



Facilities Management

REPORT ON THE CONDITION
OF
UNIVERSITY FACILITIES

For the Fiscal Year Ending June 30, 2018

2017-2018 Facilities Condition Report

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FACILITIES INVENTORY

The University of Virginia (UVA) facilities portfolio includes 560 buildings and corresponding infrastructure, encompassing over seventeen million gross square feet of building space, with a conservatively estimated replacement value of \$5.1 billion. The facilities portfolio constitutes a significant portion of the total assets held by the University. This report offers a maintenance condition synopsis for these E&G assets and a discussion of the on-going reinvestment needed to assure their continued usefulness.

For administrative and budget purposes, the University includes three State agencies, Agency 207 University of Virginia, Agency 209 University of Virginia Medical Center, and Agency 246 Wise. Agency 207 is subdivided into two operational categories: Educational and General (E&G) and Auxiliary. The following items should be considered when discussing these categories:

1. Agency 207 E&G refers to the academic division of the University that is partially supported by general funds allocated by the Commonwealth. This includes the Medical School, Nursing School, and Health Science Center Library.
2. Agency 207 Auxiliary spaces are assigned to organizations that are self-supporting, such as the Housing and Athletic departments. These organizations receive no general fund support.
3. Agency 209 is the patient care portion of the University's Health Systems division.

The UVA Facilities Management (FM) staff prepares this report on an annual basis. The FM staff has direct access to the inspection and cost data for Agency 207 E&G facilities. The facilities data for Agency 246 has been provided by the college's administration and can be found in Appendix D.

Table 1 below shows the number of buildings, gross square feet, and replacement value of the buildings and infrastructure maintained by Agency 207 and Agency 209.

Table 1- University of Virginia Facilities and Infrastructure Summary

	Number of Buildings*	Gross Square Feet**	Replacement Value***
Agency 207 E&G	309	7,494,876	\$2,870,921,259
Agency 207 Auxiliary	213	6,244,842	\$1,227,489,417
Agency 209	38	3,843,579	\$1,035,751,147
Total	560	17,583,297	\$5,134,161,823

- * Some buildings are shared by more than one agency. For the purposes of this report, each building is counted once and each building is assigned to the category that has the majority of space in that building.
- ** Calculated based on the percentage of financial responsibility in each building.
- *** Calculated based on the percentage of financial responsibility in each building or infrastructure component.

Replacement Value

The term “replacement value” has a long and varied history of use in the type of analysis contained in this report. A logical assumption is that “replacement value” means the total cost to replace a building if it has to be completely rebuilt. However, for this report, when “replacement value” is used, it refers to *the value of those building’s components that an organization is obligated to maintain*. It may be clearer to think of this as the asset’s total maintenance value. For newly constructed and renovated facilities, replacement value refers to a portion of the total amount that would be needed to actually build or replace the facility, specifically the construction cost. Replacement value does not include additional costs for line items such as architectural fees, project management fees, and furnishings; nor does it include the cost of adapting a building to changing occupant needs, building codes, or fire and life safety requirements.

Infrastructure

Facilities Management maintains many assets that are not buildings, such as sidewalks, roads, curbs, steam tunnels, sewer and water lines, buried electrical lines, and light poles. In fact, the infrastructure assets account for \$836,123,069 of the total replacement value shown in Table 1 with a proportion of 59% 207 E&G, 22% 207 AUX, and 19% 209.

Age

Generally speaking, as the age of a building or infrastructure component increases, so does the maintenance demand. Although some components of a building can last for many decades, such as the foundation, framing, and exterior walls; the average life span of most electrical, mechanical, and roofing systems is between twenty-five and thirty-five years.

Of the 309 buildings assigned to Agency 207 E&G, 225 (73%) are more than 30 years old. For Agency 207 E&G facilities, the average age is 73 years, the median age is 58 years, and the weighted age is 57.1 years, where weighted age assigns more weight to larger facilities.

CONDITION OF AGENCY 207 E&G FACILITIES

Maintenance Backlog

Facilities Management gathers information about the maintenance needs of the Agency 207 E&G buildings by performing facility condition assessments. The goal is to inspect E&G buildings once every four years. The assessments result in a number of immediate repairs. They also document repairs that are needed at the time of the inspection but cannot be undertaken at that time due to funding or other constraints. These deferred maintenance items become the maintenance backlog for that building. It is important to distinguish between what a facility may need in terms of maintenance, and what it may need in terms of adaptation or modernization. The maintenance backlog represents the estimated amount of money needed to restore deteriorating components to their original operating condition. In many cases, restoring components to their original operating condition will fall short of today's standards for function and/or regulatory compliance; therefore, the cost to fully renovate or modernize a building is usually many times greater than the estimated deferred maintenance backlog.

Cost Estimates

The maintenance backlog for a building represents the total cost to repair the maintenance deficiencies documented in the facility condition assessment. Many major repairs cannot be accurately estimated until considerable money is spent on research and design. Money is not invested in this level of estimating unless a project is funded for accomplishment. The estimated costs that make up the backlog are order of magnitude figures, intended to be sufficiently accurate in reflecting the magnitude of the repairs needed for a particular building.

The Facility Condition Index

The Facility Condition Index (FCI) is a simple and widely accepted measure used to indicate the relative condition of a building. It is calculated by dividing the value of the maintenance backlog in a building by the replacement value of the building and showing the result as a percentage. For example, a building with a replacement value of \$5,000,000 that contains a \$100,000 maintenance backlog has an FCI of two percent. By comparison, a building with a replacement value of \$1,000,000 that also has a \$100,000 backlog is in relatively worse condition. The FCI for that building is 10 percent. Recognized industry benchmarks assume that a building with a FCI of 5 percent or less is in good condition.

Over the past fiscal year, many building system renewal projects were completed which slowed the growth of the maintenance backlog. Some examples of these projects include the Thornton Hall A-wing and Ivy Stacks roof replacements, MR-4 passenger elevator modernizations, Clark Hall plaza renewal, and the Campbell Hall bathroom renewals. Also, the Campbell Hall electrical, Materials Science HVAC, and Old Cabell Hall MEP renewal projects were completed this year, which helped to reduce the maintenance backlog.

Table 2 – 2017-2018 E&G FCI%

E&G Total Replacement Value*	E&G Total Maintenance Backlog**	E&G Overall FCI***	E&G Buildings with FCI of 5% or Higher
\$2,870,921,259	\$144,673,895	5.0%	25%

