Facilities Management Evaluation Program

University of Massachusetts Boston Campus

Department of Facilities

November 4-9, 2018

Final Report

The Facilities Management Evaluation Program is a service of APPA: Leadership in Educational Facilities
APPA: Leadership in Educational Facilities is an international association dedicated to the development of leadership and professional management applicable to the planning, design, construction, maintenance, and operation of the facilities required for quality teaching, research, and public service.

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The appraisal of the institution is made in relationship to the criteria and guidelines of APPA’s Facilities Management Evaluation Program (FMEP). The evaluation report comments on the strengths of the institution and, when appropriate, offers suggestions and recommendations for improvements of performance. The report constitutes no endorsement or denial of endorsement, of the institution by APPA or by the members of the evaluation team. This document was created for the exclusive use of the institution named. All contents are confidential.
# Contents

Overview and Background ........................................................................................................4

Introduction .............................................................................................................................7

Executive Summary ................................................................................................................14

Evaluation Report and Recommendations ............................................................................25

1.0 Leadership ..................................................................................................................25

2.0 Facilities Strategic and Operational Planning ..............................................................34

3.0 Customer Focus ..........................................................................................................42

4.0 Assessment and Information Analysis ..........................................................................47

5.0 Development and Management of Human Resources ...............................................53

6.0 Process Management ..................................................................................................64

7.0 Performance Results ...................................................................................................75

Conclusion ............................................................................................................................84

Appendices ...........................................................................................................................87
Overview and Background

The University of Massachusetts Boston, also known as UMass Boston, is an urban public research university and the third-largest campus in the five-campus University of Massachusetts system. The university is on 118.9 acres on the Columbia Point peninsula in the city of Boston, Massachusetts, United States. UMass Boston is the only public university in Boston. Students are primarily from Massachusetts and some are from other parts of the country.

The University of Massachusetts system dates back to the founding of Massachusetts Agricultural College under the Morrill Land-Grant Acts in 1863. However, prior to the founding of UMass Boston, the Amherst campus was the only public, comprehensive university in the state. On June 16, 1964, the legislation establishing the University of Massachusetts Boston was passed by the Massachusetts General Court and signed into law two days later by Massachusetts Governor Endicott Peabody.

Freshman classes started for 1,240 undergraduate students in September 1965 at a renovated building located at 100 Arlington Street in the Park Square area of downtown Boston, formerly the headquarters of the Boston Consolidated Gas Company (which had leased the building to the university). Virtually the entire entering class was residents of Massachusetts, with the great majority living in the greater Boston area and one-fourth living in the city of Boston itself. By the fall of 1968, the number of applications to UMass Boston for the fall semester had risen from 2,500 for fall 1965 to 5,700, and total enrollment had risen to 3,600.

In 1967, the Boston Redevelopment Authority (BRA) published a study, titled An Urban Campus by the Sea, which proposed building the campus on the Columbia Point peninsula. The site was a former landfill and a mile from the MBTA’s Columbia station.

On August 29, 1969, the Massachusetts Legislature enacted and Acting Governor Francis W. Sargent signed into law, Chapter 898, of the Acts of 1969, entitled, “An Act to Provide Funds for the Establishment of a Campus of the University of Massachusetts in the Area Known as Columbia Point in the City of Boston, and to authorize the Acquisition of Land and the Planning and Construction of Improvements Therefore.”

The construction began in January 1970 and had multiple delays. The Boston Edison Company had not finished its electrical work. Because the site was a former landfill that had only been closed since 1963, a concrete and brick substructure needed to be built before the buildings could be constructed. The substructure provided parking and a location where all of the campus mechanical systems would route via conduits. This substructure needed to be undergirded by hundreds of driven piles, yet pile driving released methane
from the former landfill, requiring construction workers to halt production while each release of methane dispersed.

The campus was originally composed of 7 buildings, as follows:

1. Service and Supply (150)
2. Administration (110) [now Quinn Administration Building]
3. Library (090) [now Healey Library]
4. College (020) [now McCormack Hall]
5. College (010) [now Wheatley Hall]
6. Science (080)
7. Utility Building (160)

Five of the buildings were connected by a series of enclosed walkway footbridges, commonly called "the catwalk" located on the second floors of the buildings. To transport students from Columbia MBTA station, the MBTA and the university administration set about planning a shuttle bus system, funded by parking fees. The substructure served as a parking garage with 1,600+ spaces. Because the campus was surrounded on three sides by a bay, exposed to sea breeze and seasonal storms, the salt water in the atmosphere and the road salt carried from automobiles would eventually damage parts of the substructure beyond repair.

The campus eventually opened in 1974. In 1977, McKee-Berger-Mansueto, Inc. (MBM), the company contracted to supervise the construction of the campus, came under public scrutiny after its contract with the Commonwealth was criticized in a series of newspaper articles for being abnormally favorable toward MBM, and a special legislative committee was formed to investigate the contract. A scandal erupted after it was learned MBM paid state senators in exchange for a favorable report from the committee. As newspaper columnist summarized the careless and negligent quality of MBM’s oversight of construction projects unearthed by the Ward Commission’s investigation.

On July 19, 2006, UMass Boston Chancellor Michael Collins ordered the immediate and permanent closure of the parking garage underneath the main campus, causing a loss of 1,500 parking spaces. Two days later, an article in The Boston Globe summarized the deterioration of the facility:

“The University of Massachusetts at Boston has closed an underground parking garage that has been decaying for decades. Over the years, the garage has become a dreary labyrinth, with walls and floor so eroded from the salty environment that they look like a coral reef. Nets hang from the ceiling to catch fragments of falling cement, a problem linked to the use of low-quality concrete in the construction.”
Chunks of concrete had been falling from the garage ceiling since the 1980s, and when Chancellor Collins ordered the closure, 600 spaces had already been lost due to ongoing repairs and rerouting of passenger and vehicular traffic. Because of the salt water atmosphere and the road salt from vehicles, the steel reinforcing bars embedded in the campus substructure concrete walls and ceiling became severely degraded, and because all of the campus mechanical systems had run through conduits hanging from the substructure, many of those systems could not be repaired and the damage was causing outages of the computer, electrical, heating hot water, and chilled water (air-conditioning) equipment. An engineering report indicated that to repair the garage such that it would be safe for parking would cost $160 million, and so the university elected not to do that. On October 2, 2006, the university began the process of creating a master plan to renew the campus. (The above information was compiled from interviews and Wikipedia.)

It is from this background that the evaluators developed their assessment of the department’s performance.
Introduction

The University of Massachusetts Boston campus was originally constructed in the 1970s. The campus buildings were designed to sit on top of, and be interconnected by, a plaza that covered a two level parking substructure elevated 25 feet above the surrounding landscape. The substructure extended to each corner of the campus, including under each academic building and was designed and used for both parking and for the routing of conduit through which ran most of the university’s utilities infrastructure. The facades of this two-level garage alternate from having fully solid brick walls or unprotected openings for ventilation.

Years of exposure to road salt and the elements has caused widespread corrosion damage to the two substructure levels. Mechanical, electrical, plumbing, and architectural features have deteriorated as well. Over the years, deteriorated areas have been patched and repaired, including the installation of shoring supports under structural elements or utility pipes where the deterioration was particularly acute.

In 2005, concerns about the structural integrity of the campus buildings whose structure is integral to the buildings above prompted UMass Boston to request the assistance of the Division of Capital Asset Management (DCAMM) to commission the firm, Simpson Gumpertz and Heger, Inc. (SGH), to conduct a “Study for Structural Repair of Plaza and Upper and Lower Levels at UMass Boston Harbor Campus” (Massachusetts State Project No. UMB0502). This study proposed a comprehensive conceptual long-term repair solution with an estimated cost of construction of $136,000,000 and a total project cost of $160,000,000.

At the same time, UMass Boston also faced several issues that affected its facilities, including: deferred maintenance of many of its buildings; growth of academic programs; research endeavors drawing more external financial support; and a need to accommodate increasing enrollment. In 2006, key leaders of DCAMM, the University of Massachusetts President’s Office, and UMass Boston made a decision to focus efforts on developing a campus master plan to address UMass Boston’s growth and to determine the best use of its physical resources. This led the university and DCAMM to conclude that, rather than repair the substructure for parking, it would be more cost-effective and beneficial to demolish portions of the substructure not under academic buildings and to replace the parking with new free-standing garages. An interim structural stabilization project was undertaken in lieu of the $160 million conceptual long-term repair solution to provide a 7-to 10-year solution.

The interim structural stabilization project would address the immediate pressing structural issues while enabling DCAMM and the university to undertake a comprehensive
master planning process for a long-term solution for the campus. In connection with the interim structural stabilization project, the substructure was closed in 2006.

Amongst the planning and design challenges for this campus master plan (complied from the master planning document) to consider were: How to seize the opportunity to redefine and reconfigure the campus to improve it? Where to attain new connections to its surroundings, neighbors, and services? What the best strategy would be to address obvious space shortages and how best to provide connections to new facilities and landscapes, and how best to advance the campus into the twenty-first century as a competitive institution of higher education? The following report provides an assessment of those functions that are typically covered by the facilities management department. At UMass Boston, the Department of Facilities (DF) is the major provider of these functions but some functions are controlled by other departments reporting to the vice chancellor for Administration and Finance.

Mission
DF does not have its own mission statement but self-reports its mission as closely aligned with the university mission statement below:

The University of Massachusetts Boston is a public research university with a dynamic culture of teaching and learning, and a special commitment to urban and global engagement. Our vibrant, multi-cultural educational environment encourages our broadly diverse campus community to thrive and succeed.

Workforce
Currently there are 49 employees in the Department of Facilities. Of these employees, 41 are represented by collective bargaining units and, of those employees, seven are working supervisors. Of the eight employees who are not represented by bargaining units, seven are managers and one is an administrative staff person. The Department of Facilities relies heavily on outside contractors to supplement its workforce. Janitorial services are contracted out. The contract for janitorial services contains two supervisors and 54 working custodians. Other services outsourced entirely are elevator maintenance and repair, fire suppression maintenance and repair, architectural design, and fire alarm maintenance and testing. Other services outsourced in part, include: HVAC, electrical, landscaping, and snow removal. In order to accurately determine the actual workforce size, approximations based on annual dollars spent in each contract category is used.

Regulatory Environment
The Department of Facilities conducts its work in a highly regulated environment. Most aspects of work are affected by regulations, code, policy, or the law in some way. There are many requirements under federal, Commonwealth of Massachusetts, or system-wide university policy that stipulates how some work is performed.
2018 Budget
The facilities management budget is supported by general operating funds. These funds cover most services provided to campus for operation and maintenance for all academic, research, and support buildings. The capital budget is comprised of recurring funding for capital renewal and deferred maintenance (CR/DM) and one-time funding for new major construction projects. The funding for the two different budget types is detailed below.

### Operation and Maintenance Central Funds

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Maintenance (Non-Project)</td>
<td>$24,374,848</td>
</tr>
<tr>
<td>Payroll and Fringe</td>
<td>$4,621,192</td>
</tr>
<tr>
<td>Non-Payroll</td>
<td>$19,650,540</td>
</tr>
<tr>
<td>Employee Related</td>
<td>14,500</td>
</tr>
<tr>
<td>Administrative</td>
<td>80,100</td>
</tr>
<tr>
<td>Facility Operational</td>
<td>225,900</td>
</tr>
<tr>
<td>Energy and Space Rental</td>
<td>11,603,278</td>
</tr>
<tr>
<td>Consultant Services</td>
<td>135,000</td>
</tr>
<tr>
<td>Operational Services</td>
<td>85,000</td>
</tr>
<tr>
<td>Equipment Purchases</td>
<td>6,000</td>
</tr>
<tr>
<td>Equipment Lease and Maint</td>
<td>30,500</td>
</tr>
<tr>
<td>Infrastructure and Land</td>
<td>7,358,762</td>
</tr>
<tr>
<td>Information Technology</td>
<td>11,500</td>
</tr>
<tr>
<td><strong>Unallocated Budget</strong></td>
<td><strong>$103,116</strong></td>
</tr>
</tbody>
</table>

### Capital

<table>
<thead>
<tr>
<th>Facility Type</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facilities Maintenance (Project)</td>
<td></td>
</tr>
<tr>
<td>Small Capital Renew. &amp; Reno.</td>
<td>$3,487,895</td>
</tr>
<tr>
<td>And Deferred Maintenance</td>
<td></td>
</tr>
<tr>
<td>New Construction (FY 2017 – 2021 Capital Plan)</td>
<td></td>
</tr>
<tr>
<td>Average Annual (next four years)</td>
<td>$100,000,000</td>
</tr>
</tbody>
</table>

### Capital Renewal and Deferred Maintenance
The rough estimate of costs to address the currently known capital renewal/deferred maintenance obligation on the campus is unknown in detail but generally believed to be in the $600 million range based on the May 2018 Sightlines report. Sightline identifies an assessment of capital needs of $467 million. This represents the capital renewal, deferred maintenance, and compliance needs for the campus. The replacement value of the campus is estimated at $1.33 billion. These two numbers produce a facility condition index (FCI) of 0.35. Reference is made to plans currently underway to demolish the Science Building, the Clark Pool, and a large portion of the substructure. This retires $452 million of deferred maintenance and 1,064-square feet of space. When complete, this will modify the FCNI to a new level of 0.19.
Campus Space Breakdowns
Since its inception in 1974, the UMass Boston main campus in Dorchester has grown to include over 120 acres and several major new buildings. The space inventory for which the DF provides services to the Boston campus is made up of 3,690,302 gross square feet. The breakdown is given below:

<table>
<thead>
<tr>
<th>Category</th>
<th>Gross Square Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>Administration</td>
<td>96,897 GSF Quinn</td>
</tr>
<tr>
<td>Academic and Research</td>
<td>1,593,774 GSF Healey, ISC, McCormack, Science, UH, Wheatley</td>
</tr>
<tr>
<td>Auxiliary Buildings</td>
<td></td>
</tr>
<tr>
<td>Campus Center</td>
<td>330,000 GSF</td>
</tr>
<tr>
<td>Residence Halls</td>
<td>248,656 GSF</td>
</tr>
<tr>
<td>This space is maintained by Residence Halls.</td>
<td></td>
</tr>
<tr>
<td>Recreational Services</td>
<td>126,427 GSF Clark</td>
</tr>
<tr>
<td>Parking</td>
<td>512,000 GSF</td>
</tr>
<tr>
<td>Utility</td>
<td>109,261 GSF SWPH, Service &amp; Supply, Utility Plant</td>
</tr>
<tr>
<td>Substructure</td>
<td>640,000 GSF</td>
</tr>
<tr>
<td>Off campus</td>
<td>33,287 GSF Bayside (Field Station and Gouin Village)</td>
</tr>
<tr>
<td>Total</td>
<td>3,441,646 GSF Does not include residence halls</td>
</tr>
</tbody>
</table>

| Total (after substructure remediation) | 2,752,000 GSF |

High Level Metric Comparisons
Listed below are common high-level metrics for the Department of Facilities Management using the data on headcounts, budget, and campus square footage.

<table>
<thead>
<tr>
<th>Data Provided</th>
<th>APPA Std</th>
<th>APPA FPI Peers</th>
<th>Sightlines Peers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Funding per square foot - All Space - $/SF</td>
<td>$6.60/GSF</td>
<td>NA</td>
<td>7.70/GSF</td>
</tr>
<tr>
<td>O&amp;M Cost per square Foot</td>
<td>$3.13/GSF</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maintenance &amp; Grounds</td>
<td>$2.09/GSF</td>
<td>$2.16/GSF</td>
<td>NA</td>
</tr>
<tr>
<td>Custodial</td>
<td>$1.04/GSF</td>
<td>$1.46/GSF</td>
<td>NA</td>
</tr>
</tbody>
</table>

Full Time Employee Workload Metrics - KSF/FTE
- Maintenance: 98.8 KSF/FTE, 65, 75.2, 89.3
- Custodial: 45.7 KSF/FTE, 35, 38, 35.2
- Grounds: 16 Acre/FTE, 23.5 Acre/FTE, NA
- Utility Cost per GSF: $3.47/GSF, ~ Equal
- Facility Condition Index Current: 0.35, Poor
- Facility Condition Index After Demo of Substructure: 0.19, Fair/Good

Deferred Maintenance Backlog All Space - $/GSF: $174/GSF
Customer Satisfaction: NA
Intensity of Use Students/KGSF: 664, <351
Discussion of Metrics
The review team developed the metrics above to get a handle on whether funding levels were in acceptable ranges. It confirmed that the metrics concerning funding and workload are lacking compared to peers and APPA standards. Sightlines data taken from the May 2018 ROPA and BPS Presentation, which were derived from information on FY17 performance and spending, tell the same basic story of underfunding and understaffing, as does the information on the FY19 operating budget that was provided to the review team. Notwithstanding, some methodological differences that no doubt exist between Sightlines’ and APPA’s analysis of the two sets of data received, such as the extent to which outside contractors’ performance of maintenance work is counted, the essential picture remains consistent from FY17 to FY19.

The facility condition index (FCNI) is presented before and after the substructure and Science Building remediation, since the impact of the substructure is substantial. FCNI is a widely used measure to represent the condition of the campus facilities. The FCNI is simply the financial needs of the campus divided by the replacement value of the campus facilities. This measure can be used at a building or campus level. The magnitude of the deferred maintenance level is presented in the Sightlines report. It was presented to the review team that the estimate is based on DF self-inspection in conjunction with Sightlines and empirical life cycle calculations and not routine inspection. Due to this fact, the team questions the accuracy of the FCNI 0.19. The numbers being used for DF after substructure remediation are somewhat misleading as to severity of need. The reason for this is that the campus is in transition; it is comprised of new buildings with very low capital renewal needs and much older, original buildings, with much higher capital renewal needs. The result is that half the campus has an FCNI in the 0.05 range and the other half in the 0.40 range.

Customer and employee satisfaction metrics are not available from Sightlines or in-house surveys. Intensity of use of the campus facilities is dramatically greater than peers of similar size campuses. Higher levels of intensity of use lead to systems and components of buildings being at a higher level of wear and tear and result in higher maintenance needs and costs.

The metrics paint a mixed message with some bright spots pointing to a reviving situation as older facilities are retired but also tells a story of underfunding for the present conditions and future demands.

The APPA FMEP Team
This report reflects the observations and recommendations of a team of university facility professionals who collectively have extensive experience in managing university facility management programs, capital project programs, and in setting priorities and triaging resources among competing demands. The review team visited UMass Boston from
November 4 through November 9, 2018. The major focus of this report is the evaluation and assessment of the UMass Boston Department of Facilities. Additional recommendations are provided for the UMass system administration and UMass Boston administration when their policies or procedures impact how the Department of Facilities (DF) may accomplish its work. The review program utilized is the Facilities Management Evaluation Program of APPA: Leadership in Educational Facilities.

The judgment and recommendations included in this report are based on the review team members’ many years of experience combined with extensive interviews, detailed document reviews, and studied comparisons. Members of the review team were selected to comprise higher education facility managers who are experienced in managing complex institutions comparable in size and complexity to UMass Boston. Members of the review team include the following individuals:

Richard W. Robben, P.E., MBA, CEFP
Executive Director, Plant Operations
University of Michigan, Ann Arbor – Retired
President, True North FMC – Current
Ann Arbor, Michigan

Jay M. Campbell, MBA, CEFP, CFM
Executive Director of Facilities Management
University of Colorado
Denver, Colorado

George Hakim
Director of Facilities and Operations
University of Michigan – Flint Campus
Flint, Michigan

John (Jack) Dempsey, PhD. P.E., LEED-AP
Executive Director Facilities & Services
University of Illinois Urbana Campus – Retired
Royal Palm Beach, Florida

The APPA review team conducted extensive interviews within DF and with numerous principal administrators, campus partners, and staff external to the department who constitute the major campus stakeholders and client constituency.

This review would not have been possible without the full cooperation and participation of all those who were interviewed and who freely shared their comments. All participants were especially gracious with their time and contributed significantly by offering their perspective on the successes and challenges facing the University of Massachusetts Boston,
Department of Facilities. The time provided to this effort afforded the review team the opportunity to gain valuable insight into the complexities of the institution. The interview discussions helped in our understanding of the overall context of departmental relationships and service delivery. This also gave the DF participants an opportunity to articulate their successes along with the current and future challenges that the organization faces. The campus partner and customer groups were of particular importance in providing key comments and perceptions of DF services through their first-hand experience with staff and service delivery processes.

Those members of DF and the campus community who participated in the interview process are listed in the Appendices.

Acknowledgments
The APPA review team wishes to thank all those who contributed to the review. Everyone was most generous with their time and their comments. We found the site visit very well organized which allowed for efficient use of the review team’s time. Special thanks are extended to all members of the Department of Facilities leadership team. Their investment of time and attention was critical to the review success and most instrumental in ensuring a thorough review.

We also thank and acknowledge the participation of so many hard working women and men in the Department of Facilities who provided their time and insights and who demonstrated a genuine interest in the review process.

We would like to express our special gratitude to Chancellor Katherine Newman for taking time from her duties to meet with the team via Skype to express the viewpoint from the very top of management. Chancellor Newman’s participation reflects highly on the importance of this review effort to the Institution. We also wish to acknowledge Kathleen Kirleis, vice chancellor for Administration and Finance, for her welcoming hospitality and participation, which was graciously extended to the review team the entire time we were on campus and for taking valuable time from her schedule to meet with our review team and to attend our exit briefing meeting on our last day on campus. We are also grateful to Dorothy Renaghan for greeting the team Sunday evening and for meeting with us and providing valuable insights into the operation and performance of the Department of Facilities.

Finally, Cynthia Williams provided an indispensable contribution by serving as our principal contact for preparing and obtaining materials and documents in advance of our campus visit and who was our scheduler and meeting coordinator during our site visit. Cynthia was most patient and efficient in accommodating our requests for additional information and our need to change or add interviews to our schedule.
Executive Summary

The APPA Facilities Management Evaluation Program (FMEP) framework was utilized to format this report. The seven criteria provided by the FMEP provide a thoughtfully developed integrated and complementary framework. In performing a review of a complex area like the Department of Facilities Management (DF), it is very important that the review team capture a strong sense of the organizational context and culture. Context and culture are heavily implicated in the organization’s basic mission, its strategy, and goals, its means of getting the job done, its key measurements, and its remedial systems and practices. Accordingly, the FMEP framework, consisting of the self-evaluation and the seven criteria listed below, provide essential steps and afforded the review team foundational information upon which to base our findings and to construct conclusions and recommendations. The seven FMEP criteria utilized to guide this review are:

- Leadership
- Facilities Strategic and Operational Planning
- Customer Focus
- Assessment and Information Analysis
- Development and Management of Human Resources
- Process Management
- Performance Results

These criteria were also used to conduct the self-assessment, which was provided to the review team in advance of the campus visit. Regrettably the self-evaluation was not fully completed and as of this writing is still missing the performance section. The interview schedule prepared by DF included many campus customers, stakeholders, and campus partners who were asked to share their experience and level of satisfaction with the department’s services.

LEADERSHIP

An important role and responsibility for department leaders is to create a work environment that is conducive to people coming to work and doing their very best. The assistant vice chancellor has strived with varying degrees of success to develop a work environment where department leaders are competent, stay mission focused, and generally work together to accomplish group purpose.

The DF leadership team has the support of many campus administrators through their endeavors to become proficient in the performance of their roles and responsibilities. The assistant vice chancellor of DF recognizes the importance of customer service leadership. Other members of the leadership team demonstrate a similar customer focus with positive results.
Consequently, faculty and staff have a tolerant acceptance of the campus’s operations and maintenance conditions, but this understanding attitude is wearing thin in particular areas where chronic facility issues persist.

As stated earlier, there exist overarching conditions that inhibit the growth of DF competency and performance.

A substantial investment in resources is needed to grow the capabilities and capacity to keep the organization relevant. It is recommended that UMass Boston’s administration continue to recognize the strategic importance of continuously building DF’s organizational capacity. The DF leadership will then be able to develop a continuous action plan to address talent management, engagement of the existing workforce, building the next generation, leadership development and empowerment at all levels of DF, and continually finding ways for the department personnel to work better together.

