

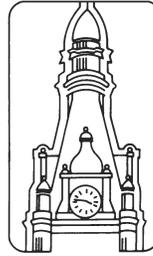


City of Milwaukee
ANNUAL REPORT
2004



**2004
Milwaukee
Common
Council**

- President
Willie L. Hines, Jr.
District 15
- Ashanti Hamilton
District 1
- Joe Davis, Sr.
District 2
- Michael S. D'Amato
District 3
- Robert J. Bauman
District 4
- James A. Bohl, Jr.
District 5
- Mike McGee, Jr.
District 6
- Willie C. Wade
District 7
- Robert G. Donovan
District 8
- Robert W. Puente
District 9
- Michael J. Murphy
District 10
- Joseph A. Dudzik
District 11
- James N. Witkowiak
District 12
- Terry L. Witkowski
District 13
- Tony Zielinski
District 14



**City
of
Milwaukee**

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MISSION

To promote the health, safety, mobility, and quality-of-life for all City of Milwaukee residents and visitors by providing:

- Safe, attractive, and efficient surface infrastructure systems;
- Solid waste collection, disposal, recycling, and waste reduction;
- Safe, aesthetically pleasing, and sufficient drinking water;
- Storm water and waste water conveyance; and,
- Support services and facilities for the Department of Public Works (DPW) and other city departments.

INITIATIVES FOR 2005

- Continue to work with the state and county governments on major transportation projects, including the Park East Freeway and Marquette Interchange.
- Continue to realize more efficient and effective utilization of personnel resources in the Operations and Infrastructure Division.
- Improve operational efficiency by coordinating service delivery with other government agencies.
- Reduce plowing on non-arterial streets.
- Work with other departments and local entities in developing Menomonee Valley.

MESSAGE FROM THE COMMISSIONER

Year in Review

2004 was a year big year for change in the City of Milwaukee and the Department of Public Works. The City of Milwaukee got a new mayor, Tom Barrett, and the Department of Public Works' Commissioner Mariano Schifalacqua retired after 30 years of service. I was appointed and confirmed by the Milwaukee Common Council on July 27, 2004.

The Department of Public Works had many accomplishments during 2004. The Administrative Services Division installed a telephone system, replacing a 20-year-old system. The new system is state-of-the-art technology that allows the City to take advantage of other computer telephony integration technologies, while retaining the reliability of traditional digital telephony. Approximately 3,000 telephone were replaced Citywide.

The Parking Fund, which is managed by the Administrative Services Division, financed the purchase and installation of parking access and revenue control equipment in four city-owned parking structures. The equipment provides greater convenience and more payment options for patrons who use the City's parking structures. The Parking Fund also initiated a pilot project in late 2004 to install kiosks at three police district stations to sell night parking permits and to pay parking citations. This will allow the Milwaukee Police Department to focus on more crime related activities and to provide the public with more payment options.

The Infrastructure Services Division in conjunction with the Department of Natural Resources designed and installed stormceptors at four locations in Good Hope Road to prevent pollution from getting into Lincoln Creek. These devices trap the pollutants in the rainwater run off from getting into the Lincoln Creek.

The staff has also been integrally involved in the development and implementation of mitigation strategies to handle the effects of rerouted traffic during the various stages of the Marquette Interchange project, as well as the relocation of exiting City utilities affected by the project.

Infrastructure is in place to support the redevelopment of the former Park East corridor and the rehabilitation and extension of Canal Street is underway to support diverted traffic as a result of the Marquette Interchange. This will also support the renewal of the former Milwaukee Road Shops in the Menomonee Valley.

Advancement in pedestrian related issues included the completion of the North Avenue Dam Bridge and the start of construction on the Marsupial Bridge, which will be suspended beneath the Holton Street Viaduct.

The City's first "count-down" pedestrian signal heads were installed at South Layton Boulevard and West Lapham Street. The "count-down" pedestrian signal heads are intended to increase pedestrian safety at signalized intersections.

The Operations Division had a very busy year and implemented several new programs. Environmental Services developed a bid package that resulted in a new seven-to ten-year disposal contract that will save the City \$17 to \$20 million over the life of the contract. Also awarded was an innovative recycling contract that guarantees the City over \$2 million in revenue for marketed recyclables in the first year and splits the revenue on a 50-50 basis for the remainder of the five-to ten-year contract.

Other recycling initiatives included the Nike Reuse-A-Shoe program and "Cans for Cash Challenge". The Nike Reuse-A-Shoe program included a challenge from the Nike Corporation to collect 5,000 pairs of used athletic shoes that will be turned into Nike grind and

used to resurface a tot lot or playground for City of Milwaukee children to enjoy. The City surpassed its goal in half the time by collecting over 6,300 pairs of shoes. The "Cans for Cash" contest was sponsored by the U.S. Conference of Mayors. There was a \$5,000 reward for collecting the most cans and \$5,000 for the most innovative idea to raise awareness of recycling aluminum cans. The City of Milwaukee won in both categories. The amount of cans collected was 559,997 cans. An attempt was made to break the world's record for the longest line of consecutive cans, which had stood at 27,378. On November 13th, 59 volunteers lined up 33,952 aluminum cans. The City is waiting to get the official word from the Guinness Book of World Records. This effort resulted in an additional \$5,000.

Additional achievements in the Operations Division include converting 40% of annual flowerbeds on boulevards to perennials, ornamental grasses, shrubs and trees. This initiative will reduce annual planting and maintenance costs while still providing aesthetically pleasing boulevards to city residents and visitors. For the first time in the history of the City, in partnership with the County, the Department of Natural Resources, and the Department of Agriculture, participated in aerial spraying to control Gypsy Moth infestation within the city limits. The results were very good, reducing defoliation of tree canopy from as high as 95% to 5% in treated areas.

Important initiatives that were started in 2004 that will have a major impact on City workers and City Hall includes the consolidation of several DPW facilities into one building located at the Tower Automotive site and the City Hall restoration project.

The Department of Public Works' Facilities Development & Management staff was instrumental in assisting the Milwaukee Health Department in completing its Bio-Safety Level 3 Laboratory. DPW assisted in procuring a grant from the State of Wisconsin for the expansion of this facility. The Department worked very closely with the Health Department of the State of Wisconsin to ensure that the BSL # Lab met all the requirements to be certified as a Bio-Terrorism Lab. The Center for Disease Control in Atlanta, Georgia inspected the lab in November 2004. It is one of three in the State of Wisconsin certified for Bio-Terrorism Analysis of suspected agents.

Milwaukee Water Works completed its first full year of efforts to promote Milwaukee's safe and abundant water to water-intensive business and industry. A multi-agency marketing group was formed that included the Department of City Development, Metropolitan Milwaukee Association of Commerce, and the Milwaukee Metropolitan Sewerage District. A relationship was developed with Forward Wisconsin to promote Milwaukee water at the state, regional, and national levels.

This represents only a portion of the accomplishments of the Department of Public Works for 2004. I am sure there will be many more accomplishments to report for 2005. I am proud to be the Commissioner of a Department that touches the lives of the citizens of Milwaukee and I look forward to working with the dedicated staff of the Department of Public Works.



Jeffrey J. Mantes

A handwritten signature in black ink that reads "Jeffrey J. Mantes".

**Jeffrey J. Mantes, Commissioner,
City of Milwaukee – Department of Public Works**

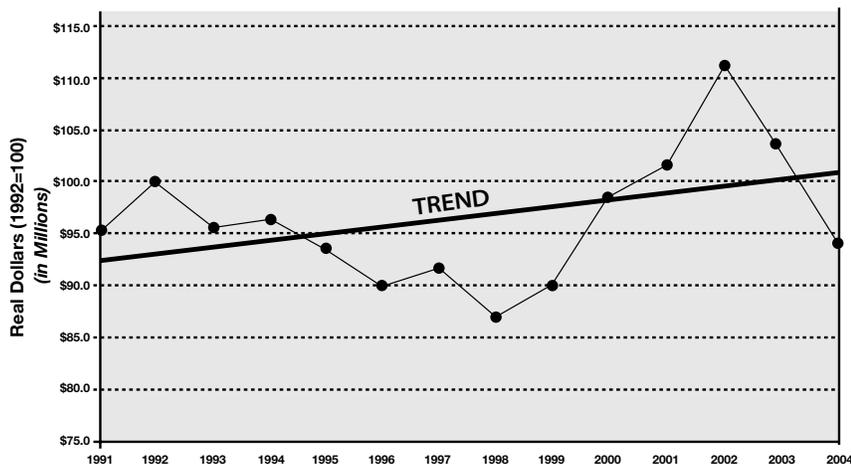
DEPARTMENT OF PUBLIC WORKS BUDGET SUMMARY

	2002 ACTUAL EXPENDITURES	2003 ADOPTED BUDGET	2004 ADOPTED BUDGET	CHANGE 2004 ADOPTED VERSUS 2003 ADOPTED
PERSONNEL*				
FTEs – Operations and Maintenance	1,757.96	1,883.87	1,800.00	-83.87
FTEs – Other	424.64	450.78	441.29	-9.49
Total Positions Authorized	4,141.00	4,063.00	3,509.00	-554.00
DLH – Operations and Maintenance	3,126,223.00	3,390,906.00	3,240,000.00	-150,906.00
DLH – Other Funds	764,347.00	811,404.00	794,322.00	-17,082.00
EXPENDITURES (General City Purposes)				
Administrative Services	\$4,676,074.00	\$4,856,904.00	\$4,553,338.00	\$-303,566.00
Infrastructure Services	22,061,243.00	23,748,383.00	22,476,509.00	-1,271,874.00
Operations	81,514,913.00	81,347,580.00	75,971,287.00	-5,376,293.00
Subtotal – General City Purposes	\$108,252,230.00	\$109,952,867.00	\$103,001,134.00	\$-6,951,733.00
WATER WORKS (Public Utility)				
Operating Budget	\$50,533,642.00	\$60,918,579.00	\$63,435,206.00	\$2,516,627.00
Capital Improvements	9,902,984.00	14,900,000.00	22,620,000.00	7,720,000.00
Total Water Works**	\$60,436,626.00	\$75,818,579.00	\$86,055,206.00	\$10,236,627.00
PARKING BUDGET				
Operating and Maintenance Budget	\$24,416,376.00	\$27,426,797.00	\$26,500,225.00	\$-926,572.00
Capital Improvements	832,348.00	1,661,000.00	1,305,900.00	-355,100.00
Addition to Parking Reserves	4,983,469.00	0.00	0.00	0.00
Transfer to the General Fund	8,250,000.00	8,300,000.00	12,000,000.00	3,700,000.00
Capital Improvements to be Financed from Permanent Improvement Reserve Fund – Parking	0.00	5,000,000.00	5,000,000.00	0.00
Total Parking Budget	\$38,482,193.00	\$42,387,797.00	\$44,806,125.00	\$2,418,328.00
SEWER MAINTENANCE FUND				
Operating and Maintenance Budget	\$20,167,832.00	\$26,548,059.00	\$24,165,233.00	\$-2,382,826.00
Capital Improvements	16,288,590.00	19,700,000.00	21,500,000.00	1,800,000.00
Total Sewer Fund Budget	\$36,456,422.00	\$46,248,059.00	\$45,665,233.00	\$-582,826.00
GRAND TOTAL – Department of Public Works	\$243,627,471.00	\$274,407,302.00	\$279,527,698.00	\$5,120,396.00

*Personnel totals reflect Operating Divisions, Water Works, Sewer Maintenance Fund, and Parking Fund.

**Does not include retained earnings.

Department of Public Works Operating Budgets



ADMINISTRATIVE SERVICES



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Dorinda R. Floyd, Administrative Services Director

LaQuisha Harrell Schroeder, Finance and Planning Manager

Gerard Froh, Network Planning Manager

Thomas Sanders, Parking Enforcement Manager

Cindy Angelos, Parking Financial Manager

Office of the Commissioner:

James P. Purko, Director of Operations

Thomas Miller, Coordination Manager

Dan Thomas, Personnel Administrator

Cecilia Gilbert, Permits and Communications Manager

The Administration Services Division serves as department liaison to elected officials and the public and coordinates major transportation, environmental and economic development related projects. In addition, this division is responsible for coordinating the department's operating and capital budgets as well as enterprise fund budgets, finance and planning, payroll, personnel, employee safety and contract management. The division also manages all communication responsibilities for the department including media relations, special event permits, DPW Information Center and the telecommunications infrastructure.

The division manages all parking-related activities including parking enforcement, parking information desk, City tow lot, towing contracts, citation processing contract, parking structures and lots and parking meters. In February 2000, parking enforcement and the parking information desk were transferred from the Milwaukee Police Department to the Department of Public Works.

MAJOR PROJECTS

The Department of Public Works Administrative Services Division coordinated planning and construction of public improvements for several major projects during 2004. These projects included the planned Harley Davidson Museum, Pier Wisconsin, and the Third Ward Public Market. The Division also coordinated the design of public infrastructure for a number of single family home subdivisions including the Heritage Meadows Addition Number 3 and Josey Heights.

Using \$250,000 in Department of Natural Resources grant funds secured in 2003 along with City funds and contributions from two downtown Business Improvement Districts, the Division coordinated construction of a new riverwalk segment that connects the Historic Third Ward and downtown riverwalk systems.

LANDFILLS

During 2004, the Department of Public Works worked with the Housing Authority of the City of Milwaukee in an attempt to gain Federal approval to locate a Jobs Corp facility on the College Avenue South landfill site. In the end the site was deemed unsuitable for a development that included a residential component. DPW is currently working with the Department of City Development to market this site along with the Layton and Pennsylvania landfill site for industrial or warehousing use. Active monitoring of groundwater and methane conditions will continue at these sites, as well as at the Hawley Road and College Avenue North sites, for the foreseeable future.

CONTRACT ADMINISTRATION

DPW contracts for all City infrastructure projects. It also contracts for several major public service functions including solid waste recycling, public parking structure operation, vehicle towing, and parking meter revenue collection. During 2004, 149 formal contracts were awarded totaling over \$122 million. Through its contracts, DPW leverages employment opportunities for city residents who live within the Community Development Block Grant boundaries. This initiative is known as the Residents Preference Program. The Department requires that at least 25% of all hours worked on individual City contracts be allocated to unemployed residents of the target area. The Department partners with Esperanza Unida, the Milwaukee Urban League, and Big Step to assist contractors in locating eligible resident workers. All resident workers must be certified by the City prior to a contractor receiving credit for their hours worked. DPW maintains a list of all certified resident workers and reports annually to the Common Council on the success of the program. For the 2004 contracts that were closed out as of June 1, 2005, resident participation averaged 33% of all contract hours worked.

DPW requires that contractors use Emerging Business Enterprises (EBEs) in their contracts. EBEs are certified by the City and are mandated by ordinance to be involved in at least 18% of all work contracted by the Department. In 2004, the overall EBE participation level for DPW contracts was 20.5% or about 13.9% higher than the established 18% minimum requirement. It also represents the Department's best performance in this area since the EBE program inception.

As part of its contracting activities the Department actively monitors all public works contracts for compliance with the Prevailing wage and Livable Wage ordinances.

During 2004, the Department continued its efforts to place public works contract bidding procedures on line. Contractors and other interested parties can now find information on the DPW web site about projects coming up for bid, which contractors have taken out plans on various projects, rules and procedures for the EBE and Residents Preference programs, the results recent bid openings, monthly EBE performance reports, and various contracting forms.

FINANCE AND PLANNING

The Administration Division is responsible for coordinating the operating and capital budgets for the department as well as several enterprise funds, including Water Works, Sewer Maintenance Fund and the Parking Fund. The division is also responsible for tracking and monitoring revenues and expenditures on a monthly basis.

In the 2004 budget, the department's operating budget (excluding enterprise funds) totaled \$103 million and the capital budget totaled \$58.3 million. Revenues were projected to total \$31 million.

In 2004, the Department of Public Works was challenged by significant increases in fuel prices. Although the department spent \$600,000 more for fuel than budgeted, these costs were covered due to less than anticipated expenditures for snow and ice control and savings elsewhere in the department's budget, eliminating the need for contingent funds. In addition, the department generated \$34.9 million in general City revenue, \$3.9 million more than the Comptroller's Office 2004 estimate. This excess revenue diverted to the Tax Stabilization Fund. In fact, over the past three years, the department has contributed over \$15.4 million to the Fund in excess revenue and expenditure savings.

The Finance and Planning Section is also responsible for paying invoices and billing City agencies as well as external agencies for services performed by the department. In 2004, this section processed nearly 34,879 vouchers totaling over \$111.4 million and produced 4,834 invoices and interdepartmental requisitions totaling over \$27 million.

PERSONNEL/SAFETY

Contracts were settled for all bargaining units during 2004.

Disciplinary actions were up 7% in 2004. The largest increase was in written warnings which are used to correct behavior before it becomes a bigger problem.

Grievances were down 28% in 2004. The decrease was related to a reduction in the number of grievances filed regarding the Operations Division that was formed in 2002.

The number of recordable injuries was up 1% in 2004. The number of lost work days was up as well. The increase in the number of lost work days is, in part attributable to a change in the reporting requirements that includes calendar days in the calculation. In the past only work days lost were counted. Safety staff will continue to monitor worksites and staff to insure that injuries and lost time will be minimized.

DPW CALL CENTER

The Department of Public Works Call Center began operations in November 1998. It is a "one-stop-shop" for citizens requesting services or seeking information either over the telephone or through the Internet. By calling 286-8282, citizens can talk to customer service representatives who will process requests for services, provide information and respond to citizen complaints for sanitation, forestry, street maintenance and street lighting services.

DPW service requests are entered electronically by using an application developed by staff. The application contains all relevant information required to deliver the requested service. Once received, the service request is sent electronically to the field district offices

to expedite processing. Because of the large volume of sanitation-related service requests processed each day, an enhanced application was developed whereby each service request is bar coded to track disposition and response times. For all service requests, the Call Center application is used to track the number and type of requests, monitor response times, and schedule and route staff to deliver services in the most cost efficient and effective manner.

In 2004, the Call Center received 214,486 calls and requests for services, an increase of 21,877, or 11.4% over 2003. Of the total calls received over 168,500, or 82%, were service requests and approximately 92% of those were for sanitation-related services. In addition, the Call Center also processes service requests received online at www.dpwworks.mpw.net. In 2004, over 9,100 requests were received as compared to over 5,600 in 2003, an increase of 62%. However, online services requests comprise only 4.2% of the total volume.

SPECIAL EVENT PERMITS

The Special Events Office issued 1,038 permits in 2004, only 21 less permits than 2003 when the 100th anniversary of Harley Davidson Motor Company occurred. The Special Events office issues permits for any activity that occurs in the public right-of-way. The majority of the events are neighborhood activities, i.e., church festivals, homecoming parades, 4th of July parades, block party gatherings, neighborhood clean ups and night time trick or treat. Several neighborhood organizations utilize block parties and clean ups as a way to strengthen the neighborhoods and encourage the residents to get to know each other.

Many of the run/walks that are held annually benefit a charity or disease like the Susan B. Komen Race for the Cure, Dylan's Run (autism), Al's Run for Children's Hospital, and the United Negro College Fund, which benefits many Milwaukee area students.

Some of the activities are done in conjunction with other promotional events in the City, like the Holiday Lights festival, the Downtown Open House and the Milwaukee Downtown Amazing Race. These types of events are held to encourage residents and visitors to visit downtown and patronize businesses in the area.

Theatrical productions sometime have special parking needs for loading and unloading of their equipment. Large conventions establish temporary bus shuttle stops to get their attendees around town for various events, and sometimes streets need to be "signed" to accommodate parking needs for very large events in the neighborhoods.

There were new events held in the City last year to encourage patronage of the businesses in two distinct neighborhoods. The Bay View Bash and the Brady Street Artisan Festival, both proved to be very successful for first-time events and will be repeated in 2005.

The coordination of all Special Events permits, especially the larger events, includes the Milwaukee Police Department's Planning & Operations Division, the Common Council, Milwaukee County Transit System, DPW Traffic and Parking Sections, and Parking Enforcement. The coordination involved in issuing a permit for the public right-of-way includes:

- ◆ Coordination of DPW services, such as street construction and maintenance and Sanitation services, street sweeping after large events;
- ◆ Barricading and occupying a city street or sidewalk;
- ◆ Traffic and or parking restriction for an event, including the installation of "Temporary No Parking" signs;
- ◆ Hooding of parking meters;
- ◆ Providing use of dumpsters, garbage carts, recycling carts and snow fencing and
- ◆ Police escort and traffic control (event security is not provided by Milwaukee Police Department).

Note: Although special events fees are charged for various services, the fees in no way cover the cost of implementing them. Several hours are spent planning events, installing signs, hooding meters, delivering barricades, and maintaining the safety of the events by the Milwaukee Police Department.

TECHNICAL SUPPORT SERVICES

The Technology Support Services Section has responsibilities in three areas of technology for the Department of Public Works and the City: network/desktop computing, application development and Citywide telecommunications infrastructure, including the municipal telephone system and the wide area network.

Network/Desktop Computing

This team performs software and hardware maintenance and system enhancement and management and resolves system and application problems. In 2003 information system planning and implementation included the upgrade of all Forestry and Sanitation desktops to Windows 2000. Support is provided for numerous applications including the department-wide electronic calendar and the new DPW email system, installation of numerous patches in response to multiple virus attacks and support for new client server applications for work management, public works' permits, DPW invoice/accounts receivable system and Peoplesoft. This section also provides installation, administration, support and maintenance for server hardware and operating systems.

Application Development

The application development team works directly with DPW staff responsible for specific operations to custom build functionality into applications to meet or exceed the efficiency and management information needs of the operations staff. With the exception of the database itself, all the software used to develop and support the 30 plus applications was "Open Source" or free. The application servers are low cost but powerful microcomputers that run the Linux operating system that is also "Open Source". In addition to small code revisions and supporting all the users of the 30 plus applications, the application development team developed many new reports, dozens of database field additions, SQL streamlining, and other algorithm enhancements to provide efficiency improvements to the end users.

Call Center Application. All Sanitation districts began using the Call Center application in 2003. Previously, the Call Center would print out each request form and send it to the respective district. This process was not only inefficient but also resulted in longer response times and delays in responding to service requests. Now all service requests are immediately available to the districts electronically, reducing response time by at least one day. This has also improved the response time for Sanitation Supervisors for complaint investigations and aldermanic service requests. The requests are color coded on the screen to highlight priorities such as age of the request and Aldermanic Service Requests. Once the requests have been sorted and prioritized, they are given to the supervisors. The supervisors then assign or investigate each request. After the service request has been satisfied, field clerks enter the resolution into the Call Center application, providing staff the ability to respond to return calls by constituents or aldermen. The Call Center application also provides electronic communication of requests for service from one department to another. Street lighting staff will begin using the system in 2004, and street construction staff is expected to utilize the system by the end of the year. The public interface to the Call Center program has been updated to allow for more types of service requests, including street lighting and street maintenance.

Communications Infrastructure Inventory. DPW continues to develop an application to track the copper telecommunication infrastructure installed, owned and managed by the City. Information about the thousands of conductors (wires) in hundreds of cables is currently maintained in a large manual ledger referred to as the "cable book". This electronic cable book will be an important tool in the relocation of circuits resulting from the reconstruction of the Marquette Interchange. We also plan to use this database to collect information about private entities that lease City conduit. This will facilitate billing of these entities.

E-Government Applications. In addition to the Governmental Telephone Directory that is printed every four years, DPW developed an electronic telephone book that is available on the Internet (<http://phone.mpw.net>). The Internet version provides name, telephone number, department and address information. City employees can view the detailed internal information by accessing <http://directory.mpw.net>. The phone database administrator in each department is responsible for updating the directory to reflect personnel or organizational changes.

Telecommunications Infrastructure

The Technology Support Services Section is responsible for supporting the municipal telephone system. The City's telephone system includes approximately 5,700 telephones for nearly 8,200 employees at over 150 locations, 240 fax machines, 1,319 call box locations, 1,708 voice mail boxes, 750 pagers and 1,300 cell phones. In 2003, the telephone system connected over 13.3 million calls. This included approximately 2.6 million internal calls, 6.6 million incoming calls and 4.1 million outgoing calls. The voice mail system provided about 4.2 million greetings in 2003. In addition, personnel completed approximately 1,200 moves and changes of desktop telephones. The RFP to replace the City's Rolm telephone system was developed in 2003 and will be issued in the spring of 2004. The installation of the new system is expected to be completed by fall 2004.

The Technology Support Services Section is also responsible for planning, designing, engineering, installing, maintaining and supporting the local and wide area network for the Police Department, Fire Department, all major DPW facilities including Water, Health Department, Department of Neighborhood Services and other unique operations. These locations are connected with a variety of communication protocols and speeds including ethernet, fast ethernet, gigabit ethernet, ATM, Sonet, DSL, T-1, and DWDM provided over about 100 miles of fiber optic cable and hundreds of miles of copper cables. This network is now referred to as COMON — the City of Milwaukee Optical Network and requires DPW to provide rapid response on a 7/24/365 basis because of the critical public safety requirements. In addition, this network is designed for near 100% reliability critical to community safety services.

DPW has provided Internet services for its own needs and other City agencies since 1997. In 2002 DPW switched Internet providers to Time Warner Telecom. In anticipation of public safety requirements for more reliable Internet access, DPW designed and installed a redundant and load balancing Internet connection. The redundant Internet access is provided with a 10Mb connection to WiscNet. The WiscNet connection is physically located at the University of Wisconsin-Milwaukee. UWM is the primary Internet2 presence in the State of Wisconsin. Late in 2003, the Common Council authorized the DPW to extend its optical network to Marquette University. It is anticipated that this connection will enable Marquette to connect to Internet2 through COMON. At the request of the Department of Administration, DPW began providing Internet access to the entire City in 2003.

In 2003 DPW completed two major and several smaller COMON projects. The largest projects included the Fire Department and Water Department networks. The smaller projects included Lake Tower and the first stage of phasing out of the ATM network. For the Fire Department, DPW installed 80 gigabit distribution ports in 10 different sites across the City of Milwaukee. DPW also installed 10/100 Mb ports at each of the 38 engine houses and other MFD facilities for a total of 1,920 ports. The Water Department upgrade

was also completed in 2003. DPW installed 10 gigabit distribution ports at 5 locations and a total of 432 10/100 Mb ports at seven Water Department sites.

The Health Department network design was completed in 2003. The Health Department will require 10 new gigabit ports and 768 10/100 Mb ports. Three floors of the Municipal building and five off site locations will be connected over COMON. This network is designed to comply with the very stringent HIPPA requirements.

The Department of Neighborhood Services and the adjacent Sanitation site networks were upgraded at Lake Tower. DPW added 2 gigabit distribution ports and 168 10/100 Mb access ports. Several floors of the Municipal Building were upgraded as we begin the process of phasing out the ATM network. DPW introduced Asynchronous Transfer Mode (ATM) technology to the City in 1996. It was a success for its reliability and usefulness. However, as technology changes and the needs of the City change, the need for greater bandwidth displaced the ATM.

DPW also completed several other technological upgrade projects. New servers were built and application software was installed. Two new firewalls were built and installed. The largest hardware replacement was the new Oracle server. The Oracle server is now on dual 3-megahertz processors with 8 gig of RAM, fully mirrored 292 gigabytes of hard drives space, and a gigabit ethernet uplink. DPW installed and tested a Session Initiation Protocol (SIP) server to evaluate the abilities of voice over IP telephone services in conjunction with other applications. SIP is an application-layer control protocol that can establish, modify, and terminate multimedia sessions (conferences) such as Internet telephony calls. DPW also deployed a video to the IP application server which provides the capability to view CNN, The Weather channel, and Channel 25 directly from any desktop within the City of Milwaukee network.

PARKING FUND

The Parking Fund is an enterprise fund administered by the Department of Public Works. It receives revenues from various parking activities, including parking enforcement, which finances the City's on and off-street parking operations.

The Parking Fund's activities include owning and operating four City-owned parking structures that provide 4,454 parking spaces. The City leases a fifth structure to a private company. In addition, DPW manages 51 City-owned surface parking lots. Revenues received in 2004 from parking structures and lots totaled over \$6.5 million.

Five staff manages 6,535 parking meters citywide, 6,185 on-street and 350 off-street meters. In 2004, nearly \$4.2 million was generated in meter revenue. Parking meter staff is also responsible for hooding, installing and removing meters. This activity generated nearly \$139,700 in 2004.

DPW also administers the overnight parking permit program. Permits are sold at all Police District Stations, three Violations Bureau locations and the City Tow Lot. In 2004, over 190,200 night parking quarterly and annual permits were sold generating over \$2.9 million. This increase reflects greater compliance with night parking regulations.

The City's towing program is also managed through the Parking Fund. DPW is responsible for managing the City's Tow Lot, two towing contracts and the vehicle recycling contract. In 2004, 29,332 vehicles were towed. Of this amount, 4,926 vehicles were abandoned and 24,406 vehicles were illegally parked. In addition, of the vehicles towed 50% were unclaimed causing the City to dispose of the vehicles. Of the vehicles disposed, the City recycled 76% and sold 24%. Revenue generated from towing, storage and disposal of vehicles totaled over \$4.5 million in 2004, an increase of \$700,000 over 2003. This increase is due to higher prices for scrap metal.

In spring 2003 Parking enforcement operations along with the Parking Information Desk were moved from the Central Garage to a new location at 123 N. 25th Street in the Menomonee Valley. Parking enforcement operations includes 64 parking checkers. The goal of parking enforcement is to deploy parking checkers to provide the most comprehensive and consistent parking enforcement Citywide. In addition, parking checkers are deployed 24/7/365 and are assigned to special patrols, including abandoned vehicles, citizen complaints and Aldermanic Service Requests. In 2004, parking checkers issued 978,026 parking citations, an increase of 17.3% from 2003. A portion of this increase reflects a decrease in Police-issued parking citations. The Police have allocated their resources to concentrate more on crime-fighting activities. In addition, in 2004 the average response time to a parking complaint totaled 1 hour and 4 minutes, an improvement from 2003 of 1 hour and 22 minutes.

