

## **Department of Facilities**

### **Introduction**

This year marked the first full year in which the two new Department of Facilities teams worked in parallel while closely allied. Operations, led by John DiFava, and Campus Planning, Engineering and Construction (CPEC), led by Richard Amster, continued to focus on improving customer service, maintained ongoing Institute operations and the capital building program, and implemented sustainability initiatives throughout campus.

Operations achieved its two primary goals from the previous year. Based on feedback received from one-on-one interviews with customers, Facilities created a “one-stop shopping” area, the Customer Service Center (CSC). Facilities also added a new zone to serve the Division of Student Life (DSL). The DSL Zone allows Facilities to streamline multiple points of coordination into a single zone.

CPEC’s achievements included the completion of Building NW35, a new graduate residence with 540 beds. The new Ashdown House is on track for Leadership in Energy and Environmental Design (LEED) Silver certification. This is the first MIT residence hall with a heat recovery system from kitchen and bath exhaust systems, as well as a highly efficient curtain wall system allowing for the installation of HVAC equipment with a reduced environmental impact.

Four staff members from Facilities participated in the Institute-wide Planning Task Force. The task force was formed to find ways to maximize the efficiency and effectiveness of operations while focusing on the need to reduce overall expenses. The Facilities staff added much knowledge of planning and project management to the teams.

### **Energy and the Environment**

Both Operations and CPEC embarked on sustainability endeavors. The Custodial Services area increased its green cleaning initiative and purchased new equipment with low environmental impact. Parking and Transportation provided many more commuting alternatives to staff, with the goal of reducing MIT’s carbon footprint by decreasing the number of cars traveling to campus. A new Single Stream recycling program began in August 2008 and was expanded to include the entire campus by the end of the academic year. The intent of the program is to increase recycling and reduce the amount of trash collected, thereby generating a cost savings to the Institute.

Other activities intended to generate cost savings are a comprehensive energy cost reduction program and a faculty-approved savings verification program developed by the Engineering Division. In addition, a recommissioning process revealed energy improvements that will lead to significant savings. Energy efficiency projects are under way and include lighting upgrades and improvements in the Stratton Student Center and the Stata Center; also, fume hoods will be recalibrated in the Dreyfus Chemistry Building.

This year CPEC and Operations had an impressive record in staff training with an environmental focus. Four CPEC staff members and the assistant director of Operations

attended a LEED accreditation course with a 100 percent pass rate. This brings the total to nine people in the department who are LEED certified.

## **Administration**

### **Communications**

In collaboration with a subgroup of the Campus Energy Task Force, the Communications team created a greeningMIT logo that helped to launch the Walk the Talk effort in January. The Communications team also created a series of posters addressing behavioral change for energy savings. Both the new logo and posters were a huge success. The logo was featured on the MIT homepage, in Tech Talk, and in Technology Review. This effort reinforced the position of Facilities as a leader in supporting the energy movement at the Institute. In addition to this campaign, the Communications team created a poster for the Single Stream recycling program. The communications manager led recycling marketing efforts and presented an educational program during Independent Activities Period (IAP) and on Earth Day.

In addition, the communications manager was an active participant in the design and implementation of the new Building Services SAPweb. She organized several customer study groups for the effort and followed up with customers after the launch. The Communications team worked closely with the Applications and Desktop Services (ADS) group to ensure that the department's website was updated to reflect the changes in work order processes.

### **Environmental Health and Safety**

Collaboration between Facilities' Environmental Health and Safety (EHS) area and the Office of Environment, Health and Safety led to the creation of seven interdepartmental work groups. The groups covered areas of engagement between the two departments, including confined space and universal waste collection. The groups reviewed current standard operating procedures, program requirements, current roles and responsibilities, and opportunities for improvements. All seven groups completed their work and presented their findings in the spring. Based on the success of this collaboration, more work groups are planned for the upcoming year.