The department organization structure is a flat organizational design with only one layer of management below the assistant vice chancellor, and the alignment and reporting lines are clearly illustrated for the members of the leadership team. Below this level, the visual presentation of the hierarchy is not easy to follow. The lines of the organization chart, which map how the whole is divided into working units and how each part relates to the other, does not serve as a clear and effective communications tool. The website is helpful in this regard but could be improved.

Organizational alignment and structural changes are recommended.

DFM does not have an active leadership development program or a succession plan, though it has designated a deputy who would be in charge if the assistant vice chancellor were absent for any lengthy period. The workplace and workforce recommendations described in Section 5.0: Development and Management of Human Resources are considerable.

The organization is only moderately data driven. Processes are not mapped for use of the TMA computerized maintenance management system (CMMS). As with Section 5.0: Development and Management of Human Resources, the recommendations in Section 6.0: Process Management are considerable.

**FACILITIES STRATEGIC AND OPERATIONAL PLANNING**

Changes in campus leadership, projections of a smaller student body size, and a shift in funding by the state have all impacted the existing campus strategic plan. To remain relevant, a new or revised campus strategic plan is necessary. While it will take some time for the new leadership to address this need, the strategic focus of DF is clear. An interim facilities strategic plan is necessary if the efficient application of resources is to be achieved.
The focus of the new plan must recognize the change in customer expectations in new buildings, new technologically advanced building systems, planned increases in deferred maintenance funding, and the need for improved transparency and accountability.

Near-term planning for DF is possible because the funding model for the next few years is relatively clear. It should be anticipated that for UMass Boston DF, the construction of a strategic plan will be iterative in nature as the initial preparation will reveal fundamental deficiencies in data necessary for plan development. For instance, establishing a realistic goal for maintenance service levels in the new structures requires a planned maintenance program and the commitment to staffing and funding to achieve the desired service level. Essentially, the DF’s strategic plan development must consider the need to improve core-service levels, the scale of unfunded capital renewal/deferred maintenance needs, and the highly competitive economy and high costs in the Boston area. The plan, of necessity, will identify much needed service level improvements for maintenance, custodial, and grounds. The use of available maintenance management systems (TMA) and management tools provided by Sightlines will be integral to development and execution of any strategic plan.

The view of DF as the organization that keeps a poorly constructed infrastructure working has changed with the addition of three major, relatively new buildings and a new $250 million utility corridor. This shift in perspective will likely continue with the demolition of the Science Center and Clark Pool, the application of $30 million to fund moves from the Science Center plus the application of $29.7 million over five years (FY19-FY23) to reduce the deferred maintenance backlog through the critical repairs project.

The expectations that are raised by these improvements must be managed by UMass Boston’s leadership in light of two important factors: 1) The DF received only a small portion of funding to maintain the new buildings and the new utility corridor; and 2) The DF is left with 1.3-million square feet of space to maintain within the remaining original buildings, along with all of those buildings’ DF (Clark Gym and Rink, Healey Library, McCormack, Salt Water Pump House, Service & Supply, and the Utility Plant).

This paradigm shift must be met through increased use of technology, improved application of resources, and (where appropriate) increased resources. Without a well-thought-out strategic plan none of this will be possible.

**CUSTOMER FOCUS**

There are two customer perceptions that taken together define the state of the DF organization. First, is the consistent refrain from customers that facilities leadership works hard, but lacks the resources to provide the desired level of maintenance and cleanliness for the buildings and grounds. Secondly, is the belief that the best way to get things done, perhaps the only way to get things done, is to call a responsible person in facilities. Taken together, customer expectations are low and any problems require leadership intervention.
to resolve. Or stated another way, customers are not satisfied with the condition of facilities, but do not blame the DF leadership; this condition is beginning to change depending on whether the customer is in a new or old building. Further, customers do not believe the DF work order system is responsive.

Although the assumption that DF is not funded or staffed to provide desired levels of service is generally accepted as true, there is no documented relationship between resources and levels of service standards. If DF hopes to be staffed sufficiently to provide consistent levels of service and reliability, it is incumbent upon them to make their case for resources based upon accepted industry-wide standards. APPA has developed and refined a complete array of maintenance, utility, grounds, and custodial standards for higher education facilities of all kinds. These guidelines provide a clear description of what varying service levels provide, which can then be used to communicate the service level to customers. Service standards are not publicized by DF to the campus community, and there is no method in place to measure DF performance against service level standards. These processes are essential to understanding customer expectations and managing performance in support of those expectations. APPA standards are included in the Appendices.

Defining a realistic baseline level of service that can reliably and consistently be delivered is critical to building credibility with customers and is a fundamental first step in determining the level of resources required to raise service to acceptable levels. Using APPA and/or other nationally recognized productivity guidelines and standards as a guide, DF can objectively determine what level of service can realistically be achieved given current staffing and resourcing levels. DF should immediately collect the data necessary to define their operations in terms of these standards to arrive at a clear and quantified picture of the state of the DF organization.

It is troubling that some customers feel the need to make personal contact in order to get things done because it means that the work order system has failed. In almost every case, customers identified some person inside DF, who they called either to initiate a work request or to obtain status. Our team came away with the conclusion that the website was the last place customers went to initiate a work request. Even workforce representatives brought up the issue that customers called them instead of using the work order website. Some customers stated that they did not know how to initiate work requests or access work order status. Discussion with the DF IT staff person indicated that the necessary customer training to correct this deficiency would take less than 30 minutes. This training should be conducted as soon as possible.

DF has contracted with Sightlines, whose analytical tools and reports include features that provide a window into customer satisfaction. Part of their standard package is a customer survey, which provides information on areas of excellence and areas needing improvement. When used over multiple years it can provide feedback to determine which initiatives are successful and which are not. Since all UMass campuses use Sightlines reporting, customer
satisfaction can be benchmarked within the system and best practices shared between campus facilities organizations. As of this writing, the customer survey has not been utilized with Sightlines.

With new construction, demolition, associated renovations, and state-sponsored deferred maintenance funding, the overall facility condition will continue to be improved and customer expectations will increase accordingly. This is already apparent in the newer facilities. In response, DF needs to communicate to the vice chancellor for Administration and Finance the service levels that can be provided with current funding levels. Once service levels have been agreed to these should be communicated to the provost and deans, in writing. This should be viewed as the first step in developing a strong cooperative relationship between DF and the academic units.

**ASSESSMENT AND INFORMATION ANALYSIS**

It is critical that a facilities organization take advantage of its opportunities to collect data, convert it into meaningful information, and use that information to drive decisions within its operation. UMass Boston DF has data collection mechanisms in place through internal systems and the use of outside resources; however, more work needs to be done to convert the data into meaningful and actionable information.

The DF is using TMA, a web-based CMMS to manage the flow of campus repairs and maintenance within its department. Work orders are generated from requests made by campus constituents, and work is assigned out to facilities staff. Of the approximately 14,500 work orders generated each year, 6,000 are preventive maintenance (PM) work orders and 8,500 are generated by customer calls, emails, walk-ins, and from their submissions via the web-based iService. However, the data being collected is not being used to its full potential. Work order aging reports are generated periodically (weekly to biweekly) and shared with department working supervisors and deputy directors, for purposes of identifying work orders that are not closed. No routine, formal mechanism is in place to improve workflow, reduce backlog, or improve the customer experience overall. It also appears there is a lack of uniform awareness across campus of the online system for requesting work, which creates a greater reliance on email and telephone requests from the customers. It is recommended that DF promote, through campus-wide email and other available systems, the TMA system.

In recent years, the DF has been utilizing Sightlines as a resource to annually review and report critical facilities measures, benchmarking, and analysis of comparative data. It is recommended that the DF utilize Sightlines to its fullest extent. There is a critical need for the DF to develop competencies in the use of operations and maintenance performance measurement. The concept of using key performance indicators (KPIs) for operations and maintenance management and for purposes of process improvement, making transformative business cases, decision support, innovation, and continuous improvement
is not adequately understood nor practiced in DF. This is especially critical in an environment where the department is facing a declining budget and employee layoffs, which has been the case in recent years. DF has indicated a reliance on the information from Sightlines to communicate benchmarking data and recommendations to campus senior management; this practice is encouraging and should be continued. Additionally, the president's office is using this data to set, keep up on, and monitor maintenance spending targets.

In an environment where department budgets are declining, it is essential that there be continual efforts to optimize operations and reduce or eliminate discretionary or unnecessary expenses. There is a relatively heavy reliance on outside contracting of core services in the DF. Although this an acceptable approach operationally, there is no comparative data available to support this approach. It is recommended that DF undertake a comprehensive make/buy assessment when making this type of decision.

Existing Sightlines data may be useful in this regard as at least a starting point. However, the fact that the department is operating at an overall staffing level that is below recommended industry standards, the contribution provided by outside contractors will be a consideration when establishing a baseline staffing level if this function were brought in house.

It was observed that DF hardware and software systems may not be given the proper attention to assure that they are currently, and will be in the long-term, managed to assure peak performance and protection of technology investments. Complicating this concern was the observation that roles and responsibilities between facilities and IT staffs did not appear to be properly delineated or understood. Because IT infrastructure is a critical component of facilities operations, emphasis needs to be given to implementing a collaborative review of the facilities technology, systems, and support mechanisms. Both IT and DF staff must be fully engaged in this assessment in order to achieve the necessary outcomes including a business continuity plan.

**DEVELOPMENT AND MANAGEMENT OF HUMAN RESOURCES**

In the realm of facilities management, the functions of HR theories, tactics, processes, and procedures are primarily focused on four components: recruitment, retention, training and development, and performance management. Each of these distinct, yet acutely interrelated aspects of personnel management can make or break an organization’s ability to attract and hold on to the best talent available. The very best employers, as gauged by employee satisfaction and loyalty, seem to excel in all aspects of human resource management. They have a competitive advantage as employers of choice, particularly in a strong economy and tight labor market.
Admittedly, it was a bit of a red flag when DF failed to answer 6 of the 13 questions in this section of the FMEP self-assessment. That led to significant time being spent during onsite interviews focusing on the fundamentals of recruitment, retention, training and development, and performance management. While there is undoubtedly some positive feedback to celebrate and expand upon, the stark reality is the vast majority of DF employees suffer from poor morale and little hope that anything is going to change for the better.

Significant budget challenges and cuts to the workforce have been detrimental to the overall workplace culture within DF. A common theme throughout this report is the fact that staffing levels, particularly in the maintenance trade groups, are dramatically low for the size and complexity of operation at UMass Boston. Challenges with HR processes and resource constraints have resulted in hiring delays, which in turn is preventing DF from keeping up with the basic maintenance demands of the campus. Attrition via retirements and high levels of turnover have had negative effects on staff morale and overall productivity.

Although the HR functions may have at one time been adequately managed, in its current state DF needs to apply considerable time and effort toward the very basic fundamentals of human resource management. A great first step would be to conduct an employee engagement survey. If done properly, the insights from this survey would guide DF leadership’s efforts to improve employee satisfaction and the workplace culture.

**PROCESS MANAGEMENT**

Operational excellence is the execution of the business strategy more consistently and reliably than the competition. Operational excellence is evidenced by results. To be operationally excellent, processes have to be in place that are efficient and will produce the expected and repeatable results. There are two components fundamental to Operational excellence.

The first component consists of a framework of processes and standards that define where the company is going, identify the risks to getting there, mitigate them, manage change, and continuously improve. Having one single, integrated management system reduces overlap, redundancy, and conflict. The second component, a culture of operational discipline, is commonly described as doing the right thing, the right way, every time. These values are used to identify the behaviors expected of each and every employee and how they support the organization’s mission and outcomes.

A fundamental starting point in building operational excellence is in the building of processes that meet the above goals. These processes should cover all aspects of the business enterprise and be followed steadfastly to improve reliability and repeatability. A process is a structured set of activities that transform inputs into outputs. Processes should
be measurable with clear performance metrics and indicators. Processes are strategic assets of an organization that if managed well deliver a competitive advantage. And processes assist us in defining responsibilities, internal controls, and work standards for compliance, consistency, and performance.

DF appears to be in a transitional phase of bringing existing processes under control and instituting new processes that will improve future results. There is a noticeable effort to improve that is hampered only by resources.

*Note: A side note on this subject is that the team recognizes that impacts of leadership change, such as, resource restrictions, staffing level impacts, and a large deferred maintenance backlog on the workload of all existing staff and the resultant difficulties of making progress during transitional times.*

The review team sought out those processes that are most critical to effective delivery of services. As noted in the Introduction, several departments other than DF are also the controllers of some of these processes. These processes come under four categories and are generally commented on below (see Section 6.0: Process Management for more details).

**Administration**
- Budget management and reporting which includes:
  - Capital Planning Process: New unproven process
  - Capital Project Budget Tracking: In place, problems exist with system of accounts usage
  - General O&M Ledger: In place, problems exist with system of accounts and departmental designations usages
- Materials Inventory Management: System floundering needs immediate attention
- Workforce position management and control which includes:
  - Hiring and Retention: Needs attention
  - Payroll: In place functioning
  - Training: No comprehensive system in place
  - Labor Relations: In place within HR problematic
  - Human Resources Interfaces: In place problematic

**Operations and Maintenance**
- Work Order Management: In place not being used up to its potential, needs immediate attention
- Preventive/Proactive Maintenance: In place and expanding
Project Management

- Capital Project Planning: New process too soon to evaluate, prior process not functional
- Project Interface on Large State Run Projects: In place needs improvement
- Delivery of Campus Run Projects: In place needs improvement
- Development and Management of Design Standards: In place at state level, needs local input

Utilities and Energy Management

- Procurement of Purchased Utilities: In place and functioning
- Energy Conservation Management: In place could improve
- Monitoring and Reporting of Energy Usage: In place and functioning
- Delivery of Utilities to Campus: In place and functioning

Interviews and inspection of records show that some of the processes that are indicated as functioning lack documentation of how the process is to operate. This is particularly true in the work order management, material acquisition, hiring and retention, general O&M ledger, and capital project reporting.

Further exacerbating the problem is the understaffing of the department. This also leads to a common lament that there is not enough time to be proactive or to follow process. As stated above, rigorous adherence to processes that are properly designed will provide efficiency and repeatability of results.

There are several actions that can have good effect at low cost and short time frame. Several key processes, mentioned above, should receive immediate attention by being mapped and documented and staff trained in the operation of the process.

PERFORMANCE RESULTS

The condition of individual campus buildings varies but in general looks to be meeting UMass Boston goals, even though the overall FCI rating for campus facilities is “poor” 0.35. The overall appearance of the campus grounds shows a campus in transition from one that is aging to one of renewal. Cleanliness of the interior building common space looks passable to good. Operation and environmental conditions within the buildings are acceptable to good.

DF is commended for its efforts to provide and maintain an environment that is attractive and functional, particularly to the casual observer and visitor. Nevertheless, the review team believes that many areas and systems both seen and unseen by the public are in poor repair. DF needs to better use its resources through more modern maintenance management practices and some attention to the obvious details. An interesting comment
by a senior academic stated that DF needed a strategy similar to New York City in dealing with the graffiti on the subway cars. Just cleaning off the graffiti gave a better image, without the need to replace the train cars. To carry this analogy to UMass Boston, the interviewee suggested fixing holes in the plaza, repairing cracked windows, and replacing stained ceiling tiles would make a great difference in the feel of the campus.

Various upgrades and new buildings have been added to campus and its building systems over the past ten years. Renovation of older space and relocation of departments from the Science Center is anticipated to continue over the next year and into the future. Allocations by the Commonwealth of Massachusetts in recent years have been growing to address deferred maintenance and capital renewal.

**FCA.** Campus FCI is at 0.35, which is “condition poor.” This level needs to be addressed to avoid critical failures and shutdowns of obsolete and worn out systems, some of which are highly mission critical. The new construction program and the combined university and state contributions can make a significant impact on the FCI if the substructure and Science Center are demolished.

**Custodial.** Based on our limited tours of building interiors (administrative, research, theater, and classrooms), the review team thought that the custodial crews were doing a good job.

**Grounds.** It is evident when walking the campus that it is well laid out. Hardscape and walkways are well designed. Sustainable features are operable. It was also clear that there are two qualities of buildings, those that are newly constructed (past ten years) and those that are part of the original construction sitting atop the substructure. New facilities appear well maintained, original buildings and plazas are generally in a state of disrepair except where renovated. The same is true of the back areas of the campus and lawn and shrub beds, where construction activity is highly evident.

**Maintenance.** This area is more difficult to assess the performance results without the type of data that would come from a robust CMMS system. However, several observations are illuminating: the Sightlines data reports high levels of deferred maintenance, anecdotal stories of equipment failures and emergency response, high deferred maintenance suggests increase breakdown maintenance, the lack of a robust preventive maintenance program, and questionable asset data. Additionally, comments made by the workforce suggest that at least some members of the team do not believe in preventive and predictive forms of maintenance. DF lacks a centralized maintenance oversight of activity as would be found in a work control group.

**Customer Survey.** Customers seem to be accepting of the services provided by DF, citing underlying issues for lack of performance. Leadership recognizes the need for additional
tools that provide more definitive data to better measure customer satisfaction. A survey instrument is needed.

**Employee Satisfaction.** Present efforts to engage the workforce are making headway even though some undercurrent issues remain. An employee engagement survey tool is in order.

Overall, DF is meeting its obligations, but not smoothly, to the campus community. The maintenance and operations group is currently struggling without a comprehensive CMMS. There are areas for improvement in most sections of the department. Two areas of positive note are the FCA program and the new capital planning process.
Evaluation Report and Recommendations

1.0 LEADERSHIP

Senior leaders in an effective facilities organization set direction and establish customer focus, clear and visible values, and high expectations in line with institutional mission, vision, and core values. Effective facilities leaders facilitate the dialogue around larger leadership issues such as total cost of ownership (TCO), sustainability, recapitalization requirements, and facilities reinvestment. Leaders inspire the people in the organization and create an environment that stimulates personal growth. They encourage empowerment, involvement, development and learning, innovation, and creativity. Leaders act as both educators and change agents. DF is facing leadership challenges that the review team believes are in large part environmentally based, i.e., budget scarcity, deferred maintenance, intensity of facility use, growing stakeholder expectations, and the addition of unfunded mandates (the addition of two new buildings with sophisticated HVAC systems, a new utility corridor, calf pasture pumping station, for example). The responses to the questions that follow will delineate these issues.

1.1 Describe how leadership roles and responsibilities and the decision-making structure are defined by the facilities department and generally understood by internal and external stakeholders.

Organizational structure clarity and ease of understanding by internal and external constituencies can serve as an effective communication tool for understanding the organization’s leadership team roles and responsibilities and decision-making structure. The current leadership seam structure does not fully identify where the lines are drawn for all functions. Some clarity for project management and construction implementation is needed. Specifically, the distinctions in process between large and small projects, the role of the state of Massachusetts and the DFM in delivery of projects are not clear. The boundary lines, lines of authority, responsibility, and decision making for the other leadership team members are better defined with the help of the department website. The organization chart is current and is updated as needed.

The leadership team job descriptions are not evident in use. The system requires updated position descriptions when posting new positions. All classified staff union job descriptions were rewritten with a wage study performed by the university’s HR Department, at the request of the assistant vice chancellor of the DF in 2009 as part of an effort to support the retention and hiring in skilled trades positions. Since that time, as posted, job descriptions have been reviewed within DF with assistance of HR in order to ensure that job descriptions align with current job functions. The new position of deputy director for Research and Teaching Laboratories was posted and filled. For management positions that have incumbents with long service, the job descriptions are likely to be out of date and in disuse as a performance measurement tool.
There are a number of organizational structural elements that are impacting productivity and communications both internally and externally and organizational alignment and structural changes should be considered. The changes suggested for consideration are intended to strengthen the organization’s focus and ability to implement a focused strategy (Section 2.0: Facilities Strategic and Operational Planning) and for DF to be successful in carrying out its mission.

Changeover at the chancellor position and the vice chancellor for Administration and Finance has created a desire to make positive change in the university and the DF. Tighter budgets and controls, hiring protocols, attrition of existing staff, increased use of outside contractors, and project disruptions have created a new working environment for many of the current DF leadership team. Reaction to this new environment has not in all cases been positive.

The result is that DF leadership is becoming increasingly reactive in policy and not investing in processes and technology that could ease pressure of the current resources. Although there does not exist a hiring freeze, strong position controls that are in place for position replacement make it very difficult to fill open positions. This has led to less than desirable organizational structures.

**Recommendation 1A**

The structural changes recommended include:

- Establish a director of Operations and Maintenance with clear responsibility for all campus building core maintenance functions.
- Establish a director of Work Management to better take control of maintenance scheduling, data collection, and monitoring through the use of key performance indicators.
- Create position of training coordinator to institute professional and technical training program for all staff.
- Duplicate the position assistant director for Research and Teaching Laboratories for other areas of the campus.

These changes marginally flatten the organization, increase data collection and focus, improve service delivery, and allow for better prioritization of work, the assignment of limited resources, and create an opportunity for freeing positions that can be repurposed to roles that can enhance service delivery through increase use of technology.

**Recommendation 1B**

As management controls are added, for whatever reasons, it can have unintended effects on the processes they are intended to improve. While operating in changing environments, it is important that all affected personnel are trained...
adequately in the new process methods. This will help minimize misunderstanding or resistance to new controls. It is recommended that new functions be fully rolled out and personnel trained in the intent and practice of new procedures.

Recommendation 1C
The current organization does not have a succession plan for the lead team members in event of a long-term absence; as such, the organization is subject to operational risk. There are a number of other examples where key positions in DF are totally dependent on a single individual. This suggests a need to develop others for key roles and responsibilities.

1.2 Describe how the leadership system includes mechanisms for the leaders to conduct self-examination, receive feedback, and make improvements.

The term “leadership system” refers to how leadership is exercised, formally and informally, throughout the organization; it is the basis for and the way key decisions are made, communicated, and carried out. It includes structures and mechanisms for decision making; two-way communication; selection and development of leaders and managers; and reinforcement of values, ethical behavior, directions, and performance expectations.

The department self-reports that: Facilities leaders utilize the work management system to follow work assigned, meet with staff regularly, and follow-up with stakeholders for feedback. Where improvements are needed to mitigate future recurrence of issues, facilities leaders are strongly encouraged on a regular basis by the assistant vice chancellor to make changes where they are confident of the desired outcome or to recommend changes for implementation to the assistant vice chancellor, where such changes may have significant cost, may be politically sensitive, require the authorization of authorities having jurisdiction, or may have downstream consequences that may be impactful.

Although these are laudable practices, they do not meet the full intent of the leadership system. A more robust process for self-evaluation is needed that is data based with performance targets and goals and provides insights for performance improvements.

Recommendation 1D
“Feedback is the breakfast of champions.” Only by completing the loop from outward action to understanding the impact of that action can anyone hope to understand his or her effect: what works, what doesn’t, and what needs to improve.

Institute a formal performance evaluation system for leadership team members (see Recommendation 5D). The process should include annual evaluations from their immediate supervisor. They do not have a mechanism to conduct self-
examination and to receive personal feedback for making self-improvement for developing their respective personal proficiency. It is recommended that all directors and members of the facilities management team conduct biannual 360-degree type leadership performance evaluations to supplement the current annual performance evaluation in order to provide a mechanism for feedback from colleagues and co-workers.

1.3 Describe how the organization aligns its missions, vision, and value statements with those of the institution.

The Department of Facilities Management does not have its own mission statement but self-reports as closely aligned with the University mission statement below:

The University of Massachusetts Boston is a public research university with a dynamic culture of teaching and learning, and a special commitment to urban and global engagement. Our vibrant, multi-cultural educational environment encourages our broadly diverse campus community to thrive and succeed.

Strategic planning is a tool that leaders use to help set direction, to structure and align the organization, and to inspire and motivate people to achieve group purpose. That is why every organization needs a mission, vision, and values statement and a SMART (specific, measurable, achievable, relevant, and time-bound) set of strategic goals to pursue. These statements and goals serve as guides and accountabilities along the long road to success. A SMART goal is a short statement that a person makes to lead them in the direction of what they want to accomplish.

