

PARSONS

Ferris State University
Facility Condition Assessment Report
2010 Limited Scope Update



FERRIS

FERRIS STATE UNIVERSITY 

April 25, 2011

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Objectives and Approach

Founded in 1884 by Michigan educator and statesman Woodbridge N. Ferris, the 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 February 2005, Ferris State University (FSU) authorized Parsons to conduct an assessment of their facilities including 121 buildings totaling approximately 3,784,920 sq. ft. The effort was a comprehensive assessment that includes 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). The 2010 update of the previous report was fairly limited (narrow) in scope. These updates were accomplished by working closely with Ferris State University staff to collect information and then modify the database. The update included the following tasks.



1. The cost information in the database was updated to 2010 RS Means.
2. Many miscellaneous capital projects retired deficiencies that were recorded as complete in the COMET database.
 - a. The improvements made at the Central Heating & Power Plant were captured in the COMET database. Parsons worked with Dan Sovinski, Plant Engineer, to collect this information and update the database.
 - b. TSK completed several roofing projects that were recorded as complete in the COMET database. Parsons worked with Mark Eichenberg, Assistant Director of Plant Operations, to collect this information and update the database.
 - c. The FSU Physical Plant completed several plumbing and mechanical maintenance projects that were recorded as complete in the COMET database. Parsons worked with Kevin Myer, Plumbing & HVAC Supervisor, to collect this information and update the database.
 - d. The FSU Physical Plant also completed several interior finish projects that were recorded as complete in the COMET database. Parsons worked with Walter Smith, Supervisor of Painting, Carpentry and Locksmithing to collect this information and update the database.
3. Other renovation and improvement projects also retired deficiencies that were recorded as complete in the COMET database. Parsons worked with Project Managers Matt Stanke and Karen Simmon to collect this information and update the database.
 - a. The original Copy Center building (4,054 SF) was demolished. FSU moved the Copy Center operations to a building nearby (2,544 SF) that was purchased from a bank. Parsons removed the original building from the database, which eliminated \$303,708

- (2006 dollars) in deficiencies. A field survey was performed to collect data and deficiencies related to the new building, which was then added to the COMET database.
- b. FSU renovated the IRC building and constructed an addition (6,440 SF) to connect it to the Business Building. During the original assessment project, the data on the IRC building in the COMET database was kept to a minimum in anticipation of the renovation work. Parsons performed a field survey to collect data and deficiencies related to the IRC building and updated the COMET database. As a result, two hundred and two (202) deficiencies totaling \$3,688,593 (2010 dollars) were retired from the database.
 - c. The Ice Arena was renovated extensively including a complete tear out of the main rink and the half rink with new ice making systems and under floor brine piping as well as new HVAC systems. Parsons performed a field survey to capture the new information and modified the COMET database including editing the narrative description, changing the dates of last renovation in the cost model and recording the retired deficiencies as completed. As a result, seventy-three (73) deficiencies totaling \$3,196,095 (2010 dollars) were retired from the database.
 - d. An addition was constructed in 2009 at the South Commons building (aka, The Rock) to enlarge the seating area and the rest of the facility was almost completely renovated as part of that project. Parsons performed a field survey to collect data and deficiencies and updated the COMET database. As a result, forty-four (44) deficiencies totaling \$1,382,038 (2010 dollars) were retired from the database.
 - e. A new chilled water plant serves several buildings in the vicinity of the College of Art & Sciences. The new plant was not surveyed. However, the project scope and the effect it had on the associated campus buildings were documented. Additionally, deficiencies that were retired by the project were recorded as fixed in the database.
 - f. A Learning Environments Classroom & Lab Renovation Project touched classrooms in eleven (11) buildings on the campus. These renovations were documented and the one hundred sixteen (116) associated deficiencies totaling \$652,746 were recorded as retired in the database.
 - g. East Campus Apartments Buildings A thru G were demolished in 2009 due to damage. Parsons removed these buildings from the database, which eliminated \$6,101,730 (2010 dollars) in deficiencies. A new development called the East Campus Suites was constructed in 2010 with three buildings named the Maple Grove Suites, Oak Suites and Pine Valley Suites. Parsons added these buildings to the database with assistance from FSU.
 - h. South Campus Apartments Building O was



FLITE Library

also demolished in 2009 due to damage. Parsons removed this building from the database, which eliminated \$1,160,369 (2010 dollars) in deficiencies.

- i. The main auditorium in the Pharmacy building was gutted and completely renovated. The interior walls were painted throughout the building. Parsons performed a field survey to capture the new information and then modified the COMET database including editing the narrative description, changing the dates of last renovation in the cost model and recording seventy-eight (78) deficiencies totaling \$1,214,709 (2010 dollars) as retired in the database.

Objectives

The primary objectives of the original assessment project were to determine the condition of the facilities and to quantify the costs associated with continuing to maintain and repair them as compared to performing major renovations or replacing all or parts of the facilities. Information resulting from that work was used by FSU Physical Plant staff involved with facilities planning to guide recommendations to their leadership regarding maintenance, renovation and /or replacement. The results of this project provide an update of the original baseline assessment as described above.

The update report identifies the current deferred maintenance and capital renewal funding needed in making informed decisions regarding the planning, continued use and reinvestment funding needs of the existing facilities.

Approach

The Facilities Assessments performed for Ferris State University 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 direct project costs. The populated database includes deficiencies based on field observations. It also forecasts projected future renewal costs from component life cycles for the building and site elements of each portion of the facility that are added to the itemized deficiencies gathered during the field survey. 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.

Parsons conducted all field surveys included in the scope of work for the update project during the week of April 5-9, 2010. The team visited the facilities to collect data on the condition and life cycle of major systems. The information was compiled in the field and then loaded to the main COMET database located on the Parsons server in Houston. From this information, the assessors created cost models using R.S. Means as the cost basis. In addition, the assessors were able to confirm cost information for certain components and systems by using cost data taken from similar regional Parsons projects under construction or recently completed.



