

Engineering Department

Gary E. West, Director

The Engineering Department is responsible for planning, designing, bidding, funding, and managing construction for all Public Works Projects within the City of Mishawaka and review of all private development and utility company projects for conformance with Engineering Standards, such as storm water management, sanitary construction and connection, and right of way access and improvements. Our office also manages the traffic signal system, traffic cameras, right of way records, and as-built records for locating right of way infrastructure, such as the City fiber-optic system and the storm and sanitary sewer systems.

Engineering Staff

The Engineering Department staff includes the Director and Assistant Director of Engineering; a Construction Manager, a Project Manager, a Traffic Manager, an MS4 Coordinator; a Project Coordinator, an Office Manager, and a Locate/Permit Coordinator.

The Director of Engineering is responsible for the day-to-day management of the Engineering Department. The Director also serves at the City's representative on the following boards and committees:

- President of Board of Public Works and Safety/Utility Board
- Technical Advisor & Member, City of Mishawaka Plan Commission
- Technical Advisor & Member, City of Mishawaka Traffic Commission
- Member of the City's Solid Waste Committee
- Member of the Transportation Technical Advisory Committee, Michiana Area Council of Governments
- Mayor Wood designated the Director of Engineering as Deputy Mayor

The Assistant Director of Engineering's responsibilities include all site plan reviews, including storm water management, site access, sanitary sewer connections, and construction plan reviews. These plan reviews include new residential and industrial subdivisions documenting compliance with storm water regulations, subdivision infrastructure requirements, sanitary sewer engineering standards, and to ensure that adequate sanitary sewer capacity is available to serve the proposed development. Delegation of responsibilities allows for a more timely response to developer, engineer, and contractor inquiries, while enabling the Director of Engineering to focus on project planning, right of way, and funding future Public Works Projects. The Assistant Director also:

- Reviews storm water management calculations and designs submitted by developers
- Reviews construction plans and specifications for development of improvements of public streets, sewers, and drainage within proposed subdivisions
- Administers the sanitary sewer use ordinance for connection of new customers
- Coordinates with Wastewater Treatment staff, consultant Lawson-Fisher Associates of South Bend, and Bethel College staff in the development and implementation of the MS4 Program
- Participates in the Michiana Stormwater Partnership, which is the regional MS4 Education Committee, which includes members from St. Joseph County, City of South Bend, Bethel College, Ivy Tech, and Soil and Water Conservation District

- Works with consultants to complete design plans and construction cost estimates for various public infrastructure projects

The Construction Manager oversees City construction projects within the Tax Incremental Financing (TIF) District to ensure compliance with construction documents and addresses construction concerns reported by the public.

The Project Manager is responsible to oversee smaller Public Works projects, the curb and sidewalk program, the summer street paving project, assigns all City addresses in conjunction with 911 emergency system, and troubleshoots citizen complaints. The Project Manager also shares responsibility with the Project Coordinator for the Department's purchase orders and processing of claims for consulting services and construction projects. The Project Manager also manages the allocation of funding from multiple funding sources to ensure adequate monies are available to complete smaller local construction projects.

The Traffic Manager oversees the operation of the City's traffic signal management system and coordinates repairs by the City's maintenance contractor. The Traffic Manager is also responsible for signal timings, traffic studies, and traffic work orders for sign installation as well as for the management of emergency vehicle pre-emption systems and eighteen City traffic cameras.

The MS4 Coordinator is responsible for compliance with the IDEM/EPA Rule 5 and Rule 13 requirements and is the City's coordinator for the City MS4 Program. The MS4 Coordinator presents MS4 education programs and processes approval of erosion control plans, and monitors their compliance during and following construction.

The Project Coordinator is responsible for coordinating and maintaining project files, processing payment applications, sanitary sewer construction and connection applications, utility excavation and sewer permits, and other duties as required.

The Office Manager is responsible for managing phone and front counter inquiries from the public, maintaining sewer insurance records, updating the Locate database, assisting with excavation permits and sewer permits, and other duties as assigned. The Office Manager also serves as the Clerk for the Traffic Commission.

The Locate/Permit Coordinator is responsible for reviewing all locate emails, updating the locate database, and gathering historic sewer as-built information to distribute to the Sewer staff to accurately locate the sewers in the field. The Locate/Permit Coordinator also issues excavation permits, maintains City as-built records, and assists with phone and front counter inquiries from the public. The Sewer Maintenance Department continues to perform the field locating duties for storm and sanitary sewers prior to any excavation in the public right of way. As the number of locate tickets continues to increase, this work could impact the amount of maintenance work which can be performed by the Sewer Department, and therefore, is monitored for potential reconfiguration of responsibilities.

Engineering Services

In addition to engineering public works projects such as curb, sidewalks, street improvements, traffic signals, school warning devices, and sanitary and storm sewers, the Department also

ensures compliance with job-site safety, maintenance of traffic, erosion control issues, and restoration of City and public utility projects. Follow-up inspections ensure proper site restoration.

The Department also investigates complaints received from residents throughout the City to resolve concerns within their neighborhood including local and area-wide drainage, traffic, and parking issues.

A significant responsibility is the underground public works utility locate service for the City. The facilities located are the sanitary trunk sewers, lateral connections, storm sewers, fiber optic interconnects, traffic signal control systems, and the Metronet shared conduit system. In 2015 over 7,000 locate tickets were processed, resulting in over 1,100 sites which required underground facilities to be located. When these locates are required for an ongoing project, remarking of the facilities is required every 3 weeks.

Engineering ensures contractor and individual compliance with the City of Mishawaka Excavation and Public Works Bonding Ordinances and permitting requirements. The Department issues permits for all excavation within all City public rights of way to ensure the motoring public and the existing infrastructure are protected, as well as ensuring proper restoration of street cuts. The Engineering Department provides engineering assistance for municipal utility projects on request and on other major public works capital improvement projects.

Our office receives copies of traffic accident reports that involve City-owned property damage, such as guardrails, traffic signs, traffic signals, trees, and other City property, for restitution of damaged property through insurance claims or personal payment plans. In 2016, \$6,312.94 was collected for damaged public property at six locations.

Excavation and Sanitary Sewer Connections for 2015

Sanitary Sewer connection fees are designed to assess a fee on the developer's site based on the size of the property and the impact the proposed development will have on the capacity of the sanitary sewer collection system and the Wastewater Treatment Plant. The money collected is used for oversizing and extending sanitary sewers, as well as making improvements at the Wastewater Treatment Plant.

In 2015 Engineering issued 598 Excavation Permits with fees totaling \$10,710.00 for all categories of excavation, such as telephone, cable, gas, electric, fiber optic, boring, street, sewer, water, and irrigation. This is a decrease from 2014 when \$18,680.00 was collected from 612 Excavation Permits. In addition, there were 133 Sanitary Sewer Connection and Inspection Permits obtained in 2015 that totaled \$178,139.23 compared to \$165,234.98 collected from 89 permits in 2014. This increase in Sewer Connection and Inspection Permits is directly related to an increase in private property development.

Sewer Insurance Program

The Engineering Department maintains all sewer records and provides administrative assistance to the Sewer Lateral Insurance Program. This program, which began in 1986, protects single family residents from paying catastrophic sewer lateral repair costs. The homeowner is

responsible for paying all routine sewer lateral cleaning costs, and if the line requires repair, they pay the \$250 deductible fee. The Sewer Insurance Fund pays all repair costs in excess of the \$250 for the repair of a private sewer lateral connection between the foundation wall of the home to the trunk sewer main. The costs of removal and replacement of public streets, curbs, and sidewalks as a result of the repair are included. The monthly fee for residential sewer insurance was increased to \$1.50 per month in 2008.

The fund is also occasionally used to replace existing sewer laterals that are located within sewer main replacement projects to minimize the need to excavate a sewer lateral in a newly reconstructed street. Fees collected in 2015 totaled \$229,206.60 with expenses of \$289,763.14. In 2015, the Sewer Department received 232 complaints of sewer lateral issues where 62 residents signed up for the Sewer Insurance Program. Of the 62 residents, there were 34 residential contractor repairs performed with an ending balance in the fund of \$161,799.23.

