

INFRASTRUCTURE SERVICES DIVISION
Department of Public Works

REPORT ON 2000 ACTIVITIES

The Infrastructure Services Division is responsible for the design, construction, operations 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. This Division is the largest of the six Divisions of the Department of Public Works (DPW), with a work force that expands in excess of 1,000 employees during the construction and repair season.

ADMINISTRATION SECTION

Administration is responsible for all business operations, budget coordination, personnel administration and clerical functions of the Division and shares responsibility for accounting with the DPW's Administration Services Division. The Section is responsible for daily operations and routine maintenance of the Division's microcomputer network and acts as the Division's primary information systems liaison with other areas.

The Section administers Grant and Aid and Capital Improvement Programs of just under \$84 million, a city Operations and Maintenance Budget of nearly \$22 million, a Sewer Maintenance Budget of over \$30 million and an annual payroll of almost \$29 million.

ENVIRONMENTAL SECTION

The Environmental Engineering 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 record books. 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 system 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.

The Environmental Section also has oversight responsibility for the Administration's Underground Conduit Unit. This unit is responsible for all phases of engineering work required for the City-wide programming and design of Underground Communication/Traffic/Lighting electrical conduit and manhole systems. The work group is also responsible for the review of private utility and sewer plans, preparation of construction plans involving electrical conduit lines and manholes and maintaining City-wide underground conduit maps. It is also responsible for administering the rental of available City conduit space to various telecommunication companies.

Following are highlights of the work performed in 2000 by the Environmental Engineering Section.

Sewer Design Area

The Section designed and let to contract 2.48 miles of new sanitary sewers, 1.51 miles of new storm sewers, 1.62 miles of new combined sewers, 6.92 miles of replacement sewers, 0.69 miles of sewer lining and 0.32 miles of sewer pipe sealing for a total cost of \$19.5 million.

West Becher Street Relief Sewer

A \$14.45 million contract was awarded and work began on the construction of the West Becher Street Relief Sewer. The installation of the new 108-inch diameter sewer is being constructed by tunnel method, with precast concrete segments lining the new sewer. A tunnel-boring machine at the front of the work area removes soil and rock, with the excavated material being conveyed to muck cars for disposal. The concrete segments are installed immediately after the excavation. The project is the first use of this method of construction by the City and is being used to minimize the potential of ground settlement, surface disruptions and limited impacts to area residents.

The new sewer will replace an existing 96-inch diameter combined sewer constructed in 1892. The increased capacity will reduce backwater occurrences in the service area bounded by South 5th Street, South 34th Street, West Greenfield Avenue and West Lincoln Avenue. The completion date for the project is October 1, 2001.

West Meinecke Avenue Lining Project

In the fall of 2000, a \$1.99 million contract was awarded for the installation of 2,285 feet of cured-in-place lining in the existing 72-inch diameter combined sewer in West Meinecke Avenue from North 30th Street to North 37th Street. The existing sewer, constructed in 1926, was in poor structural condition. The lining will structurally rehabilitate the existing sewer and will not reduce its hydraulic capacity.

For a sewer with a diameter as large as 72 inches, the typical method for installing a liner is to work with lengths of 700 to 800 feet. In a first for this construction method, the contractor will install a single liner for the entire length of the project. This will allow the contractor to eliminate additional work shafts along the project's length, minimize surface disturbances, minimize disruptions to area residents and reduce the cost of the project as compared to the typical method of installation.

East North Avenue Sewer

In 2000, the design of an 84-inch diameter sewer was completed to replace the existing 66-inch diameter combined sewer that was constructed in 1902. The existing sewer is in poor structural condition and is no longer large enough to handle flows in the area.

In order to provide the required outlet for the new sewer, a portion of the Milwaukee Metropolitan Sewerage District's (MMSD) combined sewer overflow will be rebuilt along with the City sewer. The City will design and construct the District's sewer in conjunction with the City's new sewer. MMSD will provide the funding for their portion of the project.

The new sewer will be constructed from the east bank of the Milwaukee River to North Bartlett Avenue, and will involve the installation of 818 feet of 84-inch diameter sewer by tunnel or pipe jacking methods. Construction is scheduled for completion in the summer of 2001, prior to the start of a street paving project. Total cost of the project is estimated at \$3,500,000 that includes MMSD's estimated share of \$885,000.

Storm Water Management Area

The City received a new Storm Water Discharge Permit from the Department of Natural Resources (DNR) in August 2000. This permit replaced the City's original permit issued in 1994.

One major activity common to both storm water discharge permits is the requirement for a storm water management plan for developments and redevelopment projects on parcels of land five acres in size or larger. During 2000, 78 storm water management plans were reviewed.

Field testing of storm sewer outfalls for illegal/illicit discharges continued throughout the City. The dry weather field test consists of a visual and chemical test for pollutants at each outfall. The field tests identified 26 possible illegal/illicit discharges in 2000. All were reported to the Department of Neighborhood Services for further investigation and correction.

Storm water samples were gathered and chemically analyzed from ten storm water sampling stations and two City owned industrial sites. The Storm Water staff continued to work with the Health Department in the watershed monitoring of the cryptosporidium/giardia project.

Nonpoint Source Program

Twenty-nine (29) Department of Public Works facilities were investigated for possible sources of storm water pollution as part of a study funded by the Department of Natural Resources' Nonpoint Grant program. Of the sites evaluated, 25 of the facilities required a Storm Water Pollution Prevention Plan (SWPPP). The sites were analyzed for present and proposed practices or structural measures to prevent and remove pollutants mixing with storm water. Working with a consultant, the SWPPPs were completed in May 2000. Each detailed site plan included Best Management Practices (BMPs) to implement and self-inspection requirements.

Preliminary work continued on the proposed storm water treatment devices to be installed near the Milwaukee River in conjunction with the Historic Third Ward Riverwalk Project. The devices are to reduce the amount of sediments and pollutants entering the river through runoff. The devices are to be installed in 2001, with DNR providing 50% of the funding and the Historic Third Ward providing the other 50% of the funding for the project.

A contract for \$34,500 was awarded to a consulting firm for the Lyons Creek Pilot Study. The study will determine the effectiveness of a storm water pollution prevention information and education program on reducing pollutants found in urban streams. In order to monitor the water quality of Lyons Creek, a storm water sampling station will be constructed as part of the contract. A survey of the area residents will also be conducted to determine the existing level of understanding residents have on storm water pollution issues.

Infiltration and Inflow Reduction Program Area

Sanitary Sewer Flow Monitoring

Flow monitoring was performed in order to evaluate the performance of sanitary sewer systems in various wet weather conditions. In 2000, 70 sanitary sewer systems were monitored. The section monitored 35 of the systems and a consultant was hired to monitor the remaining 35. Flow monitoring data was collected from April through September. The data was then used to determine if the performance of a system warrants further investigation, in the form of a sewer system evaluation survey to identify sources of infiltration and inflow. The total cost for flow monitoring in 2000 was \$251,078.

