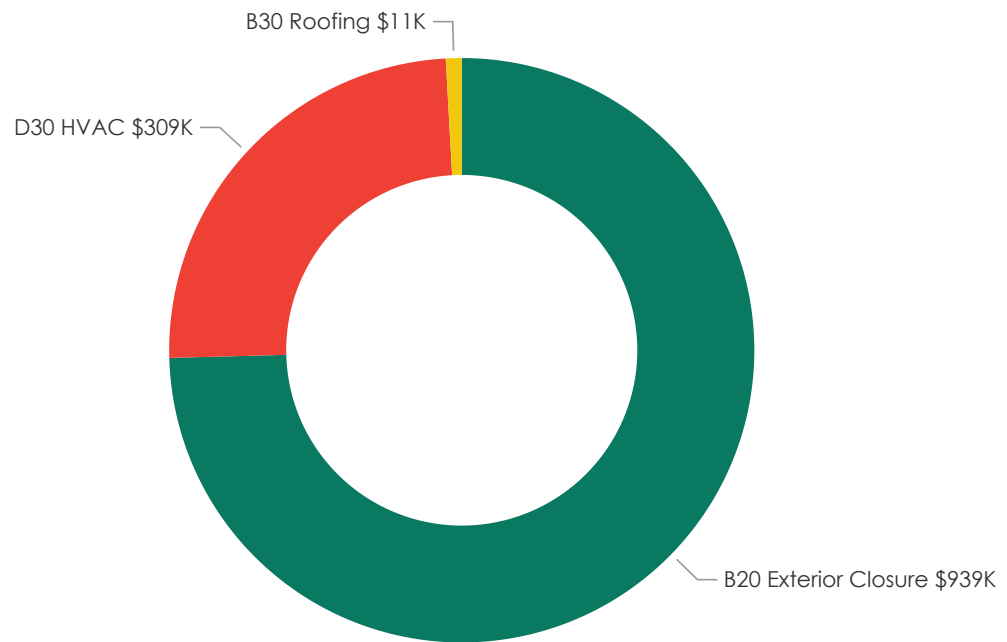
## Chimacum Creek Primary Building



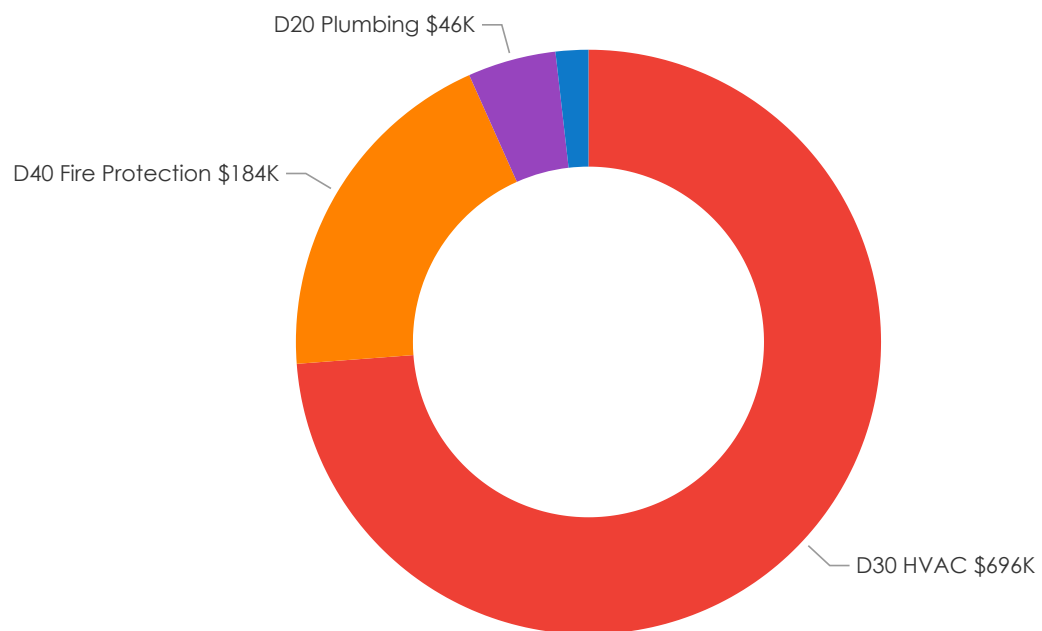
## Chimacum High School Building 100A



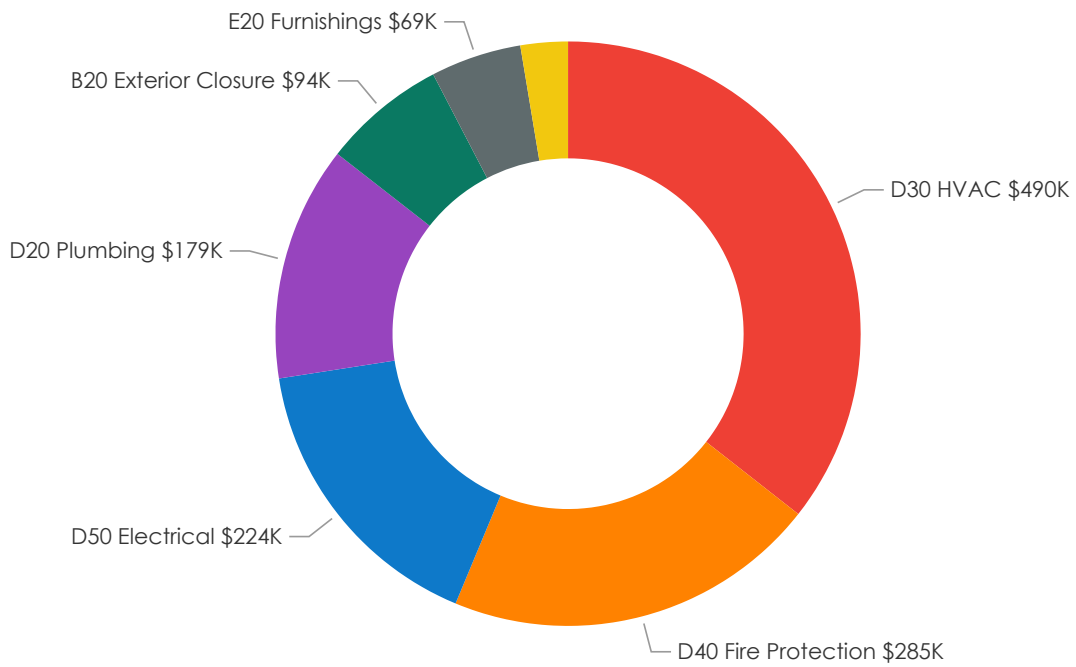
## Chimacum Middle School Building 100B



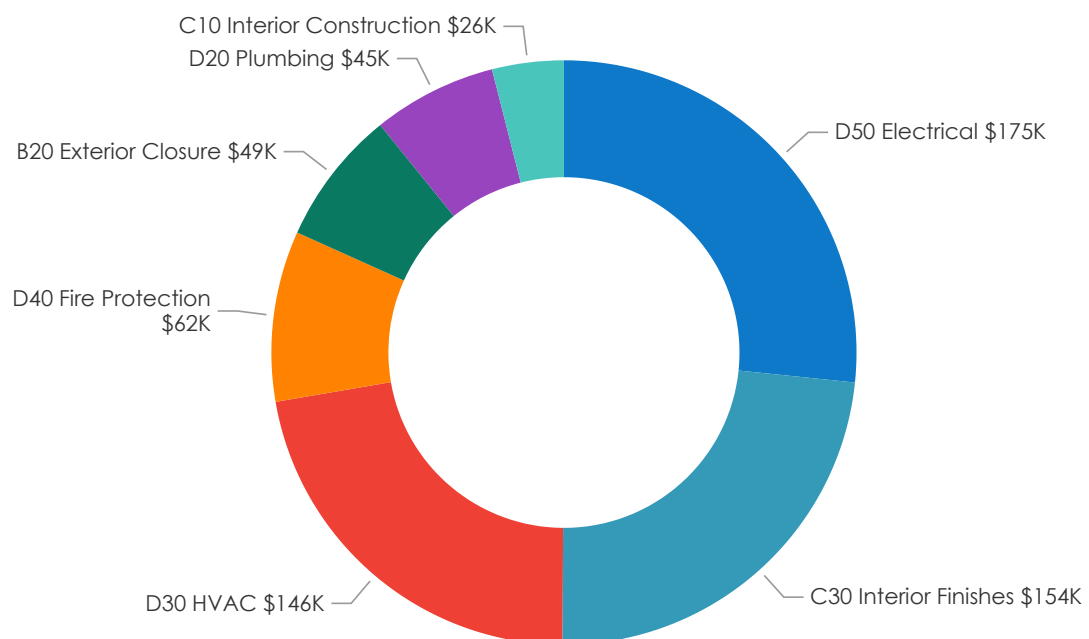
## Chimacum Middle School Building 200



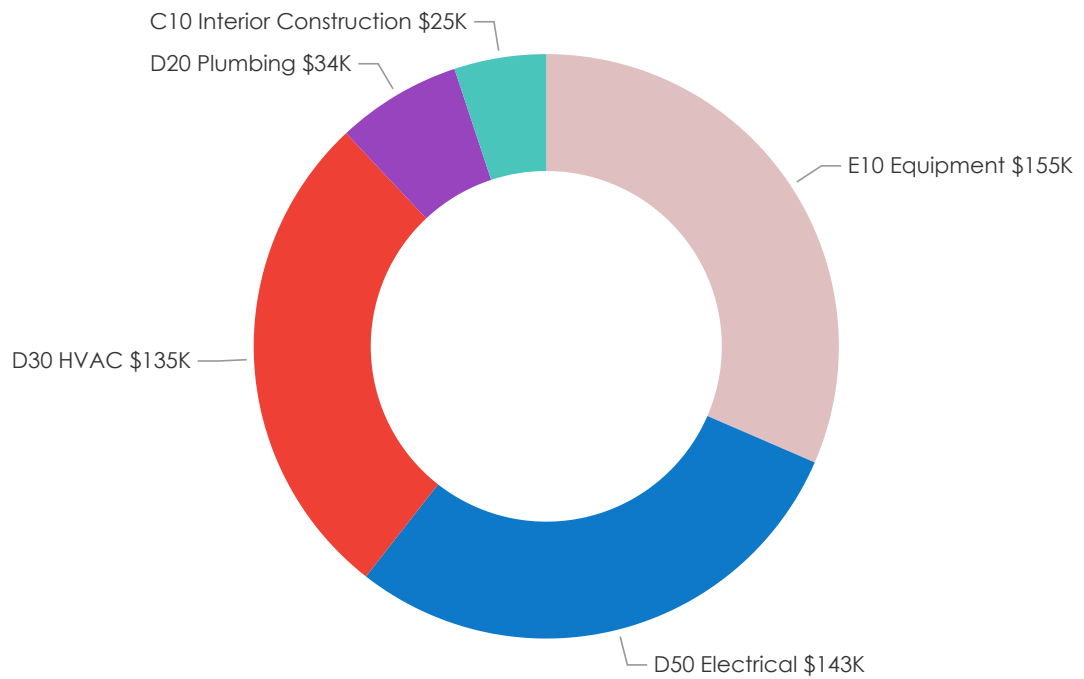
