

## **Engineering Department**

*Christine Jamrose, PE, City Engineer/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 stormwater management, sanitary construction and connection, and right of way access and improvements. The office also manages *the* MS4 program, citywide GIS, addressing, 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 City Engineer/Director, the Assistant Director, a Construction Manager, a Project Manager, a Traffic Manager, an MS4 Coordinator, a Project Coordinator, an Office Manager, a Locate/Permit Coordinator, a GIS Coordinator, and a GIS Manager.

The City Engineer/Director of Engineering is responsible for the day-to-day management of the Engineering Department. The Director is a technical advisor to the City's Municipal Utilities and continually assesses the City's changing needs to develop major and minor public works capital improvement projects. The Director matches future projects with available funding sources and submits applications where required, such as Community Crossings Grant Program, INDOT/Federal Aid (MACOG) programs, Municipal Wastewater and Sewer Department funding, and Tax Incremental Financing (TIF) District. The Director also manages development of construction plan and specification preparation for public bidding and construction of public works projects. The Director serves as the City's representative on the following boards and committees:

- Technical Advisor for Board of Public Works and Safety/Utility Board
- Technical Advisor and Member, City of Mishawaka Plan Commission
- Technical Advisor and Member, City of Mishawaka Traffic Commission
- Member of the Transportation Technical Advisory Committee (TTAC), Michiana Area Council of Governments
- INDOT Certified LPA Employee of Record for Federal Highway Funded Projects

The Assistant Director of Engineering continues to be responsible for reviewing proposed private property development, i.e., all site plans, subdivisions, variances, rezonings, and annexations for conformance with current engineering standards and specifications including stormwater management, site access, sanitary sewer connection, erosion and sediment control, and overall plan conformity. Additional responsibilities include:

- Assist engineers, surveyors, planners, developers, landowners, and contractors with determining feasibility of potential projects to help streamline review process.
- Review construction plans and specifications for improvements of public streets, sewers, and drainage.
- Track required project documentation including permits, testing reports, inspections, material tickets, bonds, and as-built drawings for infrastructure to be perpetually maintained by the City.

- Support consultant engineers with design of various public works projects.
- Review sanitary sewer construction applications for sufficiency.
- Manage and oversee GIS personnel day-to-day tasks and responsibilities.
- Participate in the Michiana Stormwater Partnership, which is a local MS4 Educational Committee focused on providing the community with information on the importance of good environmental stewardship.
- Serve as the proxy member for the Mayor on the St. Joseph River Basin Commission, where various topics related to water quality and flood mitigation within the watershed are discussed quarterly.
- Serve as the City of Mishawaka's representative on the Juday Creek Task Force, which is an advisory group, with vested interest, to voice opinions of potential development adjacent to Juday Creek. The task force meets with project representatives on an as needed basis.

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 for overseeing smaller public works projects, the curb and sidewalk program, the summer street paving project, assigns all City addresses in conjunction with the 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, including the emergency vehicle pre-emption system and twenty-one (21) City traffic cameras, and coordinates repairs by the City's maintenance contractor. The Traffic Manager is also responsible for addressing citizen complaints, traffic signal timings, traffic studies, and traffic work orders for sign installation.

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

The Project Coordinator is responsible for coordinating and maintaining land acquisition documentation and project files, processing purchase orders and payment applications, and processing utility excavation permits and sanitary sewer construction and connection applications and permits. The Project Coordinator is back-up for City address assigning and assists the President of the Board of Public Works and Safety.

The Office Manager is responsible for managing phone and front counter inquiries from the public, maintaining sewer insurance records, assisting in 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 tickets, updating the locate database, and gathering historic sewer as-built information for distribution to the Sewer Maintenance Department staff to accurately locate the sewer system in the field. The Locate/Permit Coordinator also issues excavation permits, maintains the City as-built records, and assists with phone and front counter inquiries from the public. As the number of locate tickets continues to increase, the field locating workload could impact the amount of sewer maintenance performed by the Sewer Department; and therefore, monitoring of workload remains a priority to assess the need for potential reconfiguration of responsibilities.

### **GIS (Geographic Information Systems) Staff**

The GIS staff includes the GIS Manager and GIS Coordinator. The GIS staff is responsible for managing the overall citywide GIS technology including:

- Create and maintain all base map layers including aerial photography, building outlines, road edges, hydrology, streets, addresses, business locations, and other data layers
- Manage 11 data servers and administer databases on those servers
- Maintain all aspects of GIS software including installs, upgrades, applications, and technical support for all City employees utilizing GIS
- Assist in interfacing primary GIS software with other software systems including permitting, inspection management, and other department-specific applications
- Provide and maintain online web-based maps available to the public and City internal use only
- Create mobile map applications for field editing on mobile devices
- Coordinate other interagency projects related to GIS

### **Engineering Services**

In addition to engineering public works projects such as curbs, 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 including follow-up final inspections.



The Department also investigates complaints received from residents throughout the City to resolve concerns within their neighborhoods 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 2018 over 10,000 locate tickets were processed, resulting in over 2,600 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.

### **Excavation Permitting and Sanitary Sewer Connections for 2018**

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 protection of the motoring public and the existing infrastructure as well as ensuring proper restoration after all excavations within City rights of way.

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 2018, Engineering issued 568 Excavation Permits generating \$16,450.00 in fees for all categories of excavation, such as telephone, cable, gas, electric, fiber optic, boring, street, sewer, water, and irrigation. This is an increase in fees from 2017 when \$13,970.00 was collected from 573 Excavation Permits. In addition, there were 186 Sanitary Sewer Connection and Inspection Permits issued in 2018 that totaled \$169,377.50 compared to \$286,789.11 collected from 162 permits in 2017. Although a decrease in collected funds it is an increase in the number of Sewer Connection and Inspection Permits and is directly related to the pace of private property development.