Sanitary Sewer Evaluation Surveys

A consulting firm was contracted to determine the sources of inflow/infiltration (I/I) in sanitary sewers systems. These systems were identified as having high rates of I/I through flow monitoring studies conducted by either the City of Milwaukee or the Milwaukee Metropolitan Sewerage District. The primary task of the surveys was to identify defects that have the potential to allow I/I into the sanitary sewer systems. The main methods of determining defects are inspecting the manholes and smoke testing the sewer mains. The data from these surveys will be used to correct illegal connections, prioritize the maintenance and reconstruction of sewers and prepare rehabilitation contracts. The total cost of the survey work done in 2000 was \$580,321.

Manhole Rehabilitation Program

In order to conform to the Milwaukee Metropolitan Sewerage District's 2010 Facilities Plan goal of reducing infiltration and inflow in the sanitary sewer system, the Section began a sanitary manhole inspection and rehabilitation program in 1998. In 2000, a contract was let for the repair of 1,358 sanitary manholes at a cost of \$1,220,711. The rehabilitation consists of replacing lids, installing seals and repairing defective brick work in the manholes.

Downspout Disconnection Project

In 2000, the City received a \$50,000 grant through the Milwaukee Metropolitan Sewerage District's Infiltration and Inflow Reduction Program to determine cost effective methods of reducing storm water flow in sanitary and combined sewer systems. The staff has begun preliminary engineering on a study of the effects of disconnecting downspouts in a combined system. Single and two family homes within the study area will be eligible for a rebate for disconnecting downspouts onto grassed or vegetated surfaces away from the foundation of the building. Storm water runoff that previously went into the combined sewers will be infiltrated into the ground, reducing the potential amount of sewage that could bypass to area waters. Flows in the combined sewers will be measured to determine the amount of reduction.

Supervisory Control and Data Acquisition (SCADA) System

In 1998, a consulting firm was engaged to design, furnish, install, implement and test a new Supervisory Control and Data Acquisition (SCADA) System. The system will replace the existing sanitary bypass pump, lift station and rain gauge monitoring systems. During 2000, the consulting firm completed the installation of the major components of the system and began testing the system.

When fully operational, the new SCADA system will automate several functions, currently performed by staff, by recording the data electronically instead of on paper. Electronic recording will allow for real time analysis and processing of the data. This in turn will result in real time reporting of bypass pump and lift station operations internally and to the Department of Natural Resources (DNR) as required by the City's sanitary bypass pump permit. The system also monitors the operational status of the bypass pumps and lift stations thus reducing the need for field visits to these sites.

Automated Mapping and Drafting Area

In 2000, the City of Milwaukee and the Milwaukee Metropolitan Sewerage District agreed to share their complete sewer systems electronically with each other. Files containing all graphics and databases for the sewer systems will be available for each agency for instant reference. This will provide accurate information of each system for studies and design projects performed by both agencies. In addition, the Building Services Unit will also be able to enhance the sewer plat reference pages with the addition of the District's information.

Sewer construction drawings and building sewer plat pages were electronically scanned so they can be viewed on a computer screen. Approximately 26,000 sewer drawings are now available on the Department of Public Works' network. This has resulted in considerable savings in time as well as money. Staff can now generate their own prints of these plans from their desktop computer rather than pulling a microfilm card or pulling a tracing from the files and having it printed. In the future, these same advantages will be used to effect additional savings for assembling prints by staff for Digger's Hotline requests. Other City departments may also obtain access to these files.

The Section also completed the conversion of its backwater records from paper format to electronic format. This system reduces the time it takes staff to maintain the backwater complaint records and makes the data more accessible for studies and sewer designs. The computer records provide an address link to the subject property for all complaints registered after 1995 and results in more accurate maps.

Underground Conduit Design area

The Underground Conduit system provides a reliable network and secure pathway for copper and fiber optic cable throughout the City for interconnecting police, fire, other municipal buildings and remote sites with data, voice and video communications. In 2000, city forces installed an additional 2.7 miles of new underground conduit and 30 additional manholes. New conduit was installed in West Fond du Lac Avenue from West Capitol Drive to North 36th Street.

Additional conduit installed in 2000 was located in North 35th Street from West North Avenue to West Fond du Lac Avenue to serve the new 7th District Police Station building. Conduit was also installed in North Lincoln Memorial Drive to provide fiber optic cables for the Linnwood Water Treatment plant operating system.

As of December 31, 2000; there are 541 miles of underground network conduit lines and 7,348 manholes in active service.

The City of Milwaukee is currently renting out available conduit space to seven telecommunication companies, generating \$286,237 in revenue for the City.

TRANSPORTATION SECTION

The Transportation Section 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 section 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 Section 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 \$6.2 million capital paving budget by the Project Programming Unit resulted in approval of 67 street paving and 40 alley projects in 2000, and the award of \$9.4 million in contracts, which includes developer sponsored projects.

In 2000, the Project Programming Unit prepared 388 estimates and verified 153 city certified paving projects for improvements in the City of Milwaukee. The formal estimates prepared included 149 street paving projects (12 sponsored by the State of Wisconsin), and 60 alley paving projects. The verified certificates included 66 street paving projects, of which four were sponsored by the State of Wisconsin, 45 alley paving projects, six special treatment projects, and three concrete walk repair projects.

Project Programming staff appeared before the Common Council's Public Improvements Committee for public hearings on 118 paving, new sewer and new water projects. In addition, resolutions were prepared to authorize construction for approximately 300 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 2000, the unit issued 2,996 bills resulting in \$3,287,500 in revenue to the City.

Major Projects Area

The Major Projects Unit coordinated the completion of seven Federal and/or State Major Street Program paving projects at a total cost of \$9,896,000, of which the City's portion was \$1,747,000. The major Federal and/or State paving projects completed in 2000 included the reconstruction of West Fond Du Lac Avenue (STH 145) from West Capitol Drive to North 36th Street, the reconstruction of North 35th Street from West North Avenue to West Townsend Street, the resurfacing of West Morgan Avenue from South 84th Street to West Beloit Road and the resurfacing of West Burleigh Street from North 60th Street to North Sherman Boulevard.

Major Project's staff also played a key role in working with Federal, State, County and private consultants to prepare the Request For Proposal for the Design-Build project to replace the Sixth Street Viaduct across the Menomonee River Valley with a new facility. Proposals were submitted and reviewed resulting in the selection of a joint-venture firm to design and build the new facility at an estimated cost of \$49,500,000. Work on the contract has begun and the unit will coordinate the work with the design-build team and other governmental agencies involved to insure a successful project when it is completed in 2002.

Working with Federal, State, County staffs and private consultants the unit initiated the process to remove a section of the Park East Freeway. The project involves the removal of the existing freeway segment and replacement with a new surface facility and new movable bridge over the Milwaukee River at a total estimated cost of \$25 million. This unit will continue in this role in 2001 through scheduled completion in 2003.

Preliminary engineering was in progress for 31 Federal and/or State Aided Major Street paving projects, 13 Local Bridge Replacement Program projects and 2 State Trunk Highway Bridge Replacement Projects.