A summary of the 2015 Sewer Insurance Program is provided below:

Summary of 2015 Sewer Insurance Program					
Date Initiated	Job Number	Address	Action Taken	Total Cost	Work Completed
01/02/15	1334	611 Somerset	Contractor repaired	\$5,370.00	04/29/15
01/02/15	1335	309 Omer	Contractor repaired	\$4,075.00	05/15/15
01/05/15	1336	3627 Vistula Rd	Contractor repaired	\$6,650.00	01/20/15
01/15/15	1337	627 N. Mason St	Contractor repaired	\$5,095.00	01/27/15
01/22/15	1338	133 W LaSalle Ave	Line opened, no guarantee	\$245.00	01/22/15
01/26/15	1339	2810 Schumaker	Line opened, no guarantee	\$245.00	01/27/15
01/26/15	1340	514 N. Pine St	Line opened, no guarantee	\$245.00	01/26/15
01/28/15	1341	921 W Grove St	Contractor repaired	\$6,490.00	10/09/15
02/06/15	1342	726 Queensboro Ave	Line opened, no guarantee	\$3,679.20	04/09/15
02/09/15	1343	1312 E. Third St	Contractor repaired	\$5,130.00	05/22/15
02/25/15	1344	445 Ballard Ave	Line opened, no guarantee	\$438.00	02/27/15
03/13/15	1345	618 N Wenger Ave	Contractor repaired	\$3,820.00	04/06/15
03/20/15	1346	1442 Tremont Dr	Line opened, no guarantee	\$405.00	03/20/15
03/20/15	1347	1204 Arbor Lane	Line opened, no guarantee	\$965.00	03/25/15
03/20/15	1348	208 Wells St	Contractor repaired	\$6,043.26	08/10/15
03/23/15	1349	1708 Maplehurst Ave	Line opened, no guarantee	\$585.00	03/23/15
03/23/15	1350	1201 Lincolnway E	Contractor repaired	\$7,470.00	08/06/15
03/30/15	1351	1140 E 3 rd St	Line opened, no guarantee	\$4,615.00	05/05/15
03/24/15	1352	424 E LaSalle	Line opened, no guarantee	\$450.00	03/25/15
04/08/15	1353	1114 Charlotte	Contractor repaired	\$6,580.00	05/15/15
04/16/15	1354	622 W 7th St	Contractor repaired	\$4,680.71	04/27/15
04/16/15	1355	356 S Hodson St	Line opened, no guarantee	\$632.25	04/27/15
04/21/15	1356	921 Willow St	Line opened, no guarantee	\$542.25	04/24/15

Summary of 2015 Sewer Insurance Program (cont.)					
Date Initiated	Job Number	Address	Action Taken	Total Cost	Work Completed
05/04/15	1357	2711 Normandy Dr	Line opened, no guarantee	\$945.00	11/30/15
05/06/15	1358	1019 W Battell St	Contractor repaired	\$6,805.00	10/15/15
05/08/15	1359	204 Wells St	Contractor repaired	\$8,965.38	07/28/15
05/26/15	1360	307 E LaSalle	Line opened, no guarantee	\$225.00	05/27/15
05/28/15	1361	220 Downey Ave	Line opened, no guarantee	\$360.00	05/29/15
06/02/15	1362	1539 E 4 th St	Contractor repaired	\$10,580.73	06/26/15
06/03/15	1363	911 W Mishawaka Ave	Contractor repaired	\$7,375.00	06/09/15
06/26/15	1364	128 E Donaldson	Contractor repaired	\$6,076.06	08/17/15
07/01/15	1365	418 Park Ave	Contractor repaired	\$18,346.73	07/28/15
07/06/15	1366	813 W Borley	Pending		
07/06/15	1367	1109 Calhoun	Line opened, no guarantee	\$561.00	07/06/15
07/15/15	1368	705 W Broadway	Contractor repaired	\$12,900.00	09/24/15
07/20/15	1369	303 W LaSalle	Contractor repaired	\$6,080.00	09/10/15
07/21/15	1370	228 N Charles St	Contractor repaired	\$2,850.00	08/21/15
07/24/15	1371	210 Stanley St	Contractor repaired	\$3,963.18	08/17/15
07/27/15	1372	623 W Battell	Line opened, no guarantee	\$731.00	07/30/15
09/09/15	1373	309 E Lawrence	Line opened, no guarantee	\$450.00	09/09/15
09/16/15	1374	1238 E 4 th St	Line opened, no guarantee	\$540.00	09/17/15
09/18/15	1375	111 W 6 th St	Contractor repaired	\$7,925.00	12/04/15
09/21/15	1376	233 Stanley	Contractor repaired	\$5,860.51	10/13/15
09/25/15	1377	321 N Cedar St	Contractor repaired	\$3,695.58	11/20/15
09/29/15	1378	130 Ray St	Contractor repaired	\$7,835.00	12/09/15
09/29/15	1379	635 Gernhart Ave	Line opened, no guarantee	\$360.00	10/01/15
10/01/15	1380	224 W Battell	Contractor repair	\$7,660.00	10/30/15
10/12/15	1381	2526 N Grape Rd	Contractor repair	\$7,300.00	11/24/15
10/28/15	1382	2622 Lenson Dr	Contractor repair	\$2,866.33	11/11/15
10/30/15	1383	208 E Leyte Ave	Line opened, no guarantee	\$765.00	11/12/15
10/30/15	1384	710 N Indiana Ave	Contractor repaired	\$2,450.00	11/30/15
10/30/15	1385	507 Alabama	Contractor repaired	\$6,153.88	11/11/15
11/03/15	1386	116 W 6 th	Line opened, no guarantee	\$315.00	11/03/15
11/04/15	1387	319 W Lawrence	Contractor repaired	\$3,120.00	11/15/15
11/06/15	1388	334 Hodson Ave	Contractor repaired	\$4,713.21	12/07/15
11/10/15	1389	1615 Kings Ct	Contractor repaired	\$3,325.31	12/09/15
11/10/15	1390	1002 W Jefferson Blvd	Line opened, no guarantee	\$393.00	11/10/15
11/16/15	1391	218 Niles	Pending		
11/16/15	1392	541 W 9 th St	Contractor repaired	\$12,079.86	12/15/15
11/20/15	1393	1605 Sarah St	Line opened, no guarantee	\$540.00	11/02/15
11/23/15	1394	516 E Grove St	Line opened, no guarantee	\$675.00	11/21/15
11/24/15	1395	135 W Colfax Ave	Contractor repaired	\$2,745.00	12/18/15

Review of Industrial, Commercial, and Residential Developments in 2015

2015 experienced a steady increase in proposed larger commercial property developments that range from multi-family/multi-story developments to many health care developments. The City experienced a more balanced combination than in recent years between rehabilitation of existing sites and new construction. Examples of some new development projects approved in 2015 were the Veterans Administration (VA) Clinic (1540 Trinity Place), Beacon Health System Headquarters and Wellness Center (3221 Beacon Parkway), Browning/Bayer Health Care Headquarters (2904 Beacon Parkway), Barak River Rock Apartments (614 Elizabeth Street), and GMX Midland Retail (5111 N. Main Street). Fresh Thyme (5520 Grape Road), SkyZone (5604 Grape Road), and Twin City Baptist Church (420 E. Jefferson Boulevard) are all examples of reconstruction of an existing property.

Municipal Separate Storm Sewer System (MS4)

During 2015, the MS4 finalized preparations for an IDEM audit of the City's Good Housekeeping practices at municipal facilities. In preparation for the audit, the MS4 Coordinator, in conjunction with Department Heads, reviewed municipal housekeeping operations to ensure compliance with local and State regulations. In June 2015, Reggie Korthals of IDEM performed the Good Housekeeping audit and an associated inspection of the City's Central Services building. The results of the audit were highly favorable, and there were no corrective actions necessary. Because the City has invested in the new Watson Central Services building, which has been designed with up-to-date storm water pollution controls, IDEM would like to tour the new building in 2016.