## Chimacum Elementary Building 300



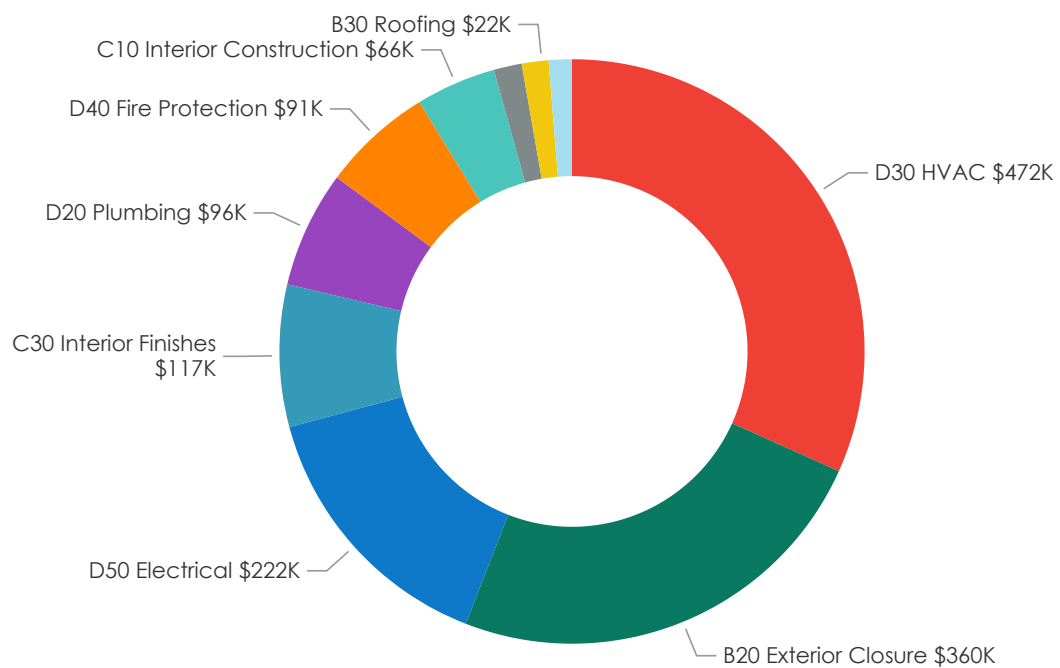
## Chimacum K-8 Library Building 400



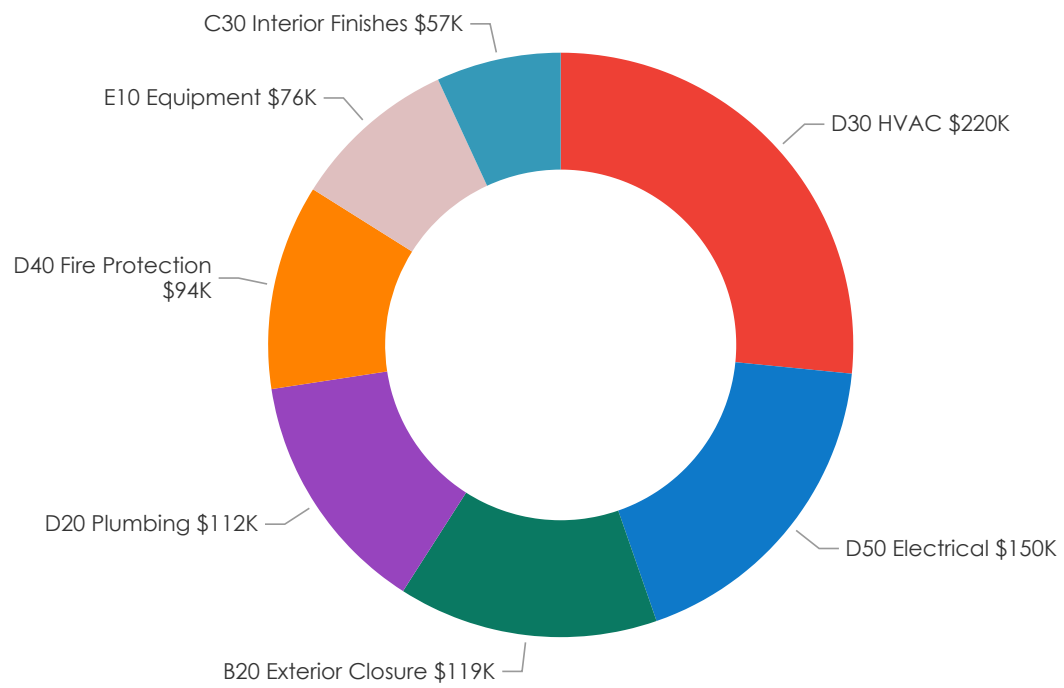
## Chimacum Multipurpose Building 500



## Chimacum Maintenance Building



# Chimacum Transportation Facility Building

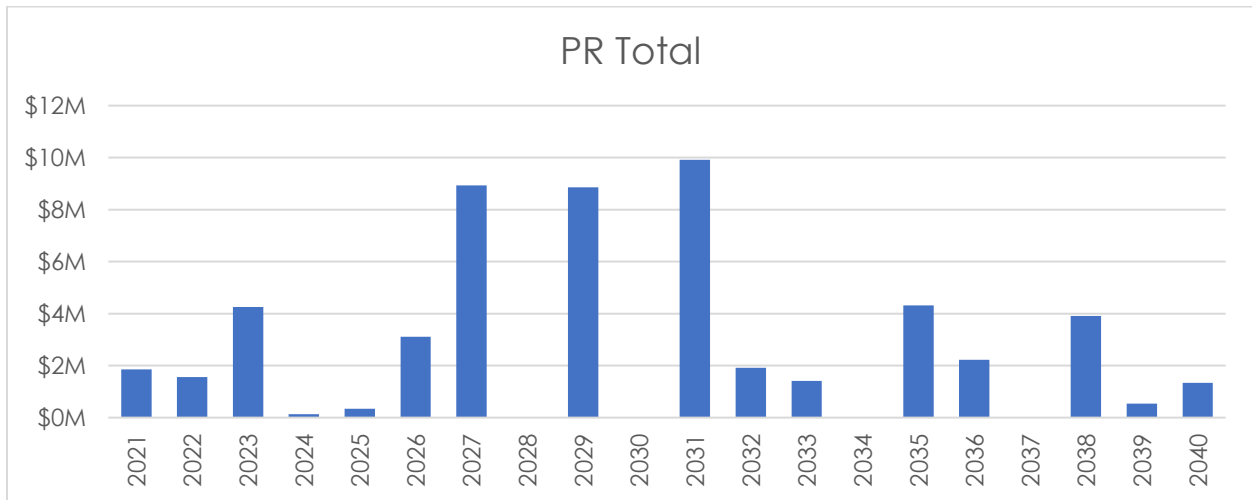