Parking Information Desk operates 24/7/365 and includes 21 communication assistants. Parking Information Desk personnel receive parking complaints, process night parking permissions, provide general parking information and dispatch tow operators. In 2004, the Parking Information Desk received 211,718 calls, an increase of nearly 14,300 calls, or 7.2% from 2003. Of these calls 68,099 were parking complaints from citizens, an increase of nearly 7,800 complaints, or 12.9% from 2003. In addition, the Parking Information Desk processed 146,319 night parking permissions, an increase of over 9,100 permissions, or 6.6% from 2003. In addition, DPW developed an online night parking permissions request form to make night parking permissions even more convenient for the public. This form can be accessed through www.parking.mpw.net. In 2004, nearly 19,700 permissions were requested online, an increase of 13,217, or 204% over 2003. Further, Parking Information Desk personnel also dispatched 38,616 tows, an increase of over 4,000, or 11.6% from 2003.

Parking Citation Processing

The Department of Public Works manages the processing and collection of parking citations with the help of contracted services. There are several ways citizens can pay parking citations. They may use the pay-by-mail service, of which 34% utilize this service, visit the three Violations Bureau locations of which 41% utilize this service, or utilize drop boxes which are located in each of the seven Police District Stations, the Avenues West Police Substation and City Hall. In 2002, the City offered two more convenient ways to pay parking

citations, which are available to the public 24/7. Citizens can pay by phone through the Interactive Voice Response (IVR) system by calling the Violations Bureau at 344-0840 at any time. Citizens can also check any outstanding balances due by using this system. In addition, citizens can pay parking citations online by accessing www.parking.mpw.net. Both the IVR and the online payment options charge a \$1 transaction fee. In 2004, 16% of the parking violators chose to utilize these services to pay their parking citations.

The automated citation processing/cash management system tracks citation issuance and payments and has improved the City's ability to pursue overdue and delinquent citations and to better manage City parking resources. By fall 2003, the City began utilizing the Tax Refund Intercept Program implemented by the State of Wisconsin Department of Revenue to intercept state income tax returns for those individuals that had over \$100 in outstanding parking citations. In 2004, nearly \$1.9 million in outstanding parking citations was collected through this program. This is an increase of nearly \$550,000 from 2003.

The Violations Bureau processed over 1.1 million parking citations in 2004. The amount of revenue collected totaled over \$21.7 million. Of that amount, nearly \$7.0 million was collected from past due violations, similar to 2003. This amount is reflective of the Tax Refund Intercept Program. It appears that the clearance rate of citations issued in 2004 is expected to resemble the clearance rates of prior years of nearly 80%.

Parking Enforcement Facility and Tow Lot Host Open House

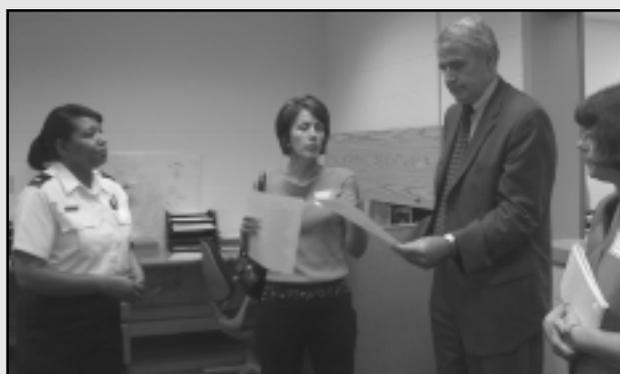
It was a little over a year ago that the Parking Enforcement Facility was moved from the Central Garage, 2142 West Canal Street to 123 North 25th Street providing spacious locker rooms, an area for the Parking Information Desk, a break room, parking and other office functions. On Friday, August 27th, Department of Public Works' Parking Enforcement held an open house along with the Tow Lot, which is located at 3811 West Lincoln Avenue.

Mayor Tom Barrett, members of the Common Council, neighborhood organizations, employees of Miller Compressing and Professional Account Management, and DPW staff were invited to get a first hand look at the operations. The tour began with remarks and introductions of the Parking Enforcement management staff. Once the tour of the building was completed, guests were taken over to the Tow Lot for a tour of the Tow Lot office, the vehicle intake area, the grounds, where cars and other vehicles are stored, and the Miller Compressing area.

Parking Enforcement, which operates 24/7, consists of 64 officers. In 2003, Parking Enforcement Officers issued 834,000 and towed nearly 30,000 abandoned or illegally parked vehicles.

The Parking Information Desk is also a 24/7 operation and consists of 21 Communications Assistants who are responsible for processing parking complaints and night parking permissions as well as dispatching tows. In 2003, the Parking Information Desk answered nearly 197,500 calls, of which 60,300 were parking complaints and over 137,200 were night parking permissions. In addition, staff dispatched 34,596 tows.

The Tow Lot has a maximum capacity of 2,400 vehicles and a staff of 25. The Tow Lot operates 24/7 but is only open to the public during regular business hours. In 2003, the Tow Lot processed nearly 30,000 vehicles, of which 54% were abandoned and 46% were illegally parked. Of the vehicles towed, 58% were not claimed by the owners. Of those not claimed, 69% were recycled and 31% were sold. The Milwaukee Tow Lot in cooperation with the Miller Compressing Company recycles 12,000 vehicles per year, which includes over 34 million pounds of scrap and 50,000 gallons of vehicle fluids.



From left, Michelle Metcalf, Parking Enforcement Supervisor, Dorinda Floyd, Administrative Services Director, explains one of the forms utilized by staff to Mayor Tom Barrett, while Cindy Angelos, Parking Financial Manager observes.



(Left to right) Paul Tucker, Parking Enforcement Assistant Manager, explains parking operations to Brian Dunn, Professional Account Management (PAM) and to Diana Russell, also from PAM.

Parking Citation Adjudication

In 2003, the Department of Public Works, City Attorney's Office and the Municipal Court worked cooperatively to develop and implement a number of strategies to deal with the large number of parking scofflaws. These strategies include the Municipal Court obtaining jurisdiction for adjudication and enhanced collection efforts of outstanding parking citations. One of these strategies includes utilizing the Notice of Appearance form to address parking scofflaws who schedule an appointment with the Citation Review Manager and miss the appointment. Over 50% of parking scofflaws who schedule an appointment miss the first appointment. In order to reschedule an appointment, the scofflaw must go to the Violations Bureau or the Tow Lot to sign a Notice of Appearance form. This form includes a Municipal Court date and a summary of all outstanding parking citations. Failure to appear in Court will result in a default judgment and may include a suspension of vehicle registration or a lien on assets. In 2004, 4,139 notices were issued.

Another strategy implemented in late 2003 included the utilization of the Summons and Complaint form. The purpose of this form is to address parking scofflaws whose vehicles have been towed by the City and retrieved by the owners. When the scofflaw retrieves his/her vehicle at the Tow Lot and there are eligible outstanding parking citations, a summons and complaint will be personally served to the parking scofflaw. This form will include a Municipal Court date and a summary of all outstanding parking citations. Failure to appear in Court will result in a default judgment and may include a suspension of vehicle registration or a lien on assets. In 2004, 2,421 summons were issued for 33,502 citations valued over \$1.3 million.

Parking Technology

The Department of Public Works issued an RFP and awarded a contract for the purchase and installation of parking access and revenue control equipment for four City-owned parking structures. Over 200 new pieces of equipment were installed at the end of 2004 at a cost of \$1.2 million. This investment will enhance financial management and auditing capabilities and provide payment options for the public. The equipment has the ability to provide for credit card payment on entrance, exit, and at pay-on-foot machines. Overtime, it is anticipated that this technology will reduce the number of cashiers needed to staff the parking structures and allow the entrance and exit gates to be down at all times.

In 2004 the Department of Public Works negotiated an amendment to the parking citation processing contract to require the development and installation of kiosks that sell and dispense quarterly and annual night parking permits and accept payments for parking citations. The kiosks were installed in Police District Stations 2, 5 and 6 at the end of 2004. The kiosks accept cash, check, or credit cards and electronically dispense the permits. The kiosks are in English and Spanish and are accessible 24/7. Because the purchaser of a permit is required to enter all the permit data or update the data when necessary, the night parking permit data is more timely and the City no longer requires its contractor to hand-enter this data after a permit is sold. In addition, the kiosks significantly reduce the workload for the Milwaukee Police Department staff who currently sell night parking permits. The department intends to eventually install kiosks in all Police District Stations.

In the summer of 2004, a three month pilot program was undertaken that introduced multi-space parking meters to downtown Milwaukee. Four multi-space meters were installed on Jefferson Street between Wells and Mason Streets and existing parking meters were replaced with markers designating a number for each parking space. The new meters accepted coins, credit and debit cards. Surveys were conducted of the users and of the businesses located on this block of Jefferson Street. The feedback from the project was very positive.

The results of the pilot project revealed the following: 1) 25% of all meter revenue was derived from credit cards; 2) 14% of all transactions used credit cards for payment; 3) the average payment with a credit card totaled \$1.71 compared to \$0.78 with cash; 4) 64% of all credit card payments were at the maximum value of \$2.00 compared to 6% of coin payments; and 5) meter revenue increased 3.2%. In addition, the meter management system provided real time information for adjudication, financial management, auditing and monitoring meter uptime and cashbox capacity, more efficient parking enforcement and a reduction in frequency of coin collection. The department will determine whether to purchase and install these meters in areas of the City with high demand for on-street parking.

In addition, the City received a \$1.5 million grant from the Wisconsin Department of Transportation's Congestion Mitigation/Air Quality Program to purchase and install a parking information system in downtown Milwaukee. The system will be installed at parking structures within one block of the Summerfest shuttle route. This will include the City-owned structure located at 2nd Street. The system is intended to reduce congestion related to Summerfest and other downtown activities. It is anticipated that the system will be in place by Summerfest 2006.

New Parking Equipment Makes it Easier To Pay in City-Owned Parking Structures

The City of Milwaukee has invested over \$1 million in new parking equipment that will make it easier for the public to pay for parking in the four City-owned parking structures. No longer will the public have to look for cash to pay for parking; credit cards can now be used. The project was financed through the Parking Fund, an enterprise fund that is self-supporting. All revenues generated from parking-related activities pay for Parking Fund expenditures, including parking structures.

The purpose of the new equipment is to provide the public more convenient options to pay for parking. In addition, the equipment will provide enhanced financial management and auditing capabilities. The City-owned parking structures generate over \$6 million annually. The new equipment is installed at MacArthur Square, on James Lovell Street, 4th and Highland, 1000 North Water, and 2nd and Plankinton parking structures. Over 250 new pieces of equipment has been installed, including new gates, ticket dispensers, credit card processors, pay stations, and cashiering systems. Signage has been placed near the elevator doors, in the aisles of the structures, and on the walls to encourage use of the Pay Station. The new equipment is able to process credit cards on entry, at exit and at pay stations. The pay stations will also take cash. There are three “SMART” ways to pay for parking:

SMARTEST — Credit Card In & Same Credit Card Out

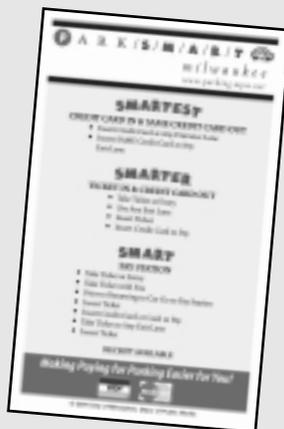
- Insert Credit Card at Any Entrance Lane
- Insert SAME Credit Card at Any Exit Lane

SMARTER — Ticket In & Credit Card Out

- Take Ticket at Entry
- Use Any Exit Lane
- Insert Ticket
- Insert Credit Card to Pay

SMART — Pay Station

- Take Ticket at Entry
- Take Ticket with You
- Prior to Returning to Car Go to Pay Station
- Insert Ticket
- Insert Credit Card or Cash to Pay
- Take Ticket to Any Exit Lane
- Insert Ticket



Left to right: Dorinda Floyd, Administrative Services Director, acted as emcee at the press event to roll out the new parking equipment. Behind her are Mayor Tom Barrett, Ellen Winters, Executive Director of Westtown Association, and DPW Commissioner Jeff Mantes.



(Left to right) Beth Nicols, Executive Director, Milwaukee Downtown; Dorinda Floyd, DPW Administrative Services Director; Randy Prasse, Executive Director, East Town Association; and Ellen Winters, Executive Director of the West Town Association. DPW has collaborated with the downtown organizations to encourage the use of parking structures by producing parking maps and by providing of Parkmilwaukee.com. Milwaukee Downtown Public Service Ambassadors have disseminated brochures on the new parking equipment to customers in the structures.

On Thursday, October 21st, Mayor Tom Barrett assisted the Parking Fund with the roll out of the new parking equipment by attending a press event for the media. Staff from DPW, executive directors from downtown association, Milwaukee Downtown Public Service Ambassadors, (who assisted with distributing information about the new payment system), representatives from Central Parking Systems, and McGann Associates Inc., were in attendance



OPERATIONS DIVISION



James R. Purko, Director

Zeidler Municipal Building
841 North Broadway, Room 516
[414] 286-8333

James P. Purko, *Operations Division Director*

Venu J. Gupta, *Buildings & Fleet Superintendent*

Preston D. Cole, *Environmental Services Superintendent*

The Operations Division was created in 2002 by consolidating the Forestry, Sanitation and Buildings & Fleet divisions. The division is responsible for solid waste collection and disposal, recycling and waste reduction, trees and landscaping, fleet maintenance and dispatch, support services to City facilities and snow and ice control.

ADMINISTRATION

The administration section coordinates, prepares and monitors the division's operating and capital budgets. A small, cross-trained administrative staff provides key support to managers of each operating section. Support functions include monitoring the facilities hotline to quickly dispatch service requests for City buildings, maintaining the City's keycard access database, responding to solid waste fee inquiries and environmental code citations and generating over \$1,000,000 in accounts receivable invoices annually. This section also manages the solid waste scale system that tracks all refuse and recycling brought through the City's three transfer sites.

Buildings and Fleet Services

Buildings & Fleet Services is a composite of licensed professionals, skilled trades, certified mechanics and technicians, fleet operators, communication specialists, dispatchers and experienced office staff. Buildings and Fleet serves the needs of employees, managers, agencies, departments and the public users of city facilities. Our goal is to provide efficient and effective service to our internal and external customers by supplying quality work environments and a well-maintained fleet that will allow our customers to work more efficiently.

Buildings & Fleet has undergone many changes over the past several years. Methods and processes have been streamlined and the application of technology has created a more efficient and effective section. Our future is the vast array of talent, known as human resources (our employees), that on a day-to-day basis does the work and represents the front line teamwork of our services and projects.

Mission Statement

"Buildings and Fleet Services will constantly strive to give prompt, competitive, quality services to meet our customers' needs through a diversified workforce of skilled, experienced, and professional employees in communications, buildings, and fleet operations."

OPERATIONS DIVISION *Buildings & Fleet*



Venu J. Gupta, Superintendent

Zeidler Municipal Building
841 North Broadway, Room 602
[414] 286-3401

Venu J. Gupta, *Buildings & Fleet Superintendent*

Gary Kulwicki, *Facilities Manager*

FLEET SERVICES

Fleet Services is responsible for the maintenance and repair of over 4,200 vehicles and pieces of equipment assigned to the Department of Public Works, the Milwaukee Police Department and other City agencies. The number of authorized full-time repair positions, including the Stockroom and Tire Shop, is 137. Work Orders completed in 2004 totaled 32,145. This is a decrease of 730 Work Orders from 2003.

Vehicle Wash

Phase two of the vehicle wash at the Central Repair Garage began in 2004 and should be completed in early 2005. This phase adds an automated drying unit that will permit the wash to be open unless the temperature goes below 5 degrees Fahrenheit. Without the drying unit, vehicles could not be washed when temperatures are below freezing. The dryer is located in a new extension to the drive-through vehicle wash. As a vehicle progresses through, it will trigger photo eyes to activate the blowers. There are ten blowers in the dryer cell, set up in pairs; each pair of blowers is activated depending on the size of the vehicle. Smaller vehicles will use six blowers, medium trucks will activate eight blowers, and the largest trucks will activate all ten blowers to remove the majority of the water before the vehicle leaves the wash building. In addition to drying the vehicle, this will keep the majority of the water inside the facility and off the street, minimizing icing around the wash area.

Central Repair Garage

Central Garage replaced four in-ground vehicle hoists in 2004. The old vehicle lifts had a life expectancy of 20 years and lasted almost 26 years before starting to fail. The new replacement lifts have a lifetime warranty because of the type of construction and improved coatings provided by the manufacturer.

Fleet Services also purchased two sets of portable vehicle lifts. One set is utilized at Ruby Garage and the other at Central Garage. Portable lifting towers are placed at the truck wheels and synchronized to lift vehicles up to 64,000 lb. to about six feet in the air for servicing. The vehicle can then be put on special tall jack stands so the lifts can be removed and used to raise a second vehicle. The portability of the devices allows more flexibility than a permanently installed hoist.

Three of the hallways that connect light and heavy repairs at Central Garage have been painted and the floors have been coated with epoxy paint. This epoxy paint is very durable and allows for easy cleanup. The new wall and floor coating brightens up the hallways. The color scheme is the same that will be used in the main part of the garage when it is painted in 2005.

A major consolidation of Repairs sections took place in 2003 with the closing of the Southwest Garage. Integration of the workforce into the Central Garage staff was finalized in 2004. The space at the old Southwest Garage has been converted to valuable storage for a variety of items that should not be stored outside. The yard space continues to be used for off-season storage of large, bulky seasonal pieces of equipment.

Stockroom

In 2004, a major change was made with the stockroom lighting. Stockroom lights were upgraded to brighter, more efficient, sensor-controlled fixtures. Six large skylights were installed and the ceiling was painted white. Two windows were added in the receiving area for natural light.

Stockroom activity included disbursements from inventory of \$1,706,635, a decrease of \$42,860 or about 2.5% less than in 2003. Emergency purchases, or items not in inventory, totaled \$1,460,620 a decrease of \$89,020, representing about 5.7% less. Service order activity totaled \$1,397,240, a decrease of \$14,336 or about 1%.

The 2004 monthly inventory value averaged \$1.3 million, compared to \$1.6 million in 2003. At the end of 2004 there were 11 stockroom employees compared to 13 employees in 2003. The stockroom also reports the following statistics from its recycling program:

- ◆ 80.75 barrels of used oil filters recycled
- ◆ 59.19 tons of used tires sent to the shredder for recycling
- ◆ 10,150 gallons of motor oil recycled
- ◆ 838 batteries returned for recycling
- ◆ 275 gallons of antifreeze recycled

New Equipment Purchases included the following:

- ◆ Eight 5-yard dump trucks with underbody plows, front plows, and all-stainless steel salt spreaders with 320-gallon liquid de-icer storage and microprocessor based dispensing equipment. These trucks are used as front line ice control equipment in the winter, and are also used by DPW divisions throughout the warmer months, for hauling various materials and pulling trailers.
- ◆ Eleven 25-yard refuse packers, equipped with hydraulic cart lifters. Three of these were fitted with a specially modified lifting bar, which will be used in conjunction with a custom designed ramp for fall leaf collection equipment. This lifting bar is used to stow the ramp for transportation, and allows the ramp to remain on the ground during loading. The entire setup is safer, quieter, and less damaging to the equipment than the previous method.
- ◆ Five multi-purpose tractors, with various attachments such as snowplows, salt spreaders, and leaf rakes, for sidewalk and street snow removal, and leaf pick-up. These tractors are equipped with hydrostatic transmissions, which will reduce the maintenance and repair costs associated with the older manual shift tractors currently in the fleet.
- ◆ Three street sweepers with hydrostatic drive systems to reduce maintenance requirements and pressurized cabs to reduce operator fatigue. These sweepers include a spring suspension system on the rear wheels that was developed by City of Milwaukee technicians to reduce wear on the sweeper and improve operator comfort.
- ◆ A pavement-milling machine for removing a layer of material from paved surfaces for maintenance. This machine can be used to smooth and resurface roads by grinding the top to an even profile, and subsequently resurfacing with a new layer of material. This avoids or delays major digging and reconstruction in many cases. This new machine can grind 24 inches wide and up to a depth of 12 inches, depending on the material. Fleet Services was able to purchase a demonstration unit that resulted in savings to the City.
- ◆ A truck-mounted excavator/crane. This unit is used primarily for removing sidewalk that needs to be replaced. An operator can lift entire sections of concrete walk and place it into a dump truck. This method is more efficient than breaking the concrete by hand for removal. This unit replaces a similar, older piece but is more compact, making it easier to maneuver in the city.
- ◆ Two solar powered traffic control message signs. These trailer-mounted signs use solar collection cells to power a 42 inch by 70 inch light board that can warn drivers about utility work in the street, temporary lane obstruction, etc.
- ◆ A trailer mounted sewer jet. This is a smaller and more maneuverable complement to the existing truck mounted sewer jets. It has a diesel engine that creates a high-powered stream of water, which is used to assist in cleaning clogs and debris from sewer lines.
- ◆ Two vehicle towing units, a conventional style tow truck and a flatbed car hauler, both to be used by the Light Repair area. The tow truck has a larger capacity than the previous unit, allowing the towing of heavier vehicles. The flatbed carrier has a deck that tilts to the ground and a winch to load equipment. This is particularly useful when a vehicle cannot be lifted and towed from one end. This unit can also tow a vehicle behind, permitting the transport of two vehicles at the same time.
- ◆ A liquid brine spreading truck. This new concept uses a salt-water (brine) mixture for anti-icing or deicing instead of dry rock salt pellets. The brine is mixed at a yard and loaded into the truck. Several spray nozzles at the rear of the truck can be used to apply the liquid. The brine is a faster-acting agent than dry salt. When the brine dries it leaves a coating on the pavement, which will become effective again when moisture, such as snow, is present. Currently this one truck is being used for select bridge applications, and the results are being studied before expanding the idea.



Multi-purpose Tractor



Truck-mounted Excavator/Crane

Norquist, Schifalacqua, and Williams Host Open House for Historic Anderson Municipal Building and Water Tower

Mayor John O. Norquist, Department of Public Works Commissioner Mariano Schifalacqua, and Department of Neighborhood Services Chief Operations Officer Teresa Williams hosted an open house for the recent remodeled Robert A. Anderson Municipal Building and Water Tower, 4001 South 6th Street. The event was held on Tuesday, December 9th. The remodeling included modifying the first through fourth floors and part of the fifth level to provide office space for the Department of Neighborhood Services and the Milwaukee Police Department.

Built in 1938 and 1939, the art deco style of the approximately 162-foot tall Town of Lake Water Tower and Municipal Building immediately became a south-side landmark. On April 6, 1954, the City of Milwaukee obtained ownership of the building when it annexed the Town of Lake. Lake Tower was nominated as eligible to be listed on the National Register of Historic Places in 1984 and locally designated as a historic site on February 17, 1990. In 1996 the Common Council renamed the structure the Robert A. Anderson Water Tower and Municipal Building in honor of this former 13th District alderman.

Many of the organizations that utilize the services of the Department of Neighborhood Services were invited to meet staff and see where the Department was located. DNS works with several neighborhood groups on special neighborhood clean-ups, targeting areas of the city to get landlords and homeowners to remove items from the neighborhood that are detracting and bring property up to code. The Safe and Sound program is housed there, as well as the Town of Lake Band, which is currently run by the Milwaukee Public School Music program.

Several of the contractors who performed work on the remodeling project attended the open house also, as well as the staff from Buildings and Fleet who worked on the project. A brief program was held in the third floor community room that featured Mayor John O. Norquist, DPW Commissioner Mariano Schifalacqua, DNS Chief Operations Officer Teresa Williams, and 13th District Alderman Terry Witkowski.



Department of Public Works Commissioner Mariano Schifalacqua served as master of ceremonies for the brief program during the open house. Mayor John O. Norquist, Alderman Terry Witkowski and Chief Operation Officer Tracey Williams were also on the program.



The first floor reception also captures the Art Deco feel with its chevron-and-diamond supports and birch counter.



Front door — The chevron and vertical line Deco details on the exterior of the building are carried through inside in existing and remodeled areas.



1st floor vestibule light fixture is a refurbished original pendant fixture. It is one of a pair in the 2-story vestibule. It features the chevron design and angular housing details. The shape of the fixture reflects the building's configuration.



Original steel cross bracing and tension ring in the water tower tank. The structural steel on the floors were fire-proofed as part of the remodeling to bring the building up to code.

- ◆ A street sweeper was equipped with an automated central lubrication system in late December. This system will apply grease to the necessary points on a timed basis. The effectiveness will be studied during the 2005 sweeping season. If this proves to be successful, more equipment may be fitted with automatic lubrication devices.
- ◆ Three aerial lift trucks for use in Street Lighting and Forestry tree trimming operations. Each aerial lift truck is constructed in a manner that will require less routine maintenance than other available trucks. In addition, the industry standard five and ten year rebuild requirements are not required by the aerial lift manufacturer, which will save the City approximately \$18,000 per truck over the course of its use in City service.
- ◆ Two specialty mason trucks for use by Infrastructure-Underground for repairing sewer openings. These trucks are masonry mortar factories on wheels, each containing a sand storage box, mortar mix, bricks, 100-gallon water storage, tool storage, and a crane for heavy lifting.
- ◆ One trailer mounted stump cutter with hydrostatically driven cutter wheel, which greatly reduces the stress to the engine normally present with mechanical drive systems. To enhance safety when pedestrians are present, the cutter wheel can be stopped within three seconds.

FLEET OPERATIONS

Training and Testing

In 2004, Fleet Operations Instructors trained 258 employees. A total of 477 classes were held on various subjects. Of note during the year was a comprehensive refresher program provided to all front line snow fighting personnel. In addition to the formal training given by our instructors, our 3rd Party Commercial Drivers License testing program conducted 278 CDL road tests.

Fleet Accidents

The Fleet Operations section prepares an in-house accident report for all accidents involving City of Milwaukee owned vehicles. It also investigates reports of damage to property and equipment where the involvement of City vehicles is reported. In 2004, the section prepared 443 accident reports. This is similar to the 434 reports filed in 2003 and slightly higher than the 430 prepared in 2002.

Dispatch

Phase one of the new computerized dispatch system has been finished. Dispatch personnel can now use this program to assign vehicles and employees to various job requests daily. The system is tied to the Repairs fleet management software and will automatically determine truck availability and assign an employee to their pre-picked job, etc. Phase two is being developed to integrate employee training and other criteria in making job assignments. This system has increased the speed and efficiency of dispatch scheduling. A portion of this system can also be used to staff a snow and ice control operation.

FACILITIES

The Facilities section is responsible for providing facilities that are clean, functional, comfortable, in good condition and provide a reasonable level of physical security. Through the efforts of a highly dedicated staff, Facilities aims to maintain space that is pleasing and efficient to use. The section is responsible for the management, repair and maintenance of 102 Department of Public Works facilities with over two million feet of space. We also provide project management, consulting services, inspections, and evaluations for the repair, maintenance and renovation of the City's building infrastructure. Our staff of skilled craftsmen, mechanics and professionals provides these services to City agencies, field offices, shops and storage facilities that encompass 220 buildings.

Facilities are getting more sophisticated with increased demands by their users for telecommunications, energy management, a quiet, comfortable environment and a very high level of indoor air quality. The Facilities section is taking an active role in strategically meeting the needs of staff and the public for the use of its buildings, while remaining fiscally prudent.

Architectural Design

The Architectural Design team of professionals leads DPW's development of new buildings, additions and alterations to existing facilities for the City. They are involved from concept through construction, creating the design, producing contract drawings and specifications, administering construction and overseeing architectural consulting firms on projects. This unit also provides architectural technical support for the development of budgets and facility utilization studies, and assists in operations and maintenance activities.

The architectural team works collaboratively with clients to meet their goals and needs. By being proactive and cost conscious in developing design solutions, this team creates functional and efficient workplaces. Better working environments are provided with the installation of energy efficient building operating systems and compliance to life/safety building code requirements is maintained.

**DEPARTMENT OF PUBLIC WORKS REMODELING
Lobby to Department of Public Works**

Zeidler Municipal Building 5th Floor East Side

In 2004, the 5th floor of the Zeidler Municipal Building was the focus of remodeling to accommodate the DPW Commissioner's Office and administrative staff. Office alterations included removal of walls and partitions and construction of a new reception area, private and general offices and a conference room. The reception area, with its curved oak and steel reception desk, and the adjacent contracts area provide for direct access by private contractors and city staff. Features include a drywall ceiling at the reception area with pendant fixtures, wood and marble paneling, and new systems furnishings. In private and general office areas, indirect lighting provides both energy efficient lighting and controls. New communications services, updated sprinkler and system smoke detection systems and life/safety systems were integrated into the design.

The project was designed by Buildings & Fleet (B&F) and consultants assisted with project management. Consultants provided plumbing, HVAC and life-safety design, with coordination and oversight by the B&F architectural unit. DPW Administration provided communications services. B&F staff provided construction inspection while the trades group completed carpentry, marble installation, painting, communications and electrical work. Private contractors installed the carpeting, systems furnishings, sprinklers, HVAC life safety and plumbing.



Above and below, the Department of Public Works Reception Area — 5th Floor Remodeling



**COMPTROLLER'S RECEPTION AREA
Before . . . and After**

City Hall 4th Floor, Comptroller Office

Last altered in 1988, the 4th floor of City Hall was remodeled in 2004 to provide updated office space for the Comptroller's Office. Due to the number of staff involved, the project was phased into two parts – north and south – with staff relocated to the 10th floor of the Zeidler Municipal Building. Alterations included redesigning of the reception area, building some new offices, installing new systems furnishings, painting, electrical, HVAC, plumbing, sprinklers, life/safety and communications work. Building performance initiatives included indirect lighting and energy efficient ballasts, energy efficient modifications to HVAC systems and use of certified green carpeting. U-shaped workstations provided an updated appearance and more functional configuration. The curved design theme was carried through at the north reception area, in the arch and rounded, traditional paneled reception station. Paneled doors and cove lighting were in keeping with the historic architecture of City Hall. In addition, both men and women toilet rooms were updated to provide energy efficient fixtures and accessibility per the Americans with Disabilities Act.

The project was designed by an outside consultant and overseen and coordinated by the architectural unit. B&F staff provided inspection services and our trades group completed the carpentry, painting, electrical and communications work. Outside contractors installed the systems furnishings, carpeting, HVAC, plumbing, ceiling and life safety systems.



