Exhibit A

Beavercreek Thoroughfare Plan Update 2019

June 4 2019

Prepared by the City of Beavercreek Planning and Zoning Department

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Introduction

Transportation is the movement of people, goods and services to and from residential, commercial, industrial and recreational centers. The transportation network is one of the principal driving forces behind the economic and social growth and prosperity of a city and a region.

Currently, there are numerous plans and maps highlighting the future development of roads in the City of Beavercreek. It is the intention of this Thoroughfare Plan to utilize the existing Thoroughfare Plan while consolidating the City's 5-Year Capital Improvement Plan with the regional MPO's (MVRPC) Long Range Plan and Transportation Improvement Plan and create a composite map. Then take that consolidated map and look comprehensively at what is planned for the community, to find gaps between the plans, and to create a plan that fills any such gaps while projecting corridors where future improvements make the most sense based on historical and anticipated development trends.

Benefits of a Thoroughfare Plan

1. Allows for the efficient utilization of the existing infrastructure to meet the current traffic demands and the reservation of necessary right-of-way* for future long-term developments.

2. Establishes a framework for the future development of the City in which the functional role of each roadway is defined. This framework ensures that the major areas of the community are connected to each other as well as connecting adjacent jurisdictions to the community, not only for motorized vehicles but for all users of the transportation system.

3. Provides data regarding planned thoroughfare improvements and amenities prior to the application for federal and/or state transportation dollars to ensure all improvement projects are comprehensively planned and interconnected.

* Right-of-way reservation with local dollars only.

Process

- **Summer 2018** – Create draft maps for existing motorized and non-motorized transportation.
- **Summer/Fall 2018** – Analyze past and present residential and commercial development trends to project future development patterns and locations.
  - Based on analysis, create draft maps of proposed motorized and non-motorized transportation facilities.
- **Fall 2018** – Review draft non-motorized facilities map with the Bikeway and Non-Motorized Transportation Advisory Committee for input.
- **Winter 2019**- City Planning and Engineering Departments meet to update overall goals of the Thoroughfare Plan, and update motorized and non-motorized transportation facilities maps.
- **March 2019** – Present draft Thoroughfare Plan to the Planning Commission for review and comment.
- **April 2019** – Hold public open house for review of draft Thoroughfare Plan.
- **May 2019** – Present overview of draft Thoroughfare Plan to City Council with comments from public open house and Planning Commission for review and comment
- **June 2019**– Present final Thoroughfare Plan to City Council for review and approval.

Periodic Update Required

This Plan should be thought of as an evolving, living document. Periodic updates will be necessary in the future in order to assess progress, take advantage of emerging opportunities, and re-evaluate priorities as needed. As new sections of the roadway and non-motorized transportation networks are developed and new technologies are adopted, following older plans and policies that have become antiquated, can become increasingly challenging.

A required 5-year update period will ensure unforeseen development patterns and possible different future financial situations are taken into consideration to be part of a plan based on realistic goals and objectives.

