FACILITY ASSESSMENT UPDATE

August 2025

Summary Report (FINAL)

Ferris State University

PARSONS

FERRIS STATE UNIVERSITY

Contents

Introduction

Founded in 1884 by Michigan educator and statesman Woodbridge N. Ferris, Ferris State University has developed a modern 880-acre campus in west central Michigan's vacation-recreation country. The University operates campuses located in Big Rapids and Grand Rapids, Michigan.

In December 2024, Ferris State University (FSU) authorized Parsons to conduct an update of the condition assessment information on their facilities including 113 buildings totaling approximately 3,846,281 sq. ft. The effort was a comprehensive assessment that included a detailed physical survey of current deficiencies and an estimate of component building system renewal costs based on the RS Means building cost modeling procedure. The data was captured within Parsons proprietary software called COMET (Condition Management Estimation Technology).

In this effort, Parsons migrated the information contained in the previous database to their current eCOMET software platform and then sent teams of assessors into the field to work closely with Ferris State University Physical Plant leadership and staff to collect information and update the database.

The objective of this Facility Condition Assessment (FCA) Update for FSU 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.
- Determine the overall outstanding capital need and a recommended annual investment plan to address deferred maintenance.
- Use data gathered from the FCA to develop a multiyear capital improvement plan beginning in 2026.
- Update the central repository of data on critical building systems, life expectancy, and capital investments.

The findings in this report are based on nationally recognized facility condition assessment approaches, methods and techniques, and best practices used to evaluate and assess the physical condition of higher educational and support facilities. Included in these assessments were the permanent academic and instructional buildings, and other permanent administrative, maintenance, warehouse or other ancillary buildings such as storage or equipment buildings. The assessments required the use of specially-trained personnel and distinctive methods and approaches to the work. Parsons personnel conducted the physical condition assessment of the buildings and prepared the overall findings in this report. In addition, Parsons incorporated the knowledge and expertise of the Physical Plant Staff to assist in the set up of the database management tool and in the development of the individual facility assessment reports and findings in this document.

The items and issues identified in the FCA could have the potential to impact current operations and future growth or expansion capabilities. The result of the FCA survey is a database that catalogs system deficiencies for buildings with estimated costs. It provides analysis and reporting tools that support FSU's institutional planning and decision making process by making accurate facility information readily accessible. The software also enables the user to generate multi-year capital spending plans to implement the proposed upgrades and replacements. A 10-year capital spending plan is presented in this report as an example, which should be thoughtfully considered by FSU leadership regarding the allocation of funds.

Parsons used our proprietary software called *e*COMET™ (Energy and Condition Management Estimation Technology) to gather and process the data within this report. We offer the software for continued use by FSU as a facility asset management tool. The assessment teams provided software training for the staff at FSU to enable them to collect information and input it into the database.

For a complete list of terms and definitions please refer to the appendix.

Approach

In considering the parameters of an economical FCA Update, Ferris State University requested that Parsons perform an analysis similar to the last FCA update in 2017. While we considered the information for all campus buildings, the analysis focused on the buildings receiving more investment funding than some others. In addition, the Parsons team was supplied with detailed records of the work order projects for the selected group of facilities. The analysis of these records helped the team concentrate on the efforts made to retire deferred maintenance backlog in the portfolio. The result of that effort had a very positive effect on accuracy of the reporting.

We worked cooperatively with the professional staff of the FSU Facilities Management group and received direction to proceed with the FCA Update services, including the following strategies:

- Eliminate demolished buildings from the existing database.
- Add new buildings to the database from the list provided by FSU.
- Categorize buildings based on investment funding as New (4 bldgs), Significant Renovations (53 bldgs), Minor Remodeling (40 bldgs), No Significant Improvements (15 bldgs), or NIC (1 bldg). Building tags are listed in the tables beginning on page 8.
- Perform detailed field assessment of the New buildings and those that have had Significant Renovations. This represents just over 40% of the floor area of the portfolio or 1.6 million sq. ft.
- For buildings where Minor Remodeling has occurred identified by the tag OFFICE in the property list below, we focused the update on editing deficiencies and cost models cooperatively with FSU Facilities Management leadership without a field visit to each building. This adds another 1.6 million sq. ft. or about 40% of the portfolio.
- For buildings with NO SIGNIFICANT IMPROVEMENTS identified by the tag COOP in the property list below, we focused the update on editing deficiencies and cost models cooperatively with FSU Facilities Management leadership and made field visits when considered as beneficial. This accounts for the remaining 650,000 sq. ft. of floor area.

The work described began in December of 2024 and encompassed higher educational facilities and student housing buildings owned by FSU located on the Big Rapids Campus. Parsons supplied one assessment team consisting of an architect, a mechanical engineer and an electrical engineer to perform the field surveys. That team of assessors, with assistance from other senior level Parsons staff, also performed the collaborative work with FSU Management leadership. Information resulting from this project will be used as a guide for making funding recommendations to leadership involved with their Capital Renewal & Deferred Maintenance (CRDM) program. The project results also provide a baseline assessment of current deferred maintenance and capital renewal funding needs that should prove useful in making informed planning decisions and considering future reinvestment in FSU facilities, as well as planning for future facility demolitions.

Field Survey/Inspection

Parsons conducted all field surveys included in the scope of work for the project December 2024 through January 2025. The team visited the designated facilities to collect data, which was compiled in the field and then loaded to the main eCOMET™ database. From this information, the assessors edited the cost models created using R.S. Means published methodologies and cost information. In addition, the assessors were able to confirm cost information for certain components and systems by using cost data taken from information provided by FSU or from similar regional Parsons projects under construction or recently completed. Parsons worked closely with the FSU Physical Plant leadership who made arrangements for escort for the assessors and often joined in the field survey tours.

The assessment teams reviewed drawings and other facility information, and interviewed FSU Physical Plant staff, to document non-visible and on-going component problems. The teams then conducted site visits to verify data already

gathered as well as to record additional information found during the inspection. Based on visual observations and on-site discussions with facility representatives and staff, the assessors acquired a general understanding of the conditions of the building and site components. Parsons then developed a written description of each facility including an overview of the construction, building systems and general condition.

The team obtained information in this report through field observations, equipment inspection, review of available existing documentation, and interviews with FSU Physical Plant staff. Publications used as references for the anticipated service life of the building systems include the Building Owners and Managers Association International (BOMA) "Building Systems Useful Life" and the American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Applications Handbook" as a reference for the service life of systems and equipment. In many instances, actual experience may indicate a longer service life for a particular system, but these are the best available recognized standards for the anticipated service life of capital assets typically found in higher education and support facilities.

The populated database includes cost models for each facility that generate a forecast of future capital funding required to address system renewal. The Parsons Certified Cost Estimator compared the costs models for different types of buildings against a selection of actual costs for recent FSU construction projects (see Appendix for more information on cost modeling). Applying an accurate replacement cost and an anticipated service life to each component enables the model to forecast the respective cost and year for renewal. The software also applies an escalation factor for work in future years. Together, this information resource becomes a strategic tool that allows facility managers to quickly identify and capture deferred maintenance and capital renewal items when composing their capital budget plans.

The FCA performed for FSU included a visual survey of the various facilities included in the scope of work. The result of the field survey is a catalog of current deficiencies with associated budget costs. The budget estimates were developed by the assessors using RS Means 2024 cost information embedded in the database with factors applied by the software to account for the additional cost of managing the implementation project (refer to the Appendix for more information on Additional Costs). Note that other costs are not included for project financing or downtime (i.e. lost revenue, operational inefficiency, etc.).

The Parsons Certified Cost Estimators prepared detailed line item estimates for the series of corrections defined in the database. The assessors used the combined experience of their respective consultant team to apply the available corrections to the deficient conditions observed in the field. They modified the line item costs provided by the Estimators to match the conditions associated with the individual deficiencies represented in the database. These estimates attempt to describe all costs reasonably associated with performing the prescribed work and typically include related costs for demolition, modifying piping and conduit to match a variety of possible equipment suppliers, removing and replacing other components (such as sprinkler heads) affected by the installation, and repairing finishes. In some cases, these estimates may exceed the replacement value for the respective system driving the condition index for that system over 100%. It is important to remember that the intent is to provide estimated costs as approximations for budgeting purposes, only. Recognize that Parsons does not have control over the cost of labor or materials, nor over any contractors' methods of determining bids or prices. As a result, Parsons does not warrant that budgets will match the contractor or vendor's proposals.

Summary of Results

This section reports the results of the Facility Condition Assessment Update for FSU. The report is a planning tool to assist in making decisions needed to achieve short and long term facility goals. The intent of the data tables and exhibits is to objectively describe the findings and summarize the results of this study using assessment best practices and standards. The costs presented in the tables found in this section of the report use the Facility Condition Index (FCI) as a key to summarize the information for each of the buildings included in the project scope.

The Facility Condition Index (FCI) offers a relative scale on which to compare the facilities. It describes the physical condition of a building and its component systems against a cost model for a similar newly constructed building as if they were at the beginning of their service life. For each system in the cost model, the Condition Index (CI) measures the estimated cost of the current deficiencies and compares it to the projected Replacement Value for that system. The total cost of the repairs for all the systems is divided by the current Replacement Value resulting in the FCI. This approach can also be applied to a group of buildings forming a portfolio. The FCI calculation is shown in the following formula:

$$FCI = \frac{\text{Cost of Assessed Deficiencies}}{\text{Replacement Value}}$$

For example, if the Replacement value of the systems for a particular building is $10,000,000 and the cost of correcting its assessed deficiencies is $1,000,000, the building's FCI is $1,000,000 ÷ $10,000,000 = 0.10, or we might say the facility is 10 percent deficient. A higher FCI means the facilities are in poorer condition and in need of greater repair. This key indicator helps to identify the need for renewal or replacement of specific parts of the facility. The FCI is particularly useful when comparing similar facilities or campuses within the same portfolio.