The City hired Lawson-Fisher Associates to create an adaptive GIS layer to assist developing, storing, and retrieving MS4 program data. The GIS layer was further enhanced to include the locations of industries that have a potential to impact storm water. The GIS layer will serve as a tool going forward to target areas for enhanced monitoring of illicit discharges, and will also be a useful screening tool if an illicit discharge is detected. In addition, the Sewer Department has been enhancing the GIS to target maintenance of the City's sanitary and storm sewers. These activities are above and beyond the requirements of our MS4 permit, and IDEM was impressed with the breadth of our sewer maintenance program and the City's integration of GIS with maintenance activities.

The City continued its participation in the Michiana Stormwater Partnership (MSP), which is a consortium of all MS4s within St. Joseph County, to ensure consistent messaging and a pooling of resources. MSP works collectively to implement the public education and outreach programs required by each entity's NPDES permit. In March 2015, the MSP partnered with the Greater Elkhart County Stormwater Partnership for a regional contractor education effort entitled "The Green of Erosion Control", which was well attended and positioned the City as a strategic partner in a regional coalition. Additionally, the City continued its partnership with St. Joseph County for SWPPP reviews.

In conjunction with the MSP, the City of Mishawaka completed a long anticipated sign campaign which is designed to identify various water bodies throughout the City. The signs, bearing the MSP logo and the slogan “A Resource Worth Protecting” under the water body name, have been placed at most major road and waterway crossings in the City. As weather and access permits, additional signs will be placed along the Riverwalk in 2016 and in locations that were inaccessible due to construction projects. The signs are intended to alert residents to the abundant surface water bodies in the area, and to serve as a reminder to protect these vulnerable resources to keep them clean and free of pollutants.



This year was the first year of our third NPDES permit term (5-years per term). IDEM has indicated that their MS4 permit program may undergo restructuring that may bring changes to the local MS4 programs, including the potential for revised permit requirements. Program efforts throughout 2016 will focus on resolving IDEM audit concerns and educating City staff in making any necessary adjustments to the City’s MS4 program that result from program changes made at IDEM.

Fats, Oils, and Grease (FOG)

The Common Council approved revisions to the Sewer Use Ordinance to cover fats, oils, and grease (FOG) in the summer of 2010, which established maintenance requirements and provided a regulatory framework for recovering costs incurred by the City to deal with problem facilities. The program is evaluated at the end of each calendar year to develop upgrades or modifications for implementation the following year. In a continued effort to educate restaurant operators about the City’s expectations, the Wastewater, Sewer, and Engineering staff printed an educational pamphlet for distribution with the 2015 January restaurant license renewal. Additionally, permit applications and letters detailing program requirements were updated and provided to the Controller’s office for distribution throughout 2015.

Traffic Engineering Services

Traffic Engineering is responsible for operation and maintenance of all of the 62 City-owned traffic signals, 13 school warning devices, as well as two intersections with four-way red flashers and two with all-way yellow warning flashers. Traffic Engineering received several requests for additional or modified signage through the Mishawaka Police Department, concerned motorists, and citizens. In 2015, these requests were investigated and resulted in the issuance of 38 work orders for the installation of new or modified signage and pavement markings.

Traffic Signal and Flasher Maintenance

In 2015 one hundred four (104) traffic signal maintenance repairs were completed in addition to repairs and maintenance of luminaries and guardrails. All 62 traffic signal cabinets received an annual cleaning to protect the cabinet electronics, which includes replacing air filters and evaluating the LED bulbs and battery back-up system. The Engineering Department also responded to numerous 4-way flash problems involving the resetting of traffic controllers and conflict monitors.

Signage

New sign retro-reflectivity standards were adopted by the Federal Highway Administration (FHWA). These changes were established for the aging population to promote safety while providing sufficient flexibility for agencies to choose a compliance method that best fits their specific conditions. MACOG assisted in providing a reflectometer and has been training personnel on its use to identify signs that do not meet new guidelines.

School Signage

Each year the Engineering Department inventories all traffic control signage near public and private schools. This process involves replacing damaged, faded, or missing signs and repainting school crosswalks. This enables Engineering to maintain safe and effective traffic control signage in compliance with Federal guidelines as outlined in the Indiana Manual on Uniform Traffic Control Devices for all schools in Mishawaka.

Disabled Parking Approvals

With the assistance of the Mishawaka Police Traffic Division, the Engineering Department coordinates the application process for designated disabled parking spaces on public streets. In 2015 the Board of Public Works and Safety approved the designation of 14 new disabled parking spaces and the removal of 2 spaces that were no longer required.

Traffic Studies and Activities

Requests for four-way stops, time limited parking, restricted parking, etc. require a recommendation by the Traffic Commission and, in many instances, action by the Mishawaka Common Council before implementation. The Engineering Department conducts a thorough investigation to determine the merits of each request. These studies are then presented to the Traffic Commission for review and recommendation and to the Common Council. Upon adoption of an Ordinance by the Mishawaka Common Council, the Engineering Department issues a work order to install the appropriate signage.

In an effort to protect motorists and neighborhoods, the Engineering Department monitors placement of dumpsters in the streets. Twenty six (26) dumpster permits were issued in 2015. The Engineering Department also received requests for additional signage from the Street Department and the Mishawaka Police Department in various neighborhoods. There were 3 speed limit signs added and 4 requests for no parking signs.

The Engineering Department continues to work with the Mishawaka City Police Department to resolve truck problems. With several streets detoured or in various stages of reconstruction (Church/Union Street improvements) during 2015, excessive truck traffic occurred on non-truck route streets. Police enforcement assisted in curbing these truck problems in residential areas. Additional “No Truck” signs were added on Main Street between Lincolnway West and Thirteenth Street, at the request of the Mishawaka City Police.

MACOG (Michiana Area Council of Governments) partners with the City to gather traffic count data for various corridors throughout Mishawaka. This data assists in documenting changes in traffic volumes and may be used to justify upgrades in infrastructure.

Railroad Pavement Markings Grant

The City of Mishawaka received a grant from the Railroad Grade Crossing Fund supported by the Rail Office of the Indiana Department of Transportation. The grant received was for applying new thermoplastic pavement markings at 21 railroad crossings throughout the City. Prior to the pavement markings being applied, the City resurfaced the approaches of 9 crossings as part of the Summer Street Paving Program to provide a good surface for the markings. The grant received was for \$29,400.00.

Construction Projects

Engineering is responsible for plan development and construction management of Public Works Projects. These construction projects are funded from several sources. In 2015 projects under construction were funded with Long Term Control Funds, Tax Incremental Funds, Cumulative Sewer, Redevelopment CDBG Funds, Local Road and Street Funds, Sewer Maintenance Funds, and INDOT/FHWA Funds. Construction completion in 2015 totaled approximately \$17.7 million. Specific details of the 2015 construction projects are highlighted in the following sections. In addition, projects that were in the design and land/easement acquisition phase during 2015 are also discussed with intent of 2016 construction.

TIF Projects

Church/Union Street Improvements Phase 2

This project started construction in 2014, was shut down for winter, and resumed construction in March of 2015. The



Church/Union Street Improvements

contractor began the site work associated with the new Watson Central Services Facility, which included a new storm water retention basin, sanitary sewer, storm sewer and asphalt pavement. Construction along the west side of the underpass included two new modular block walls, refacing the existing retaining wall,

sidewalk, and decorative fencing. After construction along the underpass was completed, new landscaping plantings, pavement markings, and street lighting were installed throughout the project.

A ribbon cutting for the project was held on June 24, and the roadway was opened to unrestricted traffic. Site work at the new Watson Central Services Facility continued after the ribbon cutting, and was not completed until November of 2015. The project was substantially complete in November with an estimated investment of \$5.1 million.