When it comes to core-values, we find that many organizations most generally need to review and to document existing organizational values. Many organizations focus on values like honesty, integrity, and respect for the individual. Of course these are important; they are the foundation for other values, but the review team’s collective experience is that what really separates the highest functioning organizations from others is when core values express what leaders want it to be like to work inside the organization. Facility management core values should represent the deeply held beliefs of the organization and the desired day-to-day behaviors of all employees. This could include visible behaviors such things as: compassion and caring, coming to work on time, an honest day’s work for an honest day’s pay, challenging the status quo, promoting from within, rewards for performers, and being customer focused.

These examples represent meaningful organizational core values that some of the DF leadership team articulated during our review. Many of these are tangible things that people can get their arms around and they are essential to consistently deliver value to customers and improve organizational performance.
There is a need to develop and communicate these statements for achieving a shared understanding beyond the leadership team levels of the organization. It is recommended that the mission, vision, and value statements be displayed at various worksites, break areas, and on the department’s website. The display of mission and vision statements will serve as an additional reminder to the workforce and will reinforce the organization’s purpose and direction. Displaying the mission, vision, and value statements doesn’t just add voice to these documents; it endorses them as Department of Facilities policy and guiding principles. A word of caution for all those in leadership positions: empty value statements create cynical and dispirited employees, alienate customers, and undermine managerial and leadership credibility. “Leaders must lead from the front” and model the values.

**Recommendation 1E**

*It is recommended that DFM develop a departmental strategic plan that identifies a unifying strategic plan with mission, vision, and value statements and a list of prioritized SMART goals that support the university strategic roadmap in Facilities terms. See Section 2.0: Facilities Strategic and Operational Planning.*

1.4 Describe how effective the senior leadership of the department has been in establishing and sustaining internal and external communications plans that (a) educate the campus community on the facilities department’s role in institution success, (b) promote customer and stakeholder feedback, and (c) reinforce the role of front-line staff in creating a positive public impression of the quality of organization services.

As recognized in the self-evaluation, DF does have a communication plan process that meets the intent and criteria of the above question. Although the review team findings for this criterion support the self-evaluation response and that DF management leaders are giving this area a high priority, the results are mixed for both internal and external stakeholders.

Aspects of the current plan include:

- A robust series of meetings with all stakeholders on a routine basis to go over current issues. These meetings however do not have prepared agendas and minutes. They could most likely be more effective in tracking issues and performance.
- The facilities response center tracks all requests for service and disseminates the request to service providers for action. However, as pointed out in Section 6.0: Process Management, the TMA CMMS is highly underutilized for monitoring the progress of work through the system or for acting as a repository for history information.
- Efforts to create the image of a competent service delivery organization, through use of uniforms and though leadership reinforcement of values and expectations were self-reported as unsuccessful.
The department has struggled for a variety of reasons; some internal and some external. Without a doubt, they have contributed to the difficulty to communicate both internally and externally.

Recommendation 1F
The review team understands the difficulty in gaining traction on communications while in the midst of major challenges, and we applaud the work that has been done to establish internal and external communications. Yet, there remains work to be done in communicating top to bottom within DFM and communicating with campus customers and stakeholders on numerous services and policies. Communication will continue to be every leader’s number one challenge. For example, a number of the recommendations contained in Section 3.0: Customer Focus, Section 5.0: Development and Management of Human Resources and recommendations in Section 6.0: Process Management represent a critical part of the communication and relationship challenge. These sections of the report highlight additional opportunities for internal and external communication improvement.

It is recommended that DFM leadership consider an internal communications audit of DFM staff as a part of an employee engagement survey recommended for consideration in Section 5.0: Development and Management of Human Resources (see Recommendation 5I).

Statements such as this could be included:
- My organization’s leaders share information about the organization.
- My organization asks what I think.
- As it plans for the future, my organization asks for my ideas.
- I get important information I need to do my work.
- I know my organization as a whole is doing.
- I know how well my organization is doing financially.

1.5 Describe how representatives of the facility department engage with key communities, both on and off campus (e.g., town and gown, agencies having jurisdiction) and contribute to the enhancement of their various communities—both personal and professional.

The current leadership team has an excellent working relationship with the various authorities having jurisdiction including the State Building Inspector, the State Plumbing Inspector, the State Elevator Inspectors, City of Boston’s Inspection Services Division for Electrical, Boston Water and Sewer, Department of Environmental Protection, and Boston Conservation Commission, etc. Continuing this focus on collaboration and information sharing represents a best practice in this area.
1.6 Describe the leadership development and succession plans presently in place to ensure continuity of leadership.

DF has a number of staff members who are eligible for retirement and has already experienced the loss of valuable institutional memory in several instances. Additionally, the competitive economic conditions in the Boston area increase the risk of key staff turnover. DF self-reports that it has informal structures in place to address the issue of succession plans. In addition to any informal plans that may exist, the review team recommends a leadership development plan for its management staff and those who may aspire to leadership positions.

Recommendation 1G
DFM leaders should consider action within institutional policy to better manage vacancies in critical positions. Success in this arena requires having the right people, in the right place, at the right time. In accordance with institutional policy, DFM is encouraged to develop the current workforce to fill critical positions and advance an approach for identifying and developing the right individuals into those key positions. APPA has leadership programs that can be used to groom future leaders at all levels of management. Specifically the APPA Leadership Academy and the APPA Institute for Facilities Management are available programs.

A practical approach is recommended that allows for a total assessment of the most critical position needs of the organization and the development of a plan of action to address the needs. These are often called needs-based training programs. A template set of tasks for each classification is developed. The template includes those tasks that should be mastered in order to be considered qualified in the role. Worker skill sets are then compared to the template, where gaps exist is the area training is focused. This makes the most efficient use of training dollars.

Also, a leadership development program specific to the facility management profession for those in supervisory, management, and leadership positions should be pursued. Section 5.0: Development and Management of Human Resources contains additional recommendations on leadership development programs for consideration (see Recommendation 5G). Also note Recommendation 1B on succession planning.

1.7 Describe how the leadership of the facilities department emphasizes the importance of and how it engages in excellence.

The DF leadership team is keenly aware that their example sets the tone for the department and works hard to communicate expectations. Specific and achievable targets have been
established and specific individuals made responsible for achieving those targets. Examples given in the self-evaluation pertain to:

- Revamping of the job descriptions for the skilled trades to include professional licensing and the improvement of wages associated with the new positions.
- Participation in the design and development drawing review process.

The term “excellence” has been around for a long time and it means different things to different people. Universal agreement on a definition is not important, but what is important is that DFM staff knows what it means to them and that others working in the same facility and the same organization have a consistent definition. Even more important than a consistent definition is a common vision of what things will look like when you arrive at excellence.

DF is encouraged to continue to recognize excellence and to continue to develop its standards of performance and service levels described in Section 6.0: Process Management. There is also an opportunity to incorporate excellence into the department’s core values addressed in criterion 1.3 above.

The foundation for this can be expressed through several observed practices including:

- The APPA FMEP
- Emphasis on accountability and ownership
- Empowerment within boundaries for each level of the organization as appropriate
- Feedback to staff to acknowledge strengths and opportunities for improvement
- Inclusion of “excellence” in performance management and development programs
- Pay and promotion are linked to excellence, as allowed by collective bargaining agreements (CBA)
- DF recognition of excellent performance, as allowed by collective bargaining agreements

**Recommendation 1H**

DF leaders are encouraged to continue to recognize excellence through increased employee recognition programs such as a “DF Award for Excellence” to visibly recognize and acknowledge those who regularly deliver excellent work.

Also the implementation of a structured LEAN program for continuous improvement is suggested. In order for a program of this type to succeed and flourish, it requires a programmatic approach with training, empowerment, governing councils, and directed Kaizen efforts and teams.
1.8 Describe how the leadership of the facilities department promotes and ensures ethical behavior in all interactions.

The review team did not observe any indications or concerns about ethical behavior within the Department of Facilities. The training discussed in the self-evaluation and the appreciation of the difficulties in staying on top of the issue are good indicators that the DF is aware and on top of the issue.

Recommendation 11
DF leaders are encouraged to nurture ethical practices in all parts of the organization. The leadership is doing that by ensuring that procurement rules long ignored are required to be followed, no matter how often the emergencies strike. When considering factors that directly influence the organization’s success, leadership practices, such as visibly performing ethical behavior and demonstrating the organization’s professed principles and values, impact the performance of every individual and establish department staff and stakeholder perceptions. The team understands that when leadership ended the practice of workers accepting “Christmas gifts” from contractors who do business with the university, there was some disappointment expressed by staff; yet this action is modeled on a principle and value that is an important. This is particularly true when public funds are used.

Criterion 1.3 above, calls attention to organizational values. An important part of the leader’s role and responsibility is to create a work environment that is conducive to people coming to work and doing their very best. Employee commitment to core values infuses the creation and delivery of services and guide internal and external relationships. A tenacious adherence on the part of the leadership team to the spirit and letter of organizational values is recommended.
2.0 STRATEGIC AND OPERATIONAL PLANNING

Strategic and operational planning consists of the overall planning process, the identification of goals and actions necessary to achieve success, and the deployment of those actions to align the work of the organization. The successful facilities organization anticipates many factors in its strategic planning efforts: changing customer expectations, business and partnering opportunities, technological developments, institutional master plans, programmatic needs, evolving regulatory requirements, building organizational capacity, and societal expectations, among other criteria.

2.1 Describe the strategic plan that was developed for the facilities organization that includes the goals and objectives of the department.

There is no facilities strategic plan. The last time the campus developed a strategic plan was in 2011. Facilities had goals in that plan, which they reported on as part of the university strategic plan review process. That plan contained seven goals, which are/are not relevant to today’s organization. Given the changes in leadership, new construction, renovations, and deferred maintenance focus, there is a need for facilities leaders to develop a more intense and focused strategy on the things that matter most today. The campus facility operations and maintenance requirements for improving core-service levels, coupled to capital renewal/deferred maintenance, provide unmistakable guidance for facilities strategy development.

Recommendation 2A
With input from customers and in coordination with the vice chancellor for Administration and Finance, facilities should create and implement a short-term (3-5 years) strategic plan. Many of the right people are now in place to effectively begin this important process. The assistant vice chancellor for Facilities Management, a new vice chancellor for Administration and Finance, and other new key campus administrators lend stability and positive prospects for continuity in leadership and administration for the campus.

Clearly, resource constraints present limitations and good strategy development will consider what is realistic and take this constraint into account. Further, the strategy development will bring clarity to priorities and to the allocation and deployment of these limited resources.

Recommendation 2B
A good strategy will also help identify much needed service levels (quality) for maintenance, custodial, and grounds. The levels of service for each of these “core services” are determined in large part by the resources available: financial, human, and physical.
For example, determination of staffing levels for maintenance, custodial, and grounds is derived from a clear understanding of the quality of service that is possible with the resources provided and the efficiency and effectiveness of the use of this resource. The review team believes that DF would benefit greatly by establishing APPA service levels for these three core services based on resource availability and communicate these to the vice chancellor for Administration and Finance and the campus community.

2.2 Describe the process used to develop the strategic plan, and how participation from internal and external stakeholders was sought out, the process used to gain approval of the plan by the administration, and how it was communicated to internal and external stakeholders.

DF does not currently have an identified process for strategy development and strategy implementation. See Recommendation 2A above.

2.3 Describe the processes defined to ensure that strategic goals and key performance measures are understood by all and the extent to which those goals and measures are periodically reviewed.

The self-evaluation report stated that facilities periodically reports updates on assigned goals, departmental goals, and capital plans. Information on facilities spending and staff is provided annually to Sightlines, who collates the data to provide selected facility metrics that can be used for comparison with similar universities. The FMEP team did not see any evidence that the Sightlines reports are being used to compare UMass Boston funding and performance against mutually agreed to goals or as a benchmark with similar universities. Nor, are there KPIs for each goal/objective used to measure performance outcomes. Sightlines data on deferred maintenance was used to establish funding requests to the Commonwealth’s Division of Capital Asset Management and Maintenance (as part of a newly implemented critical repair process funded via a Higher Education Bond Bill, enacted in 2018). It is also used by the UMass Boston president’s office in its dealings with the campuses.

**Recommendation 2C**

Using the current campus goals promulgated by the chancellor, Sightlines data, and APPA service levels, DF and the vice chancellor for Administration and Finance should construct mutually agreed upon KPIs for maintenance, custodial, grounds, and utility operations. The KPIs should reflect current funding and service levels.

2.4 Describe how the institution’s and the facilities’ master plans incorporate and reflect principles of sustainability, total cost of ownership (TCO), and overall facilities renewal.
UMass Boston’s campus master plan is not the responsibility of DF. Facilities does actively participate in the process by providing staff input and has an active role in reviewing campus design standards, design and construction specifications, plan reviews, limited capital project construction inspection, and coordination. The campus master plan incorporates and reflects UMass Boston’s commitment to sustainability.

**Recommendation 2D**

The team recommends that the sustainability office is well placed within the responsibility of the campus planners office. We would recommend however that dotted-line responsibilities extend from planners office to those individuals embedded within other departments that have responsibility for implementing programs related to sustainability. For example, energy conservation, pesticide use, green cleaning chemicals, design standards, and utility planning to mention a few. This will enable coordination and single point reporting of progress to the campus leadership and community.

TCO is a long-term stewardship approach to the planning, design, and construction of campus facilities that requires a collaborative approach of all parties involved in the capital processes. It is based on a comprehensive perspective of the total financial and operational impacts that a facility will have on the institution from cradle-to-grave. This comprehensive perspective of building ownership is especially important in situations where over the years, faced with rising costs and budget constraints, institutions have tended to either underfund or fail to fund the operating costs of new facilities.

The Massachusetts State Legislature is funding a program for state universities to address the backlog of deferred maintenance. This program will provide facilities $29.7 million over five years to correct deferred maintenance. The funding for these projects is 56 percent from DCAMM and 44 percent from the university; thus DCAMM will provide $16.7 million in funding, which will be matched by $13.0 million from UMass Boston. The deferred maintenance projects to be funded have been identified and all proposed projects values fall within the contracting authority of UMass Boston.

**Recommendation 2E**

The review team did not find that a TCO concept has been adopted and practiced. It is recommended that the capital planning process be revised to specifically identify both the TCO and a funding source for those costs for all new construction and major renovation.

**Recommendation 2F**

DF needs to carefully examine its capability and capacity to manage all aspects of the deferred maintenance program, especially as it relates to contract administration and project management. An example of measures to be taken include:
• Identify all projected contract work for next three to five years.
• Construct timelines for each project execution.
• Make tentative assignments for each contract element, such as architect/engineer (AE) selection, design review, construction contract administration, inspection, commissioning, and warranty; all while performing customer liaison.
• Balance any gaps or oversubscription of talent.

2.5 Describe the current strategies and processes defined to ensure continuity of functions in the event of staff turnover, contractor failure, or other unanticipated disruptions.

DFM currently does not have a continuity of operations plan (COOP). DF believes that cross training coupled with handling numerous crises occasioned by an old and deficient physical plant has “honored the crisis response skills of almost all facilities leaders on the team.” While this may be true, the size of the organization is small and the loss of one or more key people at the top of the organization could easily cripple the organization. This is amplified by a generally held perception that the assistant vice chancellor DF tightly controls the organization. Further, the inability to hire as positions became vacant has resulted in accretion of duties by or reassignment of key people, which has exacerbated the management of the organization by a small group of people.

**Recommendation 2G**
*Given all the other issues that need to be addressed and the current hiring constraints, an organizational review of critical functions and associated positions may be burdensome at this time. However, as soon as reasonably possible DF should conduct a review of those positions considered “critical” to the operations and maintenance function and develop a plan to ensure a COOP for these functions.*

2.6 Describe the emergency response plans that are currently in place, and how they are communicated to facility employees and the campus community as required.

The department reported that the UMass Boston Office of Emergency Management (OEM) is responsible for the development of protocols, procedures, and communications related to campus-wide emergency response. DF provides staff and technical support as necessary and participates in campus trainings for disaster preparedness. Based on campus customer interviews, DF’s response and communication during utility interruptions, especially planned construction related outages, has been excellent.

**Recommendation 2H**
*The current leadership is to be commended for their ability to respond to, and correct, plant failures over the years. However, as indicated in criterion 2.5 above, the management of crises falls to a small number of people, whose*
absence could adversely impact the campus emergency response. See Recommendation 2E.

2.7 Describe the process and timing for a regular, periodic review of the facilities strategic plan.

Criterion 2.1 notes that there currently is no DF specific strategic plan and recommends the development of short-term strategic plan by the facilities organization.

Recommendation 2I

Annual reporting, in writing, of success in achieving those goals and objectives of the short-term strategic plan should be included as part of the plan implementation. The report should constitute an element of the annual performance review by the assistant vice chancellor DFM.

2.8 Describe the process used to develop the capital plan, addressing needs for renovation, major repairs, and/or upgrades.

The process used to develop the capital plan has recently changed and at the time of this report has been promulgated to the campus community; however, the basic elements of the process remain. The basic elements of the process are:

- Call goes out to deans and department heads
- Proposals from campus submitted
- Facilities provides initial feasibility and cost estimate
- Project vetted by the Office of Budget and Planning
- Projects prioritized and approved by senior leadership
- Presidential and board approval determined by trustee policy
- Chancellor approves and forwards to UMass Boston president

The process is orderly, thorough, and serves the campus well. Anticipated changes add additional discipline to the process.

Recommendation 2J

The rationale for the process changes, including how it will improve capital planning, and should be clearly communicated as part of the updated capital planning process.

2.9 Describe the processes utilized to ensure a budget is developed with input from multiple levels of staff utilizing historic expenditures, needs analyses, and with effective allocation of available resources to support the organization’s goals and objectives, while seeking new and innovative measures to leverage resources.
Currently, the DF budget development is based on historical expenditure with modifications made only to accommodate/offset labor costs, new construction, or specific capital renewal. There has been no attempt to calculate service levels based on funding, quantity, and type of space. Actual expenditures are collected and periodic reports are provided to unit managers to ensure operations are managed within budget.

**Recommendation 2K**

Recommend that UMass Boston DF employ a zero-based budget process. This can be accomplished by carefully articulating the service levels that can be achieved and the financial resources required to sustain services. This will form the basis for a critical discussion about budget resources with university administrators and their “tolerance for risk” of the core service levels. To a large extent, this tolerance will determine budget allocations and impact directly the quality of services that DF will be able to offer. It will also ensure that departmental leadership understands the true cost of its core services, and campus customers know what level of service can be expected.

2.10 Describe the process used to ensure that the capital planning process aligns itself with the campus master plan and the institution’s strategic plan, in terms of preferences and current and future priorities/initiatives.

The UMass Boston process carefully follows the basic elements enumerated in criterion 2.8 above, with numerous reviews performed by DF, the Office of Master Planning, University System Controller, and Budget Director, University of Massachusetts Building Authority, and Capital Projects for the Building Authority. These required reviews ensure the process aligns with the campus master plan and the institution’s strategic plan. Projects which fall below the funding line are captured for consideration the following year. It is a very thorough and disciplined process.

2.11 Describe the process used to ensure that representatives from operational units participate in the development of construction program planning and are active participants in the acceptance of completed projects and documents.

Operational involvement begins with the chancellor’s “call” for projects and continues through commissioning and inspection. The execution of major capital projects is the responsibility of the Division of Capital Asset Management and Maintenance (DCAMM) or the University of Massachusetts Building Authority (UMBA) depending on the project’s funding. The UMass Boston project manager is included in all elements of the process beginning with AE selection, various design reviews, construction manager (CM) selection, and ultimately construction award(s). During the final stages (punch list development, commissioning and inspection, and training), the UMass Boston project manager can call on the assistance of the maintenance personnel as necessary. Even though there were
reported scope problems expressed by a few customers, it would appear that customer input and feedback is very well managed.

Project turnover to DF’s maintenance staff is an area that should be reviewed, beginning in the bidding phase with the examination of contractor training requirements for staff. Because of limited maintenance staff and the high complexity of the many newly constructed buildings’ systems, staff involvement in turnover has been limited as, especially in the new ISC, key maintenance, electrical, and plumbing (MEP) maintenance tasks are outsourced.

**Recommendation 2L**

As noted above, resolution of the training issue will not be easy. The first two decisions that need to be made are: Does UMBA intend to operate and maintain the new buildings? And secondly, what service level for its facilities will UMass Boston implement? These are separate issues and need to be made consciously and based on careful financial analysis. Selecting a service level will determine the cost of the maintenance, whether performed in house or by contract.

2.12 Describe how leadership is building and expanding organizational capacity and capabilities.

Historical underfunding has precluded expanding organizational capacity and capabilities. The DF has focused on maintaining capacity in critical service areas and in effectively utilizing existing resources. The vice chancellor for Administration and Finance indicated an openness to considering additional facility resources based upon credible supporting documentation.

**Recommendation 2M**

It is recommended that DF continue to recognize the strategic importance of continuously building organizational capacity. This requires a continuous action plan to address talent management, engagement of the existing workforce, building the next generation, and continually finding ways for the divisions within the department to work better together. It is a stewardship responsibility to keep the organization relevant. Many of the recommendations offered in Section 5.0: Development and Management of Human Resources apply to this criterion as well.

2.13 Describe the practice used to ensure the workplace environment optimizes staff performance.

The DF’s deputy directors (management) and working supervisors (union staff) voice a strong commitment to creating a positive workplace environment that optimizes staff performance.
Yet, there are members of the organization who do not agree with this characterization of a
work environment that optimizes staff performance. Among the items most frequently
mentioned during the interview process were training, warehouse hours, access to job sites,
micromanagement, and position elimination. Many of the front-line workers believe that
recent actions by DF leadership are counterproductive.

While the validity of each of these may be questionable, the fact is that they are believed to
be true by many workers, which in and of itself is a problem.

Recommendation 2N
First determine the validity of the comments. Are they the result of a single
incident, which has become urban legend? Some issues may be easily corrected
and should be addressed immediately by either correcting the problem or
communicating the correct information.

Recommendation 2O
A decision must be made on whether to continue to perform building
maintenance requiring high levels of technical skill by contract or to hire
technicians with programming and control technology skills.

Recommendation 2P
More attention needs to be paid to communicating with staff. Even at the direct
report level we found people didn’t understand all the changes that are taking
place and why. The FMEP team sensed the management team did not have the
full support and trust of all maintenance and grounds staff. Frequent and direct
communication with all levels of facilities will improve this situation.
3.0 CUSTOMER FOCUS

Customer focus is a key component of effective facilities management. Various stakeholders (faculty, students, staff, and other administrative departments) must feel their needs are heard, understood, and acted upon.

Various tools must be in place to ensure customer communication, assess and assimilate what is said, and implement procedures to act on expressed needs. To be successful, a facility department ensures that its customers have an understanding of standards, tasks, roles, frequencies of services, etc.

3.1 Describe the process you use to identify customers.

It was evident that DF views all students, faculty, staff, and visitors as customers, and that they understand their role in supporting the university’s mission of teaching, research, and public service. Evidence was shown supporting the identification of key customers and awareness of the primary customer points of contact within each unit. Conversely, the customers do not have an understanding of the level of service, which can be provided by DF. The general comment from customers interviewed was that DF is underfunded and that is why the expectations are low.

Recommendation 3A
UMass Boston facilities develop service level agreements (SLA) with each of the major customers on campus. This process will ensure that customers understand the level of service that can be expected based upon the funding provided for facilities cleaning, maintenance, utilities, and grounds. With this information, the customers can either accept the level of service funded, lobby the vice chancellor for Administration and Finance for additional funding, or provided departmental funding for a higher level of service. Additionally, the development of a detailed service guide would complement the SLAs.

3.2 Describe how you identify the needs and expectations of both your internal and external customers and how you measure your success in meeting those expectations.