Gym-Student Recreation Center

Summary of Findings

This section of the report provides a summary of the findings for the project. Information is presented in tabular form on the Facility Condition Index (FCI), the total cost of Assessed Deficiencies and the Replication Value. The data includes soft costs associated with a rehabilitation project.

Facility FCI by Campus

The costs presented in the table (below) are a summary of the FCI by Campus for the project. The FCI is an industry standard index derived by dividing the “Total Cost of Assessed Deficiencies” by the “Replication Value”. It describes the relative state or physical condition of a building by comparing a sum of the needed repairs against the cost of a model building of similar use, size and construction. Using the cost modeling approach, the condition index can also provide a meaningful reference for the buildings component systems by comparing each against its value at the beginning of their service life. It can also be used as a reference to compare groups of buildings. The FCI is particularly useful when comparing similar facilities or campuses within the same portfolio. A higher FCI means the facilities are in poorer condition and in need of greater repair.

| Facility Name | Gross Area (Sq. Ft.) | Total Cost of Assessed Deficiencies | Replication Value | FCI |
|--------------------------------|----------------------|-------------------------------------|----------------------|---------------|
| Ferris State University | 3,784,920 | \$226,771,704 | \$821,576,188 | 27.60% |
| <u>Big Rapids Campus</u> | <u>3,508,940</u> | <u>\$203,838,179</u> | <u>\$737,485,948</u> | <u>27.64%</u> |
| Auxiliary | 1,741,346 | \$115,053,324 | \$305,924,481 | 37.61% |
| Non-Residential | 281,575 | \$13,858,621 | \$50,950,577 | 27.20% |
| Residential | 1,459,771 | \$101,194,703 | \$254,973,904 | 39.69% |
| General Funded | 1,767,594 | \$88,784,854 | \$431,561,467 | 20.57% |
| <u>Grand Rapids Campus</u> | <u>275,980</u> | <u>\$22,933,525</u> | <u>\$84,090,240</u> | <u>27.27%</u> |

{this table doesn't include Michigan College of Optometry or the Science Chiller Complex}

The table below is provided to help interpret the results of this survey by establishing a relationship between FCI and a list of recommended actions based on the general building condition. The Association of Higher Education Facility Managers (APPA) and the National Association of College and University Business Officials (NACUBO) have established standard guidelines currently used by owners across the country. The FCI% Ranges listed are derived from these national standard guidelines and from Parsons experience performing assessments of billions of square feet for clients across the country. This information is widely used as resources for interpreting FCI results. The recommended ranges presented in the table have been found by

| Recommended Action | APPA/ NACUBO | Parsons Experience |
|------------------------------------|-----------------|-----------------------|
| Good (Maintain Current Funding) | < 5% | < 15% |
| Fair (Functional & Repairable) | 5 to 10% | 15% to 25% |
| Poor (Needs Significant Attention) | > 10% | > 25% |
| Suggests beyond useful life | > 60% | > 60% |

Parsons to be useful at the planning level in establishing budgets for work that is not well defined at the time of the estimates.

Conclusions

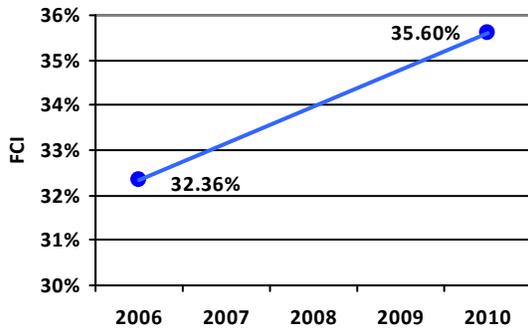
The overall FCI of the Ferris State facilities is 27.6%, which indicates that

the University should be actively refurbishing and renovating facilities as they are in need of significant attention per the Recommended Action table (above).

The modifications to the Ferris State University assessment database included updating the RS Means cost data tables from the original 2006 information to 2010 cost data. The result was an increase in both the estimated costs of the deficiencies and the calculated replication value of the facilities. The net changes to the cost information in the database are displayed in the table at the right.

Note that it appears the FCI has decreased by nearly 5% over the four year period. The repair costs listed in the table appear to have increased by only 8% while the replication value of all FSU facilities increase by nearly 27%. And, the change in replication value exceeds that in repair cost by a factor of ten. However, this is misleading and bears further explanation for the reader to clearly interpret these results.

| Year | Repair Costs | Replication Value | FCI |
|-------------------|----------------------|------------------------|--------|
| 2010 | \$226,771,704 | \$822,576,188 | 27.60% |
| 2006 | \$209,701,394 | \$647,893,054 | 32.36% |
| Net Change | \$17,070,310 8.1% | \$173,683,099 26.8% | |



The chart at the left demonstrates the change in FCI expressed in 2006 dollars. Note that when the FCI is adjusted for escalation as a result of the RS Means update, we see the effective change was an increase of a little over 3% during the period.