Existing Conditions

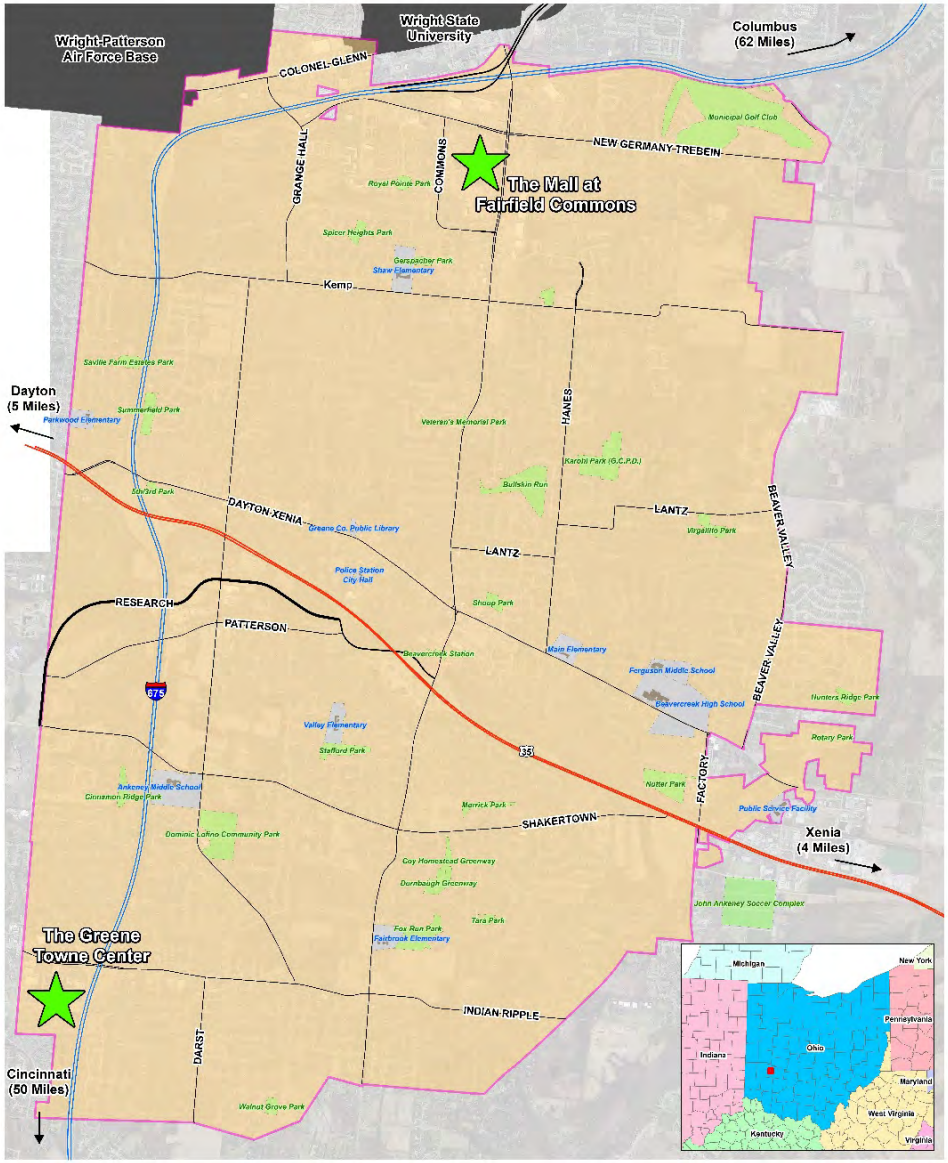
Community Overview

Beavercreek is a fast growing community located in the Miami Valley. The City encompasses over 26 square miles with an estimated population of 46,255 people*, and has become a sustained benchmark for successful economic growth within the Dayton Region. While the Beavercreek area was first settled in the early 1800's, the City itself was incorporated in 1980.

Beavercreek is characterized by a spacious, rolling environment providing a very attractive setting for many outstanding residential neighborhoods. Beavercreek is considered one of the most attractive and desirable locations in the Dayton area offering a premier quality of life. Consequently, it has also been one of the fastest growing regional communities with a housing stock ranging from exclusive, custom-built homes to charming older neighborhoods.

The Mall at Fairfield Commons and the Greene Towne Center anchor two growing regional business destinations providing convenient shopping, dining and services for residents. Neighborhood shopping areas along Dayton-Xenia Road and Indian Ripple Road are also conveniently located to provide shopping and dining opportunities for residents within the community. Beavercreek is also home to numerous research and manufacturing firms engaged in defense technologies, aerospace, automotive components, electronics and other specialized advanced technologies. Many Beavercreek residents are current or former Air Force and civilian employees of nearby Wright-Patterson Air Force Base and its defense industry contractors serving this significant administrative command and research facility.