Beacon Parkway (Fir-Capital Connector)

Construction of Beacon Parkway (Fir-Capital Connector) was substantially completed in spring 2015 with final installation of the landscaping features in the center islands, as well as the trees and plantings along both sides of the road. The new signal at Fir Road and Beacon Parkway was operational just prior to the ribbon cutting ceremony on April 16, 2015. Final project completion occurred in early June 2015 with a final City investment of almost \$3.6 million.



Beacon Parkway

Mishawaka Avenue, Phase I (Main St. to Division St.) & Phase II (Cedar St. to Willow St.)

This complete project includes Mishawaka Avenue from Main Street to the St. Joseph River Bridge, Pine Street, Ell Street, and Cedar Street from Grove Street to Park Avenue. Phase I of this project began in the fall of 2014 and includes Mishawaka Avenue from Main Street to Cedar Street, Pine Street, and Ell Street. Project highlights include the upgrade of the street pavement and sidewalks, installation of new storm sewer, and rehabilitation of the sanitary sewer system. Many significant aesthetic improvements are included in this corridor; specifically, relocating the overhead electric and communication lines carried by power poles to underground conduit with transformers, the widening of the Central Park entrance off Mishawaka Avenue, converting the ornamental street lighting to LED lights, and replacing concrete with brick pavers adjacent to the



Mishawaka Avenue Area rehabilitation

curbs in the commercial blocks. Phase I was completed in 2015 with a total investment of approximately \$4.2 million.

Phase II of this project was bid in spring of 2015 and continues the elements of Phase I further east on Mishawaka Avenue from Cedar Street to the St. Joseph River bridge and Cedar Street from Mishawaka Avenue to Grove Street. This phase also included replacement of the traffic signal and equipment at the Cedar Street and Mishawaka Avenue intersection. This work was completed in fall of 2015 with an investment of approximately \$1.4 million. Phase III of this project is programmed for construction in 2016 and will include improvements to Cedar Street from Mishawaka Avenue south to Park Avenue with an estimated investment of \$1.2 million.

Grove-Elizabeth-Mishawaka Avenue Improvements

This project consisted of sewer separation and full road reconstruction on Grove Street from Ann Street to Main Street as well as Elizabeth Street from Grove Street to Mishawaka Avenue. Also included was the milling and repaving of Mishawaka Avenue from Main Street to Liberty Drive. Additionally the project included construction of a new municipal parking lot, sewer lateral replacements, water service replacements, Cured-In-Place-Pipe (CIPP) sewer main rehabilitation, manhole rehabilitation, new signage, street lighting, and overall beautification of the adjacent areas including landscaping and trees. The project began in summer of 2015 and is anticipated to conclude in 2016. The estimated project investment is \$1.6 million.



Grove-Elizabeth-Mishawaka Ave. Improvements

Brick Road and Fir Road Water Main

Construction on the Brick Road and Fir Road Water Main project started in late July of 2015. In order to install a new 16 inch water main, Fir Road between State Road 23 and Brick Road was closed to traffic from July 27 to August 13. New 16 inch water main was also installed along the north side of Brick Road between Fir Road and Gumwood Road and was connected to the existing 12 inch water main at Gumwood Road. As part of the project, 16 inch water main inside a 30-inch steel casing was bored underneath State Road 23 along the west side of Fir Road.



Brick Road and Fir Road Water Main

After completing the bore across State Road 23, a 16-inch water main was also bored underneath Fir Road and connected to the

existing 12 inch water main on the east side of Fir Road. The new 16 inch water main, extending approximately 7,600 linear feet, was completed by late September meeting the required milestones in the contract. Subsequently, the contractor began to work on the proposed pressure monitoring station located on the south side of Brick Road, just east of Prairie Vista Elementary School. The precast building was delivered and set in place on October 29. Due to issues with AEP, power to the building was not provided until late December. As a result, the proposed pressure monitoring station will not be completed until January 2016. Final completion is anticipated in early 2016 with an estimated investment of \$1.5 million.

Front Street Roundabout Reconstruction

With the unusually harsh past few winters, in spring of 2015, pavement cracks and failing joints were discovered in the concrete pavement of the roundabout located at the intersection of Front Street and Spring Street. Reconstruction of the roundabout started on August 20. The existing pavement was removed and replaced, and the roundabout was re-opened to traffic on September 4. The final project investment was \$106,000.



Front Street Roundabout

Trinity Place Realignment

In summer of 2015, the US Department of Veteran's Affairs chose a 14 acre site on Trinity Place for the location of a new 60,000 square foot VA Clinic. The site was appealing due to its proximity to the St. Joseph Regional Medical Center and the many amenities the City of Mishawaka has to offer guests. In order to provide sufficient space for an optimal site layout, the Ambrose Development Group and City of Mishawaka agreed to relocate a 1,400 foot section of Trinity Place to the south. Doing this will not only accommodate the new VA Clinic, but will also provide developable land for future projects.

The relocation was completed in several phases in order to expedite the process due to winter limitations and work within the VA schedule. October of 2015, Phase I was quoted and included



Trinity Place Realignment

clearing the land for the new road alignment, installing sanitary sewer and conduit for electric. Phase I was being constructed while plans were being prepared for Phase II. Phase II included removal of the concrete pavement along the existing route and terminating all existing utilities. This sewer had to be relocated in order to provide continued service to the existing DaVita Dialysis office adjacent to the VA Clinic site. Mishawaka Electric removed the light poles and was also able to install new electric service in the new conduit in order to maintain the electric feed to

DaVita and a loop for the hospital. Phase III included a new water main also along the new roadway corridor to again maintain service to DaVita and provide a loop for the hospital. The project was quoted in these phases in order to allow time to complete plans for the next phase and work within the developer's schedule. By removing the roadway and vacating the right-of-way, the developer could provide the VA with one contiguous parcel for the building. The re-aligned Trinity Plans have been completed and includes construction of new concrete pavement, curb, storm sewer, and pathway. Bids will be received in early spring of 2016 for the final phase. Adding all phases together, the estimated total investment will be \$1.2 million.

Fir Road and University Drive Intersection Expansion

University Drive and Fir Road Intersection improvements were completed in the fall of 2015. Additional turn lanes were added for the eastbound University Drive approach onto Fir Road. Improvements included new concrete curb and gutter, full depth asphalt pavement, and a resurface course from the Costco store to the east. Traffic signal conduit, handholes, and fiber were installed to the Beacon Parkway signal system. Metronet communication conduit and handholes were installed and connected to the existing Metronet line on Fir Road south of Cleveland Road. Other construction consisted of storm sewer, new guardrail, traffic signal upgrades, pavement markings, and traffic signs. Total investment is approximately \$1.4 million.



Fir Road and University Drive

Reconstruction of Cedar Street and Elimination of CSO 012B

Construction commenced in August 2015 for Cedar Street between Fourth Street and Lincolnway East and was substantially complete in November 2015. Construction operations included the installation of new storm sewers, asphalt pavement, concrete curb and gutter, concrete sidewalk, concrete approaches, decorative street lighting, pavement markings, and nursery sodding. A project alternate also included the installation of a 20" water valve on the existing 20" water main on Fourth Street. The Combined Sewer Overflow (CSO) diversion structure (STR 12A) was modified, and structure 12B was eliminated. The existing 18" sanitary sewer on Cedar Street received a new interior lining via Cured-in-Place-Pipe (CIPP) sewer main rehabilitation. The estimated City investment is \$850,000.



Reconstruction of Cedar Street

Merrifield Park Sewer Improvements

This project was completed in the summer of 2015 and included the installation of new manholes, 6" and 8" sanitary sewers, and service laterals for the restroom facilities in Merrifield Park and Castle Manor. Other improvements included nursery sod and pavement markings. The final City investment is approximately \$48,000.