Major Projects also coordinated efforts by the Miller Brewing Company to secure a Transportation Enhancement grant to include various streetscape work with the City's planned improvement of West State Street through "Miller Valley" in 2001.

Structures Area

Construction of the second phase of the rehabilitation of the South 35th Street Viaduct over the Menomonee River Valley, which began in fall of 1999, was completed in 2000. The rehabilitation included painting, structural steel repairs, and roadway resurfacing. Preliminary engineering is also in progress for the rehabilitation of the State Street Bascule Bridge over the Milwaukee River, the West Bradley Road Bridge over the Little Menomonee River and the West Mill Road Bridge over the Menomonee River.

Construction was completed for the Emmber Lane Bascule Bridge over the Menomonee River and was opened to traffic on June 7, 2000. The construction of the South 13th Street Bridge replacement over the Union Pacific Railroad began on June 5, 2000 and was open to traffic on December 7, 2000.

Milwaukee Gateway Partners was awarded the design-build contract for the South 6th Street Viaduct over the Menomonee River Valley. Design is underway and construction will begin in early 2001. This is the first design build contract for the State of Wisconsin Department of Transportation and the City of Milwaukee for a State and Federal aided bridge project. Many new processes and some enabling legislation were required to bid and award this contract. There are many other innovative ideas and firsts incorporated into the design and construction of this bridge. The bridge incorporates two cable stayed and two double leaf bascule spans which will replace the existing 6th Street Viaduct. The new bridge will slope down to the floor of the Menomonee River Valley forming an at-grade intersection with Canal Street. The Viaduct will be closed for 15 months and the entire project is expected to take 25 months.

Design work was completed for the North Sherman Boulevard Bridge over Lincoln Creek. Construction will be underway in 2001. Design work was completed on the South Chase Avenue Bridge over the Kinnickinnic River. Construction has been delayed while the City acquires property from the Union Pacific Railroad to accommodate a new bicycle path, to allow access to the river for MMSD and to allow removal of the existing Railroad Bridge over Chase Avenue.

Other major work performed in 2000 included: review of the plans and specifications for the Teutonia Avenue bypass culvert and the North 37th Street Bridge over Lincoln Creek, preliminary design for rehabilitation of the Teutonia Avenue Bridge over Lincoln Creek, construction of the North 51st Street Bridge over Lincoln Creek and construction of the West Woolworth Avenue Bridge over Lincoln Creek. Both Lincoln Creek Bridges at 51st and Woolworth were left closed to traffic to accommodate the heavy construction equipment needed for the flood control work in Lincoln Creek. The 51st and Woolworth Street Bridges are scheduled to be opened in spring of 2001. In September, construction began on the West Green Tree Road Bridge over Lincoln Creek and is scheduled for completion in spring of 2001.

The remote control bridge operating system was upgraded to allow operation of the Plankinton Avenue Bascule Bridge from the Broadway Bascule Bridge and the Clybourn Street Vertical Lift Bridge from the Wisconsin Avenue Vertical Lift Bridge.

Railings on North Hubbard Street retaining walls were installed. Plans and specifications were prepared for retaining walls for the Forestry/Sanitation Field Headquarters at 5230 West State Street. Analysis and Design of the hollow walk support for a light pole and traffic signal standard at South 11th Street and West Mitchell Street was completed. Plans and specifications were prepared for the Clybourn Street Vertical Lift Bridge fiberglass sidewalk plate replacement. Plans and specifications were prepared for structural modifications to the City Hall Fire Escape and construction was started. Plans and specifications were also prepared for the renovation of the Milwaukee-Michigan Parking Structure. This renovation includes re-cladding the building and structural repairs.

Engineering analysis was performed and conceptual plans were developed for the proposed pedestrian bridge and bike path supported from underneath the Holton Street Viaduct. Technical assistance was provided in preparing the bid package in the City's efforts to investigate the sale of the City owned parking structures.

Bridge inspections were performed during 2000 in accordance with the new Federal and State guidelines. The new guidelines included quantifying all major structural maintenance items on each bridge. A total of 161 bridge inspection reports were completed. About 60 percent of the fracture critical bridges were inspected. Bridge rating calculations were also performed to determine the operating and inventory ratings of various bridges.

Following the December failure of the Hoan Bridge, the City took inventory of all its bridges in order to identify those bridges with some similar structural design or construction features. It was determined that no city bridges had features identical to the Hoan Bridge. Of those with some similarity, no structural problems were found in the steel girders during the most recent biennial inspection or any other previous inspection.

Structural analysis was performed for various repair and construction projects including street light poles, hollow walks and bridges for overload vehicles.

Structural inspections, reports and reviews were made for various structures including: a number of sewer structures, the Lincoln Creek flood control plans and the effects on City bridges

This Unit provided construction administration and inspection for the Department of City Development in connection with the Milwaukee RiverWalk initiative. The RiverWalk system is being built to provide accessibility for pedestrians and development along the Milwaukee River. Specifically, the Section's responsibilities were to review and recommend for approval all contracts, plans and specifications; construction budgets, change orders and payments, shop drawings and construction field inspections for projects not in the public way. The following projects had activity during 2000: Brady Street/Northern Lights riverwalk at 1661 North Water Street; dockwall work for the River Homes residential project in the Beerline "B" Redevelopment project area; preliminary plans for the Harley-Davidson/Warner Cable riverwalk and site development; and Empire Alley upgrades on the West Bank of the River between West Wisconsin Avenue and West Wells Street. Work also continued on the Highland Avenue Vertical Lift Pedestrian Bridge with construction nearly completed. Design work progressed on the design of the Historic Third Ward River Walk and construction was started on the dockwall upgrades.

Planning and Development Area

This unit provided technical assistance to the Southeastern Wisconsin Regional Planning Commission with regard to the Transportation Improvement Program, the Kenosha-Racine-Milwaukee Corridor Transit Alternatives Analysis (a.k.a. WISERIDE), and the Park East Reconfiguration Environmental Assessment traffic analysis as it related to decommissioning of the Park East Freeway.

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), and on various freeway bridge rehabilitation projects.

In conjunction with reconstruction/resurfacing activity on the Milwaukee County Freeway System, traffic mitigation plans for local streets were developed and implemented to minimize the impacts of traffic diverted from the freeway system during construction. Local street traffic mitigation plans include changes in traffic signal timing and other operational adjustments, as well as designs and implementations of signing and pavement markings to change traffic flow patterns and regulate local street traffic. Additionally, emergency measures were taken in conjunction with the unscheduled closure and subsequent repair of the Hoan Bridge.

Assistance was also provided to the WISDOT with regard to the planned resurfacing of the following sections of the Milwaukee Freeway system: US 45 Freeway from Greenfield Avenue to County Line Road; I-43/94 from the Mitchell Interchange to Silver Spring; and I-894 from the Belton Overpass to the Mitchell Interchange. Assistance was further provided on the Intermodal Passenger Facility location study; the alternatives study for the Marquette Interchange; 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); an Integrated Corridor Operations Program (ICOP); and the US 45/STH 100 Northwest Side Transportation Study as it relates to future development and upgrading of the Good Hope Interchange.