### Predicted Renewals

Predicted Renewals (PRs) are modeled for the years 2021 – 2040, based on the system type, age, current condition, expected useful life, and anticipated replacement cost. These costs are based on predictive models, and therefore should be used as high-level long-term planning tool. Some systems may fail sooner or last longer than the model predicts.

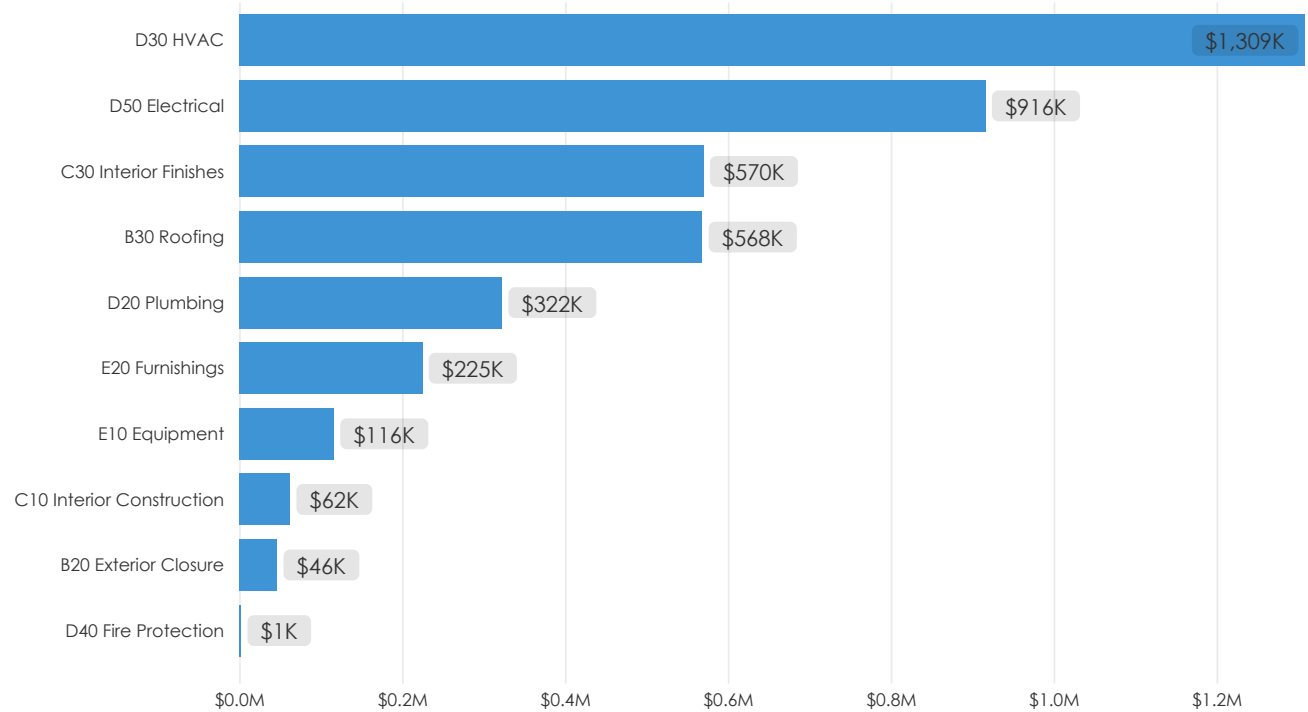
For the time period of 2021 – 2040, the estimated PR cost is approximately \$54.7M. The highest cost year is expected to be 2031 at approximately \$9.9M. The detailed PR table included in the Appendix shows these PRs broken out by facility, subsystem, and year.