Before and after Comptroller's Reception Area





ENGINE HOUSE 3 REMODELING

100 W. Virginia Avenue

To better serve the needs of the Fire Department, B&F undertook the remodeling of Engine House 3. Built in 1900, this picturesque building with its corbelled brick, picture frame detailing and stone parapet, has long been a cornerstone in its south side neighborhood. A new concrete floor slab was poured, and the boiler and adjacent repair facility building and Engine House 3 was separated from the repair building in 1990. The 2004 interior remodeling included removal of office walls, updating toilet rooms to be ADA accessible, providing energy efficient fixtures, and modernizing the kitchen. During remodeling, care was taken to retain the distinctive wood casework features. The aging mechanical systems were also updated. The architectural design unit oversaw and coordinated project design,

working with Continuum Architects and Planners, architects; Pujara, Wirth Torke Ltd., structural engineers; and IBC Engineering Services, Inc., plumbing, HVAC and electrical engineers.

Remodeling included creating individual sleeping rooms on the second floor, replacement of outdated fixtures with new, code compliant units, providing energy-efficient indirect and pendant light fixtures, adding a generator for backup power, and updating communications service. B&F staff provided inspection and electrical services and DPW Administration provided communications services. James Cape & Sons was the General Contractor on this project.

Mechanical Design

The Mechanical Design Unit's engineering professionals leads DPW in managing and coordinating the planning, programming, design and construction process of mechanical systems for existing and new City owned buildings. The unit manages the design and construction of building mechanical systems projects including project scheduling, budget control, compliance with design standards, resolution of on-site construction problems and overall project quality control, in coordination with user agencies. We provide engineering services to enhance the condition and prolong the useful life of public facilities.

POLICE ADMINISTRATION BUILDING - CHILLER REPLACEMENT

951 N James Lovell Street

The design and installation of a new chilled water plant for the Police Administration Building was completed. The new plant consists of two 250 ton water cooled chillers equipped with variable frequency drives capable of modulation capacity and improving energy efficiency. The speed of the chilled water and condenser water pumps are modulated by variable frequency drives to meet system needs at full load conditions and to conserve energy at part load conditions. The chilled water system provides cooling to the eight-story building. The new chillers replaced two thirty year old chillers served by constant volume chilled and condenser water pumps. All pieces of equipment as part of this project were connected to the central building automation system to allow for remote control and monitoring of the system. The system should provide better control capabilities while also significantly reducing energy usage.



New Chiller Lift Lowered Through the Roof

POLICE ADMINISTRATION BUILDING – HVAC EQUIPMENT REPLACEMENT
951 N James Lovell Street

The design and installation of the replacement and refurbishment of equipment for the Police Administration building was completed. The HVAC project consisted of the replacement of approximately 15 exhaust fans, 3 air-handling units and the building heating water pumps. The project also included a new carbon monoxide detection system in the lower level garage as well as new controls for the fans and associated dampers. The two main air handling units serving the building were refurbished with new automatic dampers, replacement of fan components subject to wear and tear, and new variable frequency drives to allow for better control of the supply and relief/return fans. The heating water pumps were equipped with variable frequency drives to allow for modulation of the heating water flow to meet building loads. The air handling unit serving the basement level was converted from a constant volume multi-zone type unit to a single-duct variable volume type unit serving variable air volume boxes with hot water reheat coils. All new pieces of equipment included in this project were connected to the central building automation system to allow for remote monitoring and control. The various modifications made to the HVAC system should allow for more precise control while also reducing energy consumption.

LABORATORY REMODELING IN THE ZEIDLER MUNICIPAL BUILDING
841 N Broadway 2nd Floor

In response to the events following the attacks of September 11, 2001 government agencies throughout the country have been setting up a network of laboratories able to address conditions associated with biological hazards. As part of these efforts the Milwaukee Health Department needed to upgrade their existing laboratory facility to meet federal government standards designated as Biological Safety Level III (BSL III). This entailed several major parts. First, an airtight room had to be built to contain any hazardous material brought on site for evaluation.



BIOLOGICAL LEVEL III SAFETY LABORATORY
Laboratory Exhaust Fans

Secondly, new exhaust fans had to be installed that would create a negative air pressure condition in this space, thereby drawing air in from adjacent areas. This was a precautionary measure to make certain that hazardous materials being tested would be under absolute containment. Finally, system redundancy was incorporated with a back up fan to operate in the event a mechanical failure occurs to the primary system or when scheduled maintenance is required.

Finally, the laboratory support area needed to be reconfigured to provide not only a safe work flow through the lab but also integrate the new equipment needed to process hazardous materials.

Due to the potential dangers of a release of these hazardous materials, meeting the stringent requirements of a BSL III was a challenge. In order to obtain an “airtight” rating for the new lab it was necessary to go through several iterations of testing and sealing. New exhaust fans replaced existing fans that serve the entire 2nd floor laboratory. Testing exposed deficiencies in the system that needed to be corrected before the new requirements could be met. The new support area allows flow of materials in only one direction, thus providing security and eliminating backward contamination.

Additionally the laboratory electrical infrastructure was updated to allow the BSL III lab and support area to operate on the back-up power system in the event of an emergency.



Carpentry, Painting & Masonry

This unit provides highly skilled trade services for all City facilities. Our capabilities are diverse in areas such as painting, masonry, tuck-pointing, stonework, ceramic tile installation, concrete flat work, steel stud & drywall construction, millwork, custom cabinetry, ceiling system and flooring installation and general maintenance.

In 2004 our staff worked on several capital remodeling projects including the entire Comptrollers Office on the 4th floor of City Hall and the DPW Commissioners Office on the 5th floor of the Municipal Building, scheduled for completion Spring of 2005. We also completed the construction of a new conference room at the Central Repair Garage and a complete remodeling of the Dispatch area on the 2nd floor of that facility. Finally, we completed the construction of a storage building for the Children's Outing Association, matching the architecture of their adjacent building.

Children's Outing Association Storage Building

Work for other departments included a wide variety of retrofit work. For the Health Department we replaced all the ceilings at the South Side Health Center and remodeled the entire basement at the Keenan Health Center. For the Police Department, we replaced the ceilings in the basement and 1st floors at the Safety Academy. At the Fire Department headquarters on Wells Street we built out a new dispatch area in the apparatus room, while maintaining occupancy and viability during construction. Additionally, we completed driveway replacement work at Engine Houses 37 and 39. Finally, the Water Department required our services rebuilding the water tank at Lake Park.



Keenan Health Center basement during construction

In addition to our general maintenance and repair services, this unit provides repairs to fifty-seven children's play areas. We regularly replace door and frame assemblies and re-key buildings for occupancy changes and security purposes. Another service aspect of this unit is boarding up privately owned properties throughout the City, 24 hours a day, 365 days a year. This year we performed 1900 board-ups at the request of the Police Department, Fire Department and Department of Neighborhood Services.



Communications

The Communications unit consists of journeyman electrical mechanics, electrical workers and laborers that provide and maintain the City's copper cable plant and fiber optic backbone for data and telephone transmission. Our staff is responsible for the maintenance of the City's telephone system, street lighting control circuitry, various alarm systems, public address systems, Fire Department Computer Aided Dispatch, the Community Safety Wide Area network, Police call boxes and public access WI-FI Hotspots at Pere Marquette Park and Cathedral Square Park. This unit is also involved in the remodeling and construction of City facilities where we provide Cat 3/5e/6 wiring and fiber connectivity for all City Departments. Communications continues to be in the forefront of the fiber optic and local area network hub technologies linking DPW and other City Departments.

In 2004, the Communications unit worked with Avaya staff installing the City of Milwaukee's new telephone system. This involved relocating the existing wiring plant to provide room for the new system, without disrupting service from the still functioning Rolm system. Besides replacing equipment at the City Hall Complex, new phone systems were installed at all of the Health Department Clinics, the Water Meter Shop, Traser Yard, Central Library, Lake Tower and the Municipal Services Building. In all, the installation of the new telephone system involved the replacement of over 3100 digital phone sets and the rewiring of more than 5000 extensions.

Communications also installed wiring in more than 30 Engine Houses paving the way for a new Computer Aided Dispatch system, tying the network, Engine House PCs and paging systems together to alert firefighters of dispatched calls. The new CAD system is a fiber-based network consisting of SONET with DWDM and Ethernet, replacing the old system that was modem based and operated on the City's copper infrastructure.

Our Communications section is a national leader in technology. In 2004 an additional 6 miles of Fiber Optic Cable were installed to enhance the City's telecommunication network. Only a few other municipalities in the nation own and use a community fiber network such as the one our unit is responsible for.

In addition to meeting the challenges of installing state of the art infrastructure technology, our unit replaces approximately 36 miles of copper cable each year due to cable damage or failures and to accommodate paving and road construction projects.

The Marquette Interchange Project activities started in the fall of 2003 and are scheduled to be complete in 2008. Late in 2003, the Communications unit began the task of relocating cables, and this year we temporarily relocated cables from the Winnebago and State Street Bridge structures. The cables across the Juneau Structure were also permanently relocated through a directional bore under the pavement at the former Juneau Avenue location. Nearly 20 cables containing close to 3000 conductors feeding hundreds of circuits were relocated for these projects without causing any significant outage. Future projects will be coordinated around the activities of the Marquette Interchange to take advantage of planned outages while adding to reliability and redundancy of the fiber network.

Finally, our communications staff provides 24 hours a day, 7 days a week, 365 days a year service in maintaining the citywide data and telephone system. As technologies advance in communications, we provide and maintain the latest in category 6 cabling for local area networks as well as multimode and single mode fiber connectivity utilized by the City's ATM, SONET with DWDM, and Gigabit Ethernet networking technologies.

Special Electrical Services

The Electrical Services group consists of seasoned and skilled Electrical Mechanics in the field of electrical wiring, maintenance, and construction. Over fifty percent of our staff are credentialed Master Electricians and others hold credentials in refrigeration, electrical inspection, and industrial instrumentation. We provide diverse electrical services for all city-owned facilities including Police Districts, Fire Houses, Parking Garages, Forestry and Sanitation Yards, and the Port of Milwaukee.

In 2004 Special Electrical Services participated in, and completed a multitude of construction projects ranging from small office and shop alterations, to large-scale remodeling projects. We participated in the remodel of Historic Engine House 3 located on 1st and Virginia Avenue. The project involved providing an updated power distribution system throughout the building with a backup emergency generator system. The group provided design review and recommendations and installation for all the building systems including HVAC, overhead door operators, hose tower hoists, vehicle exhausts, and life safety systems. Additionally, new energy efficient lighting was installed throughout the Engine House. As is the case with many old structures, this building posed many unique challenges in completing a quality, code compliant, electrical systems installation.

Also in 2004, our group successfully completed the Zeidler Municipal 5th Floor East Remodeling Project. The scope of this project included new indirect lighting with low voltage control switching and power distribution with isolated grounds and dedicated circuitry. One unique challenge on this project was the installation of all ceiling mounted junction boxes requiring locations outside the extensive drywall ceilings to maintain accessibility.

Another extensive capital remodeling project we undertook was the 4th Floor City Hall Comptrollers Office. In addition to our normal scope of work including power distribution, lighting, and HVAC systems, we installed the Siemens manufactured life safety system in this floor. DPW's Central Repair Garage facility was another sizeable project our group completed in 2004. We installed all the electrical equipment and wiring required to complete the remodeling of the dispatch area, stockroom lighting and dryer cell addition.

In addition, we were actively involved in the design, review and planning of emergency back-up power upgrades, as well as on-site power generation projects. Upcoming future projects include the downtown municipal complex, firehouses, police districts, and critical DPW Garages.

The new Zeidler Generator Project is scheduled for completion mid 2005. This will ensure the downtown municipal complex having adequate and reliable emergency power when needed. The project will provide significant cost savings utilizing co-generation with the utility during peak summer months.

Zeidler Building New Generator Switchgear

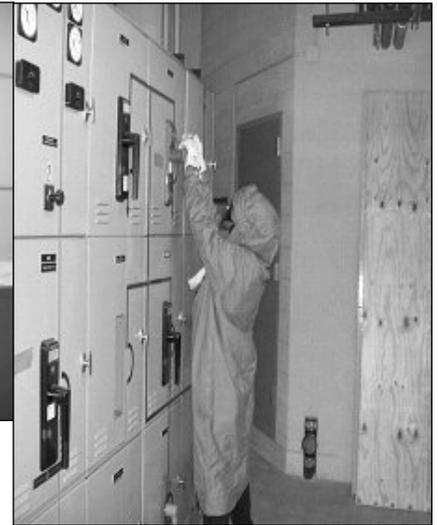
In 2004, Special Electrical Services continued to concentrate its effort in responding to customer generated electrical needs and requests. Through the Proteus Work Order System our staff within Operations and Maintenance was able to manage a substantial volume of requests while still responding to other demand maintenance requests from other city-wide department locations.

New to 2004, the group launched an Arc-Flash Safety Program. Each employee received training based on NFPA-70E Standard for Electrical Safety in the Workplace. All electricians were issued Personal Protective Equipment (PPE) and a set of voltage related tools. The Group also initiated Arc-Flash studies at various building locations. The Arc-Flash Studies along with subsequent labeling of electrical equipment is ongoing. As required per NFPA-70E, the labeling serves to inform the employee the category and level of protection required when working on a piece of electrical equipment.



Electrician wearing Arc-Flash PPE and performing a switching operation

Throughout 2004 staff members participated in a wide range of continuing education opportunities. As always, the group displayed an eager willingness to adapt to an ever-changing work environment welcoming change brought on by new systems and technologies. Supported by an efficient inventory management system. Special Electrical Services continues to provide prompt, competitive service to meet the City of Milwaukee's most critical electrical needs. Providing 24-hour on call emergency service, the group prides itself on their ability to perform high quality, reliable electrical service to a valued customer base.



Information & Security Services

The unit consists of a small group of Communication Assistant III employees and management that occupy the City Hall Information Center and provide after hours call center services as well as acting as the central station monitoring center for DPW buildings on a 24/7 basis. We also have one security officer that provides watch tour coverage of the facilities after hours and tests the security systems on a quarterly basis. Additionally, the City contracts with a security provider during the weekends and second shift on the weekdays. These officers provide watch tour and patrol service along with monthly fire extinguisher checks in the City Hall Complex. Their specific responsibility is to protect the assets under the control of the Department of Public Works.

This group also provides consulting services to other City departments on security-related matters and alarm system at 841 North Broadway by including door monitoring capabilities and controlling access to the stairwells and elevators (after hours). Later in the year we updated the access control and alarm system in the City Hall building by including door monitoring capabilities and updating the fire escape hardware and controls. In an effort to enhance reporting capabilities we added software modules that allows us to conduct security officer tours of the facilities using the access control system. We have almost completed the process of providing photo identification cards to City employees that fill the dual role of identification and access control. In October of 2004 we began the installation of the card access/alarm system that will be tied to CCTV in various key outlying buildings that will be monitored and dispatched from City Hall.

Emergency Response

The Emergency Operations Plan and Employee Handbook was revised this year with the scheduled distribution in early 2005. We have instituted various testing processes for emergency procedures and equipment in an effort to improve our ability to respond correctly to a variety of situations. These include regular testing on emergency and other procedures for employees who work in the central station, conduct fire drills for all employees in the complex at least annually and conduct inspections of emergency equipment per NFPA guidelines.

Fire/Life Safety

We continue to upgrade the fire life safety system (sprinklers and detection) in the complex as we remodel spaces. The fifth floor of the municipal building and the 4th floor of City Hall have been completed during 2004. We have also completed planning process on several projects that will be completed during the early months of 2005. This includes such items as: fire detection in the Fleet garages, the 4th floor in the Municipal Building and 5th floor in City Hall that currently have sprinklers but not the new fire detection system. We also completed a study of our complex sprinkler system to insure all systems are tested in accordance with NFPA regulations. Where testing deficiencies are detected, we will be implementing those recommended changes in early 2005.

Facilities Operations

In 2004, the Facilities Management section continued the expansion of the Johnson Controls, Inc., Metasys system, which monitors and controls HVAC equipment, to buildings outside of the City Hall Complex. For example, when a boiler fails at the Municipal Service Building on Canal Street, the operator at City Hall receives an alarm and dispatches a maintenance technician immediately. In addition, critical alarms such as a boiler failure received through Metasys will automatically create a demand maintenance work order in Proteus, our computerized maintenance management system. Each one of approximately 35 critical alarms throughout the City prints out a detailed description of the problem so that the City Hall Operator can relay the information to the responding technician.

The use of the Proteus maintenance management system continued to expand in 2004 to include the loading dock personnel. Increased use by painters, carpenters, and electricians, in addition to the maintenance technicians has caused a rise in the total number of demand work orders completed. In addition, the number of preventive work orders continues to increase as new equipment is installed as part of remodeling projects.

2004 marks the year where Facilities Management initiates a holistic approach to sustainable buildings. Starting with the newly formed building systems commissioning team, we have assembled a cross-functional team to address assurances that new systems deliver optimum performance as the first step in sustainable, efficient and environmentally responsible operations. Areas we are addressing include a wide range of expertise such as:

- ◆ HVAC
- ◆ ENERGY MANAGEMENT SYSTEMS AND CONTROLS
- ◆ LIGHTING CONTROLS
- ◆ FIRE, LIFE AND SAFETY SYSTEMS
- ◆ MAINTENANCE MANAGEMENT SYSTEMS
- ◆ POWER PLANTS & COGENERATION
- ◆ CENTRAL CHILLER AND BOILER PLANTS
- ◆ SUSTAINABLE DESIGN
- ◆ LEED™ FOR EXISTING AND NEW BUILDINGS

Performance outcomes include lower operating costs, lower energy use, and better use of building space, increased productivity by building occupants, reduced change orders and shorter punch lists.

A world-renowned expert in building commissioning conducted training and the staff continues to attend local seminars about the latest developments in commissioning building systems. Additionally, to ensure longevity, a commissioning team meeting is held every Friday morning to discuss progress and how we can best apply the commissioning to existing and new systems.

Load Shedding

In 2004, Facilities Management decided to adopt an electric load shedding program by getting more use from the existing energy management system. In 2003, a pilot project was undertaken where selected lights were turned off during expensive peak demand periods. The program proved to be a success and we decided to turn off more lighting, motors and other equipment in 2004. The program helps offset the ever increasing cost of energy and reduces demand on our energy infrastructure.

OPERATIONS DIVISION *Environmental Services*



Preston D. Cole, Superintendent

Zeidler Municipal Building
841 North Broadway, Room 619
[414] 286-8282

Preston D. Cole, *Environmental Services Superintendent*

Michael J. Engelbart, *Sanitation Services Manager*

Robert McFadyen, *Forestry Services Manager*

ENVIRONMENTAL SERVICES

In 2004 the merged Forestry and Sanitation sections continued to explore new opportunities for improved efficiencies resulting in a cost effective Environmental Services. These included the areas of facilities usage, equipment, emergency management, staff cross training and customer service. Utilizing these opportunities ensures that the Environmental Services section continues to provide the City of Milwaukee high quality services at the lowest possible cost.

SANITATION

Sanitation's main objective within the City's overall Strategic Plan is to keep our neighborhood streets and alleys clean. Several programs address this goal including:

Residential Garbage Collection

In 2004, Sanitation provided 190,000 Milwaukee households with weekly garbage collections that generated 184,095 tons of residential waste.

- ◆ **Apartment Collection.** Since 2001, the City requires that apartment buildings of five or more units be charged 100% of the cost for garbage collection services. Sanitation first began charging apartments for garbage collection in 1998. In 2004, Sanitation serviced 47% of the city's apartment buildings and generated \$900,000 in revenue.
- ◆ **Special Collections.** Sanitation makes special bulky and brush collections upon request through the DPW Call center. These service requests generated 15,700 tons of bulky items and 3,700 tons of brush that is composted. Sanitation crews also responded to 472 Sheriff's evictions by quickly removing items set out at the curb.
- ◆ **Skid-Steer Loaders.** Sanitation has been instrumental in neighborhood cleanup programs using small skid-steer loaders with grapple bucket attachments. Skid-steer loaders have the ability to safely pick up large piles of loose debris, garbage, bulky items and brush, and dump it directly into garbage packers. This equipment has greatly expanded Sanitation's scope of operations while reducing the potential for back injuries, puncture wounds, cuts, abrasions, and animal bites.

Skid-steer loaders are now used routinely on crews and are extremely effective in emergency cleanups resulting from windstorms or floods. These machines collected 11,600 tons of debris in 2004. Using skid-steer loader crews, Sanitation continues as one of the Department of Neighborhood Services' exterior nuisance remediation contractors. Previously, all DNS remediation work had been done by the private sector.

Mayor Tom Barrett, Environmental Services Superintendent Cole and MPS Kick Off City's Nike Reuse-A-Shoe Program

Mayor Tom Barrett announced the City's latest recycling initiative on June 23rd at Cathedral Square Park in downtown Milwaukee. Milwaukee Recycles, a DPW program that promotes recycling, in partnership with Nike and the National Recycling Coalition will operate the Nike Reuse-A-Shoe Program. This program will expand current recycling initiatives and encourage waste reduction and diversion. The goal of the Nike Reuse-A-Shoe program is to collect 5,000 or more pairs of any brand of used athletic shoes that will be recycled and processed into Nike Grind. This recycled sports surface material will be used to resurface and beautify a Milwaukee Public School tot lot/playground.

"I am pleased with the City of Milwaukee and Milwaukee Public Schools collaborative effort in renovating play space that our children will enjoy for generations to come," Mayor Barrett stated. Environmental Services Superintendent Preston Cole talked about the importance of recycling the shoes instead of having them wind up in the landfills, he also stated that the average runner buys two pair of running shoes a year.

The press conference was held at Cathedral Square Park where the annual Bastille Days Festival place. The Storm the Bastille Run (held July 8th) is held the first night of the festival, and that was the first big event where the Nike Reuse-A-Shoe Program debuted. Participants were encouraged to bring their used athletic shoes of any brand to the Nike Reuse-A-Shoe drop box near the starting line.

Executive Director Randy Prasse, of the East Town Association, which produces the Bastille Days festival said, "The East Town Association is proud to assist the City of Milwaukee with the Nike Reuse-A-Shoe Program. We have 3,500 runners in the Storm the Bastille Run and we will encourage all of them to bring their old athletic shoes". MPS Director of Strategic Planning and Community Outreach Dan Donder spoke of the cooperation that already exists between Milwaukee Public Schools and the City of Milwaukee who work together for the sake of the children to provide safe recreation play areas.

Also attending the kick off event were Jim Purko, DPW Director of Operations; Mary Bengsch; DPW Recycling Specialist; Belle Bergner, Keep Greater Milwaukee Beautiful Program Director; Mike Egelbart, Sanitation Services Manager; Joe Wilson, Keep Greater Milwaukee Beautiful Interim Director; Gina Spang, MPS Manager of Design and Construction; Beth Howard, Recycling Intern; and children from All Our Kids Childcare & Learning Center.

The Nike Reuse-A-Shoe Program will continue throughout the year by having drop boxes stationed at run/walks, schools, businesses, recycling self-help facilities, and in City of Milwaukee buildings. The City of Milwaukee hopes the program will jump-start a new attitude towards recycling that will give residents a chance to see positive effects of diverting waste from the landfills.



Ms. Chantell Lee, All Our Kids Childcare & Learning Center, Mayor Tom Barrett, Executive Director of East Town Association Randy Prasse and Ms. Myesha Randolph, All Our Kids Childcare & Learning Center. The children from All Our Kids Childcare & Learning Center were invited to be a part of the press conference to kick off the City newest recycling initiative.



Executive Director of the East Town Association Randy Prasse said the East Town Association was proud to partner with the City on such a great program and be a part of the kick off of the City's Nike Reuse-A-Shoe Program.



Environmental Services Superintendent Preston Cole was the first one to donate used athletic shoes. He talked about diverting athletic shoes from the landfill and stated that if the 5,000 shoes were collected it would represent approximately 5 tons that would be diverted from the landfills.

Keeping Neighborhoods Clean

- ◆ **Street Sweeping.** Mechanical brooms swept 73,500 curb miles of Milwaukee streets and alleys and removed 5,500 tons of debris.
- ◆ **Neighborhood Clean-Ups.** CDBG block grant funding provides weekend roll-off dumpster boxes for neighborhood cleanups from April through October. The program placed 1,580 boxes for residents use in 2004. These cleanups produced 7,000 tons of waste material and helped to beautify neighborhoods.
- ◆ **Special Events.** Sanitation provided support to over 1,040 civic celebrations including numerous neighborhood block parties and church festivals. These events required 150 festival boxes, 15 roll off boxes and 9,200 barricades.
- ◆ **Operation Immediate Clean-Up.** Operation Immediate Cleanup began as a systematic post-winter clean up program to clear alleys of winter debris. The program expanded over the years and spawned several other neighborhood clean ups throughout the summer. Overall, this program collected 1400 tons of bulky items, 1200 brush collections, 30 tons of tires and generated 240 referrals to the Department of Neighborhood Services. As part of this cleanup effort 1200 miles of streets and alleys were swept producing 691 cubic yards of debris.
- ◆ **Directed Neighborhood Clean-Ups.** Sanitation and the Department of Neighborhood Services (DNS) collaborated on successful neighborhood clean ups. The program provided residents in selected areas with a systematic special pickup service with a follow-up canvass by DNS to order the removal of any remaining litter and nuisance vehicles. Fifteen directed neighborhood clean ups were conducted in 2004.
- ◆ **Self-Help Stations.** The city operates two drop off Self-Help Centers located at 3879 West Lincoln Avenue and 6660 North Industrial Road. Each site has multiple boxes to facilitate convenient service for city residents and property owners to dispose of refuse. City of Milwaukee residents use the Self-Help Centers to recycle used motor oil, oil filters, antifreeze, appliances, tires, recyclables, brush, computers, and to dispose of excess non-hazardous waste. Non-commercial construction and demolition materials limited to two cubic yards are also accepted from city residents at the Centers.
- ◆ **Leaf Collection.** This year's fall leaf collection operation collected over 16,000 tons from mid October through early December.

Recycling and Waste Reduction

Sanitation works to reduce the amount of residential solid waste sent to landfills by incorporating the following programs and collaborative partnerships in order to achieve this goal:

- ◆ **Household Recycling.** Milwaukee's residential recycling program diverted 25,800 tons of materials from landfill in 2004. This nationally recognized and highly innovative program serves specific neighborhoods' needs through the use of a semi-automated monthly cart or weekly bin collection. In addition to household collection, residents can bring additional commodities to the City's Self Help Centers where they will be recycled.
- ◆ **Diversion.** Milwaukee's Self Help and composting programs diverted an additional 29,350 tons of materials from landfills in 2004. This included 6,590 computer components, 4,465 gallons of waste antifreeze, 325 tons of used motor oil, 45 tons of used oil filters, 17 tons of used anti-freeze and 1,244 batteries.
- ◆ **Waste Reduction and Education.** Waste Reduction continued to be a high priority in our educational outreach materials. Waste reduction reduces tax dollars needed for garbage and recycling collection. Sanitation continued its participation as a founding member in the regional BeSMART waste reduction campaign. The BeSmart Coalition assisted Milwaukee festivals and events with their recycling efforts. Venues included the West Town Farmers' Market, Jazz in the Park, River Rhythms, River Flicks and Bastille Days. We also collected 28 tons of recyclable ballpark material from Miller Park.
The unique partnership between Keep Greater Milwaukee Beautiful (KGMB) and the City of Milwaukee continued in 2004. KGMB conducted 20 tours with 1,200 MPS students and adults touring the Education Center and the Materials Recovery Facility (MRF) to get a first hand look at the processing of recyclables. Students also participated in classroom demonstrations designed to heighten the awareness of pollution prevention, resource conservation, waste reduction and recycling.
- ◆ **ReUse a Shoe.** Sanitation heightened recycling awareness throughout the city and country in 2004 by participating in non-traditional recycling initiatives. In June, Milwaukee partnered with NIKE and the National Recycling Coalition and brought the Reuse-A-Shoe program to the city. Milwaukee was challenged to collect 5000 pairs of used athletic shoes within a year to be eligible for a \$20,000 grant to be used in the re-surfacing of a playground with the recycled sports surface material. Milwaukeeans ran past the 5000 pairs goal in a mere six months. Sanitation is collaborating with Recreational Facilities & Playgrounds to identify a playground to resurface in 2005.
- ◆ **Cans for Cash.** In November, Milwaukee competed in the US Conference of Mayors *Cans for Cash Challenge*. Cities across the country were challenged to be creative in collecting as many aluminum cans as possible within two weeks. Working with local recyclers, MPS and the City Material Recovery Facility, we collected 270 tons of cans. Milwaukee received national recognition for its creativity in attempting to break the Guinness Book of World Records, *Longest Consecutive Line of Aluminum Cans*. On November 13th in Ruby Garage, 59 volunteers lined up 33,952 aluminum cans in a line that extended 1.35 miles. Milwaukee captured the number nine spot in ESPN's Top Ten Plays of the Day on November 15, 2004. In addition, more than one hundred radio/television stations across the country aired the feat. On March 14, 2005 Milwaukee's attempt became an official Guinness record. Milwaukee was presented with two \$5,000 awards from the US Conference of Mayors for collecting the most aluminum cans and for being the most creative.

Snow and Ice Control

◆ **Salting & Plowing Operations.** Public safety is the Department of Public Works highest priority during snow and ice control operations. Public Works staff direct and supervise snow and ice control operations on the city's 1,400 miles of streets to remove snow and ice as expeditiously and economically as possible to minimize economic losses to the community.

The operational response is based on the severity of the storm. Snow and ice control operations can vary in size from a few vehicles intermittently salting bridges or isolated slippery spots to full scale snow plowings utilizing over 375 pieces of equipment. The most common operation is a General Ice Control (GIC) during which 90 salt trucks are sent out citywide to apply road salt at the minimum rate needed to achieve public safety. Streets are prioritized for salting and snow plowing operations based on traffic volume, public transportation routes and access for emergency services and schools. Main or arterial streets are addressed first with side or residential streets being addressed afterwards.

When a major storm occurs a General Plowing is initiated. It can take 12 to 18 hours to complete, depending upon the severity of the storm. During storms of long duration, plows concentrate on keeping main streets open. Additional operations, such as clearing snow islands left by parked cars, touching up intersections and widening residential streets, continue after the initial plowing is completed. Cleanup may last for several days after a storm. The city does not plow alleys. There were three snow plowing and 23 general ice control operations in 2004 that spread 53,400 tons of salt across city streets.