Table 1 - Recommended Actions by FCI Range

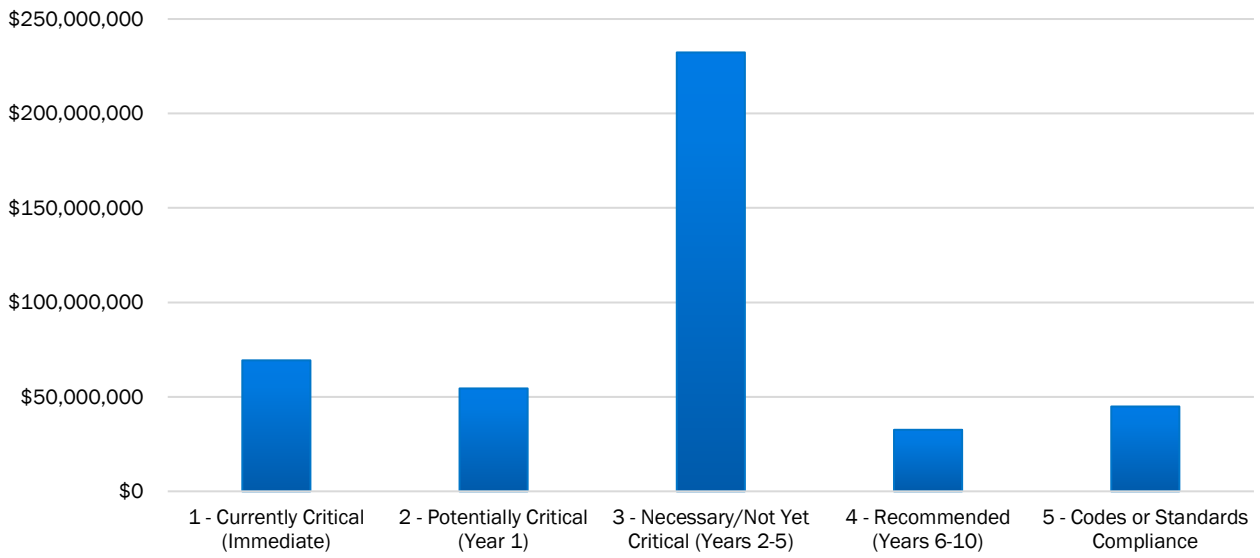
FCI % Range	*Recommended Action*
<15%	Good (Maintain Current Funding)
15 to 25%	Fair (Functional & Repairable)
>25%	Poor (Needs Significant Attention)
> 60%	***Suggests beyond useful life***

The table at the left is provided to help interpret the results of this survey by establishing a relationship between FCI and the general building condition. The FCI% Ranges listed are derived from Parsons experience performing assessments of billions of square feet for clients across the country and are based on national standard guidelines widely used as resources for interpreting FCI information. The recommended ranges presented in the table have been found by Parsons to be useful at the planning level in establishing budgets for work that is not well defined at the time of the estimates.

PRIORITY, CATEGORY AND DISTRESS

The approach to prioritizing deferred maintenance is based on a multi-year time scale to establish a relative sense of urgency for addressing deficient conditions. The selection of response time priority also allows for recommended corrections to deficient conditions that may be accomplished beyond the initial five years. The chart below displays the repair costs for each of the recommended priorities.

Figure 1 - Chart of Repair Costs by Response Time



FACILITY FCI BY BUILDING

The tables below present a summary of information on the buildings in the portfolio grouped by current FCI range with the FCI from the last update in 2017. The facilities in the FSU portfolio have been in service anywhere from less than 1 year to nearly 116 years. The newer facilities have few immediate needs for repair or reinvestment. The older facilities have aged components that are beyond their service life, obsolete or no longer efficient. FSU performs scheduled maintenance and undertakes reconstruction projects to replace or repair components at the facilities. Many of the facilities have received at least partial reconstruction since they were initially put into service. Note that the last column provides a tag that indicates how the data update was handled for that building. Those with the tag NEW or FCA were assessed as if they were new to the database, while the OFFICE tag indicates our assessors used input from Physical Plant staff to update the information and the information for those listed as NSI was copied over from the previous database with updates to the cost and model information, only.

Table 2 – Building with FCI < 15%

FACILITY	GROSS AREA	YEAR BUILT/ IMPROVED	REPLACEMENT COST PER SF	REPAIR COST	REPLACEMENT VALUE	CURRENT FCI%	2017 FCI%	ASMT METHOD
(ALU) Alumni Building	34,600	1929/2023	$401.50	$23,528.34	$13,891,900.00	0.17%	58.08%	FCA
(ATB) Athletic Trainer Building	756	2016	$334.39	$2,795.95	$252,797.00	1.11%	0.59%	OFFICE
(CCE) Copy Center	2,070	2006	$427.68	$36,735.80	$885,298.00	4.15%	14.16%	OFFICE
(CVL) Center for Virtual Learning	59,310	2023	$557.11	$4,696.48	$33,042,196.00	0.01%		NEW
(ELC) Early Learning Center	10,338	2023	$331.55	$69,899.45	$3,427,563.00	2.04%		NEW
(FLT) Flite Library	173,484	2001	$447.69	$3,264,616.19	$77,667,050.00	4.20%	7.01%	OFFICE
(HMA) APAM Training Center	4,470	2019	$562.39	$24,561.51	$2,513,887.00	0.98%		NEW
(ICA) Urban Inst. of Contemporary Art	45,000	2010						NIC
(KAT) Katke Golf Course	5,700	2000	$430.08	$192,161.11	$2,451,456.00	7.84%	2.47%	FCA
(KJG) Ken Janke Sr Golf Learning Ctr	9,555	2018	$533.63	$0.00	$5,098,837.00	0.00%		NEW
(MCO) Michigan College of Optometry	86,104	2010	$422.61	$3,519,885.69	$36,388,413.00	9.67%	0.44%	OFFICE
(MGS) E Campus Suites - Maple Grove Stes (24)	36,000	2011	$347.01	$233,635.36	$12,492,360.00	1.87%	1.84%	OFFICE
(NHB) North Hall Building	124,019	2017	$435.22	$147,017.66	$53,975,551.00	0.27%	0.00%	FCA
(OVS) E Campus Suites - Oak View Suites (24)	36,000	2011	$346.85	$93,454.15	$12,486,600.00	0.75%	1.84%	OFFICE
(PVS) E Campus Suites - Pine Valley Suites (24)	36,000	2011	$347.01	$162,246.78	$12,492,360.00	1.30%	1.84%	OFFICE
(SBF) Softball Facility and Pressbox	1,008	2001	$440.89	$61,282.32	$444,417.00	13.79%	5.41%	OFFICE

FACILITY	GROSS AREA	YEAR BUILT/ IMPROVED	REPLACEMENT COST PER SF	REPAIR COST	REPLACEMENT VALUE	CURRENT FCI%	2017 FCI%	ASMT METHOD
(SCC) Science Chiller Complex	3,200	2010	$2,302.76	$1,103,247.67	$7,368,832.00	14.97%	3.19%	OFFICE
(SPO) Sports Complex - Ewigleben	95,119	1974/1999	$615.51	$6,285,475.02	$58,546,694.00	10.74%	18.37%	FCA
(T25) Tower 25	26,801	2011	$185.94	$6,135.28	$4,983,377.00	0.12%	0.16%	OFFICE
(UCB) University Center	142,779	2015	$459.52	$2,166,706.09	$65,609,808.00	3.30%	0.09%	OFFICE
(WCA) Cardinal Court	81,227	1993	$343.15	3,034,194.44	27,873,055	10.89%	9.62%	FCA
(WCA) Finch Court	107,584	1995	$336.22	3,051,486.70	36,172,003	8.44%	7.11%	FCA
(WCA) Robin Court	97,854	1994	$343.15	3,596,158.36	33,578,606	10.71%	9.21%	FCA
(WDB) Woodbridge N Ferris Building	75,000	1908	$793.55	$3,577,737.77	$59,516,250.00	6.01%		COOP
Total Current & Forecast Period Needs	**1,293,978**			**$30,657,658**	**$561,159,310**	**5.46%**		

Table 3 - Buildings with FCI 15% to 25%

FACILITY	GROSS AREA	YEAR BUILT/ IMPROVED	REPLACEMENT COST PER SF	REPAIR COST	REPLACEMENT VALUE	CURRENT FCI%	2017 FCI%	ASMT METHOD
(CSS) Timme Center for Student Services	59,179	1967/2002	$448.37	$4,760,120.69	$26,534,088.00	17.94%	6.76%	OFFICE
(GRN) Granger Center 4 Construction & HVACR	75,298	1962/2003	$537.29	$8,463,600.03	$40,456,858.00	20.92%	2.06%	OFFICE
(ICE) Ice Arena - part of SPO	69,460	1974/1999	$382.50	$5,022,781.43	$26,568,449.00	18.91%	11.64%	OFFICE
(IRC) Instructional Resource Center	61,425	1969/2008	$403.83	$4,118,335.63	$24,805,259.00	16.60%	8.96%	OFFICE
(KAS) Katke Storage Facility	2,800	1984/2013	$203.71	$113,973.48	$570,388.00	19.98%	18.80%	OFFICE
(SCO) South Commons - The Rock Cafe	34,020	1965/2009	$570.99	$3,011,738.22	$19,598,583.00	15.50%	2.25%	FCA
(SRC) Student Recreation Center	116,051	1962/1999	$500.13	$13,938,440.37	$63,301,180.00	17.42%	17.50%	FCA
(SST) South Storage	1,400	1965	$268.97	$91,793.60	$376,558.00	24.38%	6.25%	OFFICE
(TTF) Top Taggart Field & Wheeler Pavilion	10,593	2001	$488.86	$1,165,952.81	$5,178,494.00	22.52%	3.34%	OFFICE
Total Current & Forecast Period Needs	**430,226**			**$40,686,736**	**$207,389,857**	**19.62%**		

