

Department of Facilities

The Department of Facilities has undergone extensive reorganization over the past year. From a new chief facilities officer and new division directors to new organizational units, Parking and Transportation and Shared Services, the department has undergone change unlike any other in the past decade. As we move forward, the new organization will be built on a foundation that focuses on client service, employees, communications, teamwork, continuous improvement, and accountability.

Along with the changes to the organization, we have continued to steward the physical assets of the Institute. We have helped increase the campus recycling rate by almost 40 percent. We continuously seek methods to implement sustainable building and facility management practices. Since opening the Stata Center we have tuned building systems, worked with occupant focus groups, and overcome normal start-up issues. We transitioned to an Systems, Applications, and Products in Data Processing (SAP)-based work management system, assisted Housing in converting to this same system, and conducted a process redesign in the Mail Services section. We have sought out and implemented methods to decrease the impact of increased fuel prices and, at the same time, provided additional capacity for the heating, cooling, and electrical needs of the expanding campus.

In addition to the capital building program, we have completed over 80 renovation projects, providing improvements to classrooms, laboratories, offices, residential facilities, and other student activity space. We have also replaced structural and mechanical components in numerous buildings.

Finally, we, along with others at the Institute, are engaged in a capital planning process that will identify the areas of highest need and address the strategic priorities of MIT. The upcoming sections will provide details of our changes and accomplishments during the past year.

Organization Changes

The Department of Facilities has initiated numerous organizational changes over the past year. Bill Anderson began last August as the new chief facilities officer (CFO). Bill joined MIT from Penn State University where he was associate vice president for physical plant.

All of the administrative, operational, and utilities units within the department had been reporting to one director. Those areas were split into separate divisions, each with a director reporting to the CFO.

The administrative area was renamed the Facilities Shared Services Division, with Jim Wallace, the previous director of operations and administration, as the director. This division provides administrative services to the entire department, including human resources, training and development, labor relations, finance and accounting, information technology services, and communications and public relations. Annette

Montminy was hired as assistant director for human resources to provide advice and expertise to the department through the Shared Services Division. Annette brings over 15 years of senior-level experience in human resources. Further, in January 2005, the Parking and Transportation Office for the Institute was transferred to Facilities. This function, managed by Larry Brutti, is also reporting to Jim Wallace.

The Operations Division, encompassing Custodial Services, Grounds, Mail Services, and Repair and Maintenance, is led by Dave McCormick, the previous assistant director of operations. Within the Operations Division, Bernie Richard, who had managed the Mechanical, Electrical, and Piping section within Repair and Maintenance, is now managing all central repair and maintenance services located in Building E19. Kevin Connolly, previous supervisor of the D Maintenance Zone, is now lead supervisor and manages all five zone maintenance units. Replacing Austin Petzke, who retired as manager of custodial services, is Kyle Rohm. Kyle came to MIT last August from Wheaton College, where he was director of custodial services. Kyle also has experience supervising operations with private contract cleaning firms.

The Utility Division is led by Randy Preston, who was previously the manager of structural services and zone maintenance within the Repair and Maintenance area. Peter Cooper, previous director, is now with the Engineering Division, heading a new effort on sustainable engineering and development and long-range utility planning.

We have assessed the organizational effectiveness of the Development, Design, Engineering, and Construction group (DDEC) with a view toward developing a client-focused organizational model that establishes client advocacy, increases accountability, enhances professionalism, preserves flexibility, improves consistency in project management, and continues to deliver quality service. DDEC will become three separate divisions: Project Management, Campus Planning, and Design and Engineering. Project Management will combine the previous Capital Construction and Design and Construction Sections of DDEC. We have recently hired Pam Delphenich, previous university planner at Yale University, as the new director of the Project Management Division. The Campus Planning and Design Division and Engineering Divisions are being established with Deborah Poodry and Walt Henry as the respective directors.