Mayor Tom Barrett, Housing Authority Commissioners, and DPW Forestry Division Help Central City Cyberschool Students Celebrate Arbor Day

Mayor Tom Barrett, Housing Authority Commissioners Mark Wagner, Michael Van Alstine, and Forestry Division staff helped students at Central City Cyberschool celebrate Arbor Day by planting a maple tree on the campus on Friday, April 30th. The Central City Cyberschool, located in the Parklawn Housing Development, 4434 West Marion Street, presented an Arbor Day program that featured students from all grade levels. The students recited poetry, performed a song and made a dance presentation. Their Arbor Day program was one of several that were held in City of Milwaukee schools from April 24th through the 30th.

Following the program, the students proceeded to an area on the campus where a hole had been prepared for the planting of a maple tree by Forestry staff. Before the actual planting, Mayor Tom Barrett made a brief speech about how fortunate the children were to have trees in their neighborhood. He related a funny childhood story about himself and his siblings who attended a picnic with a babysitter under a tree, which was located on a boulevard. Mayor Barrett encouraged all of the students to take part in helping to plant the tree by taking a shovel of dirt and spreading it in the hole.

The Central City Cyberschool is among the first elementary schools in the North America to feature a wireless data network system where students can operate laptop computers and access the Internet from anywhere in the building.



Left to right: Housing Authority Commissioners Mark Wagner and Michael Van Alstine (behind tree), Forestry District Manager Jeff Boeder, Urban Forestry Technician Mark Schlosser, Mayor Tom Barrett and Environmental Services Superintendent Preston Cole. Cole encouraged the students to return to the tree with their children and grandchildren to show them "their tree".



Students from the Central City Cyberschool took turns shoveling dirt to complete the planting of the new maple tree.

FORESTRY

Forestry is responsible for the design, planning, planting, and management of street trees, boulevards, landscapes, green spaces, and beautification projects within the City of Milwaukee.

Beautification Projects

Forestry installed major new boulevard plantings on McKinley Avenue, North 4th Street and North 6th Street in conjunction with the Park East redevelopment. This display incorporates perennials, ornamental grasses, shrubs, trees, annual flowers, and bulbs. In addition to the plantings in this area, a new automatic irrigation system was installed.

Forestry participated in the planning stages of improvements to Wisconsin Avenue, from North 2nd Street to North 4th Street. Designs utilizing granite curbing and ornamental metal enclosures provide a new and exciting look to the streetscape in this area. These designs also provide seasonal displays that are planted by the Milwaukee Downtown Business Improvement District #21.

Capitol Drive, from Green Bay Avenue to North 36th Street was refurbished in 2004. This was a major undertaking that involved complete reconstruction of the entire boulevard and street in that area. Landscape designs that incorporate a concept providing interest at major intersections were used. These major intersections utilize a diverse plant palette incorporating annual flowers, perennials, ornamental grasses, shrubbery, and shade and ornamental trees. The boulevard in this area utilizes "bed only" irrigation as mandated in the 2004 budget. This method of irrigation provides water to bedded plant material but not to any turf areas.

Community Outreach

Forestry continued with its tradition of fostering community based public/private partnerships. Many of these partnerships are designed to assist community groups with beautification related activities, and included:

- ◆ Coalition for Hope Block Watch
- ◆ Union Pacific Railroad, Logan Street
- ◆ Liberty Gardens
- ◆ Bay View Garden and Yard Society
- ◆ Milwaukee Alliance

New DPW Recycling & Waste Contracts Provides Benefits to Residents

Mayor Tom Barrett shared some of the benefits that the City of Milwaukee's new recycling and solid waste contracts provides to the citizens of Milwaukee at a press conference at the Milwaukee Recycling Facility. The "new" five-year recycling contract with Recycling America Alliance, Inc. (RAA) will result in a year one net savings to the City of \$2.3 million.

Mary Bengsch, Sanitation Recycling Specialist, was the emcee of the event, which included Harry Pelz representing Recycling America Alliance. Shelley Miles, EBE Staffing, and Ignacio Vasquez, of IV Contractors were also present representing the Emerging Business Enterprises that are also part of the contracts.

In years 2-5, the City will share in the revenue for the sale of recycled products and anticipate an annual saving of \$900,000 per year. This contract can be extended for up to 5 additional years.

The new recycling contract will allow residents to recycle all grades of paper, including newspaper, magazines, paperback books, shredded paper, cereal boxes, soda cardboard containers and junk mail. RAA has indicated that any paper product is acceptable unless food, oil or other types of garbage soil it. A display of hard cover books, magazines, juice boxes, and other former non-recyclable items was set up to provide a visual reminder.

As a result of the "new" solid waste contract with Waste Management, the City's two Self-Help Centers, 6660 North Industrial Road and 3879 West Lincoln Avenue began extended hours July 2nd. The new hours are Monday through Friday, 7:00 a.m. to 7:00 p.m., Saturdays, 7:00 a.m. to 3:00 p.m. and Sundays, 8:00 a.m. to noon. The Self-Help Centers are closed on holidays.



Left to right: Shelley Miles, EBE Staffing; Ignacio Vasquez, IV Construction; Mary Bengsch, Recycling Specialist, listen to Mayor Tom Barrett as he explains some of the benefits of the City's recycling contracts.



Harry Pelz, Recycling Alliance of America, spoke of the benefits of recycling to the citizens of Milwaukee. Mr. Pelz is a recycling pioneer and has been in the business for a number of years.

City of Milwaukee Beats Guinness Book of World Records For Longest Line of Aluminum Cans!!!

On November 4th at Hawley Environmental School, Mayor Tom Barrett announced that the City of Milwaukee had entered the “Cash for Cans” contest hosted by the National Conference of Mayors and Alcan Corp. The dates for collecting the most cans were November 2nd through the 15th. Cities across the country were challenged to collect the most tonnage of recyclable aluminum cans. The winning city will receive a \$5,000 award that can be applied toward encouraging recycling. Another \$5,000 award will be given to the city with the most innovative ideas for promoting recycling.

Milwaukee’s activities to increase recycling for this competition included an aluminum can education and collection program with Milwaukee Public Schools’ elementary schools and an attempt to break the Guinness Book of World records for the longest line of aluminum cans which had stood at 27,378.

On November 13th at one of the city’s garages, located on 30th and Ruby Street, 59 volunteers gathered to line up the longest continuous line of recyclable cans. Each can had to touch each other. Tape was laid out on the floor and volunteers were given gloves and bags containing all types of aluminum cans, beer, soda, tea, energy drinks, water, etc. The event was videotaped for verification and two independent sources had to sign papers as witnesses of the event. The total amount of cans lined up was 33,952 or 1.35 miles. Mayor Tom Barrett placed the last can on the line, which had been signed by all of the volunteers.

The event was well covered by local and national media. More than a hundred stations across the country, including ESPN Zone, carried spots heralding Milwaukee’s accomplishment of breaking the Guinness Book of World Records. The City of Milwaukee has submitted all of the forms and a letter, signed by Mayor Barrett, as well as a videotape of the event and some of the local and national coverage to the Guinness Book of World Records organization and is awaiting confirmation of the record. Mary Bengsch, the City’s Recycling Specialist said, “our purpose in attempting to break the record was to simply increase recycling awareness, and we found a fun way to do it.”



Mayor Tom Barrett places the last can on the line to create the “world’s longest continuous line of aluminum cans”.



Tape was put on the floor of the empty garage to form a line for the cans to be placed.



Justin Gilbert (left) was excited to help break the world record.



Mayor Tom Barrett signs the letter for the Guinness Book of World Records while son, Tommy, and Preston Cole, Environmental Services Superintendent, looks on.



Mayor Tom Barrett and students from Hawley Environmental School. The mayor announced the City’s entry into the “Cash for Cans” contest at the school on November 4th.



These are the volunteers who helped the City of Milwaukee beat the Guinness Book of World Records for the longest consecutive line of recyclable aluminum cans. Congratulations!!!!

City of Milwaukee Receives 2003 Downtown Green Thumb Award

Milwaukee Downtown Business Improvement District #21 selected the City of Milwaukee for the 2003 Downtown Green Thumb Award. This award recognizes a downtown business or entity for meticulously maintaining exterior landscaping year round, including plantings and floral displays. The 2003 Downtown Achievement Awards was held on Thursday, November 13th at The Milwaukee Theater.

The City of Milwaukee received the award for the boulevard planters located on East Kilbourn Avenue. The boulevard, from Water Street to Broadway was reconstructed to incorporate a “new” look that boldly enhances the streetscaping in this area. With the use of raised planters, lighting, and a new irrigation design, the endeavor illustrates new and exciting options for landscaping the city’s boulevards. Additionally, by reducing turf, the Division has eliminated the need for mowing.

Preston Cole, Environmental Services Superintendent, noticed the application of planters in the Chicago downtown area and thought it would work in Milwaukee. He worked with the Department of City Development, and money was allocated to install the planters. The Department of Public Works Infrastructure Division was also instrumental in the design and installation of the planters.

The planters were installed in the fall of 2002 and were decorated with live and artificial trees with lights for the holiday season. Last spring the planters were planted with trees, shrubs, and perennial grasses, like maidenhair grass and redfeather grass, for backbone and structure. Some of the trees and shrubs included weeping cherry trees, renaissance spirea (shrub), japanese tree lilac, dwarf weeping larch, contorted filbert, redspire pear tree and cranberry cotoneaster among others.

In the late spring to fall the following new plants were planted for color — terra cotta million bells, black magic elephant ears, orange cape daisy, purple supertunia and yellow, orange, and tropicana cannas. These were planted among the old favorites, white geranium, fountain grass, white and violet spider plants and dusty miller. This fall, to continue the beauty of the boulevards, mums were planted. They included manakin (red), teran (white), verona (yellow), prato (bronze), celino (white), canelli (lavender), and coparo (pink).

Prior to the planting of the boulevard planters, Paula Oleszak and Ted Mueller, Urban Forestry Managers, worked on the landscape design. Later, Paula met with Jan Grocholski, Greenhouse and Nursery Manager to select plants that would have the size, color and stamina to flourish in the planters. The new plants were ordered and grown at the nursery. The plants were also selected for low maintenance for workers at the nursery.

Urban Forestry Crew Leader Bob Keesan and his crew, Urban Forestry Specialists: Steve Shea, Dwayne Reinhardt, Jamie Jastrab, and Jason Schmelling, along with Urban Forestry Laborers, Jim Faupl and Bill Jankowski were responsible for the installation and maintenance of the downtown boulevard planters.

The boulevard planters received raved reviews from businesses, residents, visitors, and especially local gardeners, and landscape architects. “It is wonderful to have the community recognized the efforts of the staff of the Department of Public Works. Although, Environmental Services Superintendent Cole, and myself received the Green Thumb Award, I accepted it on behalf of the men and women of the Department who actually performed the work,” stated DPW Commissioner Mariano Schifalacqua.



DPW Commissioner Schifalacqua and Environmental Services Superintendent Cole received the 2003 Downtown Achievement Award at the new Milwaukee Theater.



This is the way the boulevards appeared between Market Street and Broadway prior to the planters being installed.



The planters and plants made a dramatic difference to the appearance of the boulevards.

Forestry Harvested 40-Foot Colorado Blue Spruce for Holiday Tree

Mayor Tom Barrett watched with Gregory and Cindy Applegate as their 40-foot Colorado Blue Spruce was harvested on Wednesday, November 10th. Gregory Applegate's father told him to put the tree on the Forestry Division list for holiday trees after he learned that the couple was planning to have it removed. The tree's roots were beginning to push into the basement walls.

The Applegates, who have lived in their home for two years, were delighted to be able to donate the tree so that "others will be able to enjoy it and get some use out of it". The Applegates not only wanted to get rid of the tree because of the roots, but also to provide some room for their seven-year-old son Austin to play.

Department of Public Works Forestry crew arrived at the couple's home at 5:30 a.m. They prepared the tree for cutting by removing the lower branches and attaching ropes to guide the tree to a trailer for transport to Red Arrow Park. A crane was used to lift the tree and keep it from falling onto the home or in the street once it was cut.

Once the tree was cut, it received a Milwaukee Police escort to Red Arrow Park where it was installed for the City/County Holiday Tree Lighting ceremony.



Mayor Tom Barrett, Cindy Applegate, Alderman Robert Puente, Gregory Applegate and son Austin, in front of the tree which had just been harvested.



Preston Cole, Environmental Services Superintendent, served as master of ceremonies. The Forestry Section is part of Environmental Services. He told the crowd that the City had been celebrating the tradition of Holiday Tree Lighting for 97 years. This was the third year for the City/County collaboration on the event.



City crews string lights on the holiday tree.



(Left to right back row) County Executive Scott Walker, Mayor Tom Barrett, Alderman Robert Puente, Gregory Applegate, and Cindy Applegate look on as the children of (left to right) County Executive Walker, Mayor Barrett and Austin Applegate (hand on switch) help to flip the switch for the lighting of the tree.



Below, MPS Roosevelt Middle School of the Arts Concert Choir, led by Ms. Alida LaCrosse, performs in the City Hall rotunda prior to the Holiday Tree Lighting in Red Arrow Park.

Mayors Landscape Awards

The Mayor's Landscape Awards honors members of the community who, through their greening efforts, beautify and add value to Milwaukee's neighborhoods. Awards are presented annually in the following categories: residential (home, balcony, rooftop and windowsill); business (commercial, professionally landscaped, sub-division, church and school); and, creative (most imaginative).

In 2003-2004, over 475 entries were received thanks to the efforts of Greening Milwaukee and the advertising support of the Milwaukee Journal Sentinel. Judges reviewed digital photos and still pictures submitted by applicants. The judges awarded two winners in each category in each of the 17 aldermanic districts.

Award ceremonies were held in March 2004 at the Midwest Airlines Center in conjunction with the REALTORS® Spring Show. Acting Mayor Marvin Pratt presented each winner with a sculpted award and each finalist received a certificate. The entrants were invited to be guests of the 2004 REALTORS® Spring Show, the longest running and largest home and garden show in the state.

Holiday Tree Lighting

The City/County Holiday Tree Lighting ceremony was held at Red Arrow Park. Mayor Tom Barrett and County Executive Scott Walker lit a beautiful tree that was donated by Gregory and Cindy Applegate, and their son Austin. The event was sponsored by Greening Milwaukee and TDS Metrocom, with additional assistance provided by the East Town Association, Starbucks Coffee, Milwaukee Downtown, Madison Medical Affiliates, Karl's Event Rental, Milwaukee County, and the City of Milwaukee.

Budget Initiatives

Forestry embarked on a new design concept as part of a 2004 budget directive. Forty percent of the annual flowerbeds planted on boulevards were converted to mixed bed plantings. Smaller insignificant beds were eliminated in areas that have low traffic volume. Other beds were embellished in order to provide seasonal/year-long interest utilizing mixed plant material such as perennials, ornamental grasses, shrubbery, annual flowers in reduced numbers, and ornamental and shade trees.

These beds were located on high traffic and high visibility areas for many residents to see. This maximizes available resources and makes the largest impact visually in addition to reducing the number of maintenance stops.

As part of this concept, the city nursery continues to produce at capacity and excess plant material is then sold to other municipalities and organizations, providing revenue to the city.

Insect and Disease Control

The City of Milwaukee participated in the 2004 Wisconsin Gypsy Moth Suppression Program to treat the most heavily infested areas within the city. The program involved the voluntary participation of counties and landowners (municipalities) in a state organized aerial insecticide treatment.

Six areas within the city were identified as having pest populations high enough to warrant control efforts. Each area was sprayed overhead by plane with the insecticide BtK, which is a form of bacteria that only targets caterpillars and is not harmful to humans or other animals. The spraying is done when the caterpillars are very small (5-11mm) and when they are actively feeding. Once a caterpillar ingests leaf material infected with the bacteria, they will stop feeding and die shortly thereafter (3-5 days).

Gypsy moth populations will continue to be monitored through the use of pheromone traps and egg mass surveys yearly by the Forestry Section.

In an ongoing cooperative study with the University of Wisconsin, the Linden borer activity in Milwaukee was monitored. A paper on this study will be published in the Journal of Arboriculture in the future.

New Initiatives

Computerized irrigation will be implemented as boulevard areas are renovated in conjunction with the city's street paving program. In 2003, a pilot program utilizing new technology for boulevard irrigation was begun. This pilot proved to be very successful and reliable. This system will allow boulevards to be watered at night, thereby conserving a valuable resource during warm weather.

The code enforcement program continues to provide an efficient and effective program to deal with weeds and tall grass, hazardous trees, encroachment issues related to the public right-of-way, and sidewalk snow.

Complaints are received electronically at Forestry field locations through the DPW Call Center. They are responded to by Forestry Technicians and remedies are then prescribed to the property owner as well as the timeframe to get the work done. The property owner is informed of the consequences and cost of non-compliance. If the property owner complies, there is no follow-up required. However, if the property owner does not comply, appropriate action is taken to either schedule the work by Forestry staff or a private contractor.

Forestry's construction inspection program again received recognition in a published article in Wisconsin Academy Review. "Greening the Cities" by Katherine Esposito outlines the progressive construction program that continues to protect the City of Milwaukee's green infrastructure. James Kringer, Forestry Technician, pioneered this program, which continues to provide clear evidence this program is essential in protecting the tree canopy of Milwaukee from potential damage during street paving, sidewalk replacement, and other construction activities.

City of Milwaukee Plans Gypsy Moth Suppression Program

The Gypsy Moth, a foreign tree pest, has become established in Wisconsin.

This pest typically goes through periodic outbreaks where its numbers increase dramatically. There have been a number of outbreaks in the Milwaukee area in 2003, and it is anticipated there will be more outbreaks in the future.



The City of Milwaukee intends to participate in the Wisconsin Department of Natural Resources (DNR) Gypsy Moth Suppression Program to treat approximately 994 acres with *Bacillus thuringiensis kurstaki* (BtK). If left unchecked and populations are allowed to increase, the City will experience tree decline and mortality, as seen in other states. In a press conference held on February 9th in the City Hall rotunda, Acting Mayor Marvin Pratt, stated that “forty years ago the City’s trees suffered from Dutch Elm disease. The beautiful, tree lined shady streets of Milwaukee became hot, dusty, noisy neighborhoods. We don’t want that to happen again.”

Other negative effects caused by Gypsy Moths include:

- Reduced property value
- Tree replacement cost
- High pesticide costs for residents
- Loss of urban canopy

The Department of Public Works’ Forestry Division has identified six areas that contain heavy infestations of Gypsy Moths that will need to be sprayed in May 2004. The spraying is done overhead by plane with the insecticide-BtK, a naturally occurring soil bacteria that only targets caterpillars and is not harmful to humans or other animals.

Participation in the aerial spray treatment allows communities to manage Gypsy Moth outbreaks at a lower cost than would be possible for privately arranged treatments.

The Department of Public Works conducted three public information meetings to discuss the treatment program and solicited public input. Residents who live within a treatment area had the option to file an objection prior to February 21, 2004. All residents within the treatment areas were mailed a letter to inform them of the suppression program. Some of the information included letting residents know that the planes fly very low, about 50 feet above the tree tops, very early in the morning near dawn. Residents were also informed that the spray might give off an odor until it dries with the dew. A hot line will also be set up to answer any questions residents may have once the Gypsy Moth Suppression Program begins.



John Kyhl, Regional Gypsy Moth Suppression Coordinator, Department of Natural Resources speaks of the State's role in the suppression program. Acting Mayor Marvin Pratt looks on.



From left to right: Paul Biedrzycki, Disease Control and Prevention Manager, Health Department; Acting Mayor Pratt; Bob McFadyen, Forestry Services Manager; and Randy Krouse, Local Gypsy Moth Suppression Coordinator. A press conference was held to highlight the City of Milwaukee Gypsy Moth Suppression program.

INFRASTRUCTURE SERVICES DIVISION



Jeffrey Polenske

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Jeffrey Polenske, City Engineer

Clark Wantoch, Administration and Transportation Design Manager
Administration and Transportation Section

Martin Aquino, Engineer-in-Charge
Environmental Section

Jerome Zaremba, Infrastructures Operations Manager
Field Operations Section

The Infrastructure Services Division is responsible for the design, construction, operation and maintenance of all streets, alleys, bridges, public way lighting, traffic control signs and signals, sewers, and underground conduit systems; and overseeing the construction of water facilities. Through consolidation and efficiencies, the Division has been reduced by roughly 330 positions over the past 10 years to a level of 926. In 2004, 1,133 Alderman Service Requests were received.

ADMINISTRATION AND TRANSPORTATION SECTION

In 2004, the Administration Section and the Transportation Section were combined into one section resulting in the reduction of a section manager.

Administration Unit

The Administration Unit is responsible for business operations, budget coordination, computer network software and hardware administration, personnel administration, accounting and clerical functions, and the Equal Employment Opportunity administration for the Infrastructure Services Division.

The Unit coordinates accounting functions along with the Department of Public Works Administration Services Division and the Comptroller's Office. The accounting services provided by the Unit include establishing projects, recording payments, monitoring costs, and closing project budgets and expenditures for the Transportation Unit and Environmental Unit in coordination with the Construction Unit. In addition, the Unit is involved in accumulating, categorizing, recording and reporting operation and maintenance expenditures for the Division. The Unit also acts as the accounting resource for tracking and monitoring projects; supports the accumulation of accounting data used in the development and measurement of project estimating and performance; and assists in the development and programming of financial reports for use by managers in the Division.

In 2004, the Unit administered Capital Improvement and Grant and Aid Programs in excess of \$54.8 million, Operations and Maintenance budgets of over \$46.5 million, with payrolls of \$19.2 million. The 2004 expenditures for all contract payments totaled over \$32.4 million. In addition to processing payments and monitoring construction contracts, the Administration Unit provides support to other areas of the ISD on financial matters. The Unit recorded and monitored expenditures that included payments to contractors, cost of City provided materials used in projects, as well as the salaries and benefits of City employees involved in the planning, implementing, and managing of the projects.

In 2004, Highway Aids in the amount of \$23.1 million were received by the City of Milwaukee. The net expenditures related to DPW-Infrastructure activities, using a 6-year average (based on 2002) of 58.7% applied to this total, resulted in approximately \$13.5 million of aid received. In addition, \$522,640 was received for reimbursement of costs incurred in maintaining and operating lift bridges on the connecting highway system program. Also, \$1.9 million was received for Connecting Highways within the City of Milwaukee, reflecting a percentage of actual costs. Administration personnel were involved in the retrieval of information and gathering of support documents to produce the reports necessary to submit requests for these aids.

The Administrative Unit completed the annual report of the Mid-Year Review of the financial condition of the Sewerage System. The Commissioner of Public Works is required to file this report with the city clerk on or before July 1st of each year as stated in the Master Resolution for the Sewer Maintenance Fund to secure bonds. The Section works in conjunction with the Budget Office and the Financial Division of the Comptroller's office to evaluate data for this report. The Sewerage System has a required Debt Service coverage of 1.2 times net revenues. The report determined the Sewerage System is in compliance with the covenant as found in Article VIII of the Master Resolution.

The Administration Unit also provides support for the day to day operations of the computer systems within the Division and acts as liaison with other computer support areas within the City. This support includes hardware and software maintenance of the 77 GIS/CADD units, 195 general-purpose units and 10 special purpose units within the Division. During the past year, the Section replaced 23 of the GIS/CADD units and 39 general-purpose units for Division users. In addition, hardware was reconditioned, reconfigured, updated and reinstalled for many Division users. This section was responsible for responding to several serious virus attacks upon the Division's systems in 2004. This section generated various ad-hoc reports from data contained in the Division's data bases, maintained the database system that is used by the Transportation and Construction Units to administer paving and walk contracts, and helped users deal with process changes caused by changes in other City departments.

Transportation Unit

The Transportation Unit is responsible for programming street, alley, and bridge improvements using city, state and federal funds; design of public way lighting, traffic control signals, signing and pavement markings; transportation planning; reviewing utility easements; coordinating public improvements in tax incremental districts; reviewing building permits and processing permits for street encroachments; locating bus passenger loading areas, designing handicapped access ramps in sidewalks; maintaining various city maps; operating a "Diggers Hotline" service; coordinating reviews of subdivision plats, certified survey maps, and opening and closings of public rights of way; coordinating transportation improvements with other governmental agencies and railroad companies; representing the City Engineer and/or the Department of Public Works on transportation issues; and undertaking engineering studies and investigations for the Common Council and other city departments.

The Unit inspects and makes recommendations for Capital Improvements for all city maintained bridges and city owned parking structures. It also maintains plans and other records for the city's bridges, parking structures, dams, retaining walls, dock walls, and other structures; designs and prepares contract documents, and performs construction administration for a wide variety of projects involving structures.

The Unit is also responsible for administering the city's local street and alley capital paving programs.

Project Programming Area. Administration of the City of Milwaukee's \$7 million capital paving budget by the Project Programming Unit resulted in approval of 29 street paving and 20 alley projects in 2004, and the award of \$5.8 million in contracts for local streets and alleys, noting that there was significant carry-over monies from 2003.

In 2004, the Project Programming Unit prepared 294 estimates and verified 51 city certified paving projects for improvement in the City of Milwaukee. The formal estimates prepared include 86 street paving projects (10 of which were sponsored by the State of Wisconsin) and 57 alley-paving projects. The verified certificates include 30 street paving projects, of which 8 were sponsored by the State of Wisconsin and 13 alley paving projects.

Project Programming staff appeared before the Common Council's Public Improvements Committee for public hearings on 94 paving, new sewer and new water projects. In addition, resolutions were prepared to authorize construction for approximately 213 non-assessable public improvement projects. Upon completion of the work, the Unit reviews assessments, prepares and issues the associated special assessment bills to property owners affected by the work. In 2004, the unit issued 4,769 bills resulting in \$4,638,000 in revenue to the City.

Major Projects Area. The Major Projects Unit coordinated the completion of six Federal and/or State Major Arterial Street and bridge projects at a total cost of \$6,261,700, of which the City's portion was \$866,600. The Major Federal and/or State paving and bridge projects completed in 2004 include the following:

- ◆ The reconstruction of North 35th Street over Lincoln Creek Bridge
- ◆ The resurfacing of North 12th Street West Wells Street to West Highland Avenue (Project originally delayed due to utility work for the Marquette Interchange)
- ◆ The reconstruction of the North Farewell Avenue Bridge over Milwaukee County Bike Trail
- ◆ The reconstruction of West Blue Mound Road from North 66th Street to Story Parkway
- ◆ The reconstruction of West Center Street from North 92nd Street to North 76th Street.
- ◆ The resurfacing of South 27th Street including bridge (UPRR Forest Home) and West Forest Home from South 31st Street to South 27th Street

State Street Bridge on the National Register of Historic Places

The State Street Bridge was nominated for local designation as a result of several State of Wisconsin agencies and the Federal Highway Administration, including the Advisory Council on Historic Preservation Regarding Implementation of the Historic Preservation Plan for Bascule Bridges in Wisconsin. The Historic Plan for Bascule Bridges was prepared in April, 1996 and included four bridges in Milwaukee, Emmer Lane Bridge, State Street Bridge, Kilbourn Avenue Bridge, and Cherry Street Bridge. The State Street Bascule Bridge was the only one that met all of the requirements for designation. On January 21, 2004 the Milwaukee Common Council supported the designation.

The State Street Bascule Bridge, (known simply as the State Street Bridge) as its name implies, links the east and west banks of the Milwaukee River at State Street. A bascule bridge is a form of movable bridge in which one or two portions of the roadbed, called leaves, rotate up vertically to allow for the passage of river traffic. The State Street Bascule Bridge has two leaves and is a simple trunnion type with fixed counterweight. A trunnion is a type of pivot.

The primary character defining features of the State Street Bridge remain in good condition and include the two cooper-clad operators houses, the prominent railing with rectilinear design, and all the structural members including the through plate-girder double leaf span with slight arch, the thick plates of the girders with their prominent rivets and the piers which house the mechanicals. Alterations to the bridge have been minimal.

The State Street Bascule Bridge is significant as the oldest surviving bascule bridge in Milwaukee. The engineering of the bascule span for the State Street Bridge was modeled after the prototype developed by the Milwaukee Bridge Company for the Muskego Avenue/Emmer Lane Bridge in 1904. This prototype was considered technologically significant as one of the first simple trunnion bascules in the United States and is commonly referred to as the "Milwaukee Type Bascule". Its successful use at Muskego Avenue/Emmer Lane led to the construction of 13 additional bridges of this type in Milwaukee before World War II. Its relatively simple construction, ease of operation and maintenance made it very popular outside Milwaukee as well. With the demolition of the Muskego Avenue/Emmer Lane Bridge, and other spans, the State Street Bridge remains the oldest example of this pioneering type in the city and one of only three intact Milwaukee Type Bascules constructed before 1950.

The State Street Bascule Bridge has remained in use since its opening in 1924 with a few modifications. Since the bridge structure, operators houses and mechanicals remain in their original condition and due to fact that the style conscious design set the tone for later bridges, the State Street Bascule Bridge was deemed eligible for listing in the National Register of Historic Places. The next time you walk or drive across the State Street Bridge you are crossing a historic site!!!

Note: Information for this article was supplied by the Historic Designation Study Report presented to the Public Improvements Committee by the City of Milwaukee Historic Preservation Commission.



State Street Bridge operators' house was one of the things that influenced the decision to nominate the bridge for historic designation.



The State Street Bridge has remained in use since 1924 with few modifications.

Major Projects also worked with Marquette University toward completing the required preliminary engineering requirements associated with a Congestion Mitigation/Air Quality (CMAQ) Grant received from the Wisconsin Department of Transportation (WISDOT) for additional pedestrian lighting, landscaping and other streetscape items in and around the campus area. Landscaping was completed in June of 2004 and the Pedestrian Lighting is scheduled for completion in January 2005.

Planning and preliminary engineering work was completed in 2004 for the reconstruction of the State Street Bridge. The State Street Bridge is referred to as a "Milwaukee Type Bascule" and is listed in the National Register as a historically significant structure. This bridge was not only historical for its structure type but also for some of its aesthetics, such as its decorative hand rail and its copper clad octagonal operator's house. Therefore, the proposed project not only includes reconstruction of the existing Bascule Bridge but also incorporates these various items of historical significance.