Table 4 - Buildings with FCI 25% to 60%

FACILITY	GROSS AREA	YEAR BUILT/ IMPROVED	REPLACEMENT COST PER SF	REPAIR COST	REPLACEMENT VALUE	CURRENT FCI%	2017 FCI%	ASMT METHOD
(ASC) Arts/Sciences Commons	79,259	1996	$421.72	$9,812,617.58	$33,425,103.00	29.36%	24.44%	OFFICE
(AUT) Automotive Center	77,000	1956/1988	$364.85	$12,330,288.15	$28,093,450.00	43.89%	31.20%	OFFICE
(BON) Bond Hall	90,500	1966	$425.96	$18,280,525.96	$38,549,380.00	47.42%	28.80%	FCA
(BRO) Brophy Hall	47,000	1962	$413.22	$10,025,760.05	$19,421,340.00	51.62%	32.31%	FCA
(BUS) Business Building	90,600	1970	$433.35	$18,802,505.98	$39,261,510.00	47.89%	35.72%	OFFICE
(CAR) Carillon Tower	100	1968	$2,988.37	$119,209.71	$298,837.00	39.89%	4.19%	OFFICE
(CLK) Clark Hall	41,500	1960	$440.27	$10,121,740.09	$18,271,205.00	55.40%	54.43%	COOP
(CPD) Corporate and Professional Dev Center	16,836	1985/1987	$320.85	$1,710,500.24	$5,401,830.00	31.67%	24.67%	OFFICE
(CRA) Cramer Hall	91,700	1969	$376.12	$11,810,930.04	$34,490,204.00	34.24%	36.48%	FCA
(GEN) General Services Building	28,571	1984/2005	$361.04	$5,558,578.55	$10,315,292.00	53.89%	38.37%	OFFICE
(GSA) General Services Annex	15,282	2005	$271.35	$1,097,511.35	$4,146,770.00	26.47%	12.59%	OFFICE
(HEC) Heavy Equipment Center	52,000	1987	$402.55	$7,184,913.48	$20,932,600.00	34.32%	29.28%	OFFICE
(HEN) Henderson Hall	44,900	1965	$344.27	$8,433,156.01	$15,457,723.00	54.56%	34.77%	FCA
(ICT) Inst. for Construction Education & Training	6,950	1966	$387.93	$1,315,846.70	$2,696,122.00	48.81%	18.38%	OFFICE
(KAM) Katke Maintenance Facility	3,200	1974	$276.46	$467,748.93	$884,672.00	52.87%	40.50%	COOP
(KEN) Kendall Building	200,980	1950	$436.92	$36,753,802.05	$87,812,181.00	41.86%		COOP
(KNO) Knollcrest Commons	11,094	1961	$385.33	$1,820,769.16	$4,274,851.00	42.59%	32.43%	OFFICE
(MCK) McKessy House	2,800	1940/1997	$401.41	$392,513.34	$1,123,948.00	34.92%	27.75%	OFFICE
(MCN) McNerney Hall	47,000	1962	$425.00	$7,638,978.60	$19,975,000.00	38.24%	22.52%	FCA
(MER) Merrill Hall	51,700	1961	$392.20	$7,003,704.72	$20,276,740.00	34.54%		FCA
(MIL) Miller Hall	47,382	1963	$418.63	$9,493,920.29	$19,835,524.00	47.86%	44.25%	COOP
(MUS) Music Activities Center	10,000	1962	$512.56	$2,810,993.72	$5,125,600.00	54.84%	19.71%	COOP
(NEC) National Elastomer Center	43,392	1987/1999	$400.62	$7,147,930.68	$17,383,702.00	41.12%	16.76%	OFFICE
(NST) North Storage Facility (Kirby)	10,711	1956	$336.09	$1,769,772.60	$3,599,862.00	49.16%	49.88%	COOP

FACILITY	GROSS AREA	YEAR BUILT/ IMPROVED	REPLACEMENT COST PER SF	REPAIR COST	REPLACEMENT VALUE	CURRENT FCI%	2017 FCI%	ASMT METHOD
(PHR) Pharmacy Building	62,200	1972	$621.33	$11,433,171.52	$38,646,726.00	29.58%	51.81%	FCA
(PIC) Pickell Hall	50,400	1964	$367.22	$8,890,061.11	$18,507,888.00	48.03%	33.12%	FCA
(POW) Power Plant - Campus	19,900	1955/1988	$1,261.89	$8,219,437.49	$25,111,611.00	32.73%	31.90%	OFFICE
(PRK) Prakken Building	42,100	1952	$393.05	$9,059,234.71	$16,547,405.00	54.75%	36.97%	COOP
(PUT) Puterbaugh Hall	46,400	1965	$420.25	$8,077,288.07	$19,499,600.00	41.42%	15.92%	FCA
(RQT) Racquet Facility & Fitness Center	50,884	1980/01	$278.29	$3,562,865.60	$14,160,508.00	25.16%	13.17%	OFFICE
(SCI) Science Building	109,148	1955/1999	$369.45	$12,586,157.38	$40,324,729.00	31.21%	17.83%	OFFICE
(SPL) Southwest Power Plant	2,200	1964	$264.57	$287,192.46	$582,054.00	49.34%	41.49%	FCA
(STR) Starr Educational Center	86,400	1962/96	$410.05	$9,048,230.32	$35,428,320.00	25.54%	22.44%	OFFICE
(SWN) Swan Technical Arts Bldg	189,418	1966/2004	$305.40	$16,554,128.43	$57,848,682.00	28.62%	30.85%	FCA
(TRV) Travis Hall	51,700	1961	$416.47	$9,782,223.03	$21,531,499.00	45.43%	19.92%	FCA
(VFS) VFS Allied Health Building	67,400	1979	$479.94	$16,075,633.00	$32,347,956.00	49.70%	43.31%	COOP
(WAR) Ward Hall	41,320	1963	$444.23	$9,987,588.99	$18,355,585.00	54.41%	30.39%	FCA
(WCC) West Campus Community Ctr	5,785	1996	$320.72	$701,898.64	$1,855,367.00	37.83%	24.02%	OFFICE
(WCO) West Commons	19,800	1968/2002	$444.14	$3,117,971.70	$8,793,972.00	35.46%	27.15%	OFFICE
(WIL) Williams Auditorium	31,431	1962	$438.14	$6,848,905.97	$13,771,178.00	49.73%	41.21%	COOP
(WST) West Storage DPS	800	1990	$147.85	$62,027.86	$118,280.00	52.44%	4.88%	OFFICE
Total Current & Forecast Period Needs	**1,987,743**			**$326,198,234**	**$814,484,806**	**26.43%**		

Table 5 - Buildings with FCI > 60%

FACILITY	GROSS AREA	YEAR BUILT/ IMPROVED	REPLACEMENT COST PER SF	REPAIR COST	REPLACEMENT VALUE	CURRENT FCI%	2017 FCI%	ASMT METHOD
(BHC) Health Center	18,400	1959/1967	$405.40	$5,521,538.92	$7,459,360.00	74.02%	84.49%	COOP
(BIT) Bituminous Lab	1,702	1965/1987	$298.26	$333,849.06	$507,639.00	65.77%	90.38%	OFFICE
(BRN) Barn - behind McKessy	2,000	1989	$248.42	$345,075.44	$496,840.00	69.45%	34.78%	OFFICE
(CAC) Creative Arts Center	7,200	1965	$377.56	$2,368,540.84	$2,718,432.00	87.13%	72.81%	COOP
(GMB) Grounds Maintenance	7,232	1979/2006	$216.92	$1,127,562.50	$1,568,765.00	71.88%	3.56%	OFFICE
(HAL) Hallisy Hall	44,700	1958	$370.38	$10,179,492.44	$16,555,986.00	61.49%	41.02%	COOP
(JOH) Johnson Hall	33,600	1959/1980	$381.66	$9,640,266.43	$12,823,776.00	75.17%	54.62%	COOP
(SWC) Southwest Commons	19,500	1965/1986	$512.24	$6,523,212.80	$9,988,680.00	65.31%	45.98%	COOP
Total Current & Forecast Period Needs	**134,334**			**$36,039,538**	**$52,119,478**	**69.15%**		

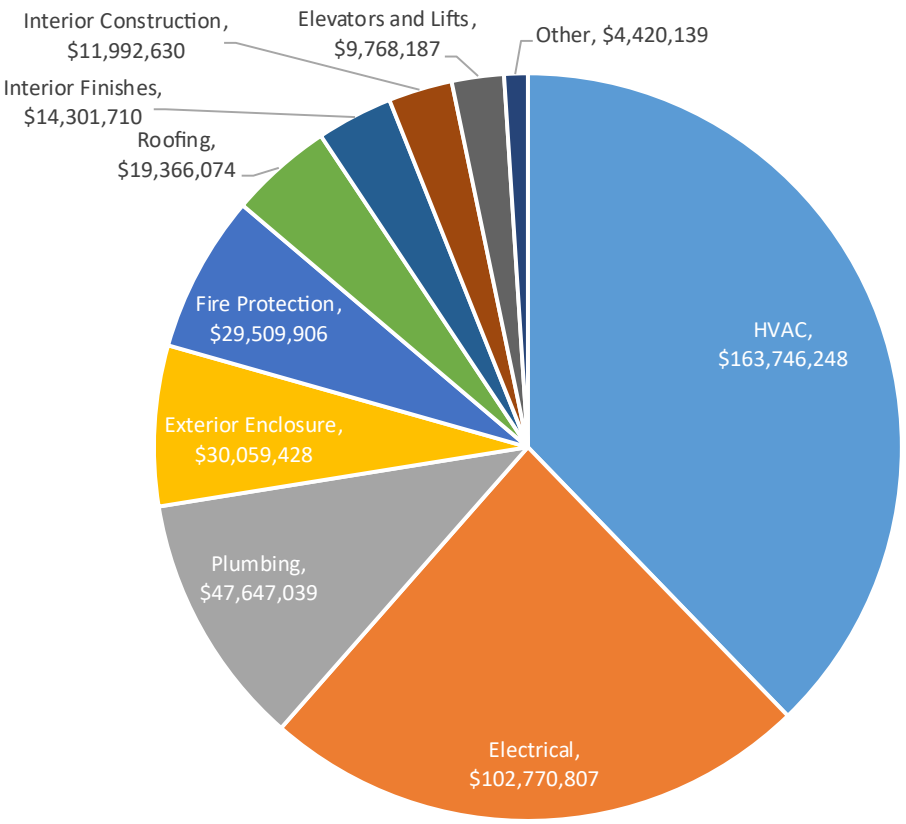
Some things to consider when reviewing the tables above that present the updated FCA data versus the 2017 dataset include the following:

- The buildings demolished since the last FCA update in 2017 were in very bad condition and contributed a long list of costly repair items to the deferred maintenance backlog. Removing them from the portfolio had a profound effect on the resulting FCI.
- New buildings added to the portfolio helped to moderate changes in the overall FCI.
- A concentrated effort was made to retire deferred maintenance backlog in the portfolio as identified by records provided from the AiM work order management system. The result of that effort was a significant reduction in costlier repair items from the portfolio, which also had a very positive effect on reducing the current FCI.
- Parsons estimators identified some of the cost model profiles as not properly representing the likely replacement value of the FSU facilities. The updates that were made to the affected buildings typically increased the replacement value, which reduced the resulting FCI for those buildings.