Lowell Avenue and Edgar Avenue Improvements

Primary construction initiated in early summer of 2015 and consisted of the reconstruction of Lowell Avenue and Edgar Avenue from N. Main Street east to Sarah Street. Work included new concrete curb, asphalt pavement, concrete approaches, concrete sidewalk, sanitary sewer laterals, water services, pavement markings, and nursery sod. Construction operations were complete in the fall of 2015 with a City investment of approximately \$226,000.



Lowell Avenue and Edgar Avenue

Third Street Municipal Parking Lot

In the fall of 2015, a 30 stall concrete municipal parking lot was constructed at the northwest corner of Third Street and Mill Street, the former location of Notre Dame Credit Union which was demolished in 2014. Construction was completed in December 2015. Work also included the installation of four drywells and connecting pipe for drainage. In addition, concrete curbing, drive approaches, pavement markings, and nursery sodding were installed. The final City investment is approximately \$147,000.

2015 TIF Design Projects

Byrkit Street Path (Twelfth Street to Dragoon Trail)

In order to plan for future growth and improvements, a schematic design is being prepared for a future multi-use path along Fir Road from Twelfth Street to Dragoon Trail. Potential development has been proposed on the east side of Fir Road and a master plan for the corridor is required in order to make sure sufficient room is provided for potential improvements before additional developments are completed and obstructions are in place. This project studied the current traffic patterns and likely future traffic patterns of the vehicles using Fir Road and recommended a 10 foot multi-use path be planned for the east side of Fir Road. Based on traffic projections, it is likely that within 20 years, a 3 lane roadway will be required for this corridor. This analysis identified the amount of



Byrkit Street Path

right of way that would be required to accommodate a 3 lane road and a 10 foot path. This will allow the proposed adjacent development to install landscape buffering up to this point without risk of removal during a future road reconstruction project.

Beacon Parkway Pathway

Since the opening of Beacon Parkway, which was designed as a new gateway into the City from Capital Avenue at the Toll Road interchange, new development is beginning to occur in the area. During the planning of the new road project, a 15 foot wide utility easement was requested from the property owners along both sides of the road. The new utilities were accommodated within the new right of way and utility easement. In response to the new development occurring along the roadway, the City has committed to providing a roadside pathway. The permanent pathway will be accommodated within the right of way and utility easement. The pathway is currently under design for the south side of Beacon Parkway. It is anticipated to be bid in April 2016 with construction starting in May 2016. The pathway is expected to be complete by July 2016 with a total City investment of approximately \$400,000.

State Road 23/Cleveland Road Widening (Grape Road to Main Street)

This project, which is currently being designed, started with a Traffic Impact Study (TIS) in the spring of 2014 in response to the proposed new development at the northwest corner of intersection State Road 23/Cleveland Road and Main Street/Gumwood Road. After approval and concurrence of the TIS by INDOT, 10% conceptual plans were developed. The conceptual plans included an extension of left turn from the intersection of State Road 23 and Grape Road east to State Road 23/Cleveland and Main Street/Gumwood Road intersection. This accommodated two through lanes for each direction and a center left turn lane between Grape Road and Main Street/Gumwood Road. Also, at the intersection of Main Street/Gumwood Road exclusive right turn lanes were added for westbound and eastbound traffic.

INDOT is letting a mill and resurface project along State Road 23 which includes the section between Grape Road and Main Street. It is the intent of the project to have the asphalt pavement to be milled and overlaid with the INDOT project. The new pavement is anticipated to be full depth asphalt with new curb and gutter and extension of storm sewers. Utility relocation is part of the project with AEP relocating their power line to the new right of way line. Additional utility relocations are also anticipated and will likely be completed before the construction of the project begins. The traffic signal at the intersection of Main Street/Gumwood Road will be modified to accommodate the proposed improvements. The project is anticipated for bidding in March 2016 with construction starting in April 2016 and completion by August 2016. The total City investment is anticipated to be \$1.8 million.

Public Works Projects

Summer Street Paving Program

The Engineering Department assisted the Street Department in prioritizing and overseeing 30,445 linear feet of street milling, sealing and resurfacing projects. The summary of the Summer Street material bid prices are detailed in the table below:

2015 Summer Street Unit Prices
Materials: Rieth Riley Construction Company

Description	Qty	Unit	Unit Price	Extension
BITUMINOUS MATERIALS:				
Hot Mix Asphalt Pavement, Surface 9.5MM Type "A"	4,000	TON	\$53.00	\$212,000.00
Hot Mix Asphalt Pavement, Surface 9.5MM PG, Type "B"	4,000	TON	\$53.00	\$212,000.00
Hot Mix Asphalt Pavement, Surface 9.5MM - PG, Type "C" Polymer Additive	1,500	TON	\$70.00	\$105,000.00
Hot Mix Asphalt Pavement, Surface 905MM, Type "A" Limestone FOB	200	TON	\$42.00	\$8,400.00
HMA Surface - Alley Paving (2")	400	TON	\$80.00	\$32,000.00
HMA Surface - Alley Paving (2") Resurfacing	400	TON	\$80.00	\$32,000.00
HMA Surface Patching -Type "A" Local Street	500	TON	\$100.00	\$50,000.00
HMA Surface Patching -Type "B" High Volume	1,000	TON	\$100.00	\$100,000.00
HMA Pavement, Surface - Type "A" B.F. Slag	250	TON	\$30.00	\$7,500.00
HMA Pavement, Type "A" Intermediate 19MM	100	TON	\$70.00	\$7,000.00
HMA Pavement, Intermediate 19MM FOB	100	TON	\$35.00	\$3,500.00
HMA Pavement, Type "A" Base 25MM	200	TON	\$35.00	\$7,000.00
HMA Pavement, Base 25MM FOB	100	TON	\$30.00	\$3,000.00
Bituminous Material Tack	20	TON	\$1.00	\$20.00
Bituminous Material Crack Pouring FOB	2,000	GAL		\$0.00
Bituminous Material Dust Pallative FOB	2,000	GAL		\$0.00
Bituminous Patch Material FOB	500	TON	\$85.00	\$42,500.00
Emulsified Asphalt FOB	20,000	GAL		\$0.00
AGGREGATE:				
Course Aggregate #73 stone or slag	150	TON	\$16.80	\$2,520.00
Course Aggregate #73 stone or slag FOB	150	TON	\$0.00	\$0.00
Course Aggregate #73 or #53 Gravel	150	TON	\$15.60	\$2,340.00
Course Aggregate #73 or #53 Gravel FOB	150	TON	\$9.50	\$1,425.00
Course Aggregate #11 or #12 LS or Slag Chips	150	TON	\$21.80	\$3,270.00
Course Aggregate #11 or #12 LS or Slag FOB	150	TON	\$18.25	\$2,737.50
Fine Aggregate #23 or #24	150	TON	\$10.40	\$1,560.00
Fine Aggregate #23 or #24 FOB	150	TON	\$5.25	\$787.50
ROTO-MILLING:				
Contractor Retain Materials 0"-2"	85,000	SYD	\$1.90	\$161,500.00
Contractor Retain Materials 2"-4"	500	SYD	\$2.30	\$1,150.00
Contractor Retain Materials 4"-6"	500	SYD	\$2.35	\$1,175.00
City Retain Materials 0"-2"	15,000	SYD	\$1.90	\$28,500.00
City Retain Materials 2"-4"	500	SYD	\$2.30	\$1,150.00
City Retain Materials 4"-6"	500	SYD	\$2.35	\$1,175.00
MISCELLANEOUS ITEMS:				
Street Excavation	300	TON	\$10.00	\$3,000.00
Bituminous Curbs	500	LF	\$10.00	\$5,000.00

TOTAL AMOUNT OF BID:

\$1,039,210.00

The following table summarizes the streets that were resurfaced in 2015. All streets were either edge milled 6 feet along the curb line or the entire surface removed 1” to 1.5” to retain as much curb exposure as possible.