Internal
The review team’s discussions with the assistant vice chancellor’s direct reports, managers, and professional staff indicated a high degree of trust and support for the assistant vice chancellor. In general, maintenance personnel believe they could do a better job if they had ready access to worksites and maintenance/repair parts and adequate training on new systems. DF leaders are aware of these issues and are working to resolve the first two. As mentioned earlier, the decision on whether to maintain the newer high-tech systems by contract or in house will be the determining factor in training on these systems. The relationship between DF and the labor unions that represent facility employees appears to be respectful, without animus or confrontation. There was, however, no evidence that DF
conducts any type of employee satisfaction survey to assess employee well-being and identify potential areas of employee dissatisfaction. A formalized, periodic survey would allow DF leadership to identify trends and systemic issues affecting employee satisfaction and engagement. It also would allow staff to anonymously express how they feel about their jobs, when they might not be comfortable doing so in a face-to-face meeting.

External
The discussions that the review team had with primary customers revealed a sense of frustration and dissatisfaction with service levels, most notably in the areas of custodial services and maintenance operations. With few exceptions, the cleanliness and material condition of older buildings were regarded as marginally acceptable. It bears repeating that it was generally assumed that the basis for the poor facility condition is the result of underfunding facility requirements, not poor performance by DF staff.

There appear to be opportunities for improvement in customer communications. In general, customers interviewed indicated that using iService is not the method of choice for initiating work requests. Although there are other methods for customers to submit work orders via telephone or email and out of 14,500 work orders issued per year, about 8,500 are received from these three ways. Facilities customers have expressed that the best way to get things done is through their personal relationships with DF staff and back-channel communications. The customers interviewed have the perception that senior leadership is more (in some cases only) responsive to deans, department heads, and other senior administrators.

DF does not publish service level standards. Without publicized service level standards, it is very difficult to manage customer expectations or hold staff accountable. That said, for service level standards that are publicized, it is very important that they reasonably reflect the level of service that can be financially supported. See Recommendation 3A above.

Other than anecdotal feedback (complaints, hallway conversations, meetings, etc.), there doesn’t appear to be any systematic process in place to identify the needs/expectations of customers and obtain customer feedback. The annual Sightlines benchmarking process provides an annual campus-wide customer satisfaction survey, which can be customized to identify specific areas of customer concerns.

**Recommendation 3B**
*Meet with maintenance staff to clarify the issues raised relative to worksite access, material requisition, and training. Collaboratively develop a plan to allay or address their concerns, as appropriate.*

**Recommendation 3C**
*Analyze the cost of fully burdened in-house maintenance of new building versus contract maintenance. Based on the outcome of the analysis and other*
considerations, select an alternative. If the decision is to use in-house personnel, develop training program to ensure maintenance personnel have the necessary skills.

Recommendation 3D
Develop and administer a comprehensive annual employee survey to measure levels of employee engagement and employee satisfaction. The survey should be professionally designed to understand and draw out employee perceptions about the following key focus areas: department/workgroup leadership, strategic direction, adequacy of tools/equipment/processes, safety, internal communication, pay/benefits, department/workgroup cohesion, organizational climate, employee development, job satisfaction, and level of employee engagement. Employees are generally willing to participate in these surveys if they believe the results will be used by leaders to effect meaningful change. Therefore, it is imperative that facility leaders act on the survey results and communicate their ongoing efforts to the staff on a regular basis so they don’t lose credibility.

Recommendation 3E
When asked, customers indicated they did not know how to use the computerized work order system. Discussions with DF staff indicated that customers could be taught how to input work requests and check work status in less than one hour. It is recommended that training sessions be scheduled with all major users and they be encouraged to use the system.

Recommendation 3F
Utilize the Sightlines customer survey tool to identify areas of excellence and those that need to be improved. The survey should be designed to capture the customers’ overall perceptions about the quality of service provided by DF in each functional area. Quality of service is generally defined as how well the department meets customer expectations in terms of timeliness, quality of work, cost, and communication. The survey should also capture the relative importance of each functional area to your customers, which is extremely helpful when making decisions regarding the allocation of limited resources. In addition to the quality of service assessment, the survey should also capture a general assessment of building condition and cleanliness (appearance, lighting, general repair of interior spaces and furnishings, cleanliness of spaces and restrooms, availability of restroom supplies, etc.), building comfort (temperature, air quality, odors, noises, water quality, etc.), and condition of landscaping and grounds. Appropriate demographic information should be captured with this survey as well to ensure that the results can be meaningfully analyzed and interpreted.
At a minimum, the survey should capture the following demographic information: type of department (administrative, academic, auxiliary, etc.), number of years on campus, leadership level (executive, senior management, middle management, administrative support, etc.), primary building(s) managed/occupied, and site (if applicable).

Recommendation 3G
Using APPA and/or other nationally recognized productivity standards as a guide, objectively determine what level of service can realistically be achieved given current staffing and resourcing levels in each functional area. The APPA guidelines provide a clear description of what varying service levels provide, which can be used to communicate your service level to customers. Work with the vice chancellor of Administration and Finance and a representative customer group to specifically identify and prioritize what work will and will not get done. Basically, refine and clarify what services are provided free to them and which ones are available to purchase for a fee. Develop key performance metrics to ensure that results can be objectively evaluated. All these results should be regularly shared with facility managers and integrated into the performance evaluation process whenever possible.

3.3 Describe the process you use to establish the type of organizational structure and levels of service most likely required to meet customers’ needs and expectations and describe the communication processes you use to share those service levels and structure.

Generally, the department is structured and organized for their functional tasking. Turnover without backfilling vacancies and wages in the skilled trades especially present significant obstacles to attracting the full range of staff needed to achieve operational success. As a result, the organization struggles to achieve even the basic levels of service needed to meet customer expectations, and customers have largely come to expect/accept poor service levels as “normal.” As indicated above, there are no established levels of service negotiated, established, and communicated; therefore, current customer perceptions are purely subjective.

Recommendation 3H
Adopt Recommendations 3F and 3G above.

3.4 Describe the process that enables customers to obtain services and monitor progress or status. Describe the processes available to customers that encourage them to provide feedback on results and/or perceptions of quality and value.

Facilities services are most often obtained by submitting a service request email or phone to the Customer Service Center (CSC), who enters work requests into DF iService, where the
work is assigned to the responsible area (trade shops, custodial, grounds, etc.) for execution.

Customers have access to DF iService to input their work and check the status of their work orders, but prefer to contact the CSC or a contact within the department. Customers need to be encouraged to use the features available in the TMA CMMS.

*Recommendation 3I*
*Adopt Recommendation 3E above.*

3.5 **Describe how customer feedback is used to affect continuous improvement and innovation.**

The department may use informal feedback and use it to make changes to improve service. There is no formal mechanism for capturing customer feedback and using it to affect continuous improvement and innovation.

*Recommendation 3J*
*Adopt Recommendation 3F above.*

3.6 **Describe the practice used to evaluate the extent to which both the leadership of the organization and its front-line staff meet customer needs and expectations.**

DF generally takes an informal approach to evaluating the extent to which the leadership and front-line staff are meeting customer needs and expectations. Despite the lack of a formal approach, however, department leadership appears to have a good awareness of its weaknesses and what it needs to do to continue to improve. There are no KPIs in place to measure and demonstrate success and improvement.

*Recommendation 3K*
*Adopt Recommendations 3F and 3H above.*
4.0 ASSESSMENT AND INFORMATION ANALYSIS

Assessment and information analysis describes how your organization uses information and analyses to evaluate and drive performance improvements. Of interest are the types of tools used and how the tools are used to measure and enhance organizational performance.

Raw data is not very useful. Data must be refined to be beneficial. Data refinement is the process by which data become more important to the organization. The data refinement process includes the following steps: data → information → knowledge → wisdom. Data is the lowest common element collected. Information comes into existence when the data is organized and labeled so that it becomes important. Once data is collected and then becomes consistent, organized, or validated, it is transformed into knowledge. Knowledge helps individuals understand what is important and what must be known about a particular subject. The next step in the refinement process is wisdom, which comes from understanding the knowledge and then making judgments concerning it. Wisdom becomes information and knowledge-based management when the gathering of information and knowledge can lead to better decision making.

4.1 Describe the processes that are used to identify and collect key performance indicators/benchmarking for your most critical areas. Describe the key performance measures determined to be critical to your organization.

KPIs and benchmarking against peers provides valuable information to an organization, offering a comparison of one organization’s performance against others in their specific area of business. UMass Boston listed that they have begun to utilize Sightlines as a means to identify industry-wide performance indicators specific to higher education facilities throughout the country.

Performance indicators may be utilized by administrators to evaluate service and staffing level alignment with department delivery expectations. The comparison helps ensure the data generated by performance aligns with the organization’s delivery strategy. UMass Boston listed several areas where they are currently benchmarking with others, including: operating budget spending, planned maintenance spending, janitorial and maintenance staff spending/coverage, and capital/operating spending. The Sightlines FY17 ROPA+ and BPS results reinforced concerns that the age of the majority of the campus buildings (75% of total construction took place within the same five-year period in the early 1970s) are making prioritization of deferred maintenance a significant challenge.

The DF leadership spoke of gathering TMA CMMS data for the purpose of better managing workflow and improving customer service. The work order center sends work orders (approximately 10,000 work orders generated/year) to the appropriate shop and supervisors receive weekly to biweekly reports related to status, aging, etc. Approximately 50 percent of requested work that finds its way through the TMA process is generated via
the online request process found on the DF website. No formal process exists to address excessive backlog or aging. Leadership also indicated an interest in reinstituting Survey Monkey to measure customer satisfaction.

**Recommendation 4A**

UMass Boston is encouraged to build upon the best practices it has in place through its partnership with Sightlines. Continue to work with Sightlines to collect and manage data, as well as to create routine processes (both formally and informally) to report findings, conclusions, and recommendations to campus leadership.

DF is advised to take greater advantage of TMA as a management tool. Although it appears that the features of TMA are being put to use to collect raw data, generate work orders, and assign them out for performance of the work, and there are indications that reports are being generated to track status and aging, it is advisable to more fully utilize the TMA system capabilities to utilize the system as a management tool. This, in turn, will provide a mechanism for better tracking of work and, most importantly, customer response times, timely completion, and customer satisfaction.

Greater promotion of the online TMA request tool (for nonemergency work) is strongly advised in order to increase awareness of the online tool to the campus community and improve the reliability of the process overall. Success of the work order administration program is heavily dependent on reliable data coming into the system; also, continued dependence on other means of accepting requests (phone call, person to person, email, etc.) decreases the stability of the response process.

Develop workflow plans for key processes that are followed by DF’s shops. Establish the KPIs that reflect compliance with work processes and strategic goals. Remember that KPIs must be understood by those who are using them. Failure to provide adequate systems and training leads to data gaps, misinformation, and miscommunication. Training must go beyond the classroom and include ‘on the shop floor” and “in the field” coaching. Make sure that users see the benefit of capturing and reporting correct, timely information. And NEVER use information as a “hammer” or you will receive misinformation.

4.2 Describe the process that is used to incorporate the results of key performance metrics into a systematic evaluation that supports improvement of key processes, decision making and innovation, and achieving continuous improvement within the facilities departments. Include discussions on ROI calculations.
Although data collection was evidenced within facilities operations (TMA, Sightlines, financial, etc.), there was little information provided that showed how key performance metrics were used to improve departmental processes and decision making. As mentioned earlier, there is significant data generated by units within UMass Boston; however, there is little evidence that the information is disseminated across the department, administration, or other key stakeholders. Some systems also appeared to be underutilized. The DF leadership informed us of a FY19 goal to collect data related to building equipment and systems in all buildings that will be utilized to establish information about the labor and materials needed to provide appropriate preventive maintenance. This is the type of analytical exercise that is critical for the department to continue to utilize in discussions about resources needed to get the job done. However, the team did not see evidence of this in practice at this time.

As mentioned earlier, building upon the existing TMA CMMS framework to better utilize the system capabilities is likely to improve customer service, staff satisfaction, and overall delivery of services. Additionally, utilizing Sightlines data as a continuous improvement tool will bring departmental focus to the most impactful opportunities to improve operations overall. It should be noted that there was routine reminder of budget constraints and significant understaffing expressed to the team throughout our interviews. Lack of funding availability was often mentioned as an operational barrier in many ways including performance improvement. However, the team feels that there are methodologies to improve performance at the current funding level, as identified throughout the report.

**Recommendation 4B**

DF has not yet performed the fundamental work to align all activities needed to determine KPIs that are the best indicators of desired departmental performance.

KPI development should be focused and linked to facilities and campus strategic objectives. There is a good deal of foundational work on process development that needs to occur. The general process is to:

- develop goals through a strategic planning effort,
- determine metrics needed to track successful attainment of the goals,
- put in place the processes that will create the underlying data from which the metrics will be calculated, and
- rigorously follow (and continuously improve) processes to collect data (i.e., CMMS implementation).

4.3 Describe the process that is used to ensure that performance measures being used are current and valid and how these align with those of peer institutions.

UMass Boston is still in a developmental stage for identifying KPIs and benchmarking. A recent positive step has been the work DF has done with Sightlines on performance
measures across its units. The university is actively working with Sightlines on its performance measures across its units.

Utilizing and expanding university metrics with Sightlines demonstrates its desire to stay current while comparing its performance with other peer institutions. This comparison is also an opportunity to train staff on the importance of the performance indicators as it relates to the entire UMass Boston Department.

Recommendation 4C
UMass Boston currently embraces Sightlines and should continue down this path in an effort to improve departmental performance and stakeholder relationships. As well, the same focus should be provided related to other services provided by DF, especially CMMS data management. We encourage the DF to expand the availability of information with its stakeholders as appropriate to their needs.

4.4 Describe the procedures used to communicate the results of the performance indicators and benchmarking to key campus decision makers and other interested stakeholders (internal and external) for the purpose of education, budgeting, and engagement. Describe the process used to validate the effectiveness of that communication process.

DF has described that they have “relied on information gleaned from this performance review to be communicated to campus senior management as determined appropriate by the vice chancellor for Administration and Finance.”

There seem to be undocumented processes for making and communicating campus decisions regarding long-range master plans, future capital projects, and operations and maintenance needs. A campus space committee, which had once been formal and staffed with key campus stakeholders, has been functioning less formally in the past couple years due (at least in part) to perceived lack of effectiveness. However, facility requests that involve or impact space are still continuing to be addressed by the individual committee members in the absence of the committee.

There is a $155.5 million substructure project to fund the demolition of the Science Center, pool, and plaza that will finally address some of the deficiencies with the original campus construction. Optimism was noted related to the future capital and major deferred improvements as UMass Boston was recently granted state approval and autonomy to self-manage at a larger project budget level (up to $10 million). This program will provide the DF with $29.7 million over the next five years to correct deferred maintenance. The funding for these projects is 56 percent from DCAMM and 44 percent from the university, thus DCAMM will provide $16.7 million in funding, which will be matched by $13 million from UMass Boston. The support required to successfully execute this plan may require
additional resources. The facilities project team is currently approaching this increased workload as a challenge they’re willing and able to take on.

**Recommendation 4D**

Consider expanding the use of technology to communicate on several fronts, including enhanced use of project management tools such as Microsoft Project (or at least comparable project software) to track, manage, and report to campus leadership the status of project workload. As was mentioned previously, DF should consider expanding the use of technology to communicate to a broader campus audience the results of Sightlines when possible. Consideration should be given to developing a KPI dashboard and a “balanced scorecard” framework. However, this should not be considered a formal recommendation at this time since other activities need to occur first.

4.5 Describe the process used to ensure that hardware and software systems are effective, user-friendly, secure, reliable, and up to date. Include a description of the business continuity plan describing actions to be taken in the event of an emergency or other out-of-normal event.

Ensuring that the software programs and hardware systems they perform on are up to date, user-friendly, and not plagued with breakdowns is a prime contributor to worker efficiency, data collection, and flow of information. As such, it is critical to a modern facilities organization that these systems are kept in peak performance. This is accomplished by making certain that:

- software systems are kept up to the latest revisions,
- software systems are continually evaluated against the needs of the department,
- workers are well trained in the use of applicable software,
- the file servers, laptops, desktops, handhelds, etc., are all capable of meeting software and reliability needs, and
- a properly trained staff of IT professionals is in place to monitor the monitor the above conditions and to act when necessary to make changes to the IT infrastructure. This is the business continuity plan.

The review team notes that the above programs are generally supported for the DF by the Campus IT Department; however, the team also observed that, although DF leadership is described as very supportive of the role of IT staff in supporting the DF IT infrastructure, union staff is not as supportive. It was noted that DF workers still don’t recognize the value and significance of growing IT needs supporting DF operations.

The team also observed that:

- IT support staff interacts with the building management system (BMS) routinely.
- The energy management system (EMS) office may require essential upgrades for purposes of functionality and reliability.
• Financial support for IT infrastructure and systems may be limited.
• There may lack a clear communication path for addressing of critical IT issues.

DF leadership indicated there are plans to transfer the work management system database server to the IT division data center for purposes of better reliability and business continuity.

Recommendation 4E

*It is strongly suggested that a comprehensive, collaborative review be performed to fully assess condition, performance, maintenance, and support of the DF technology backbone, systems, and support mechanisms. The review team should, at a minimum, include key representatives from the DF and IT staff whether driven entirely with in-house staff or relying on an outside IT consultant to perform the assessment. The outcomes from the review should lead to, at a minimum:*

• Identification of short-term priorities requiring relatively immediate action based on current status.
• A long-term IT infrastructure, systems and support plan for the DF.
• Space considerations within the DF to effectively address current and future IT needs.
• Consideration of the DF staffing gaps needing addressing within the department (e.g., low voltage control specialist) to better position the department for growing IT reliance.
• A business continuity plan reflective of the outcomes from the collaborative review/assessment.
5.0 DEVELOPMENT AND MANAGEMENT OF HUMAN RESOURCES

An organization’s success depends increasingly on the knowledge, skills, innovative creativity, and motivation of its employees and partners. This section addresses the ways in which the facilities organization ensures an environment of continued learning through communication, policies, recognition, training, professional development opportunities, and other.

Management theories, elegant organizational charts, and well-crafted strategic plans are useful for any organization, but they alone do not guarantee a successful organization. Only people doing their best work led by the best leaders guarantees success. Thus, the criteria utilized for this part of the report focuses on the workplace and the workforce.

The review team understands that the DF had an HR professional on staff at one time, but that person resigned and DF did not backfill because of budgetary constraints. DF has not had a dedicated HR professional on staff since that time. The budget challenges with the university have led to reductions in workforce and positions remaining open for extended periods of time. Attrition via retirements and a high level of turnover has had detrimental effects on staff morale and overall productivity.

The overall menu of HR functions including processes and procedures for job descriptions, performance evaluations, hiring practices, employee orientation, and a safe workplace may have at one time been effectively managed and implemented within the DF. However, in its current state, the department needs significant organization due in part to the lack of crucial human capital initiatives that include:

- Employee Recognition
- Employee Career Pathway
- Staffing Analysis
- Employee Communication
- Succession Planning

5.1 Describe the process used by the department to identify and develop position responsibilities, determine competencies required, and develop job descriptions to ensure these all align with work unit and department roles and responsibilities and that they are well understood by all members of the staff.

The self-evaluation states: “all staff were interviewed in 2009 to ascertain actual job functions…as a result of that two-year process with colleagues in HR, all job descriptions for trade/maintenance staff were updated…” This process was a collaborative effort between DF, HR, and the bargaining unit employees to ensure their viewpoints were considered and incorporated into the job descriptions as needed.
This update resulted in several key trade groups receiving upgrades and pay raises, which was acknowledged by line staff in our interviews. The lack of a more recent formal job review is something that should be remedied. Given the number of staffing changes over recent years and the transition of many duties due to budget cuts, it is advisable to revisit position descriptions and their associated duties and responsibilities.

Additionally, the review team feels that the development of a needs assessment tool for determining the proper skill mix of the DF is equally important. The complexity of the new Integrated Science Complex has resulted in higher skilled services being provided by contractors.

**Recommendation 5A**

*People are the most important resource of an institution and this holds true for DF. Job descriptions, needs assessments, training, and advancement opportunities should be connected to a more holistic program that is tracked with specific success factors.*

*It is recommended that a skills assessment program be developed that will enable the department to assess the training needs of the workforce and to plan training for future development. Various approaches to determining this are available, and APPA has resources in place to assist, as do many peer institutions.*

**Recommendation 5B**

*In talking with HR staff, it was acknowledged that most employees who have been at UMass Boston more than a few years probably do not have an up-to-date job description. In support of the above referenced skills assessment, the fundamental information contained in an accurate job description is vital to most HR processes. It is recommended that a thorough review of DF job descriptions occurs and that gaps in information are addressed. This process should be collaborative with the bargaining unit employees to ensure their viewpoints are considered and incorporated into the job descriptions as needed.*

5.2 Describe employee recognition programs and practices and how they are used to encourage, recognize, and reward improved performance.

The review team could find no evidence of a formal recognition program, which was validated by in-line staff and HR interviews. Although an informal program is referenced in the self-evaluation, the overall impression of staff is that recognition is severely lacking.

The successful management of a moderate, nonmonetary recognition program has been proven to boost employee morale and improve engagement in difficult employment environments. When coupled with an effective continuous improvement program (see
Section 4.0: Assessment and Information Analysis) and an employee engagement survey, recognition programs are valuable tools for management.

Recommendation 5C

In conjunction with establishing a climate survey or employee engagement survey (see Recommendation 5H), management is encouraged to actively look for more ways to recognize employees for their work. There are numerous programs identified by industry professionals that can and should be considered, particularly those costing little to nothing to implement. This has been proven time and again for improvements in employee productivity.

5.3 Describe your process for setting individual goals and how they promote innovation in the department.

The review team found no evidence of a formal job assessment program or performance management processes. During interviews we heard annual reviews are not required and sparsely done. It was not clear that there is an established program that targets personal or group innovation. This question was not answered on the self-assessment.

Goal setting and periodic reviews are a basic requirement of any effective employee management program. The establishment of a formal employee assessment and review program should be a priority for facilities management leadership. There are many commonly used forms and HR appraisal programs that can help facilitate the establishment and ongoing support of such a program.

Recommendation 5D

Goals for individuals, including training and career development, are intended to be set through the annual performance review process. DF leadership should develop and implement a basic annual review process, in collaboration with line staff and supervisors. The benefits of this are numerous, including improved communication, clear expectations of work performance, identification of skills gaps and training requirements, and improved engagement of the workforce.

It is further recommended that DF increase its capability to work with staff in all areas of training, education, and development. The focus should first include an assessment of individual skills and abilities needed to keep abreast and current for individual job requirements, followed by an assessment of needs for leadership/management development. APPA programs such as the Institute for Facilities Management, the Supervisor’s Toolkit, and the Leadership Academy should be considered along with participation in regional and international APPA association functions.
When it comes to promoting innovation in the workplace, showing the employees that management and the university care about their career development is vital to their buy-in and engagement.

5.4 Describe how the DF fosters an organizational culture that rewards cooperation, communication, and skill sharing across work units.

From the observations and interactions of the review team, we feel that DF, and to a larger extent UMass Boston, is lacking a culture that supports cooperation and teamwork. Individual contributors were recognized in interviews as being the “go-to person” or for being willing to help in any situation. However, the culture of DF does not currently foster open communication and skill sharing.

Keep in mind the review team found that no policies seem to exist that would mandate an organization that rewards cooperation, communication, and skill sharing across work units.

HR is currently working to develop and administer an organizational climate survey. In recognizing morale is low on campus, this is a positive step in helping identify areas of need in order to dedicate resources where they will do the most good.

Given the relatively small size of the staff and the need for backup of critical functions, cross training for primary and secondary responsibilities may be a means of promoting skills sharing and team responsibility for coverage of critical duties. The FMEP team does note that efforts were made during the utility corridor project. Sixty utility cutovers over the past 18 months were made; there was a significant effort to ensure that each cutover was made without difficulty.

This confirms that close coordination is doable. Developing this coordinating and crossover capability in day-to-day operations could help improve communication between work units as well help foster ongoing collaboration and cooperation.

**Recommendation 5E**

DF leadership should establish and support opportunities for informal employee cooperation and communication. Include these as expectations in employee goal setting and annual performance management. In addition, utilize cross training on critical staff functions to promote skills sharing and communication. This will help promote a team approach to coverage of critical duties. Finally, utilize the strategic plan for DF to help align and prioritize functions so staff has a common vision of importance (see Recommendation 2A).