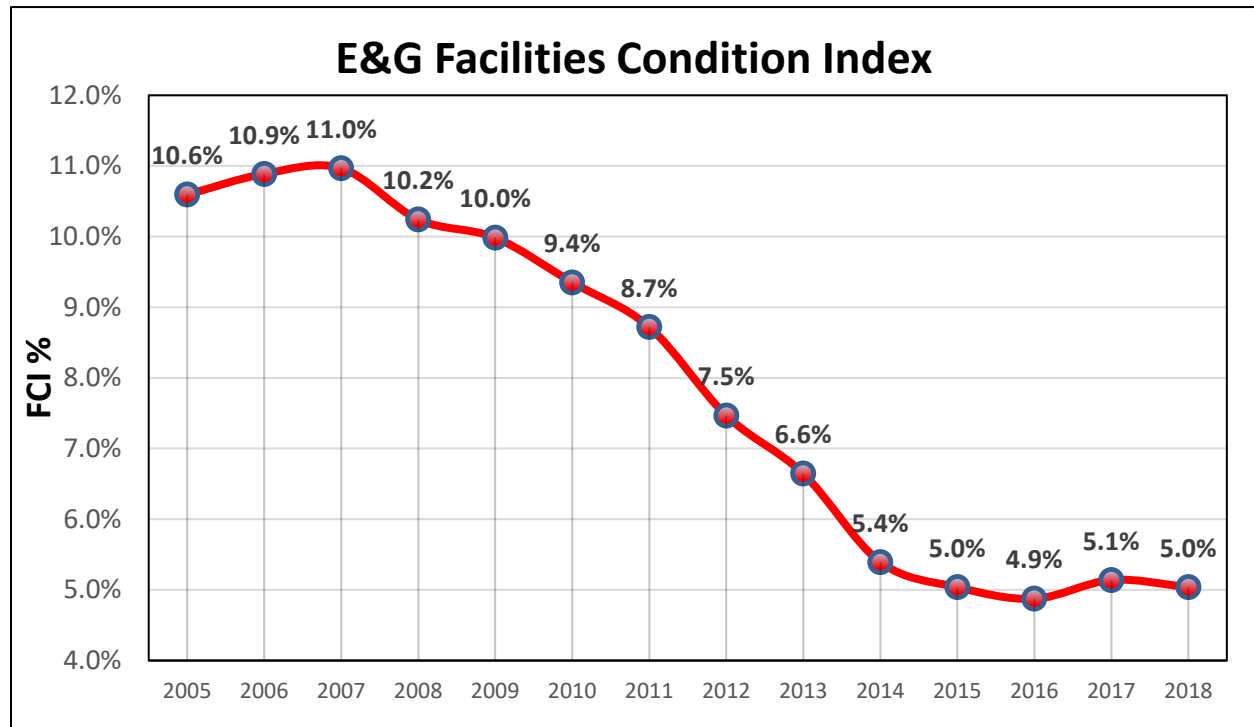
* Calculated as the total value of each building (or infrastructure component) multiplied by the percent of financial responsibilities for Agency 207 E&G.

** Calculated as the total cost of all deficiencies in each building (or infrastructure component) multiplied by the percent financial responsibilities for Agency 207 E&G.

*** Calculated by dividing the value of the deficiencies in the Maintenance Backlog by the replacement value.

The achievement created in the last thirteen years would not have been possible without the transformational support, planning, and funding commitments of the BOV. Through this support, along with the investments made in maintenance operations, maintenance reserve and major capital renewals, the Deferred Maintenance Program achieved its goal of a 5 percent FCI, as of June 30, 2015. The program continues to maintain the University’s facilities in good condition through the combination of maintenance reinvestment and whole building capital renewals. This year the FCI decreased slightly due to the completion of several minor capital projects. The backlog will be further reduced by the Chemistry and Gilmer renovations, which will address the maintenance deficiencies while adapting the buildings to planned use and current codes.

—The following chart illustrates the progress made by the Deferred Maintenance Program in regards to achieving the goal of a 5 percent FCI by fiscal year 2015.



RESOURCES FOR MAINTENANCE AND REPAIR OF AGENCY 207 E&G FACILITIES

This report captures the financial resources for the maintenance of the University's E&G facilities from three principal sources: Maintenance Operating Budget, the Board of Visitors (BOV), and Maintenance Reserve funding. Additionally, the correction of maintenance items are accomplished through larger projects funded by capital outlay or private fund sources. Though not captured here, these complementary resources are essential to achieving and maintaining a 5 percent FCI.

Maintenance Operating Budget Expenditures

Funding for preventive and routine maintenance in support of Agency 207 E&G is provided through the University's annual operating budget. Funding for maintenance of the utility infrastructure is provided by a component of utilities rates charged to each user of these services. Resources expended through the maintenance operating budget for Agency 207 E&G for the 2017-2018 fiscal year totaled \$33,464,545. This figure includes operating maintenance funding for both Law and Darden.

Board of Visitors

Beginning with the 2005-2006 fiscal year, the University's Board of Visitors made available a special allocation of funds for deferred maintenance projects. When the initiative began, the plan was to incrementally increase annual funding to a budgeted target maintenance reinvestment rate of 2%. Further detail on the Maintenance Reinvestment Rate is found below. During the last fiscal year \$9,516,959 was expended from the BOV deferred maintenance account.

Maintenance Reserve Funding

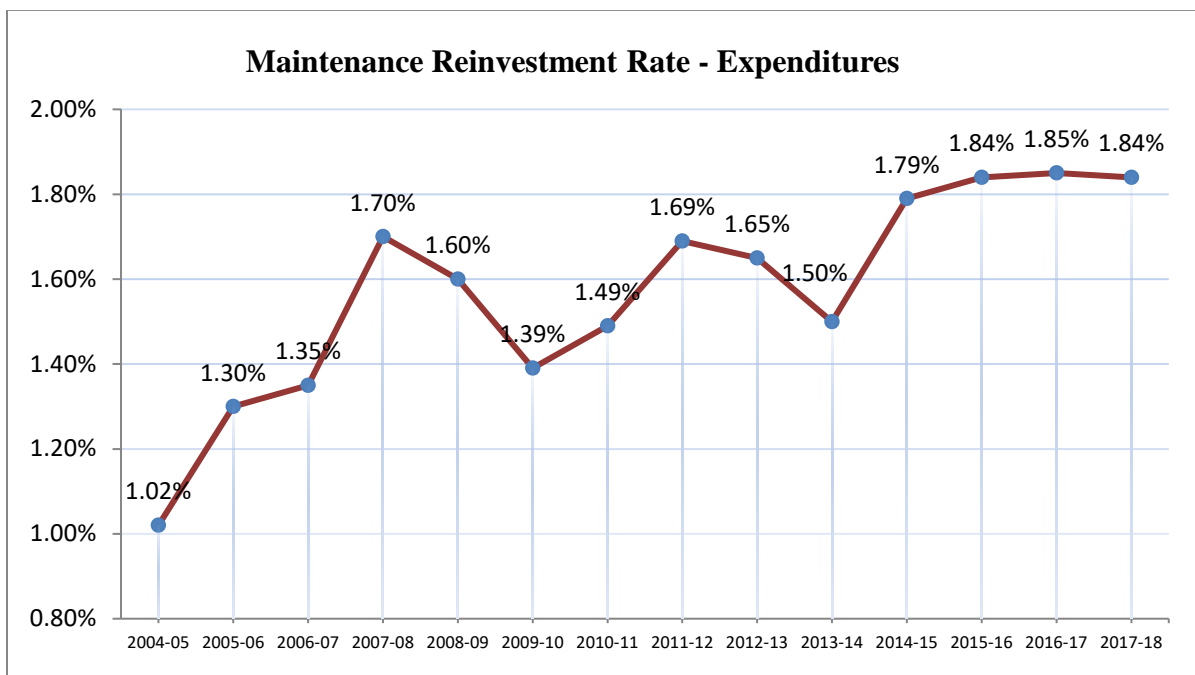
Maintenance Reserve is a component of the Commonwealth's capital outlay budget appropriated by the General Assembly each biennium. Initiated in the 1982-84 biennium, Maintenance Reserve acknowledges the need of an on-going financial commitment to address deferred maintenance needs within state facilities. Maintenance Reserve is intended to fund major repairs costing between \$25,000 and \$2,000,000 each. A total of \$9,815,455 was spent from this account in the last fiscal year. Maintenance Reserve funds address the deterioration of building systems, thus extending the useful life of a facility. Today, Maintenance Reserve funds, combined with capital renewals, play a crucial role in the management and reduction of UVA's deferred maintenance backlog. Note that the State allocation of Maintenance Reserve funds are not available for Agency 209 and Agency 207 Auxiliaries, and a small number of Agency 207 E&G facilities.