In addition, consider the net changes between years listed near the bottom of the table at the right. The bullets below provide insights into these results:

1. The magnitude of the change in repair costs is artificially understated because the University completed a substantial amount of repairs in the four years since the original assessment. While a net total of \$17M was recorded in new deficiencies, a total of \$23M in needed repairs were retired during this period. Several buildings in need of significant repairs were also demolished, which eliminated another \$7.5M in deficiencies from the portfolio. Adding these numbers yields the total activity in repair costs in the database, or $\$23,459,385 + \$17,065,968 + \$7,565,807 = \$48,091,160$. This represents an overall change of 23%, which compares more favorably with the 26.8% change in the replication value.
2. The value of all FSU facilities increased substantially during this period. While several buildings were removed from the portfolio, the net effect was not significant and the portfolio grew in value through new construction and additions to existing buildings. The table below is provided as a partial summary of the changes in replication value using the facilities mentioned in the Objectives and Approach section at the beginning of this report.

| Facility | Replication Value | | Changes |
|--------------------|-------------------|---------------|----------------|
| | 2006 | 2010 | |
| Copy Center | \$ 542,707 | \$ 361,629 | \$ (181,078) |
| IRC | \$ 11,482,077 | \$ 16,271,235 | \$ 4,789,158 |
| Ice Arena | \$ 16,227,285 | \$ 17,639,469 | \$ 1,412,184 |
| South Commons | \$ 5,083,236 | \$ 6,132,018 | \$ 1,048,782 |
| East Campus Apts | \$ 9,399,103 | \$ 2,796,828 | \$ (6,602,275) |
| East Campus Suites | \$ - | \$ 13,610,160 | \$ 13,610,160 |
| South Campus Apts | \$ 7,107,627 | \$ 7,226,262 | \$ 118,635 |
| Pharmacy | \$ 12,197,420 | \$ 15,273,832 | \$ 3,076,412 |
| | | Total | \$ 17,271,978 |

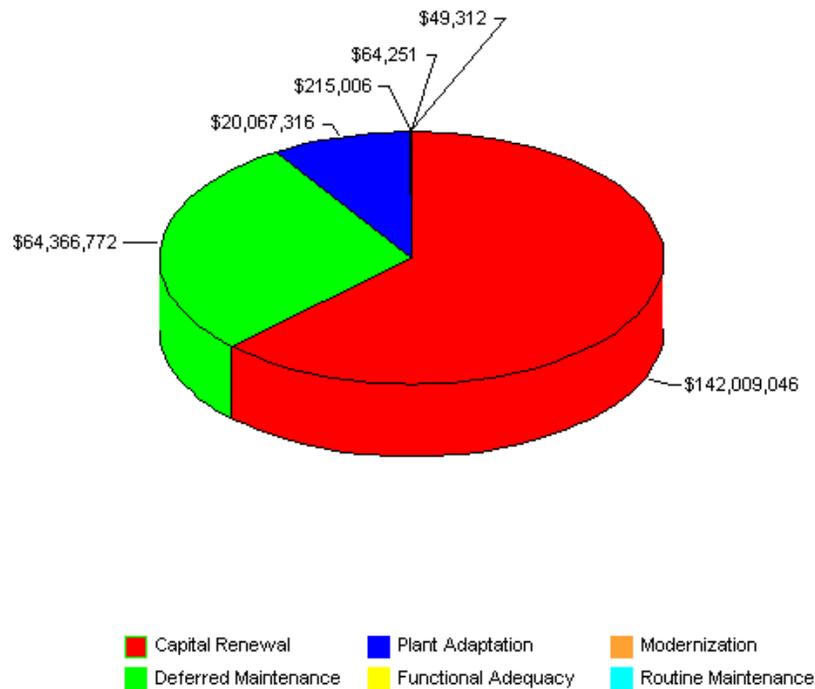
It is also important to note that four (4) of the campus buildings plus the four (4) buildings at the South Campus Apartment have an FCI > 60%. This means that these facilities have reached a point where the projected cost of needed repairs would be roughly equal to the cost of constructing a new facility. An additional seven (7) individual campus buildings, eight (8) residence halls and all thirty-two (32) of the West Campus Apartments have an FCI > 45%, which indicates they are candidates for significant renovation in the near future. Another twenty six (26) individual buildings have an FCI > 25%, which indicates they are in poor condition and in need of significant attention. That list includes the Federal Building and one of the Kendall buildings. Please refer to the tables in the next section of this report entitled “Summary Results” for a list of buildings and their associated FCI ranking. You will also find a section in the report that explores a method for strategic analysis of required funding. It includes an investigation using a powerful tool available in the COMET software to examine three funding scenarios and their potential impact on the condition of the FSU facility portfolio.

Summary of Results

This section of the report provides a summary of the results for the project. Information is presented in a series of charts that report the repair costs by category and system; and a table that provides information by building on the facility condition index (FCI), the total cost of needed repairs and the replication cost.

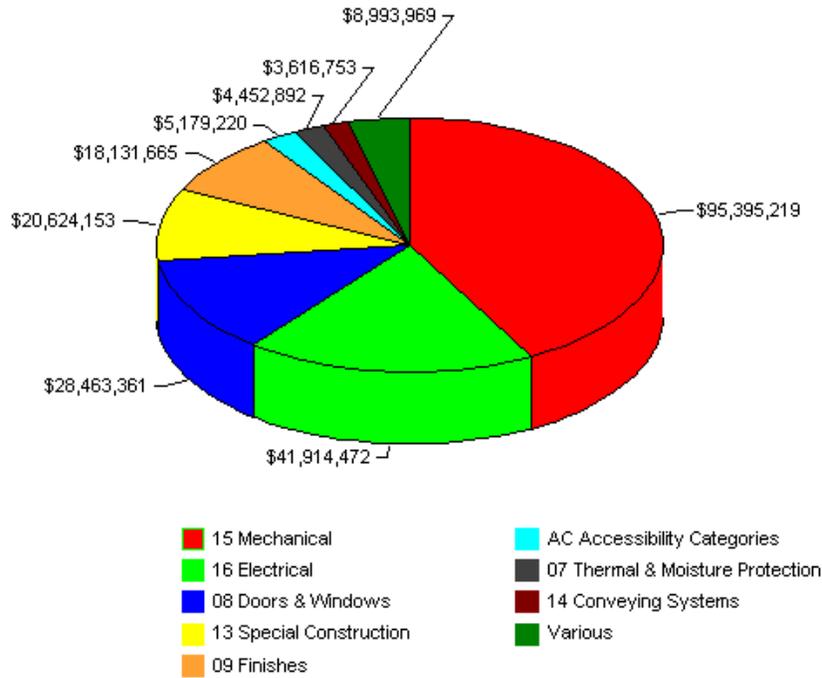
Deficiencies by Category

The deficiency costs identified in the assessment are grouped in to Capital Renewal, Deferred Maintenance, Modernization, Plant Adaptation and Routine Maintenance categories (see Definitions for more information). The data presented in the chart (below) provides a summary of all deficiencies with a breakdown by their respective Category.