REPAIR COST BY UNIFORMAT SYSTEM

The summary data presented in *Figure 2* provides a breakdown of current deferred maintenance by Uniformat system. Please refer to the Appendix for more information on how these values were determined.

Figure 2 - Repair Costs by Uniformat System



2025-2035 Capital Funding Scenarios

The overall FCI of the facilities on the FSU portfolio is 26.52%, which indicates they are in fair condition both functional and repairable, and implies that FSU should be actively repairing and maintaining systems at these facilities per the Recommended Action table (see Table 1 on page 6).

Referring to the facility assessment summary, the total Current Period (2024-2027) and Forecast Period (2028-2034) funding needs are about $742,946,919. This represents the total current deferred maintenance and the amount forecast to accumulate over the 10-year capital planning period. In the analyses shown below, Parsons used the facility condition data developed during the FSU assessment to produce four funding scenarios:

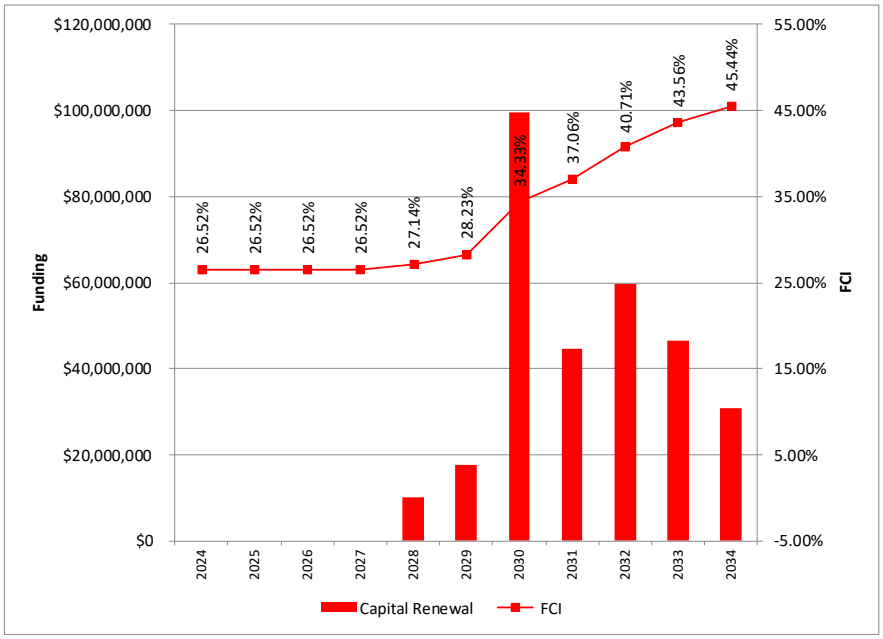
- Scenario 1: The red line and associated bars demonstrate required capital renewal funding over the next 10 years. Under this scenario, FSU would apply no funding toward reducing the current deferred maintenance and forecasted system renewal needs. This scenario results in a significant rise in the FCI from 26.52% to 45.44%, a level at which the overall portfolio of buildings would be consider as in poor condition and should be considered for major renovation.
- Scenario 2: Invest at a rate sufficient to match the total Current Period (2024-2027) and Forecast Period (2028-2034) annual funding needs, thereby maintaining the current FCI of 26.52%. The capital reinvestment in this scenario amounts to $309,364,752, which is just over 40% of the needs estimate for the period 2024-2034. In this scenario, the proposed annual investment is intended only to keep pace with forecast future funding requirements resulting in the FCI beginning and ending the period at the same value. In this scenario, the proposed annual investment exceeds the sustainable funding range.
- Scenario 3: Increase funding to offset the recurring system renewal costs plus reducing existing deferred maintenance to improve the FSU facilities' condition from an FCI of 26.52% to an FCI of 15%, a level level that is considered to be in good condition. The capital reinvestment in this scenario amounts to $497,673,902, which is nearly 70% of the needs estimate for the period 2024-2034. In this scenario, the proposed annual investment is within the sustainable funding range.
- Scenario 4: Increase funding to offset the recurring system renewal costs plus eliminating existing deferred maintenance to improve the FSU facilities' condition from an FCI of 26.52% to an FCI of 0%, a level considered to be excellent (like new) condition. The dark line tracks the annual FCI over the funding cycle. The capital reinvestment in this scenario amounts to $742,946,919, or 100% of the needs estimate for the period 2024-2034. In this scenario, the proposed annual investment exceeds the sustainable funding range.

The charts that follow combine the funding needed for repairs with the predicted capital renewal requirements. The annual funding requirements (bars) are read from the left axis and FCI% (colored lines) from the right axis. The table below each of the chart shows the actual values for proposed annual capital funding requirements. The charts illustrate the 10-year total funding requirements for the FSU facilities for the four different scenarios.

SCENARIO 1 – DEFICIENCIES AND CAPITAL RENEWAL WITHOUT CAPITAL INVESTMENT

The red line and associated bars demonstrate required capital renewal funding over the next 10 years. Under this scenario, FSU would apply no funding toward paying down the current deferred maintenance and forecasted system renewal needs. This scenario results in a significant rise in the FCI from 26.52% to 45.44%, a level at which the buildings should be considered for renovation.

Figure 3 - Deficiencies and Capital Renewal without Capital Investment



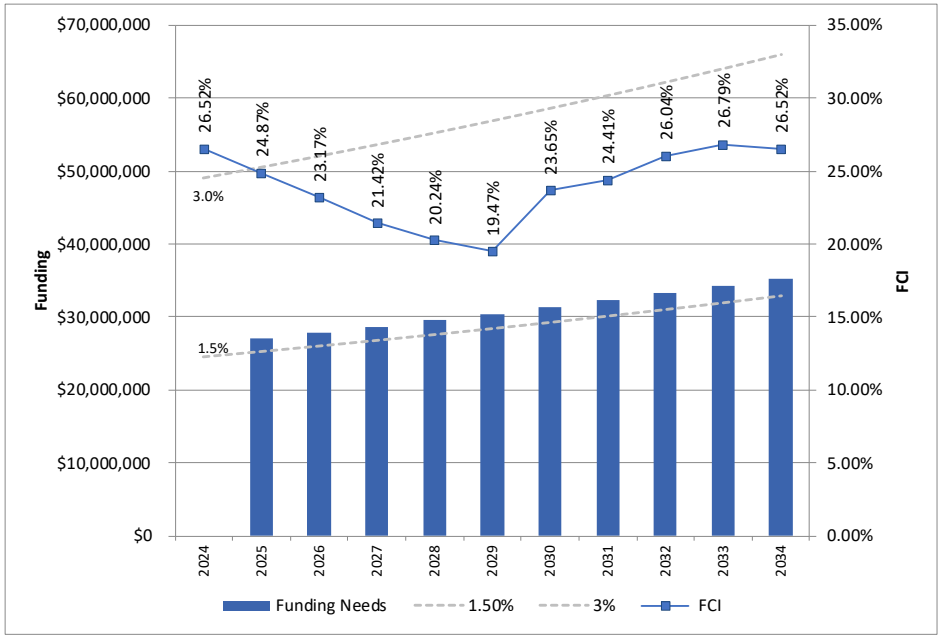
Year	Capital Renewal	Net Deficiencies	Funding Needs	FCI
2024	$0	$ 433,582,167		26.52%
2025	$0	$ 433,582,167	$0	26.52%
2026	$0	$ 433,582,167	$0	26.52%
2027	$0	$ 433,582,167	$0	26.52%
2028	$10,224,442	$ 443,806,609	$0	27.14%
2029	$17,818,929	$ 461,625,538	$0	28.23%
2030	$99,656,505	$ 561,282,043	$0	34.33%
2031	$44,700,574	$ 605,982,617	$0	37.06%
2032	$59,724,225	$ 665,706,842	$0	40.71%
2033	$46,545,252	$ 712,252,094	$0	43.56%
2034	$30,694,826	$ 742,946,919	$0	45.44%
Total	$309,364,752		$0	
PV	$164,806,658		$0	

The APPA guide on Capital Renewal and Deferred Maintenance Programs (2009; pg 10) recommends a range of 1.5% to 3% of Current Replacement Value (CRV) for the capital renewal component of annual funding; this is considered the sustainable funding range. The overall Replacement value is $1,635,153,451, which translates into a range of $25,263,121 to $50,526,242 in 2025 the first fiscal year of the plan. The dotted lines in the chart show the boundaries of the sustainable range. Note that the lines and bars in the chart include a 3% annual escalation rate. The supporting data for these charts is also available in the eCOMET™ database.

SCENARIO 2 – MAINTAIN CURRENT FCI

Invest at a rate sufficient to match the total Current Period (2024-2027) and Forecast Period (2028-2034) annual funding needs, thereby maintaining the current FCI of 26.52%. The capital reinvestment in this scenario amounts to $309,364,752, which is just over 40% of the needs estimate for the period 2024-2034. In this scenario, the proposed annual investment is intended only to keep pace with forecast future funding requirements resulting in the FCI beginning and ending the period at the same value. In this scenario, the proposed annual investment exceeds the sustainable funding range.