U.S. 35 provides direct expressway access to downtown Dayton and Dayton International Airport from Beavercreek, and I-675 skirts the northern and western edge of the City, providing convenient access to nearby Cincinnati and Columbus Metropolitan Areas.



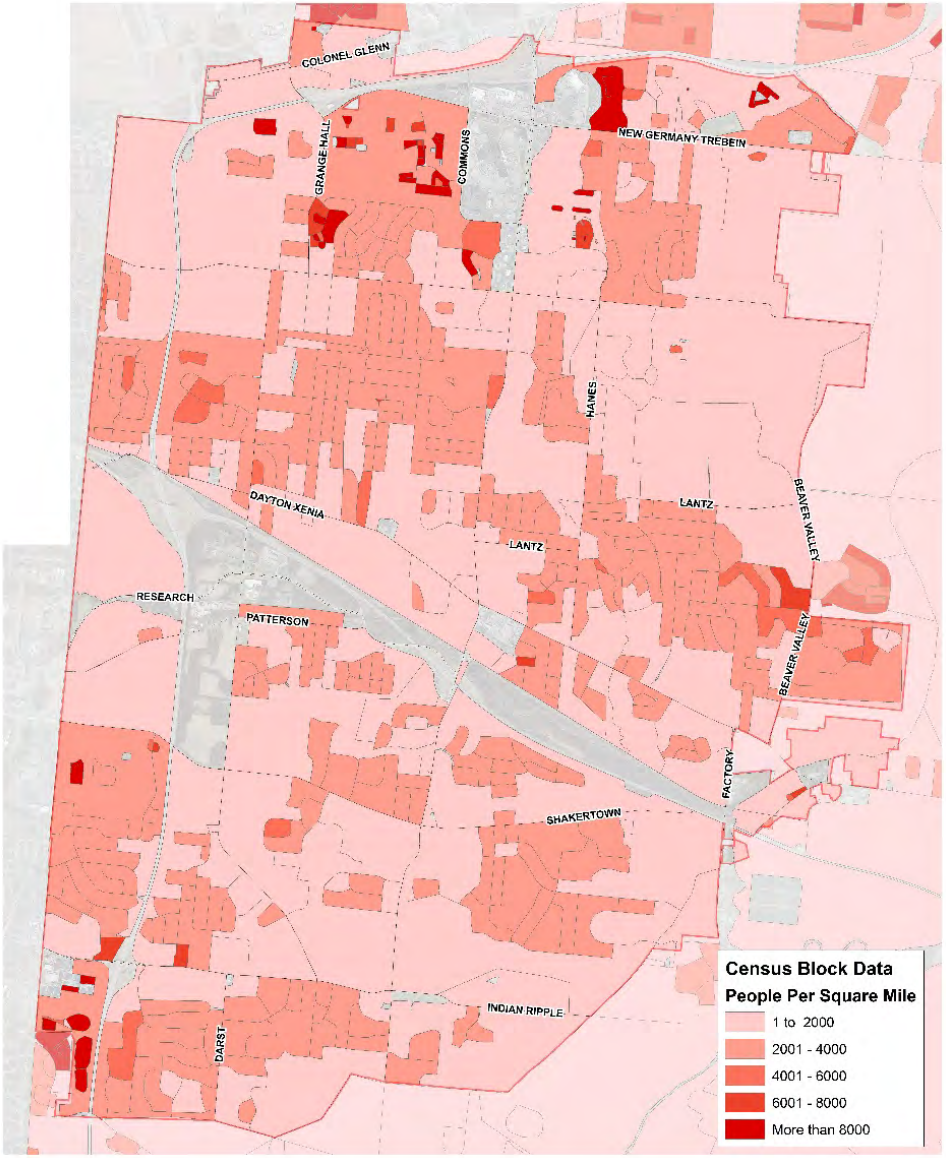
*2013-2017 American Community Survey 5-Year Estimates US Census