Department Objectives

As we moved through the year building a new Facilities organization, there were a number of objectives and principles that were defined to form the foundation of how we operate and succeed in providing the facilities services and stewardship necessary for MIT. Specifically, these were as follows:

- *Client service.* The reason our department exists is to serve our customers to enable them to fulfill the Institute's teaching and research mission. Delivery of quality products and services in a cost-efficient and timely manner is a primary objective.
- *Employees.* Equally important is our commitment to employees. We ask a lot from them, and they should expect a lot from us: sound leadership, meaningful

- work, recognition for hard work, safe working conditions, and fair and equitable treatment are all important objectives.
- *Communications.* We have a large, complex organization. We must effectively communicate throughout the organization and with our customers.
 - *Teamwork.* We must be a true team to be successful in this challenging environment. Collaboration is absolutely essential.
 - *Continuous improvement.* We need to continually improve work processes to make them as efficient and effective as possible.
 - *Accountability.* Personal and organizational accountability are inherent in all successful teams, including the Department of Facilities.

Operations

In addition to the numerous organizational changes, the Operations Division had many accomplishments over the past year. Listed below are some of the more significant highlights.

Through the first 11 months of fiscal year 2005, the MIT recycling rate has improved to 31 percent from a rate of 22.4 percent in 2004.

In 2004, Repair and Maintenance (R&M) began operations in the new Stata Center. Working throughout 2004 and 2005, R&M was able to transition the building from an active construction site to a functioning building with 1,000 occupants. During this period, they worked with Facilities project managers and engineering staff to fine-tune the building's mechanical systems, establish a customer work order interface, and work through the initial start-up and maintenance issues in the building.

During the summer of 2004, R&M transitioned from MAXIMO to the SAP Plant Maintenance (SAP PM) computerized work order management system. A collaborative team, including staff from Information Services & Technology, R&M, Facilities Information Technology, and Facilities Finance and Accounting worked closely to develop, test, and successfully implement this new system. The SAP system directly integrates with MIT's SAP financial system and allows for planning and tracking of work order costs down to the individual work order level.

In improving performance metrics, R&M reduced the average work order age from 23 days to 9.3 days in the last year, increased the rate of on-time work order completion from 30 to 70 percent, and reduced the total outstanding preventive maintenance work orders from over 1,500 to less than 500.

R&M also successfully completed many repair projects, including structural reinforcement of the Rockwell Cage roof, installation of new roofs on buildings 31, 38, E19, W32, 57, 44, 24, and 50, painting of the Main Group windows, and renovation of elevators in buildings W1, W4, W51, W61, W71, and W85.

Mail Services performed a process reorganization of their operations, redesigned and changed the layout of the WW15 Mail floor to improve the process flow, and redesigned mail sorting, pickup, delivery, shipping assignments, and routes to achieve

more efficient operations. The process redesign resulted in no loss of service to the MIT community, even though there were five fewer staff in Mail Services.

Mail Services also successfully opened the new shipping/receiving area and Service Center in the Stata Center basement.

Due to budget reductions, Custodial Services adjusted from every-night cleaning to every-other-night cleaning, with minimal complaints from the MIT community.

Working together in a joint management/labor team, Custodial Services successfully competed with outside contractors to provide the cleaning services for the new Brain and Cognitive Sciences Building, which will add 10 new custodial positions to the staff.

Custodial Services developed an in-house carpet shampoo program and have begun to transition this work from outside vendors to in-house MIT personnel. This program will be more cost efficient and provide a quicker response to the customer.

A new custodial service inspection program and a new customer survey program were implemented, which will track our progress in improving custodial services and customer satisfaction.

A joint team of R&M, Custodial, and Grounds staff combined to provide support to presidential inauguration and celebration, Commencement, and Stata dedication.