Preliminary engineering was in progress for 17 Federal and/or State Aided Major Street paving projects, 3 Congestion, Mitigation Air Quality (CMAQ) landscaping/ lighting projects, 1 Hazard Elimination and Safety (HES) project to improve roadway geometrics, 11 Local Bridge Replacement Program projects and one State Trunk Highway Bridge Replacement/Rehabilitation Project.

Construction was completed on the Park East Freeway Project in 2004. The project involved the removal of the existing freeway and replacement with an at-grade roadway facility and a new movable bridge over the Milwaukee River at a total cost of over \$30,000,000. Demolition and local road construction was completed by December 2003, streetscaping for the project was completed by the spring of 2004 and the Knapp Street Bridge was completed and operable by mid 2004. This unit continues to work with City and County staff in developing the redevelopment plan for the lands formerly occupied by the Park East Freeway.

Major Project's staff also coordinated the City's efforts to assist the Southeast Wisconsin Regional Planning Commission in their preparation of the 2005-2007 Transportation Improvement Program (TIP). This program is part of the Statewide Transportation Improvement Plan, which involves not only transportation planning efforts but also analysis of the state's air quality to meet future goals. This major effort involves compiling and updating project information on all Federal/State aided projects proposed for the TIP period.

As one of the City's major liaisons with the WISDOT, the Major Projects Unit was involved in several major efforts in 2004. These include the planned reconstruction and extension of the second phase of West Canal Street in the Menomonee Valley, between South 25th Street and Miller Parkway. Further agreements were negotiated with the WISDOT to supply additional state funds in the amount of 5 million dollars for this major street improvement, which will open up the Menomonee Valley for future development.

In addition this unit is working in conjunction with Milwaukee County on the reconstruction of South 13th Street (County Trunk V) from West College Avenue to the South City Limits. This reconstruction will include going from a rural roadway cross section to an urban sewer system and installation of new sidewalk, within the City of Milwaukee. The project will also include new street lighting.

Major Projects is also working with the Wisconsin Department of Transportation (WISDOT) in their efforts to rehabilitate 4.5 miles of North 76th Street (USH 181). Construction is scheduled for the spring/summer of 2007 for the portion from West Florist Avenue to West Clinton Avenue and for the spring/summer 2008 for the portion from West Clinton Avenue to West County Line Road.

The unit continues to work with the WISDOT in their efforts to design and coordinate work on the Marquette Interchange. Preliminary construction work on West Clybourn Street between North 9th Street and North 16th Street was completed in 2004. In addition ramp closings were put into place in preparation for Phase I of the Marquette Interchange, North Leg which is to begin construction in 2005.

Traffic Design Unit

Eight new traffic signals were installed by the Division in 2004 to address new roadway construction and new land uses. Five of the signals were installed along West McKinley Avenue and East Knapp Street due to the removal of the Park East Freeway. The reconstruction of the intersection of West Fond du Lac Avenue and West Mill Road by Milwaukee County resulted in the replacement of a four-way stop with a traffic signal, with both Milwaukee County and the City of Milwaukee jointly responsible for the traffic signal. The first new traffic signal for the Marquette Interchange project was installed at West Tory Hill and North 11th Street, with more to come in 2005 and 2006.

A traffic signal was installed at West Oklahoma Avenue and North 30th Street for a new driveway into the St. Luke Hospital's site. The driveway services both a parking garage for staff members and a loading dock.

The City continued its program of replacing older electro-mechanical traffic signal controllers with new microcomputer based solid state signal controllers to improve reliability, to provide flexibility of operation and to reduce maintenance costs. Seven electro-mechanical controllers were replaced in 2004; 711 of the City's 723 signalized intersections are now controlled with solid state controllers.

The City continued its program of installing fire vehicle traffic signal preemption on primary fire response routes. As the fire vehicles approach, vehicular traffic at signalized intersections is cleared for approaching emergency vehicles and a continuous green signal indication is displayed on the emergency approach route until the emergency vehicle clears. This program improves response times for these emergency vehicles, while improving safety for emergency vehicles as well as pedestrian and vehicular traffic at affected intersections. The signal preemption devices were installed at 27 locations under this program in 2004.

For the first time in the city, pedestrian countdown indications were installed. At the signalized intersection of West Lapham Street and South Layton Boulevard, the existing "walk/don't walk" indications for crossing Layton Boulevard were modified by installing another indication that counts down the seconds remaining of the flashing "don't walk". The purpose is to give pedestrians information they might find useful to safely cross the street.

Major work for the Marquette Interchange Reconstruction project started in 2004. Along with installing the new traffic signal at West Tory Hill and North 11th Street mentioned above, the Traffic Design Unit has worked to insure that the additional traffic diverted from the freeway system onto city streets moves as efficiently as possible. Major detour routes were set up for when the freeway system

ramps or freeway lanes are closed. Traffic signals along the routes were optimized by changing their, and in some instances, modifying hardware to facilitate new traffic patterns. Under this project, emergency vehicle preemption was installed on West Saint Paul Avenue from North 35th Street to N. 5th Street to give fire vehicles an alternative over other possibly crowded or closed routes. In all, there were 96 work orders written in 2004 for traffic signal work due to the Marquette Interchange reconstruction project.

In May 2004, both West Wells Street and West State Street from North 35th Street to North 11th Street were converted from one-way to two-way traffic. This project required the contribution of all of the subsections of the Traffic Design Unit, namely traffic signals, traffic operations and signs. Pavement markings, traffic signals and traffic signs along the entire stretch of both streets were modified. The conversion was done on a Saturday to minimize interruption to traffic.

Approximately 390 miles of lane lines, center lines and edge lines were painted in 2004 to maintain adequate visibility of pavement markings and to provide positive guidance to motorists. Crosswalks were painted at 1,196 locations and 195 special arrow and "only" markings were painted. Coincident with this work, 269 pavement marking records were updated.

In 2004, pavement markings to designate separate bicycle lanes were installed on the following roadways: West Center Street from North 76th Street to North 92nd Street, South Forest Home Avenue from South 27th Street to South 31st Street, North Water Street from North Holton Street to East Kilbourn Avenue, and North 40th Street from West Vliet Street to East Pleasant Street.

During 2004, the unit coordinated the signing, maps and traffic control for approximately 1000 special events which included bike races, festivals, filming, marches, parades/processions, parking events, runs, walks, block parties and many other activities affecting the use of City streets. The unit also coordinates the traffic control for all utility and construction work in City streets, making sure that special events and construction work do not overlap.

Street Lighting. As part of the City's Capitol Improvement Program, plans were prepared for street lighting alterations and upgrades that were to be done in conjunction with 18 paving projects. Lighting work done in conjunction with these projects included the installation of overhead circuitry prior to construction to maintain adequate lighting level during construction, protecting and adjusting facilities during construction work, and where required, the installation new street lighting cable and the upgrade of electrical circuitry and components.

Traffic Signals Changed to LED Bulbs

Infrastructure Services crews changed the traffic signals from standard lenses with incandescent lamps to LED (light emitting diode) bulbs on the corner of Broadway and Kilbourn Avenue the week of August 16th. These signals are considerably brighter and perform better optically. The LED's last a whole lot longer than normal incandescent bulbs, and consume significantly less electrical energy, which would reduce our electrical energy bills. Infrastructure Services is exploring ways to expand the program throughout the City because of the potential improvements to safety and to save money on electrical energy. This is being done at this intersection to test the devices where Infrastructure Services staff can monitor them closely. The installation represents one of several vendors whose technology the Division is testing. The crew installing the LED signal heads are Dave Stuczynski and Mark Kuehn.

Thanks to Bob Bryson, Infrastructure Services Street Lighting, for the information.



The crew, Dave Stuczynski, Electrical Mechanic and Mark Kuehn, Electrical Mechanic apprentice, are removing the bulb, reflector, and colored lenses and direct connecting the new LED's.



Installing the LED's on Broadway and Kilbourn Avenue provides an opportunity for Infrastructure Services to monitor the LED traffic lights.

In 1987, an initiative was begun to convert all mercury vapor and incandescent street lighting in the City of Milwaukee to more energy efficient high-pressure sodium lighting. In 2004, a total of 1,170 streetlights in the City were converted to high-pressure sodium lighting. With this work, approximately 92 percent of the 67,294 streetlights in the City of Milwaukee have now been converted to high-pressure sodium.

Historic Milwaukee lanterns and harp lights continue to be installed in conjunction with streetscape, redevelopment and neighborhood and business district beautification projects. In 2004, grant funds, special assessment or private funding was used to provide historical lighting as part of the neighborhood and business district improvement projects. Examples of projects completed this year are: West North Avenue, from North 27th Street to North Sherman Blvd., West Lincoln Avenue South 7th Street to South 20th Street and West National Avenue from South 1st Street to South 12th Street.

Construction has continued the installation of Milwaukee Lanterns and Harps in 2004 in conjunction with the streetscaping of the Park East Corridor from North 6th Street to North Milwaukee Street. Work will continue in 2005 on the remaining segments of the roadways within the corridor.

Engineering for the local roads street lighting for the second and third phases of the Marquette Interchange Reconstruction project was completed in 2004. Installation of new Street Lighting facilities has started in 2004. Engineering and construction will continue in 2005 on these and upcoming phases.

In 2004 work has continued on the replacement of the City's Master Street Lighting Control System. The current system, which was developed using World War II era technology, is being used to the street lights on and off is failing due to age. Development of the proposed replacement has progressed during 2004 that an operational prototype will be in service by spring of 2005. Replacement of the existing system is anticipated to begin in late summer of 2005.

Street Lighting personnel maintain and operate outlet circuitry, for 15 Business districts and other organizations, for Christmas decorations and other yearly civic celebrations. Outlet Circuitry was added to the harps on West North Avenue from North Sherman Blvd to North 60th Street.

CENTRAL DRAFTING AND RECORDS UNIT

The Central Drafting and Records Unit is responsible for maintaining the one-quarter section maps of the area within the corporate limits of the city, and those areas outside of the city in which the Milwaukee Water Works provides service and maintains facilities. The maintenance of these maps, along with maintenance of the official maps, aldermanic district maps, police district maps, address assignment maps; and the preparation of state and city paving plans, structure plans, street lighting plans, circuit maps, traffic signal plans, underground conduit plans, and other specialty maps and exhibits are accomplished with the use of an interactive computer graphics system.

Additional duties of Central Drafting and Records includes: the operation of a "Diggers Hotline" service to assist in the location of City of Milwaukee facilities in the public way; the preparation of legal descriptions and maps for openings or closings of public rights-of-way; maps for annexation to or detachment from the City of Milwaukee; the preparation and/or review of certified survey maps and subdivision plats; the assignment of addresses; the review of street name change ordinances; checking and optimizing routes for oversize and overweight loads; sales of maps; performing traffic counts and surveys; providing reproduction services for various City departments; and maintaining an office supply facility for the Transportation and Administration Section.

In 2004, plans and petitions for the vacation of public ways were processed. The Unit also processed subdivision plats and certified survey maps, produced paving plans for separate paving projects, structure projects and state paving projects, and acted upon requests from Diggers Hotline to locate the City's underground electrical and water main facilities.

City Underground Conduit. During 2004, City forces installed an additional 2.0 miles of conduit, abandoned 0.2 miles and 18 additional manholes. An additional 0.4 miles of conduit and 6 manholes were installed for the City by others.

City forces installed new conduit in North 84th Street from West Lisbon Avenue to West Hampton Avenue. This conduit will service existing City facilities in addition to alleviating conduit congestion that exists in the area.

City forces installed new conduit in North Water Street from East Pleasant Street to East Brady Street. This conduit alleviates the congestion in the area. Conduit installation is planned for North Water Street from East Juneau Avenue to East Pleasant Street. This will provide a vital link from the downtown area to the northeast side of the City.

City forces installed conduit in East Kilbourn Avenue from North Astor Street to North Prospect Avenue and in North Prospect Avenue from West Kilbourn Avenue to East Wells Street. This conduit replaced the facilities that were in conflict with the Kilbourn Tower Project. This project was requested and funded by the developer.

Conduit installations in the Park East Freeway Project have been completed. This installation was in East/West McKinley Boulevard from North Milwaukee Street to North 8th Street, which also included a package under the Milwaukee River. This conduit provides another vital link between the downtown areas of the City to the west. Conduit was also installed from the bridge house at McKinley to the bridge house at Juneau, thus providing for remote control access to both bridges. This conduit was both designed and installed by others as part of the Park East Freeway paving project.

As of December 31, 2003, there are 548.5 miles of underground conduit lines and 7,411 manholes in active service.

The Underground Conduit Area has spent the last two years working with a telecommunications company interested in leasing space in the City conduit system. This project was completed in 2003 and we are currently now leasing 24 miles of conduit to this company.

Planning and Developments Area

The Planning and Developments Area undertakes a variety of tasks related to transportation planning, ranging from non-traditional projects such as traffic calming to arterial roadway and freeway improvements. This Area is involved in almost every major private development and public improvement that occurs Citywide. This Area works closely with other City departments, elected officials, state and county departments, private organizations and the general public. The following is a sampling of work activities that were undertaken in 2004.

- ◆ In 2004, assistance was provided to the WISDOT with regard to traffic mitigation and administration during the Clybourn Advanced Contract (CLAC) and the start of the North Leg phases of the reconstruction of the Marquette Interchange. This unit attended numerous meetings concerning Marquette Interchange construction phasing, utility relocation and coordination, traffic mitigation and elected official and public outreach in 2004. All of these efforts were directed at keeping downtown Milwaukee open for business during all phases of the Marquette Interchange construction and minimize the impacts of diverted traffic from the interchange during construction. Assistance was further provided on the Intermodal Passenger Facility location study; the application of Intelligent Transportation System technology (ITS) in the Gary-Chicago-Milwaukee (GCM) Corridor; a study of incident management on southeast Wisconsin's freeways (TIME); the implementation and testing of an Integrated Corridor Operations Program (ICOP); and on the Local Roads & Streets Council (LR&SC), an initiative to better coordinate and create a more efficient relationship between local jurisdictions and the state Department of Transportation.
- ◆ This Area provided technical assistance to the Southeastern Wisconsin Regional Planning Commission with regard to the Transportation Improvement Program, the Regional Freeway Reconstruction Study, an amendment to the Regional Bicycle and Pedestrian System Plan, and the Kenosha-Racine-Milwaukee Corridor Transit Alternatives Analysis (a.k.a. WISERIDE).
- ◆ Activities also included providing plan review and utility coordination to the Wisconsin Department of Transportation (WISDOT) on freeway maintenance projects, on the improvement of the ramp metering, variable message signing, and vehicle detection systems phases of MONITOR (The Freeway Traffic Management Plan).
- ◆ The Area coordinated projects being completed under the Congestion Mitigation and Air Quality (CMAQ) Program, the Statewide Multi-Modal Improvement Program, and the Transportation Enhancement Program, all of which were continued under the Transportation Equity Act for the 21st Century (TEA-21), as well as the Transportation Demand Management Program. These programs generally provide up to 80% Federal and/or State funding for eligible projects.
- ◆ During 2004, the unit issued a Request for Proposal (RFP) for the design of a CMAQ funded Summerfest Shuttle Bus Parking Management System. A three-party design contract was awarded to Edwards and Kelsey, Inc. in 2004 for this project. An initial project kickoff meeting and preliminary discussions with operators of downtown parking structures were held in 2004. This system will provide information to drivers headed for Summerfest about available parking in garages located near the shuttle route in the downtown area. It is hoped that this initial deployment will spur the development of a more comprehensive downtown parking management system.
- ◆ The Area was involved in several bicycle related projects again in 2004. This Area continued to provide membership and staff assistance to the City's Bicycle and Pedestrian Task Force. The Task Force was active in 2004 fulfilling its mission to recommend to City policy makers ways to make the City of Milwaukee more bicycle and pedestrian friendly.
- ◆ The Area continued its efforts in implementing the City's Bike Rack Assistance Program. This program, funded by a Transportation Enhancements grant, provides local business with free bike racks. In 2004, City forces installed new bike racks in several local business districts. To date, over 850 free bike racks have been distributed since 2000. The unit will continue to promote the program in 2005.
- ◆ In 2004, the Area worked with the Bicycle Federation of Wisconsin (BFW) to undertake two bicycle related planning studies. The first is the Evaluation, Selection, Designation and Spot Improvements of Bike Routes. This project, funded by a CMAQ grant, involves the evaluation of the City's current bicycle route system and makes recommendations as to additions to the system and proposed improvements, particularly providing bike lanes. This project was completed in 2004, and it resulted in the creation of Milwaukee's Bike Lane Design Guide. The BFW was also retained to undertake the Off-Street Bikeway Study. This project, funded by the STP-Discretionary program, involves the evaluation of off-street corridors that potentially could accommodate a paved bike trail. This project will continue through 2005. The BFW was also retained in 2004 to design and produce a new City/County bicycle route map using STP-Discretionary funds. New maps will be available in mid-2005.
- ◆ Engineering began on the Kinnickinnic River Bike Trail over the former Union Pacific Railroad right of way between South 6th Street and East Washington Street. The City retained Bloom Consultants, Inc. to design a new bicycle bridge over South Chase Avenue. Construction of this CMAQ funded bridge and trail is anticipated in 2005 and 2006.
- ◆ Two segments of the Beer Line "B" Bicycle Trail were completed in 2004. The first segment between East Pleasant Street and North Humboldt Avenue is funded by a CMAQ grant, and the second segment between North Humboldt Avenue and the East North Avenue Viaduct is funded by a Transportation Enhancements grant.

- ◆ Construction on the Marsupial Bridge began in 2004. The Marsupial Bridge is a bike/pedestrian bridge suspended beneath the North Holton Street Viaduct, which will connect the Beer Line "B" area to the Brady Street commercial district. Construction of the CMAQ funded bridge will be complete in 2005.
- ◆ In 2004, this Area worked to get bicycle lanes marked on North Water Street between East Kilbourn Avenue and East Brady Street, on West Forest Home Avenue between North 27th Street and North 31st Street, on West Center Street between North 76th Street and North 91st Street, on West Blue Mound Road between North Hawley Road and North Story Parkway, and on North 40th Street between West Lisbon Avenue and West Vliet Street. The unit will continue to pursue the installation of bike lanes on City streets where ever they can be accommodated.
- ◆ During 2004, this Area continued to work in a cooperative effort with the DNR to implement remaining segments of the Hank Aaron State Trail (HAST). The HAST projects are funded primarily with CMAQ grants previously secured by this unit. Furthermore, this unit provided technical assistance to the DNR to secure an additional CMAQ grant for the construction of a bike ramp structure from the 6th Street Viaduct down to grade along the south bank of the South Menomonee Canal and trail connection to East Pittsburgh Avenue. Much of the work on the HAST began in 2004 in conjunction with the Canal St Paving through Menomonee Valley.
- ◆ In 2004, this Area worked closely with the design consultant, Milwaukee Transportation Partners, to finalize plans and acquire right of way for the West Canal Street Reconstruction/Extension project in the Menomonee Valley. This project includes relocation of an existing railroad spur within West Canal Street, reconstruction of West Canal Street between North 6th Street and North 25th Street on the existing alignment, construction of a new roadway from North 25th Street to Miller Park through the west end of the Menomonee Valley and construction of portions of the HAST. A new modern roundabout, bio-retention facility and storm water lift station are planned near the intersection of West Canal Street and North 25th Street. The project also includes extensive traffic control equipment to facilitate traffic flow during Miller Park events. This unit also began negotiations with the Milwaukee Brewers and the Southeastern Wisconsin Professional Baseball Park District to acquire certain Miller Park roadways to provide a Canal Street connection to Miller Park Way and serve as critical public infrastructure to support redevelopment of the Milwaukee Road Shops TID. This project is expected to provide a catalyst for redevelopment of the Menomonee Valley as well as provide an alternate traffic route during reconstruction of the Marquette Interchange. Construction activities on this project began in 2004, with completion scheduled for the spring of 2006.
- ◆ This Area also worked closely with DCD and the Menomonee Valley Partners business group in their planning efforts including participation in a National Design Competition for the "Green Development" of the former Milwaukee Road Shops site. The results of this competition were integrated into the design initiatives for the extension of West Canal Street between North 25th Street to Miller Park.
- ◆ This Area continues participation in a study of downtown transit improvements known as the Milwaukee Downtown Transit Connector Alternatives Analysis. This study, sponsored by the City, Milwaukee County, the Metropolitan Milwaukee Association of Commerce and the Wisconsin Center District, is investigating alternative downtown transit improvements linking multiple tourist and business venues. The Alternatives Analysis is expected to be completed during the summer of 2005 with preliminary engineering commencing shortly thereafter.
- ◆ This Area provided coordination services for the Downtown Pedestrian Corridors project. A contract was awarded in 2004 for street amenities along East Wisconsin Avenue from the Milwaukee River to North Milwaukee Street. A second contract will be awarded in 2005 for East Wisconsin Avenue and North Prospect Avenue from North Milwaukee Street to East Mason Street. Work on both CMAQ funded projects are expected to be completed in 2005.
- ◆ During 2004, this Area continued its role as liaison with the various railroad entities doing business in the City in matters of crossings, structures, and right-of-way improvements.
- ◆ The Area coordinated Infrastructure Services Division and Department of Public Works activities for several major development projects, including Kilbourn Tower, St. Luke's Regional Medical Center, Columbia/St. Mary's Hospital, Phase II of the Cherokee Point Subdivision, the Mayberry Subdivision, the Milwaukee County Grounds development and the Pabst City redevelopment project. This unit also worked on several residential developments in and around the central business district in 2004. This unit participated in several predevelopment roundtable conferences with DCD in which DPW's comments and concerns were identified at an early stage in the development process.
- ◆ This Area worked closely with the state, the design consultant (Milwaukee Transportation Partners), and DCD in the Park East Freeway removal project. This project also included the construction of new surface roadways and a new river bridge within the Park East corridor. The new Knapp Street Bridge and the paving of North Water Street were completed in 2004. This unit worked to retain National Survey and Engineering to prepare subdivision plats which will allow for the full development of the Park East corridor. This unit will continue to work with DCD and developers in implementing the Park East Redevelopment Plan in 2005.
- ◆ This Area continues to assist the DCD with the expansion of the Riverwalk system, including planning for roadway and streetscape improvements to complement the adjacent riverwalk. Work began in 2004 on constructing of a southerly extension

Groundbreaking Ceremony for One of a Kind "Marsupial Bridge"

Mayor Tom Barrett, Alderman Michael D'Amato, Alderman Michael McGee, and Brady Street activist, Julilly Kohler were among the many that took part in a "Groundbreaking Ceremony" for the Marsupial Bridge. The footbridge will link Brady Street with the new Beerline neighborhood on Commerce Street. The event took place on Thursday, May 27th at the Lakefront Brewery, 1872 West Commerce Street.

The idea for the marsupial bridge began with Julilly Kohler who was kayaking beneath the Holton Street Bridge in 2000. Kohler is a neighborhood resident who has been active in the revitalization of the Brady Street area for a number of years. She lobbied for the Congestion Mitigation Air Quality (CMAQ) funds and with the assistance of State Representative Jon Richards the City was granted 80% of the funds needed for the project. Another politician assisted with the granting of the funds, Mayor Tom Barrett who was a congressman at the time funds was being sought. The City of Milwaukee provided the remaining 20%. Total cost of the Marsupial Bridge project is \$3.2 million.

State Representative Jon Richards stated, " This bridge is civic design at its best; a bold and imaginative solution to the challenge of linking two dynamic neighborhoods. The fact that the bridge was designed and championed by people living in this neighborhood speaks volumes about the creative sparks now flying in Milwaukee. I



Julilly Kohler, at microphone, welcomes the crowd of Brady Street business owners, contractors, city officials, neighbors and well wishers to the "groundbreaking of the Marsupial Bridge". Behind her, from left to right are: former State Senator Brian Burke, County Supervisor Gerry Broderick, President of the Brady Street BID, Leroy Boothe, Mayor Tom Barrett, Common Council President Willie Hines, Comptroller Wally Morics, Alderman Michael D'Amato, Alderman Michael McGee Jr., Alderman Ashanti Hamilton, President of the Brady Street Business Association, Pat Suminski and architect Grace La, of LaDallman Architects. A reception was held following the program at Lakefront Brewery, with refreshments provided by owner Russ Klisch.

was proud to have played a role in securing the funding to make it possible."

The Marsupial Bridge will be a pedestrian and bicycle path crossing the Milwaukee River and will be suspended from the Holton Street Bridge. Because it will seem to hang like a pouch from the existing structure, the term "marsupial" has been utilized to describe it.

The Marsupial Bridge is part of the Crossroads Project undertaken by the Brady Street Business Association to assist with revitalization of the Brady Street area and surrounding neighborhoods. The bridge was designed by La Dallman Architects and Bloom Consultants, an engineering firm and will be built by Lunda Construction Company. When completed, the bridge will be 10 feet wide and about 650 feet long. The project is expected to be completed in spring 2005.



of the Riverwalk system into and through the Historic 3rd Ward, as well as a northerly extension along the Beer Line "B" redevelopment area to the former North Avenue Dam. A new pedestrian bridge across the former North Avenue Dam connecting the Beerline "B" area to Caesars Park on the east side of the River was completed in 2004.

- ◆ This Area is responsible for the Division's review of various permits, specifically as the proposed work relates to the public's use of the right-of-way. This includes utility permits, building permits, and DPW excavation permits. In 2004 this unit processed 518 utility permits, 161 DPW permits, 101 boring permits, and 485 building permits. The unit also reviews applications for special privileges and air/subterranean space leases, and writes resolutions for Common Council action.
- ◆ During 2004, this Area continued its role of assessing impacts to the public way through the review of local and state legislation, and encroachments and obstructions affecting various public improvement projects. This unit also continued to provide public service assistance to our citizens by investigating a variety of traffic, roadway, and railroad grade crossing condition complaints.
- ◆ In 2004, this Area continued to provide technical assistance to the Board of Zoning Appeals (BOZA). This unit provides membership to the Zoning Administration Group (ZAG), which provides comprehensive and timely reviews of special use and zoning variance requests in front of the Board. In 2004, approximately 775 new requests were submitted to the Board office and reviewed by the ZAG. This unit also provides staff at each BOZA meeting to present the DPW report on cases in front of the Board. This unit also provides technical assistance to the City Plan Commission with regard to DPW concerns on proposed General and Detailed Planned Developments, as well as proposed zoning changes. Both written comments and oral testimony are provided to the City Plan Commission in 2004.
- ◆ This Area also participates in three subcommittees of the Local Roads and Streets Council - the Education and Communication subcommittee, the Infrastructure Management subcommittee and the Regulatory, Environmental, and Legislative subcommittee. This unit also represents the City's interests in promoting and deploying intelligent transportation technology regionally as a representative on the Gary-Chicago-Milwaukee ITS Corridor Deployment Committee and statewide as a member of the Wisconsin ITS Alliance.

During 2005 the Planning and Developments Area will continue to work closely with other City, State, County, Federal, and private entities in continued improvement and maintenance of our arterial street and bridge infrastructure with the given resources and funding programs at our disposal. We will also work similarly in implementing streetscape and bicycle enhancements. New initiatives will commence on dynamic parking control and information, bicycle facilities, pedestrian mobility, and market strategies geared at continued enhancement of the central and surrounding business districts. Major developments anticipated to occur in 2005 include the redevelopment of the Park East corridor and the Pabst City mixed use development. This unit will also work closely with the WISDOT on continued study involving Freeway Traffic Management and in evaluating a pilot program to integrate signal systems of complementary arterial and freeway corridors.

Major Projects Area

The Major Projects Area coordinated the completion of six Federal and/or State Major Arterial Street and bridge projects at a total cost of \$6,261,700, of which the City's portion was \$866,600. The Major Federal and/or State paving and bridge projects completed in 2004 include the following:

- ◆ The reconstruction of North 35th Street over Lincoln Creek Bridge
- ◆ The resurfacing of North 12th Street West Wells Street to West Highland Avenue (Project originally delayed due to utility work for the Marquette Interchange)
- ◆ The reconstruction of the North Farewell Avenue Bridge over Milwaukee County Bike Trail
- ◆ The reconstruction of West Blue Mound Road from North 66th Street to Story Parkway
- ◆ The reconstruction of West Center Street from North 92nd Street to North 76th Street.
- ◆ The resurfacing of South 27th Street including bridge(UPRR Forest Home) and West Forest Home from South 31st Street to South 27th Street

Major Projects also worked with Marquette University toward completing the required preliminary engineering requirements associated with a Congestion Mitigation/Air Quality (CMAQ) Grant received from the Wisconsin Department of Transportation (WISDOT) for additional pedestrian lighting, landscaping and other streetscape items in and around the campus area. Landscaping was completed in June of 2004 and the Pedestrian Lighting is scheduled for completion in January 2005.

Planning and preliminary engineering work was completed in 2004 for the reconstruction of the State Street Bridge. The State Street Bridge is referred to as a "Milwaukee Type Bascule" and is listed in the National Register as a historically significant structure. This bridge was not only historical for its structure type but also for some of its aesthetics, such as its decorative hand rail and its copper clad octagonal operator's house. Therefore, the proposed project not only includes reconstruction of the existing Bascule Bridge but also incorporates these various items of historical significance.

Preliminary engineering was in progress for 17 Federal and/or State Aided Major Street paving projects, 3 Congestion, Mitigation

Air Quality (CMAQ) landscaping/ lighting projects, 1 Hazard Elimination and Safety (HES) project to improve roadway geometrics, 11 Local Bridge Replacement Program projects and one State Trunk Highway Bridge Replacement/Rehabilitation Project.

Construction was completed on the Park East Freeway Project in 2004. The project involved the removal of the existing freeway and replacement with an at-grade roadway facility and a new movable bridge over the Milwaukee River at a total cost of over \$30,000,000. Demolition and local road construction was completed by December 2003, streetscaping for the project was completed by the spring of 2004 and the Knapp Street Bridge was completed and operable by mid 2004. This unit continues to work with City and County staff in developing the redevelopment plan for the lands formerly occupied by the Park East Freeway.