Community Overview *(cont.)*

Population		
Census	Population	% Change
2017*	46,948	3.88%
2010	45,193	18.98%
2000	37,984	12.96%
1990	33,626	6.45%
1980	31,589	-
Population Change Since 1980		48.62%
* Annual Estimates of the Resident Population, US Census		

Housing Units				
Census	Total	% Change	Occupied	Vacant
2017+	19,558	0.56%	-	-
2010	19,449	31.12%	93.55%	6.45%
2000	14,833	22.10%	95.31%	4.69%
1990	12,148	19.21%	96.25%	3.75%
1980	10,190	-	-	-
+2013-2017 American Community Survey 5-Year Estimates				

Density	
Approximate Land Area: 26.61 mi^2	
Census Year	Persons Per Square Mile
2017	1,764.30
2010	1,698.35
2000	1,427.43
1990	1,263.66
1980	1,187.11
^ Updated Square Miles includes annexations	

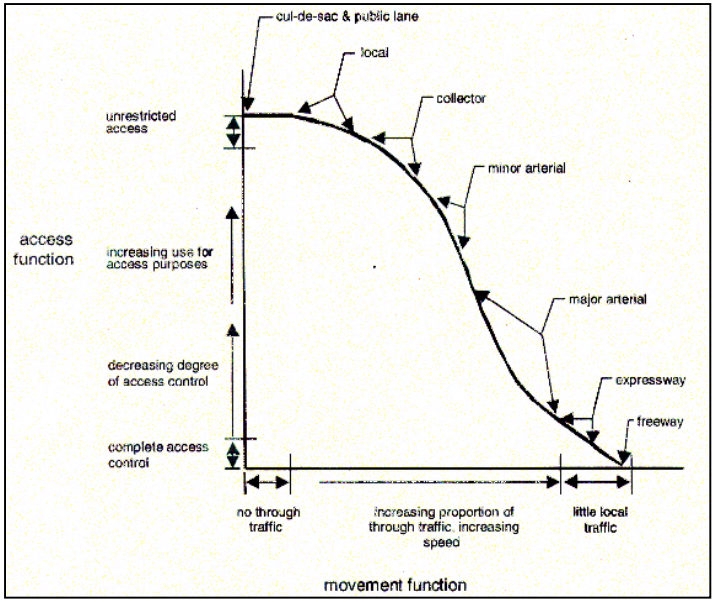


2010 People Square Mile (Census Blocks)

Roadways Functional Classification

A detailed functional classification system provides a hierarchical organization of roadways, streets and highways, which are characterized by their specific functions and the type and level of service which they are intended to provide. The system is classified by considering the relationship of the proportion of access with the proportion of vehicle movements. Expressways and freeways are at the top, allowing the most movement of the largest number of vehicles, while at the same time as having the least access from other roadways. On the lowest end of the spectrum are local streets, which typically have unrestricted access, but are not intended to move large volumes of traffic or traffic at high speed.