The most significant change in the EHS area resulted from personnel movement. A newly created position of assistant manager of EHS was filled in November 2008 by Edward Akerley. In January 2009, EHS manager Jennifer Combs moved into the position of project manager in the Project Management Division. As a result, Ed became interim manager of EHS. This year, the EHS training program saw training improvements with opportunities provided on site for both CPEC and Operations managers and supervisors to attend two Occupational Safety and Health Administration programs: Construction Industry Outreach Training and General Industry Training. More training opportunities are planned for the upcoming year.

EHS and Facilities have collaborated in the pilot GE Workout program to improve coordination and communication on construction projects. Facilitated by central Human

Resources, the team implemented rapid process improvements and is moving next to a study of safety management in construction projects.

### **Finance and Accounting**

The Operations Finance and Accounting group worked to improve managers' assistance with financial issues and to provide greater access to financial data. In addition, the group worked with the Facilities Operations leadership team to chart the way through budget reductions.

### **Information Technology**

The Applications and Desktop Services group was an active participant in both department and Institute-wide initiatives. The group participated in the Information Services and Technology (IS&T) Voice over Internet Protocol (VoIP) pilot to replace MIT's legacy phone system with a VoIP infrastructure. The conversion of Facilities phones in NE49 to all VoIP was completed, and conversion of Facilities phones in other campus areas continues. In addition, ADS members completed necessary server upgrades to the File and Print, Windows Terminal, and Kronos database servers, providing increased functionality and stability to Facilities users. ADS members also worked with other administration staff and IS&T to complete the implementation of the SAP Plant Maintenance module in additional Operations areas. This included significant work on the GuiXT scripts used in the Plant Maintenance module as well as significant testing.

The ADS group worked with IS&T to complete the transition of the legacy system used to track keys at the Institute to a modern, supportable system. The ADS group is now in the process of upgrading users to Microsoft Office 2007. The major upgrades include significant hardware replacement as well as user training. In addition, the ADS group has continued to evolve the use of mobile devices for Facilities staff with expanded support for smartphones.

### **Operations**

Providing good service to customers continues to be the primary objective of Facilities Operations. Facilities made great strides in this area with the introduction of the Customer Service Center and the new DSL Zone. In addition, the department collaborated with central IS&T to expand the SAP Plant Maintenance module to additional Operations areas and develop a new web page for customers. This new Building Services section in SAPweb allows customers to order many Facilities services through that website. The streamlining of the process provides a central web-based ordering system.

Operations hired an outside firm to gather data on various areas including off-site facilities and landscape and hardscape areas on campus. The information collected by the firm was instrumental in allowing Operations to establish capital renewal priorities.

### **Custodial Services**

The primary objectives of Custodial Services were to improve the level of cleaning and enhance the overall appearance of the Institute. Corridor and lobby floors in Institute

buildings were refinished, and a burnishing program was implemented, resulting in a better presentation of public spaces. Custodial Services continued to develop its Green Cleaning program by converting 90 percent of its cleaning chemicals to Green Seal-approved products. Environmentally preferable cleaning equipment was purchased, including three Tennant ec-H2O floor scrubbers; these devices clean using electrically converted water technology, eliminating the need for chemicals. These products and technologies will be applied to the new Media Lab, Sloan School of Management, and Koch Institute for Integrative Cancer Research buildings.

During the latter part of the fiscal year, Custodial Services developed a service organizational plan for the Stata Center. On July 1, cleaning services for the Stata Center were transitioned from outsourced status to being provided internally by MIT Custodial Services staff.

Custodial Services, in concert with Environmental Health and Safety, held organizational meetings to implement an Institute-wide integrated pest management program. This program will continue to develop in the coming year.

### **Customer Service Center**

The first phase of the Customer Service Center, with a “one-stop shopping” focus, began in November in tandem with the new Building Services SAPweb tab. One of the central features of CSC is that it increases the hours of operation during which Facilities answers customer telephone calls. Internal processes were also enhanced with a centralization of the SAP work order systems for the Custodial Services and Grounds areas.