Figure 4 - Invest to Maintain Current FCI

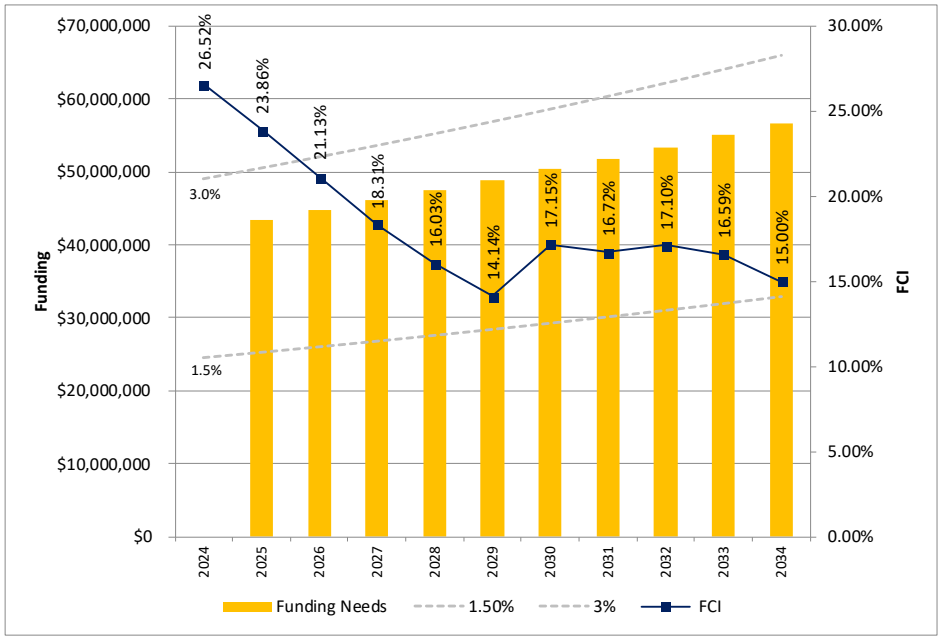


Year	Capital Renewal	Net Deficiencies	Funding Needs	FCI
2024		$ 433,582,167		26.52%
2025	$0	$ 406,596,123	$26,986,044	24.87%
2026	$0	$ 378,800,498	$27,795,625	23.17%
2027	$0	$ 350,171,003	$28,629,494	21.42%
2028	$10,224,442	$ 330,907,066	$29,488,379	20.24%
2029	$17,818,929	$ 318,352,965	$30,373,030	19.47%
2030	$99,656,505	$ 386,725,249	$31,284,221	23.65%
2031	$44,700,574	$ 399,203,075	$32,222,748	24.41%
2032	$59,724,225	$ 425,737,869	$33,189,430	26.04%
2033	$46,545,252	$ 438,098,008	$34,185,113	26.79%
2034	$30,694,826	$ 433,582,167	$35,210,667	26.52%
Total	$309,364,752		$309,364,752	
PV	$164,806,658	$164,806,658		

SCENARIO 3 – FUNDING TO TARGET FCI OF 15.0%

Increase funding to offset the recurring system renewal costs plus fully pay down existing deferred maintenance to improve the FSU facilities' condition from an FCI of 26.52% to an FCI of 15%, a level that requires minimal annual capital funding. The capital reinvestment in this scenario amounts to $497,673,902, which is nearly 70% of the needs estimate for the period 2024-2034. In this scenario, the proposed annual investment is within the sustainable funding range.

Figure 5 - Improve FCI to 15.0%

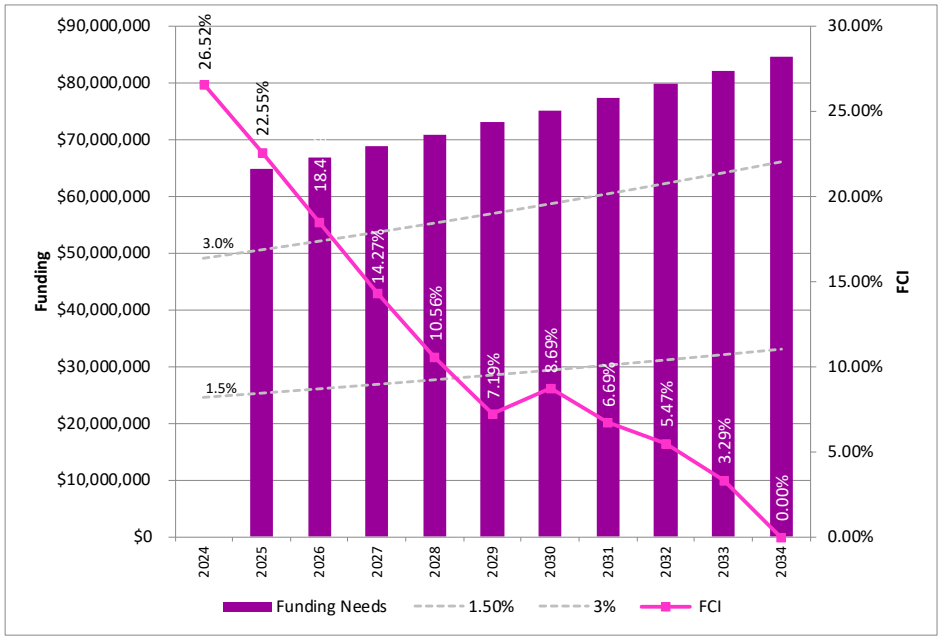


Year	Capital Renewal	Net Deficiencies	Funding Needs	FCI
2024		$ 433,582,167		26.52%
2025	$0	$ 390,169,820	$43,412,347	23.86%
2026	$0	$ 345,455,104	$44,714,717	21.13%
2027	$0	$ 299,398,945	$46,056,158	18.31%
2028	$10,224,442	$ 262,185,543	$47,437,843	16.03%
2029	$17,818,929	$ 231,143,494	$48,860,979	14.14%
2030	$99,656,505	$ 280,473,191	$50,326,808	17.15%
2031	$44,700,574	$ 273,337,153	$51,836,612	16.72%
2032	$59,724,225	$ 279,669,667	$53,391,710	17.10%
2033	$46,545,252	$ 271,221,458	$54,993,462	16.59%
2034	$30,694,826	$ 245,273,018	$56,643,266	15.00%
Total	$309,364,752		$497,673,902	
PV	$164,806,658	$265,123,845		

SCENARIO 4 – IMPROVE THE FCI TO ZERO DEFICIENCIES (FCI = 0%)

Increase funding to offset the recurring system renewal costs plus fully pay down existing deferred maintenance to improve the FSU facilities' condition from an FCI of 26.52% to an FCI of 0%, a level considered to be excellent (like new) condition. The solid line tracks the annual FCI over the funding cycle. The capital reinvestment in this scenario amounts to $742,946,919, or 100% of the needs estimate for the period 2024-2034. In this scenario, the proposed annual investment exceeds the sustainable funding range.

Figure 6 - Improve FCI to 0%



Year	Capital Renewal	Net Deficiencies	Funding Needs	FCI
2024		$ 433,582,167		26.52%
2025	$0	$ 368,774,531	$64,807,636	22.55%
2026	$0	$ 302,022,666	$66,751,865	18.47%
2027	$0	$ 233,268,244	$68,754,421	14.27%
2028	$10,224,442	$ 172,675,632	$70,817,054	10.56%
2029	$17,818,929	$ 117,552,996	$72,941,565	7.19%
2030	$99,656,505	$ 142,079,689	$75,129,812	8.69%
2031	$44,700,574	$ 109,396,556	$77,383,707	6.69%
2032	$59,724,225	$ 89,415,563	$79,705,218	5.47%
2033	$46,545,252	$ 53,864,440	$82,096,375	3.29%
2034	$30,694,826	$ -	$84,559,266	0.00%
Total	$309,364,752		$742,946,919	
PV	$164,806,658	$395,787,167		

Table of Findings

As with most of America's colleges and universities, FSU is coping with aging facilities, enrollment challenges and changing program requirements. Some are experiencing growth in new technologies and initiatives that reimagine the evolving relationship between higher education, student performance and their profound impact on facilities. Addressing facility condition needs is critical to meeting the FSU goals and objectives.

FINDING 1: FACILITY AGE

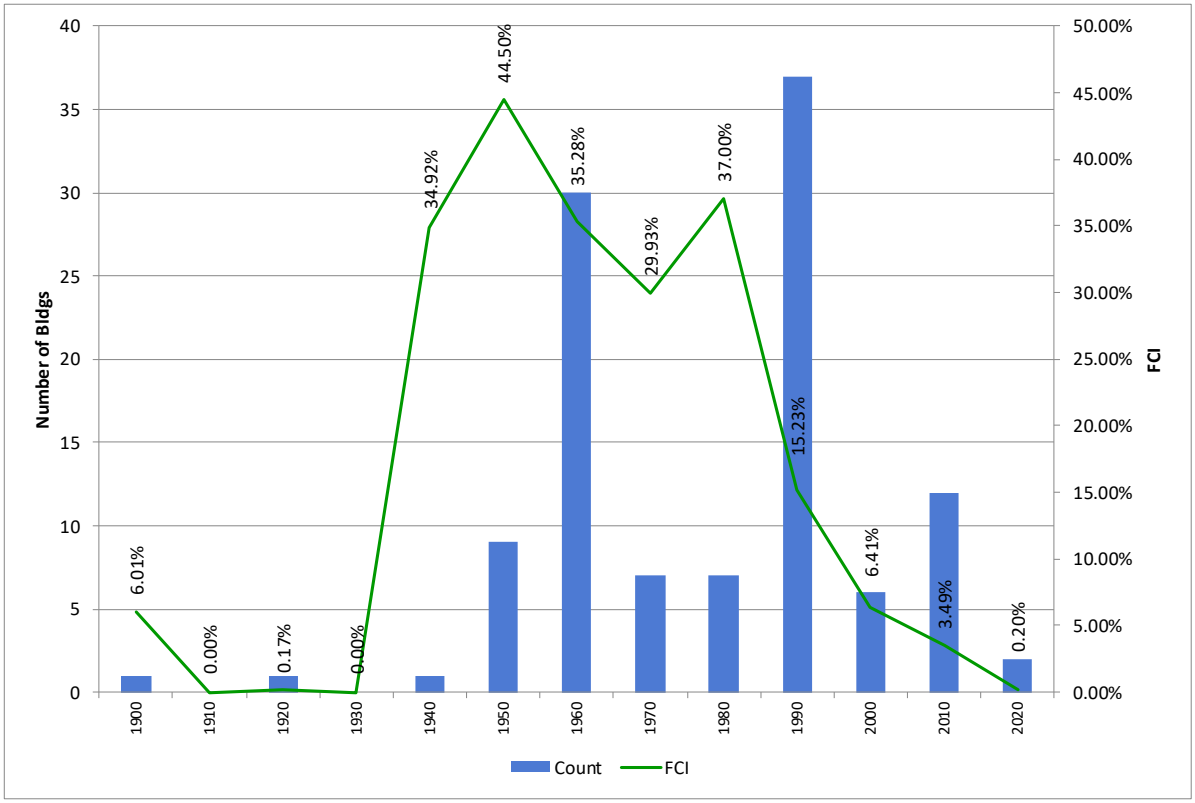
The following table provides a compilation of data on the age of FSU facilities.