### **Sewer Insurance Program**

The Engineering Department maintains all sewer records and provides administrative assistance for the Sewer Lateral Insurance Program. This program, which began in 1986, protects owners of single-family dwellings from paying catastrophic sewer lateral repair costs. The homeowner is responsible for paying all routine sewer lateral cleaning costs, and if the lateral requires repair, they pay a \$250 deductible fee for an owner-occupied home or a \$500 deductible fee for a renter occupied single family home. The Sewer Insurance Fund pays all repair costs in excess of the deductible for the repair of a private sewer lateral connection from 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 sewer insurance fee for single family residential dwellings 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 2018 totaled \$327,695.68 with expenses of \$319,161.97. In 2018, the Sewer Department received 216 reports of sewer lateral issues where 50 residents signed up for the Sewer Insurance Program. Of the 50 residents, there were 50 residential contractor repairs performed with an ending balance in the fund of \$9,283.71. The costs for the sewer lateral repairs ranged from \$277.50 to \$25,162.00.

## **Review of Commercial, Industrial, and Residential Developments in 2018**

The City continued to experience steady growth of proposed commercial property and residential developments. One of the larger examples of this growth is Beacon Health System with its expansion of a new hospital at the northwest corner of Beacon Parkway and Capital Avenue (3220 Beacon Parkway). This hospital is a 33,000 square foot building with a full emergency department. Beacon Health System also announced a new corporate service building at the southwest corner of Beacon Parkway and Capital Avenue (3245 Beacon Parkway), just south of the current Beacon Health & Fitness building. The corporate service building will be centrally located between its other area facilities and will house all leadership and administrative personnel.

Grandview Planned Unit Development initiated its design and ultimate construction of Phase II, which includes (4) four-story buildings incorporating residential apartments, commercial storefronts, and covered parking. The United Federal Credit Union expanded with two new banks within Mishawaka, one in Toscana Park (7514 Gumwood Road) and the other at the southeast corner of Bremen Highway and Meijer Drive (3630 Bremen Highway). Other major site development and subdivision projects approved in 2018 were Center for Hospice – Phase 2 (519 Comfort Place) and Phase 3 (535 Comfort Place), Classic Seamless Gutters building expansion (1121 N. Merrifield Avenue), Cor-A-Vent building expansion (645 E. Sixth Street), Lippert Components Parking Lot expansion (400 S. Byrkit Avenue), Vibra Rehabilitation Hospital (4807 Edison Lakes Parkway), and Villas at Reverewood, Phases 4 and 5.

### **MS4 (Municipal Separate Storm Sewer System)**

During 2018, staff prepared for potential construction and post-construction audits by IDEM. City staff met with the IDEM inspector for our region for field training on IDEM soil erosion control expectations at private construction sites. IDEM will be choosing a subset of the regulated communities for the in-depth audit in 2019. We are unsure if Mishawaka will be chosen as an audit site for 2019, but we will continue to handle construction and post-construction in accordance with applicable regulations to ensure that the results of a potential audit will be favorable.

The City, through its consultant, created 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 stormwater. 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 at our last good housekeeping audit, 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. During 2018, the MSP began planning for a contractor education event that is being spearheaded by the Soil and Water Conservation District. The event will occur during the first quarter of 2019.

2018 was the City's final year of the third NPDES permit term (5 years per each term). Staff prepared and submitted a permit renewal to IDEM. The City has not received a response, but anticipates receiving the renewal in 2019. IDEM is currently working on changes to the MS4 Permit Program. The revisions will require permit restructuring that may bring changes to the local MS4 programs, including the potential for revised permit requirements. Program efforts throughout 2019 will focus on continuing outreach education, erosion control permitting with construction site monitoring, 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 2010, which established maintenance requirements and provided a regulatory framework for recovering costs incurred by the City in dealing 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 updated and printed an educational pamphlet for distribution with the January 2018 restaurant license renewal. The list of food service establishments that fall under the provisions of the ordinances was reevaluated. As the program has grown and developed, additional food service establishment types have been identified for inclusion in the program. Those newly identified establishments were included in the registration and education in 2018.

### **Traffic Engineering Services**

#### *Maintenance and Operation*

Engineering is responsible for maintaining the effective use of the City's streets for the motoring public. This includes ensuring that the traffic signals are operating correctly, traffic signs are clearly and consistently displayed, and the City's rights of way are clear of obstructions. The following bullets detail some of these efforts during 2018.

#### *Traffic Signals*

Total of 63 traffic signals: all cabinets received an annual cleaning to protect the cabinet electronics, which includes replacing air filters and evaluating the winter heat source and battery back-up system

- 13 school warning devices
- 2 intersections with four-way red flashers
- 2 intersections with all-way yellow warning flashers
- Completed 150 traffic signal maintenance repairs
- Additional repairs and maintenance of luminaires on traffic signal poles
- Additional repairs of guardrails

### Traffic Signage, Pavement Markings, and Dumpster Permits

- 28 work orders issued for signage and pavement markings
- Annual inventory of all traffic control signage near public and private schools including repainting school crosswalks and replacing damaged, faded, or missing signs, which maintains compliance with Federal guidelines as outlined in the Indiana Manual on Uniform Traffic Control Devices for all schools in Mishawaka
- 4 on-street disabled parking spaces were added following recommendation from the Mishawaka Police Traffic Division and approval by the Board of Public Works and Safety
- 5 on-street disabled parking spaces were removed since they were no longer needed
- 58 dumpster permits were issued

### Traffic Studies, Modifications, and Traffic Commission

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.

Requests are received for additional four-way stops, time limited parking, and restricted parking which require a recommendation by the Traffic Commission and, in many instances, action by the Mishawaka Common Council before implementation. A thorough investigation and, in some instances, a study is completed to determine the merits of each request. These studies are then presented to the Traffic Commission for review and recommendation to the Common Council. Upon adoption of an Ordinance by the Mishawaka Common Council, the Engineering Department issues a work order to install the modified signage or pavement markings.

In 2018, the City received a formal request to consider adding a traffic signal at the intersection of Russell Avenue and Milburn Boulevard. A study was completed by review of accident reports, traffic counts, and sight distance and configuration verification. The study did not recommend a traffic signal or an all-way stop since the intersection data did not have supporting justification. Ultimately, the findings were presented to the Traffic Commission, the Traffic Commission denied the request, and it did not advance to Common Council.