The unit coordinated projects being completed under the Congestion Mitigation and Air Quality (CMAQ) Program, the Statewide Multi-Modal Improvement Program (SMIP), and the Transportation Enhancement (TE) Program, all of which were continued under the Transportation Equity Act for the 21st Century (TEA-21), as well as the Transportation Demand Management (TDM) Program, and the Transportation Economic Assistance (TEA) Program funded by the Wisconsin Department of Transportation. These programs generally provide up to 80% Federal and/or State funding for eligible projects.

Participation on behalf of the City of Milwaukee continued on a major initiative with the Wisconsin Departments of Transportation and Commerce and the Village of Menomonee Falls to affect necessary street and highway improvement that will encourage economic growth and jobs creation in the area of West Good Hope Road, North 124th Street, and their interchange with STH 41-45. This \$13,550,000 "Jobs Corridor" initiative is being carried out utilizing \$7.2 million in Federal/State Highway funds, and \$6.35 million in local funds, including \$2.178 million from each the City of Milwaukee and the Village of Menomonee Falls, a \$1,000,000 State of Wisconsin TEA grant, and a \$1,000,000 State of Wisconsin Department of Commerce Public Facilities Economic Development grant. Construction activities began in 2000, with all construction anticipated to be completed in 2002.

Data collection and preparation of computer model inputs continued for several computerized signal optimization projects, which utilize CMAQ grants. Included were studies of the Milwaukee central business district, the near south side, and the West Appleton Avenue/Lisbon Avenue signal system.

Grant funds have been provided to develop a Bicycle Publicity Plan for the City. The City of Milwaukee Bicycle Route Map was printed and distribution continued through 2000. A Bike Rack Assistance program was created through a CMAQ grant, to provide local business the ability to acquire free bike racks if they agree to install and maintain them. 175 bike racks were distributed in 2000. Work continued to fabricate and install bike route signs along City streets that were selected as bicycle routes in a recent TDM grant. This unit also provides staff assistance to the City's Bicycle Task Force.

During 2000 this unit was very active in the planning and implementation of several off-road bicycle trail segments. CMAQ and Wisconsin Coastal Management Program grants were secured for the Hank Aaron State Trail from Miller Park to Emmer Lane along the Menomonee River and from Miller Park to Doyne Park along North 44th Street. Work on these projects is anticipated to begin in 2001. Furthermore, CMAQ funding was secured for the Kinnickinnic River Bike Trail on abandoned Union Pacific Railroad Company right-of-way between South 6th Street at West Rosedale Avenue and East Washington Avenue and for the Beerline "B" bicycle trail between East Pleasant Street and East Humboldt Avenue. A Transportation Enhancement grant was obtained to extend the Beerline "B" trail to East North Avenue. Engineering on these projects is expected to begin in 2001.

Furthermore, this unit made application and secured funding under the Transportation Enhancements Program for shoreline protection improvements and construction of a bicycle/pedestrian trail along Lake Michigan adjacent to the Milwaukee Art Museum. Work on this project is anticipated to commence in 2001.

Traffic count data was collected under a grant provided by the Wisconsin Department of Natural Resources through the WISDOT to meet travel monitoring requirements for the Southeastern Wisconsin Ozone Non-attainment area.

CMAQ grants totaling nearly \$5.0 million have been received to implement intersection treatments, plantings, art work, and other street amenities along major downtown pedestrian corridors including Wisconsin Avenue, Water Street and West Kilbourn Avenue. It is anticipated that a toolbox of design concepts will be finalized in 2001.

Construction was essentially completed on a 3-acre urban wetland demonstration project in the westerly reaches of the Menomonee River Valley. This project was funded under a \$500,000 grant from the Wisconsin Department of Natural Resources.

The unit continues to expand its background and role in mass-transit related issues, especially with respect to the potential benefits of introducing rail transit into the area. The unit also monitors transit initiatives by other agencies, including expanded Amtrak, commuter rail service, and high-speed rail technologies. As previously noted, this unit assisted in the Kenosha-Racine-Milwaukee Corridor Alternatives Analysis (WISERIDE) with SEWRPC and a high speed rail Chicago/Milwaukee Rail Corridor study with the WISDOT and IDOT, the results of which will be wrapped into a broader Chicago-Minneapolis Initiative. A CMAQ grant was utilized to construct a transit ramp from the Summerfest Grounds to IH 794. This ramp will improve transit efficiency during the festival season and other special events. The unit is also representing the City's interests and participating with Milwaukee County, the Metropolitan Milwaukee Association of Commerce and the Wisconsin Center District in a study of alternative downtown transit improvements linking multiple tourist and business venues.

During 2000 this unit 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 unit coordinated Infrastructure Services Division and Department of Public Works activities for several major development projects, including Miller Park, the Milwaukee Art Museum Expansion, the Creasant, River Homes, Trostel Square, Humboldt Ridge, Brewers Hill Commons, Warren Manor, Marquette University, Ivory Tusk Building, Highbridge, and the Humboldt Yards Redevelopment. Other development projects included the Third District Police Station, Heritage Meadows, Heritage Woods, Cherokee Point, Reed Street Yard Redevelopment, Lakeshore State Bank, the Honey Creek Corporate Center and Riverwoods subdivision. This unit also 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 unit played a major role in the redevelopment of two City of Milwaukee Housing Authority projects: Parklawn and Lapham Park.

The unit worked closely with several Business Improvement Districts (BID's), Tax Incremental Financing Districts (TID's), and General Planned Developments (GPD's). Major developments include the East North Avenue (East Side BID) streetscape improvements; the Brady Street (BID 11) plaza along the Holton Street Bridge; the Tannery (TID 26) streetscape improvements; the Beerline "B" (TID 22) Vine Street Stairway and the paving of North Commerce Street, North Hubbard Street, North Booth Street, North Pierce Street, North Fratney Street, and North Weil Street; and the Park Place GPD work, including the design of North Liberty Drive.

During 2000, this unit coordinated or assisted in the design and implementation of several minor streetscape and traffic calming projects. These projects included East North Avenue, the Northern Lights building, Marquette University, Avenues West BID, and the Valley Park neighborhood.

This unit continues to assist the Department of City Development with the expansion of the Riverwalk system, including planning for roadway and streetscape improvements to complement the adjacent riverwalk. Work continued in 2000 on planning of a southerly extension of the Riverwalk system into and through the Historic 3rd Ward as well as Riverwalk extension north of West Pleasant Street along the Beer Line "B" redevelopment area to the former North Avenue Dam. It is anticipated that construction will commence in 2001 on 8 Riverwalk segments along the east side of the Milwaukee River extending from Clybourn Street to Broadway as well as a number of segments along the Beerline "B".

This unit 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. The unit also reviews applications for special privileges and air/subterranean space leases, and writes resolutions for Common Council action.

During 2000 this unit 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, and private drainage complaints.