5.5 Describe how work performance and attendance expectations are reviewed and the process used to communicate such information to employees. Work performance and
attendance tracking measures are in place, are understood by staff members, and are used by supervisors to assess performance.

This question was not answered on the self-evaluation.

The review team’s interviews did not uncover any major issues with work performance or attendance. However, it was noted that how this is managed varies among work units and is not consistent. HR staff felt there was a delay in working with DF staff on performance and attendance issues, as well as a sense of frustration in DF’s following through on their part. This could not be substantiated by the review team but should be explored further by DF leadership.

The lack of an annual performance review process limits what can be done to address work performance and attendance. There was no evidence to suggest that reports are generated to track employee attendance. There does not seem to be a review of attendance or overtime usage. These are industry standard, critically important KPIs for tracking human factors and productivity.

**Recommendation 5F**

*It is recommended that DF leadership establish clear protocols and procedures for tracking attendance. In conjunction with annual performance management processes, keep and establish relevant KPIs for tracking overall performance and continuous improvement.*

5.6 Describe how career development needs are assessed, provided, and monitored.

The self-assessment states: “In the various collective bargaining agreements, UMass Boston offers employees the opportunity to take courses offered on campus. Within the department, employees are provided release time to attend sessions needed to obtain CEUs for the maintenance of various licenses or to attend conferences/programs that will allow for the acquisition of new skills that can benefit departmental operations.”

The job description updates and licensing efforts undertaken in 2009 showed a strong desire to improve career development within DF. How well that has been fostered or maintained since is unclear. There was no evidence that a formal system for identifying and recording development needs or training accomplishments exists. Many employees interviewed indicated a dire need for training and opportunities for career development.

Overall, the review team feels there are inadequate processes in place for the purpose of ensuring a well-trained and competent workforce that is available to meet the needs of the DF and the university. Succession planning appears to be absent as well.
Recommendation 5G

It is recommended that DF develop a comprehensive training program for supervisory and leadership training, staff and trades technical training, and safety and administrative functions, along with a professional development program for professional staff. Furthermore, the department should consider strategies to engage the front-line staff in the development of such a program and promote their participation in any program that is developed. Classroom, online, offsite, and on-the-job training (OJT) instruction methods should be considered. When incorporated into a computerized management tracking and reporting system, the program can assure the presence of an internal pipeline of talent for the department into the future.

Typically, the assessment, provisions, and conduct of career development needs of individuals are not strong skill sets for DF supervisors. Goals for individuals are intended to be set through the annual performance review process (see Recommendation 5D).

Additional action is needed to make a management commitment to an investment in the growth and development of the DF staff through training, seminars, professional involvement, career ladders, and other means that unlock human potential. The recognition for growth and development of the staff should be given a higher priority and must be supported with financial resources as well as a philosophy that supports employee development. Given the circumstances of geographic location, local area employment competition, and other economic realities, it makes sense that any investment in preparing people to become more productive and effective will produce an attractive return on investment.

5.7 Describe the processes used by the organization, both at the institutional and departmental level, to promote organizational diversity both in its workforce and leadership.

Throughout the review team’s interviews and evaluation of the data provided by DF, HR, and the Office of Inclusion, Diversity and Equity (OIDE), it was clear that diversity was being valued and promoted, DF leadership participates on Finance and Administration and university committees and has a path forward to maintain progress. However, the review team was not given any data showing a formalized process to ensure ongoing success of the methods described.

Recommendation 5H

DF and HR have established hiring practices that are consistent with UMass principles and guidelines. DF should work to develop formal written guidelines that document their approach to hiring and maintaining a diverse workforce.
Although there was no data on diversity shared with the review team, it is apparent from our interactions with many, though not all, members of the DF community, that the DF values a diverse and respectful workplace.

5.8 **Describe how the organization utilizes both formal and informal assessment methods and measures to determine employee well-being, employee satisfaction, and motivation.**

This question was not answered on the self-evaluation. It is apparent from the review team’s interviews that no formal system for identifying and recording employee well-being and satisfaction exists. The informal methodologies uncovered in interviews lack uniformity and are inadequate for the purpose of ensuring that management receives unbiased feedback in order to assess satisfaction levels. “Open door” policies or meetings with assistant vice chancellors and directors are not effective ways to achieve unfettered feedback. Clearly an employee survey that can be anonymously filled out, covering the areas of employee concerns should be considered.

**Recommendation 5I**

It is recommended that DF conduct an employee engagement/satisfaction survey and then develop and implement an action plan targeting those dimensions viewed to be most important to improving job satisfaction.

5.9 **Describe the approaches used to ensure the effectiveness of recruitment programs to provide well-qualified staff and to retain high performers.**

The turnover of employees within DF has fluctuated based on the difficulty to recruit and the restrictions of the current Massachusetts state step ranking system. The job description overhaul in 2009 provided some flexibility and relief in limited areas, but a large percentage of job classifications remain an issue. As referenced in the self-evaluation: “The grade/step system limits the department’s ability to craft promotional opportunities or other financial incentives to retain staff.”

During interviews, the review team got feedback that recruitment and retention in DF is “completely broken.” Morale surrounding this issue is very low and the line staff doesn’t see a solution for it on the horizon, given the current budget woes. That does not mean leadership is not in the process of rebuilding capabilities to successfully recruit and retain top performers, just that any efforts that are currently being taken have not been adequately communicated across the organization. In this vacuum, there is a lack of information where people are left to make their own assumptions.

Additional feedback was given that the HR process of hiring is burdensome, with too many approvals needed and delays experienced, and that it takes a long time to hire anyone in DF. This undoubtedly contributes to the perception expressed above.
Recommendation 5J
Long-standing job openings unnecessarily burden existing employees and strain valuable departmental resources. When it comes time to hire, the pressure of making the right selection becomes even heavier. Errors in employee selection are costly and time consuming to correct, and managers would do well to avoid these mistakes. DF leadership should work closely with the HR office to identify barriers and strengthen the hiring process, thus ensuring that appropriate hires are made to fill open positions.

The use of performance reviews during any new employee’s probationary period is an effective tool for gauging the effectiveness and appropriateness of new hires. The review team encourages the department to use this tool uniformly in accordance with the collective bargaining agreements among all units.

Recommendation 5K
Develop a succession plan for key future vacancies.

5.10 Describe the processes used by both the department and the institution for orienting new employees so they can successfully fulfill their responsibilities.

As is the case with many universities, it appears to the review team that onboarding is decentralized and not consistently performed. Primary orientation is done at the university level, which is the typical best practice. There should be a follow-up orientation within DF to familiarize new employees with the workplace, processes, and culture of the department. The review team saw no evidence of this taking place in DF.

Examples of topics that should be covered include safety training, how to fill out a timecard, how to order parts, who is who within the department, etc. New employees should be given a checklist of items that they must ensure are completed with their supervisor. Many examples of excellent new employee orientation programs are available from which to form your own template, including within the APPAInfo Discussion list (see http://appa.org/discussionlists/index.cfm).

Recommendation 5L
A new employee orientation effectively integrates the new employee into the organization and assists with retention, motivation, and job satisfaction and can quickly enable everyone to become a contributing member of the work team. Keeping in mind that you never get a second chance to make a first impression, managers should make sure that new hires feel welcomed, valued, and prepared for what lies ahead during the new employee orientation process.

The evaluation team suggests an orientation program be developed and deployed for the department. The program should include a single day central university
orientation followed by a detailed local orientation that focuses on facilities and specifics related to the department that the individual will be working in. Lastly, the new employee should be given a checklist of items that they must ensure are completed with their supervisor. We believe this would enhance the onboarding experience for new employees and reinforce the message that DF is a great place to work.

5.11 Describe the processes used to determine appropriate staffing levels, based on identified and approved operational performance standard(s).

There have been two studies complete to determine appropriate staffing levels and skills sets in the DF: 1) the WSP-Flack & Kurtz 2013-2014 Maintenance Costs Assessment, and 2) the July 2014, E. Catlin Donnelly & Associates Staffing Assessment. The first sought to provide good information on how the new ISC building should be staffed and what it would cost to maintain, though few if any recommendations were accepted, funded, and implemented. The Donnelly report was quite thorough in its approach; however, budgetary constraints resulted in few, if any, recommendations being accepted, funded and implemented.

At this time there is nothing to suggest that a formal system for determining the appropriate staffing levels and skill sets are in place today. The levels have been determined as a result of budget considerations rather than actual staffing needs, a true back-door approach. Historical data, empirical analysis, and needs assessments are the main methods for determining proper staffing levels. These tools are used with a defined scope of work and industry productivity standards to determine the appropriate mix and number of workers. The DF leadership understood this, requested these studies, and participated enthusiastically but has been unable to implement because of budgetary constraints.

**Recommendation 5M**

The use of APPA staffing standards as a benchmark for determining DF labor levels is an excellent start to workforce planning. However, as a maintenance organization’s skill levels and knowledge of asset needs deepen (for example, Integrated Science Complex), the analysis of workforce composition and staffing levels should become based on the tasks that need to be performed in the maintenance and repair of the campus assets. Gaps in workforce skills versus the needs of maintenance are then filled using contracted labor or an effort is made build the skill in house. The CMMS is an excellent tool for facilitating this analysis.

The review team recommends that DF continue this type of analysis. It is noted that we were informed that this is a current effort begun after the review team departed the site. The CMMS history database and preventive maintenance (PM)
specifications can be used to calculate PM needs. Corrective repairs can also be extrapolated from the database. The benefit of performing this analysis is twofold: 1) a better tuned workforce for the mission at hand, and 2) if the CMMS cannot provide the data needed to perform the analysis, it will reveal deficiencies in the use of the CMMS that need to be rectified.

Likewise, divisions that do not readily have access to data from APPA related to their functions, such as project management, should benchmark staffing levels from more appropriate sources such as The Association of University Architects.

5.12 Describe how the department manages and organizes its workforce to accomplish its advertised mission and objectives.

Some of the recommendations from the 2014 Staffing Assessment were implemented to streamline services and consolidate responsibilities into areas of strength within the DF leadership team. It is clear to the review team that the DF team delivers quality service to the university in many respects due purely to the dedication of the employees and their willingness to do whatever is necessary to meet the needs of the university. This approach is commendable; however, it will not improve critical response to maintenance needs or provide the stability that the customers are seeking.

The structure of the traditional shops such as HVAC, electrical, plumbing, and carpentry is appropriate for an organization this size. However, staffing levels within these teams seem very lean for a campus this size. Serious analysis needs to be performed to determine appropriate staffing levels.

The relationship with the HR office should be strengthened, and clear service level agreements should be developed to help identify obstacles and roadblocks to effective recruitment and retention.

*Recommendation 5N*

Please review all other recommendations in this section, as they apply equally to this criterion. The addition of a focused deputy director of Research and Teaching Laboratories is a positive example of proactive workforce management. Similar focus and efforts within the other DF units should be considered where appropriate.

5.13 Describe how the department identifies needs for improvement and measures progress in the areas of regulatory requirements, health, safety, emergency preparedness, and security. Describe the processes used to train employees in these categories and how the effectiveness of those training programs is ascertained.
This question was not answered on the self-evaluation. Although many of the functions such as safety, regulatory, and emergency preparedness are provided by other departments, there should be clear points of contact to interface with DF. There must be clear lines of responsibility for deployment within DF. Safety training should occur routinely at the shop level to establish a culture of safety. Business continuity planning is essential to ongoing operations, as experienced in Hurricane Sandy. It is essential within DF that each employee understands their role in implementing these plans.

**Recommendation 5O**

Comprehensive COOPs should be developed and tested regularly with table top or simulated event exercises.

**Recommendation 5P**

The department’s safety program is an excellent area to begin to learn and test continuous improvement techniques. A properly formulated program will have:

- A safety manual (instructions) and a curriculum based on those instructions for training
- A suggestion system with an evaluation committee to triage recommendations for action or not
- An implementation committee charged with implementing approved safety recommendations
- A committee to evaluate injury data to make recommendations on improvements to plant conditions or training, which have the potential to lead to reductions in accidents
- Ad hoc committees as needed, i.e., arc flash safety or lock out/tag out (LOTO), and others as needed
- Mock safety inspections of shops and facilities
- Finally, a steering committee comprised of senior stakeholder representatives to monitor the efforts of the safety program and make changes in course as needed

**Recommendation 5Q**

It is recommended that a disciplined schedule of life-safety and safety training be developed and that this training be determined by management to be mandatory. Attendance at training sessions should be recorded and documented in the work management system. This is especially important for required training on such topics as asbestos, lock-out/tag-out procedures, confined spaces, and other hazardous materials such as lead and PCBs, laboratory safety, and ongoing needs for equipment operation safety.
6.0 PROCESS MANAGEMENT

Effective process management addresses how the facilities organization manages key product and service design, delivery processes, and continuous improvement. Process management includes various systems or “core competencies,” such as work management, performance standards, estimating systems, planning, design, and construction of new or renovated facilities, space management, event management, and other key processes that affect facility functions.

How processes are developed and adhered to in day-to-day operations ultimately defines how successfully an FM team manages its workflow and meets its objectives. The best facilities management teams find innovative ways to foster and encourage communication and collaboration between internal units that is manifest in their processes. As a result, ongoing consistency and cohesion leads to increased coordination of services between them and better customer service.

Processes and procedures must be clear and concise, and take into consideration how they may affect other units within the department. DF that does not take the time to define how work should flow produces inconsistent results and often drops the ball in coordinating efforts. The result is inconsistent service delivery.

6.1 It is critical that a facilities organization understand its “core competencies” and how they relate to the mission, environment, and strategic goals in areas of:

- Administration
- Operations and Maintenance
- Planning, Design, and Construction
- Utilities and Energy

Describe:

- How the core competencies described in criterion 6.1 contribute to the delivery of customer value, organization success, and stewardship to your organization.
- The facilities performance indicators and related measures for each core competency.
- How the core competencies support compliance and coordination with the agencies having jurisdiction.

In the absence of a departmental strategic plan or the use of facility performance indicators (FPIs) that would outline specific goals and competencies, it is difficult to assess this area.

Below are listed and evaluated the core processes for each area. Recommendations follow the evaluations of each area.
Key Administrative Core Competencies/Processes

There are several critical processes related to the administration area. In DF these processes govern how resources are distributed and accounted. The resources can be dollars, personnel, or campus physical information. The individual processes are listed below.

Master Planning. The campus is engaged in implementing its campus master plan and utility master plans. These plans have existed in the recent past and have largely been followed, for example, in the recently $250 million utility corridor and roadway replacement project. They are now developed under the auspices of the office of the vice chancellor for Administration and Finance. Business continuity and emergency plans are similarly developed and also in place. DF participates in the development and execution of all of these plans and, in fact, the DF leadership requested that the utility master plan would need to be undertaken if the campus master plan was to be implemented.

Strategic Business Planning. DF does not have a strategic business planning process to set goals and objectives specific to the facilities arena, although it does self-report that DF aligns with the university plan which is in place. See Section 2.0: Facilities Strategic Operational Planning.

Capital Projects Budgets. The reviews of DF performance in using the procedures for project management of cost accounting were not good. This may be due to poor training on the part of the department or that procedures are not well administered. Additionally, improper use of the system of accounts for assigning expenses, change orders, poor estimates, and similar issues is taking place. Reporting is then suspect. See Recommendation 6A.

General O&M Budget. The ledger system used by the university is upgraded and comprehensive. Budget information is readily available to operating units through the Summit tracking system. The system is set up to report expenses at the assistant vice chancellor facilities management level for general fund and project funds. The system requires the DF to set individual department IDs and to follow the system of accounts when identifying expenses. While examining the system, it appears the department IDs were not set up and information is not being properly tagged in the system of accounts. Reporting is then suspect. Additionally, it does not appear that information reports are being generated for operating units since the department IDs are not in place. See Recommendation 6A.

Inventory Management and Procurement Interfaces. Another area of concern is material supply; how needed materials meet up with the maintenance worker. This process is currently in disarray, for example long lead times, buying controls requiring items that cost as little as $100 requiring assistant vice chancellor approval, and POs taking long intervals for issuance. The area lacks an inventory manager and is reported to be transitioning to just-in-time delivery system. The review team did not see evidence that this effort is moving at all. Correcting this area, along with the CMMS recommendation below, will
greatly enhance workforce productivity. This recommendation requires a high level priority. See Recommendation 6B.

**Workforce Position Control, Including: Hiring, Dismissal, Compensation Management, Labor Relations, and HR Interfaces.** This area is reported as taking far too long to accomplish most, if not all functions. A new set of job descriptions was developed for several skilled trades positions but even this success was reported to be incomplete and took too long. HR is reportedly working on this issue as part of their improvement efforts.

**Workforce Development and Training.** Other than some online regulatory safety and diversity training, there does not exist a training program for leadership and technical skills evident in the department.

**Planning Information and Analysis.** Activities in this area include providing information to the master planning process and the capital planning process.

**Space Management.** The university had lacked a comprehensive space management process until recently. The space management process is now being developed and managed through the office of director of Master Planning. It is too early for us to judge the effectiveness of this process, but it is encouraging for the future since comments received from stakeholders were not complimentary about the prior process.

**Operations and Maintenance**

There are several critical processes related to the operations and maintenance area. In DF these process govern how data is collected and how work flows through the system. The resources can be dollars, personnel, or campus physical information. The individual processes are listed below.

**Work Order Process CMMS.** The utilization of the TMA CMMS work management system provides the framework for creating metrics and tracking improvements, but as noted previously in Section 4.0: Assessment and Information Analysis, it is underutilized for these purposes. The flow of work requests from cradle to grave needs to be formalized and evaluated to determine potential for efficiency improvements. There are several gaps in the process that need long-term solutions to prevent future issues. Work verification and follow-up with customers is decentralized and rather vague. Supervisors are relying on a largely paper driven shadow process to track status of work orders. The only information given to supervisors is a list of open work orders, which is not generated to show backlog, but rather the failure to close out work orders.

How DF chooses to utilize the TMA CMMS and all of its available features in the long run will ultimately drive changes to the workflow process. Priority codes are not used even though they exist. There is no uniform process for using the system. Different supervisors use or don’t use the system as they see fit. There is great potential here that needs the
discipline of change management to get up and running. Together with the inventory system mentioned above, these areas can have the greatest effort on workforce performance.

Two additional areas related to the CMMS are the development of the work order flow process maps. How work orders are managed, what data needs to be collected, and how performance is reported are all a part of work management. Work management is disjointed in the department. Some areas are following procedures; other areas are not. Consistency and repeatability of results is the cornerstone of operational excellence and planning and scheduling is the foundation. This is what work management can bring to the table. Note recommendations in Section 7.0: Performance Results on organizational structure changes.

The second area of concern mentioned above is material supply; how needed materials meet up with the maintenance worker. The wrench time concept is more impacted by this process than most others. Just-in-time versus inventory levels, ordering processes, kitting of PM, and corrective repair jobs are all factors that improve worker efficiency on wrench time. See Recommendation 6C.

**Preventive Maintenance.** The DF is using TMA CMMS to manage the PM program. The review team was unable to get any reports on how well this program was being managed. The consensus obtained in interviews with stakeholders was that PM work orders were being performed for the Integrated Sciences Complex. This was confirmed by the deputy director of Research and Teaching Laboratories, and with data that he provided. It was noted that this PM work was being performed almost exclusively by outside contractors. Otherwise, it would seem that corrective work orders were too numerous and take priority over preventive work. In general, it would appear that the PM program is not being uniformly administered. Other questions arose concerning the quality of PM work being performed. In general, it is not clear that all assets have been tagged in the system and that uniformity exists in the PM tasks listed in the work orders. See Recommendation 6D.

**Recommendation 6A**

*Tracking of the budget performance by the department is critical for the effective utilization of resources. It recommended that the department IDs be developed for each DF work group and that the system of accounts be used for all expenditures. This will likely involve a significant training effort with ongoing refresher instruction to ensure that it is properly utilized by supervisors and workers. Linkages to the CMMS will make the process easier to manage.*

*Additionally, project expense tracking is in need of stricter controls on the assignment of system of accounts coding.*
Recommendation 6B
Effective material inventory management needs to be implemented within DF. There is a stated desire to convert to a just-in-time system but little, if any, activity for this complex transition was seen in progress. Work in defining the inventory methodologies and procedures needs to be addressed in conjunction with recommendations on CMMS.

Recommendation 6C
The TMA CMMS is being underutilized and is not providing the potential benefit that these systems, when fully integrated into the business operation, can provide. Potential savings, taken from literature on the subject, could result in 20 percent or better, in reductions derived from increased workforce productivity and efficiency. It is recommended that DF pursue the increased utilization of the current CMMS. Map out the workflow process. Train the workforce in the use of the system and the proper work processes, use the work code features to minimize the need for work feedback descriptions, tie inventory to the system and link the system to the university ledger if not already done, schedule work, prioritize work, assign work, distribute handhelds for access, allow customers access through the remote portal, and generate time cards. There are additional features for equipment rental and asset management. The earlier recommendation to hire a work control manager provides a path for full implementation. See also Recommendations in Section 4.0: Assessment and Information Analysis.

Recommendation 6D
DF leadership, with the support of staff, needs to assess its PM program. Strategically focused questions such as the following should be asked: Is the asset list represented on the program realistic? Are the scheduled services representative of industry standards? Are staffing levels appropriate for the preferred program? An effective PM program has to dovetail with the organization’s core competencies. It is thus essential that all stakeholders, internal and external, understand and accept those competencies as part of the organization’s culture, from top management through middle management to the individuals tasked with making it happen. The use of a PM consultant may help achieve this goal, with the understanding that such an endeavor is not just a one-time event but a change management event.

Recommendation 6E
DF needs to clearly define roles, responsibilities, frequencies of service, sources of funding, etc., for all work performed by its units. These facts need to be documented and widely available to all building occupants and frequently reinforced to all stakeholders through meetings and training sessions. This is
usually accomplished through the development of a service guide delineating all responsibilities and services provided.

Planning, Design, and Construction

There are several critical processes related to the project management area. In DF these processes govern how data is collected and how work flows through the system. The resources can be dollars, personnel, or campus physical information. The individual processes are listed below.

Capital Project Planning. The capital planning process is managed through the office of the assistant vice chancellor for Administration and Finance in the Office of Budget and Financial Planning. The new process document was just released to interested parties while the review team was onsite. It is too early for us to judge the effectiveness of the new plan but it is encouraging for the future since comments received from stakeholders were not complimentary of the consistency of the prior process.

Project Interface with State Run and University of Massachusetts Building Authority Run Projects. DF staff was quite unanimous in their perception of the lack of involvement they have had in and/or during the design and construction phases of projects. The perception is that they are rarely invited to sit in on programming and design discussions and are discouraged from “inspecting” construction projects. Upper management pointed out that it is not the responsibility of the maintenance staff to perform inspection. It is the duty of UMBA and DCAMM to inspect construction for completeness. The team agrees and notes that this is common practice in the industry to reduce risks and improve safety on construction sites. It is reported that there are times when operations and maintenance (O&M) “inherits” projects, which are in need of remedial work—paid for out of operating maintenance budgets. On the subject of O&M staff involvement in design charrettes, there are counter views about involvement and the opportunity for worker input. The team finds disagreements as to the level of participation common in its reviews of institutions. All agree that participation of O&M staff members in these review processes is desirable.

The DF website does provide a link to design guidelines, though finding it can be challenging unless or until the actual link is provided to the curious. It is not clear to the review team that these guidelines are religiously enforced, perhaps being little more than a “suggestion.” DF staff mentioned that project managers may take it upon themselves to approve “or equal” submittals by designers, contractors, or suppliers, which leads to an unavoidable challenge in inventory management as well as technical training for staff. The review team notes that the burden is often placed on O&M supervision and/or staff to make a compelling argument for “sole sourcing” a product. However, once a sole source recommendation is approved or declined, the results should be applied to the campus and/or state design standards for future projects.
Even project management admits that it frequently takes a frustratingly long time to close out a project. As-builts are delivered inconsistently or not all, as are warranties. This could result in work being performed against maintenance budgets, with the additional disadvantage of possibly voiding out remaining warranties.