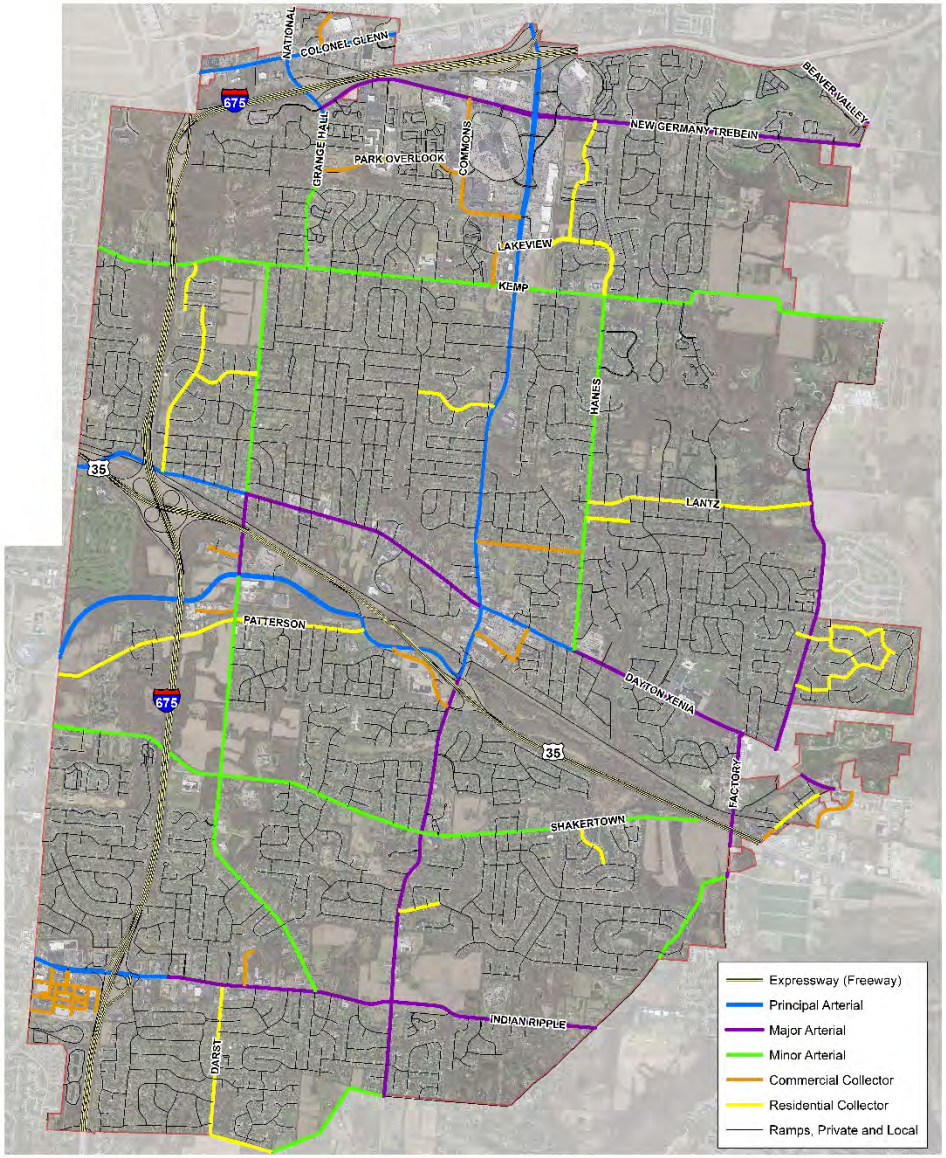
Providing appropriate levels of access, from the top to the bottom of the spectrum, will not only potentially lengthen the life of a roadway, but can also reduce congestion and improve safety across the entire system.



City of Beavercreek – Functional Classification Map

Road Classification	Miles*
Expressways and Freeways	29.9
Principal Arterials	15.1
Major Arterials	15.0
Minor Arterials	17.2
Collectors	19.8
Private Roads	20.8
Entrance/Exit Ramps	14.1
Local Streets	189.4
Total	**321.3**