Over 1000 weekday or weekly traffic counts were taken on arterial streets primarily in the downtown area and west side of the City, at key count stations, and at other locations on an as-needed basis. Continuous count stations (key counts) are operated by the City at 24 permanent installations at selected arterial locations throughout the City. Seven-day counts are extracted on a monthly basis to monitor travel patterns in the City. Various manual traffic counts and speed checks are performed by unit staff in response to new development proposals, site access management, traffic complaints, and requests for additional traffic control.

Technical assistance, including testimony at public hearings and meetings, was provided to other City agencies and organizations, including the Bicycle Task Force, the Railroad Commission, the City Plan Commission, and the Board of Zoning Appeals. This unit participates with the Department of City Development and the Board of Zoning Appeals in the Zoning Administration Group (ZAG) to provide consistency of review and timely processing of the special use/variance cases referred to us. This unit also participates in two subcommittees of the Local Roads and Streets Council – the Education and Publicity subcommittee and the Technical Users Advisory Group. This unit also represents the City's interests in promoting and deploying intelligent transportation technology statewide as a member of the Wisconsin ITS Alliance.

—In 2000, this unit continued the implementation of our Pavement Management Administration (PMA) system, which provides a computerized method for evaluating and comparing the characteristics of more than 19,000 segments of the City's paved roadways. This year the PMA utilized information obtained through a Visual Pavement Condition Evaluation Survey. This information allowed us to better evaluate the properties of all City streets, which is necessary to accurately present the condition of our streets and predict the rate at which our roadways will deteriorate. By mid 2001, the PMA will be functioning to the point where it can assist us in determining the most cost-effective pavement rehabilitation strategies.

During 2001 the Planning and Development Unit will work closely with other City, State, and private entities in coordinating efforts in the initiation of a \$4 million Riverwalk system in the Historic 3rd Ward, reconfiguration and redevelopment of the Park East Freeway Corridor, continued evaluation of alternatives and the Environmental Assessment for the rehabilitation of the Marquette Interchange, implementation of \$5,000,000.00 in streetscape improvements on Wisconsin Avenue, North Water Street and West Kilbourn Avenue, continued evaluation of alternatives in the Downtown Connector Study, the Milwaukee Art Museum expansion, the Harley Davidson Museum, the Marshall Fields Rehabilitation, and the Metro Center. New initiatives will commence on parking, bicycle facilities, pedestrian mobility, and market strategies geared at continued enhancement of the central and surrounding business districts. This unit will also work closely with the WISDOT on continued study involving Freeway Traffic Management and a pilot program to integrate signal systems of complementary arterial and freeway corridors.

Traffic and Lighting Area

Six new traffic signals were installed at the following locations:

- West Edgerton Avenue and South 13th Street
- West Allyn Street and North 91st Street
- West Hampton Avenue and North 22nd Street
- West Oklahoma Avenue and South 41st Street
- West Lake Park Drive and North 107th Street
- West Park Place and North 107th Street

In addition, three existing traffic signals were reconstructed:

- West Wisconsin Avenue and North 97th Street (relocated intersection and new freeway ramp)
- North Lincoln Memorial Drive/I-794 for Summerfest Buses
- North Commerce Street and North Humboldt Avenue

Two new technical initiatives were installed:

- Six hundred Light Emitting Diode (LED) traffic signal indications were installed at 38 intersections. The new indications consisted of a variety of manufacturers red and pedestrian indications. The LED indications use approximately 90 percent less energy and have an expected life of between 5 and 10 times that of regular incandescent signal indications. There was a rebate incentive offered by a contractor to Wisconsin Electric Power Company that the unit obtained by installing these indications.
- A new type of visual detection system from Iteris was installed at E. Ogden Avenue and N. Prospect Avenue. This is another type of vehicle detector, which eliminates the need for detector loops being placed in the pavement, and is easily adapted to the City's existing traffic signal controllers.

Two City neighborhoods received Neighborhood Identification Signs. Forty two signs were installed in the following neighborhoods:

- Historic Layton Boulevard
- Enderis Park

Bicycle Lanes were installed at the following locations:

- East Capitol Drive, West Humboldt Boulevard to Estabrook Parkway
- East North Avenue, West Humboldt Boulevard/Avenue to North Oakland Avenue

Angle Parking was installed in the following locations:

- East Kilbourn Avenue, North Broadway to North Prospect Avenue
- North Jackson Street, East Kilbourn Avenue to East Wells Street.

The Traffic and Lighting Design unit sought and received Federal funding through the Wisconsin Department of Transportation, Bureau of Transportation Safety, to conduct three 1-day training workshops specifically discussing the state of the practice of traffic calming in the United States to enhance the safety of pedestrians and bicyclists. Individuals from village, city, county, state, federal, private consultant, and university agencies attended the workshops. There were 97 in attendance in Milwaukee, 50 in Eau Claire, WI and 47 in De Pere, WI. The City of Milwaukee sent seven staff engineers or planners. The training grant provided \$30,000 for these workshops.

The Milwaukee workshop featured Ellis McCoy, Program Manager, City of Portland, OR, who presented sessions on the City's Traffic Calming program including School related projects; John Edwards, Parking Consulting Engineer, Atlanta, GA, who spoke on the importance of downtown's, the need for retail businesses, and the need to make an accurate survey of parking availability; Robert Smith, Adjunct Professor of Civil and Environmental Engineering, UW-Madison and practicing Attorney, Ellis McCoy, and Walter Kulash, who conducted a panel discussion on liability considerations; Brian Ray, Functional Design Group Manager, Kittelson & Associates, Portland, OR, who covered modern roundabouts as reflected in FHWA's newly released, "Roundabouts: An Informational Guide"; Arthur Ross, Pedestrian and Bicycle Coordinator, Madison DOT, who spoke on pedestrian programs and how traffic calming can help; Walter Kulash, Traffic Engineer, Glatting, Jackson, Inc., Orlando, FL, who challenged the highway planning/building process and thinking; Howard Young, Retired Public Works Director, City of Wauwatosa, WI, who spoke on the North Avenue traffic calming project; John Capelle, Planner, City of West Bend, WI, who reviewed the City's work in calming traffic and enhancing pedestrian accommodations in their downtown area; and Tom Huber, Bicycle and Pedestrian Coordinator, WisDOT, who covered bicycle related strategies and available guidelines.

The Eau Claire and De Pere workshops included the presentations by Ellis McCoy, John Edwards, Howard Young, Brian Ray, and Tom Huber. James Ito, Traffic and Lighting Design Engineer, City of Milwaukee, WI, covered the charrette process and Kenneth Voigt, Director of Transportation Engineering Services, HNTB Corporation, Milwaukee, WI, covered their firm's public involvement role in the East Washington Avenue multi-modal enhancement project in Madison, WI.

There were 99 paving projects that required the preparation of plans for the alterations to street lighting and traffic control facilities. Lighting work included plans for the installation of overhead circuitry prior to construction, protecting and adjusting facilities during the paving, and where required, the installation of new underground cable and upgrading of lighting.