**Delivery of Campus-Run Projects.** Comments on campus run projects by operating and maintenance staff were similar to those of state-run projects noted above. Additionally, comments from the Office of Budget and Financial Planning disclosed poor use of classification of expenses that resulted in a mix of operating and capital funds that prolong project closeout.

*Note: general comment on project delivery. The state of Massachusetts has a complete project manual that is routinely updated. AllUMBAproject managers are required to recertify on the processesperiodically. Several project managers are currently going through recertification training programs. The manual is used for both state and campus delivered projects. The recommendations below this grouping refer to actions that can be applied to both state- and campus-run projects.*

**Recommendation 6F**
DF should establish a task force to explore opportunities for shortening the timeline required for the completion of small projects. This may require contractual adjustments and/or additional holdbacks in final payments with contractors. It also requires process mapping to understand everyone’s responsibilities and protocols to follow in the project delivery process.

**Recommendation 6G**
DF leadership should lead the way in clarifying procedures, processes, and opportunities for the development of design standards where appropriate, as well as how they are to be applied. A task force, with representation from all strategic partners, should be established to achieve this objective. For large state-run or UMBA-run projects this can be accomplished using the design standards as a starting point and working with state agencies to identify desirable changes or site-specific needs. Procedures for compliance with design standards should be strengthened with the state or UMBA project management staff. This is a give and take process but if achieved can meet the objectives of all parties.

*Maintenance personnel should routinely and consistently be extended the opportunity to review and suggest changes of details in design specifications at all stages, providing documented input with the expectation they will receive professional and timely feedback in response. Design review can be accomplished is a number of ways:*  
  - On an individual project basis with a representative from each skill classification reviewing construction documents for the reviewers’
area of expertise. If comments are provided, feedback is appropriated from the project designer.

- The O&M staff provides a continuous input to design standards as issues arise in day-to-day operations that could have been avoided if properly designed. This method captures O&M needs in a more repeatable fashion for future projects. This can be accomplished through a committee for maintaining design standards. It is the responsibility of the project leadership to make sure that design standards are adhered to.

_Also, O&A personnel should be given the opportunity to witness final commissioning activities._

Utilities and Energy

There are several critical processes related to the utilities and energy areas. In DF these processes govern how data is collected and how work flows through the system. The resources can be dollars, personnel, or campus physical information. The individual processes are listed below.

**Procurement of Purchased Utilities.** Purchasing of utilities (electric and natural gas) is administered at the state system level for UMBA. Also, the system has hired an energy consultant CES to administer and advise on purchasing methods. A central committee operating at the UMass system level is attended by UMBA assistant vice chancellor of purchasing and the director of Utilities. This process is working well. Interviews however did identify some issues in providing information to OMFP in a timely manner, such as invoice approvals. The actual purchase of gas and electric from the local and national sources seems competitive and in good practice.

**Energy Conservation Management.** The university has used in the past the services of an accomplished energy services company (ESCO), Noresco, to provide a performance based contract to reduce energy consumption and improve reliability of the campus utilities. This contract is believed to be completed at this time. This is pointed out as an effective way to reduce costs and improve system reliability. Energy conservation projects are pursued for renovations and new construction through the local utility rebate programs for demand management. It is believed that energy audits for existing buildings were done in the past, but currently energy conservation is only pursued for new projects where rebates are available. See Recommendation 6H above.

**Monitoring and Reporting of Energy Usage.** Not all of the campus buildings are submetered. This condition limits ability to assess where and how energy is being expended. Having submetering offers an excellent opportunity for identifying energy consumption characteristics and trends. Although the installation of submetering is not a formal recommendation at this time, it is an action to consider in future upgrades. In fact,
all of the new buildings are submetered. Monthly campus consumption reports do not appear to be prepared and circulated. Not having consumption reports limits oversight of the activity. The review team have many examples from our experience where monitoring these type of reports identified cases where energy was being wasted. This comment goes hand and with the submetering comment above. One item of note with regard to energy conservation is that energy usage is trending up as new laboratory buildings are added to the campus.

**Delivery of Utilities to Campus.** DF operates a newly completed, medium temperature, hot water heating plant, chilled water/heat recovery high efficiency plant, and a new distribution system for heat, cooling, domestic water, fire protection, and electricity, all completed as part of the recent utility corridor relocation project. The plant is staffed 24/7 365 days a year and protocols are in place for response to emergency situations in the buildings when they arise.

DF staff deserves recognition for the energy and water saving initiatives implemented at UMass Boston. It appears to the review team that this institution is in a leadership position, having implemented numerous energy conserving measures (ECMs) through the utility corridor project, the ISC project, the new residence halls, the west garage, and the university hall for utility generation and distribution on campus. Similar attention is being paid as well toward the original buildings on campus, including savings on the project to replace 14 elevators and on the renovation of existing academic buildings (REAB) projects.

**Recommendation 6H**

*There most likely exists an opportunity for quick payback energy conservation projects in the existing buildings. As energy conservation technology has changed, many new ECMs are now available for retrofit that can have paybacks of less than a year. UMBA DF should re-audit the buildings that are not scheduled for renovation to see what opportunities can exist. Some utilities can provide these energy audit services at no cost.*

**6.2 Describe the processes used to establish measurements for process inputs and outputs required to achieve efficiency and effectiveness.**

As mentioned in previous sections, DF participates in benchmarking initiatives, comparing and contrasting themselves against other institutions in their system, with Sightlines, and with some of their own data. It appears that input and output measures are only monitored to a limited extent. There are opportunities to develop and implement additional meaningful KPIs.

One glaring example of data and processes not being utilized to advantage is in the application of the TMA work order system. It is reported that PM costs, and subsequent breakdown costs, are not consistently posted to the asset. There should be tracking on all
maintenance work performed on assets. For example, the current lack of meaningful information extracted from existing data that is apparently already available eliminates the opportunity of managing assets utilizing a “total cost of ownership” or “life cycle costing” concept. It is thus a challenge to determine when an asset should be replaced to avoid total breakdown. Other capabilities and information gathering, such as scheduling dates, turnaround on work orders, materials against work orders, and backlogs to name a few are not being used.

**Recommendation 6I**
The development of meaningful metrics is needed to measure progress. The use of and success of DF business processes should be examined in the context of the published APPA FPI standards to ensure that an actual comparison of performance against peer institutions is possible.

The TMA CMMS system has a great deal of capability that goes far beyond simple work order management. Augmenting the CMMS to track all types of work by creating functional coding to be used in analysis is invaluable. Additionally, areas of inventory management, equipment history, reactive versus proactive maintenance, and tool management, etc., are valuable data sets that should be developed into information and subsequently knowledge of the DF operation.

6.3 Describe how stakeholders are involved in the development and implementation of core processes.

DF staff members are key stakeholders in the development and implementation of core processes. Once those core processes are developed, input from faculty and campus staff may be needed to provide buy-in or offer guidance that may impact the campus as a whole.

**Recommendation 6J**
DF relationships with campus customers will improve with discussion and engagement of the customer affected in any major core process changes.

6.4 Describe the protocol established to evaluate processes established to determine opportunities for improving efficiency and effectiveness and value to the success of the organization.

DF does not have an established protocol to effectively evaluate processes for effectiveness and efficiency improvement.

**Recommendation 6K**
A formal mechanism for use in evaluating core processes, once they are established, is recommended. This section of the report and Section 4.0:
Assessment and Information Analysis identify a number of opportunities particularly in work management and maintenance stores and purchasing that are candidates for process improvement.

Other sections of this report have discussed some of the shortcomings existing in current protocols. Recommendations have also been offered as to how to bridge those gaps. Several protocols, such as the publication of reports and identifying active, late, and completed work orders are certainly beneficial, though it is not clear how that information is actually utilized.

Beneficial processes that compare final costs on billable projects to original estimates are of value, if actually used to improve future performance on similar projects.

The review team observed a small number of situations that don’t fit cleanly in any one category, or perhaps overlap several of them. The following is a list of opportunities for improvement that may be considered more general in nature, or that may have been touched upon in preceding recommendations.

Miscellaneous Opportunities for Improvement

- Map, document, and post all processes; make sure they are followed.
- Develop KPIs that measure functions performed in the organization that are essential for success.
- Determine and share appropriate service levels and share them in a detailed, posted service guide.
- Consider flattening the organization to improve effectiveness.
  - Strengthen work management protocols.
  - Build on deputy director of Research and Teaching Laboratories concept.
  - Improve effective functional alignments and scheduling of work activities.
  - Improve communication.
  - Utilize limited financial resources more efficiently.
- Expand construction processes.
- Provide earlier opportunities for involvement and collaboration of and by strategic partners, stakeholders, and customers.
- Improve closeout and turnover processes for projects.
7.0 PERFORMANCE RESULTS

The performance of a facilities organization can be assessed in a number of dimensions: campus appearance, customer satisfaction, employee satisfaction, effectiveness of systems operations, financial results, and supplier/business partner results to mention a few. Having measurement tools in place to assess performance is critical in an environment of continuous improvement. UMass Boston DF is performing well in a number of dimensions and rebuilding in some others.

The tools used to assess performance are wide and varied. They range from single question survey results to benchmarking and from detailed data analysis to budget performance.

Results should be examined in relation to performance in areas such as asset management, customer focus, financial outcomes, human resource developments, capital reinvestment, and supplier management.

7.1 Describe processes in place to ensure that the appearance of the buildings and grounds is in keeping with the surrounding community as well as the desired image of the institution.

The campus master plan is the governing document for the development of campus image. The surrounding community is distant from the entrance of the campus so that there is a distinct separation zone of highways, train stations, and middle schools. The campus has a distinctive entrance way and when combined with the adjacent Presidential Library and Senate Museum makes a clear transition to campus architecture. The campus is in a transition architecturally as new buildings gradually replace the original structures. The master plan foresees this transition. The update of the campus master plan under the Office of Campus Master Planning is now being developed.

As stated above, the governing document for the campus image is the campus master plan and the local campus design guidelines. The plan adequately describes the expected results of efforts on campus on a broad scale, but design standards and guidelines are lacking in detail. This could cause issues as new projects are initiated due to lack of specificity. These standards must be followed and updated as needed to keep concert with the master plans and be followed by design and construction for new buildings and spaces.

The review team commends the level of planning and guidance that goes into the new construction of campus. It is clearly evident when walking the campus and is a credit to the participating departments including UMass Boston DF, which acts a major stakeholder in the processes.

The role of steward does not end with turn over from construction. After receiving the buildings and infrastructure from construction, DF is charged with the maintenance, upkeep, and renewal of assets associated with the buildings and infrastructure. There
should then be an expectation that performance results should be high. Unfortunately, the benchmarking data does not compare any performance metrics. For example, inspection data on custodial operations for determining the cleaning level of spaces. The data would inform how effective the cleaning process is in relation to resources received. Details are given in the answers to the following questions.

**Grounds and Forestry.** It is evident when walking the campus that it is a work in progress. Some of the newer areas are well laid out and maintained. Hardscape and walkways are a mixed bag. New areas are again well designed and attractive; sustainable features are operable and pleasing to view. It was also clear that the main malls (dating from the original campus construction and back areas of campus are in poor condition. Lawn and shrub beds are similar in appearance. New looks good but original is suffering both from neglect and construction impacts.

We did not find evidence of a detailed work plan in grounds. We also received comments from staff and supervision that the department is understaffed for the level of work to be performed. Grounds services in part are contracted out. Clarity of roles is confused among in-house staff. A detailed work plan can help codify what needs to done, when, and by who. Contracted services can then be provided for appropriate activities, for example:

**In-house:**
Spring/Summer/Fall
- Lawn and bed maintenance, trash removal, daily issues
Winter
- Snow removal, trash removal

**Contractor:**
- Plantings, new construction support, excess snow removal above in-house staffing capabilities

New trees are being tagged and added to the tree management plan developed in 2012 at the DF leadership request.

**Recommendation 7A**
The Grounds Services Department should develop a detailed work plan that describes the multitude of activities that need to be performed and a schedule to accompany it. Work codes and priority areas can be devised and estimates of time should be developed. When the opportunity exists, the plan should be incorporated into the CMMS. So it should be developed with that end in mind. As part of the plan, work codes or separate accounts should be set up for the different tasks so that time can be recorded against the various activities. This allows for better analysis of data in the future.
Contractor and/or in-house worker distribution of effort should be resolved as part of the work plan.

Recommendation 7B
A tree maintenance detailed work plan should be developed that describes the multitude of activities that need to be performed and scheduled. Work codes and priority areas can be devised and estimates of time should be developed. When the new CMMS is available, it should be incorporated into the system. So it should be developed with that end in mind. As part of the plan, work codes or separate accounts should be set up for the different tasks so that time can be recorded against the various activities. This allows for better analysis of data in the future. The tree database should be put back in use and all activities on trees tracked.

The database should be included into the CMMS or the GIS system when available.

7.2 Describe how the organization determines that the condition and cleanliness of facilities are in keeping with the image and standards adopted by the institution as well as activities associated with its mission and programs.

The campus goal is described above. As a consequence, the condition of the buildings and grounds on campus have historically been maintained at a level to match that vision. The institution subscribes to the philosophy that if potential students and stakeholders like what they see while visiting the campus that they will be more inclined to enroll and/or remain at the university.

Custodial Operations. Based on our limited tours of building interiors (administrative, research, theater, and classroom), the review team thought a good job was being done by the Custodial Department. The department has a work plan based on traditional area cleaning methodology.

Adequate custodial services are essential in providing clean and sanitary facilities. When custodial services are missing or inadequate, the image of the institution suffers, as do ongoing activities and programs. Custodial services at UMass Boston are well managed. Using APPA standards on staffing and cleaning goals as the measure, the custodial group is striving for blended Level 3 (defined as casual inattention) for existing buildings and a Level 2 (defined as ordinary tidiness) for new buildings. The review team’s inspections and perceptions suggest that custodial is meeting it goal levels; however, no formal QA inspection program exists nor has a financial assessment been made to see what cleaning level based on the current funding level should be achievable.
UMass Boston DF operates in a traditional/dedicated area cleaning system using a separate material delivery apart from maintenance inventory. Cleaning equipment is state of the art and very well maintained. The cleaning effort is contracted out to a custodial cleaning contractor.

While the review team was not able to visit many campus buildings, the level of cleaning in the buildings visited seemed to meet APPA’s Level 3 standard. The current in-house custodial manager is fully committed to the continuous improvement of the department and is working to continuously improve the effectiveness of the cleaning program and to ensure that the system meets the needs of the institution.

Our assessment of customer satisfaction is based on stakeholder interviews and our own inspection. Since no formal survey mechanism exists our assessment could be open to dispute.

**Recommendation 7C**

*Custodial services should explore possible solutions to improving efficiency by evaluating the following programs:*

- Task team cleaning is a team cleaning methodology that has demonstrated higher efficiencies and a better method for handling missing workers.
- Produce a service guide to describe the services provided by the cleaning staff.

**Recommendation 7D**

*Custodial services should develop a QA inspection program for its activities. Perform regular inspections of all buildings, involving the entire custodial management team (supervisors and higher). Communicate results and standards to building occupants. There are several programs on the market that can quickly fill the need. This could be a program that can be rolled into the CMMS when available.*

**7.3 Describe how the department assesses that building systems, infrastructure systems, and utility systems are maintained and operated at a level of reliability and efficiency that contributes to the successful implementation of the institution’s mission and programs.**

This area is more difficult to assess the performance results without the type of data that would come from a robust CMMS system. Several observations are illuminating: the facility condition data reports high levels of deferred maintenance. Antidotal stories abound of equipment failures and emergency response, high deferred maintenance suggests increased breakdown maintenance, the lack of a preventive maintenance program, only a rudimentary regulatory compliance life safety program, and questionable asset data. Additionally, comments made by the workforce suggest that at least some members of the
team do not believe in preventive and predictive forms of maintenance. Additionally, there is no centralized maintenance oversight of activity as would be found in a work control group.

The DF has a program to perform regulatory compliance inspections of life safety systems. This is accomplished through the use of in-house staff and outside contractors. The following items are part of the program.

- Fire alarm testing
- Fire pump testing
- Sprinkler system testing
- Emergency generator testing
- Fire suppression systems
- Backflow preventer
- Fire Extinguisher inspection and testing
- Elevator testing
- Pressure vessel testing and inspection
- Bidirectional antenna testing
- Other regulatory requirements mandated by authorities

This program needs to expand and to be included in the CMMS when available.

Recommmendation 7E
A recommended addition to the effort would be to reorganize the Maintenance Department to include a work control group answering to a managing director of M&O. This group would be responsible for managing the workflow and PM programs, preparing schedules, work plans, and asset lists, and is further described in Section 6.0: Process Management and Recommendation 7H below.

Recommendation 7F
Continue to aggressively pursue a program of regulatory compliance testing and inspection described above and incorporate record keeping into the CMMS system.

Recommendation 7G
Move aggressively forward with the expanded use of the TMA CMMS program and include a data analysis and continuous improvement aspects to the end of the program.

Recommendation 7H
In order to put the correct emphasis on the TMA CMMS program and on data collection and analysis, we recommend the creation of a Work Control
Department. This department would be responsible for managing the input requirements and dissemination of data from the new CMMS. Other areas of responsibility of the department would include:

- issuance and tracking of preventative work orders,
- tracking the workflow process for all work orders including use of work codes,
- management of the asset database,
- preparation of PM work plans,
- prioritization and characterization of work orders,
- preparation of work schedules and estimated time values (ETVs),
- preparation of planned multi-trade shop projects,
- system owners reside in work management, and
- other duties as needed.

Recommendation 7I
The current state of inventory and material supply is not functional. This area requires immediate attention. Discussion on just-in-time delivery versus traditional inventory methods need to be settled, and an appropriate system put in place to support material supply to the maintenance workforce. See Section 6.0: Process Management.

7.4 Describe the processes established to ensure that funding resources are effectively used and are adequate to support a level of facilities maintenance that prevents the deferral of major maintenance and repairs.

It is a fact of facilities life that old and outdated mechanical and electrical systems are prone to failure. Disruptions for customers happen most often when systems fail and, in particular, critical research projects are placed at high risk. With a university goal to significantly increase research programs, steps need to be taken to meet and satisfy research program needs by providing more reliable mechanical and electrical systems and where needed, to install redundant systems.

Using the Sightlines facility condition assessment system described earlier, projects that are of a high priority are implemented that will improve reliability and reduce maintenance needs; capital investment is therefore prioritized and used to address troublesome areas. This allows for the reallocation of maintenance resources to other priorities.

The UMBA DF uses the facility condition assessment (FCA) reports and database for tracking and identifying projects that are part of deferred maintenance or capital renewal categories of capital needs. Additionally, the list of projects can be augmented by in-house
knowledge of deficiencies. The lists are prioritized by a capital review committee to determine priorities.

Funding is provided through a combination of government allocation and UMass Boston matching funds. The current level of actual and planned funding appears adequate to reduce the current FCI. It appears that the governance of the university recognizes the need to continue to renew the campus.

The institution’s aggressive renovation and construction program has demolished old facilities and replaced aging building systems within renovated and new buildings, which has worked to reduce deferred maintenance levels. But still the current estimate of deferred maintenance is high until the remediation of the “mega-structure” is addressed.

Current levels of facilities-related deferred maintenance funding appears to be adequate to cover routine maintenance and emergency repairs with some left for minor reductions of the deferred maintenance backlog.

**Recommendation 7J**

*Establish and maintain realistic and predictable annual funding levels for capital renewal and deferred maintenance that will allow DF to carry out orderly and well planned facilities maintenance and upgrade programs. In addition to buildings, attention must be given to the needs of the central heating and chilled water plants as well as utility infrastructure.*

7.5 Describe the tools used to assess whether the staff is highly motivated and productive, taking pride in the accomplishment of their duties.

UMass Boston DF has demonstrated repeatedly that the department leadership places a high value on the workforce and is working along multiple fronts to engage and enhance both the relationship with management and workforce support of department goals. However, the DF does not have a structured survey instrument either at the department or university level to use to determine either a baseline or trends for employee engagement and satisfaction. DF uses a survey tool to document, among other things, the engagement of the workforce. The survey is called the Workplace Experience Survey. The questionnaire asks all faculty and staff to rate the organization. The survey results tie to areas of strength as well as the areas needing improvement. Other programs and processes used include:

- a robust communication program described in Section 5.0: Development and Management of Human Resources,
- a leadership development training program described in Section 5.0: Development and Management of Human Resources,
- an increased staff involvement on planning committees,
- an increased use of shop meetings and “all hands” meetings,
• a department recognition program,
• staff empowerment, and
• an employee satisfaction survey.

The review team noted that some negative issues are impacting the attitude of the workforce during our interviews. Alleged issues surrounding safety, outsourcing, understaffing, and working conditions are tainting the union/management relationship. The review team has not corroborated any of these charges as substantive, but rather reflect the environment that all university employees are working under an inadequate communication plan.

DF efforts to make positive impact on worker attitude have been substantial but have yet to overcome the inertia of past events. This suggests that there are still undercurrent issues that are holding back full commitment to the DF goals. For example, the issue of wage scale in the in Boston area was raised during discussions.

**Recommendation 7K**

UMass Boston DF should develop or contract for a survey tool to document among other things the engagement of the workforce. A survey product such as Dennison Corporations’ Employee Engagement Survey can satisfy the department need, or an in-house developed survey using Survey Monkey are both quick and easy tools to use that can get a quick baseline on the issue. The questionnaire should ask all staff to rate the organization based on their involvement.

The survey results tie to areas of strength as well as the areas needing improvement.

7.6 Describe the processes used to ensure that the levels of service are consistent with customer needs and requirements and within the facilities department’s capability.

Most customers interviewed by the review team seemed to be satisfied with the services provided by DF. A few customers, however, were unhappy with some provided services and the response from some shops most notably multi-trade shop work. All felt that the facilities organization had been traditionally underfunded and understaffed. DF leadership understands the importance of customer satisfaction and has made attempts to improve its relationship through a variety of face-to-face meeting types and schedules. However, as with employees, there is no survey tool to measure customer satisfaction.

Routine meetings are held between the facility managers and building managers and the faculty and administration representatives. The results of these meetings are discussed and action taken to remedy issues. In 2014, the department created a deputy director of Research and Teaching Laboratories position to better coordinate service in this sector. The
maintenance structure now responds more quickly and directly to customer requests for service in this area.

It is the opinion of the reviewers that the DF is making progress in the engagement of customers into their planning for the department services. Additional staffing and the use of management tools such as CMMS can begin to make clearer advances on many fronts.

Recommendation 7L
UMass Boston DF should develop a quick, less than 10 question targeted survey, for determining areas where customer concerns are occurring. Targeted action plans can then be developed to remediate these issues. The survey results can be evaluated and plans created to remedy weaknesses or to build on strengths. DF has put in place, as part of the Sightlines contract, the ability to conduct a customer satisfactions survey in 2019.

7.7 Describe how managers and supervisors are encouraged and enabled to stay in touch with the needs of higher education and how they relate to their own institution.

Departmental leaders are members of and participate in the programs of several associations that serve higher education such as SCUP, APPA, and ERAPPA. These associations stay in touch with what is happening within higher education and are familiar with the ongoing changes that occur in colleges and universities.

Departmental management and supervision also regularly read articles and reports that are published in national magazines and journals that are geared to the programs of higher education. Employees are very good at bringing to the attention of others within DF pertinent and timely information published in magazine and other periodicals.

Finally, management and union supervisors and technical management staff are often certified as Facility Management Administrators (FMA), Project Management Professionals (PMP), Professional Engineers (P.E.), and Certified Education Facilities Professionals (CEFP).

Recommendation 7M
Continue participation in APPA’s programs, and others, in spite of budget constrictions. Broaden opportunities for midlevel managers and front-line supervisors to participate in events, even if only at the local level. Explore opportunities to partner with other institutions in the area to co-host events and the APPA Institute for Facilities Management.
Conclusion

The Department of Facilities has faced a number of challenges over the last decade that have impacted its effectiveness. Funding has been a major challenge. As a result, the campus has reduced the funding for operations and maintenance while also increasing investment in deferred maintenance. This has left the campus and DF in a position of transition. Some facilities are declining while new facilities come online. Operating funds across the university are static or declining, placing central administration departments in tight financial positions as the central administration seeks to support growing educational needs. There are fewer resources with which to respond.