### **GIS (Geographic Information Systems)**

Geographic Information Systems, or GIS, is a computer technology that uses data in relation to location, smart mapping technology. It is estimated that 80-90 percent of all information kept by local governments has a geographic location associated with it. The GIS staff oversees and coordinates the City's use of the software, databases, and all related information through interaction with most departments; work performed out in the field; relationships with other agencies such as South Bend, St. Joseph County, and MACOG; and provides convenient visually oriented information for City employees, residents, and businesses to utilize.

One of the primary responsibilities of the GIS staff is to maintain all aspects of GIS software and coordinate base mapping data such as aerial photography, building outlines, road edges, hydrology (bodies of water), streets, addresses, business locations, and many other data layers. This includes troubleshooting when problems with GIS and related software are encountered. It also involves the interfacing of the primary GIS software with other software systems for permitting, inspection

management, and other department-specific applications. All web-related GIS applications involve creating and maintaining GIS maps provided for the public as well as for field capabilities by City departments, such as utility locating, entering real-time data in the field, and other uses of mapping data lookup. There are currently 17 online web maps available to the public and an additional 13 online web maps for internal City use only. This involves overseeing the supporting GIS data so the online web maps provide current graphics and data. Many department-specific maps, which are accessed from City employee workstations, have been created and maintained by the GIS staff as well.

The GIS staff also coordinates Mishawaka's interagency projects such as providing streets, addresses, and business locations to the St. Joseph County Public Safety Answering Point (PSAP) and providing updated residential addresses to the U.S. Census Bureau.

### GIS Projects

In 2018, the following projects were completed, beyond the normal daily tasks and responsibilities of the GIS staff:

- Completed submission to the U.S. Census Bureau for the Local Update of Census Addresses (LUCA) as part of the 2020 Census to ensure complete and accurate population count
- Completed integration of EnerGov, a new permitting software, with City GIS
- Coordinated with the Police Department to support implementation of the Motorola Premier One Records Management System (RMS)
- Created ability to track and easily identify particular attributes of the Mishawaka street centerline layer including street ownership and high traffic volume roads
- Created a Traffic Alerts online map to help improve communication with the public on upcoming road closures, lane restrictions, and detours
- Created ability for the Water Department to do limited online GIS editing of water layers

### **Construction Projects**

Engineering is responsible for plan development and construction management of public works projects. These construction projects are funded from several sources. In 2018 projects under construction were funded with Long Term Control, Tax Increment Financing, Cumulative Sewer, Redevelopment CDBG, Local Road and Street, Sewer Maintenance, and INDOT/FHWA Funds. Construction completion in 2018 totaled approximately \$16.8 million. Specific details of the 2018 construction projects are highlighted in the following sections. In addition, projects that were in the design and land/easement acquisition phase during 2018 are also discussed with intent of future construction.



## **TIF Construction Projects**

### **Railroad Bridge Signage – Main Street Underpass**

This Project was the first phase of the final portion of the overall City branding and wayfinding initiative. The Railroad Bridge Signage project at the Main Street Underpass commenced in May 2018. It included cleaning and painting the branding signs on the north and south facades of the Canadian National Railroad Bridge, as well as attachment of City Seal and Princess City Parkway wayfinding signs. The parapet walls were cleaned and stained to match the concrete walls on both sides of the bridge. This project was complete in June 2018 with a total City investment of \$129,000.



*Railroad Bridge Signage – Main Street Underpass*

### **Railroad Bridge Signage – Church Street Underpass**



*Railroad Bridge Signage – Church Street Underpass*

This Project was the final phase of the overall City branding and wayfinding initiative. This Railroad Bridge Signage project at the Church Street Underpass commenced in June 2018. Since existing utility crossings were attached to the bridge, the signs were cantilevered 30 inches from the north and south faces of the Norfolk Southern Railroad Bridge. The project also included staining the concrete bridge facade to match the adjacent retaining walls. The interior abutment and center pier walls were stained darker to camouflage the ongoing

impacts of the stormwater runoff from the aging steel railroad bridge. This project was complete in July 2018 with a total City investment of \$173,000.

### **Douglas Road Phase II, including Veterans Parkway and Northeast Well Field utility access**

The City's recent annexation, subsequent acquisition of the Juday Creek Golf Course, and plans for the proposed Northeast Well Field emphasized the need for improvements to Douglas Road from the existing County two-lane configuration. Due to the magnitude of utility coordination, a phased approach to the project was necessary. Phase I construction was complete in June 2018 and included utility extensions, stormwater management accommodating the sensitive nature of Juday Creek, and subgrade preparation with a total City investment of \$1.3 million.

Phase II construction commenced in June 2018 for Douglas Road and Veteran’s Parkway. Douglas Road improvements included a five lane concrete street with two travel lanes in each direction, a center left turn lane, concrete curb and sidewalk, street lighting, and multiple buried utility corridor conduits. At the close of 2018, the improvements to Douglas Road were substantially complete with a City investment to date of \$3.7 million.

When construction resumes in the spring of 2019, the focus will be on the construction of Veterans Parkway, which will provide access to the proposed Northeast Well Field and water treatment facility. Veterans Parkway will include one lane in each direction and protected left turn lanes incorporated with landscaped islands, a bridge over Juday Creek, water main, stormwater management, street lighting, gravity sanitary sewer main, and associated forcemain for a future lift station. The estimated investment to complete the project is \$2.2 million. The service area for the future lift station (Phase III) will require design for 1 million gallons per day of capacity upon total build-out.

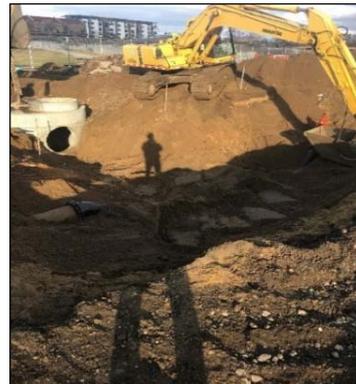


*Veterans Parkway and Northeast Well Field utility access*

As part of the Douglas Road Phase II project, the Jefferson Boulevard and Liberty Drive intersection was added to the project just prior to bidding. Specifically, in late fall of 2017 the Cemetery Perimeter Fence project provided the opportunity for reconstructing the aging intersection of Jefferson Boulevard and Liberty Drive. Since a traffic signal reconstruction for Douglas Road and Fir Road was included in the Douglas Road Phase II project and was within weeks of bidding, adding the equipment and quantities for hardscape was a much simpler proposition.