2015 Street Resurfacing Summary	
Street Name / Section	Length (Feet)
Bandelier Drive – Gauley River Drive to Tall Grass Prairie Drive	650
Beiger Street – Fourth Street south 700 feet	700
Byrkit Avenue – Fourth Street to Fifth Street	700
Blackberry Road – Harrison Road south to City limits	3000
Blair Hills Drive – Dragoon Trail to Bowdoin Drive	3100
Bluesmoke Trail – Blair Hills Drive to dead end	1200
Cedar Street – Jefferson Blvd north 500 feet	500
Edgar Street – Division Street to dead end	1250
Edison Road – Hickory Road to Grape Road	2200
Elder Road – RR Tracks south to City limits	1500
Fifth Street – Smith Street to Wells Street	825
Fifth Street – 650 feet east of Laurel Street to Laurel Street	650
Gauley River Drive – Fir Road east 350	350
Huntington Place – Yeardley to Bowdoin Drive	1400
Kennesaw Mountain Drive – Bandelier east 340	340
Kline Street – Lincolnway East to RR	650
Laurel Street – Fourth Street to Sixth Street	475
Liberty Drive – Colfax Avenue to McKinley Avenue	900
Lowell Avenue – Sarah Street to Chestnut Street	1325
Main Street – Douglas Road north 850 feet	850
Main Street – Sixth Street north 250 feet	250
Merrifield Avenue – RR to Fifth Street	190
Oakside Avenue – RR to York Road	180
Park Place – Filbert Road east 400 feet	400
Park Place – Day Road south 250 feet	250
Spring Street – Fourth Street to Sixth Street	750
Stanley Street – Sarah Street to Division Street	700
Tall Grass Prairie Drive – Bandelier Drive east 365 feet	365
Tenth Street – Union Street to Dodge Avenue	350
Third Street – Bain Street west 180 feet	180
Thirteenth Street – Main Street to Spring Street	720
Twelfth Street – Spring Street to Taylor Street	2100
West Street – Twelfth Street to Thirteenth Street	300
Yeardley Lane – Blair Hills Drive to Huntington Place	500
SEALING	
Miami Club Drive – Lincolnway East to Club Drive	1200
Victoria Street – Lincolnway East to Club Drive	1150
Total Linear Feet	32,150
Total Cost of Resurfacing	\$506,094.76
Total Cost of Milling	\$169,660.50
Total Cost of Sealing	<u>\$48,991.40</u>
Grand Total for Summer Street Paving Program	\$757,051.46

Alley Paving Program

The Alley Paving Program evenly splits the costs with residents who request their alley be paved. Typically, a field inspection of the alley is conducted to determine the feasibility of paving the alley. A list of all property owners adjacent to the alley is obtained from the County Assessor's Office and is provided to a designee of the property owners who is responsible for collecting the per linear foot assessment from each property owner along the alley. The residents along the alley benefit from this work because of the reduction of the dirt and dust generated by traffic. The Street Department also benefits by not having to grade or oil the paved alley for many years. There are approximately 48.5 total miles of alley that are open to the public, and a significant number of these have been paved by this program partnering with property owners. In 2015 nine alleys were surfaced.

Curb and Sidewalk Program

Instituted in 1986, this program encourages single-family homeowners to repair or replace deteriorated public curb and sidewalks adjacent to their property and provides for a 50/50 split of the repair cost of curbs, sidewalks, and drive approaches between the homeowner and the City. Since the beginning of this program, the cost for reconstruction of approximately 101,143 linear feet of new curb and sidewalk has been shared by the City and its residents. Additionally, several areas of sidewalk and curb were replaced due to drainage issues or damages. This year a total of \$173,072.50 was invested in neighborhoods on curb and sidewalk improvements.



Curb and Sidewalk Program

The Department of Redevelopment had funds available for curb and sidewalk improvements within the low to moderate income census tracts. With these funds the City was able to replace about 6,700 feet of curb and sidewalk to meet the current ADA standards, installing new handicap ramps at 4 intersections. The improvements were made along Liberty Drive from Grove Street to Broadway and the 300 block of West Battell and Lawrence Streets. The total cost of these improvements was approximately \$375,000.

Long Term Control Plan Projects

The City's Long Term Control Plan was endorsed by the Common Council in January 2014, and the United States District Court's Final Judgment filed on May 23, 2014. The Long Term Control Plan (LTCP) continues to evolve with the target to improve wastewater treatment and the sewer collection system to reduce the Combined Sewer Overflows (CSO) to less than 1 per year upon the plan's complete implementation. In 1990, the City diverted 350 million gallons of Combined Sewer Overflow (CSO) to the St. Joseph River during wet weather. In 2008, the City experienced 50 CSO events per year. Since 1990, the City has steadily completed sewer separation projects and has currently reduced the discharge to an estimated 4 million gallons of CSO to the St. Joseph River during wet weather in years with typical rainfall. The City has

committed and will continue to improve the collection system to achieve the limits the Consent Decree set forth.

From 2007 through 2014, construction in the Milburn Area concentrated on Divisions A, B, C, D, E, F, G, H, and J Phases I and II of the collection system. Within the Milburn area, cured-in-place-pipe (CIPP) lining, rehabilitation of the main sewer lines and the sewer laterals were completed between 2011 and 2014. In 2013 and 2014, the Middleboro Lift Station was upgraded. In both 2011 and 2012, work concentrated on finalizing the storage tunnel sizing master plan in relation to constructability. In 2013, construction shifted to the Wilson Boulevard area with the redirection of four CSOs to River Crossing 3.

Late in 2014, planning began for the major element of the Long Term Control Plan, a 7,000-foot long, 10-foot diameter storage and conveyance tunnel to be located under Third Street or Fourth Street approximately 30 feet deep beginning at the wastewater treatment plant to Merrifield Avenue. Subsurface soils investigations along the proposed alignments suggested lowering the depth from proposed 30 feet to an average of 70 feet to provide clearance from all underground utilities, boulders and overall be less invasive at the surface along the proposed corridor. In addition to the tunnel being lowered to 70 feet, it was recommended to select the Third Street right-of-way alignment instead of Fourth Street and that the tunnel be completed in one contract instead of two, all of which would result in a reduction of costs. Due to the lowering of the tunnel, a lift station was added to the Control Structure that is proposed for the WWTP site.

In the fall of 2014, the City retained the services of two design engineering teams to develop the construction documents for the Tunnel and Lift Station/Control Structure construction which are expected to be completed in spring of 2017. Bids are to be opened in June with actual tunnel construction anticipated to start in fall of 2017. The Control Structure is scheduled to begin towards the middle of 2018 with both contracts estimated for completion late in 2020.

The next LTCP phase is the micro-tunneling within Merrifield Avenue, which extends north from Third Street to Merrifield Park and will be coordinated with the tunnel construction due to its anticipated depth of 30 to 40 feet. Currently, we are analyzing options for construction to minimize costs and disruption to the intersection of Merrifield Avenue and Third Street from the 40 foot diameter, 70 foot deep, exit shaft from the tunneling process. Therefore, it is likely construction will start for the micro-tunnel prior to the storage and conveyance tunnel completion in 2020. Please see Exhibit A.