Major Project's staff also coordinated the City's efforts to assist the Southeast Wisconsin Regional Planning Commission in their preparation of the 2005-2007 Transportation Improvement Program (TIP). This program is part of the Statewide Transportation Improvement Plan, which involves not only transportation planning efforts but also analysis of the state's air quality to meet future goals. This major effort involves compiling and updating project information on all Federal/State aided projects proposed for the TIP period.

As one of the City's major liaisons with the WISDOT, the Major Projects Area was involved in several major efforts in 2004. These include the planned reconstruction and extension of the second phase of West Canal Street in the Menomonee Valley, between South 25th Street and Miller Parkway. Further agreements were negotiated with the WISDOT to supply additional state funds in the amount of 5 million dollars for this major street improvement, which will open up the Menomonee Valley for future development.

In addition this Area is working in conjunction with Milwaukee County on the reconstruction of South 13th Street (County Trunk V) from West College Avenue to the South City Limits. This reconstruction will include going from a rural roadway cross section to an urban sewer system and installation of new sidewalk, within the City of Milwaukee. The project will also include new street lighting.

Major Projects is also working with the Wisconsin Department of Transportation (WISDOT) in their efforts to rehabilitate 4.5 miles of North 76th Street (USH 181). Construction is scheduled for the spring/summer of 2007 for the portion from West Florist Avenue to West Clinton Avenue and for the spring/summer 2008 for the portion from West Clinton Avenue to West County Line Road.

The Area continues to work with the WISDOT in their efforts to design and coordinate work on the Marquette Interchange. Preliminary construction work on West Clybourn Street between North 9th Street and North 16th Street was completed in 2004. In addition ramp closings were put into place in preparation for Phase I of the Marquette Interchange, North Leg which is to begin construction in 2005.

ENVIRONMENTAL SECTION

The Environmental Section is financed through the Sewer Maintenance fund and is responsible for the engineering work required for the programming, funding, design and installation of sanitary, storm and combined sewer facilities. The Section is also responsible for preparing plans and specifications for building sewers and water services and maintaining the sewer records. The Section also handles the administration and implementation of the City's two Wisconsin Pollutant Discharge Elimination System permits. This includes reviewing storm water management plans, testing storm system outlets for illicit connections and reporting sanitary to storm sewer crossover activity. In addition, the Section performs activities as part of the infiltration and inflow reduction program on flow monitoring, smoke testing, TV inspections, building inspections and manhole inspections and rehabilitation.

In addition, the Section, through its Underground Operations Unit, is responsible for the inspection, maintenance, and repair of the City's sewer mains, manholes, catch basins and storm inlets. The construction and maintenance of the underground conduit system is also performed by Underground Operations.

Following are highlights of the work performed in 2004 by the Environmental Section.

Sewer Design Area

The Section designed and let to contract 2.00 miles of new sanitary sewers, 2.08 miles of new storm sewers, 8.82 miles of replacement sewers and 1.99 miles of sewer lining for a total cost of \$28.99 million. These projects included:

West Canal Street Project: This work consists of reconstructing approximately 1.3 miles of roadway on the existing alignment of West Canal Street between 6th Street to 25th Street. Phase II will eventually link West Canal Street to the US-41 interchange at the Miller Park parking lot. A \$14.5 million contract was awarded on October 22, 2004 for the West Canal Street and Hank Aaron State Trail projects that includes \$4.98 million for new sanitary sewer and storm sewer relay work and \$2.3 million for low flow diversion storm sewers that will convey the first flush of stormwater to the sanitary sewer system.

The scope of the work in this project includes construction of 7176 lineal feet of new sanitary sewer, 1067 lineal feet of storm sewer relay and 7157 lineal feet of new low flow diversion storm sewer to accommodate sewer needs for the existing and future development. Existing developments presently connected to the Milwaukee Metropolitan Sewerage District (MMSD) Milwaukee Intercepting Sewer (MIS) will be disconnected and reconnected to the proposed City of Milwaukee sanitary sewers. All additional stormwater runoff generated by the proposed Menomonee Valley Improvement project will be discharged into the proposed bio retention facilities at South 25th Street and ultimately discharged into the Menomonee River.

The entire project is expected to be completed by August of 2005.

South Superior Street project: A \$2.73 million contract was awarded for the lining and relay of the existing combined sewers of various sizes in South Superior Street at various locations between East Conway Street and East Illinois Street and adjacent to South Superior Street in East Bennett Avenue, East Meredith Avenue, East Trowbridge Street and in South Delaware Avenue from East Pryor Avenue to East Iron Street. The sewers were relayed with a concrete cradle section to provide the structural integrity and adequate strength to the proposed sewers. The construction of this sewer work was completed on December 22, 2004.

East Auer Avenue Lining project: In the fall of 2004, a \$636,000 contract was awarded for the installation of 778 lineal feet of 84-inch diameter cured-in-place lining in the existing combined sewer in East Auer Avenue from North Humboldt Boulevard to North Dousman Street.

Only one work shaft along the project's length was proposed to minimize surface disturbances and disruptions to area residents and to reduce the cost of the project compared to the typical method of installation. The entire work on this project was completed on August 5, 2004.

North 30th Street projects: A \$1.88 million sewer rehabilitation contract was awarded in April of 2004. This project is located in North 30th Street from West Meinecke Avenue to West Center Street. This project consisted of installing approximately 2000 lineal feet of 110-inch diameter fiber mortar glass lined pipe inside an existing 120-inch diameter combined sewer (sliplining), originally built of bricks in the year 1900. Another advantage of sliplining is that the pipes are installed through one work shaft with no additional open-cut excavations, thereby causing the least disruption to the local traffic and area residents. This project was completed in the fall of 2004. This sliplining project was one of the largest diameter sliplining projects ever completed in the country and it was featured in the October 2004 issue of *Trenchless Technology* magazine.

Another project in North 30th Street was awarded in June of 2004. This \$1.53 million sewer relay contract is located in North 30th Street from West Center Street to West Hadley Street. This project consisted of tunnel/jacking work and also open-cut excavation. Approximately 575 lineal feet of 102-inch diameter reinforced concrete pipes were installed by using open-cut method of sewer relay. Approximately 75 lineal feet of 102-inch diameter reinforced concrete pipes were installed by using tunnel/jacking method of sewer installation under the very busy intersection of West Center Street. This project was completed in the winter of 2004.

West Greenfield Avenue and South Muskego Avenue project: A contract was awarded in West Greenfield Avenue from South 2nd Street to South 17th Street, in South Muskego Avenue from West Forest Home Avenue to West Greenfield Avenue and in various adjacent streets within the area. These projects were performed to replace structurally and hydraulically inadequate combined sewers. The combined total of these three projects is \$5,916,000. Approximately 9,600 feet of sewer ranging in size from 15-inch to 72-inch are being relayed and 710 feet of existing 12-inch and 15-inch combined sewers are being lined.

Park East Freeway Redevelopment project: A \$474,000 contract was awarded in February of 2004 for the construction of various sizes of combined and sanitary sewers in the area below the former Park East Freeway from the Milwaukee River to North Milwaukee Street. New sewers were built in anticipation of future streets and to serve future development in the area. Existing sewers were also relocated due to changes in street alignments near North Water Street. Approximately 1,700 feet of sewer, ranging in size from 12-inch to 48-inch were constructed.

Storm Water Management Area

Storm Water Management Plan Review. On January 1, 2002, the City adopted a revised storm water management ordinance. Regulations imposed by both the Wisconsin Department of Natural Resources (WDNR) and the Milwaukee Metropolitan Sewerage District (MMSD) are reflected in this ordinance. The ordinance requires that a storm water management plan be submitted to and approved by the City Engineer for construction or reconstruction activities on parcels of land greater than one acre or where there will be a net increase of 0.5 acres of impervious surface. This change has resulted in an approximately 50% increase in the number of storm water management plans being submitted and approved.

In 2004, the Section reviewed 136 storm water management plans, with 112 being approved.

Illegal/Illicit Discharge Testing. Field-testing of storm water outfalls for illegal/illicit discharges continued throughout the City. The dry weather testing consists of a visual and chemical test for pollution at each outfall. The Section performed a total of 1737 dry weather tests during 2004. Of these tests, 857 were at the outfall and 880 were at points upstream from the outfall.

The dry weather testing identified eighteen locations as being potential sources of pollution. Property inspections, sewer smoke testing and lateral dye testing were performed at these locations resulting in the identification of seven cross-connections. Five of the cross-connections have been disconnected with further enforcement action being taken at the other two locations.

Stormwater Treatment Devices. In 2003, the City was awarded a grant from the WDNR for a cost-sharing retrofit of existing storm sewer systems with four stormwater treatment devices. The project reduces sediment pollutants discharged to Lincoln Creek from West Good Hope Road and West Clinton Avenue street drainage and complements the remedial actions being implemented by the MMSD along Lincoln Creek. During 2004, four Stormceptor® treatment devices were installed under a construction contract. These devices were designed to remove at least 40% of the annual total suspended solids (TSS) load from the tributary drainage areas. The devices went on-line in December 2004. The City and the WDNR will share the construction cost of \$189,060.

Infiltration and Inflow Reduction Program Area

Sanitary Sewer Flow Monitoring. A total of 21 sanitary sewer systems were monitored in 2004 for various reasons. The MMSD and the City flow monitored along two sections of Metropolitan Interceptor Sewer (MIS) which included 19 City sanitary sewer systems. The purpose of this monitoring was to coordinate our efforts to determine sources of inflow and infiltration (I/I) entering the sanitary sewers. Two systems were monitored due to backwater complaints and sewer surcharging. Flow monitoring data is analyzed to determine the quantity of I/I in a system, flow restrictions, MIS surcharges, and other problems that may lead to backwater complaints and/or overflows.

Sanitary Sewer Evaluation Surveys. In 2004, a contractor was hired to perform dye testing of 78,762 lineal feet of storm sewer at various locations throughout the City. The storm sewers had previously been identified by smoke testing as potentially leaking into sanitary sewers. The primary tasks of the dye testing were to determine locations and rates of transference of dyed water from the storm sewers to the sanitary sewers. The results of the contract will indicate which storm sewers and sanitary sewers can be repaired to reduce I/I entering the sanitary sewer system. The cost of the dye-testing contract was \$312,110.

Manhole Rehabilitation Program. In order to conform to the MMSD's 2010 Facilities Plan goal of reducing infiltration and inflow in sanitary sewer systems, the Section began a sanitary manhole inspection and rehabilitation program in 1998. A contract was let in 2004 for the repair of 430 sanitary sewer manholes at a cost of \$621,553. The rehabilitation consists of replacing lids, installing chimney seals and repairing defective brick work in the manholes. This work reduces the amount of I/I entering sanitary manholes.

Storm Water Inlet Rehabilitation. A contractor performed dye-testing of stormwater inlets and storm sewers in 2003. From this testing, several stormwater inlets were identified as leaking into sanitary sewers, sanitary laterals and sanitary manholes. In 2004, we awarded a contract, in the amount of \$306,895, to replace 55 stormwater inlets and to line 1, 292 linear feet of stormwater drains. This work reduces the amount of I/I entering sanitary systems.

Supervisory Control and Data Acquisition (SCADA) System. A Supervisory Control and Data Acquisition (SCADA) system that provides remote monitoring and control of the City's five lift stations, 83 sanitary bypass pumps and 15 rain gauges is now managed and updated by City staff. The SCADA system allows staff to remotely control the lift stations and bypass pumps if necessary. In addition, it provides real time information on the operational status of each lift station and bypass pump. Rainfall information is also collected in real time and is provided to the Milwaukee Metropolitan Sewerage District for their use.

Automated Mapping and Drafting Area

In 2004, this section drafted a total of 212 sewer engineering plans. This represented a slight increase over the total of 209 plans drafted in 2003 and particularly an increase of 41 plans over the total of 171 plans drafted in 2002, an increase of 24%. This was achieved through the effort expended in effectively coordinating Environmental Engineering drafting and engineering functions towards consistent and continuous staff productivity gains.

Building Sewers Area

In 2004, work continued on the project of digitizing building sewer laterals to the Geographic Information System (GIS) graphical maps. This digitized lateral information is added to the existing digitized maps of sewer mains. The outcome of this multi-year project will be the retirement of the present hand-drawn sewer plat pages and the elimination of the duplication of effort expended in maintaining them. In addition, the inclusion of this sewer lateral data on the digitized maps will make them more useful to our staff for sewer system analysis. An additional benefit of this project will be the ability to share this lateral information with other City departments on the GIS system. Concurrent with this work were continued efforts to improve the ease of use and functionality of the GIS tool set in digitizing sewer maps, improved verification of the accuracy of digitized files, as well as an improved and simplified capability to plot page maps.

This area processed 490 permits in 2004, an increase of 9.5% over the 464 permits processed in 2003. One thousand one hundred and twenty-six (1,126) Deferred Sewer Charge Statements were processed in 2004.

Other responsibilities of the Unit include:

- ◆ Provide the Sewer Design Area with street and utility information for new and replacement sewer projects
- ◆ Draw CAD sewer construction plans for capital program work
- ◆ Assist citizens and plumbing contractors with sewer and sewer lateral questions
- ◆ Determine and collect sewer assessment income for the City from new land developments
- ◆ Update and provide sewer system plans for design studies and general reference
- ◆ Review completed sewer contract construction reports and "as-builts" and then update original plans, sewer databases, sewer plat pages and digitized graphic maps
- ◆ Prepare sewer construction sketches for use at public hearings
- ◆ Provide easement plans for sewer construction projects
- ◆ Process plumbing and building permits

Underground Operations Unit

Underground Operations

Underground Operations is responsible for cleaning, inspecting and repairing the City's sewers, manholes, catch basins and storm inlets. This includes responding to and investigating complaints of backwater and street ponding. In addition, Underground Operations inspects and repairs sewer and communication manholes, catch basins and storm inlets on streets prior to the paving work being completed.

During 2004, 103.4 miles of sewers were examined, 480.8 miles of sewers were cleaned, and 16,604 catch basins and storm inlets were cleaned. In addition, we responded to 7,435 service calls.

In 2004, Underground Operations installed underground conduit in West Bluemound Road from North Story Parkway to North 66th St. Other locations were North 10th Street from West State Street to West Juneau Avenue and West Clybourn Street from North 10th Street to North 16th Street.

Storm Inlets

In order to reduce street debris run-off from entering the rivers and creeks in the City and affecting water quality, sump storm inlets are being constructed in place of the bowl type inlets. The sump catches a large portion of street debris material before it gets in the sewer system and ultimately creeks, channels, rivers and Lake Michigan. This effort is being done to meet the requirements of our Storm Water Discharge Permit issued by the Wisconsin Department of Natural Resources.

Debris Dewatering

As a part of the cleaning of sanitary and combined sewers, catch basins, and storm inlets, Underground Operations is responsible for the disposal of the debris removed. The wet material is currently taken to Waste Management, Inc. or United Water, Inc. for disposal.

AAA's Road Improvement Demonstration Program Announced in Milwaukee

On Monday, August 16th Mayor Tom Barrett, Wisconsin Department of Transportation Secretary Frank Busalacchi, AAA Wisconsin President Ted Gambill, Greenfield Police Chief Frank Springob and County Executive Scott Walker participated in a press conference that addressed the issue of unsafe intersections in the greater Milwaukee area.

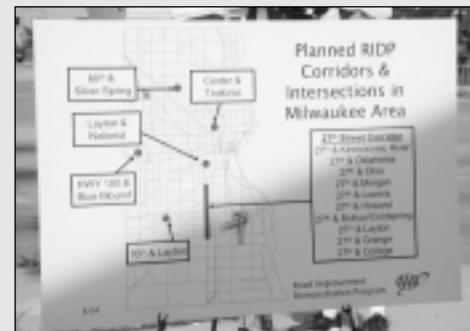
The Road Improvement Demonstration Program (RIDP) was pioneered in Michigan and is now placed or in planning at more than 400 intersections in that state. Milwaukee County is the first area outside of Michigan in which AAA is implementing this RIDP public-private partnership to reduce crashes and injuries at urban intersections.

The event to announce the RIDP stressed the intergovernmental cooperation that is needed to study and improve high-crash intersections in the greater Milwaukee area. The program included the announcement of the first set of 15 intersections slated to be studied for potential improvement as part of the program. Several of the targeted intersections are in the South 27th Street Corridor.

The City of Milwaukee's Infrastructure Services Division will participate in the study due to the support of Alderman Terry Witkowski who introduced legislation into the Common Council.



Mayor Tom Barrett, at the podium, addresses the crowd at the corner of South 27th Street and West Layton Boulevard, which is on the list of high-crash intersections. In attendance from left to right are Pamela Roberts, former Safety Director and Florence Dukes, newly appointed Safety Director, members of the Safety Commission and County Executive Scott Walker.



A map indicating the locations of intersections that have been identified as the worst ones in the greater Milwaukee area was on display.

FIELD OPERATIONS SECTION

The Field Operations Section operates, maintains and repairs the many infrastructure facilities located in the public way and river system. Responsibilities of the Field Operations Section are wide ranging and include:

- ◆ Maintenance of the City's streets, alleys and sidewalks.
- ◆ Design, construction and inspection of street, alley, sidewalk and bridge improvement projects.
- ◆ Construction and maintenance of all public way lighting, traffic control signals, signage and pavement markings.
- ◆ Operation and maintenance of the City's moveable and fixed bridges and viaducts.
- ◆ Operation of the Municipal Asphalt Plant and the Traffic Sign Shop.
- ◆ Inspection of permitted utility construction in the public way.

CONSTRUCTION UNIT

Local Paving. The Construction Section performs duties in all facets of local paving projects. This includes existing roadway surveying, designing, construction inspection, materials administration, labor compliance, contractor payments, as-built certificates, and construction management. In 2004 local paving work consisted of 38 contracts that totaled 9.18 miles of roads and 4.03 miles of alleys. The total local paving contract cost was \$5.79 million. In addition, Street Maintenance resurface paving work consisted of two contracts that totaled 2.67 miles of roads and Private Development paving work that totaled 1.75 miles of roads. Sewer construction totaled 32.86 million for 34 contracts covering 13.93 miles. Water main construction consisted of 20 contracts that totaled 10.96 miles of water main relay at a cost \$6.88 million. Inspection was also provided for 1.94 miles of suburban water main installation.

State Paving. The Construction Section also performs administrative duties on WISDOT projects within the City of Milwaukee. These functions include construction management, inspection, contractor payment estimates, materials monitoring and reporting, wage/labor verification. For select projects survey and design duties were also performed. The following four WISDOT paving projects were constructed this year at a contract cost of \$4.43 million covering 3.32 miles:

- ◆ West Blue Mound Rd – North 66th Street to North Story Parkway
- ◆ West Center Street – North 92nd Street to North 76th Street
- ◆ North 12th Street – West Wells Street to West Highland Avenue
- ◆ South 27th Street and West Forest Home Avenue
 - South 27th Street (east roadway) – Union Pacific Railroad bridge to West Lincoln Avenue, (Including Bridge)
 - West Forest Home Avenue – South 31st Street to south 27th Street

Three bridge projects were also constructed this year at a cost of \$1.63 million. They include the following:

- ◆ South 27th Street over Union Pacific Railroad
- ◆ North 35th Street over the Lincoln Creek
- ◆ North Farwell Avenue over the Milwaukee County Bike Trail

Project highlights include:

NORTH 12TH STREET - West Wells Street to West Highland Avenue

This asphalt resurfacing project was completed in stages to allow two-way traffic with access to Aurora Sinai hospital, a grade school, a middle school and Marquette University throughout its construction. After concrete bus stop pads, portions of concrete sidewalk, curb and driveway approaches were placed, four key operations for the asphalt resurfacing occurred. Existing asphalt was removed by milling (via mobile grinders), the lower course asphalt binder was placed, manhole adjustment work was done, and to complete the project, a top course of asphalt with permanent pavement markings was placed. Total contract cost was \$0.24 million.

SOUTH 27TH STREET - Union Pacific Railroad Bridge to West Lincoln Avenue

WEST FOREST HOME - South 31st Street to South 27th Street

UNION PACIFIC RAILROAD BRIDGE

This multi-faceted project included replacement of a concrete bridge deck and the asphalt resurfacing of two busy south side State Highways at a contract cost of \$1.4 million. To accommodate commuters, Aurora St. Luke's Hospital, and several nearby commercial areas, two-way traffic was maintained through a series of traffic control phases throughout construction. Pavement operations included cracking and seating of existing concrete pavement into a stabilized base for the installation of two layers of asphalt pavement. Concrete pavement bus stop pads and permanent pavement markings were installed with the addition of West Forest Home Avenue bicycle lanes. The existing bridge was rehabilitated by sand blasting, repainting, railing replacement, and a complete concrete re-decking.

WEST BLUE MOUND ROAD - North Story Parkway to North 66th Street

Concrete pavement reconstruction was completed on this 1.1 mile long project for a contract cost \$1.73 million. In order to maintain two-way traffic throughout construction, the concrete pavement was placed in two stages; one half at a time. Construction operations were coordinated to accommodate businesses such as the several entertainment establishments along the project, the Milwaukee Brewers, and residential parking needs to successfully keep inconveniences to a minimum. Bicycle lanes were also added to this roadway.

WEST CENTER STREET - North 92nd Street to North 76th Street

Concrete pavement reconstruction was completed on this one mile long project for a contract cost \$1.64 million. Reconstruction consisted of replacement of all concrete pavement, curb and gutter, driveway approaches, and portions of sidewalk. Concrete pavement replacement work was done in two stages, one half the roadway at a time, in order to maintain temporary one-way traffic and parking throughout the construction. At project completion two-way traffic was restored and permanent pavement markings were placed with the addition of bicycle lanes.

NORTH FARWELL AVENUE - Bridge over the Milwaukee County Bike Trail

The existing bridge was rehabilitated by sand blasting, repainting, concrete re-decking, concrete sidewalk and railing replacement at a contract cost of \$0.52 million dollars. Construction was completed in two phases to maintain one-way traffic for a vehicle and a bicycle lane on North Farwell Avenue. Bicycle traffic on the County Bike Trail under the bridge was maintained by diverting riders through a protective canopy. Pavement bridge approaches were resurfaced by milling the existing surface and placement of a 3-inch asphalt overlay.

STREETS AND BRIDGES UNIT

Street Maintenance Area.

The Street Maintenance area administers three types of maintenance contracts; pavement seal coating, crackfilling and asphalt pavement resurfacing. This year marked the sixth season of implementing the "Slurry Seal" method of seal coating asphalt pavements. This program has proven to be successful by receiving favorable public and Aldermanic reaction while minimizing complaints. City streets received 217,516 square yards of "Slurry Seal" in 2004. Under the crackfilling contract, a contractor crackfilled 332,226 square yards of pavement throughout the city utilizing a rubberized joint seal.

Asphalt resurfacing occurred on South 13th Street, South Whitnall Avenue, North 40th Street, North Water Street, North 124th Street and North Sherman Boulevard where 7,930 tons of asphalt were placed. In an effort to eliminate reflecting cracking of the asphalt, a new technique was implemented on resurfacing of South 13th Street from West Bolivar Avenue to West Layton Avenue. A Strata asphalt layer was placed below the top layer of asphalt. Additionally "superpave" asphalt was utilized on this project. The "superpave" asphalt is a specialized mix that eliminates rutting and shoving typically seen at intersections and in high traffic areas.

Street Maintenance field crews placed an additional 10,236 tons of asphalt on city streets. Repair projects included asphalt shims on roadways, asphalt shims on sidewalks, small asphalt patches and pothole repairs.

Street Maintenance has completed additional improvements to the tracking of incoming customer requests. All service requests phoned into the City of Milwaukee are answered by the DPW Call Center at (414) 286-8282. Telephone calls for pothole complaints, offsets along sidewalks, guardrail problems and pavement concerns are recorded into a database by the Call Center. Supervisors access this data, via computer, a minimum of twice daily. Utilizing the services of the Call Center has improved record keeping and tracking of complaints, Aldermanic Service Requests and City Attorney claims. Street patching lists are now electronically generated with this data.

Street Maintenance received a new Pavement Planner in 2004, replacing a unit that was approximately 12 years old. This new piece of equipment gives crews greater flexibility in the types and size of repairs that can be completed. Crews now have the ability to complete larger asphalt repairs in a shorter amount of time. Pushups and shoving of asphalt at bus stops can now be repaired easily with this machine.

Bridge Maintenance Area

This Section is responsible for over 220 structures maintained by the City of Milwaukee, including routine daily and seasonal maintenance, and response to bridge emergencies 24 hours a day, 7 days a week. These structures span navigable waterways, the extended watershed, and highway or railroad grade separations. Most critically, the City operates 21 movable bridges on a year round basis.

In 2004, the majority of scheduled bridge maintenance work was focused on movable facilities over the navigable waterways and those fixed facilities near or south of the Traser Yard at 6th and Canal. These projects included the rehabilitation of several pedestrian bridges over the Kinnickinnic River and the complete replacement of the deck of the pedestrian bridge between South 58th and 60th Streets at W. Montana Street. In addition, expansion joints were replaced on South 35th Street and repaired on the Holton Street Viaduct. Deck repairs were made to the Teutonia Railroad Viaduct and Cameron Bridge over Lincoln Creek. In addition to routine and emergency work on fixed and movable structures, Ironworker staff continued to perform seasonal and winter work for other City Departments, including Fire, Police, Water, Parking, and Buildings.

The Bridge & Iron Painting crew was on various bridges working rollers, railings, and structural steel. The crew also performs graffiti abatement on a daily basis. This work is coordinated with the Department of Neighborhood Services and the Police Department. Due to the extensive encroachment of graffiti into neighborhoods around several railroad bridges, the parapets, abutments and wing walls were completely repainted to restore a uniform appearance. A lower cost graffiti shield for signage is being used. Extensive graffiti sweeps are conducted prior to local festivals. Several projects were undertaken for the Water Works including interior painting and rehabilitation of coagulation basin hatches at the Linnwood Treatment Plant and painting a pump room and stairway at the Howard Avenue Treatment Plant.

Bridge Operations Area

In 2004, Bridge Operators conducted 12,347 bridge openings for commercial and recreational boating traffic. Currently eight of the twenty-one movable bridges can be remotely operated from a central hub bridge: South 1st Street, Plankinton Avenue, Emmer Lane, North 6th Street, South 6th Street, Clybourn Street, Highland Avenue Pedestrian, and Knapp Street bridges. City Electricians rewired the Broadway Bascule Bridge to update the design to current practices and eliminate an increasing trend of unreliability. The major components of the remote project for Michigan and St. Paul Bridges were put in place and this link will be operational upon completion of fiber optic connections.

Inspections Area

The Inspection Section handled over 9,300 construction permits in 2004. In addition to construction permits, the Inspectors review Special Event Permits such as block parties, walk/runs and parades. Contractors working in the location of Special Events are notified of the event and directed to complete their work or close up their excavations so as to cause little or no disruption to a Special Event.

Structural Engineering Area

The Structural Design area designs and prepares contract documents, and performs construction administration for a wide variety of projects involving bridges, retaining walls, parking structures, and other structures. This area inspects and develops a Capital Improvement Program for all city maintained bridges and city owned parking structures. It also maintains plans and other records for the city's bridges, parking structures, retaining walls, dock walls, and other structures.

Final plans and specifications were reviewed for the rehabilitation of the State Street Bascule Bridge over the Milwaukee River. The State Street Bridge has been designated a historic structure as is the oldest remaining Milwaukee style trunnion and was the first bridge in the city to exhibit architectural features to enhance the bridge aesthetics. This project, which is scheduled for construction in 2005, will rehabilitate the structural, mechanical, electrical, and architectural elements of the bridge.

The Kilbourn Avenue Bascule Bridge was also designated a historic structure and preliminary plans were developed to rehabilitate the bridge and restore the aesthetic features that warrant the historical designation. A Request for Proposal was prepared and an outside consultant was selected to perform an inspection of the structural, mechanical, electrical and architectural components of the bridge and prepare a final report of repair recommendations and a construction cost estimate. Final contract documents are expected to be completed by the end of 2005.

Construction was completed in late 2004 of the North Ave. Dam Pedestrian Bridge over the Milwaukee River. The new pedestrian bridge connects new housing developments along River Boat Road with Caesar's Park and proposed walking paths along each side of the mud flats along the Milwaukee River.

Construction started for the new Marsupial Pedestrian Bridge over the Milwaukee River. The new cast-in-place post-tensioned concrete pedestrian bridge will be hung via high strength steel cables from under the existing Holton Street Viaduct and will connect the Brady Street Business District with new housing developments along Commerce St. and the redeveloped Kilbourn Park. The bridge will incorporate architectural enhancements, projection and recessed rail lighting, and plaza areas at each landing to provide an enjoyable and safe experience for pedestrians and cyclists. The bridge is expected to be completed in late summer of 2005.

Final plans and specifications were prepared for the rehabilitation and decking of the Hawley Road Viaduct and were submitted to WisDOT for construction starting in 2005. Final plans and specifications were also prepared and submitted for the rehabilitation of the Glendale Avenue Bridge over Lincoln Creek.

Construction work started for the rehabilitation of the 35th Street Bridge over Lincoln Creek. The bridge was opened to traffic in fall of 2004 with final repairs made to the limestone veneer expected to be completed in spring of 2005.

The new Knapp St. Lift Bridge over the Milwaukee River was opened to traffic in fall of 2004. The new architectural enhanced bridge is located one block north of Juneau Avenue in place of the elevated Park East Freeway bridges over the Milwaukee River. The bridge connects a newly widened West McKinley Avenue to East Knapp Street.

Construction was started and completed for the rehabilitation of the both the South 27th Street Bridge over Union Pacific Railroad and the North Farwell Avenue Bridge over the Milwaukee County Bike Trail.

Preliminary engineering was started for the replacement of the West Bradley Road Bridge over the Little Menomonee River, the Highland Boulevard Bridge over the Canadian Pacific Railroad, the West Mill Road Bridge over the Menomonee River, and the South 29th Street Bridge over the Union Pacific Railroad. Construction of these projects is expected to occur in 2006.

A Request for Proposal was prepared and an outside consultant was selected for preparing plans for the construction of a bicycle bridge over Chase Avenue and to prepare rehabilitation plans and cost estimates for the abandoned Union Pacific railroad bridges over Greenfield Avenue and Kinnickinnic Avenue. The acquired railroad bridges and new bicycle bridge will eventually become part of the Kinnickinnic River Bicycle Trail funded through a Congestion Mitigation and Air Quality grant.