**Figure 3. Predicted Renewal Totals by Year**

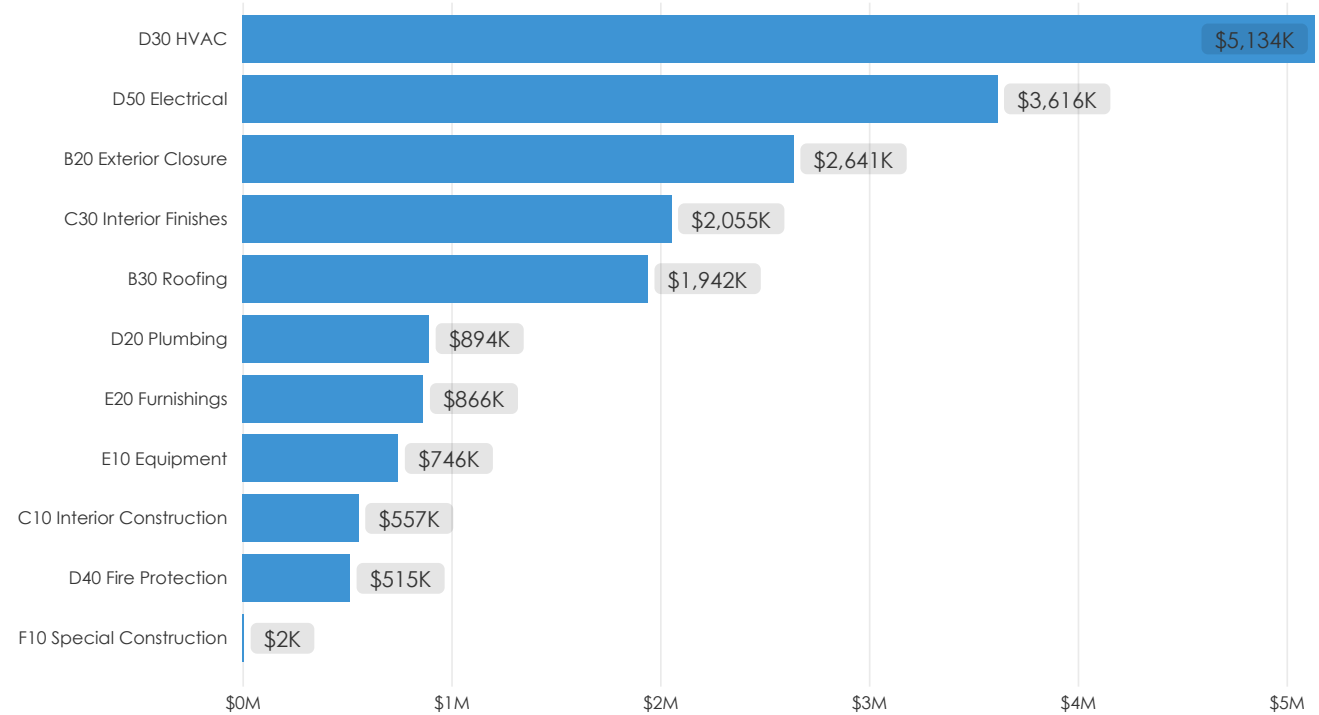


Pages 14 to 18 show a graphic representation of the total 20-year PRs by site, broken out by Uniformat Level 2 categories.