At the same time, the campus’ intensity of use has increased significantly over the past decade (even in the face of a recent drop in enrollment). The campus is heavily used at all hours every day. DF is struggling to keep up with the need to provide acceptable levels of service and increasing demand for services.

The campus has had significant turnover in leadership the last three years. This has created instability and continually changing direction and priorities which have made it difficult to maintain consistent operations. The instability of campus leadership has had a significant impact on the department’s ability to plan and manage work and deployment of scarce resources. Additionally, the Boston area has seen massive growth that creates competition and price increases for services and cost of materials. This directly affects DF’s ability to be cost-effective and to compete for staff.

As DF continues to chart its own right pathway in this dynamic environment, the rewards will be substantial. But the requirements for this success include a number of critical determinants of success, which are true for all educational facility professionals today.

These include the following:

- Competence: the achievement and sustainability of authentic competence; as facility management professionals, we simply must know what we are doing, and we must keep getting better at what we do.
- Alliance Building: in other words, we have to take the competencies, which we have, and build alliances with others who have competencies and resources, and form relationships and partnerships that are mutually beneficial. These alliances are both internal to DF and external to the rest of the campus community.
- Character Integrity Counts: the values, actions, and promises kept must be in alignment for each member of the facility services leadership team.

As can be seen from the number of recommendations in this report, a concerted effort is needed to “right the ship” and get back onto the right course. Much of the foundation is in place. Systems and methods as described in Section 6.0: Process Management are in place,
but perhaps in some cases not operating at the desired level. It may seem daunting to read this report and feel there is too much to do. That is not the case; the format of the report is the seven sections, which detail what excellent organizations do. First and foremost the DF needs to develop an action plan to implement those findings that are most critical and will provide the quickest return. The review team recommends the following framework (presented in outline) as an example for an action plan.

**A Five-Year Plan**

**Year One and Two**
- Strategic planning
- Address inventory immediate needs (purchasing policy)
- Development of critical success indicators
- Mapping major processes
- Work management and a second assistant director for non-laboratory buildings
- Budget tracking
- Energy conservation
- Communication and labor relations

**Year Two and Three**
- CMMS, inventory
- PM program evaluation
- Right staffing and work planning; firm up contractor in-house responsibilities
- Training and development
- Succession plans
- Surveying employees and customers; develop actions plans
- Communication and labor relations

**Year Three and Four**
- Labor relations and HR processes
- Stabilize all work processes
- Engage in proactive work scheduling and planning
- Communication and labor relations

**Years Four and Five**
- Institute a program of continuous improvement
- Continue to refine and implement remaining recommendations

The FMEP process is one of the highest levels of self-assessment that a facilities management organization can conduct. Not every facilities organization is willing to open their entire organization for scrutiny by outside peers and internal and external stakeholders. This step reflects an open and honest organization that is genuinely interested in improving and being recognized among the best. This evaluation program is a major
step to help DF identify its organization’s strengths and opportunities for improvement against the most important features of organizational performance. By reflecting and acting on this assessment, DF will be better positioned to accomplish its mission, improve its results, and become more aligned in support of faculty, staff, and student outcomes. Organizations across the nation use the APPA FMEP framework to improve and get sustainable results.

The building blocks of the FMEP are the seven criteria and their evaluation factors. It is a “systems perspective” that enables managing all the parts of your organization as a unified whole to achieve your mission. It means ensuring that your plans, processes, measures, and actions are consistent. And it means ensuring that the individual parts of your organization’s leadership system work together in a unified and mutually beneficial manner.

Because of the work to complete the self-evaluation, organizational and institutional profiles, and the interview process for the site evaluation, DF participants were required to think and focus on the circumstances and context of the campus and facilities services; the work environment and how work gets done and on the realities of the current situation. This work has helped to understand how well the organization is achieving its distinct mission for the UMass Boston campus and helps in accepting the opportunities for improvement.

The APPA review team, Jay Campbell, John Dempsey, George Hakim, and Rich Robben, commend Assistant Vice Chancellor Dorothy Renaghan and all of the hard working women and men in DF who have demonstrated true character and integrity and the courage to meet the demands of reality and the challenges of the hard work ahead. We hope that the recommendations contained in this report will prove to be of value and benefit and that our site visitation was meaningful for all of those whom we had the opportunity to meet.

We found the review process and our time on campus to be a most rewarding professional experience. We thank you for the opportunity.
Appendices

- List of interviewees
- Major References
- APPA Performance Standard
- FMEP Team Member Resumes
List of Interviewees

Katherine S. Newman, Chancellor
Anne Riley, Chief of Staff
Adam Wise, Vice Chancellor for University Advancement
Allison Duffy (was Interim VC)
Charlie Titus, Vice Chancellor for Athletics and Recreation, Special Projects and Programs
Georgianna Melendez, Vice Chancellor of Diversity, Equity and Inclusion (ODEI)
Maggie Peterson Pinkham, Director of Compliance and Outreach (ODEI)

Marie Bowen, Vice Chancellor for Human Resources
Wil Khouri, Assistant Vice Provost for CIS, IT Communications & Infrastructure Services
Jamie Soule, Manager, IT Operations

Geoff Combs, Executive Director, Campus Center and Event Services
Diane D’Arrigo, Assistant Vice Chancellor; Campus Center and Event Services
Erin Dayharsh Farrell, Associate Director, Campus Center and Event Services
Lisa Johnson, Vice Chancellor for Enrollment Management
Chris Sweeney, Director of Transportation Services

Michael Todorsky, Director of Budget and Operations Manager of International Partnerships

Donald Baynard, Chief of Police
Shaun Curry, Director of Project Management
Gail DiSabatino, Vice Chancellor for Student Affairs
Denise M. Duggan, Deputy Director of Facilities for Daily Service Operations
Chris Giuliani, Associate Vice Chancellor for Administration & Finance
Richard Graham, Director of Planning, Information and Analysis
Kathleen Kirleis, Vice Chancellor for Administration & Finance (absent for dinner)
Matt K avis, Budget Director, Office of Budget & Financial Planning
Darryl Mayers, Assistant Vice Chancellor for Contracts & Compliance,
Michael McGerigle, Deputy Director of Facilities for Utilities and Energy Management
James O’Day, Deputy Director of Facilities for Research and Teaching Laboratories
Patricia Overko, Director or Fiscal Operations & Controller
Dorothy Renaghan, Assistant Vice Chancellor for Facilities Management, DFM Lead Team
Peter Schneider, Director, Office of Environmental Health and Safety
Zehra Schneider Graham, Deputy Director, Office of Environmental Health and Safety
David Torrice, Deputy Director of Facilities for Mechanical, Electrical, and Plumbing Systems
Andrew S. Weiss, Director of Campus Master Planning
**Supervisors DFM**

John Carty       Access Control
Nathan Cooper   Custodial/Events Support
Greg Guidi      Plumbing
Thomas Joyce    Energy Management System & Utility Plant
David Lanchester Grounds
Paul O’Sadcia   Electrical
Armindo Reis    Building Trades
Jo-Reese Williams Service Response
Todd Williamson HVAC

**Front-line Union Staff**

Jairson Barros  Heavy Equipment Operator
John Barros     Custodian
Jeff Daignault  Carpenter
Ed Elwell       Electrical
Real Isidor     Plumbing
Benis Peguero   Groundskeeper
John Reilly     Motor Equipment Mechanic
Al Starus       Utility Plant Operator
Eric Sumner     HVAC
Jim Wright      Floor Installer/Repairer

**Academic Leadership and Faculty**

Anita Miller, Associate Vice-Provost for Academic Affairs
Bala Sundaram, Vice Provost for Research and Strategic Initiatives & Dean of Graduate Studies

Bill Brah, Director, Venture Development Center
Andrew Grosovsky, Dean, College of Science and Mathematics
Joanne Riley, Dean of University Libraries
Liz Roemer, Professor and Chair, Psychology Department
Mike Shiari, Professor, Biology Department
David Terkla, Dean, College of Liberal Arts
Marion Winfrey, Associate Dean, College of Nursing and Health Sciences
Major References

Operational Guidelines for Educational Facilities: Grounds, Second Edition
Published by APPA 2011
1543 Prince Street, Alexandria, Virginia 22314
http://www.appa.org/Bookstore/index.cfm

Operational Guidelines for Educational Facilities: Custodial, Second Edition
Published by APPA 2011
1543 Prince Street, Alexandria, Virginia 22314
http://www.appa.org/Bookstore/index.cfm

Operational Guidelines for Educational Facilities: Maintenance, Second Edition
Published by APPA 2011
1543 Prince Street, Alexandria, Virginia 22314
http://www.appa.org/Bookstore/index.cfm

Maintenance Staffing Guidelines, Published by APPA 2011
1543 Prince Street, Alexandria, Virginia 22314
http://www.appa.org/Bookstore/index.cfm

APPA Body of Knowledge Searchable Database Website
http://www.appa.org/bok/

Other References such as websites and articles are mentioned in the sections of the report they are used.
# Recommended APPA STAFFING STANDARDS

## APPA’s Levels of Service
Establishing Parameters

<table>
<thead>
<tr>
<th>Level</th>
<th>Maintenance</th>
<th>Custodial</th>
<th>Grounds</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Showpiece Facility</td>
<td>Orderly Spotlessness</td>
<td>State of the Art</td>
</tr>
<tr>
<td>2</td>
<td>Comprehensive Stewardship</td>
<td>Orderly Tidiness</td>
<td>High Level</td>
</tr>
<tr>
<td>3</td>
<td>Managed Care</td>
<td>Casual Inattention</td>
<td>Moderate Level</td>
</tr>
<tr>
<td>4</td>
<td>Reactive Management</td>
<td>Moderate Dinginess</td>
<td>Moderately Low-Level</td>
</tr>
<tr>
<td>5</td>
<td>Crisis Response</td>
<td>Unkempt Neglect</td>
<td>Minimum Level</td>
</tr>
</tbody>
</table>

Prepared by: Angie Jackson, PHR
SODEXO
Fiscal Service Manager
WKU Account
### APPA Maintenance Standards

<table>
<thead>
<tr>
<th></th>
<th>LEVEL 1 Showpiece</th>
<th>LEVEL 2 Comprehensive Stewardship</th>
<th>LEVEL 3 Managed Care</th>
<th>LEVEL 4 Reactive Management</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Description</strong></td>
<td>Able to respond to virtually any service, immediate response.</td>
<td>Response to most service needs, typically in a week.</td>
<td>Services available only by reducing maintenance, response times of one month or less.</td>
<td>Services available only by reducing maintenance, response times of one year or less.</td>
</tr>
<tr>
<td><strong>Customer Satisfaction</strong></td>
<td>Proud of facilities; have a high level of trust for the facilities organization.</td>
<td>Satisfied with facilities related services, usually complimentary of facilities staff.</td>
<td>50-75%</td>
<td>25-50%</td>
</tr>
<tr>
<td><strong>PM vs. CM</strong></td>
<td>100%</td>
<td>A well developed PM program; PM done less than defined schedule. Occasional emerg. caused by pump failures etc.</td>
<td>Reactive maintenance high due to systems failing. High number of emergencies causes reports to upper mgmt.</td>
<td>Worn-out systems require staff to be scheduled to react to failure. PM work consists of simple tasks done inconsistently.</td>
</tr>
<tr>
<td><strong>Maintenance Mix</strong></td>
<td>All PM is scheduled and performed on time. Emergencies (e.g. power outages) are infrequent and handled efficiently</td>
<td>75-100%</td>
<td>50-75%</td>
<td>25-50%</td>
</tr>
<tr>
<td><strong>Aesthetics, Interior</strong></td>
<td>Like new finishes</td>
<td>Clean/crisp finishes</td>
<td>Average finishes</td>
<td>75-100%</td>
</tr>
<tr>
<td><strong>Aesthetics, Exterior</strong></td>
<td>Window, doors, trim, exterior walls are like new</td>
<td>Watertight, good appearance of exterior cleaners</td>
<td>Minor leaks and blemishes average exterior appearance</td>
<td>Worn-out systems require staff to be scheduled to react to failure. PM work consists of simple tasks done inconsistently.</td>
</tr>
<tr>
<td><strong>Aesthetics, Lighting</strong></td>
<td>Bight and clean, attractive lighting</td>
<td>Bright and clean, attractive lighting</td>
<td>Small percentage of lights out, generally well lit and clean.</td>
<td>Worn-out systems require staff to be scheduled to react to failure. PM work consists of simple tasks done inconsistently.</td>
</tr>
<tr>
<td><strong>Service Efficiency</strong></td>
<td>Maintenance activities appear highly organized and focused. Service and maintenance calls are responded to immediately.</td>
<td>Maintenance activities appear organized with direction. Service and maintenance calls are responded to in a timely manner.</td>
<td>Maintenance activities appear to be somewhat organized, but remain people dependent. Service/ maintenance calls are sporadic without apparent cause.</td>
<td>Maintenance activities are somewhat chaotic and people dependent.</td>
</tr>
<tr>
<td><strong>Building Systems Reliability</strong></td>
<td>Breakdown maintenance is rare and limited to vandalism and abuse repairs.</td>
<td>Breakdown maintenance is limited to system components short of MTBF.</td>
<td>Building and systems components periodically or often fail.</td>
<td>Maintenance activities are somewhat chaotic and people dependent.</td>
</tr>
<tr>
<td><strong>Operating Budget as % of CRV</strong></td>
<td>&gt;.40</td>
<td>3.5-4.0</td>
<td>3.0-3.5</td>
<td>2.5-3.0</td>
</tr>
<tr>
<td><strong>Campus Average FCI</strong></td>
<td>&lt;.05</td>
<td>0.05-0.15</td>
<td>0.15-0.29</td>
<td>0.30-0.49</td>
</tr>
</tbody>
</table>

**Based on 1M sq. ft. by space type**

<table>
<thead>
<tr>
<th></th>
<th>Classroom</th>
<th>Laboratory</th>
<th>Office</th>
<th>Residence Hall</th>
</tr>
</thead>
<tbody>
<tr>
<td>LEVEL 1</td>
<td>66,667</td>
<td>37,037</td>
<td>41,667</td>
<td>55,556</td>
</tr>
<tr>
<td>LEVEL 2</td>
<td>83,333</td>
<td>47,619</td>
<td>62,500</td>
<td>71,429</td>
</tr>
<tr>
<td>LEVEL 3</td>
<td>111,111</td>
<td>66,667</td>
<td>90,909</td>
<td>100,000</td>
</tr>
<tr>
<td>LEVEL 4</td>
<td>125,000</td>
<td>111,111</td>
<td>125,000</td>
<td>125,000</td>
</tr>
<tr>
<td>Level 1</td>
<td>Level 2</td>
<td>Level 3</td>
<td>Level 4</td>
<td>Level 5</td>
</tr>
<tr>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
<td>--------</td>
</tr>
<tr>
<td><strong>Orderly Spotlessness</strong></td>
<td><strong>Ordinary Tidiness</strong></td>
<td><strong>Casual Inattention</strong></td>
<td><strong>Moderate Dinginess</strong></td>
<td><strong>Unkempt Neglect</strong></td>
</tr>
<tr>
<td>Floors and base moldings shine and/or are bright and clean; colors are fresh. All vertical and horizontal surfaces have a freshly cleaned or polished appearance and have no accumulation of dust, dirt, marks, streaks, smudges, or fingerprints. Washroom and shower tile and fixtures gleam and are odor-free; supplies are adequate.</td>
<td>Floors and base moldings shine and/or are bright and clean. There is no buildup in corners or along walls, but there can be up to two days’ worth of dirt, dust, stains and streaks. All vertical and horizontal surfaces are clean, but marks...</td>
<td>Floors are swept clean, but upon close observation dust, dirt, and stains, as well as a buildup of dirt, dust, and/or floor finish in corners and along walls, can be seen. There are dull spots and/or matted carpet in walking lanes, and streaks and...</td>
<td>Floors are swept clean, but are dull. Colors are dingy, and there is an obvious buildup of dust, dirt, and/or floor finish in corners and along walls. Molding is dull, and contains streaks and splashes. All vertical and horizontal surfaces have conspicuous dust,...</td>
<td>Floors and carpets are dirty and have visible wear and/or pitting. Colors are faded and dingy, and there is a conspicuous buildup of dirt, dust, and/or floor finish in corners and along walls. Base molding is dirty, stained and streaked. Gum, stains, dirt, dust balls, and trash are broadcast. All vertical and horizontal surfaces have major accumulations of dust,...</td>
</tr>
<tr>
<td>Annual cleaning of all blinds. Repairs completed with 24 hours. Special projects completed within 5 working days. New buildings (avg size of 100,000 NSF) online in one week.</td>
<td>Cleaning of all blinds within 18 months. Repairs completed within 1 week. Special projects completed within 5 working days.</td>
<td>Cleaning of all blinds within 3 years. Repairs completed within 2 weeks. Special projects completed within 10 working days.</td>
<td>Cleaning of all blinds every 5 years. Repairs completed within three weeks. Special projects completed within 10 working days.</td>
<td>No regular Blind cleaning. Repairs done only as time permits. Special project work done only during semester breaks. New buildings (avg size of 100,000 NSF) would require additional/contracted ...</td>
</tr>
<tr>
<td>All work requests completed the same day. All light fixtures in working order. All academic, low voltage, HID and emergency lighting systems maintained on a timely basis.</td>
<td>75% of work requests completed same day. No more than 5% of all lights out at any given time. Delays in maintenance for academic,...</td>
<td>50% of work request completed same day. No more than 10% of all lights out at any given time. Delays in maintenance for academic,...</td>
<td>Lighting in academic buildings replaced on an “as needed” basis. Requests would be prioritized with most urgent requests completed within one week. Delays in ...</td>
<td>Maintain essential minimal lighting in academic buildings. Many lights will be out in areas and only replaced when absolutely necessary. Maintenance for academic, low voltage, HID and emergency lighting systems ...</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Custodial LEVELS</th>
<th>Sq. ft. per Staffing</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>8,500</td>
</tr>
<tr>
<td>2</td>
<td>16,700</td>
</tr>
<tr>
<td>3</td>
<td>26,500</td>
</tr>
<tr>
<td>4</td>
<td>39,500</td>
</tr>
<tr>
<td>5</td>
<td>45,600</td>
</tr>
<tr>
<td>Classrooms</td>
<td>APPA 1</td>
</tr>
<tr>
<td>-----------------------------------------</td>
<td>----------</td>
</tr>
<tr>
<td>Empty trash/replace liners</td>
<td>Daily</td>
</tr>
<tr>
<td>Clean whiteboards</td>
<td>Daily</td>
</tr>
<tr>
<td>Sweep/Dust mop floors</td>
<td>Daily</td>
</tr>
<tr>
<td>Spot mop floor</td>
<td>Daily</td>
</tr>
<tr>
<td>Damp mop entire floor</td>
<td>Daily</td>
</tr>
<tr>
<td>Vacuum high traffic areas</td>
<td>Daily</td>
</tr>
<tr>
<td>Wall to wall vacuuming</td>
<td>Daily</td>
</tr>
<tr>
<td>Carpet Spot Removal</td>
<td>As Needed</td>
</tr>
<tr>
<td>Wipe down touch points</td>
<td>Daily</td>
</tr>
<tr>
<td>Clean/disinfect drinking fountain</td>
<td>Daily</td>
</tr>
<tr>
<td>Spot clean Interior glass</td>
<td>Daily</td>
</tr>
<tr>
<td>Clean interior glass (full cleaning)</td>
<td>Daily</td>
</tr>
<tr>
<td>Dust furniture</td>
<td>Daily</td>
</tr>
<tr>
<td>High/low dust</td>
<td>Daily</td>
</tr>
<tr>
<td>Spot clean walls, doors and graffiti</td>
<td>Daily</td>
</tr>
<tr>
<td>Machine scrub floor</td>
<td>As Needed</td>
</tr>
<tr>
<td>Burnish floors</td>
<td>As Needed</td>
</tr>
<tr>
<td>Vacuum supply and return air vents</td>
<td>As Needed</td>
</tr>
<tr>
<td>Dust ceiling area and light fixtures</td>
<td>As Needed</td>
</tr>
<tr>
<td>Clean trash receptacles</td>
<td>Daily</td>
</tr>
<tr>
<td>Wipe down window ledges</td>
<td>Daily</td>
</tr>
<tr>
<td>Scrub and recoat floors</td>
<td>As Needed</td>
</tr>
<tr>
<td>Strip and refinish floors</td>
<td>As Needed</td>
</tr>
<tr>
<td>Full carpet extraction</td>
<td>As Needed</td>
</tr>
</tbody>
</table>
# APPA Grounds Standards

## GROUNDS LEVELS

<table>
<thead>
<tr>
<th>LEVEL</th>
<th>GROUNDS</th>
<th>Main Grounds Acres/person</th>
<th>Open Area Acres/person</th>
<th>Athletic Acres/person</th>
<th>INDUSTRY STANDARD Acres/person</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Open</td>
<td>20</td>
<td>2.71</td>
<td></td>
<td>10</td>
</tr>
<tr>
<td>2</td>
<td>2.3</td>
<td>25</td>
<td>4.09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>2.55</td>
<td>33.33</td>
<td>5.99</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>5.74</td>
<td>50</td>
<td>11.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>13.5</td>
<td>100</td>
<td>14.29</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## LEVEL 1

**State of the Art**

Maintenance applied to a high-quality diverse landscape. Associated with high-traffic urban areas, such as public squares, malls, government grounds, or college/university campuses.

## LEVEL 2

**High Level**

Associated with well-developed public areas, malls, government grounds, or college/university campuses. Recommended level for most organizations.

## LEVEL 3

**Moderate Level**

Associated with locations that have moderate to low levels of development or visitation, or with operations that, because of budget restrictions, cannot afford a higher level of maintenance.

## LEVEL 4

**Moderately Low-Level**

Associated with locations affected by budget restrictions that cannot afford a high level of maintenance.

## LEVEL 5

**Minimum Level**

Associated with locations that have severe budget restrictions.
**APPA Grounds Descriptions of Levels:**

**LEVEL 1**
- **TURF CARE.** Grass height maintained according to species and variety of grass. Mowed at least once every five working days but may be as often as once every three working days. Aeration as required but not less than four times per year. Reseeding or sowing as needed. Weed control to be practiced so that no more than 1 percent of the turf surface has weeds present.
- **FERTILIZER.** Adequate fertilization applied to plant species according to their optimum requirements. Application rates and times should ensure an even supply of nutrients for the entire year. Nitrogen, phosphorus, and potassium percentages should follow local recommendations. Trees, shrubs, and flowers should be fertilized according to their individual requirements of nutrients for optimum growth. Unusually long or short growing seasons may modify the chart slightly.
- **IRRIGATION.** Sprinkler irrigated—electric automatic commonly used. Some manual systems could be considered adequate under plentiful rainfall circumstances and with adequate staffing. Frequency of use follows rainfall, temperature, season length, and demands of plant material.
- **LITTER CONTROL.** Minimum of once per day, seven days per week. Extremely high visitation may increase the frequency. Receptacles should be plentiful enough to hold all trash usually generated between servicing without overflowing.
- **PRUNING.** Frequency dictated primarily by species and variety of trees and shrubs. Length of growing season and design concept also a controlling factor i.e., clipped vs. natural-style hedges. Timing scheduled to coincide with low demand periods or to take advantage of special growing characteristics.
- **DISEASE AND INSECT CONTROL.** At this maintenance level, the controlling objective is to avoid public awareness of any problems. It is anticipated at this level, problems will either be prevented or observed at a very early stage and corrected immediately.
- **SNOW REMOVAL.** Snow removal begins the same day that accumulations of .5 inch are present. At no time will snow be permitted to cover transportation or parking surfaces longer than noon of the day after the snow stops. Application of snow-melting compound and/or gravel is appropriate to reduce the danger of injury due to falls.
- **SURFACES.** Sweeping, cleaning, and washing of surfaces should be done so that at no time does an accumulation of sand, dirt, or leaves distract from the looks or safety of the area.
- **REPAIRS.** Repairs to all elements of the design should be done immediately when problems are discovered, provided replacement parts and technicians are available to accomplish the job. When disruption to the public might be major and the repair is not critical, repairs may be postponed to a time period that is less disruptive.
- **INSPECTIONS.** A staff member should conduct inspections daily.
- **FLORAL PLANTINGS.** Normally, extensive or unusual floral plantings are part of the design. These may include ground-level beds, planters, or hanging baskets. Often, multiple plantings are scheduled, usually for at least two blooming cycles per year. Some designs may call for a more frequent rotation of bloom. Maximum care, including watering, fertilizing, disease control, disbudding, and weeding, is necessary. Weeding flowers and shrubs is done a minimum of once per week. The desired standard is essentially weed-free.