Maintenance Reinvestment Rate

The ratio of the building maintenance expenditures to the total replacement value is known as the maintenance reinvestment rate. The total amount spent on building maintenance can be calculated by combining the amounts spent from the operating budget, the BOV funds, and Maintenance Reserve. For 2017-2018, the figure for Agency 207 E&G was \$52,791,958.

These expenditures represented 1.84 percent of the replacement value of the E&G buildings and infrastructure. Various authorities cite a range between 1.5 percent and 4 percent as the reinvestment rate necessary to slow the growth of a deferred maintenance. Taking into consideration the age of many of the University's buildings and the substantial amount of deferred maintenance already accumulated, the BOV established a goal to achieve a reinvestment rate of 2 percent. In addition to the reinvestment rate, Agency 207 E&G funds new facility maintenance at 2 percent of the building's construction cost.

The following chart illustrates the progress made towards reaching the goal of a 2% Maintenance Reinvestment Rate (MRR) as represented by total expenditures. The MRR in some university publications shows the total budgeted amount allocated to the Deferred Maintenance program. This report's focus is what was expended during the fiscal year and its effect on both the maintenance back log and the overall FCI.



Capital Budget

Many older buildings need considerable renovation work to make them compatible with contemporary building and life safety codes, as well as current research and teaching standards. In addition to the renovations done during these projects, many long-standing maintenance and repair needs are also corrected in the course of the work. For this reason, capital renewal projects are a valuable resource to fund the correction of maintenance deficiencies in existing buildings.

Gift and Grant Funding

Gift funding has been a significant source of financial support for the restoration and preservation of the University's Jeffersonian buildings and grounds. Resources have primarily been developed through the activities of the Jeffersonian Restoration Design Committee.

Summary

In 2005-06, the Board of Visitors embarked on a ten-year plan to reduce the deferred maintenance backlog of E&G facilities and the corresponding FCI to 5 percent or less. The Board also took steps to establish adequate annual maintenance funding to limit the accumulation of deferred maintenance. Today the FCI is 5.0 percent, which is in the “good” category by industry standards. The FCI shows a noteworthy improvement since 2005-06, when the Report on the Condition of University Facilities reported the E&G FCI to be 10.9 percent. The University has made steady progress in its investments through maintenance operations, Maintenance Reserve, and BOV funding that have improved the maintenance reinvestment rate, a rate that was 1.02 percent in 2005-06 and is now 1.84 percent measured in expenditures.

Appendix A - Facilities with Agency 207 Educational and General Data as of June 30, 2018

Building Agency	Property Number	Property Description	Current Replacement Value	Total Deficiencies	FCI%	GSF	Year Built	207 E&G %	207 AUX %	209 HOS %	207 E&G Replacement Value	207 AUX Replacement Value	209 HOS Replacement Value	207 E&G Deficiency Total	207 AUX Deficiency Total	209 HOS Deficiency Total
209 HOS	1985	STACEY HALL	\$10,251,719	\$487,572	5%	60,500	1963	22%	0%	78%	\$2,255,378	\$0	\$7,996,341	\$107,266	\$0	\$380,306
207 E&G	1180	STEELE WING	\$5,371,049	\$165,280	3%	21,469	1920	97%	0%	3%	\$5,209,918	\$0	\$161,131	\$160,322	\$0	\$4,958
207 E&G	0231	STORES WAREHOUSE	\$2,863,446	\$26,338	1%	17,383	1963	100%	0%	0%	\$2,863,446	\$0	\$0	\$26,338	\$0	\$0
207 E&G	0531	STUDENT FACULTY CENTER (LAW)	\$12,780,607	\$0	0%	17,077	2002	100%	0%	0%	\$12,780,607	\$0	\$0	\$0	\$0	\$0
207 E&G	1182	SUHLING RESEARCH LAB	\$6,412,243	\$792,060	12%	25,401	1950	78%	0%	22%	\$5,001,550	\$0	\$1,410,693	\$617,807	\$0	\$174,253
207 E&G	2014	The Mews	\$435,101	\$200,366	45%	1,532	1826	100%	0%	0%	\$435,101	\$0	\$0	\$200,366	\$0	\$0
207 E&G	0204	THORNTON HALL	\$33,661,049	\$2,028,782	6%	159,384	1936	100%	0%	0%	\$33,661,049	\$0	\$0	\$2,028,782	\$0	\$0
207 E&G	0063	UNIVERSITY CHAPEL	\$1,706,661	\$342,362	19%	4,107	1888	100%	0%	0%	\$1,706,661	\$0	\$0	\$342,362	\$0	\$0
209 HOS	1150	UNIVERSITY HOSPITAL	\$323,827,051	\$16,706,892	5%	1,077,061	1989	5%	0%	95%	\$16,191,353	\$0	\$307,635,699	\$835,345	\$0	\$15,871,547
207 E&G	0253	UNIVERSITY PRESS WAREHOUSE	\$1,335,605	\$165,700	12%	8,277	1964	100%	0%	0%	\$1,335,605	\$0	\$0	\$165,700	\$0	\$0
207 E&G	0056	VARSITY HALL	\$4,970,164	\$0	0%	6,563	1858	100%	0%	0%	\$4,970,164	\$0	\$0	\$0	\$0	\$0
207 E&G	1676	VIVARIUM BUILDING #20	\$117,158	\$531	0%	646	1965	100%	0%	0%	\$117,158	\$0	\$0	\$531	\$0	\$0
207 E&G	1677	VIVARIUM BUILDING #21	\$812,516	\$5,571	1%	4,480	1965	100%	0%	0%	\$812,516	\$0	\$0	\$5,571	\$0	\$0
207 E&G	1684	VIVARIUM INCINERATOR	\$104,465	\$0	0%	576	1975	100%	0%	0%	\$104,465	\$0	\$0	\$0	\$0	\$0
207 E&G	1680	VIVARIUM PUMP HOUSE	\$27,382	\$496	2%	151	1971	100%	0%	0%	\$27,382	\$0	\$0	\$496	\$0	\$0
207 E&G	1679	VIVARIUM STORAGE	\$131,780	\$0	0%	800	1967	100%	0%	0%	\$131,780	\$0	\$0	\$0	\$0	\$0
207 E&G	2013	West Lawn Dorm	\$2,651,442	\$530,000	19%	5,995	1826	100%	0%	0%	\$2,651,442	\$0	\$0	\$530,000	\$0	\$0
207 E&G	2028	West Lawn Garage	\$144,038	\$0	0%	581	1826	100%	0%	0%	\$144,038	\$0	\$0	\$0	\$0	\$0
207 E&G	2021	West Lawn Wash Room	\$101,398	\$5,500	5%	409	1826	100%	0%	0%	\$101,398	\$0	\$0	\$5,500	\$0	\$0
207 E&G	2003	West Range Dorm	\$2,663,967	\$0	0%	6,071	1826	100%	0%	0%	\$2,663,967	\$0	\$0	\$0	\$0	\$0
207 E&G	0267	WILSDORF HALL	\$48,514,978	\$0	0%	97,838	2006	100%	0%	0%	\$48,514,978	\$0	\$0	\$0	\$0	\$0
207 E&G	0136	WILSON HALL	\$9,721,769	\$0	0%	50,327	1969	100%	0%	0%	\$9,721,769	\$0	\$0	\$0	\$0	\$0
207 E&G	0527	WITHERS-BROWN HALL	\$44,882,866	\$0	0%	247,471	1974	100%	0%	0%	\$44,882,866	\$0	\$0	\$0	\$0	\$0
209 HOS	1183	X-RAY WING	\$6,391,718	\$0	0%	25,609	1960	14%	0%	86%	\$894,841	\$0	\$5,496,878	\$0	\$0	\$0
207 E&G	0207	ZEHMER HALL	\$6,124,188	\$54,317	1%	33,767	1959	100%	0%	0%	\$6,124,188	\$0	\$0	\$54,317	\$0	\$0
207 E&G	0206	ZEHMER HALL COMMUNICATION SHED	\$10,538	\$0	0%	64	1983	100%	0%	0%	\$10,538	\$0	\$0	\$0	\$0	\$0
207 E&G	0205	ZEHMER STORAGE BUILDING	\$52,415	\$0	0%	289	1968	100%	0%	0%	\$52,415	\$0	\$0	\$0	\$0	\$0
207 E&G	0224	ZEHMER UPLINK SHELTER	\$32,282	\$425	1%	178	1988	100%	0%	0%	\$32,282	\$0	\$0	\$425	\$0	\$0