This year the unit developed plans and specifications for the installation of harp and lantern lighting by contract. The installation of lighting is being completed under a State Highway Enhancement Grant using Federal and City funds. The projects that are scheduled for construction in the spring of 2001 are South Kinnickinnic Avenue from East Morgan Avenue to East Becher Street, North 35th Street from West Park Hill Avenue to West Highland Avenue, West Wisconsin Avenue from North 32nd Street to North 38th Street, and West Blue Mound Road from North 45th Street to North Hawley Road.

Technical assistance was provided to the Field Operations, Electrical Services unit to convert incandescent or mercury vapor light sources to the more efficient high-pressure sodium and to replace old primary series cable with secondary multiple cable.

Central Drafting and Records Area

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, 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 for openings or closings of public rights-of-way, the preparation and/or review of certified survey maps and subdivision plats, the assignment of addresses, the preparation of street name 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 Infrastructure Services Division.

In 2001, 27 plans and petitions for the vacation of public ways were processed and, two subdivision plats and one certified survey map were compiled and prepared. The Unit also processed four subdivision plats and 56 certified survey maps, produced 342 paving plans for 101 separate paving projects, six structures projects and seven state paving projects, and acted upon 46,122 requests from Diggers Hotline to locate the city's underground electrical and water works facilities.

The Milwaukee County Automated Mapping and Land Information System (MCAMLIS) is a new project that will bring together property and utility information for all of Milwaukee County in a digital format. The Central Drafting and Records Unit compiled 35 digital map files of U.S. Public Land Survey one-quarter Sections in 2000 as part of a MCAMLIS project agreement with the Southeastern Wisconsin Regional Planning Commission (SEWRPC). Central Drafting also assisted the City of Milwaukee Geographic Information Systems (GIS) Section with its MCAMLIS work by compiling 85 one quarter section files containing subdivision and certified survey map outlines. Milwaukee County will be responsible for the future maintenance of this material. When the MCAMLIS project agreements are completed by Central Drafting and GIS the ability to efficiently access utility and property information in Milwaukee and the surrounding suburbs will be a powerful tool for both the public and private sectors.

Science Fair Judging

One of the highlights of 2000 was the participation in the Milwaukee Public Schools Science Programs. Engineers from the Transportation Section served as judges at many Science Fairs throughout the Milwaukee area. Encouraging the next generation of engineers is an important goal for this section.

CONSTRUCTION SECTION

The Construction Section administers and provides inspection for contracts involving the construction of streets, sidewalks, alleys, storm and sanitary sewer, water main, and house services. Two district engineering units design the street and alley pavements and have field crews that measure final contract quantities for payment purposes. A Technical Services Unit tests all sewer and water main pipe to be installed and monitors all other materials testing performed by a private contractor.

In the year 2000 work was completed on 48 paving contracts, involving 15.37 miles of streets and 3.63 miles of alleys. Payments to contractors totaled \$9.96 million. Three walk contracts were also completed at a cost of \$1.02 million.

Sewer work costing \$18.68 million was carried out on 31 contracts and covered approximately 9.74 miles.

Thirty contracts resulted in the installation of 9.08 miles of water main at a cost of \$5.37 million. In addition, inspection was provided for the installation of 1.52 miles of suburban water main.

State Paving/Bridge Projects

The Construction Section also performs administrative duties on WISDOT projects within the City of Milwaukee. These functions include construction management, contractor payments, and wage/labor verification and monitoring. Six WISDOT paving projects were constructed this year at a cost of \$8.59 million, covering 6.74 miles and included the following: West Morgan Ave. from South 84th Street to W. Beloit Rd.; East Russell Ave from S. Kinnickinnic Ave to S. Lincoln Memorial Dr.; West Atkinson from North 27th St. to North Teutonia Ave; North 60th St. from West Florist Ave. to West Villard Ave; West Fond du Lac Ave. from North 36th St. to N. 52nd St. and North 35th St. from West North Avenue to W. Townsend.

Three bridge projects were completed at a cost of \$6.71 million. Phase II of the South 35th Street Viaduct over the Menomonee River Valley Rehabilitation Project was completed at a cost of \$1.84 million. The South 13th St. bridge over the Union Pacific Railroad tracks south of West Cleveland Ave. was built at the cost of \$1.28 million. In addition, construction was completed on the \$9.34 million North Ember Lane bridge over the Menomonee River with construction costs of \$3.59 million in 2000.

W. Becher St.

A 108" diameter segmented combined sewer pipe is being tunneled in place in W. Becher St. from S. 5th St. to S. Muskego Ave. at a cost of 13.8 million dollars. The segmented pipe is a construction technique where each length of pipe consists of six segments, which are assembled on grade in the tunnel allowing a truer line and grade. A more complete and quicker grouting of the annular space between the pipe and the ground is achieved using this technique. This project was started in March of 2000 and is projected for completion in October of 2001.

Lincoln Creek Flood Abatement Program

MMSD is replacing multiple culverts on Lincoln Creek, removing the existing concrete banks and restoring the creek banks with riprap and adding detention ponds to control flooding. This project starts on the city's northwest side and terminates at Lincoln Park. Work started in 1999 and is scheduled for completion in 2002. The City is assisting MMSD by designing and constructing water and sewer main alterations where needed and inspecting bridge work and roadway restoration.

E. North Avenue Streetscape

The City and the East Side Business Improvement District worked together to design and complete \$525,000.00 in street improvement along E. North Ave. from the bridge west of N. Oakland Ave. to N. Prospect Ave. Infrastructure improvements included new curb and gutter with an asphalt overlay. Pedestrian safety and traffic calming was the priority of the streetscape project. This was accomplished by treating the intersections with curb push-outs, colored and stamped asphalt and specialty crosswalks, along with designating a bicycle lane through the length of the project. Planter boxes, trash receptacles, tree wells, harp lights and a kiosk were installed to enhance the area.

Residential Developments

Approximately 2.5 miles of new roads, along with water and sewer main installation were placed to access multiple residential areas throughout the city. These areas include: Cherokee Point on the city's southwest area; Lapham Park and Parklawn public housing developments in the central city; Fairway Place, Heritage Woods and Heritage Heights on the city's northwest area.

East Vine Street Stairs

A decorative concrete stairwell, with architectural concrete sidewalls, was placed at the east end of the N. Hubbard St. retaining wall. The stairwell has inspirational quotes scribed into each riser and connects last years N. Hubbard St. residential development to this years N. Commerce St. development.

W. Fond du Lac Avenue "White Topping"

In conjunction with the State of Wisconsin Department of Transportation and the Wisconsin Concrete Pavement Association, the City designed and constructed a four-inch "white topping" pavement on W. Fond du Lac Ave. from W. Capital Drive to N. 52nd St.. The four-inch thick fiber reinforced concrete overlay was placed on the existing asphalt pavement or in some cases a concrete base. This method of pavement restoration was used due to the distortion of the existing asphalt surface caused by heavy trucking and busing. A minimum of four inches of asphalt was milled off the existing surface and the "white topping" was placed without any utility manhole adjustments. Reinforced joints were placed in the new pavement at locations corresponding to the existing concrete base joints. In addition, the joint spacing has a maximum length of 5.5'. This fast track, high strength paving took seven days to mill, place and cure the concrete, causing a minimum of traffic inconvenience.