Final plans and specifications were reviewed for the construction of one bridge and one viaduct to complete the Canal Street extension from 25th Street to Miller Parkway. The bridges and roadway will provide access to the former Milwaukee Railroad yard and shops for development and accommodate a continuous roadway from 6th Street to Miller Park.

Final plans and specifications were prepared for the removal of an abandoned railroad bridge and construction of a new retaining wall in conjunction with the S. 6th St. repaving from W. Ohio to W. Hayes Ave. Construction is scheduled to start in May, 2005.

Concept Definition Reports were prepared and funding was obtained through the WisDOT Connecting Highway Program for the North Prospect Avenue Bridge over Oak Leaf Bike Trail and the West Forest Home Avenue Bridge over the Kinnickinnic River.

Bridge Inspection

This area performed bi-annual inspections on 179 bridges for which the City has maintenance responsibility. The bridge inspection reports were entered into the Highway Structures Inventory System (HSIS) database and copies were submitted to Milwaukee County and WisDOT. The bridge inspections were performed in accordance with the State of Wisconsin Structure Inspection Manual and National Bridge Inspection Standards.

To accommodate changes in inspection procedures, the Wisconsin Department of Transportation (WisDOT) provided each bridge inspector with off-site training and a new Structural Inspection Manual, new bridge inspection pocket manual, and new inspection and reporting procedures, which are in compliance with National Bridge Inspection Standards. All bridge inspectors attended training on the new internet based HSIS which requires bridge inspectors to enter inspection reports and other data into the master bridge file and view and generate reports related to bridge inspections or local bridge conditions.

A bridge inspection was performed on the north and south access road bridges over the Menomonee River that is part of the Miller Park Stadium District ring road. The bridges may be acquired by the City as part of the Canal Street extension project westerly into Miller Park.

Parking Structures

Final plans and specifications were prepared and a contract was let for concrete repairs to the floor and helix ramp and installation of a waterproof traffic deck coating to previously uncoated floors of the 2nd and Plankinton Parking Structure. This unit also provided contact administration and coordination for this project. The repair work was completed in late summer.

Final plan and specifications were prepared and a contract was let for recoating of a waterproof traffic deck coating to floor levels 1 through 4 of the Milwaukee-Michigan Parking Structure. The contract work will start in spring of 2005 and this unit will provide contract administration and coordination for this project.

Plans and specifications were started for work on the MacArthur Square Parking Structure. This work will consist of repairs to the stairwells, painting of the eastern half of the lower level, and reapplication of a waterproof traffic deck coating to the easterly half of the 7th Street level. This work will be let to contract in spring of 2005.

Recommendations were given both for short and long term repair needs to Parking Administration and this information was used to prepare a Capital Improvement Program for the parking structures.

Miscellaneous Structures

Construction work was completed for the Phase 2 Kilbourn Park extension to North Commerce Street. The Phase 2 work consisted of a soldier pile, precast concrete lagging retaining wall with bridge type railing along Glover Street, a cast-in-place concrete retaining wall adjacent to the bike path, and a concrete amphitheater seating area. A pedestrian stair at the end of Booth Street was included which will create a direct pedestrian access to North Commerce Street.

As part of the continued development related to the Beerline B Improvement District, construction was completed for two concrete cast-in-place retaining walls. The first retaining wall is located along the north side of Commerce Street and will allow extension of the Beerline Bike Trail. The second retaining wall is located along East Reservoir Avenue and will allow extension of that street for access to a new housing development.

Plans and specifications were prepared for the procurement of open grid steel grating to replace the grating on the Cherry Street Bascule Bridge. Plans and specifications were also prepared for the replacement of the sidewalk plates for the Clybourn Street Vertical Lift Bridge. Both of the above rehabilitation projects will be performed by City forces.

This area continued to provide engineering review and contract administration for the Department of City Development in connection with the Milwaukee Riverwalk initiative. This included review and recommendations for approval on all contracts, plans and specifications, construction budgets, change orders and payments, shop drawings and construction field reports for the Riverwalk development. Final plans and specifications were prepared and a City contract was let for the Riverwalk Downtown Connector that will connect the Bank One Riverwalk with the Historic Third Ward Riverwalk. The Phase 2 River Homes Riverwalk in the Beerline B Redevelopment project area was completed. The Phase 2 Riverwalk for the River Bridge residential project along N. Water Street was substantially completed. The second phase of the Historic Third Ward Riverwalk on the east bank of the Milwaukee River from St. Paul Avenue to Water St. that filled in the gaps from the Phase 1 Riverwalk was substantially completed. Riverwalk construction work was also completed for the Waterfront Lofts residential development on the west bank of the Milwaukee River and the Sigma Riverwalk along the south bank of the Menomonee River. Dockwall work started on the Harbor Front Riverwalk along the east side of the Milwaukee River near the Harbor entrance.

Structural analysis was performed for various repair and construction projects including bridges, hollow walks, public buildings, firehouses and bridges with overload vehicles. The following is a summary of some of those projects. A structural inspection was performed for the Fire Department Training Tower edge beam and recommendations for repair were given. Plans and specifications prepared by a consultant for the repair work to the City Hall Fire Escape were reviewed. This unit prepared the original repair recommendations for the fire escape contained in an earlier report. An underground structural steel support framing for a failed sewer pipe was designed at a sinkhole location at 35th Street and Juneau Avenue. A structural investigation was performed on the Texas Avenue Water Works Pumping Station after a massive water main break occurred. A structural investigation was performed, with a written report, on the salt storage structure of Sanitation Central Area 1 Headquarters after the dome roof collapsed. A weather station, which monitors road and weather conditions to assist in salting operations, was installed on the 6th Street Viaduct. A structural inspection, report, and

estimate were prepared for repair of the cracked floor of MFD Engine House #2.

Analysis of bridges for permit overload vehicles has increased almost two fold in recent years as the numbers of permit applications and enforcement has increased. A total of 193 bridge analyses were performed in 2004.

ELECTRICAL SERVICES UNIT

Electrical Services serves the City of Milwaukee by overseeing the operation, maintenance and installation of facilities and equipment related to street lighting, traffic control and street signage.

Traffic & Sign Services

The Traffic Services area operates and maintains 722 controlled intersections in the City of Milwaukee and completed the following work:

- ◆ Replaced 7,558 signal lamp outages.
- ◆ Repaired/restored 587 controller troubles (94% within one day).
- ◆ Repaired/restored 428 circuit troubles (66% within one day).
- ◆ Repaired/replaced 343 controller/signal knockdowns.
- ◆ Recorded 1,323 traffic counts for Engineering and traffic analysis.

The installation of new traffic controlled intersections was completed at the following locations:

- ◆ N. 4th St and W. McKinley Ave.
- ◆ Dr. Martin Luther King Jr. Drive and W. McKinley Ave.
- ◆ N. Water St. and E. Knapp St.
- ◆ N. Broadway and E. Knapp St.
- ◆ S. 30th St. and W. Oklahoma Ave.
- ◆ N. 11th St. and W. Tory Hill

The Traffic Signal Shop installed the first "Count-Down" pedestrian crossing heads at S. Layton Blvd. and W. Lapham Street. Additionally, the first phase of the Marquette Interchange project was completed on schedule. Cabling was completed for an additional 37 intersections for the Fire Department's Opticom system. Traffic signal work was completed on W. Capital Dr (N. Green Bay to W. Roosevelt), as well as many other paving projects locations.

The Traffic Sign Shop provided the following services:

- ◆ Replaced 896 missing signs
- ◆ Deliberate Vandalism - 40 Sign Replaced
- ◆ Non-Deliberate Damage – 1,268 Signs Replaced
- ◆ Replaced 251 signs due to age
- ◆ 1,551 signs replaced for paving
- ◆ Installed Arrows and Special Markings at 195 locations
- ◆ Painted 1,196 crosswalk locations
- ◆ Painted 2,061,371 feet of long line roadway stripping
- ◆ Install 1,013 special event signs

Street Lighting

Street Lighting continued to provide the City of Milwaukee well-lit neighborhoods and roadways. Personnel responded professionally around the clock to citizen requests, Alderperson's service requests, contractor damages and departmental priorities. Major projects that were completed included:

- ◆ W. Clybourn St (N. 9th St. to N. 17th St) Marquette Interchange reconstruction included light poles, cabling, lantern and harp fixtures and associated conduit work.
- ◆ N. Water St (E. Juneau St to E. Cherry St) and W. Knapp St M. Water St to River Bridge, included cabling, conduit, light poles and pole bases.
- ◆ W. North Ave (N. Sherman Blvd. to N. 27th St) included streetscape and the installation of light poles, cabling, conduits, lantern and harp fixtures.
- ◆ S. 27th St. (Kinnickinnic Pkwy to W. Forest Home Ave) included cabling and conduit work, and bridge reconstruction.
- ◆ W. North Ave (N. Sherman Blvd. to N. 60th St) included outlet circuitry and associated equipment.
- ◆ W. National Ave (N. 1st St to N. 13th St) included streetscape, light poles, cabling and conduit work and lantern and harps fixtures.
- ◆ W. Lincoln Ave (N. 7th St to N. 20th St) included streetscape, light poles, cabling and conduit work and lantern and harp fixtures.
- ◆ W. Hampton Ave and N. Port Washington Rd paving and bridge reconstruction.
- ◆ W. Michigan St (N. 6th St to River Bridge) included cabling and conduit installation and light poles.
- ◆ W. Arthur Ave. (S. 5th St to S. 16th St) paving included cabling and conduit installation and light poles
- ◆ S. 8th St (W. Greenfield Ave to W. Washington St) paving included light poles, cabling and conduit work and lanterns and harps fixtures.
- ◆ Approximately 3,000 light fixtures were upgraded from Mercury Vapor to High Pressure Sodium.

Street lighting personnel maintains a system of approximately 72,000 streetlights and 12,000 alley lights and completed the following:

- ◆ Repaired 1414 inoperable alley lights (83% within 72 hrs).
- ◆ Replaced 118 deteriorated poles.
- ◆ Repaired 2296 circuit troubles (99.4% within 24hrs).
- ◆ Repaired 549 single unit troubles (50% within 30 days).
- ◆ 2,729 streetlight units were relamped as part of the group replacement program.
- ◆ 3,019 streetlight units were relamped as scattered outages.
- ◆ Utility locators completed 34,426-hotline requests.

SUPPORT SERVICES UNIT

The Support Services Unit is responsible, in part, for the Stores areas in the Field Operations Section. Managing City inventory levels to ensure they are maintained at acceptable values is a continued focus of this group. In addition, this area manages the City's Asphalt Plant and provides field crew with the proper type and amount of asphalt materials on an as needed basis.

MILWAUKEE WATER WORKS



James R. Purko

Zeidler Municipal Building
841 North Broadway, Room 409
[414] 286-2830

Carrie Lewis, Superintendent

**Milwaukee
Water Works**

Safe, Abundant Drinking Water.

In 2004, the Water Works delivered over 44.3 billion gallons of pure, clear Lake Michigan drinking water. Average daily pumpage was 121 million gallons per day. MWW water surpasses all federal and state standards for water quality. Not only is Milwaukee's drinking water high quality, it is a good value. The cost per person per day for water is 8.5 cents, not including service charges.

During 2004, the utility collected \$72.7 million in 2004 to finance its operations. The Water Works paid to the city a \$7.9 million payment in the form of a payment in lieu of taxes. The payment directly offsets the city tax levy, reducing the 2004 tax rate by \$0.36 per thousand dollars of assessed valuation. Other payments to city departments for the municipal services used by the Water Works totaled \$13.6 million in 2004.

Water Quality Section

Water Quality Section staff were the first work group to implement a new Computerized Maintenance and Management System (CMMS) deployed by the Plant Automation Group to Plants facilities in the fall of 2004. The new software package is an improved, streamlined version that replaced a preventive maintenance system in place since 1999. The CMMS allows the Water Quality Section to schedule, complete, and document routine maintenance and quality control checks on over 175 pieces of online water quality monitoring equipment at both water plants. The data from this equipment is critical to optimizing the water treatment process and assuring the highest quality water possible for our customers.

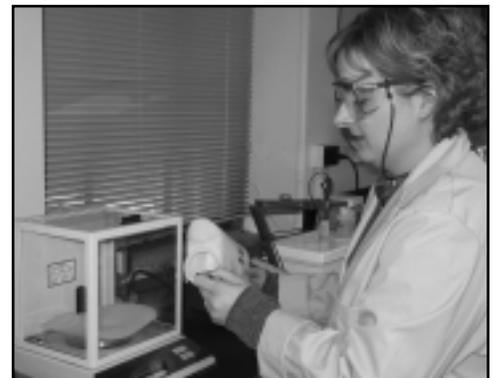
Regulatory monitoring to meet the requirements of the Safe Drinking Water Act continued in 2004. Individual filter bed turbidity monitoring was a focus of the national surface water treatment rule known as IESWTR, and is a large part of the upcoming long-term, or LT2ESWTR, regulations. Water Quality responsibilities included maintaining an ongoing filter bed turbidimeter quality assurance/quality control program. The components are daily grab sample comparisons, monthly calibration checks, quarterly calibrations, and water quality challenge studies.

Microbiological evaluation of water quality was another major activity. Staff developed a comprehensive, expanded microbiological monitoring effort to document biologically active filtration at the Linnwood Plant. This included daily sampling of individual filters and the use of four different types of culture media to measure biological growth on both a quantitative and qualitative basis.

Water Quality Section staff took a proactive stance in modifying the reporting format for the Wisconsin Department of Natural Resources (DNR) regulated water quality monitoring program of the distribution system at various sites for both Coliform bacteria and Heterotrophic Plate Count (HPC) bacteria. This was done to streamline the form and prepare for electronic data reporting in 2005.



Linnwood Treatment Plant Filter Beds



Chemist verifies readings of on-line instrumentation.

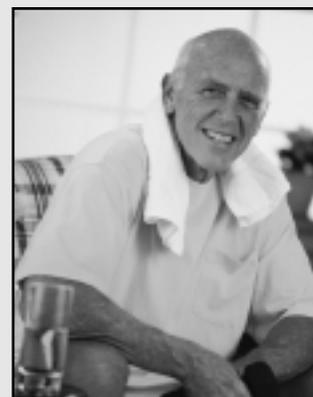
Milwaukee Drinking Water Receives an "A" for Quality

Milwaukee's drinking water is rated among the highest quality in the nation by an evaluation of water in 101 major U.S. cities. Milwaukee was one of 12 cities to receive a water quality grade of "A" in the report card by *Men's Health Magazine*.

The Milwaukee Water Works (MWW) provides drinking water for 831,000 people in Milwaukee and 14 neighboring communities.

The *Men's Health Magazine* report in the March 2004 issue focused on five contaminants: arsenic, bacteria, lead, trihalomethanes and haloacetic acids.

Milwaukee's drinking water utility treats Lake Michigan water using a multiple barrier process including ozonation and filtration. The source water has undetectable amounts of arsenic. Ozonation destroys illness-causing microorganisms, neutralizes taste and odor, and reduces chlorinated disinfection byproducts such as trihalomethanes and haloacetic acids. Phosphate in the treated water provides corrosion control to prevent lead from leaching off plumbing fixtures and pipes in older buildings. Current water quality data for Milwaukee's drinking water surpasses state and federal regulations. *Men's Health* evaluated U.S. Environmental Protection Agency (EPA) water quality reports with assistance from the Environmental Quality Institute at the University of North Carolina, the National Resources Defense Council, and Rutgers University. The report compared results to "ideal levels" recommended by the National Academy of Science and EPA's maximum contaminant limit (MCL) goals.



Milwaukee leads the nation in providing high quality drinking water.

The Milwaukee Water Advantage

Milwaukee water provides an ideal platform for water-intensive industries and provides outreach with economic development agencies to encourage so-called wet industries to expand or locate in the Milwaukee Water Works service area.

Milwaukee has an abundant supply of high quality water and competitive, stable water rates. Ozone disinfection removes taste and odor. With Lake Michigan as its source, the water is free of radon, a cancer-causing agent that can be found in well water. Other advantages for both individual and manufacturing customers are reliable water pressure, an average temperature of 46° F, moderate hardness (136 mg/L) and low total dissolved solids (180mg/L). Because Milwaukee water is moderately hard water softeners are generally not necessary.



Linwood Water Treatment Plant Laboratory

Use Water Wisely

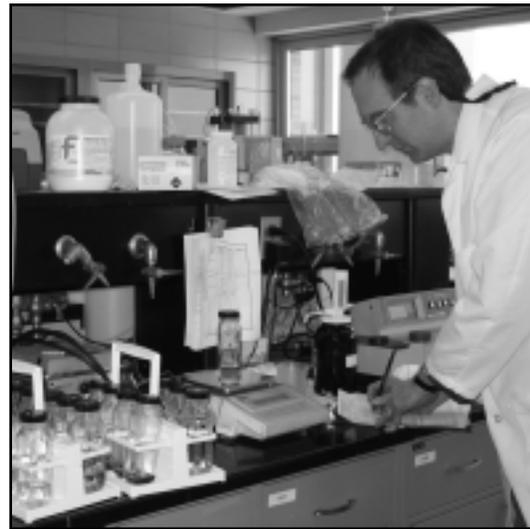
In Milwaukee, you save money when you conserve water. You save on the cost of the water, the cost of sewer treatment charges, and the cost of sewer maintenance charges. This is because sewer treatment and sewer maintenance fees are based on the amount of water used. It means that by using water wisely you make a big difference on the amount of your Municipal Services bill. The average family in Milwaukee uses 19 hundred cubic feet (Ccf) of water per quarter. This "average" family pays a total of about \$82 for water usage, sewer treatment usage, and sewer maintenance per quarter. Check your most recent Municipal Services bill. Look at the usage charges only. How do they compare to the average of 19 Ccf and \$82 for usage charges only? If there is a big difference, you can do two things to lower your costs: check for and repair any leaks, and conserve water.

Check for leaks by turning off all the water flow in the building, including faucets, dishwasher, washing machine, and outside taps. Find and observe the dial on the water meter. If the dial on the meter is turning, there is a leak. Watch for dripping faucets and replace worn faucet washers. To test for a toilet leak, add a few drops of food coloring to the toilet tank. If the coloring appears in the bowl after a few minutes, the toilet is leaking. Fixing running toilets and leaky faucets can make a big difference in lowering your Municipal Services bill. Repairing a leak pays for itself quickly. The maximum toilet leak running with the flush ball or flapper valve not seated wastes over 11,500 gallons per day, costing \$4,200 per quarter for water use and sewer charges. A steady drip from a faucet can waste 170 gallons a day, or cost \$60 per quarter.

A lot of water goes down the drain needlessly because it has always been plentiful and inexpensive. Everyone must become conscious of the amount of water they're using and learn to conserve this precious resource. For additional information please see http://www.wateruseitwisely.com/Home_water_conservation_guide: www.h2ouse.org

Water Quality staff assembled the data and updated the format of the Consumer Confidence Report, or Water Quality Report, for 2004. The report, required by the U.S. Environmental Protection Agency and the DNR each year, was mailed to all Milwaukee-billed accounts between April and July. The MWW website was expanded to include access to additional Water Quality Reports.

Prompt and comprehensive response to customers regarding water quality concerns remains a high priority with Water Quality staff. A telephone message line, coupled with follow-through to address issues and arrange field visits as necessary, assured customers of the Water Works' commitment to provide the highest quality water.



Left, chemist verifies readings of on-line instrumentation and right, laboratory at Howard Avenue Treatment Plant.

Business Section **Accounting Services**

The Accounting Services group provides budgeting and accounting services for the Milwaukee Water Works. This includes developing the utility's budget, monitoring and analyzing expenditures, and processing contract and other vendor payments. It is also responsible for financial analysis and reporting of the enterprise's operations. This is accomplished in compliance with two separate reporting systems. The first is reporting in compliance with Generally Accepted Accounting Principles (GAAP), which is the basis for the enterprise's audited financial statements. The second reporting deals with complying with the requirements of the Wisconsin Public Service Commission (PSC), the utility's oversight agency, and is used to provide proper reporting and interaction with the PSC. The combined reporting functions serve both internal and external users of the financial information of the Water Works.

Meter Services

The size of a water meter refers to the diameter of the pipe at the inlet of the meter. Water meters can range from 5/8-inch to 12 inches in diameter. The weight of these meters ranges from 12 pounds to 3,300 pounds.

Employees in the Meter Reading unit read residential water meters on a quarterly basis with a computer-equipped van as they drive down streets past homes. In 2004 this operation performed 610,680 meter readings, or read approximately 97% of the electronic meters installed.

Commercial Meter Readers manually read the meters of the 1,000 largest customers on a monthly basis, adding up to 19,708 readings in 2004. Many of these large meters are located in underground vaults; monitors and confined space entry permits are required to safely read these meters. Commercial Meter Readers compare current usage to past usage to identify changes in seasonal or monthly patterns and report discrepancies for timely corrective action. Commercial Meter Reading staff also performed 15,588 manual reads involving investigations, some larger residential accounts, and meters that are located in hard-to-read areas.

Water Meter Investigators provide services to customers who report high bills and questionable account information. They make personal visits to customers' locations to verify meter, address, and water status information. They also perform inspections of interior plumbing fixtures to locate leaks for residential and small commercial customers.

Meter Repair Shop personnel enable the MWW to ensure that water meters accurately represent water consumption, give the customer fair value and the Water Works its appropriate revenue for water delivered. Large and small water meters are tested and repaired at this facility while staff install, exchange, and test meters in the field.

The program to change medium-sized water meters (1-1/2" and 2") to automatic meter reading (AMR) was completed in 2004 with 98% of the meters converted. Meter Shop personnel have adapted to all the demands of the AMR projects. All job classifications have demonstrated skill in meter installation and solving all types of electronic, plumbing, low pressure, and customer service issues in the field and shop. This diversely skilled work force will be a valuable asset in the continued maintenance of the new AMR system.

Large (three-inch and greater) meters are typically used in industrial applications and are not yet included in the AMR program. We continue to test these meters according to PSC requirements. Testing of large water meters involves isolating the meter and testing its accuracy by running a known volume of water through the meter. This is accomplished using a portable certified test meter by one of five field



*Water Meter with
Radio Signal Transmitter*

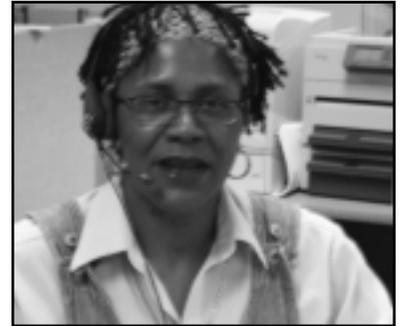
testing crews. Large turbine and electronic/magnetic meters are used to determine the water usage of large users, such as wholesale communities. Because of the high volume of water used, these meters are monitored 24 hours a day.

During 2004, the Meter Shop installed over 160 hose connections and handled over 60,250 linear feet (over 11 miles) of hose. These hose connections have enabled service-provider customers to remain open while repairs were performed on nearby water mains. Meter Shop personnel are on call 24 hours a day to support these activities.

Each year the Water Works is required to test a statistically determined random number of residential small meters. This is done as a quality control method to ensure the Water Works equipment gives the most accurate reading possible. The statistical model is based on installation date and year. We performed 675 statistical tests in 2004. Meter Shop staff installed 523 new water services resulting in 485 new meters in the system.

Customer Service

Customer Service employees respond to customer inquiries over the phone and at our service counter on the fourth floor of the Zeidler Municipal Building. The Customer Service Representatives are trained to meet all customer needs ranging from resolving billing inquiries to scheduling meter appointments. The Water Works Interactive Voice Response (IVR) system allows customers to access information about their account on a 24-hour basis including weekends and holidays. The IVR system processed 144,107 calls during 2004. Many customers prefer to speak directly with our Customer Service Representatives, and those employees served 70,484 customer contacts. Also in 2004, the Customer Service counter handled 4,166 customer inquiries, over 67,000 counter cashiering transactions, and processed 53,966 payments that were dropped off at the Water Works offices.



Customer Service Representatives served over 70,000 customers by phone in 2004.

Billing and Collections

The Billing and Collections Section generates and collects the Municipal Services Bill. In addition to collecting for water charges, the MWW also collects charges and fees for other city departments (Sewer Maintenance Usage Charge, Solid Waste Fee, and Snow and Ice Fee) and the Milwaukee Metropolitan Sewerage District (MMSD Sewer Treatment Charges). In 2004, billing statements totaling over \$139 million were mailed on schedule to the utility's customers.

Water Marketing

Activities of the Water Marketing Specialist are intended to raise awareness of the benefits of the high quality, abundance, and value of Milwaukee's drinking water. The more customers served and the more water sold, the larger the rate base will be over which MWW can spread operational costs and keep water rates low.

Of particular concern is encouraging water-intensive industries to expand or locate in the Milwaukee area. Water is the lifeblood of many manufacturers, food processors and brewers, biotech researchers, and the medical community. Across the country, water-intensive industry faces dwindling water resources due to multi-year droughts, depletion of groundwater, restrictive water quality regulations, and overpopulation of arid lands. The increasing demand for water and sewage treatment translates to higher operating costs for these businesses.

The Milwaukee Water Works and its service area offer a long-term solution for water-intensive business and industry.



Historic North Point Tower



A new customer service information system will allow customers to access account information online.

New Customer Information System

In February, the Milwaukee Water Works selected a vendor to replace the current Customer Information and Billing System. The new system's enterprise database and browser interface will provide a long-awaited advance in technology and improved reporting capability. The MWW project team and the vendor developed a comprehensive statement of work that included ways to streamline business processes. The statement outlined new enhancements to help better serve customers and provide easier access to account information. Plans were made to upgrade the IVR system and to provide customer self-service via the Internet. The contract for the new system was signed in August. Programming, test case development, and training for the new system began with implementation of the system planned for 2005.

In 2004, marketing activities included joining a multi-agency marketing group with the goal of targeting water-intensive industry in retention and attraction efforts. The group includes the Department of City Development (DCD), Milwaukee Economic Development Corporation (MEDC), Metropolitan Milwaukee Association of Commerce (MMAC), and the Milwaukee Metropolitan Sewerage District (MMSD). Representatives visited major customers of the MWW and MMSD, used the input to produce a joint promotional brochure, and provided information to water-intensive prospects.

MWW also established a relationship with Forward Wisconsin to join promotional efforts at the state, regional, and national levels. The Water Marketing Specialist served on the planning committee for Forward Wisconsin events in Chicago at the May 2004 convention of CoreNet, the world association for 7,500 corporate real estate executives and site selection consultants.

MWW provided marketing materials and worked with DCD to include five water-intensive industries as targets for the DCD Menomonee Valley strategy for industrial/ business recruitment.

MWW met with municipal wholesale and retail customers to provide new information and discuss any concerns they had about service.

The Water Marketing Specialist established a relationship with Pier Wisconsin with the goal of including the drinking water treatment story in the lakeshore Discovery World at Pier Wisconsin facility under construction.

For marketing materials, publications, and internal communications, the Water Marketing Specialist began development of a new logo and updated website, wrote news releases and informational memos, prepared Customer Service reference materials, submitted news about MWW for the DPW newsletter, and prepared and distributed the MWW Annual Report and annual Water Quality Report. To support conversion to a new Customer Information System, the Water Marketing Specialist designed and launched an employee newsletter with information and updates about the project.

For community outreach, the Water Marketing Specialist helped write the "Every Drop Counts" brochure about water conservation and water quality in partnership with MMSD, Urban Ecology Center, Schlitz Audobon Nature Center, and the Milwaukee Health Department; presented educational information to appropriate audiences such as Earth Day at the Urban Ecology Center and the Milwaukee Public Schools September beach cleanup, and provided information for the Public Policy Forum Water Resource Management study. The Water Marketing Specialist represented MWW at two MMSD Clean Rivers/Clean Lakes Watershed conferences, and the Wisconsin Water Association Leadership Council as Public Education Committee co-chair.

Technical Services Section

These employees maintain the Water Works' information processing network.

During 2004 Technical Services replaced an Uninterruptible Power Supply (UPS) with a new UPS and additional battery backup sized to meet immediate and future needs for the primary data center. They also started the process of restructuring the primary data center to meet immediate and future needs to handle required additional servers. This included purchase and installation of racks and KVM switches. As planned, to take advantage of higher communication speeds available on the new switches installed in 2003, Technical Services upgraded server connections for a number of servers from 100 MBPS over copper to 1 GBPS over fiber.

Technical Services completed a security initiative to eliminate the use of the less secure Windows 95 and Windows 98 operating systems and to standardize all computers on Windows 2000.

Building Customer Confidence

In July, the Milwaukee Water Works increased water pressure to about 190 customers in a south side area of Milwaukee known as the Wedgewood Neighborhood. The change was made to meet pressure requirements of the Wisconsin Department of Natural Resources. The area was bounded by South 68th Street, South 76th Street, West Crawford Avenue, and West Howard Avenue.

Customers and elected officials were informed in advance of the change. Letters were sent to each residence and as the project date approached, door hangers were left as a reminder. Water Engineering staff developed a systematic plan to change the pressure district boundary. This plan required Distribution forces to sequentially operate valves while thoroughly flushing the mains through identified hydrants.

Increasing the pressure in the neighborhood resulted in a few water main breaks, which were expeditiously repaired by the Distribution field crews. Due to the extent of work in the neighborhood, Water Works employees interacted directly with several customers and provided excellent customer relations. They did such a good job interacting with the public that some of the residents were on a first-name basis with crew members and even brought them cold sodas. The local alderman received phone calls from affected constituents who complimented the work crews' performance and expressed appreciation for the increased water pressure.



Flushing a water main to ensure clean, safe water

To support this initiative and replace aging equipment, Technical Services purchased and configured over 75 new machines. Over 160 Water Works employees absorbed a full day of Windows 2000 training to prepare for the operating system upgrade. Technical Services also purchased and configured 15 printers to upgrade printing capabilities for the new Customer Information System.

Technical Service began replacing an aging file and print server and has plans to replace both domain controllers to support new security implementations. The group also began upgrading network backup systems because the amount of data to be backed up had outgrown the existing hardware capacity. Each of these projects will continue into 2005.