### **Grounds Services**

Among the landscape projects designed and planted by Grounds Services is the north-side sloped garden along Vassar Street at the Stata Center. This area provides nearly year round interest in the landscape. Grounds collaborated with CPEC to garner cost savings by using in-house staff to design and install a garden area along a renovated walkway outside Building 38. Further cost savings was achieved when Grounds assumed responsibility for the landscape maintenance of Gray House. In addition, the purchase of a 51-foot aerial lift and a brush chipper will allow Grounds staff to prune the larger trees on campus. This will decrease the need to contract outside services and should result in an annual savings for Facilities.

Landscape initiatives scheduled for the next fiscal year include the redesign and installation of a garden area on the south side of the Ashdown House graduate residence (Building NW35). Also planned is a planting of 35 rhododendrons in Killian Court in order to maintain the fullness of the beds. Grounds will continue its plan to divide many overgrown perennials on campus and replant to establish new gardens and fill in existing areas where needed. This program will increase the number of plants on campus without expending money to purchase additional plants.

## **Mail Services**

Process improvements in Mail Services included the upgrading and replacement of 70 percent of the collection boxes on campus. Equipment upgrades and a change in second shift reporting time led to improved parcel delivery. Mail Services was also able to supply additional courier services for customers. Sustainability measures included the purchase of a hybrid vehicle when a fleet replacement was made.

Mail Services customer outreach efforts included attendance at several events: the Vendor Fair, the Preferred Printers Fair, the Events Fair, and a postal rule change seminar.

## **Off-Campus Facilities**

### ***Bates Linear Accelerator***

The Facilities group at Bates played an instrumental role in the design and construction of the new high-performance computer facility. Construction for the space was successfully completed earlier this year, and the installation of computer racks nears completion.

Negotiations are being finalized for the installation of a new cell site being requested by MetroPCS. This agreement is expected to generate additional income for the Bates facility, which is presently bringing in revenue from four other cell companies that occupy space on the site's water tower.

### ***Wallace Astrophysical Observatory***

The Facilities group at Bates continues to support Department of Earth, Atmospheric and Planetary Science users at the Wallace Observatory. As part of the budget reductions, Facilities picked up the contracted cleaning for the facility by performing this work in house along with the maintenance and repairs of the facility and grounds. Additionally, arrangements have been made with Haystack Observatory to assist in the oversight of site security at no cost to Facilities. This will be another realized cost reduction since this task has been contracted in the past. Painting and repaving was completed last year, greatly improving the appearance of the facility. Roof repairs were recently made to the roll-off roof of the student observatory. Overall, usage of the site has increased, with many night observation classes being conducted.

### ***Technology Square***

Facility support for the Center for Biomedical Engineering and the Institute for Soldier Nanotechnologies, located in Building NE47 (500 Technology Square), continues with a high level of satisfaction from the occupants of the space and users of the laboratories.

## **Parking and Transportation**

In an effort to reduce greenhouse gas emissions, the Parking and Transportation Office introduced more commuter benefits to build on the wide range of options available to MIT commuters. These included increased commuter rail subsidies, a free transit pass for the month of September 2008 to employees who were full-time parkers, additional satellite parking options, a new private transit benefit, and bike commuter reimbursement

benefits. The community enthusiastically responded to the free transit pass offer, with 708 drivers participating. As a result of the trial, 79 people switched to transit.

The Parking and Transportation Office provides the following services to the entire MIT community: parking permit allocation, issuance, and management; parking facility management; a subsidized MBTA pass program; and numerous shuttle services. The office continues to move its many manual processes to web-based applications. This year the office implemented a web-based visitor parking registration system (VPIS) that allows departments to reserve visitor parking online anytime, anywhere. The goal is to transform the Parking and Transportation website to a self-help commuter services site.

The Parking and Transportation Office is working with Campus Planning and Design and the Environment, Health and Safety Office to implement an on-campus filling station that would allow Facilities to purchase environmentally friendly fuels at discounted prices. The Parking and Transportation Office purchased 38,000 gallons of diesel fuel at retail prices in FY2008.

### **Recycling**

A major change occurred in recycling on campus in August when Facilities introduced the Single Stream recycling program. This program combines recycling streams including paper, cardboard, glass, and plastic into a single stream collection. It is intended to make recycling easier for everyone and improve recycling rates at MIT. The department plans to extend food scrap collection to go beyond the kitchens on campus. Several pilot programs are planned for the fall of 2009.