*Jefferson Boulevard ADA compliant sidewalk*



*Douglas Road and Fir Road*

This was also an economic decision as it could bring better pricing as quantities increase, and that is exactly what happened. Residents along the north side of Jefferson Boulevard just west of

Liberty Drive were approached to dedicate a few feet of right of way to allow the City to install needed sidewalk. The owners of 418, 420, 426, 428, and 430 W. Jefferson Boulevard were very supportive, and the results are a new ADA compliant sidewalk, working walk-waits, and new battery-backup traffic signal serving a main walking corridor for multiple walk-on schools in the area. The City investment for this intersection and surface hardscape was \$175,000. Overall, the Douglas Road Phase II project is scheduled to be complete in December 2019 with a total City investment of \$6.1 million.

### *Ironworks Development Area – Phase II*

The City entered into a developmental agreement regarding The Mill at Ironworks Plaza, a planned unit development bound by Front Street, Mill Street, Ironworks Avenue, and Hill Street, where utility improvements were committed and were split into two phases. In 2017, the City completed Phase I of the sanitary sewer service improvements at Mill Street that accommodates the future retail elements of the development fronting Mill Street, which included a total City investment of \$72,000. Due to coordinating efforts with the private developer’s equipment and materials, construction of Phase II was delayed until September 2018. This phase included the installation of storm sewer, sanitary sewer, electrical and utility conduits, and street lighting foundations. The project is expected to be completed in spring 2019, with an estimated City investment of \$490,000.

### *Douglas Road and Grape Road Intersection – Eastbound Right Turn Lane*

Ultimately, the full build-out of improvements at this intersection will require additional right of way from all quadrants of the intersection. Therefore, these improvements will be completed in phases, beginning with the southwest corner as the City was able to partner with Heritage Financial Group Inc., the new property owner at the southwest corner of the Grape Road and Douglas Road intersection. This partnership allowed the City to obtain additional right of way to accommodate the construction of a right turn lane for eastbound traffic on Douglas Road. Construction commenced in April 2018 and included the concrete eastbound right turn lane, storm sewer, and traffic signal improvements. Nearby locations on Douglas Road required concrete joint reconstruction with similar concrete reconstruction efforts modifying joints throughout the City TIF District. The project also included complete reconstruction of Hill Street between Lincolnway West and Third Street. The onset of early winter weather caused a small portion of work to be delayed until the spring of 2019. The estimated City investment is \$1.4 million.



*Douglas Road and Grape Road Intersection*

### North Main Street Median Island Modification

To facilitate safe ingress/egress for the existing southwest Main Street drive approaches and new multi-lot development at the southeast corner of Main Street and Edison Lakes Parkway, the center island on Main Street was modified to accommodate southbound left turns and a conflicting existing drive approach for Extended Stay hotel was relocated to the south. Main Street was milled, resurfaced, and new traffic pattern pavement markings from the Main Street's Juday Creek Bridge,



*North Main Street Median Island*

north to Edison Lakes Parkway were installed. Additionally, the northeast curb radius was improved at the intersection of Douglas Road and Main Street to enable stable turning movements for longer vehicles and to better protect the existing traffic signal pole. The intersection of Hickory Road and Edison Road is shared right of way with the City of South Bend. The City's portion of right of way was reconstructed including reconfiguration of three concrete islands. The total City investment was \$700,000.

### Fourth Street Improvements – Phase II

As a continuing effort to reduce combined sewer overflow, CSO, Fourth Street from Laurel Street to Merrifield Avenue was fully reconstructed. In addition to the full depth pavement, storm sewer was installed allowing for the separation of the stormwater flows from the sanitary sewer lines. All sanitary sewer laterals and water services were replaced within the public right of way. Laurel Street from Third Street to Fourth Street was also reconstructed and a sanitary sewer was constructed to separate the sanitary and storm flows. Both street sections also included new concrete curbs, gutters, and sidewalk. Work is expected to be complete in spring 2019 with an estimated City investment of \$1.1 million.



*Fourth Street Improvements*



*Donaldson Avenue Reconstruction*

### Donaldson Avenue Reconstruction

This project resolved the remaining legacy of the Main Street underpass construction and the desire to redevelop the resulting remnant land. The Logan Home and Mishawaka Building Trades each obtained parcels in this corridor that required sanitary sewer access. Specifically, the reconstruction of Donaldson Avenue from Main Street to Division Street included full depth pavement, all sanitary sewer laterals, and water service replacement. The project was completed in the fall of 2018 with a total City investment of \$500,000.

### **2018 TIF Design and Study Projects**

#### *Cedar Street from Mishawaka Avenue to Edgewater Drive (Mishawaka Ave. Phase III)*

Cedar Street is Phase III of the Mishawaka Avenue area projects which progressed to 95% complete in 2016. The project is impacted by the adjacent Cedar Street Central Service Facility rehabilitation. The facility was demolished in 2017, and it is anticipated that the brownfield requirements will be complete in 2019. The Cedar Street project may be programmed for construction once the rehabilitation is fully complete. At that time the project will include sewer separation, street reconstruction, concrete curb, and sidewalk with an estimated City investment of \$1.2 million.

#### *Union Street, Dragoon Trail to Eighth Street (study)*

The study was initiated as a planning exercise in 2017 due to the new Family Express development at the northeast corner of Union Street and Dragoon Trail. The City completed the study in spring 2018, which determined appropriate right of way needs including traffic counts that identified all turning movements, accident data, line-of-sight geometry, existing and proposed growth of utilities, and land redevelopment. In 2018 Family Express dedicated right of way for future expansion of the intersection and construction of an 8 foot wide multi-use pathway. Since improvements of the ultimate build out to a five-lane section are many years into the future, the short-term improvement of a left turn signal was recommended. In addition, the 2018 construction season routed many State detours into this intersection causing even more congestion. Since traffic counts were determined from the recently completed study and are necessary to generate the program for the signal timing, implementing the interim recommendation in 2018 was the obvious solution. Therefore, the City installed a passive left-turn signal for traffic east and west bound on Dragoon Trail and adjusted signal timings with a total City investment of \$15,000.