Total Combined Building and Infrastructure Values

5.0%

\$2,870,921,259

\$144,673,895

207 E&G Portfolio FCI%

Total Replacement Value

Total Deficiencies

Note: The Report on the Condition of University Facilities (FCR) is an annual publication since January 1992. With each publication, the maintenance program managers used improved facility inspection techniques, input from consultants and higher education colleagues, and analytics to enhance the quality, completeness, and consistency of the FCR's data. In this publication, the application of inflation to the deficiency values and current replacement value shifted from June 30th to mid-July. The shift from the last day of the fiscal year to the first weeks of the new fiscal year improves the consistency of reporting throughout a single fiscal year as evidenced by the inclusion of the BOV initiate report as an appendix.

Appendix B - Facilities with Agency 207 Auxiliary Data as of June 30, 2018

Building Agency	Property Number	Property Description	Current Replacement Value	Total Deficiencies	FCI%	GSF	Year Built	207 E&G %	207 AUX %	209 HOS %	207 E&G Replacement Value	207 AUX Replacement Value	209 HOS Replacement Value	207 E&G Deficiency Total	207 AUX Deficiency Total	209 HOS Deficiency Total
207 AUX	2415	University Gardens (84-86, 106 University Gardens)	\$685,238	\$0	0%	9,677	1948	0%	100%	0%	\$0	\$685,238	\$0	\$0	\$0	\$0
207 AUX	2416	University Gardens (95 University Gardens) G	\$438,160	\$54,320	12%	4,628	1948	0%	100%	0%	\$0	\$438,160	\$0	\$0	\$54,320	\$0
207 AUX	5576	UNIVERSITY HALL	\$16,101,235	\$11,253,984	68%	166,489	1965	0%	100%	0%	\$0	\$16,101,235	\$0	\$0	\$11,253,984	\$0
207 AUX	2390	Vaughan House	\$1,112,927	\$59,398	5%	7,437	1992	0%	100%	0%	\$0	\$1,112,927	\$0	\$0	\$59,398	\$0
207 AUX	2074	Venable House	\$544,652	\$186,000	33%	8,159	1929	0%	100%	0%	\$0	\$544,652	\$0	\$0	\$186,000	\$0
207 AUX	0319	W SCOTT STADIUM PARKING	\$2,008,134	\$65,025	3%	39,650	1993	0%	100%	0%	\$0	\$2,008,134	\$0	\$0	\$65,025	\$0
207 AUX	2370	Watson-Webb House	\$14,847,673	\$0	0%	62,279	2011	0%	100%	0%	\$0	\$14,847,673	\$0	\$0	\$0	\$0
207 AUX	2394	Weedon House	\$3,266,075	\$547,085	16%	23,196	1992	0%	100%	0%	\$0	\$3,266,075	\$0	\$0	\$547,085	\$0
207 AUX	2395	Whyburn House	\$3,413,223	\$779,353	22%	23,196	1992	0%	100%	0%	\$0	\$3,413,223	\$0	\$0	\$779,353	\$0
207 AUX	2366	Woody House	\$9,654,670	\$350,671	4%	35,801	2000	0%	100%	0%	\$0	\$9,654,670	\$0	\$0	\$350,671	\$0
207 AUX	2434	YEN HOUSE	\$1,359,716	\$317,867	23%	14,146	1983	0%	100%	0%	\$0	\$1,359,716	\$0	\$0	\$317,867	\$0
207 AUX	2567	Younger Apts	\$3,375,415	\$83,673	2%	19,157	1983	0%	100%	0%	\$0	\$3,375,415	\$0	\$0	\$83,673	\$0

Total Combined Building and Infrastructure Values

5.1%

207 AUX Portfolio FCI%

\$1,227,489,417

Total Replacement Value

\$62,430,979

Total Deficiencies

Note: The Report on the Condition of University Facilities (FCR) is an annual publication since January 1992. With each publication, the maintenance program managers used improved facility inspection techniques, input from consultants and higher education colleagues, and analytics to enhance the quality, completeness, and consistency of the FCR's data. In this publication, the application of inflation to the deficiency values and current replacement value shifted from June 30th to mid-July. The shift from the last day of the fiscal year to the first weeks of the new fiscal year improves the consistency of reporting throughout a single fiscal year as evidenced by the inclusion of the BOV initiate report as an appendix.