**LEVEL 2**
- **TURF CARE.** Grass cut once every five working days. Aeration as required but not less than two times per year. Reseeding or sowing when bare spots are present. Weed control practiced when weeds present a visible problem or when weeds represent 5 percent of the turf surface. Some pre-emergent products may be used at this level.
- **FERTILIZER.** Adequate fertilizer level to ensure that all plant materials are healthy and growing vigorously. Amounts depend on species, length of growing season, soils, and rainfall. Rates should correspond to at least the lowest recommended rates. Distribution should ensure an even supply of nutrients for the entire year. Nitrogen, phosphorus, and potassium percentages should follow local recommendations. Trees, shrubs, and flowers should receive fertilizer levels to ensure optimum growth.
- **IRRIGATION.** Sprinkler irrigated—electric automatic commonly used. Some manual systems could be considered adequate under plentiful rainfall circumstances and with adequate staffing. Frequency of use follows rainfall, temperature, season length, and demands of plant material.
- **LITTER CONTROL.** Minimum of once per day, five days per week. Offsite movement of trash depends on size of containers and use by the public. High use may dictate daily or more frequent leaning.
- **PRUNING.** Usually done at least once per season unless species planted dictate more frequent attention. Sculpted hedges or high-growth species may dictate a more frequent requirement than most trees and shrubs in natural-growth plantings.
- **DISEASE AND INSECT CONTROL.** Usually done when disease or insects are inflicting noticeable damage, are reducing vigor of plant material, or could be considered a bother to the public. Some preventive measures may be used, such as systemic chemical treatments. Cultural prevention of disease can reduce time spent in this category. Some minor problems may be tolerated at this level.
- **SNOW REMOVAL.** Snow removed by noon the day following snowfall. Gravel or snowmelt may be used to reduce ice accumulation.
- **SURFACES.** Should be cleaned, repaired, repainted, or replaced when their appearances have noticeably deteriorated.
- **REPAIRS.** Should be done whenever safety, function, or appearance is in question. INSPECTIONS. Inspection should be conducted by some staff member at least once a day when regular staff is scheduled.
- **FLORAL PLANTINGS.** Normally, no more complex than two rotations of bloom per year. Care cycle is usually at least once per week, but watering may be more frequent. Health and vigor dictate cycle of fertilization and disease control. Beds essentially kept weed free.
TURF CARE. Grass cut once every ten working days. Normally not aerated unless turf quality indicates a need or in anticipation of an application of fertilizer. Reseeding or resodding done only when major bare spots appear. Weed control measures normally used when 50 percent of small areas are weed infested or when 15 percent of the general turf is infested with weeds.

FERTILIZER. Applied only when turf vigor seems to be low. Low-level application done once per year. Rate suggested is one-half the level recommended.

IRRIGATION. Dependent on climate. Locations that receive more than 25 inches of rainfall a year usually rely on natural rainfall with the possible addition of portable irrigation during periods of drought. Where manual servicing is required, a demand schedule is programmed. Where irrigation is automatic, a demand schedule is used.

LITTER CONTROL. Minimum service of two to three times per week. Higher service may be required during the warm season.

PRUNING. When required for health or reasonable appearance. With most tree and shrub species, pruning would be performed once every two to three years.

DISEASE AND INSECT CONTROL. Done only to address epidemics or serious complaints. Control measures may be put into effect when the health or survival of the plant material is threatened or when public comfort is an issue.

SNOW REMOVAL. Snow removal done based on local law requirements but generally accomplished by the day following snowfall. Some crosswalks or surfaces may not be cleared at all.

SURFACES. Cleaned on a complaint basis. Repaired or replaced as budget allows. Repairs should be done whenever safety or function is in question. Inspections are conducted once per month.

FLORAL PLANTINGS. Only perennials or flowering trees or shrubs.
Appa Certified Educational Facility Professional with extensive leadership experience in large organizations; including facilities & utilities operation and maintenance, project management, long range planning, capital investment analysis, emergency management, and cost center profit/loss responsibility. Proven track record in facilities management, continuous improvement, 5S, asset care and internal supply chain management. Well versed in evaluating organizations and initiating changes to improve operational performance. Analytical thinker and superior problem-solver with capacity to engage and motivate others.

Professional Experience

University of Colorado Denver | Anschutz Medical Campus, Denver, CO 2015 - present
Executive Director of Facilities
Executive Director responsible for all aspects of site-wide facilities operation & maintenance, utilities generation and delivery, building automation and engineering at a multi-site higher education university and medical campus.
- Denver campus facilities support for 15000 student urban higher education location
- Anschutz Medical Campus facilities support for major medical research and health sciences center; including School of Medicine, Dentistry, Pharmacy, Nursing and Public Health
- 143 FTE team working 24/7/365
- Utility Plant producing and distributing steam, chilled water and electrical distribution
- Building Automation & control utilized to coordinate HVAC, fire & life safety systems, as well as operational control of all assets
- Operational support of all minor and major capital construction projects

CH2M HILL, Covington, GA 2012 - 2015
Facilities Program Manager
Facilities Program Management Professional responsible for all aspects of site-wide facilities operation & maintenance, utilities generation and delivery, and waste water treatment at a large food manufacturing campus.
- 2 independent manufacturing facilities and one corporate employee facility on site, all requiring full-time facilities operations & maintenance support
- Utility Plant producing steam, chilled water, compressed air, and electrical co-generation
- 300K gallon per day Waste Water Treatment plant, consisting of MBR aerobic digestion and ultra-filtration
- Maintenance practices optimization process using TPM principles, PM Optimization routines, Planning and Scheduling, and 5S best practices
- Site-wide emergency management coordination and response

COORS BREWING CO. / MILLERCOORS, Golden, CO 2001 - 2012
Facilities / Utilities Manager
Managed $40 million, 83-person technical services department that services the world’s largest brewery. Responsible for operational, asset care (mechanical, electrical and instrument / control systems) and financial performance of all plant utilities and building automation systems. Utility systems include HVAC, ammonia refrigeration, steam / condensate, compressed air, carbon dioxide, cooling water and electrical distribution 14kV. HAZMAT Incident Commander responsible for 24/7 Hazmat response team, equipment and training. Shared responsibility for potable and process water treatment plant, process waste treatment and sanitary sewer plants.
- Well versed in all aspects of TPM, preventive maintenance, predictive maintenance, asset care and world class manufacturing, including Continuous Improvement and 5S
- Safety Culture – served at Safety Culture coach and guidance team member, rolled out program across the department resulting in increased engagement and reduced incident levels
- Led a Process Safety Management (PSM) program for highly hazardous chemicals (anhydrous ammonia) that is best in class across the enterprise. O&M responsibility for an ammonia refrigeration system sized at 500,000 lbs
US NAVY, Multiple Locations  
Nuclear Machinist Mate / Supply Chain Specialist  
1993 - 2001

Operated and maintained all shipboard systems associated with nuclear propulsion, electrical distribution, potable water and HVAC.

- Rigorous training program that includes 2 years of technical schooling and on-the-job training
- Upon completion of the training program, was selected to become instructor to new recruits and stay on staff for 2 years
- Logistics team member responsible for all shipping and receiving activities onboard a 90,000 ton displacement nuclear aircraft carrier
- Coordinated departmental supply and maintenance programs to ensure optimal performance and budgetary compliance

EDUCATION

BS in Finance  Regis University, Denver, CO

MBA ‘14
Emphasis on Project Management (MBA-PM)  
Norwich University, Norwich, CT

PROFESSIONAL DEVELOPMENT

Secretary, Colorado APPA 2018 – present
APPA CEFP 2016 - present
CFM Certified Facilities Manager 2012 – present
Aurora Water Citizens Advisory Committee 2015 – present
Cherry Creek School District Long Range Facilities Committee 2015 – present
Level 5 Hazmat Incident Commander 2010
Safety Culture Implementation Coach, 2009
Process Safety Management Specialist, 2009
RCFA / Cause Mapping Facilitator, 2009
PROSCI Change Management, 2008
Level 3 Vibration Analyst, 2007
Level 1 Ultrasonic Technician, 2006
Level 1 Thermography Technician 2006
Train the Trainer Certified, 2004

COMPUTER SKILLS / QUALITY SYSTEMS

Maximo & SAP CMMS, SAP Financial, Metasys, WonderWare,  
Proficient in all Microsoft Office Suite applications  
PI Historian, DeltaV Operations

PROFESSIONAL MEMBERSHIPS

APPA – Leadership in Educational Facilities  
IFMA – International Facilities Management Association  
RETA – Refrigeration Engineers Technical Association  
IIAR – International Institute of Ammonia Refrigeration  
Vibration Institute, Colorado Chapter – Level 3 Vibration Analyst
JOHN G. DEMPSEY, PHD, PE

EDUCATION

- BS Naval Architecture, US Naval Academy
- MCE Civil Engineering, University of Minnesota
- MS, Civil Engineering, Old Dominion University
- PhD Civil Engineering, Old Dominion University
- EMP, Pennsylvania State University

EXPERIENCE

- 24 Years of Naval Service. Last assignment as Public Works Office and Officer in Charge of Construction for the US Naval Academy.
- 2.5 Years Directing Data Collection, Research and Planning for the South Florida Water Management District
- 3 Years as Deputy Director for Facilities Department at the University of Rochester, which included Strong Memorial Hospital and Research Facilities.
- 14 Years, Executive Director, Facilities and Services, University of Illinois
- Last year before retirement, Course development and teaching, Civil Engineering Department, University of Illinois
- FMEP, MIT Lincoln Laboratory
- FMEP, Des Moines University Medical School
CAREER SUMMARY

A facilities management professional with strong leadership and technical background and broad experience in construction / renovation, maintenance, security, safety, real estate, food service, information technology and other elements within and related to the facilities arena. Extensive and diversified accomplishments in higher education, state government, and private industry including automotive services and hospitality. Reputation for being a results-oriented problem solver leading diverse groups of people collaboratively to achieve difficult objectives in complex environments. Demonstrated ability to manage multiple priorities, meet aggressive deadlines, and build quality relationships in rapidly moving environments.

PROFESSIONAL EXPERIENCE

UNIVERSITY OF MICHIGAN-FLINT, Flint, MI 2010-Present
Public institution founded in 1956 with an enrollment of more than 8,500 undergraduate and graduate level students; a comprehensive university with a campus size of more than 73 acres, including 17 buildings and parking structures totaling 1.9 million square feet of building space, as well as planned growth with the upcoming addition of two high-rise buildings totaling 0.5 million square feet.

Director of Facilities and Operations
Provide strategic and operational leadership and management oversight to 125 staff and student employees and a $5 million+ budget. Maintain aggressive emphasis on delivering a variety of high quality campus support services including construction and renovation project management, architecture and engineering, grounds, repairs/maintenance, custodial services, shipping-receiving, mail service, inventory control, electrical/HVAC systems oversight, and utilities purchasing and management including the operation and maintenance of the campus central energy plant. Member of Business & Finance Management Team and Capital Projects Group.

• Spearheaded and directed the completion of multiple major projects across campus including installation of new boilers in the Central Energy Plant, replacement and modernization of elevators in North Bank Center, and the Murchie Science Building State Capital Outlay Project original scope totaling more than $30 Million in construction and related costs; outcomes include dramatic improvements in efficiency and functionality of spaces and equipment, and provide new space for expanding programs.
• Providing leadership and direction for a campus-wide energy efficiency program including the comprehensive retrofitting of lighting indoors and across campus grounds, and upgrading of mechanical and electrical infrastructure, resulting in a 24% reduction in normalized energy consumption since 2010.
• Ongoing collaboration with Environment Health and Safety to aggressively address any potential concerns related to the quality of Flint water on campus through the installation of more than 300 water filters and retrofitting of all water fountains to filtered water stations, thereby providing filtered water at every potable water source across campus
• Completed comprehensive facility condition assessment (FCA), the first campus-wide assessment in the history of the University, assuring an accurate database as the basis for long-term deferred maintenance and capital renewal planning and funding

DEPT. OF TECHNOLOGY, MGMT AND BUDGET, STATE OF MICH, Lansing, MI 2006-2010
One of 15 State departments, charged with providing comprehensive business services to government, and savings and efficiencies to Michigan taxpayers.

Director of Facilities Administration
Direct and provide oversight of 280 employees responsible for facilities services statewide, including operation and maintenance of 37 state office buildings totaling over 7 million square feet, administrative oversight of design and construction for additions, renovations and new construction of all state facility projects, real estate leasing and statewide land sales, management of 13,000 parking spaces, and security and emergency management services for state office buildings. Administrative responsibility for $93 million annual operating budget and related strategic and business plans. Member of Department Executive and Senior Management Teams.
• Oversaw multi-faceted energy consumption program for the Department, reducing energy consumption 23% and $60 million from 2002 baseline in state buildings.
• Established cohesive Directors Team within Facilities Administration and implemented nearly 30 cross-Facilities teams, removing inter-divisional barriers and driving to a ‘team’ operational environment.
• Completed major reorganization of Building Operations Division, eliminating three layers of management and reducing the divisional budget by $2 million while significantly improving efficiency and customer service.

CRANBROOK EDUCATIONAL COMMUNITY, Bloomfield Hills, MI 2004-2006
National Historic Landmark and internationally recognized center for arts, science, and education: founded in 1904, located on a 315 acre campus.

Operations Director
Lead facility operations staff of 100 employees responsible for core facilities management services campus-wide, including building repairs and maintenance, custodial and move management services, landscape management and mechanical/electrical equipment and systems maintenance. Administrative responsibility for $6 million operations budget. Member of campus management team.

• Completed rollout of planned/preventative maintenance program including full implementation of Mainsaver CMMS, improving efficiency of all facets of maintenance/facility operations.
• Developed and implemented Landscape Action Plan, creating roadmap for Grounds staff to dramatically improve the condition of the Cranbrook landscape and facilitating the restructuring of the Grounds Department.
• Spearheaded effort to remove barrier between management and union staff through consistent leadership and open communication, improving morale and minimizing grievance activity.

UNIVERSITY OF DETROIT JESUIT HIGH SCHOOL & ACADEMY, Detroit, MI 1998-2003
Prestigious all-boys Catholic institution founded in 1877: enrollment of approximately 1,000 students.

Vice President - Operations
Responsible for leadership and complete administration of all facets of the school’s operations, including maintenance, security, technology, construction/renovation, food service operation, transportation and sportswear store operation. Member of management team.

• Combined multiple school departments into a single Operations team, hired and trained key team members, and developed common work process, dramatically improving the levels of service provided to the internal and external customers.
• Served as the project leader on $8 million of new construction and renovation projects, completing those projects on schedule and within budget.

WESTIN HOTEL RENAISSANCE CENTER, Detroit, MI 1995-1998
73-story hotel, third tallest in the world at the time, totaling 1400 rooms and over one million square feet.

Building Superintendent
Managed hotel engineering staff of 35 composed of an administrative support team, hotel mechanics and service personnel responsible for planned repairs and maintenance of building systems, architectural elements, hotel equipment, and customer concerns. Member of executive committee.

• Redesigned engineering department structure and work processes, dramatically improving responsiveness, productivity, and efficiency.
• Championed intense effort to focus on work order backlog, reducing backlog by 60% in first year.
• Implemented preventative maintenance program encompassing all heating / cooling, and major electrical, mechanical and kitchen equipment, accomplishing long-standing strategic hotel goal.
MODERN ENGINEERING, INC. 1985-1995
Leading automotive product development company: $300 million sales, 35 buildings.

Managed team of professionals encompassing all aspects of facilities management. Responsible for leading staff reorganization, and develop critical business processes.

- Project manager for $3 million relocation and consolidation of five manufacturing operations into single plant facility, successfully accomplishing the largest move in company’s history.
- Recipient of Project Management Institute Award as a result of successfully managing project to set up 100,000 square foot garage service operation for Ford Motor Company.
- Managed human resources department in the areas of benefits administration, policy development and employee support in parallel with facilities management duties (1991-94).

Plant Engineering Manager, Prototype Division, Troy, MI 1985-1992
Managed all facilities and maintenance responsibilities including building acquisitions, plant construction/renovation activities, plant relocations, and major equipment acquisitions and installations. Established plant engineering department and hired staff.

GIFFELS ASSOCIATES, INC. 1978-1985
Historically considered a top tier Michigan architectural engineering firm; experienced multiple transitions in name and ownership beginning with acquisition by Arcadis in 1999.

Structural Engineer, Southfield/Newport, MI 1981-1985
Provided engineering support on structural design projects. Led the installation of major seismic pipe rupture restraints and pipe supports at the Fermi II Nuclear Power Plant.

Civil Engineer, Detroit, MI 1978-1981
Performed engineering studies for Detroit Water and Sewerage Department Facilities Plan, including the mapping and monitoring of the Detroit (DWSD) wastewater system.

EDUCATION / CERTIFICATIONS

Bachelor of Civil Engineering, University of Detroit, Detroit, MI 1978
Wayne State University, 15 credits towards ME, Detroit, MI 1980-1982
Licensed Professional Engineer, Michigan 1983 - 2013

AFFILIATIONS / MEMBERSHIPS

Sigma Pi Fraternity, International – Past Grand Sage (Past International Chairman and President); served as Grand Sage from 2008-10, International Officer from 1994-2012
IFC Advisor, U of M-Flint – Volunteer serving the IFC in support of Greek life since fall 2012
Order of Omega, U of M-Flint – Honorary member, initiated in 2014
MiAPPA (Michigan APPA) – Board member at-large
MAPPA (Midwest APPA) – President-elect, 2018-19
Engineering Society of Detroit - member since 1978
Chi Epsilon – National Civil Engineering Honors Society
RICHARD WALTER ROBBEN
True North FMC
Cell: 734 358 5150

AREAS OF DEMONSTRATED EXPERTISE:
PEOPLE: Team building, hiring and retention of quality personnel, focused training of both management and workforce, development of accountably systems for personal performance, succession planning
CUSTOMER: Connecting mission to customer experience, quality measurements systems, redirecting workforce focus from internal to external, customer training programs
FINANCE: Budgeting development and administration (operating and capital), financial controls, performance metrics development and tracking, contract negotiations (construction, utility and labor)
INTERNAL BUSINESS PROCESSES: Capital Planning, Facility condition assessment, proactive maintenance, task team cleaning, best practice implementation, reliability centered maintenance (RCM), behavior based energy management programs, deferred maintenance mitigation programs, benchmarking, change management, strategic business planning development and implementation, retro commissioning, construction management, maintenance management.
CHANGE MANAGEMENT: Business Process Redesign, Continuous Improvement, and structural redesign

EXPERIENCE:
TRUE NORTH FMC : 2016 to Present
President - Start up Facilities Management Consulting organization. Scope of Services includes: Organizational Evaluations, Interim Leadership Assignments and Turnarounds, Make Buy Assessments, Expert Witness Services and Strategic Business Planning

UNIVERSITY of MICHIGAN 1996 to 2016 – Retired
Executive Director of Plant Operations and Chief Facilities Officer – Responsible for all aspects of: operation, maintenance, grounds, waste management, renovation and construction, plant engineering, custodial and the capital planning and supply of utilities for University facilities in and around the Ann Arbor campuses. The extent of responsibility encompasses most aspects of facilities management for over 34 million SF in over 230 major buildings. The number of personnel supervised can reach a seasonal high of over 1400 professional, supervisory, support and union trade persons. Total financial authority for operating, energy and capital budgets exceeded $250 million annually.

COLUMBIA UNIVERSITY 1984 to 1996
Director of Physical Plant – Responsible for operation and maintenance of University facilities at the Morningside and Midtown campuses. My duties included: preventive maintenance, repairs, space renovations, corrective maintenance, utility production and distribution, energy conservation, capital construction improvements to the campus infrastructure, plant engineering, budget preparation and administration, customer service center, general and technical training, transportation (shuttle bus network over city and state roadways), parking (multiple lots), custodial services, grounds, special event planning and filming. The extent of responsibility encompassed most aspects of facilities management for over 5.3 million square feet in 56 building. The number of personnel supervised was more than 230 professional, supervisory, support and union trades/custodial persons. Total budget authority ranged between $30-40 million annually.

Lead Project Engineer - Various assignments throughout my employment included design and construction of power producing facilities including Coal, Oil, Natural Gas, Refuse and Nuclear Powered plants. Additional experienced involved studies for cogeneration, service life extension, and risk reduction. While in this assignment I was repeatedly sited by upper management for innovative approaches to project administration that resulted in substantial labor-hour savings.
ORANGE AND ROCKLAND UTILITIES  1977 to 1981
Senior Power Development Engineer - Worked within the power development office as a project manager. Duties included the total gambit of project management from conceptualization, design, implementation, construction management and turnover to operation of various plant betterment projects. Performed Research and Development project management duties as the company's representative to the Empire State Energy Research Corporation.

UNITED STATES NAVAL RESERVE 1974 to 1997
Positions of increasing responsibility from 1st lieutenant to Commanding Officer - This unique parallel career honed skills in personnel and maintenance management, leadership, decision making, problem solving, crisis management and resource utilization. Meeting goals and objectives with the resources at hand is a hallmark of the US Navy and of both my naval reserve and professional careers.

EDUCATION:
1991  Master of Business Administration, Columbia University NYC
1974  BS Nuclear Science, SUNY Maritime College
       Minors: Marine (Mechanical) Engineering & Humanities
1974 - Present  Various studies in Management and Technical topics to maintain proficiency, most recent Process Re-engineering, Negotiations, Change Management, and Interest Based Bargaining

RECOGNITIONS RECEIVED
2016   APPA Award for Sustainable Campus
2014 & 2006 APPA Award for Excellence in Facilities Management University of Michigan
2007   Michigan Recycling Coalition Recycler-of-Year in the Outstanding Reduction and Reuse Program category,
2007   Rex Dillow Award from APPA for Facilities Manger Magazine Article on Measurement of Quality in Service Organizations
2006   U of Michigan is the first university custodial program to be certified under the ISSA Cleaning Industry Management Standard CIMS 1101: University of Michigan
2005   EPA Energy Star Partner of the Year University of Michigan
2004   EPA Combined Heat and Power Award University of Michigan Central Power Plant
2001   National Recycling Coalition Outstanding School Program University of Michigan,
       1996   Energy Star Partner Columbia University

LICENSES and CERTIFICATIONS:
Professional Engineer, New York - Retired
US Coast Guard 3rd Assistant Engineer, Steam and Motor, Unlimited - Retired
New York City High Pressure Boiler Operator – Retired
Certified Education Facilities Professional CEFP - APPA

AFFILIATIONS:
Commander United States Naval Reserve (retired), 1974 to 1998
Member Tau Beta Pi National Engineering Honor Society
Member National Society of Professional Engineer – Michigan Chapter
Institutional Member National Association of College and University Business Officers NACUBO
Institutional Member International District Heating and Cooling Association
Principal Institutional Member Association of Higher Education Facilities Officers APPA
Member Building Owners and Managers Association BOMA
Adjunct Professor for Facilities Engineering State University of New York Maritime College,
       Inactive due to relocation to Michigan
Former Member of the Board of Directors Ann Arbor Transportation Authority 2006-2011
Adjunct Professor for Naval History NROTC unit at the University of Michigan

**PUBLICATIONS**
I have written articles on various design, management and maintenance topics that have appeared in Facilities Manager – APPA, Business Officer – NACUBO, Power Magazine, and Maintenance Solutions. APPA Effective and Innovative Practices, 2 chapters: Quality Measurement in a Facilities Management and Environment and Reliability Centered Maintenance: Application to Higher Education facilities 2014

**References Available on request**