The purchase of a packer truck for the recycling operation increased Facilities' ability to collect additional single stream recycling. The amount of these materials collected and recycled increased by 259 tons between January and June of 2009 over the same time period in 2008.

Goals for the coming year include replacing the tops on large bins in public areas and adding single stream informational stickers to all bins.

### **Repair and Maintenance**

Our central and zone teams in Repair and Maintenance (R&M) continue to serve the MIT community by repairing and maintaining the Institute's building systems. R&M teams processed over 45,000 work orders during the past year, of which 25 percent were preventive maintenance orders. Also during the year, R&M completed construction on two team work spaces. The first, for the DSL Zone in W79, makes the space centrally located to the Division of Student Life. The second space was a new Central HVAC/Instrument Shop. R&M added NW35 and W98 to its building portfolio. It also provided tremendous support during the development and implementation of the Customer Service Center.

R&M supervisors continued their support of the capital renewal program through management of a number of projects, including the repair and replacement of several

roofs, exterior lighting, and the sidewalk along Amherst Alley and the replacement of the exterior stairs at the Walker Memorial Building.

Safety and training were prominent in R&M during the year. R&M provided opportunities for training in confined space, code requirements for plumbers and electricians, Lock Out/Tag Out training with supervisors, training for HVAC and instrument technicians, and certification and recertification for 10 maintenance mechanics.

As a cost-saving measure, R&M is exploring opportunities for in-house union staff to perform work done by contractors through a joint union/management initiative. R&M also is looking at a building automation system to identify ways to conserve energy.

### **Security and Emergency Management Office**

The Security and Emergency Management Office (SEMO) has a leading role in the planning, development, and implementation of MIT's Emergency Operations Center. During the recent H1N1 pandemic concerns, the office was able to test MIT's readiness for such an event and utilize this assessment as a guide for reviewing, evaluating, and improving capabilities. In addition, the MIT emergency notification system, MIT Alert, continues to progress, and SEMO currently has approximately 45 percent of the MIT community's contact information in the database. The CCURE software program was successfully moved into a more robust environment, thereby offering stable maintenance, timely support, and consistent system monitoring.

SEMO, in collaboration with the MIT Police Special Investigations Unit and IS&T, implemented a new software-based video recording system. This new system is clearly more reliable and, most important, more cost effective, both in the short and long term. Other efforts include security assessments relative to specific laboratories and buildings. Such efforts ensure that MIT is satisfying the expectations of the Department of Homeland Security relative to the required safeguards for specific chemicals and gases.

MIT's pilot program involving background investigations of newly hired personnel in specific positions continues to be coordinated by SEMO. This program in all likelihood has contributed to the reduction in thefts while raising community awareness of MIT's commitment to providing a safe and secure environment for students, faculty, and staff.

### **Utilities**

The Utilities team was deeply involved in the design of a project to install a new cooling tower and chillers at the Central Utilities Plant. The project is under construction and is scheduled to be online by summer 2010. These improvements to the campus chilled water supply are needed, in part, to support the new building for the Koch Institute.

NStar Electric replaced one of the five cables that supplies power to the campus, thereby increasing the amount of power MIT can import to the campus. This effort was required to support the new buildings. Also, joint planning is under way with NStar to bring additional cables to the campus to further improve the electricity supply to the campus.

The gas turbine underwent two minor maintenance periods this year that were designed to improve its reliability and extend its performance. The maintenance and upgrades performed should enhance the reliability of the turbine over the next several years.

Funded by capital renewal and based on a detailed condition survey, Utilities initiated extensive repairs to approximately 20 of the 94 steam manholes on campus. These long-overdue repairs will enhance steam delivery reliability and safety on campus. Further manhole and piping repairs will be undertaken over the next few years to improve the condition of the campus steam distribution system.

During the course of the year, Utilities made numerous unscheduled repairs to the steam and condensate system on the west side of the campus. Utilities staff are currently investigating alternative approaches to repair or replace this section of the steam distribution system.