The systems and network security needs of the Milwaukee Water Works have expanded due to these projects and will continue to grow as future enhancements are deployed. The Technical Services security initiatives, under the direction of the Water Security Manager, include the deployment of firewalls, improved gateway security, intrusion detection and mitigation, vulnerability identification and elimination, system configuration monitoring, automated patch deployment, and centralized software management. In 2004, after a study of Water Works needs, Technical Services purchased additional hardware and software to help meet the goals of securely providing uninterrupted service for users and to mission critical applications. Installation of these products will be underway in 2005.

The Technical Services group is providing technical support for the Customer Information System replacement project.



Linnwood Water Treatment Plant

Water Treatment Plants

Linnwood Plant

In 2004, the Milwaukee Water Works Water Treatment Plants Division provided 44.3 billion gallons of water, a decrease of 3.9% from 2003.

The Linnwood Plant pumpage increased while the Howard Avenue Plant pumpage decreased. This was due to the three-month shutdown of the Howard Avenue Plant from March 26 to June 24. The shutdown was a result of the break of the 84" discharge main at the Texas Avenue pumping station. During that time, the Linnwood Plant was at full capacity to meet water demands of MWW customers. The Linnwood Plant delayed the scheduled spring maintenance activity for the south ozone contactors and the south coagulation/sedimentation basins until fall 2004 to ensure that adequate

production capacity was available to meet water use needs.

As part of the ongoing filter maintenance program, Linnwood Operations and Water Quality staffs performed complete filter inspections on an additional eight of Linnwood's 32 dual-media filters. The inspections of the filters showed no ill effects of the extended run criteria to the overall performance and condition of the south filters. The benefits of having all filters on extended run criteria are: more effective filter run time while meeting water quality objectives, less water used for backwashes, less spent backwash water sent to the MMSD for treatment, and less water returned to the lake as allowed under the National Pollution Discharge Elimination System (NPDES) permit.

After successfully testing an electro-hydraulic filter effluent valve operator on one filter in 2003, the Linnwood Plant installed this type of operator on all of the 32 filters. This was a capital project coordinated by the Water Engineering staff. This efficient modulating valve operator greatly enhanced the stability of the filter valve operations, which greatly reduces filter modulations and improves filter effluent water quality.

During 2003, a problem arose when the softened ammonia carrier water temperature reached less than 38°F. At that temperature and below, ice would form in the eductors and this would result in a low vacuum situation and the underfeeding of ammonia. An outside vendor designed a double-walled carrier water steam heat exchanger and Water Engineering oversaw installation of the system. The unit began operations in November. To date the heat exchanger has allowed successful operations of the water eductor system to supply adequate vacuum during the low carrier water temperatures.

A major ozone process upgrade took place during 2004. The two original water bath liquid oxygen (LOX) vaporizers were replaced with two electric LOX vaporizers, selected for lower cost and maintenance. The new units were installed and put into operation in October. During that project, all the LOX piping was reinsulated and additional pipe hangers were installed.



New electro-hydraulic valve operator



Ammonia carrier water heat exchanger

2004 saw a number of other major capital projects begin or end; all were coordinated with Water Engineering staff. The north coagulation basin inlet and drain gates were replaced. The Riverside Pumping Station power upgrade was completed. New ultrasonic level gauges were installed in coagulation basins, clearwell and filtered water reservoirs. A project to replace the surge valve at Riverside was completed. Planning began for installation of roof over ozone facilities and an internal power upgrade at Linnwood. Work got underway to remove trees that had grown over the clearwells.

On May 19, Linnwood raw water pump #7 dropped off-line due to an outboard packing sleeve failure. This pump was installed in 1938 and has a rated capacity of 80 MGD at the current head requirements. Linnwood maintenance staff did a complete take-apart to return the pump to service. They disassembled the pump, planned repairs, ordered parts, and had the pump back on line by June 9.

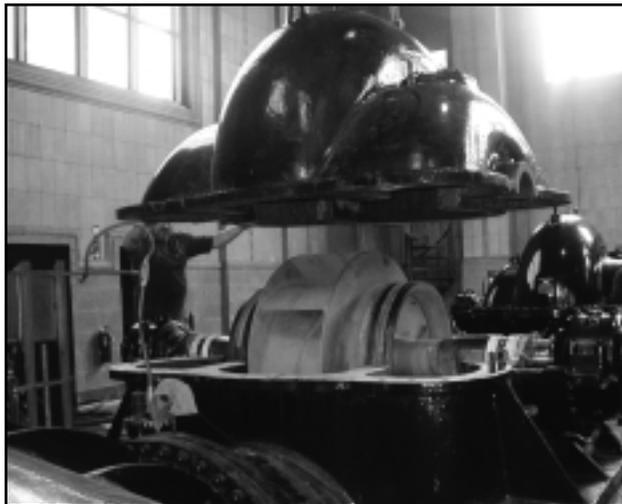
A number of security upgrades were conducted at Linnwood under the direction of the Water Security Manager. Card readers were installed on the remainder of the exterior doors at the plant, all doors were re-keyed, and an improved key control system was put in place.

Also, under Water Engineering's design and oversight, the alum delivery station was relocated from inside the alum annex to the exterior wall adjacent to the alum annex. This involved relocating the three fill lines, air line, water hose bib, storage tank level indicators and posting new signs. This will allow alum deliveries to be safely received and not require the alum annex door to be open during the delivery.

In December, the Plant Automation Section initiated a new computerized maintenance management system (CMMS) for the Plants division. The new system will be used for preventive maintenance, demand maintenance, project planning and tracking, personnel inventory, personnel certification tracking, and can be used for key management.

The section also continued upgrading plant automation with the installation of a program that monitors all Supervisory Control and Data Acquisition (SCADA) system programmable logic controllers (PLC's) for proper operations and security. An energy monitoring software program was installed at the Riverside Pumping Station. The software is designed to show where significant energy savings can be realized.

In the summer, the Safety Specialist initiated a service contract with a vendor to twice yearly inspect and service all of the fire extinguishers for the North Point and Riverside Pumping Stations. Plant staff participated in fire extinguisher training.



Reassembling raw water pump #7

Proactive Efforts to Protect Customers from Lead

Milwaukee has taken a proactive approach to protecting customers from lead in drinking water. The Milwaukee Water Works has worked to optimize corrosion control as part of its water treatment process and conducts an ongoing monitoring program without a mandate from regulatory agencies.

Lead is one of 90 contaminants regulated under the Federal Safe Drinking Water Act (SDWA) and administered by the EPA and the DNR.

Each contaminant is on a different schedule for monitoring, or testing, based on regulatory guidelines. Milwaukee's public water supply is given a list each year of specific contaminants for which it must conduct monitoring during the next year. In 2000, DNR waived the requirement for Lead and Copper monitoring of residential sites for Milwaukee's public water supply, and granted a waiver in 2004.

However, in both of those years, as a responsible water utility, Milwaukee conducted limited lead testing at selected sites. In 2000, MWW retested homes with previous values greater than 15 parts per billion (ppb), and in 2004 tested homes and worked in collaboration with the Milwaukee Health Department and Milwaukee Public Schools in a study to test internal water systems at several schools.

We are proud of our efforts to reduce and control drinking water-related sources of lead in our community.



Linnwood Plant laboratory sampling

Kilbourn Reservoir Takes on a New Role

In 2004, the Kilbourn Reservoir was decommissioned. It had been an integral part of Milwaukee's water distribution system for over 125 years. The reservoir was built in 1873 on land donated to the city by founding father Byron Kilbourn. Its purpose was to store and distribute water for drinking and fire protection. The structure is a seven-sided irregular shape that is 25 feet deep and, when full, holds 21 million gallons of water. The water was originally open to the air with about 3-1/2 acres of surface area. In 1979 a concrete roof was built over the reservoir to protect the water supply.

Water from the reservoir flowed as far south as the intersection of Oklahoma Avenue and South 20th Street. It was the Water Works' only in-ground distribution system reservoir. The structural integrity of the reservoir declined during its century of use, and to minimize leakage and structural stress, the reservoir was eventually used at only half its capacity. Replacement of the water storage component of the reservoir became necessary.

The Water Works, with the assistance of a landscape architect, held several town hall meetings since 2000 with residents of the Riverwest community and their elected representatives to develop a design for the reservoir and park area (on the north of East North Avenue) to meet the needs of the Water Works and enhance the property and the community's enjoyment of it.

The view of the city from the top of the reservoir is striking. In an effort to maintain that view, enhance the useable park area, and honor the original public works venture, a landscaping plan was developed which includes accessible paths to the top of the hill, a viewing area, and gently sloping terrain to the north.

A Department of Public Works project to reconstruct North Avenue between Booth and Bremen Streets will also be carried out. In this project, Garfield Avenue, similar to Lloyd Street, will terminate just east of Booth Street instead of going through to North Avenue. This will provide safer pedestrian crossing along North Avenue and increased parkland.

Milwaukee's Historic Preservation Commission named the Kilbourn Reservoir a historical site in 1999. In plans for the site, numerous features of historical significance will be preserved. The outline of the seven-sided shape will be preserved in pathways; stairs on the east, west, and south will remain, and the Kilbourn Star on the eastern slope will be represented. The Water Works pumping station, the comfort station in the park north of the reservoir, and the gatehouse atop the reservoir are also included in the new design. Above all, the spectacular views from the hill will remain and be open to public access. The garage building north of the pumping station, although not of historical significance, will also remain. The functions of the small police antenna atop the reservoir will be consolidated into a large red and white steel antenna already on the site.

In mid-2004, the reservoir was physically disconnected from the water distribution system. Work at the site of the existing reservoir and adjacent park area, and the reconstruction of North Avenue are planned for 2006.

The Milwaukee Water Works remains firm in its commitment to maintain strong communication with the community as we proceed with this project.



Left, the existing reservoir aerial perspective



Right, the proposed reservoir aerial perspective

Howard Avenue Treatment Plant

In 2004, the Howard Avenue Treatment Plant pumped 12.7 billion gallons of treated water. This was significantly lower than the 18.8 billion gallons pumped in 2003. As mentioned earlier, the lower production was due to a three-month plant shutdown caused by a main break at the Texas Avenue Pumping Station. The failure of the “wye” (Y-shaped configuration of pipes) at the Texas station resulted in an inability to pump raw water to the Howard Avenue Plant. Analysis of the failure found a defective weld was the major cause of the failure. The new wye included improvements in the design and fabrication of the butt strap joint. A concrete thrust block was also installed to encompass and support the wye. In addition, both 54” butterfly valves at the Texas station were placed in an open position. The surge relief valves were repaired and calibrated. The timing of pump valves opening and closing was checked.

During the plant shutdown the operations crews maintained functioning equipment and returned equipment to service. Maintenance personnel used the shutdown time to work on a backlog of maintenance and cleaning projects in the buildings and grounds and at booster stations. The new entrance security gate was placed in service, and a leak in the west clearwell was repaired.

Booster station projects from the Howard Avenue Plant completed in 2004 included refurbishing a pump at Menomonee Valley Pumping Station and decommissioning the Kilbourn Reservoir. Hydraulic modeling studies of the distribution system indicated changes in the operation of the Bluemound booster station were needed, and these operational changes were implemented.

Distribution

Water Distribution repairs and maintains the water distribution piping system throughout the City of Milwaukee and the retail suburbs of Greenfield, St. Francis, and Hales Corners to ensure continuous delivery of sufficient high quality water. Distribution employs quality repair practices using high quality parts and materials. Preventive maintenance systems have evolved into the core of distribution operations. Scheduled activities include repair and maintenance of facilities within every upcoming paving project area, annual flushing of dead end water mains, leak surveys to identify non-surfacing water leaks, and a hydrant inspection program. Distribution has been progressive in researching and implementing new technologies in materials, repair parts and equipment as well as staying abreast of new developments in maintaining distribution systems to provide a quality conduit to deliver potable water.

Emergency repairs continue with an aging infrastructure. Distribution professionals conducted 10,289 investigations for various reasons such as reports of leaks in the street and concerns from our customers. The Water Distribution Supervisor on duty or on call assesses each emergency situation and determines the necessary action. Repair Crew employees responded to 873 call-outs for emergency, after-hours repair needs to maintain water service with the least amount of interruption as possible, and to maintain the integrity of the water distribution system.



Howard Avenue Water Treatment Plant



Distribution crew locating water main leak

Daniels Receives Wisconsin Water Association Award

The Wisconsin Water Association presented Laura Daniels, Water Distribution Manager for the Milwaukee Water Works, with the Leon A. Smith Award at its 83rd annual meeting in Appleton in September.

The award is presented for distinguished service to the WWA and for exceptional activity on behalf of the water industry.

2004 marked Daniels' twentieth year with MWW. She joined the utility in 1984 as a Safety Coordinator. Two years later, she moved to the Distribution Section and became manager in 1990. For the past three years, Daniels has chaired the WWA Distribution Committee, which provided seminars for more than 500 Wisconsin water professionals during that time.



Distribution Manager Laura Daniels is honored with the Leon A. Smith Award, presented by Wisconsin Water Association Past Chairman Mike Rau.

In 2004, Distribution repaired 638 main breaks in addition to repairs to service laterals, hydrants, valves, and curbstops. Distribution coordinates new water main installation projects with various contractors to plan the water shut-off requirements, operate the necessary valves for the shut-off, coordinate water outages with affected customers, provide pipe cutting services with specialty saws for large diameter water mains, and return the water main to service.

Distribution works closely with the paving programs of the City of Milwaukee and suburban communities to coordinate preventive maintenance activities. The goal is to ensure that buried water infrastructure is in good operating condition prior to the road above being paved. Prior to paving, the water distribution system is reviewed in detail for possible improvements such as additional shut-off valves and the elimination of unused piping that, if left in service, could potentially cause future leaks. All valves are exercised and repaired or replaced as needed. Service lateral access boxes are located and inspected to make sure the curbstop is accessible and operable for any future shut-off needs. Leak surveys are conducted to detect any underground leaks. This preventive maintenance program has successfully reduced the incidence of disruption to new pavement for emergency repairs.

Leak detecting has taken on a greater focus as the water distribution system ages. Underground leaks can sometimes go undetected as water seeps into other underground voids. The use of a leak correlator provides a mechanism to detect these leaks that do not surface, helps identify repair activities, and reduces the need for future emergency repairs. The leak correlator uses highly sensitive microphones attached to valves or services. Data about the pipes is entered into the computer, the sound is analyzed, the location of the leak is pinpointed, and repairs are made.

The hydrant maintenance and inspection program is conducted by four Hydrant Service Workers. The Milwaukee Water Works maintains approximately 20,000 hydrants in the cities of Milwaukee, Greenfield, St. Francis, and the Village of Hales Corners. These employees inspect hydrants using portable, handheld computers to scan the bar code affixed to the hydrant and enter all related inspection data into that specific hydrant record. In addition, while flushing each hydrant during the inspection process, the water is sampled using a portable turbidimeter to ensure the Milwaukee Water Works water quality standards are met or exceeded throughout the distribution system. Any hydrant defects noted from the inspection are reported for repairs. If a hydrant is found to be inoperable, we notify the fire department about the out-of-service status as well as when the hydrant repair is complete. For further identification of hydrants, plastic rings were installed to provide fast identification of dead end main hydrants, hydrant out-of-service, restricted use hydrants, and private hydrants, which are not installed or maintained by the Milwaukee Water Works. We work closely with the fire departments of Milwaukee, Greenfield, Hales Corners, and St. Francis to ensure a well-communicated fire protection program.

Water Engineering

The Water Engineering Section functions as an in-house resource for the utility. The section is responsive to applied research needs of the utility and coordinates the Capital Improvements Program (CIP). The 2004 budget for CIP totaled \$14.62 million with \$12.62 million to replace water mains and \$2.0 million for water treatment process and facility improvements. The 2003 budget was \$14.9 million for CIP, \$11.6 million for water main replacement, and \$3.3 million for water treatment process and facility improvements. Capital improvement projects are specifically planned to increase efficiency and maintain the reliability of the entire Milwaukee Water Works system.

In 2004, Engineering Section staff continued to support the operation and maintenance of facilities by providing consulting engineering services for a number of projects. Construction of a soft water feed system for the addition of ammonia at the Linnwood Treatment Plant was completed in May. The project involving the abatement of lead paint at the Riverside Pumping Station resumed after a necessary delay. The security-driven, reconfigured entrance at the Howard Avenue Treatment Plant was put into operation in October.

Other projects related to the operational efficiency of both plants were completed, such as installing level sensors for the Linnwood Treatment Plant coagulation basins and clearwell, replacing an electric motor for a pump at Menomonee Valley Pumping Station, and the replacement of the surge relief valve at the Riverside Pumping Station. A hot water liquid oxygen (LOX) vaporizer system with new electrical units was placed in operation. In addition, engineering staff assisted in the implementation of the relocation of the alum unloading station, replacement of LOX piping insulation and replacement of the ozone sample water de-watering pumps.

Staff developed contract documents for several key projects in 2004. A contract to replace the Linnwood Plant filter effluent valve operators with new electro-hydraulic operators was awarded in August. A contract to replace the roof of the Meter Shop was completed prior to the end of the year. Contracts to refurbish a Texas Avenue raw water pump and electric motor, upgrade the power at Linnwood, and repair the Ozone Building Contactor roof, were awarded in December.

Water Engineering staff prepared plans and specifications for 0.8 miles of new water main extensions and 10.8 miles of replacement water mains. One hundred seventy-two plans were prepared for these installations within the City of Milwaukee. Plans were designed and reviewed for 17 alterations of water mains for various external projects. Plans were reviewed and approved for 10 suburban projects.

Early the morning of March 26, the Milwaukee Water Works responded to the failure of the 84" water main near the Texas Avenue intake feeding Lake Michigan water to the Howard Avenue Treatment Plant. MWW engineers, coordinating with the City Engineer's Construction Section, immediately began working on a plan to stabilize the area, evaluate the status of the station, repair the water main, and restore the soil and pavement to previous conditions.



Repairing the 84" water main at the Texas Avenue Pumping Station

After extensive analysis of the infrastructure, the water main was repaired and the station brought back in service on June 24.

2004 saw continuation of the strategic review and planning for the construction of the new Marquette Interchange Freeway and its impact on Milwaukee Water Works facilities. The first phase of work centered on West Clybourn Street and Tory Hill between North 10th Street and North 18th Street, and included eight water main plans constructed as part of the Wisconsin Department of Transportation contract. The much larger second phase, the "North Leg," included review of 14 water plans, again bid as part of the state contract. Water work includes six freeway crossings, three of which are feeder mains, as well as several relays and alterations in local roads adjacent to the freeway work. Construction of the North Leg water work was targeted for fall 2005 and will continue through much of 2005 in coordination with the freeway construction.

In addition, Milwaukee Water Works reviewed and constructed under city contract all necessary water alterations prior to the third interchange phase, the "West Leg." Alterations on the West Leg were related to hydrant locations adjacent to Interstate 94 between North 13th Street and North 25th Street. Preliminary review is also underway regarding impacts of the final interchange phase, the "Core." The Core will include sections of Interstates 43 and 94 between West Wells Street and North 13th Street extending to the south of the existing High Rise Bridge. Water impacts anticipated for this final phase include a freeway crossing at West Wisconsin Avenue as well as several relays and alterations in adjacent local roads.

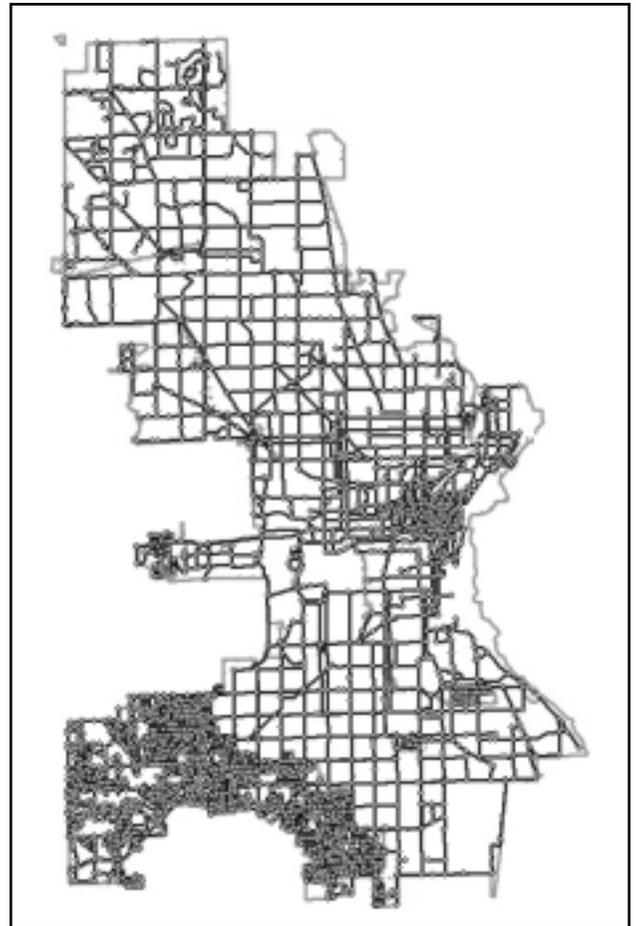
Staff also maintained and updated MWW distribution and transmission system maps and conducted daily updates within the customer service software. Information relating to location of water mains, valves, services, and hydrants are provided to this section and it is graphically represented on maps and data entered within a customer service database. The accuracy and integrity of these maps and data are essential to the day-to-day operations of the utility.

Permit applications for installation and alteration of the facilities of private utilities in public ways are reviewed for their impact on the water system. Permit applications for buildings are also reviewed. The staff reviewed over 1,000 permits in 2004.

Water Engineering provides flow and pressure information to plumbing contractors and fire protection companies. This information is used in the design of interior plumbing and sprinkler systems. As the distribution system changes, new flow tests are conducted to ensure accurate information is being supplied to fire protection companies. As of 2004, these requests are also taken via e-mail and fax. In 2004, the staff conducted 40 fire flow tests, of which 22 were done at the request of an outside agency. When these specific requests are made and performed, the outside agency covers all costs for the flow test.



A fire hydrant flow test



A hydraulic model of the pumping and distribution system will assist in long range planning.

Outreach to Students

With the goal of increasing student interest in the drinking water field, the Milwaukee Water Works hosted a tour of the Linnwood Water Treatment Plant in October for a group of students and young professionals. Students on the field trip represented Marquette University, the Milwaukee School of Engineering, and the University of Wisconsin-Milwaukee. The Wisconsin Water Association organized a student chapter to provide networking, summer job opportunities and internships, scholarships, and field trips.

Milwaukee Area Technical College students in the Environmental Pollution Technology program serve as interns at the plants during the spring.

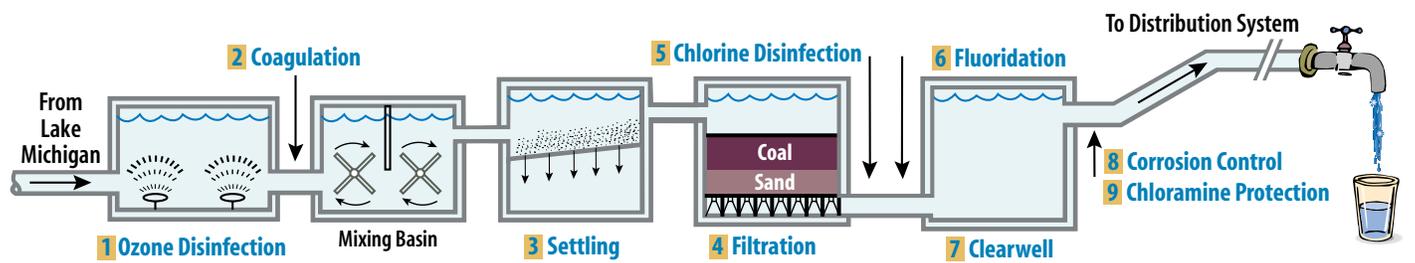
In order to provide quality control of pressure within the distribution system, Water Engineering installs and monitors remote pressure recorders at several locations during the warm weather months.

In 2004, Milwaukee Water Works obtained consultant services for completing a hydraulic model of the pumping and distribution system. The hydraulic model will primarily be used for long-range planning, validating the annual capital improvement program, improving operating standards, “what if” scenarios, and in the future, possibly water quality analysis.

The benefits of a calibrated model have been desired for several years, however, the complexity of the MWW system required that an expert in hydraulic modeling be consulted to assist in further developing and completing the model. It is anticipated the project will result in a calibrated hydraulic model in late 2007 or early 2008.

Distribution material inspections assure that only materials meeting Milwaukee Water Works’ high standards are installed in the distribution system. After being received by the Stores Division, all materials are visually inspected for compliance with city specifications. In many cases, these items are hydrostatically tested at design pressures. Water Engineering staff responded to 246 requests for inspection in 2004. The inspections were for various purchases delivered to MWW such as hydrants, valves, fittings, etc. The 246 requests translate to 22,225 pieces of materials. The staff also inspected fittings furnished by the contractor.

Milwaukee Water Works Drinking Water Treatment Process



- 1. Ozone Disinfection** — Ozone gas is bubbled through the incoming lake water. Ozone destroys disease-causing microorganisms including *Giardia* and *Cryptosporidium*, controls taste and odor, and reduces chlorinated disinfection byproducts.
- 2. Coagulation** — Very fine particles in the water adhere together to form larger particles as the coagulant alum is mixed into the water. Large particles are more effectively removed during the settling and filtering processes.
- 3. Settling** — Settling is the process in which solid particles settle out and are removed from the water.
- 4. Filtration** — The water is slowly filtered through 24” of anthracite coal and 12” of crushed sand to remove very small particles.
- 5. Chlorine Disinfection** — After filters, chlorine is added as a secondary disinfectant. This provides extra protection from potentially harmful microorganisms.

- 6. Fluoridation** — Fluoride, when administered at low levels, is proven to help prevent tooth decay.
- 7. Clearwell** — Treated water is stored in deep underground tanks and pumped as needed through the distribution system.
- 8. Corrosion Control** — A phosphorous compound is added to help control corrosion of pipes. This helps prevent lead and copper from leaching from plumbing into the water.
- 9. Chloramine Protection** — Ammonia changes the chlorine to chloramine, a disinfectant that maintains bacteriological protection in the distribution system.

Milwaukee Water Works

Safe, Abundant Drinking Water.

Learn more about Milwaukee Water at: www.water.mpw.net.

2004 Statistics

GENERAL INFORMATION ABOUT MILWAUKEE

Altitude (City datum)	581.2 feet
City Area	96.1 square miles
Geographic Center. North 42nd Street and West North Avenue	
Shoreline of Lake Michigan in City.....	10.2 miles
Incorporated by Wisconsin Charter	January 31, 1846

GENERAL INFORMATION ABOUT MILWAUKEE'S INFRASTRUCTURE

Alleys, total	414.6 miles
Freeways	40.1 miles
Paved City Streets	1,418 miles
Unpaved City Streets	15 miles
Total city streets	1,433 miles
Miles of lighted streets	1,290.44 miles
City maintained bridges	172
Movable bridges	21
Total bridge openings	12,347
Total sewer mileage in operation (sanitary, storm and combined)	2,437
Main line sewers in the City	120 miles
Streets with interim lighting	81.96 miles
Unlit streets	46.6 miles
Street lighting units	67,427
Alley lighting units	8,803
Traffic control signals	722 intersections
Traffic control signs	104,033
Underground conduit	548.5 miles
Bus stops, signage maintained	4,272

MILWAUKEE WATER WORKS

Howard Avenue plant capacity ..	105 million gallons/day (MGD)
Linnwood plant capacity	275 million gallons/day (MGD)
Total annual pumpage (gallons)	44.3 billion
Consumption per capita per day (gallons)	54
Meters in service	161,161
Water hydrants	19,758
Water mains in service (miles)	1,960
Revenue	\$74.5 million
Milwaukee Water Works' purification process is comprised of ozone disinfection, alum coagulation, dual media filtration, fluoridation, corrosion control, and chloramine post-disinfection.	
<u>Retail customers (water, billing, service, maintenance):</u> Franklin, Greenfield, Hales Corners, St. Francis, West Milwaukee	
<u>Wholesale customers (water only):</u> Brown Deer, Butler, Greendale, Menomonee Falls, Milwaukee County Grounds, New Berlin, Shorewood, Wauwatosa, West Allis, WE Energies Water Services	

SANITATION

Residential Waste collected	184,743 Tons
Recyclables collected	25,802 Tons
Leaves and Yard Waste collected & composted	27,688 Tons
Snowfall (January – December)	39.3 Inches
General snow plowings	3
Ice control operations	23

FORESTRY DIVISION

Trees on city streets	200,000
Shade trees planted	3,616
Trees pruned	39,341
Trees removed (all causes)	3,462
Stumps removed	3,015
Boulevard medians & greenspaces maintained	476 acres
Flowers produced, annuals	325,104
Flowers planted, annuals	135,932
Flowers planted, perennials & bulbs	17,083 perennials
Flowers planted, perennials & bulbs	30,000 bulbs
Shrubs planted	2,443
Evergreens planted	106
Landscaped boulevard medians	121.8 miles
Greenspaces maintained	59
Totlots maintained	57
City properties maintained	20
Service requests	11,391

INFRASTRUCTURE SERVICES — SEWER DESIGN AND MAINTENANCE

Sewers examined	103.4 miles
Sewers cleaned	481 miles
New sewers	4.08 miles
Replacement sewers	8.82 miles
Sewer lining	1.99 miles
Service calls answered	7,435

FLEET SERVICES

Work Orders	32,146
Preventive Maintenance Inspections Performed	6,896
Tires Mounted	3,424
Field Service Calls, Tires	4,252
Field Service Calls, Other	7,989
Stockroom Activity	\$4,993,347
Vehicles Serviced	
Passenger Vehicles	1,057
Packers, Rear Load	144
Packers, Front Load and Roll-off	22
Packers, Recycling	51
Tractors	68
Street Sweepers	27
Sewer cleaners, flushers, etc.	8
Construction equipment	500
Trucks, all other	847
Compressors	87
Vehicle Total	2,812
Non-automotive equipment	1,438
Total Serviced	4,250

STREET AND BRIDGE MAINTENANCE

Bridges, inspected	179
Bridges, number of openings	12,347
Pavement seal coating (square yards)	219,095
Asphalt surface by contract (tons)	7,930
Production of asphalt mixes (tons)	16,160
Average Total DPW Employees, 2004	2,400