#### *Ironworks Plaza – storm sewer relocation/parking lot, café/event center, ice rink, beer garden*

As The Mill at Ironworks private development progresses, the City turned its attention to vacant land north of Ironworks Avenue and south of the St. Joseph River Race. Elements identified for development in 2017/18 included the café/event center, new ice ribbon/rink to replace Merrifield's aging facility, and pavilion/beer garden. During the design of these facilities, it became evident that relocating the existing storm outfall from the River Race and upsizing to new 72" storm outfall at the river would be required. Phase I construction is scheduled for late spring 2019 and includes new storm sewer and outfall, a new parking lot with associated utilities installed for the future café/event center, fishing access overlook, and pedestrian walkways. Phase II is scheduled for later in 2019 and will include the beer garden area. Phase III, the café/event center and ice ribbon/rink is tentatively scheduled for construction 2020/21 as funds become available. See Exhibit A.

### *Bremen Highway, Meijer Drive – Elmwood Road Reconfiguration*

The City partnered with the developer of the parcels west of Bremen Highway that will allow the reconfiguration of the existing Elmwood Road to the Meijer Drive traffic signal. The developer committed to granting the required right of way and to share in the construction costs. Therefore, the City commenced with design in 2018 of the reconfiguration that will include utility extensions, storm sewer, full depth pavement, concrete curb and gutter, and an upgraded traffic signal. Upon receiving favorable bids, construction may begin as early as June 2019. The overall estimated project cost is \$600,000.

### *Twelfth Street, Phase III (Dodge Avenue to Campbell Street)*

Just as Twelfth Street Phases I and II were selected by INDOT/FHWA to receive 80% funds matched by the City's 20% funds for construction and construction observation, Phase III was also selected as a viable project in 2018 to receive these future funds. The design commenced in summer 2018 and the project will include a widened Twelfth Street from its present two lanes to three lanes to include a continuous center left turn lane, new storm sewer, concrete curb and gutters, and 8 foot multi-use pathway. This INDOT/FHWA process also requires deliberate design, environmental study, and right of way acquisition milestones that will span until 2024/25 when the start of construction has been programmed into the INDOT/FHWA system. The total investment for construction at that time is estimated to be \$7.8 million.

### *Bendix Pond / Beiger Street / Byrkit Street Storm Drainage Study*

In 2017 growth via private redevelopment was invested in this area through the facility and site improvements by Lippert Components and the facility investment of Siemens Health in both of Byrkit and Beiger campuses. The anticipated construction of Phase II of Twelfth Street and the performance of Bendix Pond during the flooding in February 2018, facilitated the need to identify potential drainage improvements with the goal of coordinating with future improvements for both industrial partners. Survey and existing utility information was completed in 2018 with recommendations to be finalized in 2019.

## Public Works Projects

### Community Crossings Matching Grant

In August 2017, the City was awarded a \$650,000 matching grant, which the City utilized in the 2018 construction season for eighteen project locations within the City:

Street Name	From	To
Beiger Street	Lincolnway	Third Street
Broadway	Logan Street	Liberty Drive
Edgewater Drive	Cedar Street	John Street
Hampton Road	50 feet W of Tremont Drive	Hampton Court
Hill Street	Third Street	Fourth Street
Homewood Avenue	Home Street	Roosevelt Avenue
Jefferson Blvd	Logan Street	Forest Avenue
East LaSalle Avenue	Sarah Street	Christyann Street
East LaSalle Avenue	Division Street	Chestnut Street
Main Street	Lincolnway	First Street
McKinley Avenue	300 feet west of Chestnut Street	Canadian National Railroad
Meijer Drive	650 feet east of Bremen Highway	1770 feet east of Bremen Hwy
Merrifield Avenue	McKinley Avenue	Cedar Street
Milburn Court	Fourth Street	Dead End
Oak Street	Lawrence Street	Broadway
Schumacher Drive	West McKinley Avenue	Imus Drive
Terry Lane	Land's End Drive	Harding Avenue
Vine Street	Logan Street	Calhoun Street

Each location was reviewed for the condition of the existing pavement to identify deficiencies and, on a case by case basis, a determination was made on the type of treatment application for each location. Treatments included full depth patching, partial depth patching, variable depth milling, wedge and level course, and road fabric installation. Resurfacing varied from 1.5 inches to 4 inches. Handicap ramps at the intersections were replaced to meet ADA standards for each block. Various concrete curbs were replaced, and curb inlets and manhole castings located within the pavement were also adjusted to grade where necessary. After paving was completed, new thermoplastic pavement markings were installed, including crosswalks. These eighteen projects were completed in 2018 with a total construction cost of \$1.3 million. In 2019, the City will apply for a Community Crossings Grant for the 2019 construction season.



Summer Street Paving Program

With the completion of the pavement rating system (PASER), the Engineering Department coordinated an additional 9,500 linear feet of street milling, sealing, and resurfacing. The entire street was milled from curb to curb to remove 1” to 2” to retain as much curb exposure as possible. Milling expenses totaled \$122,000, resurfacing totaled \$360,000, sealing totaled \$45,000, and pavement markings totaled \$3,000, for a total overall summer street paving program City investment of \$530,000.

Street Name	From	To
Broadway	235 feet west of Sarah Street	Cedar Street
Liberty Drive	McKinley Avenue	Jefferson Blvd
McKinley Avenue	Hickory Road /Logan Street	Entrance to Town and Country
Twelfth Street	Dodge Street	Campbell Avenue

Alley Paving Program

The 2018 Alley Paving Program surfaced 4,110 linear feet of alleys totaling an investment of \$75,000. A field inspection of each alley is conducted to determine the feasibility of paving 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 apply dust palliative to 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. In 2018 eleven alleys were surfaced with this program.

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 118,100 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, trip hazards, or damages. In 2018 a total of \$264,000 was invested in neighborhoods on curb and sidewalk improvements.