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:

- Inspection, maintenance and repair of the City's sewer system.
- Maintenance of the City's streets, alleys and sidewalk.
- Construction and maintenance of all public way lighting, traffic control signals, signing and pavement markings.
- Construction and maintenance of the underground communication conduit system.
- Operation of the Municipal Asphalt Plant and the Traffic Sign Shop.
- Inspection of permitted utility construction in the public way.
- Operation and maintenance of the City's moveable and fixed bridges and viaducts.

In 2000, responsibilities of the Field Operations Section were accomplished with a total annual budget of \$25.1 million, including \$7.4 from the Sewer Maintenance Fund.

Streets and Bridges Unit

Street Maintenance Area

A small scarifier/grinder was purchased in 2000. This Piece of equipment allows Street Maintenance to complete minor repairs to existing sidewalks. Existing sidewalks having offsets less than 1½" can be milled to match existing adjacent sidewalk. In most cases, milling an offset provides a better fix than placing asphalt shims.

This completed the fourth season of using the "Slurry Seal" method of sealing City streets. Again, this program was a success, receiving favorable public and aldermanic reaction while receiving very few complaints. Over 385,000 square yards of "Slurry Seal" were placed on City streets this year:

Contracts were awarded for Asphalt Resurfacing and Crackfilling operations. Asphalt resurfacing occurred on St. Paul Avenue, Lincoln Avenue, Michigan Street, Villard Avenue, Morgan Avenue, Tory Hill Court and 9th Street where 4,300 tons of asphalt were placed. Over 332,704 square yards of pavement throughout the city were crackfilled with tar under the Crackfilling Contract.

Field crews placed an additional 8,670 tons of asphalt on city streets. Repair projects included asphalt shims on roadways, asphalt shims on sidewalks, small asphalt patches and pothole repairs. In addition, field crews crackfilled 1,039,381 square yards of pavement with tar.

Bridge Maintenance Area

This area operates, maintains and repairs twenty movable bridges over the Milwaukee, Menomonee and Kinnickinnic Rivers. There were roughly 12,500 openings. Construction of the Highland Avenue Bridge and record low water levels resulted in a drop in the number of bridge openings for the second straight year. In the case of bridge openings, 57% occurred between 7:00 a.m. and 3:00 p.m., while 34% occurred between 3:00 p.m. and 11:00 p.m. and 9% occurred between 11:00 p.m. and 7:00 a.m.

Construction of the new Emmber Lane Bridge was completed in July. This bridge will be remotely operated from the Broadway Bridge. Four of the twenty movable bridges can be remotely operated from another bridge: Emmber Lane, Plankinton Avenue, Clybourn Street and South 1st Street bridges. Additional remote operations are planned for Highland Avenue, St. Paul Avenue, South 6th Street and North 6th Street bridges.

Construction began on the new 6th Street Viaduct in December. The viaduct will be closed to traffic in March or April of 2001. Bridge Maintenance Area assisted with the design of the new Viaduct. Most of our input concerned the design of the two bascule bridges that are part of the new viaduct. Electricians and maintenance crews provided information for electrical design, mechanical components, bridgehouse design, remote operation and long-term maintenance considerations. Early in the year the old viaduct withstood a collision by a cement barge.

Repairs were completed on the 35th Street Viaduct. These repairs included painting of the structure, structural repairs and a new asphalt surface. Construction was completed on the new Walnut Street Bridge over the Railroad.

Bridge Maintenance Crews installed new wire rope cables on the St. Paul Avenue Bridge. Bridge Maintenance Crews also performed concrete work on a new plaza being constructed at the southeast corner of the Holton Street Viaduct. Several painting operations were completed on bridges along the Milwaukee River.

There were 4,000 labor hours spent on the City's assault on graffiti. We received a small sand blaster from the Department of Neighborhood Services. Some new security measures were added which will hopefully curb the amount of graffiti placed on City structures.

Inspections Area

Over 9000 construction permits were handled in 2000. There were a record number of Fiber Optic companies installing cable and conduit throughout the city, with the downtown area receiving the majority of the fiber optic cable. This year, "condition inspections" were performed on streets, rivers and creeks prior to MMSD projects.

In addition to construction permits, Special Event Permits such as block parties, walk/runs and parades were reviewed. Contractors working in the location of these 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 the Special Event. In 2000 there were over 800 Special Event Permits.

Underground Operations Unit

The Underground Operations Unit functions under two different budgets. Activities associated with maintaining the City's sewer systems and appurtenances are financed through the Sewer Maintenance Fund. The Unit also is responsible for installing and maintaining the City's communication, traffic and lighting conduit system. The latter function is financed through the traditional operations and maintenance budget or capital improvement programs.

Storm of July 2, 2000

For the fourth consecutive year, a major rainstorm occurred in Milwaukee. This storm did not cause enough damage to qualify for Federal Emergency Management Agency (FEMA) relief for property owners, however capacity of the sewer system was exceeded at various locations.

By-Pumps and Lift Stations

A full time Electrician was hired to maintain and service the City's 80 pump facilities. In the past, Buildings and Fleets provided this service, but given the number and importance of these installations, it became obvious that this was a full-time job. In addition, with the SCADA (telemetry) system coming on line, direct technical assistance is required. This will greatly improve the operations of these facilities.

Sewer Debris Dewatering Site

Permanent sites for direct disposal of sewer cleaning debris have been secured. Most of this material will be processed by United Water at the Jones Island Treatment Plant. Waste Management will dispose of material from north-side locations at the Orchard Hills landfill site. Because costs will increase and productivity will be reduced, the development of a City facility will continue to be explored.

Lincoln Creek

Milwaukee Metropolitan Sewerage District (MMSD) improvements to Lincoln Creek will have an extremely positive affect on sewer service, or lack of, in the Parklawn area. Both ground water and surface flooding will be reduced. The installation of detention ponds and lowering of the channel flow-line will decrease inflow and infiltration. Improvements will have a natural look, instead of the old paved concrete style.

Underground conduit crews had an extensive project with the paving of West Fond du Lac Avenue from North 35th Street to West Capitol Drive. Section crews installed a duct package under a tight timetable, in heavy traffic and during hot weather conditions. In 2000, the unit installed 2.7 miles of new underground conduit and 30 additional manholes.

Electrical Services Unit

There were 2,192 units converted from incandescent or mercury vapor light sources to the more efficient high-pressure sodium light source this year. These conversions provided more lighting in the area, a reduction in electrical energy consumed and increased lamp life. This in turn will result in savings in electrical energy costs and reduced maintenance costs.

The unit was also involved with the installation of pedestrian friendly harp and/or lantern lighting for the following projects: Leader Cards, Beer Line C, Parklawn Housing, Lapham Park Housing, St. Joseph's Hospital, Wisconsin Correctional Facility, Metplex and East North Avenue BID.

