Department of Facilities

As stewards of the campus, the Department of Facilities strives to improve both buildings and grounds at MIT. Among our initiatives to improve customer service this year was a new Repair and Maintenance (R&M) service directory. Over 400 copies of the brochure—shaped like a truck—were distributed at the Vendor Fair in September.

Three Facilities divisions (Engineering, Project Management, and Operations) collaborated on an improvement to one highly visible spot on campus: the Great Dome. The dome had not been lit since the energy crisis of the 1970s, but in June 2007, it was lit at a ceremony during Commencement weekend. The new lighting system incorporates energy-saving light-emitting diode fixtures that illuminate the dome, the Roman numerals that spell out 1916 (the year the building opened), and the limestone façade.

In an effort to preserve established and healthy plants from the Dibner Garden (which was eliminated in order to make way for the new Sloan School building), Facilities reused plants and other materials at the Building E32 site. The department collaborated with the Cambridge Historical Commission to create a park after the E32 demolition, which provides a view from the Medical building, as well as a new seating area.

Strategic Planning

Following completion of the department's strategic plan, the directors created Strategic Implementation Groups (SIG), each with a focus on one of the goals in the strategic plan. One group of note is the Project Management SIG group. It was charged with reinventing the project delivery system, and members met throughout the year to focus on a variety of initiatives. Members were comprised of representatives from four divisions: Campus Planning and Design, Engineering, Operations, and Project Management. The group developed standardized processes for consultant and contractor selection, including templates for Requests for Quotes and Requests for Proposals. Current focus of the group is a streamlined project delivery process for small projects.

Continuous Quality Improvement

The department continues the Continuous Quality Improvement (CQI) initiative. Training of new CQI teams transitioned over to Facilities, allowing a more department-centered focus, but also saving money because outside trainers are no longer required.

CQI teams (comprised of tradespeople, managers, and other staff in the department) continue to work on projects improving work flow and work processes and increasing efficiency. A total of 19 teams with representatives from all six divisions completed their projects and made recommendations or are studying and improving work processes.

Energy and the Environment

Members of our department are active participants in the MIT Energy Initiative. We are working with the faculty Energy Research Council and with the Environmental Programs Office (EPO) on the Institute's Walk the Talk program. While the faculty is

finding solutions to the world energy crisis, our efforts to make the campus more energy efficient are reflected in newly opened buildings, in buildings under construction, and in renovation and conservation projects.

The PDSI project (named for the Departments of Physics and Materials Science and Engineering, Spectroscopy Lab, and Infrastructure) has been completed and is being commissioned. PDSI consists of a new 49,000 square foot infill building (Building 6C) in the courtyard encompassed by Buildings 2, 4, 6, and 8, along with a comprehensive renovation of 79,000 square feet of adjacent space, infrastructure for an additional 127,000 square feet, and life safety upgrades for an additional 90,000 gross square feet. This project uses chilled beams for cooling and is a test case for future renovations for other Main Group spaces. Energy costs are expected to be reduced and comfort increased, compared with more traditional cooling systems.

The Brain and Cognitive Sciences Complex that opened in December 2005 was submitted for Leadership in Energy and Environmental Design (LEED) Silver certification. The building achieves nearly a 70 percent reduction in potable water use by several methods, including collecting and reusing rainwater for water recycling, low-flow water fixtures, and control of lab wastes. The building has other sustainable features such as efficient lighting design controls and daylight controls, a variable air volume system, and heating, ventilating, and air conditioning (HVAC) equipment of the right size, which will reduce energy use.

The new Sloan School building (currently under construction) will be the most energy efficient building on the campus. The six-story, 215,000-square-foot building will sit above an underground parking garage with 420 parking spaces. We hope that the building will achieve a LEED designation of at least Silver.

Options for the new cancer research facility have been the subject of intensive study, and we expect it to be the most energy efficient lab building on campus. The cancer research facility is scheduled to start construction next summer; its current projected capacity is 360,000 square feet.

Energy conservation programs to reduce steam use and lighting energy are underway. Two buildings (the Dreyfus Chemistry Building and the Zesiger Sports and Fitness Center) are pilots for a continuous commissioning program. This program uses the services of an outside firm to monitor hundreds of key operating parameters. This approach identifies systems that are not operating properly and suggests remedial measures in its monthly report. In addition, Facilities recently instituted a steam trap renewal program for academic and housing buildings. About half of the academic building traps were renewed at a cost of $355K, with an anticipated energy savings of $360K for the first year.