Results by Facility System

The following chart gives a breakdown of the recorded deficiencies by their respective systems for the assessment. The individual systems appear in clockwise order from greatest to least need for repair starting at 12 o'clock. The legend at the right provides a key to the color coding used in the graphic.



Facility FCI by Building

The costs presented in the table (below) are a summary of the Facility FCI by Building for the project. The table lists total costs without regard to priority of particular deficiencies. This table documents the FCI or condition measure. This key indicator helps to identify the need for renewal or replacement of specific parts of the facility.

| Facility Name | Year Built | Cost (\$/Sq. Ft.) | Gross Area (Sq. Ft.) | Total Current Repair Costs | Replication Value | FCI |
|---------------------------|------------|-------------------|----------------------|----------------------------|-------------------|--------|
| Allied Health | 1979 | \$285.32 | 67,400 | \$2,977,208 | \$19,230,568 | 15.48% |
| Alumni Building | 1929 | \$210.15 | 42,100 | \$3,364,779 | \$8,847,315 | 38.03% |
| Arts And Sciences Commons | 1996 | \$221.45 | 69,270 | \$870,205 | \$15,339,842 | 5.67% |
| Automotive Center | 1956 | \$207.93 | 77,000 | \$7,753,198 | \$16,010,610 | 48.43% |
| Birkam Health Center | 1959 | \$181.73 | 18,500 | \$2,705,176 | \$3,362,005 | 80.46% |
| Bishop Hall | 1968 | \$202.60 | 50,900 | \$3,723,411 | \$10,312,340 | 36.11% |
| Bond Hall | 1966 | \$214.07 | 90,500 | \$7,026,649 | \$19,373,335 | 36.27% |
| Brophy Hall | 1962 | \$179.33 | 47,000 | \$4,900,150 | \$8,428,510 | 58.14% |
| Business Building | 1970 | \$184.74 | 90,600 | \$2,985,683 | \$16,737,444 | 17.84% |
| Carlisle Hall | 1957 | \$187.85 | 47,200 | \$3,794,358 | \$8,866,520 | 42.79% |
| Carrillon Tower | 1968 | \$14,397 | 44 | \$6,639 | \$633,486 | 1.05% |
| Clark Hall | 1960 | \$178.73 | 41,500 | \$4,207,746 | \$7,417,295 | 56.73% |
| Copy Center | 1988 | \$142.15 | 2,544 | \$35,128 | \$361,630 | 9.71% |
| Cramer Hall | 1969 | \$181.23 | 91,700 | \$3,958,038 | \$16,618,791 | 23.82% |
| Creative Arts Center | 1965 | \$177.80 | 7,200 | \$988,531 | \$1,280,160 | 77.22% |
| East Campus Apartments * | 1955 | \$173.35 | 16,134 | \$1,624,302 | \$2,796,828 | 58.08% |
| East Campus Suites * | 2010 | \$126.02 | 108,000 | \$0 | \$13,610,160 | 0.00% |