The unit is proceeding with the replacement of old primary series cable with secondary multiple cable. The replacement of old series cable provides the city with circuits that require less maintenance due to age, as well as providing a system that could be more compatible with new light sources, as technology progresses.

The City purchased a boring machine that was used on a number of projects last year, both large and small. One such project was on East North Avenue. It was used to install most of the duct for the project outside of the paving limits and for a smaller area within the paving limits. We estimate this method reduced the work-hours in half and the amount of concrete removal (and restoration) needed by 80% in comparison with traditional methods.

Another of the large projects that went well was the S. Layton Blvd. project. We used the boring machine for the installation of duct along the many adjacent streets. We would install about a block of duct a day. There was no need for machine trenching (and restoration) and for pushing pipe/duct under walks, driveways, and numerous trees. Later, the cable installation went smoothly with a minimal amount of hand digging at the light poles and pipe crossings. This project is not complete.

Another big advantage of the boring machine is that it significantly reduces damage to tree roots over conventional methods of installing duct or cable.

Support Services Unit

A new Fulton boiler was installed at Traser Yard replacing the aged Cleaver – Brooks hot oil boiler. It is used to heat the tanks and transfer lines on the Asphalt Plant. The high efficiency burner should result in a substantial saving on energy costs.

Stores personnel continued in their diligent efforts to reduce inventory values. The 2000-year end total for Field Operations was \$2,992,170 down \$313,631 (or 9.5%) from 1999 values. Through more advanced planning with vendors, other City agencies and Field Operation's crews our goal is to further reduce values on hand by the end of 2001.

GENERAL STATISTICS

Streets, area of (improved and unimproved)

Net change in 2000: minus 9.752 acres*

Total area at end of 2000 11,740.301 acres
or
18.344 square miles

Alleys, area of (improved and unimproved)

Net change in 2000: minus 2.397 acres

Total area at end of 2000 928.939 acres
or
1.451 square miles

Pedestrian ways and malls,
area of (improved and unimproved)

Net change in 2000:

Total area at end of 2000: 29.614 acres
or
0.046 square miles

Freeway rights-of-way, area of (improved)

Net change in 2000: minus 2.178 acres

Total area at end of 2000: ...1,809.032 acres
or
2.827 square miles

Area of City:

At end of 2000..... 95.828 square miles
At end of 1993 95.828 square miles
At end of 1969..... 95.773 square miles
At end of 1945..... 44.188 square miles
At end of 1919..... 25.851 square miles
At incorporation, January 31, 1846 7.408 square miles

*large tracts of unimproved rights of way were vacated to support site development

CONSTRUCTION PLANS AND SPECIAL DRAWINGS

Paving Plans produced	
101 Separate Paving Projects.....	342
The Paving Plans included:	
Background Drawings.....	150
Cross-Sections Transferred.....	79
New Designs Transferred.....	113
Final Official Map one-quarter section plots made.....	90
Election Commission Aldermanic District Ward Maps and	
Single and Double Line Street Maps Revised.....	100
Number of Structural Design Projects for which plans were prepared.....	6
Number of State of Wisconsin paving projects for which plans were prepared.....	7
One-quarter section map final plots prepared.....	131
Color maps prepared for Summerfest and other annual special events.....	35
One-quarter section maps prepared for MCAMLIS/GIS project.....	85
One-quarter section maps redrawn for the MCAMLIS project.....	35

ONE-QUARTER SECTION MAPS, STREET MAPS, SUBDIVISION PLATS,
AND CERTIFIED SURVEY MAPS, THE OFFICIAL MAP,
ALDERMANIC DISTRICT MAPS, OTHER PLANS

One-quarter section maps on file, in the graphics system	
and on file on microfilm aperture cards maintained	
on a continuous basis.....	524
One-quarter section maps reproduced to a scale of	
1" = 200' and bound in atlases.....	524
One-quarter section maps revised	112
Number of revisions to the one-quarter section maps.....	147
Number of one-quarter section maps re-microfilmed.....	112
Street maps of the City updated (only area within City of Milwaukee	
revised from 2000 map-change data):	
A single-line map, size: 36"x60", scale: 1" = 1,600'	
A double-line map, size: 42"x90", scale: 1" = 1,600'	
Certified Survey Maps processed	56
Subdivision Plats processed	4
Certified Survey Maps prepared.....	1
Plats of Survey prepared.....	2
The Official Map one-quarter section maps;	
scale: 1" = 200', on file (90 of these maps were revised	
with a total of 231 revisions).....	445

**LAND ACQUISITION, STREET DEDICATION, PUBLIC WAYS
VACATION AND MISCELLANEOUS ACTIVITIES**

Dedications of City Property for public right-of-way.....	2
Acquisition of rights-of-way by accepting deed reservations or by quitclaim deed.....	3
Reject Reservations.....	1
City property to be sold.....	0
Vacation of Public Ways.....	27
Prepare easement descriptions.....	5
Various title reports for vacation projects and/or sewer and water easements.....	49
Street name change ordinances prepared.....	0
Latitude and longitude locations compiled for the public.....	4
Oversize and overweight load routes checked for the Department of Public Works, Contract and Permits Office and private trucking companies.....	203
House moving permit applications processed for The Department of Public Works	7
Distances between drug arrest scenes and schools or parks given to the District Attorney's office, The Milwaukee Police Department, The Milwaukee County Sheriff's Department and The Wisconsin Department of Justice.....	661
State subpoenas received for criminal felony cases	116
Drawings prepared for use as evidence in criminal trials.....	107
Appearances in court as a witness under State subpoena for criminal trials.....	5

DIGGERS HOT LINE

Hot line requests.....	35,813
Utility information requests.....	621
Out-of-City requests.....	<u>9,688</u>
Total Hot Line Requests.....	46,122

TRAFFIC AND STREET LIGHTING ACTIVITIES

Street Lighting Circuit Maps on file.....	715
Street Lighting one-quarter of one-quarter section maps on file.....	1,228
Revisions to Street Lighting circuit and one-quarter section maps.....	907
Special Lighting Maps on file.....	223
Revisions to and creating special lighting maps.....	14
Problem signal records processed.....	90
Traffic count studies-manual.....	22
Revisions to pavement marking records.....	0
Revisions to Street Lighting Data Base.....	0

ADDRESS ASSIGNMENTS AND SALES

Address assignments.....	13
Maps, Plats and Plan Sales.....	\$17,388.82

SUPPLY SERVICES

Dollar amount of supplies requisitioned by Central Drafting and Records	\$16,529.01
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REPRODUCTION SERVICES

Approximate quantity of micro-film Aperture card
copy machine paper used 29,417 square
feet

Approximate quantity of electrostatic paper used:
Bond paper..... 133,233 square
feet
Vellum..... 1,800 square
feet

Approximate quantity of electrostatic printing done under contract
by a private printer..... 205,348 square
feet

Total Reproduction Services..... 369,798 square
feet