Building Characteristics	FSU
Average Age in years	45
Median Date Built	1989
Built before 1950	2.7%, 3 bldgs
Built between 1950 and 1969	34.5%, 39 bldgs
Built between 1970 and 1984	8.8%, 10 bldgs
Built after 1985	53.9%, 61 bldgs

Facilities by Decade Built and Corresponding FCI

The following chart illustrates the number of facilities built per decade and the calculated FCI per decade for all Big Rapids & Grand Rapids campus buildings.

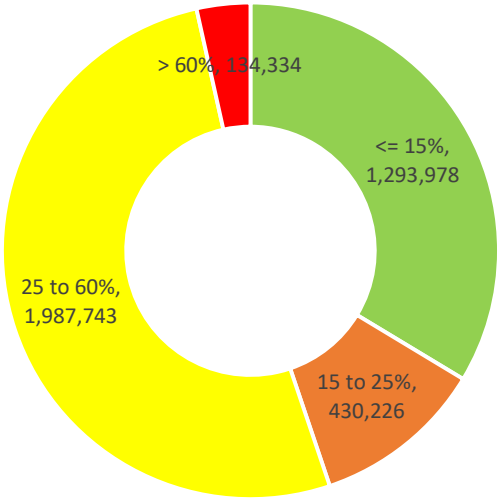
Figure 7 - Buildings by Decade



FINDING 2: FACILITY FCI PER GSF

The following chart provides a graphical reference that indicates the facilities are split into two groups based on area; those with an FCI of less than 15% or greater than 25%.

Figure 8 - Facility FCI per GSF

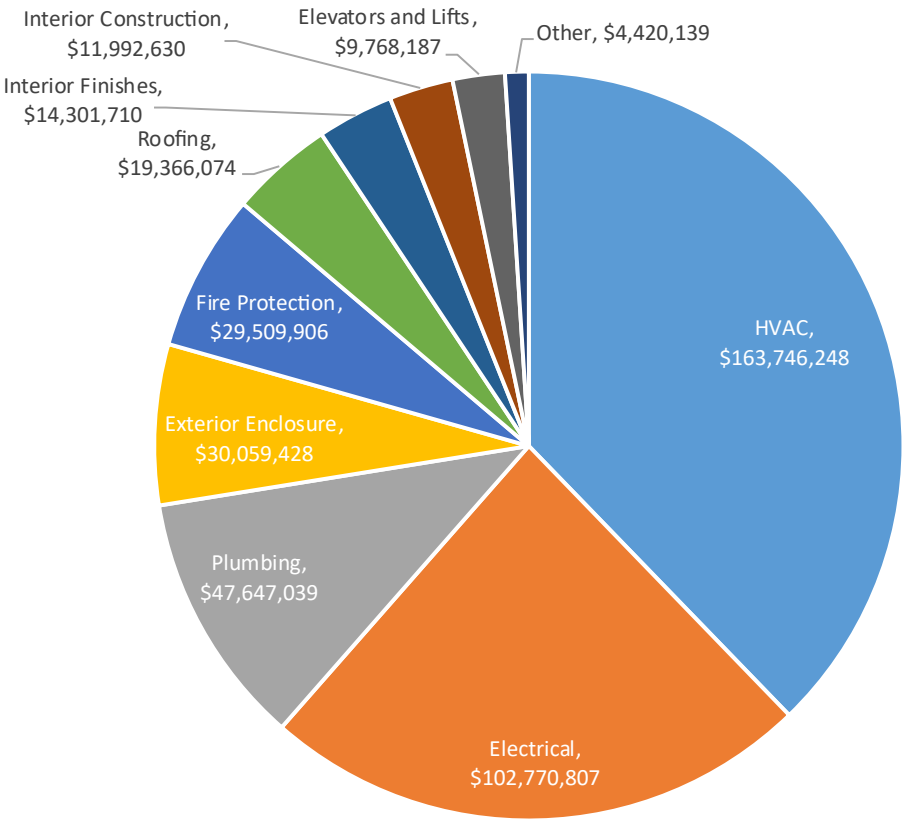


FCI % Range	*Recommended Action*
<15%	Good (Maintain Current Funding)
15 to 25%	Fair (Functional & Repairable)
>25%	Poor (Needs Significant Attention)
> 60%	***Suggests beyond useful life***

FINDING 3: FACILITY CONDITION NEEDS BY FACILITY SYSTEM

The following chart shows facility condition needs by Uniformat system, ordered by estimated repair cost.

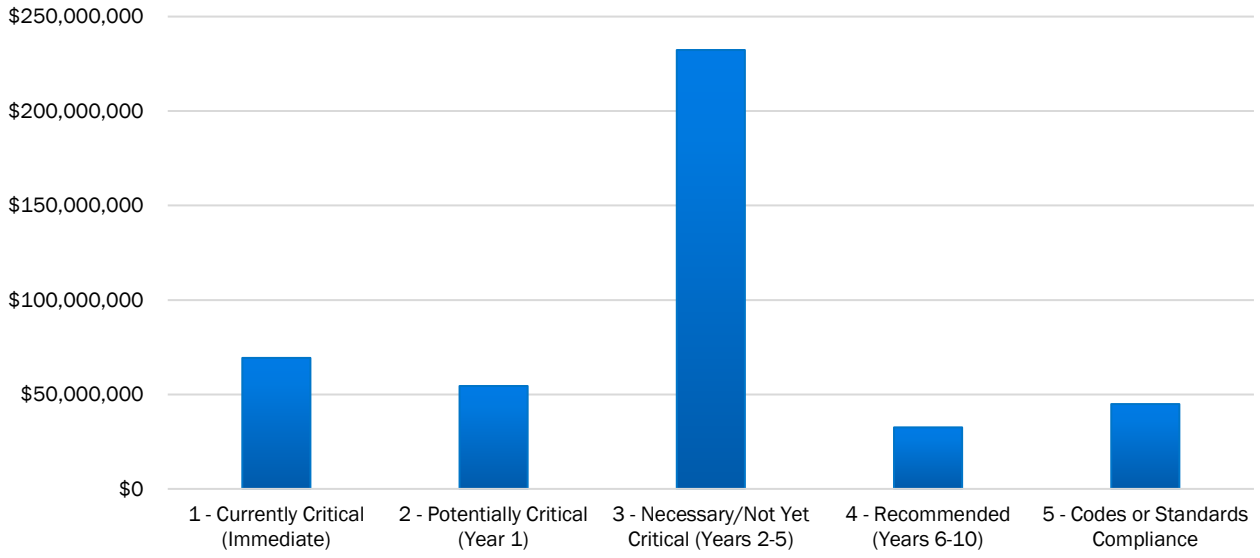
Figure 9 - Facility Condition Needs by Uniformat System



FINDING 4: FACILITY CONDITION NEEDS BY PRIORITY

The following chart indicates facility condition needs by Priority found in the assessment. Priority was determined by assessor and University staff observations. Priorities do not reflect the *affordability* of needed repairs, nor do they reconcile facility needs with a University's master plan priorities or academic program objectives. Refer to the Appendix on page 24 for more detailed descriptions of the priorities.

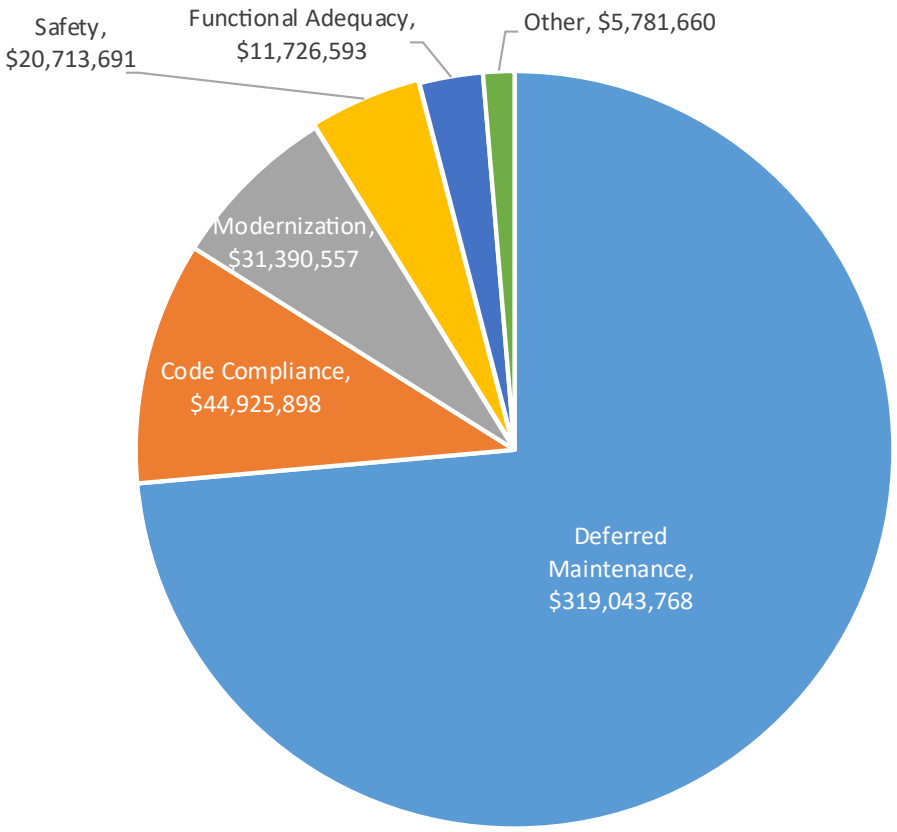
Figure 10 - Facility Condition Needs by Priority



FINDING 5: FACILITY CONDITION NEEDS BY DEFICIENCY CATEGORY

The following chart indicates facility condition need by deficiency category. Categories do not reflect the *affordability* of needed repairs, nor do they reconcile facility needs with the University's master plan priorities or academic program objectives. Refer to the Appendix on page 24 for more detailed descriptions of the categories.