## Chimacum Creek Primary Building

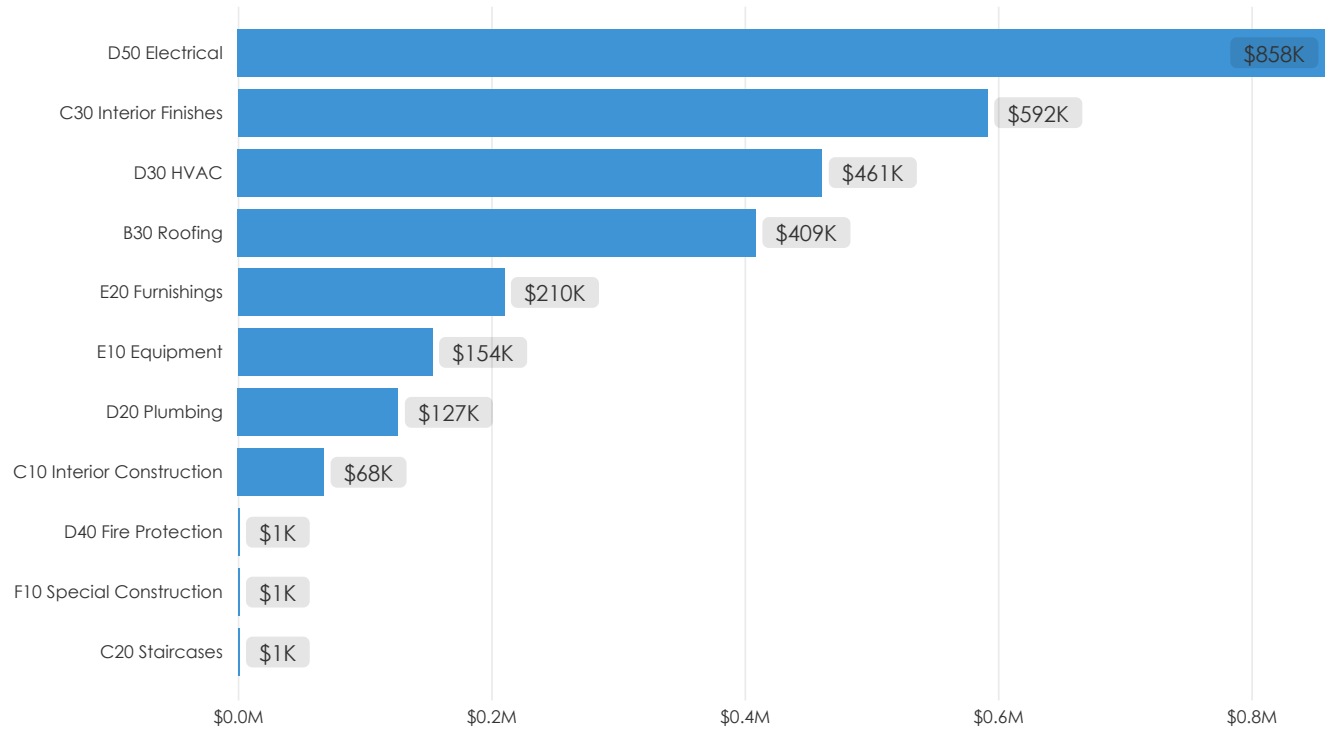


## Chimacum High School Building 100A

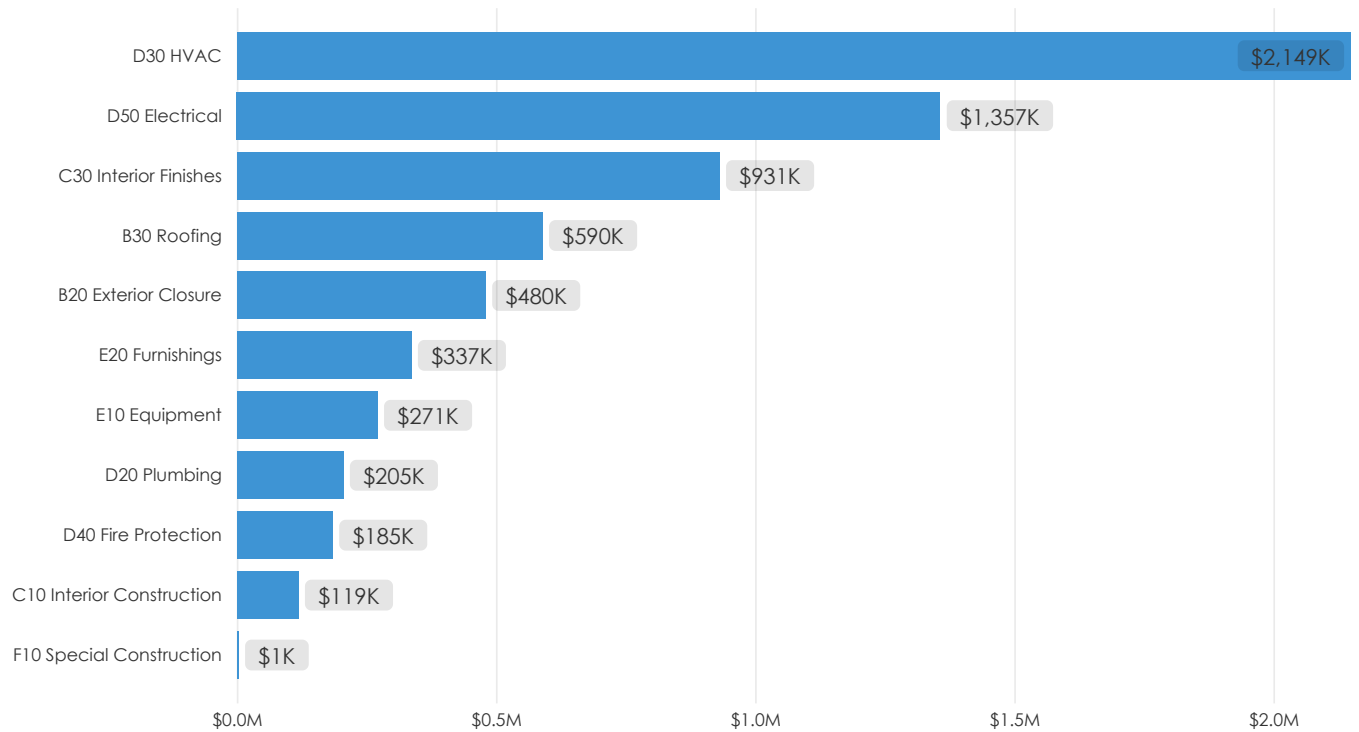




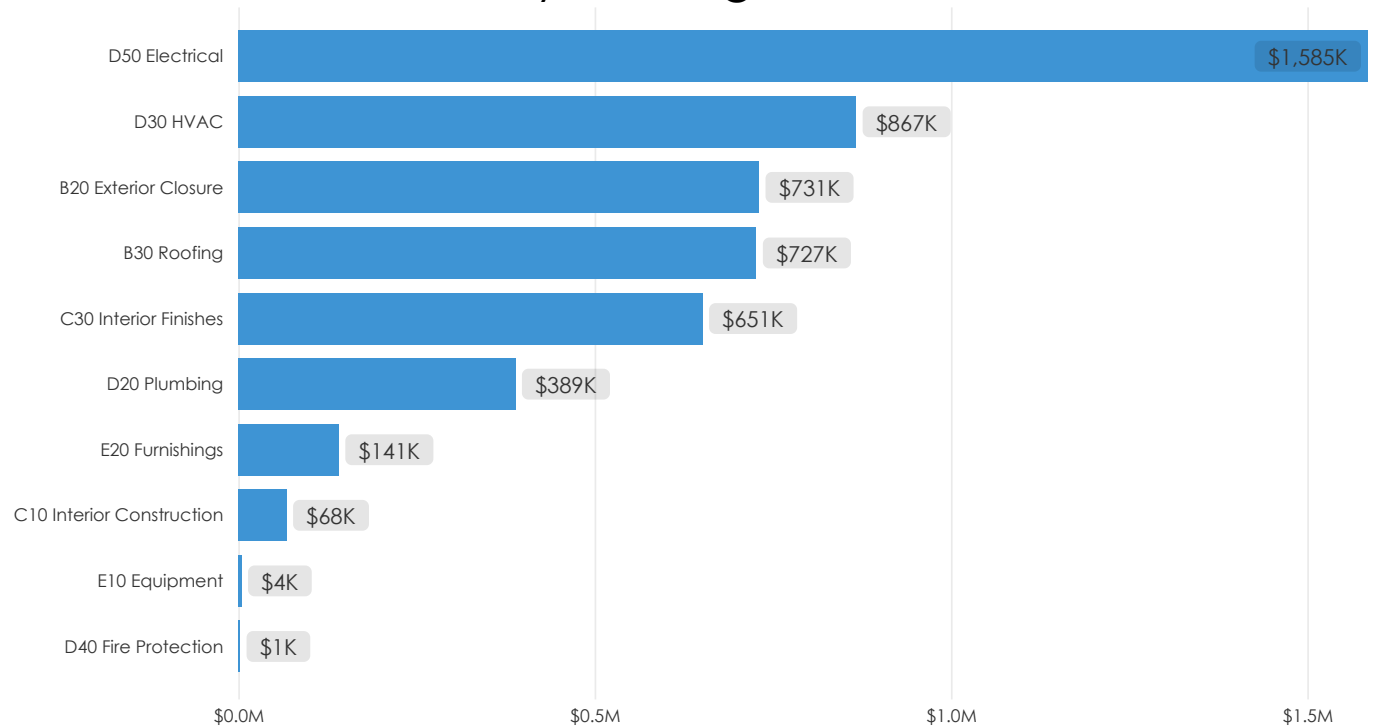