Throughout the winter months, we had numerous snowstorms, including major blizzards and some quick-hitting storms. The total snowfall was 95 inches compared to 43 inches the previous winter. Grounds Services, working closely as a team and with the help of supplemental staff from Mail and Custodial Services, were able to keep the MIT sidewalks, roads, and parking lots clear and open for business. This effort was widely recognized by faculty, students, and staff.

Utilities

The staff in Utilities faced many challenges during the past year. Installation of new equipment, rehabilitation of existing equipment, volatility in gas and oil prices, service contract negotiations, and repair to the Central Utility Plant (CUP) and campus distribution systems all contributed to a very busy year. To lessen the impact of volatility in the cost of commodities, efforts are under way to hedge the price of natural gas, the largest contributor to the volatility, so that future price fluctuations will have less impact on budget.

The Utilities Division concluded a one-year contract with Suez Energy to supply supplemental electricity to the campus at a fixed price, helping to stabilize MIT energy costs for the next fiscal year.

Also concluded was a 10-year agreement with DistriGas, a subsidiary of Suez Energy, to supply an additional 1,500 MMBtus of firm natural gas per day to the CUP. This contract

will ensure that MIT has a reliable supply of natural gas for the life of the contract sufficient to meet current needs.

Two new temporary boilers, boilers 7 and 8, were added to the steam system at the Central Utility Plant to increase the firm supply of steam. These two boilers will add approximately 130,000 pounds per hour firm capacity to the steam system.

We also reached an agreement with Barclay Water Management to provide water treatment services to the CUP. This new contract is expected to save approximately \$100,000 per year over the previous contract and to improve the level of service received by MIT.

Effectiveness of the chilled water system to provide building cooling was improved by installation of pressure-independent control valves and bypasses around building pumps at several buildings. This program is a multiyear project.

A continuation from last year was a project to upgrade the electrical interconnection to NStar from 28 mW to 48 mW firm capacity. The majority of the project— involving replacement of circuit breakers, current limiting reactors, and additional cabling and required multiple switching of the high-voltage electric lineup—is now complete. Some remaining work will continue into 2006.

In our attempts to promote sustainability, the third and largest (12 kW) photovoltaic installation on campus was completed on the Hayden Library roof, bringing the total to 21 kW. Installations on the Student Center and N52 were completed previously. These and 24 installations on area homes and schools were part of a Massachusetts Renewable Energy Trust grant obtained by the collaborative efforts of Utilities staff and the Laboratory for Energy and Environment.

A beta test installation of 30 algae bioreactors was placed into operation on the roof of the Central Utilities Plant by Green Fuel Technologies, a startup company comprised of individuals from MIT's Department of Aeronautics and Astronautics, the Sloan School of Management, and Health Sciences and Technology. A flue gas slip stream is piped to the reactors. As the algae grows, it consumes carbon dioxide and significantly reduces nitrous oxide as well.

Use of toxic chemicals to control biological growth at the E40 chilled water plant cooling towers was replaced by a nonchemical process derived from the medical research field.

Shared Services

A process team, outlined in the 2003–2004 President's Report, completed its review of the human resource, finance, budgeting, and procurement areas with an eye toward business improvements and streamlining. As this work was completed, it became apparent that, due to the size and complexity of the Department of Facilities, the Shared Service Center should be focused solely on the needs of that department. We currently are determining the makeup and focus of this division and how it will best serve the department.

The Facilities Information Technology (IT) group continues to support the wide range of departmental activity. Among the issues addressed in FY2005 were the implementation of SAP Plant Maintenance and the upgrade of existing departmental systems. Phase I (Facilities Repair and Maintenance) of the SAP PM went live in July 2004. Phase II, which included SAP PM functionality for the Housing Department and the Central Utilities Plant, went live in March 2005. SAP PM replaced the MAXIMO work-tracking system that was in use in Facilities since 1996 and in Housing since 2000. Additional functionality for the SAP PM environment is being planned for FY2006.