Curb and Sidewalk – Community Development Block Grant

The Department of Redevelopment received a 2018 Federal Grant for curb and sidewalk improvements within the low to moderate income census tracts. With these funds, a separate project was bid as performance (design/build) to replace 5,280 lineal feet of curb and sidewalk to meet the current ADA standards and install new handicap ramps. The improvements were constructed in the fall of 2018 along Elizabeth Street from Broadway to Battell Street, Battell Street from Main Street to Elizabeth Street, Lawrence Street from Elizabeth Street to Ann Street, and Willow Street from Marion Street to Jefferson Boulevard. The total investment was \$308,000.

## **Long-Term Control Plan Projects**

The City's 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) from fifty (50) per year in 2008 to less than one (1) per year upon the plan's complete implementation. Improvements were previously completed at the Wastewater Treatment Plant expanding the plant capacity and attention is now directed to the collection system, which originally diverted 350 million gallons of combined sewer overflow (CSO) to the St. Joseph River during the wet weather. Separation of stormwater from the sanitary flows not only helps prevent overflows to the river, it also reduces the amount of stormwater conveyed to the Wastewater Treatment Plant for processing saving the residents the cost of unnecessarily treating the stormwater. It also reduces individual backups during storm events.

The City's Long-Term Control Plan (LTCP) was endorsed by the Common Council in January 2014, and Final Judgment was filed on May 23, 2014 by the United States District Court. However, at the 60% plan completion in November 2016, the estimated project cost significantly exceeded the initial estimates causing the City to step back and reevaluate the LTCP as a whole. Since we are bound by a schedule and specific elements within the 2014 Consent Decree, we continued to progress construction documents of the deep storage and conveyance tunnel and lift station/control structure to 90% in good faith as we progressed the reevaluation of the LTCP.

Technology has changed since the development of the LTCP; options were reevaluated in 2017 and conclusions supported reopening negotiations with the US EPA and Department of Justice in pursuit of relief from the "zero overflow for the typical year". Official written notice was presented in November 2017 resulting in the first meeting on January 31, 2018 and a subsequent submittal dated August 24, 2018 specifically outlining our proposed alternatives to the deep tunnel-zero overflow LTCP. The year ended as we continue to await a response from the agencies. However, in parallel to renegotiation, the City continues in good faith to progress projects that do not require the deep storage and conveyance tunnel to be viable, i.e. portions of the Linden Area.

### *Linden Area – Long Term Control Plan*

The Linden Area Sewer Separation is an element of the Long-Term Control Plan (LTCP), which falls under the "East Area" of the LTCP and includes the area south of the St. Joseph River roughly bounded by Merrifield Avenue, Fourth Street, and Roosevelt Avenue.

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. However, these are further broken down into several phases to complete the entire system over the next several years.

The Linden Area construction projects began in 2016 with Division A – Phase I. Divisions A – Phase II, Division B, and Division C were completed in 2017. Linden Area Divisions A, B, and C were necessary in anticipation of the second phase of Twelfth Street Improvement Project, from Downey Avenue to Campbell Street, which will allow a storm outlet for the improvements on Twelfth Street. The Twelfth Street project is programmed through MACOG where 80% will be funded by INDOT/Federal Highway and the remaining 20% will be funded by a local match from the City.

#### Linden Area, Divisions N & P

Linden Area Divisions N & P, constructed in 2018, was one of the more challenging portions of the Linden Area projects. The challenges were not only due to utility conflicts, but because of the nearby State/INDOT projects (SR 331 Bridge and SR 933) and unexpected Norfolk Southern Railroad (NSRR) maintenance projects that resulted in sensitive and complex traffic control. With State and City coordination, we collectively toggled closures between the multiple street projects in an effort to keep an open corridor not only for the public safety and walk-on schools, but general traffic, even though these are restrictive corridors on their own.



Specifically, the Linden Area Divisions N & P project spanned Byrkit Avenue from the Norfolk Southern Railroad north to Linden Avenue including the Lincolnway (SR933) intersection. It constructed a 30”/36” dedicated sanitary sewer line to facilitate the separation of the storm flows from the sanitary flows and included a bore and jack under Lincolnway for the new sanitary sewer. An aging water main proved difficult forcing open cut replacement within Lincolnway. Also included was the relocation and replacement of the sewer laterals currently connected to the existing 60”/66” combined sewer in addition to known interconnected residential sanitary lateral separations. Once all the projects are completed, the existing 60” large diameter sewer, which continues south under the NSRR, will become a dedicated storm sewer. The total City investment from Linden Area Division N & P is \$2.5 million. It is anticipated that Divisions M and L, which connect Division C to Division N, will be bid for construction in 2019 and 2020 in multiple phases. Exhibit B more clearly defines the magnitude of area these improvement projects serve.

#### Crawford Park Conveyance – CSO 14 to Niles Avenue

The Linden Area Study also identified significant deficiencies in the conveyance system between CSO 14 and Niles Avenue. As the efforts expended in 2017 and 2018 to determine alternatives for the LTCP, a solution was determined for the overflows of manhole 19 if we were not held to zero overflow for the typical year. 2018 through spring of 2019 includes efforts in design of a new parallel 72” sewer conveyance to the existing 48” through Crawford Park between Niles Avenue and CSO 14. A new CSO control structure will also be constructed. If we are required to adhere to zero overflows, we may then continue the 72” conveyance, otherwise the plan is to terminate at

the existing CSO and dual-barrel river crossing. It is anticipated that the project design will be complete for bidding in summer 2019 with construction in fall 2019 and completed in spring 2020.

## **Wastewater Funds**

### Milburn Boulevard Area Divisions K and M



Milburn Boulevard Area Divisions K and M are not included in the Consent Decree for the LTCP, but the City elected to continue the concept due to the positive results for the neighborhood. These Divisions included Hendricks Street, Queensboro Avenue, and Geyer Avenue (Ewing Avenue to Delaware Street). This project

includes sewer separation, sewer lateral replacement, water service replacement, pavement, curb and sidewalk replacement, and continued investigation and lining of remaining laterals on Lincolnway. This project was completed in early 2018 with a City investment of \$2.1 million.