## Chimacum Middle School Building 100B



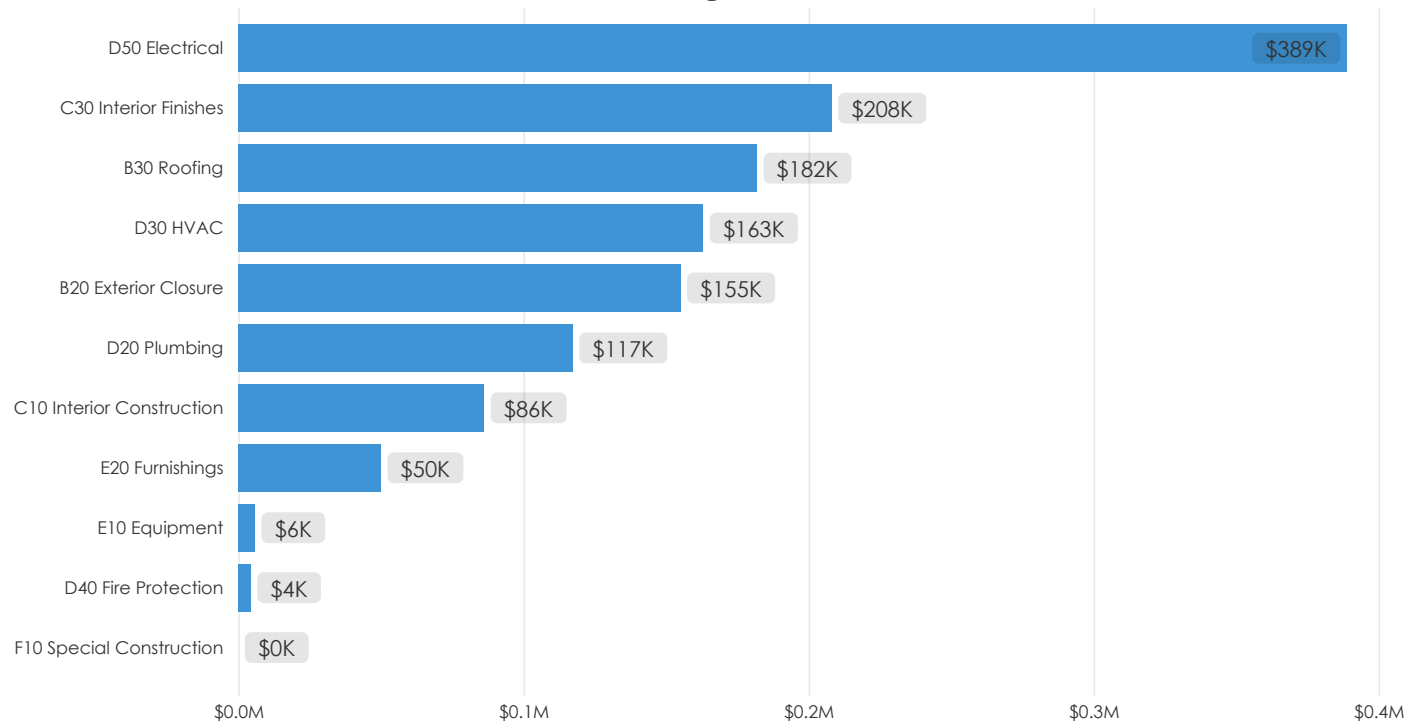
## Chimacum Middle School Building 200



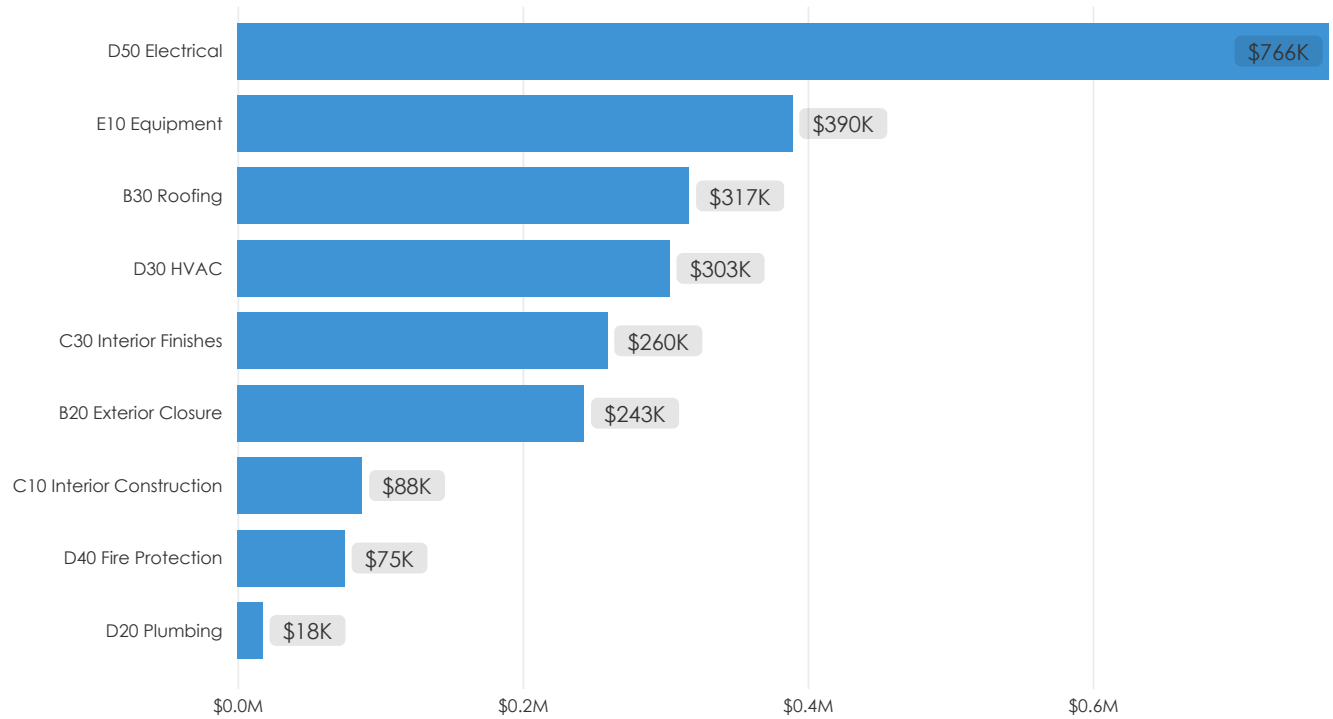
## Chimacum Elementary Building 300