Members of the IT group have been working to upgrade the Kronos system used in Facilities to track and report service staff work time and attendance. This upgrade is scheduled to go live in the fall of 2005. In conjunction with this project, the IT group is working with the SAP HR–Payroll group to build an interface between the two systems when HR–Payroll goes live in January 2006.

As explained previously, the Parking and Transportation Office became a unit within Facilities this year. During this period, a new shuttle service for residents and employees of the northwest section of campus was implemented, and the hours of operation for the Boston Shuttle were expanded. The T Pass application process was converted to an electronic system.

Finally, Larry Brutti, manager of parking and transportation, received an MIT Excellence Award for Innovative Solutions as a member of the online parking application team. We feel very fortunate to have Larry on our staff.

Development, Design, Engineering, and Construction

In addition to the accomplishments in the Capital Program, the DDEC Division completed over 80 projects last year, from very small to large renovations in classrooms, research laboratories, offices, dormitories, dining facilities, and around the campus. Using the Minor Alterations Process developed with the academy last year, we completed approximately a dozen small projects on an accelerated basis within the budget and to the satisfaction of the clients.

With the support of the Renovation Subcommittee of the Committee for the Review of Space Planning (CRSP), the Department of Facilities has begun a dialogue with user groups on the administrative procedures and processes to initiate and approve space change projects. This effort was started with a lunch meeting of all assistant deans sponsored by Doreen Morris. Follow-up meetings will be scheduled with individual assistant deans in preparation for the fall “In Cycle” CRSP review process that is linked to the Institute’s annual budgeting process. Following is a list of significant and representative projects started, completed, or ongoing for the year.

- Building 35, relocation of Professional Education Programs. This will enable further consolidation of the School of Architecture and Planning within the Main Group area. Scheduled completion date is August 2005.
- Creation of a new Technology Enabled Active Learning classroom in Stata Center; scheduled completion date is August 2005.

- New laboratories for Professor Sangeeta Bhatia in E19, completed March 2005.
- Renovations to Building 48 for Civil and Environmental Engineering, including significant infrastructure upgrades; completed summer 2004.
- Classroom renovations in Building 26; phased construction, completion February 2005 and August 2005.
- New laboratory space for Microsystems Technology Laboratories in Building 38; completed June 2005.
- Building 5 basement, Pappalardo II Laboratory; construction began June 05, completion scheduled February 2006.
- School of Science Headquarters and labs for Sylvia Ceyer, phased construction; phase 1 complete April 2005, Phase 2 scheduled for January 2006 completion.
- Infrastructure upgrades to several buildings including Building 24, electrical service and fire protection systems; E55, heating system; Building 9 and W85, life safety systems and emergency generator in Building E52.
- Relocation of Campus Police to W89; construction to begin during summer 2005, scheduled for completion in early 2006.
- Construction of new ambulance bay and overnight bunk room for ambulance staff at Stata; completed in June 2005.

The department has implemented a programwide effort to improve project controls. Central to this initiative is a project control group that meets regularly to focus on best practices for process improvement and development of the Project Information and Cost System (PICS) database. PICS merges nonfinancial project information with SAP data to provide project cost accounting reports on PM's desktops, readily tracking projects from initiation to completion. The project closeout process has also been formalized as part of this effort. Project completion and financial results are now reported to CRSP and clients within six months of substantial completion. To address projects that were completed prior to this formalization, approximately 195 projects were reviewed as a batch. The final cumulative cost for these projects was \$98.3 million against cumulative budgets of \$99.0 million, for a funding savings of approximately \$700,000.

Facilities staff, working closely with Provost Bob Brown, developed a five-year Capital Plan in the winter of 2005. The plan was presented and approved by the Executive Committee in April 2005. Criteria used in formulating the plan included senior officer strategic priorities, Institute strategic priorities, capital renewal considerations, requirements to enable other strategic projects, and debt and gift funding availability. The resultant capital plan contained six projects totaling approximately \$350 million over the five-year period from FY2006 to FY2010.

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