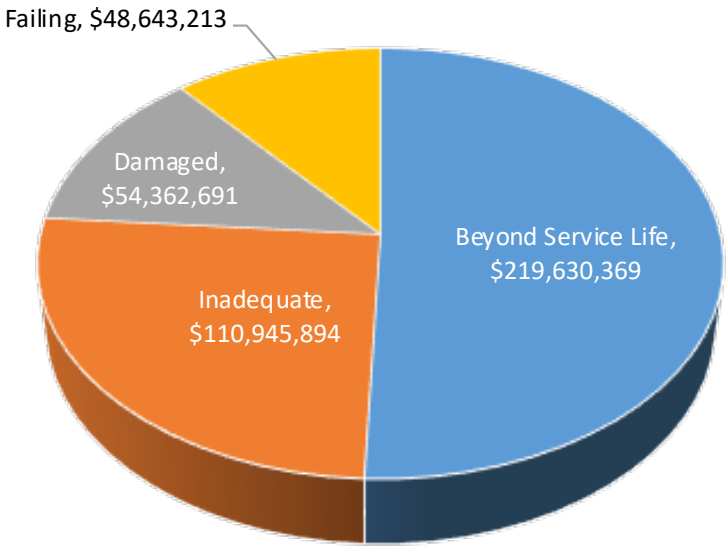
Figure 11 - Facility Condition Needs by Category



FINDING 6: FACILITY CONDITION NEEDS BY DEFICIENCY DISTRESS

The following chart and table indicate facility condition needs by deficiency distress. Distress does not reflect the *affordability* of needed repairs, nor does it reconcile facility needs with the University's master plan priorities or academic program objectives. Refer to the Appendix on page 22 for more detailed descriptions of the distress.

Figure 12 - Facility Condition Needs by Distress



Appendix

DEFICIENCY PRIORITIES

To prioritize the order in which items should be addressed, we establish a recommended response time period for each deficiency. The recommended response time periods are applied manually as deficiencies are reviewed and evaluated according to the descriptions below:

PRIORITY 1 – Currently Critical (Immediate)

These deficiencies require immediate action to:

a) Return a facility to normal operation
b) Stop accelerated deterioration
c) Resolve an urgent compliance issue (codes, regulations)
d) Correct a cited health or life safety concern

PRIORITY 2 – Potentially Critical (Year 1)

Deficiencies include improvements that will:

a) Enhance general safety/security of staff or patrons
b) Diminish the likelihood of further rapid deterioration
c) Resolve potential safety hazards
d) Repair systems that are observed to be malfunctioning

PRIORITY 3 – Necessary/Not Yet Critical (Years 2-5)

These are important repair items that are not immediately necessary but will require attention soon.

PRIORITY 4 – Recommended (Years 6-10)

Projects in this category include conditions requiring appropriate attention to preclude predictable deterioration or potential downtime and the associated damage or higher costs if deferred further.

PRIORITY 5 – Codes or Standards Compliance

This priority captures expenditures required to adapt the physical plant to meet changing building codes and standards. This includes ASHRAE Ventilation Standards, MI Energy Code, MI Fire Code and compliance with Occupational Safety and Health Administration regulations and the Americans with Disabilities Act. Relates to deficiency category Code Compliance.

DEFICIENCY CATEGORIES

To enhance reporting, each deficiency is assigned a general category that is applied manually as deficiencies are reviewed and evaluated based on the structure below. Categories often relate to sources of funding and are typically used to track expenditures in specific areas.

1. **Capital Renewal** refers to forecast replacement/rebuilding of major facility components to renew systems that have not yet reached the end of their anticipated service life.

2. **Code Compliance** refers to items documenting code and standards compliance issues including those described above in deficiency Priority 5 – Codes or Standards Compliance.

3. **Deferred Maintenance** refers to expenditures for repairs not accomplished as a part of normal maintenance or capital repair that have accumulated to the point that facility deterioration is evident and could impair the proper functioning of the facility. Deferred maintenance projects represent catch up expenses. Costs estimated for deferred maintenance projects should include compliance with applicable codes even if such compliance requires expenditures additional to those essential to affect needed repairs. Deficiencies generated for system that have exceeded their expected service life default into this category.

4. **Safety** includes items considered as health hazards. It also refers to items that have a direct benefit by improving life safety for students and staff.

5. **Functional Adequacy** refers to issues that compromise the ability of the facility or a portion thereof to meet the intended mission.

6. **Modernization** refers to system improvement associated with replacement of major facility components (e.g., replacement of the heating and ventilating systems at the end of their normal useful life is capital repair; adding air conditioning to the replacement project is a modernization cost).

7. **Plant Adaptation** refers to expenditures required to adapt the physical plant to the evolving needs of the institution and to changing standards. These are expenditures in addition to normal maintenance. Examples include compliance with changing codes (e.g., handicapped accessibility), and improvements occasioned by the adoption of modern technology (e.g., the use of personal computer networks).

8. **Routine Maintenance** describes the day-to-day efforts to control deterioration of facilities (up keep expenses) through scheduled repetitive activities (e.g. cleaning), periodic scheduled work (e.g., inspections and equipment adjustments) and minor repairs made on an as-needed basis.

DISTRESS

To enhance reporting, each deficiency is assigned a distress that is applied manually as deficiencies are reviewed and evaluated based on the structure below.

1. **Beyond Service Life** includes equipment or systems considered for replacement simply because they have reached or are beyond the end of their anticipated service life.

2. **Damaged** equipment or systems for which observed damage is significant and likely to compromise performance or integrity.

3. **Failing** refers to equipment or systems that have failed or are failing.

4. **Inadequate** conditions that do not support the mission and don't meet the criteria of other listed Distresses.

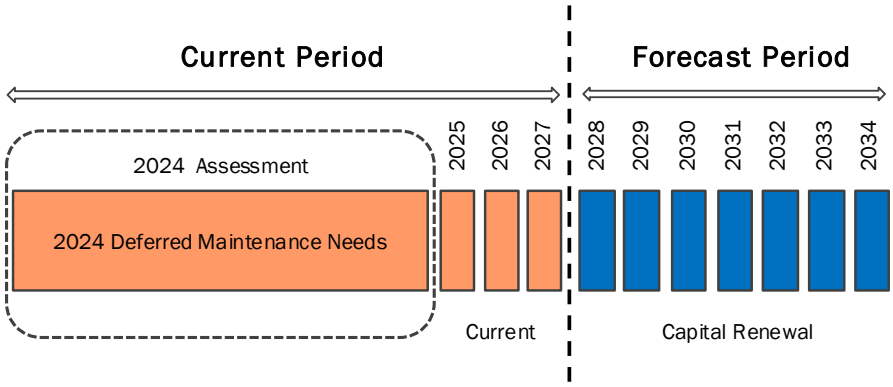
5. **Missing** refers to equipment or systems not installed in the original construction that are desirable additions to support the facility operations. An example of this would be adding a fire protection sprinkler system.

FACILITY CONDITION INDEX

The Facility Condition Index (FCI) represents the relative physical condition of facilities. The FCI measures the estimated cost of the current year deficiencies including recommended improvements and compares it to the projected Replacement cost of the various systems. The total cost of the repairs is divided by the current Replacement cost for the systems resulting in the FCI. The higher the FCI the poorer the relative condition of the facility. For example, if the building systems have a Replacement value of $1,000,000 with $100,000 of existing deficiencies, the FCI is $100,000/$1,000,000 or 0.10, which can be thought of as 10% deficient.

CURRENT PERIOD VS. FORECAST PERIOD

The current period is defined as the sum of the current deficiencies and the forecast capital renewal for the next two years. Extending the current period creates a buffer during which the overall costs in the database won't change due to the accumulation of capital renewal. The forecast period starts in 2028, at which time we begin to accumulate capital renewal. This approach allows the initial cycle of funding, design, and construction to occur prior to the end of anticipated service life of a facility system or element.



This 8-year capital renewal window helps to mitigate expiring system renewal funding spikes by reporting facility system renewal needs forward of the current year as current deferred maintenance. For example, a boiler with a 30-year expected useful life installed in 1996 represents a significant capital renewal need in 2026. Using a rolling window with 2-years forward of the current year, capital renewal needs are identified in time to initiate the funding process and to proactively plan, design and construct capital renewal items.

COST MODELS

Tables of cost information broken down by Uniformat code, called cost models, are used in the software database to predict the replacement value of the building and it's component systems. The table below provides cost in dollars per square foot for the list of facility types for which Parsons estimators created cost models. As part of the set up of the cost models, a comparison was made between the available RS Means models and the actual construction cost provided by the University for other similar buildings recently constructed on the campus. In addition, Parsons applied a table of additional costs including a City cost Index and a contingency factor applied to account for pricing anomalies. The Cost in dollars per square foot listed in the last column of the table applies these additional costs to the amounts in the Raw Cost column.