### Milburn Boulevard Area – Alabama Street, Jackson Street, and Burdette Street (Milburn East)

Though not part of the Consent Decree for the LTCP, the City elected to continue the redevelopment concept for remainder of Milburn Area streets. Alabama Street, Jackson Street, and Burdette Street improvements included sewer separation, sanitary sewer lateral replacement, water service replacement, full depth asphalt pavement, concrete curb and gutter, and sidewalk replacement. The construction was completed in fall 2018 with a City investment of \$1.5 million.



### Milburn Boulevard Area – West Design Project

Design commenced in fall 2018 for the final portions of the Milburn Area not previously improved. Specifically, blocks of Geyer Avenue, Russell Avenue, Somerset Avenue, Dale Avenue, Meridian Street, Sixth Street, and the portion of Logan Street from Panama Street to Dragoon Trail are included. The planned improvements will be storm separation, sanitary sewer lateral replacement, water service replacement, full depth asphalt pavement, concrete curb and gutter, and sidewalk replacement. It is anticipated to be bid in late spring 2019 with an estimated City investment of \$1.9 million.

## 2018 LPA Construction Project (20% Local Match)

Construction was scheduled to start in August 2018; however, due to utility relocations, construction has been delayed until spring 2019. The project will widen Twelfth Street from its present two lanes to three lanes including a continuous center left turn lane. Byrkit Avenue will also be reconstructed from Twelfth Street to Eighth Street. In addition, new curb and gutter, storm sewer, and street lighting will be installed, and the traffic signal at Brykit Avenue and Twelfth Street will be upgraded. The original contract completion date was October 2019, however, due to the utility relocation delays, the project is anticipated to be complete in early 2020. The estimated City investment is \$6.1 million.



*Twelfth Street, Phase II  
(Campbell Street to Downey Avenue)*

## Future Projects

Project	Completion Date	Estimated Cost
<b>Wastewater Funded Area</b>		
Linden Area, Division M –Phase I Railroad Crossing(LTCP) (divert 42" Indiana to 48" Linden)	Nov 2019	\$1,900,000
Linden Area, Division L (LTCP) (Byrkit – sanitary re-route railroad)	Nov 2020	\$700,000
Crawford Park Conveyance Sewer Project	Nov 2019	\$3,250,000
Milburn West Area ( Hubbard, Geyer, Russel, Somerset, Logan)	Nov 2019	\$2,200,000
Linden Area, Division M –Phase II (LTCP) (sanitary re-route south of fifth street)	Nov 2020	\$2,000,000
<b>TIF Area</b>		
Beacon Parkway Pathway	Nov 2019	\$600,000
Douglas Road Widening, Phase II (Veterans Parkway)	Nov 2019	\$3,500,000
Ironworks Plaza, Phase I	Nov 2019	\$3,300,000
Ironworks Plaza, Phase II	Dec 2019	\$2,600,000
Bremen Highway, Meijer Drive - Elmwood Reconfiguration	Nov 2019	\$600,000
Third Street Reconstruction, (Merrifield Avenue to Laurel Street)	Nov 2020	\$1,100,000
Cedar Street Improvements (Mishawaka Avenue to Edgewater)	Nov 2020	\$1,900,000
West St. Storm Relief Sewer – West St. (6th St. to 15th St.)	Nov 2021	\$2,450,000
West St. Storm Relief Sewer – 8th St. (West St. to Logan St.)	Nov 2022	\$1,850,000
West St. Storm Relief Sewer – 15th St. & 16th St. (Rose Park)	Nov 2023	\$3,200,000
<b>LPA Project (FHWA w/ 20% Local Share)</b>		
Twelfth St. Ph II (Campbell St. to Downey Ave.) – Construction (80% Federal funds and 20% City funds)	Apr 2020	\$7,500,000
Twelfth St. Ph III (Dodge Ave. to Campbell St.) – Construction (80% Federal funds and 20% City funds)	Nov 2025	\$7,800,000
Cedar Street Bridge Expansion, Riverwalk Pathway – Construction (80% Federal funds and 20% City funds)	Nov 2024	\$4,450,000