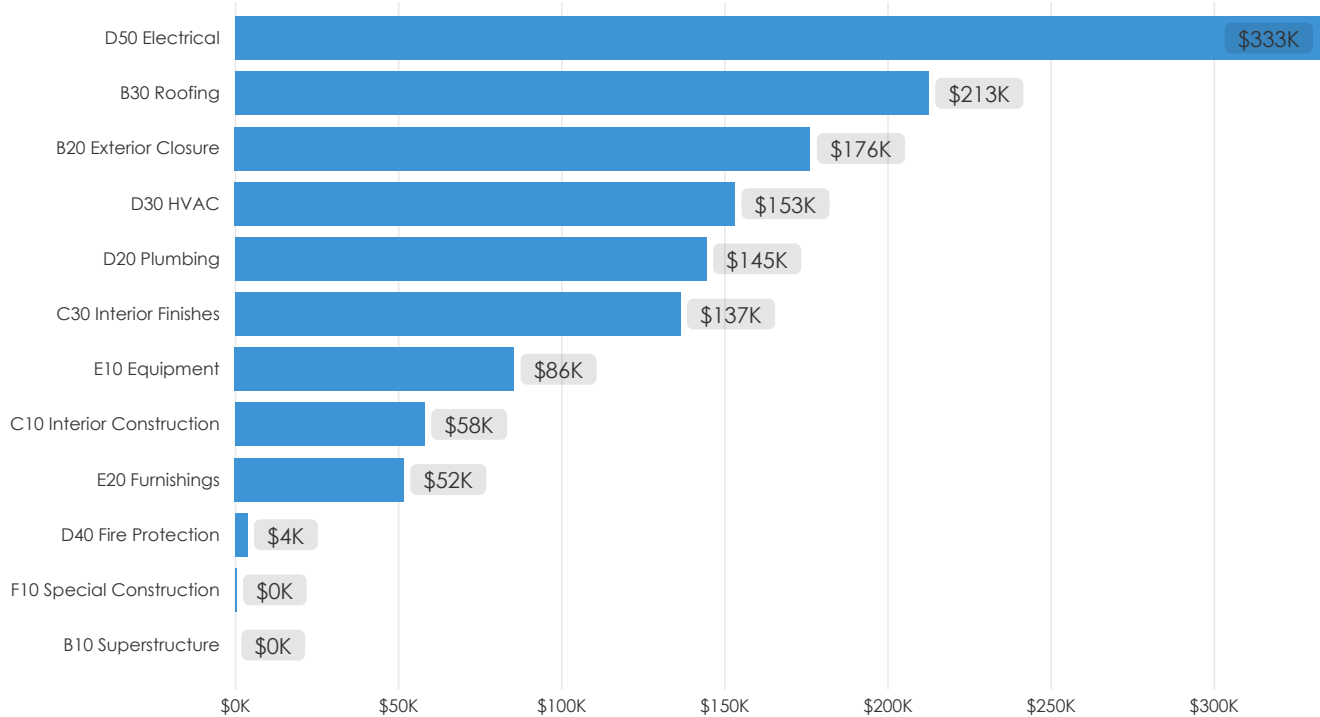
## Chimacum K-8 Library Building 400



## Chimacum Multipurpose Building 500



## Chimacum Maintenance Building



# Chimacum Transportation Facility Building