Utilities completed the fiscal year with a \$5.3 million budget surplus due mainly to lower prices than budgeted for natural gas, oil, and electricity.

### **Campus Planning, Engineering and Construction**

The members of CPEC continue to lead planning, construction, and sustainability efforts at the Institute. Sustainability activities include the submittal of LEED design credits for the Koch Institute for Cancer Research and the new building for the Sloan School of Management. In addition, the group submitted LEED construction credits for NW35. The new Sloan building will be the most energy-efficient office/classroom building on campus, and the new Koch Institute building will be the most energy-efficient lab building on campus.

The CPEC team is currently implementing construction on several major projects:

- Building E14, the new extension of the Media Lab and the School of Architecture and Planning that will occupy 163,000 square feet at the corner of Ames and Amherst Streets, is scheduled to open in fall 2009.
- The Sloan School's Building E62, which will occupy 217,000 square feet between Main Street and Building E52 (along with a 168,000-square-foot parking garage that will accommodate 430 cars), is scheduled to be completed in summer 2010.
- The Koch Institute's Building 76, which will occupy 357,000 square feet on Main Street adjacent to Building 68 and the Stata Center, is scheduled to be completed in winter 2010.
- The first phase of the Building W1 renovation, which includes the building envelope, is under way. This phase includes masonry repair and replacement, new windows, and roof repairs.
- Chilled water capacity expansion at the Central Utilities Plant, designed to provide expanded service supporting the current capital program, is expected to be completed in summer 2010.

## **Campus Planning and Design**

Campus Planning and Design (CPD) began work on a Vision 2030 planning study during the past year. CPD held meetings and interviews with the deans of all five schools, along with the deans for student life, undergraduate education, and graduate education; the vice president for research; the MIT Libraries director; and the associate provost for space planning. After initial kickoff meetings, additional meetings continue to focus on key issues within each school or division. The preliminary results from this phase of the study are planned to be presented in July 2009. Research is also under way for the 14 campus-wide themes, which describe the teaching and research, community, and infrastructure context within which the Institute carries out its mission. Work on the Vision 2030 plan will continue during the next year.

Examples of permitting and zoning activities during the past fiscal year include zoning support for the building permit for the renovation of Building W1, the former graduate residence hall that is being converted into a residence for undergraduates; the Department of Conservation and Recreation boating license and Department of Environmental Protection Chapter 91 license for the Wood Sailing Pavilion and Pierce Boathouse; and the special permit conditions for the design and implementation of the intersection of Main and Broadway, which is associated with the construction of the new Sloan building.

CPD has conducted detailed studies of backfill options resulting from the completion of the new Sloan building and the Media Lab extension. The studies include options for consolidating Sloan administrative units; School of Humanities, Arts, and Social Sciences (SHASS) departments; and SAP units, as well as renovation options for Building E52, the original Sloan building.

A comprehensive assessment of campus landscape components was performed in order to help with planning and budgeting for the next several fiscal years.

CPD continues to work with the administration to establish the agendas for the meetings of the Committee for the Review of Space Planning (CRSP) and the Building Committee and to support the decision-making process through studies, research, and documentation of committee issues.

## **Engineering**

The Engineering Division continues to provide consulting engineering services to other Facilities divisions as well as many departments, labs, and centers (DLCs). The staff supports planning efforts, space change projects, and major capital projects. The division is also responsible for overall management of the Capital Renewal program.

## **Energy Conservation Efforts**

The division continued its conservation efforts by installing 50 Vendor Misers across campus to reduce vending machine energy expenditure by 40 percent. Another project, coordinated with artist Mathew Day Jackson, made his exhibit in the List Visual Arts Center sustainable with the use of solar-powered lights. In addition, the division

developed a recalibration project for fume hoods in Building 18 to reduce face velocity by up to 20 percent and completed relamping and lighting fixture upgrades in Buildings W20 and 32.