A summary of the LTCP Elements is included in the following table:

Long Term Control Plan - Recommendation and Implementation Plan						
Location	Project	Description	Capital Cost Estimate ¹ (\$Millions)	Size ²	Start Date ³	End Date ⁴
Milburn Boulevard Area	Divisions A thru H	Sewer separation and rehabilitation of the area south of the St. Joseph River, bounded by Ironwood, Dragoon Trail, Panama and Logan Street	19.4	N/A	2007	Dec 2026
Wilson Boulevard Area	Wilson Boulevard	Parallel interceptor to redirect flows from CSO 004, 005, 006, 007, and 008 and consolidate into one overflow location at River Crossing RC-4. Upgrade RC-4 if needed based upon flow monitoring upon completion of interceptor. Closure of RC-3.	5.0	N/A	Oct 2011	Dec 2020
River Center CSO 009	Storage/Conveyance Tunnel	Storage/Conveyance Sewer from WWTP to Merrifield Avenue	59.2*	120"	Feb 2012	Dec 2020
	Lift Station/Control Structure	LS and Control Structure to transmit flows from Tunnel to WWTP	17.3*		Dec 2015	Dec 2020
	Storage/Conveyance Tunnel (Phase III)	Micro-tunnel for Storage/Conveyance Sewer from Third Street to Merrifield Park (Linden Ave)	5.7	60"-84"	Dec 2015	Dec 2023
East Area	Linden Area Sewer Separation (Phase I)	Sewer separation of approximately 152 acres north of Lincolnway East between Merrifield Park and Roosevelt	8.6*	N/A	Dec 2014	Dec 2028
	Linden Area Sewer Separation (Phase II)		8.6*	N/A	Dec 2016	Dec 2028
	Linden Area Sewer Separation (Phase III)		8.6*	N/A	Dec 2018	Dec 2028
	Linden Area Sewer Separation (Phase IV)		8.6*	N/A	Dec 2020	Dec 2028
	Alley Conveyance Sewer from Capital Ave. to Merrifield Ave.	Conveyance from the outfall of the Mariellen Lift Station to the storage/conveyance sewer along Merrifield Ave. at Third Street	5.8	30"-48"	Dec 2015	Dec 2028
Central Park Area	Northeast River Crossing to Merrifield Park (Linden Ave.)	Conveyance sewer which intercepts flow from the Daisy Road Lift Station Forcemain/Northeast River Crossing	2.3	42"-48"	Dec 2021	Dec 2031
	Daisy Road Lift Station, Forcemain, and RC-5 (Phase I)	Lift Station and FM with 2.9 MGD capacity.	7	18"-24"	2011	Dec 2031

¹ Capital cost includes 20% contingency and 20% engineering, admin, and legal costs. ENR 8000. Costs from Consent Decree Appendix A, unless updated by current information. Updated costs noted with '*'.

² The final facilities will be sized within the stated ranges to achieve zero overflows during the typical year (1992). The sizes shown were preliminarily determined by subbasin flow monitoring during preliminary design of each project component.

³ Engineer under contract to design the facility.

⁴ Facility is operational.

Efforts also progressed on the Linden Area Sewer Separation, an element of the Long Term Control Plan (LTCP) which falls under the "East Area", by completing a study further defining the sewer separation with individual project's scope, phasing, and associated estimated costs.

Specifically, the study evaluated the existing sewer system within the area south of the St. Joseph River roughly bounded by Merrifield Avenue, Roosevelt Avenue, and East Fourth Street. It provided a recommended plan to address any deficiencies while defining the sewer separation that in part requires separation of 152 acres of existing combined sewers in the Linden Area. These improvements are part of a larger plan to minimize combined sewer overflows to less than one during the typical year within the City's sewer system.

The recommended Plan consists of three main components: rehabilitating the existing combined sewer system to act as a separated sanitary sewer system; construction of new separate storm sewer systems including a new storm outfall to the St. Joseph River; and converting the existing combined sewers in Byrkit Avenue (from Sixth Street to Linden Avenue), Indiana Avenue (from Linden Avenue to Joseph Street), and Joseph Street (from Indiana Avenue to CSO 015) to storm sewers. The proposed improvements can be divided into four major geographic elements: the Eberhart Stormwater Outfall and Storm Sewer Improvements, the Roosevelt Storm Sewer Improvements, the CSO 015 Storm Sewer Improvements in the Crawford Park area, and the Byrkit Combined Sewer Conversion.

The Eberhart Stormwater Improvements include a new stormwater outfall to the St. Joseph River, approximately 106 acres of sewer separation and existing sewer rehabilitation generally located along Linden and Homewood Avenues from Mason Street to Roosevelt Avenue, and along the Byrkit Avenue corridor from Linden Avenue to Fourth Street. This project will relieve overflows at CSOs 014, 015, and 021. These improvements, combined with the Byrkit Combined Sewer Conversion project described below will provide a storm sewer discharge for areas south of the Norfolk Southern Railroad along the Byrkit Avenue corridor.

The Roosevelt Storm Sewer Improvements include approximately 11 acres of sewer separation and existing sewer rehabilitation generally east of Roosevelt Avenue along Homewood, Third Street, and Fourth Street, discharging to the existing Roosevelt Avenue storm sewer. This separation will reduce wet weather overflows at CSO 018.

The CSO 015 Storm Sewer Improvements include approximately 43 acres of sewer separation and existing rehabilitation in an area generally bound by Mishawaka Avenue, Niles Avenue, Lincolnway East, and North Mason Street. The existing CSO 015 Outfall will be utilized as a discharge point for separated storm flows. Wet weather overflows at CSO 015 will be reduced by this project.

The Byrkit Combined Sewer Conversion consists of converting the existing 60"-66" combined sewer in Byrkit from Linden to Sixth Street into a separate storm sewer. The proposed Eberhart storm outfall will be utilized as a discharge point. The conversion includes construction of smaller diameter sanitary sewers along Byrkit Avenue from Linden Avenue to Fourth Street, and a combined conveyance sewer from Sixth Street and Linden Avenue to Mason Street and Fourth Street.

The project will provide a discharge location for storm flows along the Byrkit Corridor to Twelfth Street, including separation of the industrial area (approximately 12 acres) along McIntee Court and further reduce wet weather overflows to CSO 015.

Recommended Capital Improvements are summarized in the table below and map Exhibit B:

Linden Area Sewer Improvement Study			
Pre-Design Project Cost (2015 Dollars) and Tentative Construction Schedule			
Project	Tentative Construction Schedule	Required Completion Schedule per LTCP	Estimated Project Cost¹ (\$Million)
Division A - Club Boulevard to St. Joseph River (Storm)	2016	2028	3.25
Division B - Victoria and Miami Club Drive (Storm)	2017	2028	2.24
Byrkit Avenue (8th to 12th Street) (Storm)	2018	N/A	Part of 12 th Street LPA Project
Division C - Byrkit Avenue (6th to 8th Street) (Storm)	2017	N/A	0.82
Division D - Linden Avenue Storm (Home Street to Victoria Street)	2019	2028	3.48
Division E - Homewood Avenue Storm (Roosevelt to Virgil)	2020	2028	3.66
Division F - Linden Avenue Storm (Gernhart to Byrkit)	2021	2028	2.99
Division G - Mishawaka Avenue Storm	2022	2028	2.48
Division H - Linden Avenue to Joseph Street Storm and Sanitary	2023	2028	3.11
Division J - Lincolnway East to Linden Avenue Storm	2024	2028	4.56
Division K - Homewood, Third Street, Fourth Street Storm	2025	2028	2.19
Division L - STAG Industries Storm	2025	2028	0.61
Division M - STAG to LTCP Alley Conveyance Combined Sewer (Byrkit Sewer Conversion)	2026	2028	2.41
Division N - Conversion of Byrkit Avenue Sewer to Storm (Railroad to Lincolnway East)	2027	2028	1.25
Division P - Conversion of Byrkit Avenue Sewer to Storm (Lincolnway East to Linden Avenue)	2028	2028	1.38
Long Term Control Plan Northeast Crossing (including Storm Separation)	2029	2029	3.48

Notes:

1. Includes project construction, construction contingency, engineering design, field survey, construction inspection, legal and administrative fees, and land acquisition.

Combined Sewer Overflow Consolidation Phase II, Mishawaka Avenue

Combined Sewer Overflow (CSO) consolidation construction along Wilson Boulevard began in 2013. The goal of the CSO consolidation is to help eliminate sanitary sewer flow into the river. Phase I of this project completed in 2014 included a 24” sanitary sewer within Wilson Boulevard from Clay to Forest Avenue. Phase II extended the newly installed 24” sanitary sewer main within Mishawaka Avenue from Forest Avenue to Liberty Drive. Rehabilitation was completed for the remaining CSO outfall pipes and Battell Park. In addition, the project included Riverwalk upgrades, as well as beautification of the overall area. This project was primarily completed in 2015 with a small portion remaining for completion in 2016. The total investment is estimated at \$1.8 million. The above photo shows the Battell Park Rock Garden outfall improvements.