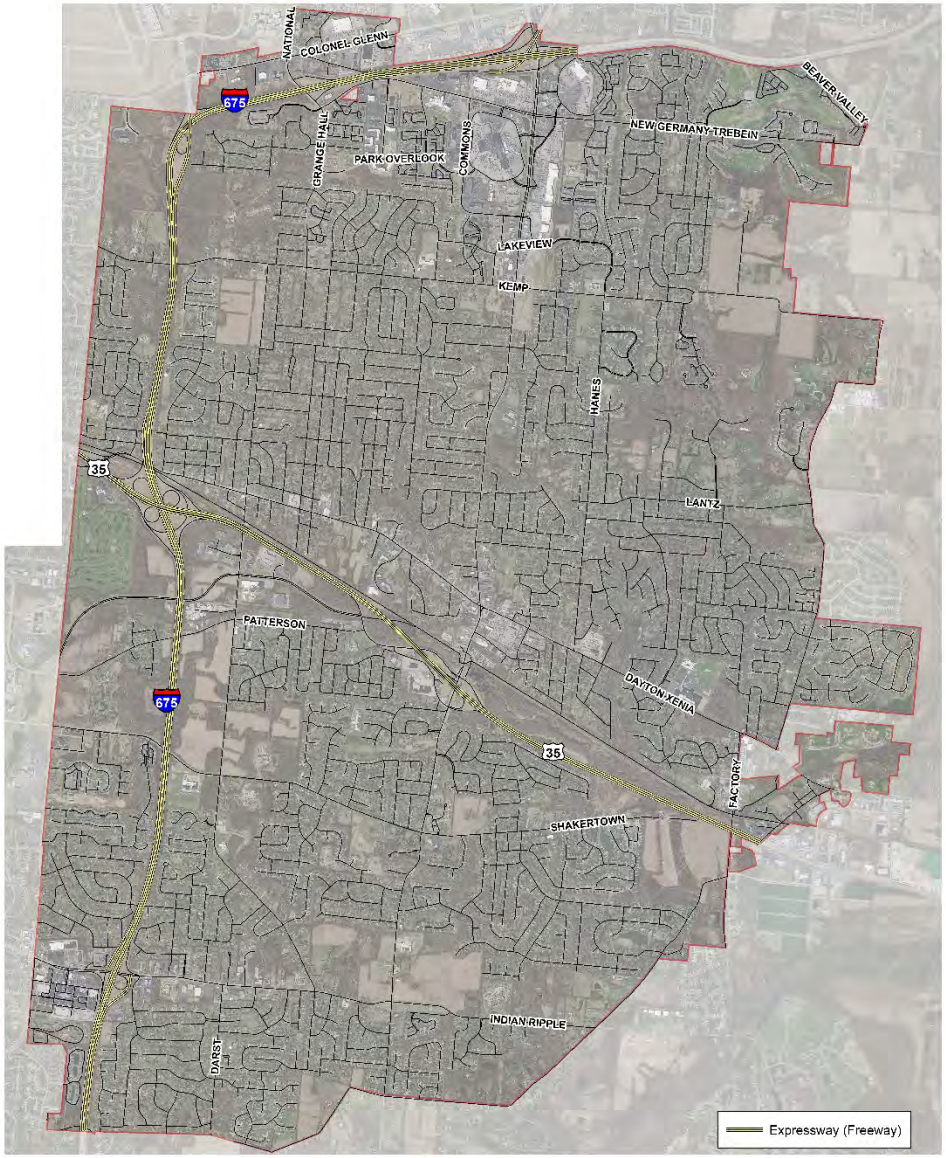
*Mileage includes those roads, such as Beaver Valley Road and Col. Glenn Highway, that are not entirely located within the City, yet are adjacent to the City's boundary, and therefore have implications on future City thoroughfare projects.



Expressways/Freeways

This class of roadway is designed for the high speed movement of a variety of vehicular traffic. It is characterized by fully controlled access points with complete grade separations at intersections. Expressways may have four to eight lanes of traffic with an expected carrying capacity of 1,500 vehicles per hour per lane.