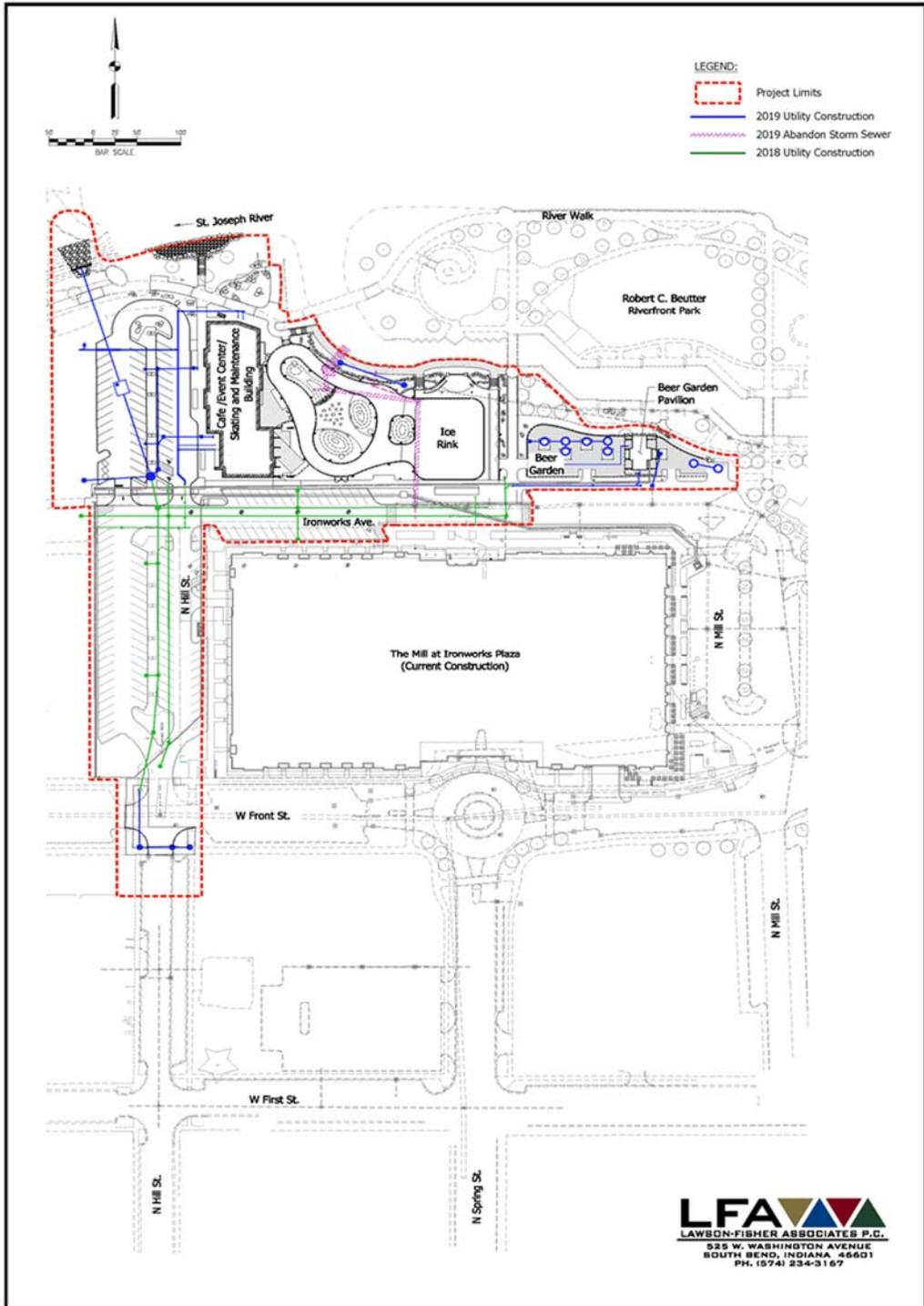
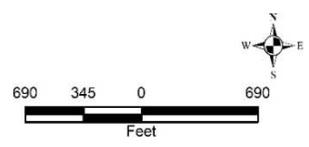
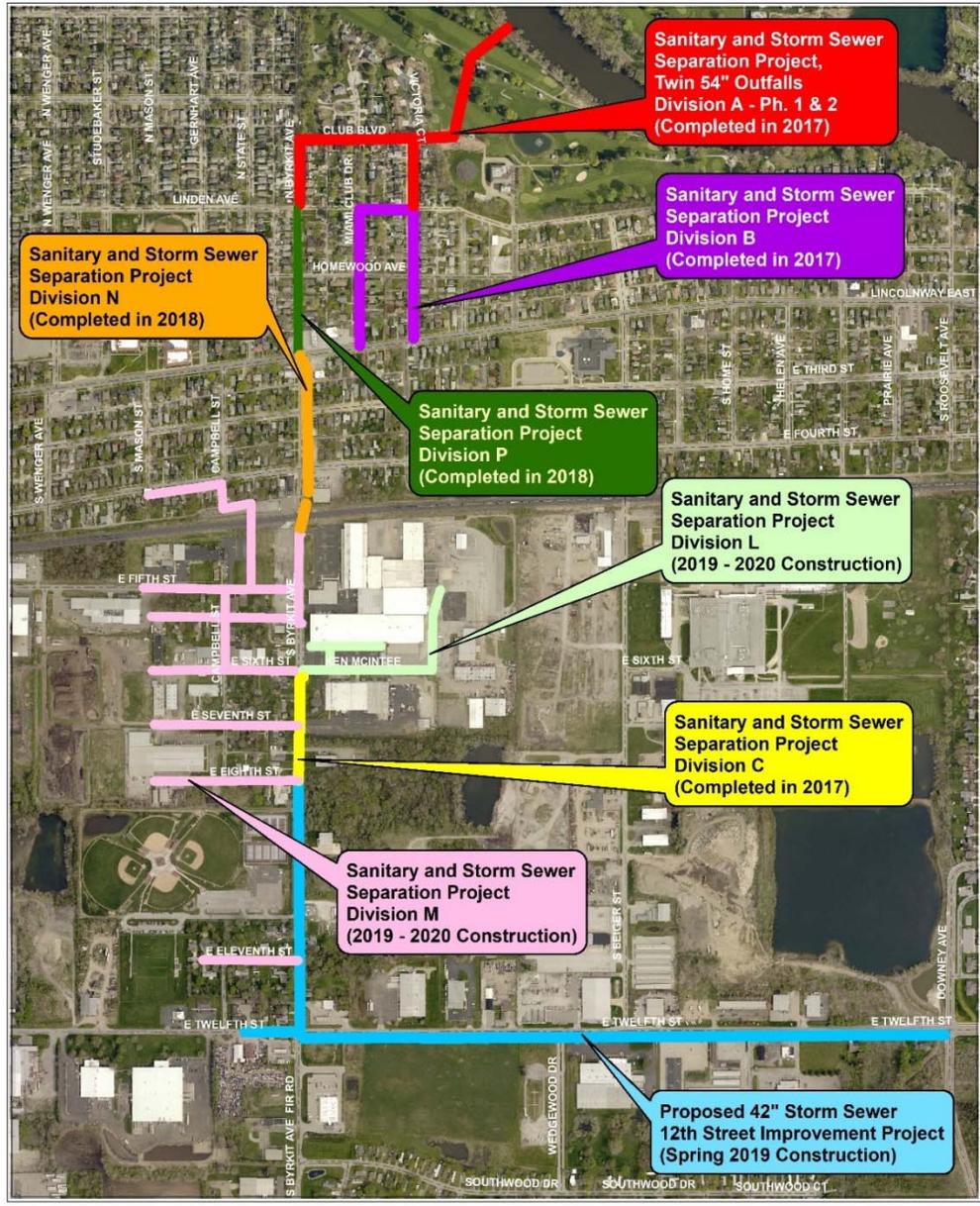


Exhibit A – Ironworks Plaza

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City of Mishawaka, Indiana  
 Linden Area Sewer Improvement  
 Division A, Phase 1 & 2, Division B, Division C,  
 Division L, Division M, Division N, Division P  
 and Proposed 12th Street

Exhibit B – Linden Area Projects and Twelfth Street Phase II