| Facility Name | Year Built | Cost (\$/Sq. Ft.) | Gross Area (Sq. Ft.) | Total Current Repair Costs | Replication Value | FCI |
|--------------------------------|------------|-------------------|----------------------|----------------------------|-------------------|--------|
| Federal Building | 1908 | \$435.66 | 75,000 | \$10,496,018 | \$32,674,500 | 32.12% |
| Flite Library | 2001 | \$283.56 | 173,484 | \$785,087 | \$49,193,123 | 1.60% |
| General Services Annex *** | 2005 | \$164.49 | 13,289 | \$0 | \$2,185,908 | 0.00% |
| General Services Building | 1984 | \$190.29 | 27,143 | \$1,407,051 | \$5,165,041 | 27.24% |
| Granger Center | 1962 | \$350.61 | 75,298 | \$62,501 | \$26,400,232 | 0.24% |
| Grounds Facility * | 1979 | \$99.99 | 6,850 | \$139,756 | \$684,932 | 20.40% |
| Hallisy Hall | 1958 | \$178.29 | 44,700 | \$2,998,399 | \$7,969,563 | 37.62% |
| Heavy Equipment Center | 1987 | \$187.23 | 52,000 | \$2,786,811 | \$9,735,960 | 28.62% |
| Helen Ferris Hall | 1956 | \$178.95 | 44,300 | \$3,649,210 | \$7,927,485 | 46.03% |
| Henderson Hall | 1965 | \$178.49 | 44,900 | \$2,600,455 | \$8,014,201 | 32.45% |
| Ice Arena * | 1974 | \$297.49 | 59,295 | \$2,977,382 | \$17,639,469 | 16.88% |
| Instructional Resource Center | 1969 | \$272.55 | 59,700 | \$1,286,793 | \$16,271,235 | 7.91% |
| Johnson Hall | 1959 | \$201.04 | 33,600 | \$4,011,911 | \$6,754,944 | 59.39% |
| Katke Club House | 1999 | \$196.44 | 5,700 | \$4,344 | \$1,119,708 | 0.39% |
| Katke Golf Cart Storage | 1984 | \$96.76 | 2,800 | \$90,640 | \$270,928 | 33.46% |
| Katke Golf Course Maint. | 1980 | \$97.26 | 3,200 | \$81,128 | \$311,232 | 26.07% |
| Kendall - 110 Ionia Street | 1950 | \$259.88 | 104,914 | \$6,643,651 | \$27,265,050 | 24.37% |
| Kendall - 111 N. Division | 1950 | \$259.88 | 85,670 | \$5,784,930 | \$22,263,920 | 25.98% |
| Kendall - 17 Fountain | 1998 | \$181.49 | 10,396 | \$8,927 | \$1,886,770 | 0.47% |
| Knollcrest | 1963 | \$174.84 | 27,676 | \$2,207,457 | \$4,838,872 | 45.62% |
| Masselink Hall | 1955 | \$211.33 | 104,700 | \$9,408,604 | \$22,126,251 | 42.52% |
| McKessy Barn | 1940 | \$56.76 | 2,000 | \$58,912 | \$113,520 | 51.90% |
| McKessy House | 1940 | \$159.31 | 2,800 | \$203,253 | \$446,068 | 45.57% |
| McNerney Hall | 1961 | \$181.16 | 47,000 | \$4,337,435 | \$8,514,520 | 50.94% |
| Merrill Hall | 1961 | \$181.49 | 51,700 | \$2,696,319 | \$9,383,033 | 28.74% |
| Merrill/Travis Commons | 1961 | \$197.19 | 10,720 | \$986,776 | \$2,113,877 | 46.68% |
| Miller Hall | 1963 | \$179.11 | 47,382 | \$3,019,260 | \$8,486,590 | 35.58% |
| Music Activity Center | 1962 | \$186.63 | 10,000 | \$631,238 | \$1,866,300 | 33.82% |
| National Elastomer Center | 1987 | \$223.12 | 43,392 | \$1,191,811 | \$9,681,623 | 12.31% |
| North (Kirby) Storage Building | 1956 | \$108.09 | 10,711 | \$547,888 | \$1,157,752 | 47.32% |
| Pennock Hall | 1968 | \$277.47 | 50,900 | \$6,667,645 | \$14,123,223 | 47.21% |
| Pharmacy Building | 1972 | \$245.56 | 62,200 | \$4,069,537 | \$15,273,832 | 26.64% |
| Pickell Hall | 1964 | \$178.68 | 50,400 | \$2,808,844 | \$9,005,472 | 31.19% |
| Power Plant ** | 1955 | \$647.74 | 19,900 | \$1,731,351 | \$12,890,026 | 13.43% |
| Prakken Building | 1952 | \$207.40 | 42,100 | \$3,643,756 | \$8,731,540 | 41.73% |
| Puterbaugh Hall | 1965 | \$177.85 | 46,400 | \$2,927,744 | \$8,252,240 | 35.48% |
| Racquet Fac. and Fitness Ctr | 1980 | \$151.84 | 38,800 | \$862,189 | \$5,891,392 | 14.63% |
| Rankin Student Center | 1958 | \$188.06 | 109,100 | \$7,600,354 | \$20,517,346 | 37.04% |
| Science Building | 1955 | \$261.30 | 107,300 | \$5,527,974 | \$28,037,490 | 19.72% |
| South Campus Apartments * | 1958 | \$169.79 | 42,560 | \$4,481,636 | \$7,226,264 | 62.02% |
| South Commons | 1963 | \$188.91 | 32,460 | \$463,742 | \$6,132,019 | 7.56% |
| Southwest Commons | 1963 | \$178.69 | 32,745 | \$3,782,320 | \$5,851,204 | 64.64% |
| Southwest Power Plant | 1964 | \$639.59 | 2,200 | \$125,862 | \$1,407,098 | 8.94% |
| Sports Complex | 1982 | \$280.94 | 86,427 | \$1,689,263 | \$24,281,431 | 6.96% |
| Starr Education Center * | 1962 | \$237.96 | 86,400 | \$4,340,517 | \$20,559,764 | 21.11% |

| Facility Name | Year Built | Cost (\$/Sq. Ft.) | Gross Area (Sq. Ft.) | Total Current Repair Costs | Replication Value | FCI |
|--------------------------------|-------------------------|-------------------|----------------------|----------------------------|----------------------|---------------|
| Student Recreation Center | 1966 | \$232.20 | 116,051 | \$4,125,584 | \$26,947,042 | 15.31% |
| Swan Building * | 1966 | \$220.22 | 131,600 | \$11,801,948 | \$28,981,364 | 40.72% |
| Taggart Hall | 1964 | \$178.69 | 47,800 | \$2,810,393 | \$8,541,382 | 32.90% |
| Technology Transfer Center * | 1965 | \$177.47 | 18,142 | \$675,429 | \$3,219,639 | 20.98% |
| Timme Center for Student Svcs | 1967 | \$251.51 | 57,000 | \$98,805 | \$14,336,070 | 0.69% |
| Travis Hall | 1961 | \$180.85 | 51,700 | \$3,492,444 | \$9,349,945 | 37.35% |
| Vandercook Hall | 1957 | \$179.00 | 41,500 | \$3,439,433 | \$7,428,500 | 46.30% |
| Ward Hall | 1963 | \$179.14 | 41,320 | \$3,565,825 | \$7,402,065 | 48.17% |
| West Building | 1952 | \$201.06 | 23,700 | \$3,675,413 | \$4,765,122 | 77.13% |
| West Campus Apartments * | 1995 | \$126.43 | 262,125 | \$17,886,748 | \$33,140,465 | 53.97% |
| W Campus Community Ctr | 1995 | \$172.41 | 5,785 | \$327,874 | \$997,392 | 32.87% |
| West Commons | 1968 | \$190.16 | 19,800 | \$1,879,306 | \$3,765,168 | 49.91% |
| Wheeler Pavilion | 2001 | \$267.37 | 10,593 | \$244,621 | \$2,832,250 | 8.64% |
| Ferris State University | 1968[†] | \$217.32 | 3,784,920 | \$226,771,704 | \$822,576,188 | 27.60% |