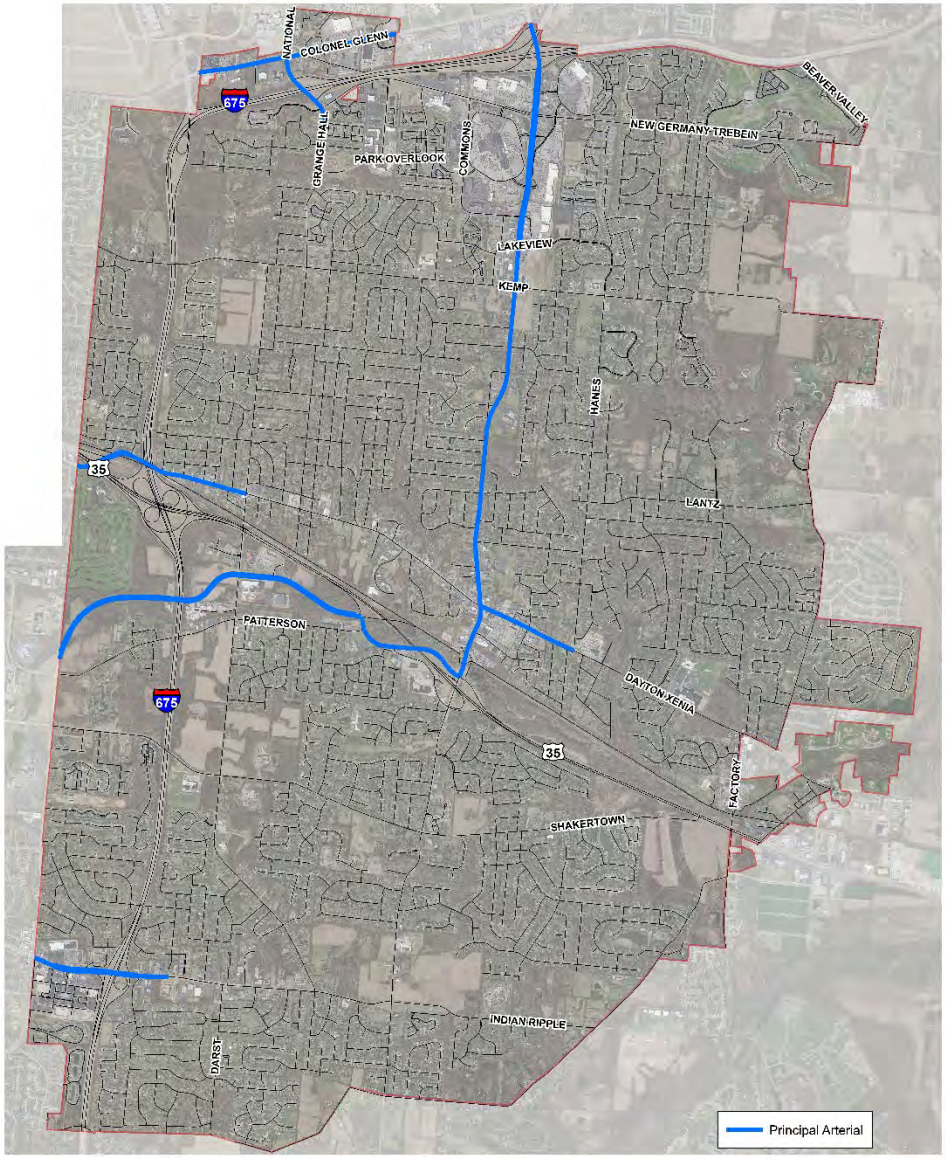
Expressways/Freeways	Miles
U.S. 35	10.0
I-675	19.4
S.R. 844	0.4
Total	**29.9**



Principal Arterials

This class of street brings traffic to and from expressways and other high speed interurban connectors. Principal arterials interconnect the principal traffic generators within the City as well as trips between different areas of the City and should be part of a reasonably integrated system. The typical trip on this class of road usually exceeds one mile. This class of road can carry from 15,000 or more daily trips.