Description	Raw Cost ($/ft2)	Cost ($/ft2)
Athletic Facility	$228.54	$388.67
Athletic Training Storage	$156.91	$266.85
Auditorium	$153.06	$260.31
Automotive Center	$139.00	$236.39
Bituminous Lab	$117.15	$199.24
Power Plant	$203.43	$345.98
Central Plant	$164.77	$280.23
Classroom Building	$136.88	$232.79
Classroom Shops	$228.54	$388.67
Dormitory, 1-Story	$195.21	$331.99
Dormitory, 3-8 Story	$174.39	$296.59
Dormitory, 9-11 Story	$174.39	$296.59
E Campus Suites	$134.30	$228.41
Faculty Office Building	$165.77	$281.93
Ice Arena	$156.54	$266.22
Laboratory Building	$155.30	$264.12
Library	$184.16	$313.20
Southwest Commons	$235.04	$399.73
Storage Building	$84.24	$143.27
Student Services	$475.02	$807.86
West Campus Apts	$141.28	$240.27

Figure 2 - Model Costs by Facility Type

CITY COST INDEX

The R.S. Means data used to develop the cost models is a national average. As such, we modified the costs using a standard index (CCI) published by the R.S. Means Corporation. The current index for the nearest location is listed in the table below as a percentage of the national average.

ZipCode	Location	CCI %
493	Grand Rapids, MI	90.42%
495	Grand Rapids, MI	90.42%

ADDITIONAL COSTS

Contractor costs and Soft costs are additional costs that are necessary to accomplish the corrective work, but are not directly attributable to a deficient system. Soft costs must be added to the R.S. Means unit costs used in our estimates to show the true cost of the corrections. When applied using the table structure within the eCOMET software these factors compound mathematically into an overall multiplier. The additional cost factors used in our assessments are listed in the table below. The table provides an example that demonstrates the compounding effect for the FSU Additional Cost template starting with a Total Assembly Cost (or Raw Cost) of $100,000 and calculating the Contractor Costs and Soft Costs with the combined total listed at the end.

Contractor costs can include: general conditions, overhead and profit, bonds and insurance, construction management fees, and permit costs. Soft costs can include: contingency, design fees, geotechnical investigations, environmental impact analysis, hazardous material remediation, program management fees (whether in-house or through a consultant), and various administrative fees.

TABLE OF ADDITIONAL COSTS

Code	Parameter Name	Value %	Applies To	Equals
TAC	**Total Assembly Cost**			**$100,000.00**
CC	**Contractor Costs**			
GC	General Conditions	9.0%	TAC	$ 9,000.00
ST	Sales Tax (Mat'ls & Equipt Rental)	3.6%	TAC	$ 3,600.00
PT	Permits	1.5%	TAC	$ 1,500.00
OP	Overhead & Profit	15.0%	TAC+GC+ST+PT	$ 17,115.00
BI	Bonds & Insurance	2.0%	TAC+GC+ST+PT+OP	$ 2,624.30
	CC Subtotal	33.84%		$33,839.30
DC	Design & Estimating Contingency	5.0%	TAC	$ 5,000.00
	Construction Cost	38.84%	TAC+CC+DC	**$138,839.30**
SC	**Soft Costs**			
AE	A/E Fees	8.5%	TAC+CC+DC	$ 11,801.34
CM	Construction Management Fees	4.0%	TAC+CC+DC	$ 5,553.57
CC	Construction Contingency	10.0%	TAC+CC+DC	$ 13,883.93
	SC Subtotal	22.50%		$ 31,238.84
	Total Cost	**70.07%**	**TAC+CC+DC+SC**	**$170,078.14**

As a result, a Contractor Cost factor of 33.84% and a Soft Cost factor of 22.50% were added to all deficiencies. It is important to note that these costs may vary once plans for executing the work are created.

REFERENCE ORGANIZATIONS

Several organizations referenced throughout the document and include:

Acronym	Organization
APPA	APPA - LEADERSHIP IN EDUCATIONAL FACILITIES: International organization focused on providing excellence in educational environments by transforming facilities and member institutions and elevating the recognition and value of educational facilities.
ASTM	ASTM INTERNATIONAL: International standards organization that develops and publishes voluntary consensus technical standards for a wide range of materials, products, systems, and services.
BOMA	BUILDING OWNERS AND MANAGERS ASSOCIATION: National organization of public and private facilities focused on building management tools and maintenance techniques. Comet reference: building and component system effective economic life expectancies
RSMeans	RSMEANS: Primary national company specializing in construction cost data. Comet reference: cost models and deficiency pricing
CSI	CONSTRUCTION SPECIFICATIONS INSTITUTE: Primary national organization specializing in construction materials data and data location in construction documents. Comet reference: Uniformat II materials classification
NIST	NATIONAL INSTITUTE OF STANDARDS AND TECHNOLOGY: Agency in the US federal technology administration that makes measurements and sets standards as needed by industry or government programs
NACUBO	NATIONAL ASSOCIATION OF COLLEGE AND UNIVERSITY BUSINESS OFFICERS: Non-profit organization focusing on higher education facilities management best practices.

SYSTEMS CLASSIFICATIONS

In this report, we've used the UNIFORMAT II, which is a format for classifying building elements and related site work. 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, and it enhances project management and reporting at all stages of the facilities life cycle—planning, programming, design, construction, operations, and disposal.

The 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 subdivides Level 1 elements into Group Elements. The Shell, for example, includes the Superstructure, Exterior Closure, and Roofing. Level 3 breaks the Group Elements further into Individual Elements. Exterior Closure, for example, includes Exterior Walls, Exterior Windows, and Exterior Doors. Level 4 breaks the individual elements into yet smaller sub-elements. Standard Foundation sub elements, for example, include wall foundations, column foundations, perimeter drainage, and insulation. A major benefit of performing an economic analysis based on an elemental framework instead of on a product-based classification is the reduction in time and costs for evaluating alternatives at the early design stage. This encourages more economic analyses and more economically efficient choices among facilities and building elements. Other UNIFORMAT II benefits include providing a standardized format for collecting and analyzing historical data to use in estimating and budgeting future projects; providing a checklist for the cost estimation process as well as the creativity phase of the value engineering job plan; providing a basis for training in cost estimation; facilitating communications among members of a project team regarding the scope of work and costs in each discipline; and establishing a database for automated cost estimating. The COMET software automates access to the benefits of applying UNIFORMAT II in design specifications, cost estimating, and cost analysis. It provides summary sheets for presenting facility and site work elemental costs with cost analysis parameters in one efficient tool for communicating economic information to decision makers in a quickly understood, concise format that helps them make project choices. Construction managers, architects and engineers, operating and maintenance staff will find the classification useful.

The table below lists the anticipated service life in years for systems used in this report. The information listed in the table is based on our interpretation of Chapter 6 – Building Systems Useful Life of the very popular 1996 publication "How to Design and Manage Your Preventive Maintenance Program" offered by the Building Owners and Managers Association International (BOMA). The BOMA guide assumes regular preventive maintenance properly performed occurs at prescribed frequencies.

The BOMA "Building Systems Useful Life" publication was used as a reference for the service life of the building systems. The "American Society of Heating Refrigeration and Air Conditioning Engineers (ASHRAE) Applications Handbook" was also used as a reference for the service life of HVAC systems and equipment. It should be noted that in many instances the service life estimates are conservative, but these are the best available recognized standards for the anticipated service life of capital assets typically found in healthcare and research facilities.

The table also divides the facility into component Systems and System Groups organized alphabetically by the Uniformat coding sequence and lists the expected life cycles we typically use for each system in a survey.

System	System Group	Life	%Ren
Foundations	A1010 Standard Foundations	100	110
	A1020 Special Foundations	100	110
	A1030 Slab on Grade	100	110
Basement Construction	A2020 Basement Excavation	100	110
	A2020 Basement Walls	100	110
Superstructure	B1010 Floor Construction	100	110
	B1020 Roof Construction	100	110
Exterior Enclosure	B2010 Exterior Walls	100	110
	B2020 Exterior Windows	40	110
	B2030 Exterior Doors	25	110
Roofing	B3010 Roof Coverings	15	110
	B3020 Roof Openings	30	110
Interior Construction	C1010 Partitions	100	110
	C1020 Interior Doors	40	110
	C1030 Fittings	40	110
Stairs	C2010 Stair Construction	100	110
Interior Finishes	C3010 Wall Finishes	10	110
	C3020 Floor Finishes	15	110
	C3030 Ceiling Finishes	20	110
Conveying	D1010 Elevators and Lifts	30	110
	D1090 Other Conveying Systems	20	110
Plumbing	D2010 Plumbing Fixtures	30	110
	D2020 Domestic Water Distribution	25	110
	D2030 Sanitary Waste	40	110
	D2040 Rain Water Drainage	40	110
	D2090 Other Plumbing Systems	30	110
HVAC	D3010 Energy Supply	35	110
	D3020 Heat Generating Systems	30	110
	D3030 Cooling Generating Systems	30	110
	D3040 Distribution Systems	30	110
	D3050 Terminal & Package Units	20	110
	D3060 Controls & Instrumentation	20	110

System	System Group	Life	%Ren
	D3090 Other HVAC Systems/Equip	30	110
Fire Protection	D4010 Sprinklers	40	110
	D4020 Standpipes	40	110
Electrical	D5010 Electrical Service/Distribution	30	110
	D5020 Lighting and Branch Wiring	25	110
	D5030 Communications & Security	15	110
	D5090 Other Electrical Systems	30	110
Equipment	E1010 Commercial Equipment	30	110
	E1020 Institutional Equipment	35	110
	E1030 Vehicular Equipment	35	110
	E1090 Other Equipment	40	110
Furnishings	E2010 Fixed Furnishings	40	110

RENEWAL SUMMARY REPORT

The attached report provides a summary of information for the facilities in the portfolio.

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