Property Number	Property Description	Total 'GSF	Year Built	Current Replacement Value	Total Deficiencies	FCI%
8333	UVACW-ASBURY HALL	22,140	1984	\$5,740,413	\$359,670	5.9%
8243	UVACW-BASEBALL FIELD PRESSBOX	1,000	2003	\$542,928	\$0	0.0%
8225	UVACW-BOWERS-STURGILL HALL	9,328	1924	\$2,058,440	\$53,951	2.5%
8240	UVACW-C. BASCOM SLEMP STUDENT CENTER	35,000	2002	\$15,461,994	\$240,358	1.5%
8213	UVACW-CANTRELL HALL	22,602	1982	\$7,813,599	\$608,214	7.3%
8241	UVACW-CARL SMITH STADIUM SEATING/FIELDH	13,814	2003	\$4,603,470	\$110,699	2.3%
8379	UVACW-CAV'S STUDENT	1,500	2007	\$131,255	\$3,000	2.1%
8276	UVACW-CENTRAL STORAGE	4,000	1974	\$412,353	\$0	0.0%
8214	UVACW-CHAPEL OF ALL FAITHS	3,425	1982	\$755,806	\$39,385	4.9%
8382	UVACW-COMMONWEALTH HALL	31,030	2009	\$10,375,275	\$0	0.0%
8223	UVACW-CONSTRUCTION TRAILER	800	2009	\$71,595	\$0	0.0%
8226	UVACW-CONVOCATION CENTER	75,746	2010	\$30,809,998	\$0	0.0%
8341	UVACW-CROCKETT HALL	13,580	1921	\$8,299,265	\$18,629	0.2%
8378	UVACW-CULBERTSON HALL	36,000	2006	\$9,749,960	\$17,843	0.2%
8112	UVACW-DARDEN HALL	34,500	1997	\$7,557,661	\$906,822	11.2%
8313	UVACW-EMMA MCCRARAY HALL A	23,800	1970	\$6,170,816	\$144,140	2.2%
8314	UVACW-EMMA MCCRARAY HALL B	19,780	1974	\$6,170,816	\$153,361	2.3%
8350	UVACW-FACULTY APARTMENT BUILDING	3,216	1958	\$564,639	\$65,429	10.9%
8375	UVACW-FACULTY HOUSE E	1,222	1958	\$167,574	\$105,434	59.0%
8376	UVACW-FACULTY HOUSE F	1,222	1958	\$167,574	\$73,751	41.2%
8242	UVACW-FOOTBALL PRESSBOX	2,743	2004	\$677,080	\$0	0.0%
8117	UVACW-FRED B. GREEAR GYMNASIUM	26,500	1961	\$4,866,089	\$1,924,594	37.1%
8114	UVACW-GILLIAM CENTER FOR THE ARTS	38,476	1974	\$17,320,207	\$0	0.0%
8212	UVACW-GREEN HOUSE	1,620	1972	\$229,628	\$0	0.0%
8338	UVACW-HENSON HALL	30,000	2000	\$7,415,109	\$11,000	0.1%
8380	UVACW-HUMPHREY'S TENNIS COMPLEX	1,344	2007	\$418,828	\$0	0.0%
8383	UVACW-IT BUILDING	6,000	2008	\$5,385,687	\$0	0.0%
8211	UVACW-JOHN COOKE WYLLIE LIBRARY	28,418	1968	\$7,461,231	\$361,394	4.5%
8377	UVACW-LILA VICARS SMITH HOUSE (CHANCELL	4,800	1990	\$997,380	\$124,860	11.7%
8218	UVACW-LOG CABIN	325	1785	\$305,666	\$0	0.0%
8219	UVACW-MAINTENANCE BUILDING	5,978	1972	\$298,795	\$5,634	1.8%
8340	UVACW-MARTHA RANDOLPH HALL	22,000	1992	\$5,740,413	\$390,810	6.4%
8275	UVACW-NEW MAINTENANCE	20,000	1974	\$4,123,529	\$0	0.0%
8227	UVACW-OBSERVATORY	282	2010	\$477,299	\$0	0.0%
8274	UVACW-RESOURCE CENTER	10,000	1984	\$1,401,356	\$25,000	1.7%
8113	UVACW-SCIENCE BUILDING	25,438	1965	\$15,876,856	\$0	0.0%
8116	UVACW-SCIENCE BUILDING LAB ADDITION	44,000	2002	\$13,810,412	\$345,000	2.3%
8228	UVACW-SCIENCE GREENHOUSE	1,465	2010	\$229,628	\$0	0.0%
8224	UVACW-SEED CENTER	4,040	1982	\$196,512	\$28,833	13.7%
8277	UVACW-SHED	2,000	1974	\$206,174	\$0	0.0%
8216	UVACW-SMIDDY HALL	21,534	1972	\$8,573,297	\$0	0.0%
8381	UVACW-SMITH DINING HALL	20,821	2009	\$12,206,909	\$12,070	0.1%
8244	UVACW-SOFTBALL FIELD PRESSBOX	1,000	2004	\$542,928	\$0	0.0%
8217	UVACW-SWIMMING POOL	8,800	1961	\$1,573,385	\$305,227	18.2%
8136	UVACW-THOMPSON HALL	22,140	1984	\$5,740,413	\$317,601	5.2%
8394	UVACW-WINSTON ELY HEALTH AND WELLNESS	12,120	2014	\$6,932,250		
8337	UVACW-TOWNHOUSE APTS	8,694	1988	\$2,254,161	\$929,665	38.6%
8229	UVACW-WISE LIBRARY	68,353	2016	\$27,392,021	\$0	0.0%
8111	UVACW-ZEHMER HALL	30,506	1959	\$6,682,725	\$441,608	6.2%

Totals - Agency 246	823,102			\$276,961,401	\$8,123,982	2.9%
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Appendix E

Annual Report on the Board of Visitors Deferred Maintenance Initiative

This report details the continued progress made since the inception of the Deferred Maintenance (DM) initiative approved by the Board of Visitors in 2005. The focus of this document includes the progress to curtail the overall maintenance backlog, the budgeted Maintenance Reinvestment Rate (MRR) and details of recent completed DM projects and accomplishments.

University of Virginia
Status Report on the Plan to Address Deferred Maintenance
FY 2017-2018

Executive Summary

The University of Virginia's facilities portfolio includes 560 buildings and related infrastructure, encompassing over seventeen million gross square feet of building space, with a conservatively estimated replacement value of \$5.1 billion. The facilities portfolio constitutes a significant portion of the total assets held by the University and should be appropriately maintained.

In December 2004, after hearing a presentation about the University's deferred maintenance backlog, the Board of Visitors embarked on a long-term plan to accomplish two objectives:

- (1) Reduce the deferred maintenance backlog to a reasonable level by 2015, with a target facility condition index (FCI) of 5 percent or less. At the time, the FCI was 10.6 percent.
- (2) Establish adequate annual maintenance funding to prevent the further accumulation of deferred maintenance, by increasing the then current 1.2 percent reinvestment rate to a 2 percent annual reinvestment rate.

Progress has been made in the last twelve years. Annual increases in the maintenance operating budget, combined with the maintenance reserve appropriation has improved the maintenance reinvestment rate to 1.92 percent. We also budget 2 percent of construction costs to maintain each new building we bring on line. Investments through maintenance operations, maintenance reserve and major capital renewals have reduced the FCI to 5.0 percent as of June 30, 2018.

The auxiliaries, Medical Center, and the College at Wise are continuing to address their respective backlogs. The Medical Center, Facilities Planning and Construction, and Health System Physical Plant have developed a building-by-building and system-by-system evaluation of the infrastructure of all Medical Center facilities. The Medical Center Operating Board and the Buildings & Grounds Committee have approved this program of infrastructure enhancement over a period of 10-15 years based on need and available resources from the Medical Center's annual capital expenditure budget. The College at Wise has a facility condition index of 2.9 percent and has a current maintenance reinvestment rate of 0.6 percent. This is the last reported MRR for Wise. This low FCI percentage is largely due to newer construction and capital renewal of existing buildings.