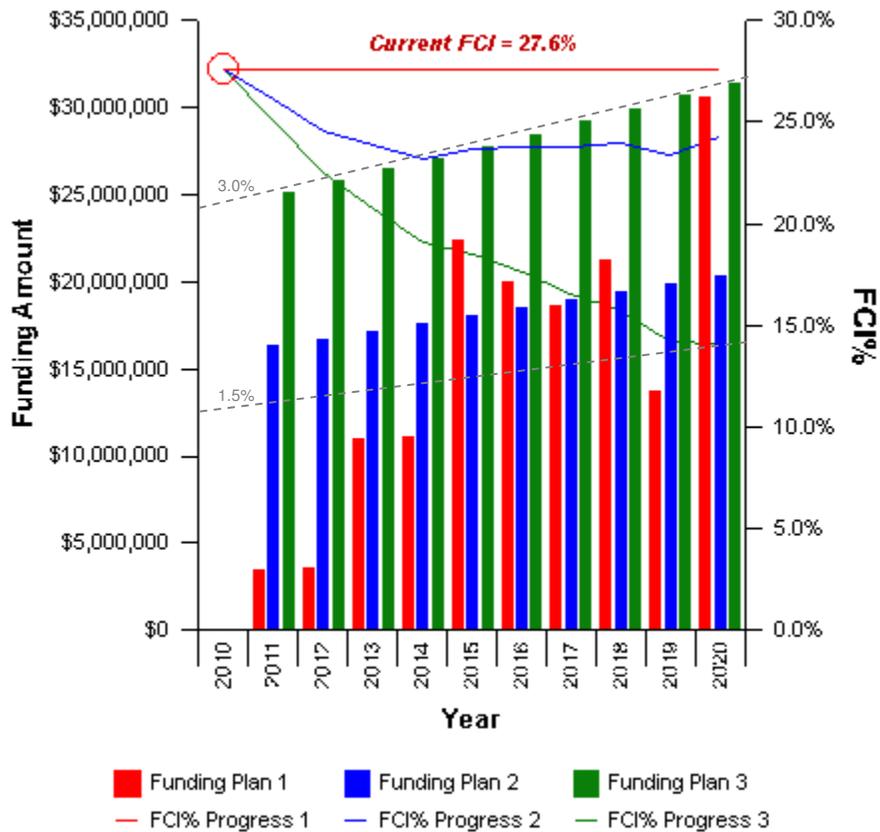
- * composite facility made up of multiple individual buildings
- ** this report does not include data from Utility Master Plan and Condition Assessment
- *** the General Services Annex was not assessed at the time of the original assessment or the update
- [†] weighted average age (sum of year built times area divided by total area)
 {this table does not include Michigan College of Optometry, Science Chiller Complex}

The information listed in the table above includes the total cost for all buildings listed in alphabetical order. Please refer to the Definitions section of this report for more information on how these values were determined.

Funding Requirements

The chart below combines the funding needed for repairs with the predicted capital renewal requirements. The annual funding requirements (bars) are read from the left axis and FCI% (lines) from the right axis.

Funding Requirements – 10 Year Renewal Projection



The chart illustrates the 10-year total funding requirements for the Ferris State University facilities for the following three (3) funding scenarios:

- **Current FCI: Keep the current FCI Stable at 27.60% (Red)**

The red line and associated funding bars assumes capital budget dollars spent only for capital renewal in order to maintain the current FCI level over the next 10 years.

- **Required funding: Reduce the FCI to 25% (Blue)**

The blue line and associated funding bars applies a premium to buy-down the current deficiencies to achieve an FCI of 25% in addition to the capital budget dollars spent for capital renewal.

- **Required funding: Reduce the FCI to 15% (Green)**

The green line and associated funding bars applies a premium to buy-down the current deficiencies to achieve an FCI of 15% in addition to the capital budget dollars spent for capital renewal.

| Year | FCI 27.6% | FCI 25.0% | FCI 15.0% |
|------|---------------|---------------|---------------|
| 2011 | \$3,497,681 | \$16,317,415 | \$25,163,637 |
| 2012 | \$3,592,264 | \$16,725,350 | \$25,792,728 |
| 2013 | \$11,009,228 | \$17,143,484 | \$26,437,546 |
| 2014 | \$11,063,107 | \$17,572,071 | \$27,098,485 |
| 2015 | \$22,391,725 | \$18,011,373 | \$27,775,947 |
| 2016 | \$20,010,485 | \$18,461,657 | \$28,470,346 |
| 2017 | \$18,622,936 | \$18,923,198 | \$29,182,104 |
| 2018 | \$21,251,563 | \$19,396,278 | \$29,911,657 |
| 2019 | \$13,729,901 | \$19,881,185 | \$30,659,449 |
| 2020 | \$30,619,556 | \$20,378,215 | \$31,425,935 |
| | \$155,788,445 | \$182,810,226 | \$281,917,834 |

An accepted rule of thumb in the property management industry suggests an annual target range of 1.5% to 3% of current replication value (CRV) for funding of deferred maintenance and capital renewal. This translates into a range of \$12,338,642 to \$24,677,285 per year. These threshold values have been added for reference to the chart titled “Funding Requirements – 10 Year Renewal Projection” shown above. A proposed funding plan can be judged as sustainable if the annual spending profile falls within the target range. Note that both the Blue and Green proposed funding scenarios fall within the range.

The blue bars in the chart clearly indicate that an annual funding level of nearly \$20,000,000 is required to achieve the goal of reducing the current FCI to 25%, which is within the rule of thumb target range. However, the green bars in the chart predict that an annual funding level of almost \$30,000,000 would be required to reduce the FCI further to 15%. Further, there are significant

spikes in required funding levels in 2015 and again in 2020 that indicate funding for deferred maintenance and capital renewal should be increased in anticipation. These indicators, taken together, may compel the University to consider options for replacing the facilities with FCI > 60%. Removing facilities from the portfolio can have a dramatic effect on your overall FCI and future funding requirements.