Performance Recognition

The department continues to refine our Rewards and Recognition program. During this past year, a new category called Pursuit of Excellence was created to provide a mid-range award to employees. In June, the department presented an Infinite Mile Award to

a CQI team that had improved the supply process for the area we've designated as the D Zone of campus (mainly the west and northwest buildings). The team was chosen for their work in reducing the time for delivering equipment and materials to the D Zone through better planning, ordering, and distribution.

Several members of our department received awards from the Institute and other departments. Peter Cooper received the James N. Murphy Award with Steven Lanou of the EPO, for their efforts with student environmental groups. Jon Himmel received an Infinite Mile Award from the Office of the Vice President for Research for his efforts in the Building E25 renovation project. Three employees from our finance and accounting/stockroom area—Tammy Doyle, Steven Fosher, and Daniel DiPasquale—received an Infinite Mile award from the Controller's Accounting Office. The three collaborated to double the use of the MIT credit card for purchasing materials; to consolidate, negotiate, and reduce the number of invoices sent by vendors; and to expand their own roles in purchasing and receiving services for other areas within Facilities.

Operations

The Operations division improved efficiency in all areas, despite inflation and rising services and materials costs, and effectively responded to a concurrent 15 percent increase in the size of MIT's physical plant. This was achieved by a combination of factors, including the execution of the action plan for the Operations Strategic Plan developed in January 2006. Plan elements included the implementation of a comprehensive training program for hourly service staff employees and the creation of clear performance expectations and accountability. These performance expectations have been incorporated into key performance metrics and performance reviews.

The division established a new Work Control Center, the purpose of which is to optimize the use of available resources. Its work includes managing major repair operations and major maintenance projects, major service contracts, capital renewal, building inspections, and interfacing with R&M and our Project Management division.

A reorganization of waste management responsibilities resulted in the creation of the new position of recycling, solid waste, and moving supervisor in our Grounds Services area. In addition, a new recycling yard opened this spring, which will ease pick-up and removal of materials from campus. The Institute's recycling efforts continue at a strong rate of 40 percent for the second consecutive year.

Enhancements to the campus landscape include a new garden at the site of the former Building E32 (using the plants from the former Dibner Garden), improvements to the area around Building WW15, and several small gardens near campus residences.

A focus on improving response time led to a variety of changes in the R&M area. Among these are the training and daily work planning for tradespeople, and the reassignment of HVAC mechanics to named zones rather than to the Central Shop. In addition, the group added an assistant manager to manage the zone shops and a senior planner/scheduler to lead the work planning initiative. R&M also implemented recommendations from

several successful CQI projects and continued to track their impact through key performance metrics.

The R&M teams processed more than 53,000 preventative maintenance and routine work orders during the year. Completed projects include reroofing Building 42, painting the MIT Boathouse, replacing heating coils in the Next House residence hall, and replacing the rooftop HVAC units for Buildings NW22 and NW17. In addition, R&M successfully bid and negotiated a new elevator service and partnership agreement.

The Custodial Services area improved efficiency by implementing recommendations of several CQI projects. Based on recommendations of a team focusing on supplies, Custodial Services is installing new automated chemical dispensing systems in custodial rooms throughout MIT. This is an improvement in cleaning products saving money on supplies. Custodial Services also leveraged a new custodial supply partnership incorporating supervisor and custodian training, hand held inspection software, and development of a state of the art computerized work loading program for daily custodial job guides.

Mail Services continued its focus on customer service by participating in the Preferred Printers' Fair, the Vendor Fair, and the Event Planners Fair. The group's initiatives included developing and implementing a training program for Mail Services employees and updating the primary mail meters.

This year, Facilities assisted with the transition of ownership of the Bates Linear Accelerator property (in Middleton, MA) from the US Department of Energy to MIT. We also provided Facilities support for Bates initiatives for future research opportunities.

Utilities

The Central Utilities Plant (CUP) provides reliable electrical, steam, and chilled water service to the majority of the Institute's buildings, labs, and centers. The CUP continued its program of presentations and tours of the Institute's energy-efficient and Environmental Protection Agency award-winning cogeneration plant. Tours were provided to a range of MIT departments that included mechanical engineering, aeronautics and astronautics, civil and environmental engineering, and architecture. Among the outside groups who visited the plant were students from Northeastern University, Harvard University, the Franklin Institute of Philadelphia, and a Cambridge community environmental group.

Joint planning is underway with NStar Electric to upgrade cable circuits feeding MIT, in order to provide firm interconnection capacity for campus expansion through 2010.