Deferred Maintenance Backlog

Overview

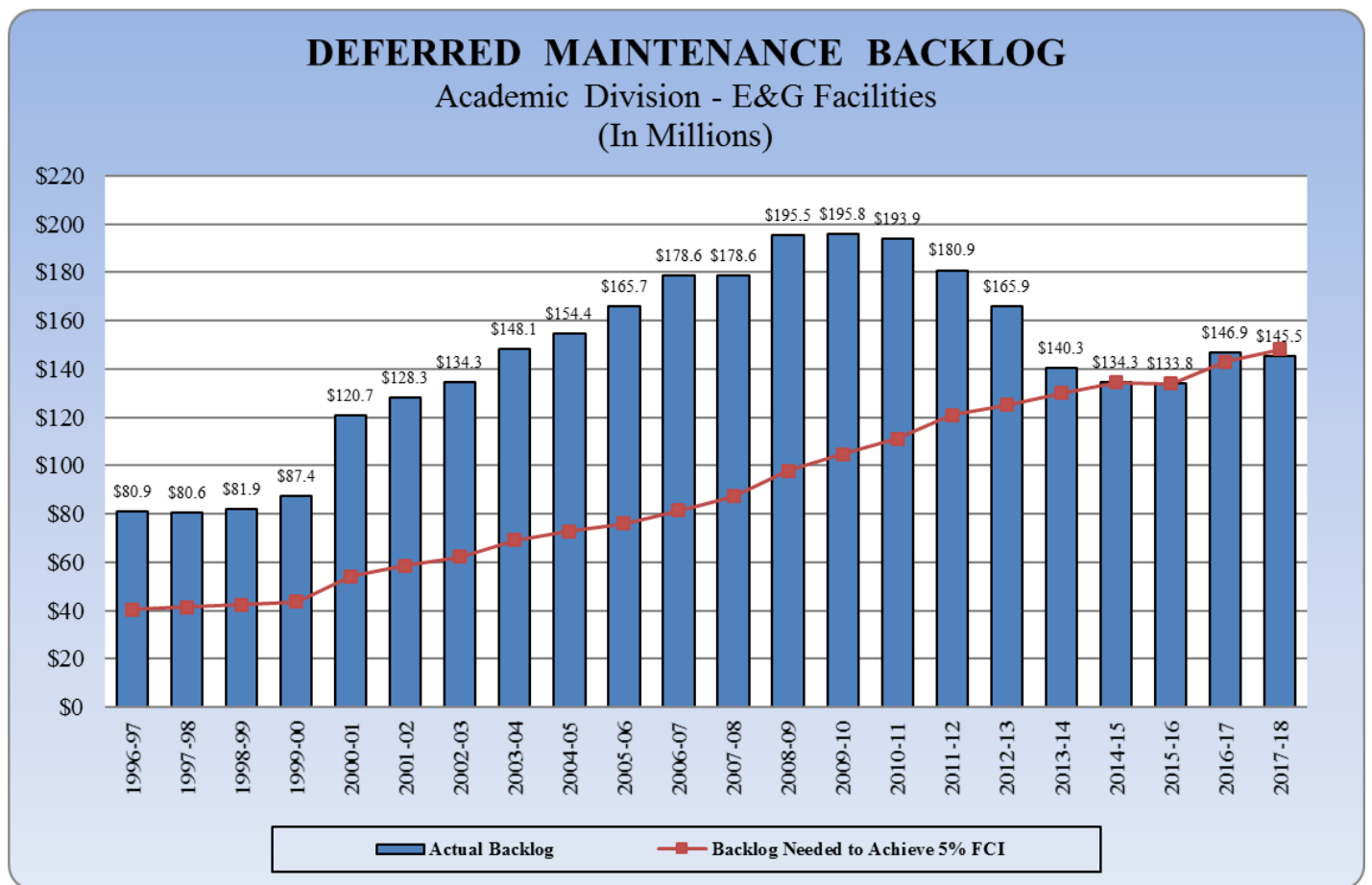
Facilities Management determines the maintenance needs of the University's E&G buildings by performing facility condition assessments. The goal is to inspect E&G buildings once every four years. The assessments result in a number of immediate repairs. They also document repairs that are needed but cannot be undertaken at the time of inspection due to

funding constraints, occupancy requirements, or other factors. These deferred maintenance items become the maintenance backlog for that building.

It is important to distinguish between what a facility may need in terms of maintenance, and what it may need in terms of adaptation or modernization. The maintenance backlog represents the amount of money needed to restore deteriorated components to their original operating condition. In many cases, restoring components to their original operating condition will fall short of today’s standards for function and/or aesthetics; therefore, the cost to fully renovate or modernize a building is usually many times greater than the cost of the deferred maintenance in the building. The deferred maintenance backlog does not include the cost of deficiencies or improvements to safety, accessibility, and building code issues.

Quantify – Current Deferred Maintenance Backlog

As of June 30, 2018 the Academic Division E&G deferred maintenance backlog was \$144 million. The graph below shows the backlog trend and the 5 percent FCI goal, which was first achieved in fiscal year 2014-15.



In developing the original deferred maintenance reduction plan, it was recommended that the University undergo a ten-year strategy to improve its E&G facilities from “poor” condition to

“good” condition by reducing the facility condition index to 5 percent by 2015. At program inception, predictions were made about the possible replacement value in 2015, which would be impacted by both inflation and new construction. The assumed replacement value was used to project the deferred maintenance backlog reduction target of approximately \$130 million in order to achieve the 5 percent FCI. The incremental cost to improve the condition of E&G buildings and infrastructure to “good” over the ten-year period was estimated to be \$125 million over the then current level of maintenance funding. The additional cost to address safety, accessibility, and code issues while correcting identified maintenance deficiencies was calculated to be \$31 million over the same ten-year period, bringing the combined required investment to \$156 million. In addition to funds available in the maintenance operations and maintenance reserve budgets, the University will rely on the capital budget to address maintenance items through building renewals such as the upcoming Chemistry and Gilmer renovations.

Facility Condition Index

Overview

The Facility Condition Index (FCI) is a simple and widely accepted measure used to indicate the relative condition of a building. It is calculated by dividing the value of the maintenance backlog in a building by the replacement value of the building and showing the result as a percentage.

For example, a building with a replacement value of \$5 million that contains a \$100,000 maintenance backlog has an FCI of 2 percent. By comparison, a building with a replacement value of \$600,000 that also has a \$100,000 backlog is in relatively worse condition. The FCI for that building is 17 percent.

Recognized industry benchmarks assume that a facility with an FCI of less than 5 percent is in “good” condition; a facility with an FCI between 5 percent and 10 percent is in “fair” condition; and a facility with an FCI of more than 10 percent is in “poor” condition.

Quantify – Current FCI

As of June 30, 2018 the Academic Division E&G deferred maintenance backlog is \$144 million, with a total facility replacement value of nearly \$2.9 billion resulting in an FCI of 5.0 percent.

Maintenance Reinvestment Rate

Overview

The ratio of the building maintenance expenditures to the total replacement value is known as the maintenance reinvestment rate (MRR). Various authorities cite a range of 1.5 percent to 4 percent as the reinvestment rate necessary to prevent the growth of a deferred maintenance backlog. Given the age of many of the University’s buildings and the substantial amount of deferred maintenance already accumulated, a reinvestment rate of at least 2 percent is

warranted. To this end, when newly constructed facilities come online, the University allocates 2 percent of the building’s construction cost to the annual maintenance operations budget.