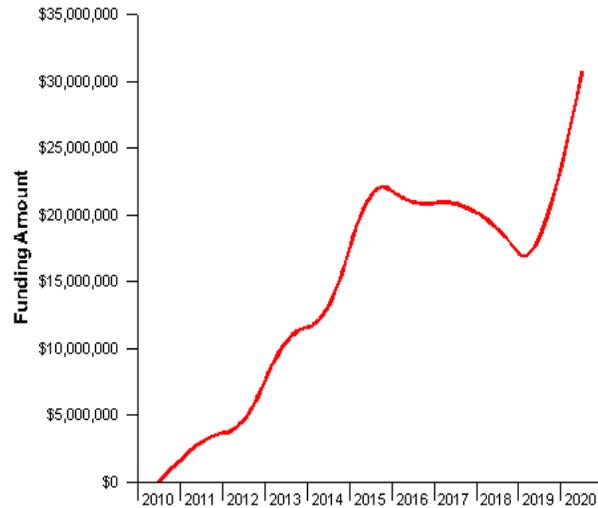
Carillon Tower

The Supporting data for this chart with a listing of current deficiencies can be found in the “Deficiency Summary” reports for each facility. A profile of funding requirements needs to support future renewal of building systems can be found in the “Capital Renewal Forecast” report for each facility. These reports are located in the COMET Reports section.

The cost models for each facility give us a method to predict future needs for capital renewal. Each model allows us to assess the remaining life of each of the main systems for each facility, and to enter into the cost model the expected time of replacement. Although that is only a rough approximation for one facility, over a larger sample it produces a reliable estimate of the yearly cost to replace facility

systems. The 10-year Capital Renewal Forecast chart (below) illustrates the projected funding requirements, excluding current deficiencies for each facility. The data supporting this chart can also be found on the Capital Renewal Forecast report for each facility included in the Comet Reports section.

10 Year Capital Renewal Forecast



When developing comprehensive investment planning strategies, it is important to coordinate the long-range need for renewal and replacement funding with the shorter-term needs to adequately fund necessary repairs and rehabilitation at these facilities. Appropriate maintenance actions implemented in a timely manner will help to extend the useful life of a facility and its components. However, applying the strategies developed during the planning and budgeting process should help to ensure that limited maintenance funds are not over-invested in facilities programmed for replacement in the near-future.

Parsons recommends that Ferris State University repeat a similar assessment every 3 to 5 years to update this data. The update process should capture and archive deficiencies that have been retired, incorporate new/replaced facilities or components and collect any new repair items that have become deficient since the last visit. In 2010, the facilities involved in the survey were assessed over a one week period in the spring of that year. Assessing all portions of the facility at once maintains the integrity of the database and allows tracking performance over time. The COMET software tracks deficiencies by the date created and the date retired, so Ferris State University can print reports to substantiate progress by the number and value of deficiencies retired over a selected period of time. In addition, individual users can analyze performance on retiring deficiencies over time based on the date the deficiency was created and the time elapsed until it was retired. This information would be useful in documenting the positive results generated by appropriate funding of the facility and in supporting future funding requests.

Definitions

This section provides definitions for the common terms used in the body of the report.

Deficiency Priorities

In order to help prioritize which facilities should be addressed most immediately, we establish a correction priority for each deficiency. The priorities are applied manually as deficiencies are reviewed and evaluated according to the structure below:

PRIORITY 1 – Currently Critical (Immediate)

Deficiencies in this category require immediate action to:

1. Return a facility to normal operation
2. Stop accelerated deterioration
3. Correct a cited safety hazard

PRIORITY 2 - Potentially Critical (Year One)

Deficiencies in this category, if not corrected expeditiously, will become critical within a year. Situations in this category include:

1. Intermittent interruptions
2. Rapid deterioration
3. Potential safety hazards
4. Systems that have exceeded their expected service life and are observed to be malfunctioning.

PRIORITY 3 - Necessary - Not Yet Critical (Year Two - Five)

Deficiencies 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. Systems that have exceeded their expected service life default into this category.

PRIORITY 4 – Recommended (Year Six - Ten)

Deficiencies in this category include items that represent a sensible improvement to existing conditions. These items are not required for the most basic function of a facility. However, Priority 4 projects will either improve overall usability and/or reduce long term maintenance. This includes systems that are expected to have an extended service life due to a diligent maintenance program or better than average quality materials/installation.

Deficiency Categories

To further enhance reporting, each deficiency is assigned a category that reflects the underlying need for correction. The categories are applied manually as deficiencies are reviewed and evaluated based on the structure below.

Plant Adaptation: 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).

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.

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.

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.

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).

Loss Control: Refers to expenditures for implementation of recommendations made by FM Global or current university loss control consultant in their quarterly reports.

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 published by the R.S. Means Corporation. The current index for Big Rapids, Michigan is 84.2% of the national average.

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 grandfathered issues, and compares it to the projected Replication cost of the facility. The total cost of the repairs is divided by the current Replication cost for the facility, resulting in the FCI. The higher the FCI is, the poorer the relative condition of the facility. For example, if a building has a Replication value of \$1,000,000 and has \$100,000 of existing deficiencies, the FCI is $\$100,000/\$1,000,000$ or 0.10 or 10% deficient.

Replacement vs. Replication

The Replication value is considered to be the cost in current dollars required to “copy” the entire facility or its major components on an adequately sized, owned and serviced parcel of property. Replication cost represents the hypothetical expense of rebuilding the existing facilities in a manner similar to the original construction. It is determined by multiplying the gross area of the facility by a per-square-foot cost estimate taken from the RS Means cost models used in the system survey. The estimate also includes soft costs associated with reconstructing the facility.