Our engineers continued to assist in the design, review, and commissioning process for new buildings. They provided start-up guidance for Building NW35 and worked with Repair and Maintenance and the Housing Office to resolve start-up problems and direct changes to further reduce energy use in the building.

### **Facility Information Systems**

Drawing Information Systems was renamed Facility Information Systems (FIS) to better reflect the extensive support that its team provides to the Institute. In addition, the signage area was reassigned to FIS, and the graphics assistant now reports to the manager of FIS.

A major accomplishment of the FIS team was the completion of the space audit for the 2009 indirect cost recovery and updated inventory. This biannual project provides crucial data for cost recovery to the DLCs on campus.

The FIS team created a new mapping framework to support Facilities mapping projects and to support CPD with Vision 2030 efforts. In addition, the team completed the processing of a backlog of documents for over 400 projects from 2001 to 2005, making them available through the CPEC document management systems. They also migrated 42,000 project documents in their document management system into an updated configuration for better access and analysis.

Collaboration with areas outside of Facilities included working with IS&T to update the online campus map with newer technologies. The team also created a process to update egress plans for the Institute and developed a strategy for their long-term maintenance. Work thus far includes a pilot with Fraternity, Sorority, and Independent Living Group buildings. Future plans include creating egress plans for the entire Institute.

### **Project Management and Construction**

Changes to the Project Management Division (PMD) organization and delivery model were implemented in February 2008. A shift occurred from a school- or DLC-focused organization led by four program managers to a project-focused organization led by five program managers. Further evolution of the PMD Renovations group occurred during the past year in the form of three teams focusing on the major programs from which projects are funded: CRSP, Capital Renewal, and Construction Quality Assurance/Quality Control (QA/QC). Each of these teams is led by a senior project manager under the direction of program manager Mike Kearns. Jan Burke leads CRSP, Bill Vitkosky leads Capital Renewal, and Joe Collins leads Construction QA/QC. The effectiveness of these teams is evident in that through their efforts Facilities has experienced more standardization, increased speed of delivery, and improved customer service.

Facilities also initiated an in-depth project tracking and reporting effort for the Capital Renewal program. This effort significantly increased the amount and rate of capital

renewal work put in place. With this new structure and discipline, the Capital Renewal team, supported by the PMD Renovations project managers and other project managers across Facilities, is positioned for a more robust and larger campaign.

Approximately \$80 million has been approved for capital renewal projects from FY2006 through FY2009. With an additional \$15 million approved for FY2010, the total allocation is \$95 million. Fifty-five projects have been completed over the first four years of the program. Total spending for this period has been \$57.3 million, with approximately half of this amount expended in FY2009. At this time, there are an additional 80 capital renewal projects in planning or construction.

In FY2009, 70 projects were completed by the PMD Renovations team, totaling \$53.66 million of work in place. These projects were funded by CRSP, Capital Renewal, donors, and the DLCs.

Highlighted projects managed by the PMD Renovations team are a major renovation to Room 10-250, including lecture hall upgrades and new fire alarm and fire protection; Center for Biomedical Engineering labs and support space in Buildings 16 and 56; and power and cooling upgrades in Building W91 for IS&T. Other projects include a new handicap-accessible entry and ramp for Building 35 and a biodiesel plant for student activities in Building NW14.

Capital renewal projects included improvements to residence halls, parking facilities, and restroom upgrades. Projects of note are stair refinishing in the Main Group buildings; a major rebuilding, including reuse of materials, of the wall of the Kresge Chapel; and a replacement of the Carr indoor tennis bubble. Ongoing programs include roof replacements, fire alarm upgrades, and elevator renewals.

Projects of the group extend off the main campus and include participation in a high-performance-computing conceptual study and an installation of a new child care center playground at Lincoln Laboratory.

## **Summary**

During the next year, Facilities will continue to be a leader in sustainability and stewardship of the campus. At the same time, the Operations areas and CPEC divisions will search for cost-saving measures while the amount of square footage that Facilities must maintain increases. It is the goal of the entire department to provide excellent customer service despite continued budget reductions.

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*More information about the Department of Facilities can be found at <http://web.mit.edu/facilities/>.*