CSO Consolidation

LPA Construction Projects (20% Local Match)

Twelfth Street/Harrison Road, Phase I (Blackberry to Lexington)

This project was mostly complete in November 2014. Work resumed on April 15, 2015 to finish grading and seeding three locations within the project. This work was completed on April 24. On June 4, at a pre-final inspection meeting, it was determined that the work was substantially complete. Final pavement markings were completed. Following the final inspection, the road reopened to unrestricted traffic on June 24. The total investment was approximately \$3.9 million.

2015 LPA Design Project

Twelfth Street, Phase II (Downey to Campbell)

Phase II of the improvements on Twelfth Street, between Campbell and Downey, are currently being designed. The main goal is to widen the street from its present two lanes to three lanes including a continuous two way left turn lane. The roadway will be reconstructed along with curb and gutter, storm sewer, and street lighting. Currently there is insufficient right of way to construct this project; therefore, additional right of way will be purchased along the length of the project. The construction is estimated to cost \$6.3 million, with 80% being federally funded.

The project is presently in the design phase with the preliminary field check completed in February 2015. A public hearing will be scheduled to present this project to the citizens of Mishawaka and gain their input on the project. The design may be modified as a result of that public hearing. Due to the federal procedures for design and right of way acquisition, it is anticipated that this project will begin construction in late summer of 2018.



Twelfth Street area rehabilitation

Future Projects

<u>Project</u>	<u>Completion Date</u>	<u>Est. Cost</u>
<u>TIF Area</u>		
Logan St. Corridor Study (Dragoon to Lincolnway)	Nov 2016	\$202,600
Cedar St. Improvements (Mishawaka Ave. to Madison St.)	Aug 2016	\$1,200,000
State Road 23 (Gumwood Rd./Main St. to Leo St.)	Aug 2016	\$4,600,000
Fourth Street, Phase I (LTCP), (Merrifield Ave. to Pine St)	Nov 2016	\$1,200,000
Trinity Place Realignment, Phase 4	July 2016	\$800,000
Linden Area, Phase AI (LTCP), (River to Club/Victoria)	Nov 2016	\$1,250,000
Linden Area, Phase AII (LTCP), (Club, Byrkit, Victoria)	Nov 2017	\$2,000,000
Linden Area, Phase B, (LTCP), (Victoria, Miami Club, Linden)	Nov 2017	\$2,240,000
Linden Area, Phase C, (LTCP), (Byrkit Avenue)	Nov 2017	\$1,25,000
Ironworks Extension (Spring St. to Hill St.)	Nov 2017	1,300,000
Hill Street Extension (Front St. to Ironworks Ave.)	Nov 2017	1,250,000
Douglas Road Widening (3000LF east of Fir Road)	Nov 2017	\$3,200,000
LTCP – Lift Station/Control Structure at WWTP head-works	Nov 2019	\$5,250,000
LTCP – Storage/Conveyance Tunnel (WWTP to Merrifield Ave.)	Oct 2019	\$45,000,000
LTCP – Conveyance tunnel, Merrifield Interceptor	Nov 2022	\$6,000,000
West St. Storm Relief Sewer – West St. (6th St. to 15th St.)	Nov 2017	\$2,450,000
West St. Storm Relief Sewer – 8th St. (West St. to Logan St.)	Nov 2018	\$1,850,000
West St. Storm Relief Sewer – 15th St. & 16th St. (Rose Park)	Nov 2019	\$3,200,000
<u>LPA Project, (City pays full cost for this portion)</u>		
Twelfth St. Ph II (Downey Ave. to Campbell St.) – Design & R/W Acquisition	Jan 2018	\$2,150,000
<u>LPA Project (FHWA w/ 20% Local Share)</u>		
Twelfth St. Ph II (Downey Ave. to Campbell St.) – Construction (80% Federal funds)	Nov 2019	\$6,300,000

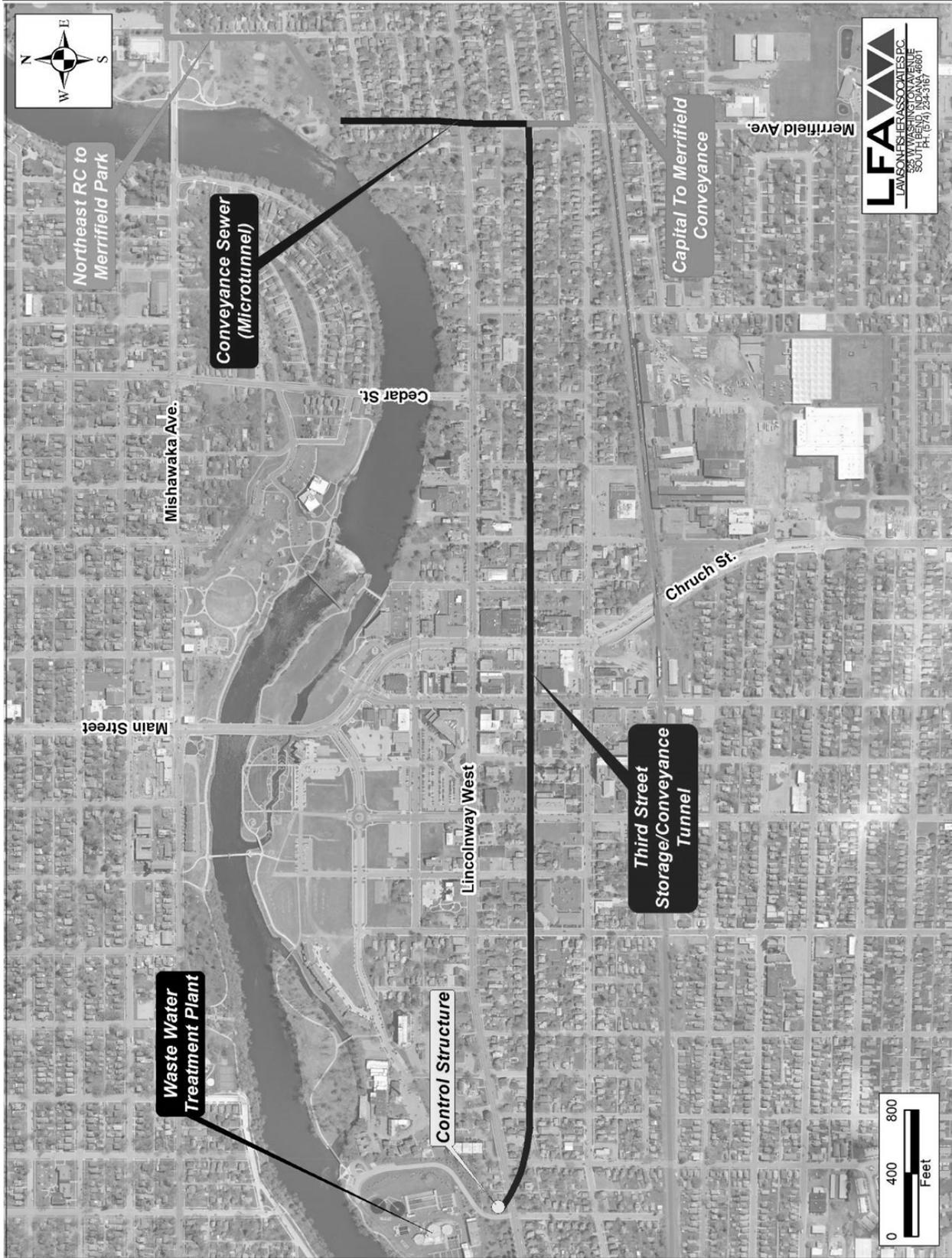


Exhibit A