The budget cost to replace the facility would very likely be much different. The replacement facility could be significantly larger or smaller. It would also be expected to meet a new set of design criteria that might include appropriate modifications to address changes in regional demographics and other factors affecting the volume of services. The replacement facility would also need to be designed to meet contemporary codes and standards.

Soft Costs

Soft costs are additional costs that are necessary to accomplish the corrective work but are not directly attributable to a deficient system. Soft costs vary by user but can include: construction contingency; design; specialized investigations such as geotechnical, environmental, or hazardous material; program management fees whether in-house or through a consultant; and various administrative fees. Soft costs must be added to the R.S. Means unit costs used in our estimates to show the true cost of the corrections. The soft cost factors used in our assessments are listed in the table below. When applied using the table structure within the COMET software these factors compound mathematically with a resulting overall multipliers of 1.518.

| Parameter Name | Value % |
|----------------------|---------|
| Gen Conditions (O&P) | 12.00% |
| Contingency | 10.00% |
| A/E Fee | 7.00% |
| CM Fee | 5.00% |
| PM Fees | 5.00% |
| Escalation | 3.00% |
| Special Consultants | 3.00% |
| Testing | 0.03% |
| Advertising | 0.01% |
| Performance Bonds | 1.00% |

An additional soft cost factor of 50% was added to all deficiencies identified in historic buildings. It is important to note that these costs may vary once plans for executing the work are created.

Building 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 BOMA International, the national association of Building Owners and Managers. The BOMA guide assumes regular preventive maintenance properly performed occurs at prescribed frequencies. It should be noted that in many instances the estimates are considered to be conservative, but these are the recognized standards of service life typically applied to capital assets in the healthcare industry.

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 and renewal premiums we typically use for each system in a survey.

| System | System Group | Life | Renewal Premium |
|--------------------|----------------------------|------|-----------------|
| Exterior Structure | A1010 Standard Foundations | 100 | 100% |
| | A1020 Special Foundations | 100 | 100% |
| | A1030 Slab on Grade | 100 | 100% |
| | A2020 Basement Walls | 100 | 100% |

| System | System Group | Life | Renewal Premium |
|--------------------|---------------------------------------|------|-----------------|
| | B1010 Floor Construction | 100 | 100% |
| | B1020 Roof Construction | 100 | 100% |
| | B2010 Exterior Walls | 100 | 105% |
| | B2020 Exterior Windows | 25 | 105% |
| | B2030 Exterior Doors | 25 | 105% |
| | B3010 Roof Coverings | 15 | 120% |
| | B3020 Roof Openings | 20 | 100% |
| Interior Structure | C1010 Partitions | 40 | 110% |
| | C1020 Interior Doors | 40 | 107% |
| | C1030 Fittings | 40 | 100% |
| | C2010 Stair Construction | 40 | 125% |
| | C3010 Wall Finishes | 10 | 100% |
| | C3020 Floor Finishes | 15 | 100% |
| | C3030 Ceiling Finishes | 20 | 120% |
| Conveying | D1010 Elevators and Lifts | 30 | 100% |
| Plumbing | D2010 Plumbing Fixtures | 30 | 90% |
| | D2020 Domestic Water Distribution | 30 | 100% |
| | D2030 Sanitary Waste | 30 | 100% |
| | D2040 Rain Water Drainage | 30 | 100% |
| | D2090 Other Plumbing Systems | 30 | 100% |
| HVAC | D3010 Energy Supply | 25 | 100% |
| | D3020 Heat Generating Systems | 25 | 100% |
| | D3030 Cooling Generating Systems | 25 | 100% |
| | D3040 HVAC Distribution Systems | 25 | 100% |
| | D3050 Terminal & Package Units | 25 | 100% |
| | D3060 HVAC Controls & Instrumentation | 25 | 100% |
| | D3090 Other HVAC Systems/Equip | 25 | 100% |
| Life/Fire Safety | D4010 Sprinklers | 25 | 100% |
| | D4020 Standpipes | 25 | 100% |
| | D4030 Fire Protection Specialties | 25 | 100% |
| | D4090 Other Fire Protection Systems | 25 | 100% |
| Electrical | D5010 Electrical Service/Distribution | 30 | 100% |
| | D5020 Lighting and Branch Wiring | 20 | 90% |
| | D5030 Communications and Security | 10 | 100% |
| | D5090 Other Electrical Systems | 30 | 100% |
| Equipment | E1010 Commercial Equipment | 20 | 100% |
| | E1020 Institutional Equipment | 20 | 100% |
| | E1030 Vehicular Equipment | 20 | 100% |
| | E1090 Other Equipment | 20 | 100% |
| Life/Fire Safety | D4010 Sprinklers | 25 | 100% |
| | D4020 Standpipes | 25 | 100% |
| | D4030 Fire Protection Specialties | 25 | 100% |
| | D4090 Other Fire Protection Systems | 25 | 100% |
| Electrical | D5010 Electrical Service/Distribution | 30 | 100% |

| System | System Group | Life | Renewal Premium |
|-------------|-----------------------------------|------|-----------------|
| | D5020 Lighting and Branch Wiring | 20 | 100% |
| | D5030 Communications and Security | 10 | 100% |
| | D5090 Other Electrical Systems | 30 | 100% |
| Equipment | E1010 Commercial Equipment | 20 | 100% |
| | E1020 Institutional Equipment | 20 | 100% |
| | E1030 Vehicular Equipment | 20 | 100% |
| | E1090 Other Equipment | 20 | 100% |
| Furnishings | E2010 Fixed Furnishings | 15 | 100% |
| | E2020 Moveable Furnishings | 15 | 100% |

Appendix A

Campus Map