Quantify – Current MRR

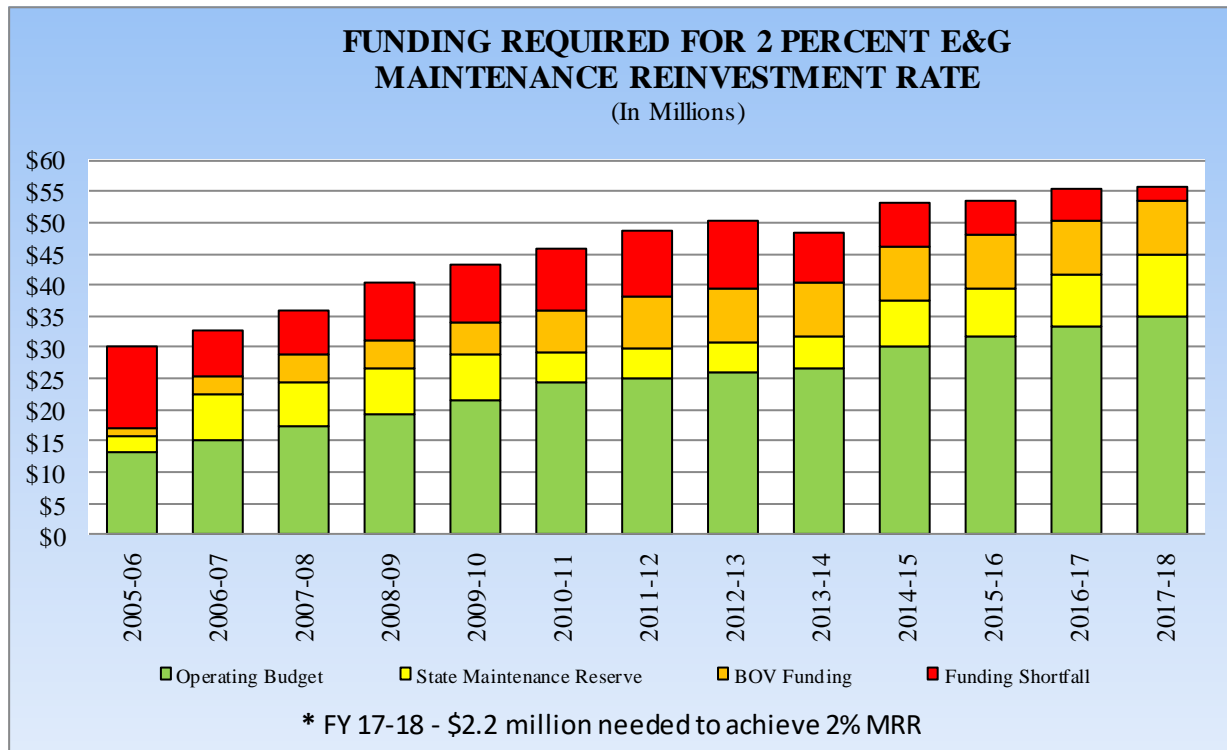
The total amount invested in building maintenance can be calculated by combining the amounts available from the operating budget and from Maintenance Reserve. For 2017–18 we budgeted \$55 million for maintenance of E&G facilities or 1.92 percent of the replacement value of the E&G buildings and infrastructure.

The table below shows the reinvestment rate for the University’s E&G buildings since the Board of Visitors initiative began. These figures are based on budgeted funds available for investment in a given year rather than actual expenditures which may vary from year-to-year based on time required to plan and execute the work.

Budgeted Maintenance Reinvestment Rate

Fiscal Year	Budgeted MRR%	Fiscal Year	Budgeted MRR%	Fiscal Year	Budgeted MRR%
2005-06	1.20%	2010-11	1.65%	2015-16	1.86%
2006-07	1.66%	2011-12	1.70%	2016-17	1.89%
2007-08	1.70%	2012-13	1.61%	2017-18	1.92%
2008-09	1.71%	2013-14	1.68%		
2009-10	1.66%	2014-15	1.86%		

The graph below shows the funding trend and annual shortfall relative to a 2 percent funding level over the past eleven fiscal years. It is clear to see that the funding shortfall has improved greatly since 2005-06 as the Board initiative has gained traction.



Capital Renewal Projects

Whole building renewals are crucial to successfully reduce and maintain the University's overall facility condition index. It is the most efficient method of dealing with the maintenance challenges associated with an older facility. A renewal project corrects maintenance needs while adapting the building to planned use and current codes.

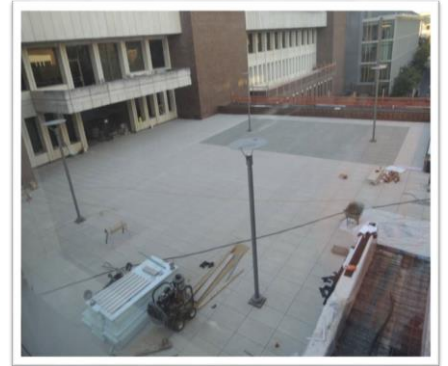
The Chemistry building's Capital Renewal is currently in progress. This renewal project is funded through State appropriations and Arts and Sciences. This renovation will correct many of the large scale maintenance deficiencies and improve the programing capabilities. Below are some pictures of the work currently in progress.



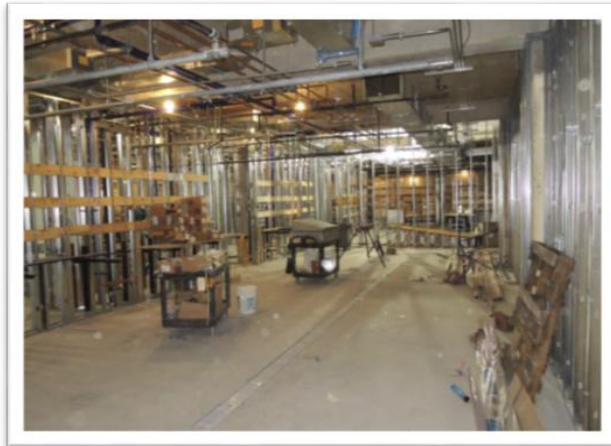
Chemistry Plaza – Removal of old water proofing



Chemistry Plaza – New water proofing and paver install



Chemistry Plaza – Water proofing and paver install complete



Chemistry - Below plaza rough in



Chemistry – 2nd floor lab framing



Chemistry – 4th floor lab demo

Elevator modernization project

Over the past year the deferred maintenance program has continued to improve the condition of the E&G elevators throughout Grounds. Since the deferred maintenance initiative approximately 30 E&G elevators have been renewed. The Peabody Hall, Withers-Brown, and the Bayly Building elevators were the most recent elevators to be completed. Elevators currently in design for replacement this summer include Physics Freight and Observatory Mountain Engineering Research Facility (OMERF).



Peabody Hall – Elevator before



Peabody Hall – Elevator modernization after



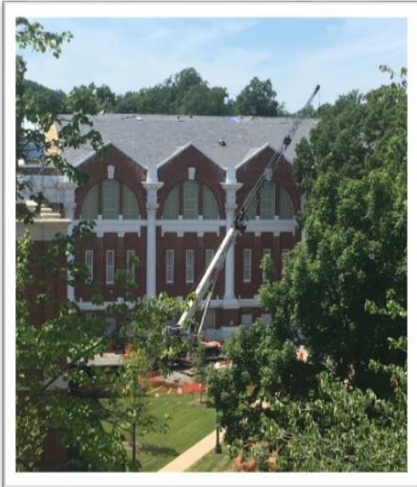
Withers Brown – Elevator Modernization Completed



Bayly Building – Elevator Modernization Completed

Deferred Maintenance Projects

There are over 50 deferred maintenance projects in progress, totaling approximately \$22 million, including the upcoming Physics Addition HVAC and Clemons Library AHU replacement, Halsey Hall building controls replacement, and Mechanical Engineering electrical switch gear replacement. Notable roofing projects that took place during 2017-2018 were the Memorial Gym, Thornton Hall, and Peabody Hall roofing replacements.