The ability of the CUP to provide adequate chilled water to the campus was improved with the installation of a new 800-ton chiller and replacement of the 25-year-old cooling towers at the East Campus Chilled Water Plant in Building E40. Additionally, Chiller Number 3 at the CUP was retrofitted with a non-chlorofluorocarbon refrigerant and upgraded from a capacity of 3,500 to 4,000 tons.

Steam production remained substantially the same as the previous year, with the exception of replacement of Boiler Feed Pump Number 1. The higher capacity pump and driver improve the reliability of the boiler feed system.

Efforts to stabilize the utility purchased commodities budget continued with agreements that fixed the price of a portion of our natural gas requirements during the winter heating season and established a one year hedge on the remainder of our natural gas purchase. This effort helped to stabilize the volatile pricing for a major portion of the fuel necessary to heat, cool, and provide electricity for the campus.

Communications

The communications team implemented an upgrade to the Facilities website in order to create a more visual venue for the department's projects and initiatives. Along with this upgrade, the team collaborated with the MIT News Office and Web Communications Services to incorporate the former Evolving Campus website information into the Facilities web pages. There is now a central source for information about the department's campus planning and construction initiatives.

Information Technology

The Applications and Desktop Services (ADS) team 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, which would replace MIT's legacy phone system with a VoIP infrastructure. Approximately 50 Facilities members have VoIP desk and/or wireless phone sets. Participation continues into the next phase. In addition, ADS members worked with other IS&T shared services staff to prepare for the recent SAP system upgrade. This included work on the GuiXT scripts used in the plant maintenance module, as well as significant testing. Extensive preparation resulted in a smooth upgrade.

The team's manager is a member of a CQI project whose mission is to improve the availability of human resources management report data throughout the department. The CQI team continues into its final phase.

The ADS group continues preparation for upgrades to both the Microsoft Windows Vista operating system and Office 2007 applications.

Parking and Transportation

The Parking and Transportation Office staff were involved in several different process changes that ranged from reorganizing the distribution of MBTA public transportation passes to relocating parkers due to closures of several parking lots on campus. The office also began a five-year contractual agreement with Standard Parking to operate parking and transportation services on campus.

The office staff relocated more than 600 parkers to support the following construction projects: the demolition of Hayward Garage and construction of a surface parking lot; the closing of the Pacific lot for construction of NW35, the new graduate residence hall;

and the closing of the Sloan lot for the new Sloan School building construction. Also, the staff adapted the subsidized MBTA pass program to support the CharlieCard and issued over 4,000 CharlieCards.

The manager of the Parking and Transportation Office partnered with Sloan School faculty to coteach a class on sustainable transportation. Other activities related to customer service included the sponsorship of the annual Transportation Fair and participation in the Vendor Fair and Earth Day.

The office continues to promote commuting alternatives in an effort to reduce the number of vehicles traveling to campus. This year, they introduced a van pool subsidy and pretax payroll deduction for van pool commuters. They also introduced the GoLoco ride sharing program to the MIT community. GoLoco is a service that helps people arrange to share rides among friends, neighbors, and colleagues.

Project Management

There were many significant and representative projects managed by the Project Management division this year. Projects completed include:

- Extensive renovations to the third and fourth floors of Building E23, including offices, examining rooms, and circulation areas; completed in December 2006
- Renovation of Professor Darrell Irvine's laboratory in Building 8 for the Department of Materials Science and Engineering; completed in July 2006
- Relocation of MIT Museum exhibit space to the first floor of Building N51; completed in April 2007
- Renovation of the Reading Room on the fifth floor of the Stratton Student Center; completed in September 2006
- Alarm and sprinkler upgrades to Building W85 (Westgate); completed July 2006
- Upgrade to the elevators in Building 6; completed in April 2007

Projects underway include:

- New building for the Media Lab and the School of Architecture and Planning, consisting of 163,000 square feet at the corner of Ames and Amherst Streets
- Renovation to 29,300 square feet of space to accommodate Health Sciences and Technology and Earth, Atmospheric, and Planetary Sciences, along with new infrastructure for 90,500 square feet
- NW35, a 548-bed graduate residence hall at the corner of Albany and Pacific Streets
- Installation of carbon monoxide detectors throughout residential buildings, in compliance with new commonwealth regulations
- Continuation of streetscape improvements on the west end of Vassar Street
- Replacement of cooling towers on Building E40 with a more aesthetically pleasing installation

Capital renewal projects currently underway include:

- Repairs to the envelope of Buildings N51 and N52
- Replacement of windows in Building W84 (Tang Hall)
- Replacement of elevators in Buildings E55, 18, and 10
- Upgrade of air conditioning in Building W16 (Kresge Auditorium)
- Replacement of boilers in Buildings N10, N52, NW12, and NW22
- Replacement of rooftop air handlers in Building W92
- Upgrade of air conditioning in Building 42
- Replacement of steam and condensate piping on Ames Street
- Repairs to Building W45 (West Garage)

Campus Planning and Design

Efforts are underway to refine the structure of the Campus Planning and Design division and to gear up for new planning initiatives.

Theresa Stone, executive vice president, has convened a group to prepare an overview of campus and capital planning, which will develop a framework for campus development. Within this broad area will be teams addressing programmatic needs, capital renewal, space needs, campus infrastructure, information technology, and transportation. There will also be two focused studies: 1) to develop and promote MIT's preferred position on the urban ring in partnership with the City of Cambridge; and 2) to develop a plan for Massachusetts Avenue from Memorial Drive to Lafayette Square that will identify development opportunities and ways to improve MIT's front door and primary gateway.

Significant projects completed this year include the Department of Athletics, Education and Recreation study, which was a comprehensive evaluation and plan for DAPER facilities; the campus-wide study of community and student activity space, in order to provide a framework for future facilities; and the Northwest Sector study, which looked at options for improving the urban design quality of the new graduate residential sector in the northwest area.

Projects underway include:

- Analysis and options for the space to be vacated upon completion of the new Sloan School building, the Media Lab extension, and the cancer research facility
- A feasibility study for renovating and reconfiguring Room 10-250
- The High Performance Computing Site study, which is considering location options for a high performance computer cluster
- Landscape projects, including the Ippen Garden replacement at Building 48 and options for the renewal of McDermott and Eastman Courts
- The Sailing Pavilion study, which is looking at options for upgrading and restoring the pavilion

Drawing Information Systems

The biennial indirect cost recovery audit was completed on June 30, 2007. This space survey is a significant work product of the Drawing Information Systems group, which assists the Office of Sponsored Programs in recovering more than $100 million in reimbursements annually.

Engineering

The Engineering division provides consulting engineering services to other Facilities divisions, as well as many departments, labs and centers. The staff supports the planning effort, space change projects, and major capital projects with their knowledge of existing systems, review of design engineers' assumptions and proposed systems, problem resolution during construction, and testing and commissioning of all building systems. The division is also responsible for utility planning and for the Institute's energy conservation and sustainability efforts. In order to inform future space planning efforts and capital renewal projects, we've undertaken a review and update of the 10-year-old facility condition assessment.

Personnel Changes

Our chief facilities officer, William J. Anderson, Jr., left the department in May to pursue an opportunity in the private sector. Deputy chief facilities officer James Wallace has assumed leadership of the department on an interim basis, under the direction of executive vice president Theresa Stone.

Pamela Delphenich transitioned from director of project management to director of campus planning and design, a position she previously held at Yale University. There is a search underway for a new director of project management.

The new position of recycling, solid waste, and moving supervisor was filled in October by Alana Levine, who had held a similar position at the University of Arizona. Since arriving last fall, Levine has worked with the communications team to create a new identity for the recycling program and to increase outreach and education on campus.

Members of the department were saddened when Robert Stiles, project manager at the CUP, passed away unexpectedly after a short illness. His presence on the CUP management team is sorely missed.

Summary

As we move into the next year, we look forward to the hiring of a new chief facilities officer and director of project management. With these changes will come new ideas, energy, and a reexamination of priorities and organization. Though we expect change, we also expect to continue our focus on customer service, stewardship, process improvement, training and development, energy management and conservation, and responsible resource management.

We will be challenged by capital construction projects, notably continued construction on the Sloan School building, the new Ashdown residence, and the Vassar Street west

streetscape. Construction will begin on the Media Lab expansion and the cancer research facility. Further, we need to confront utility and energy issues at the Institute by seeking the most efficient methods to provide utilities to an expanding campus and to address increased demand from existing buildings. We will continue working to allocate capital renewal funds in the most responsible and effective manner. The facility assessment process will contribute to the decision-making process for these funds.

Within operations and administration, we will continue to look for methods to use our financial and human resources most efficiently and effectively. We concentrate on continuous quality improvement, along with a focus on moving toward more planned maintenance. We will also seek ways to bring more technology into the department to expand and enhance our use of SAP.

James H. Wallace
Deputy Chief Facilities Officer

More information about the Department of Facilities can be found at http://web.mit.edu/facilities/index.html.