Memorial Gym Roof – Before
Crane in place to start project



Memorial Gym Roof – In progress



Memorial Gym Roof – In progress



Memorial Gym Roof –Honey Bee colony
A Honey Bee colony was discovered during construction and was removed/relocated



Memorial Gym Roof - Finished



Peabody Hall Roof - Before



Peabody Hall Roof - After

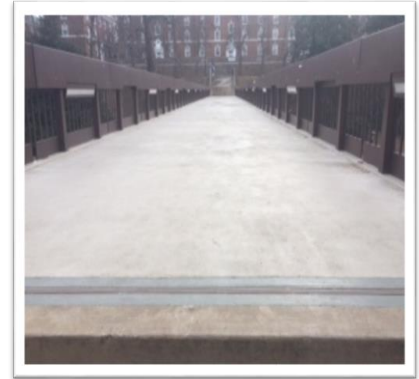
By completing deferred maintenance projects, the maintenance backlog is reduced and the overall condition of the University's facilities improved. Since 2005-06, hundreds of deferred maintenance projects have been completed. In 2017-18, projects such as the Pav. VII back porch replacement, which was due to structural and accessibility issues, Ruffner Pedestrian Bridge repairs, and the Clark Hall plaza renewal. Below are pictures of the completed Pav. VII porch, Clark Hall plaza, and Ruffner Bridge.



Ruffner Bridge - Before



Ruffner Bridge - In progress



Ruffner Bridge - After



Clark Hall Plaza - Before



Clark Hall Plaza - After



Pav. VII Porch - Before



Pav. VII - In progress (removed)



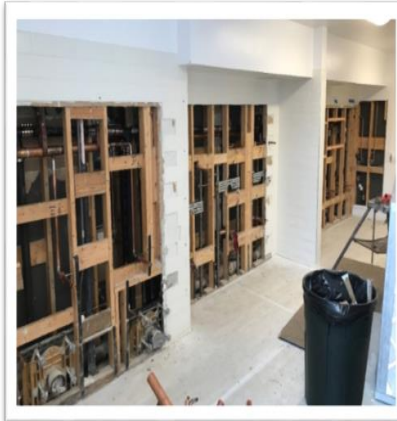
Pav. VII Porch - After

Minor Capital Maintenance Projects

Several maintenance funded Minor Capital Projects were completed this year. These projects addressed needed system renewals in buildings that are currently not scheduled for a Capital renewal. These completed projects help to remove approximately \$5 million from the maintenance back log. The projects included the Old Cabell Hall MEP renewal, Olsson Hall electrical system renewal and bathroom renovations, and the Material Science Building HVAC and fume hood renewal.



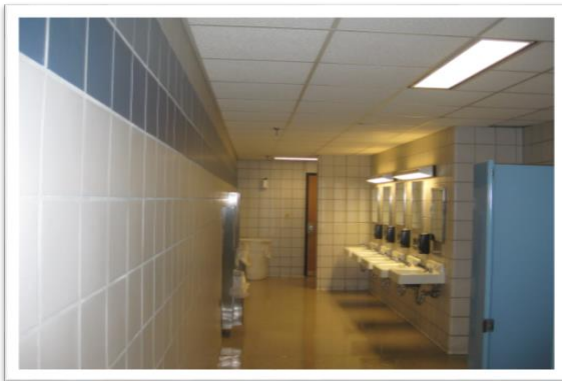
Old Cabell – Bathroom before



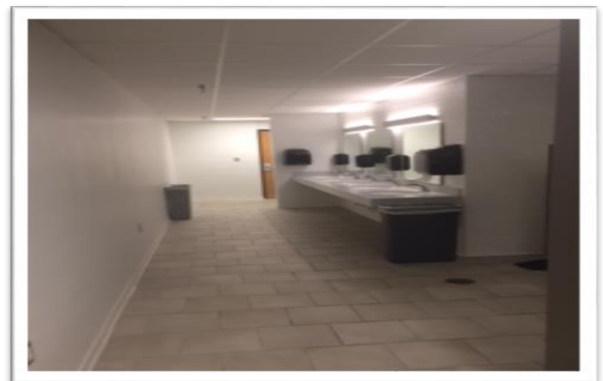
Old Cabell – New plumbing install



Old Cabell – Bathroom after



Olsson Hall – Men’s bathroom before



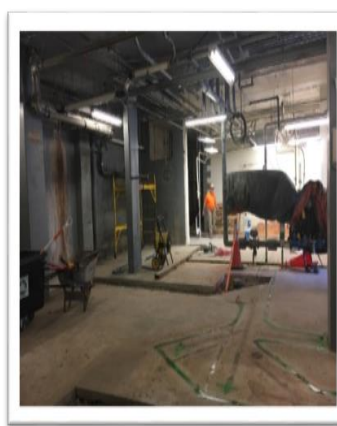
Olsson Hall – Men’s bathroom after



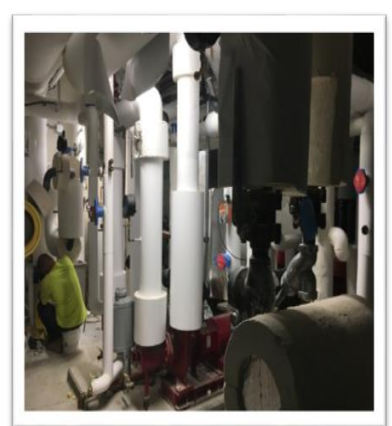
Mat’l Sci Lab – Before



Mat’l Sci Lab – After



Mat’l Sci Mech. Rm – Before



Mat’l Sci Mech. Rm – After

State Maintenance Reserve Funding

Maintenance Reserve has funded nearly \$129 million in maintenance projects from the 1982-84 biennium through 2017-18 for E&G facilities. In the 2008-10 biennium, the Maintenance Reserve budget was set at approximately \$14.5 million. The University's allocation was reduced in the 2010-12 and 2012-2014 bienniums to \$10.05 million; however it was increased back to \$14.9 million for the 2014-2016 biennium and increased again for the 2016-2018 biennium to \$17.2 million.

Summary

In 2005-06, the Board of Visitors embarked on a long-term plan to reduce the deferred maintenance backlog of E&G facilities and the corresponding FCI to 5 percent or less. The Board also took steps to establish adequate annual maintenance funding to prevent the further accumulation of deferred maintenance. Today the FCI is 5.0 percent. The FCI has shown a noteworthy improvement since 2004-05, when the Report on the Condition of University Facilities reported the E&G FCI to be 10.6 percent. The University has made significant progress in enhancing its operating maintenance budget toward the targeted two percent reinvestment rate, a rate that began in 2005-06 as 1.2 percent and is now 1.92 percent. Building systems deteriorate over time and costs rise due to code changes and inflation, therefore it is important that adequate funding support continue to be provided to sustain this initiative.