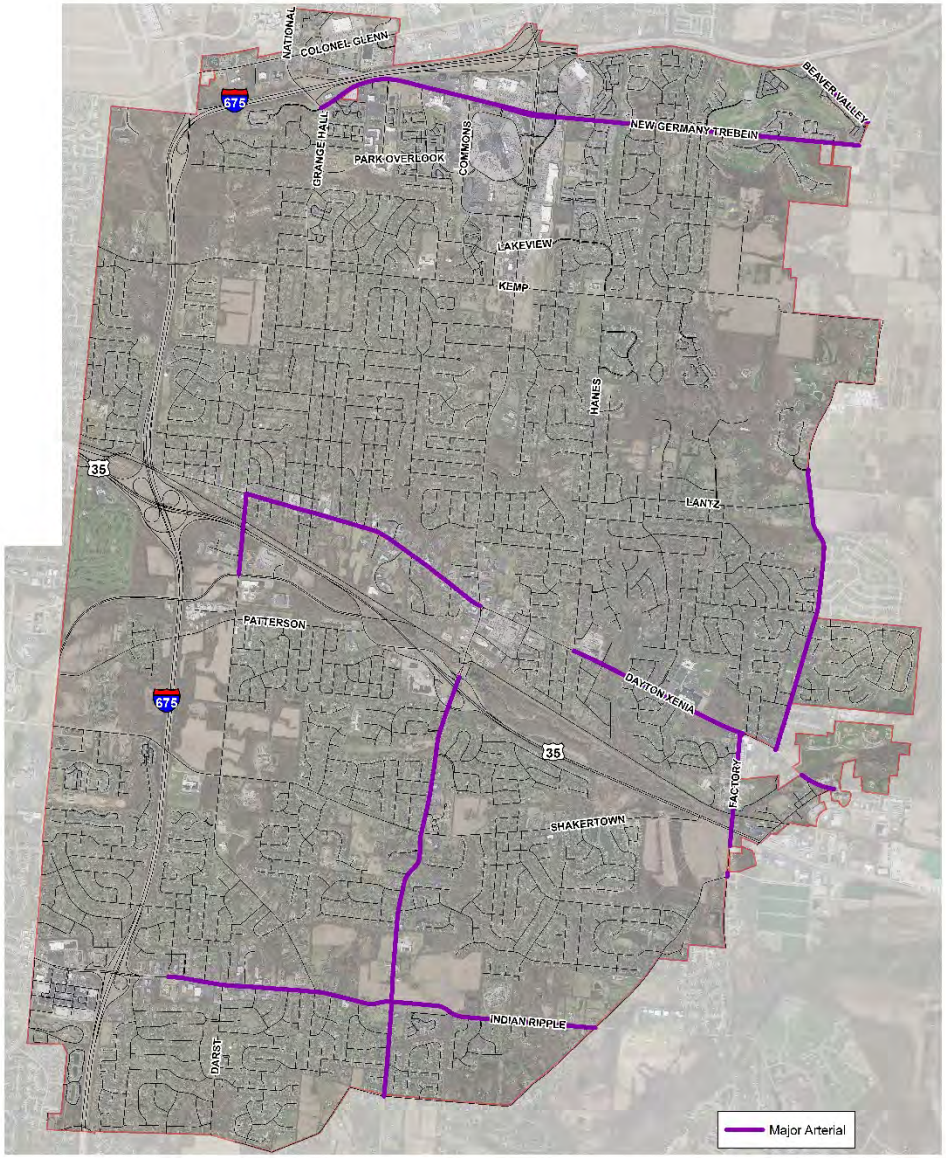
Principal Arterials	Miles
Col. Glenn Highway	1.2
Dayton-Xenia Road	2.0
Grange Hall Road	0.5
Indian Ripple Road	1.3
National Road	0.3
North Fairfield Road	5.0
Research Boulevard	4.8
Total	**15.1**



Major Arterials

This class of street has limited frontage facing individual commercial or residential properties. These roads are ideally served by the collectors and arterial roads with entrances and exits controlled. Speeds of 35 mph to 45 mph are typical for this class of road with daily volumes ranging from 10,000 to 15,000.

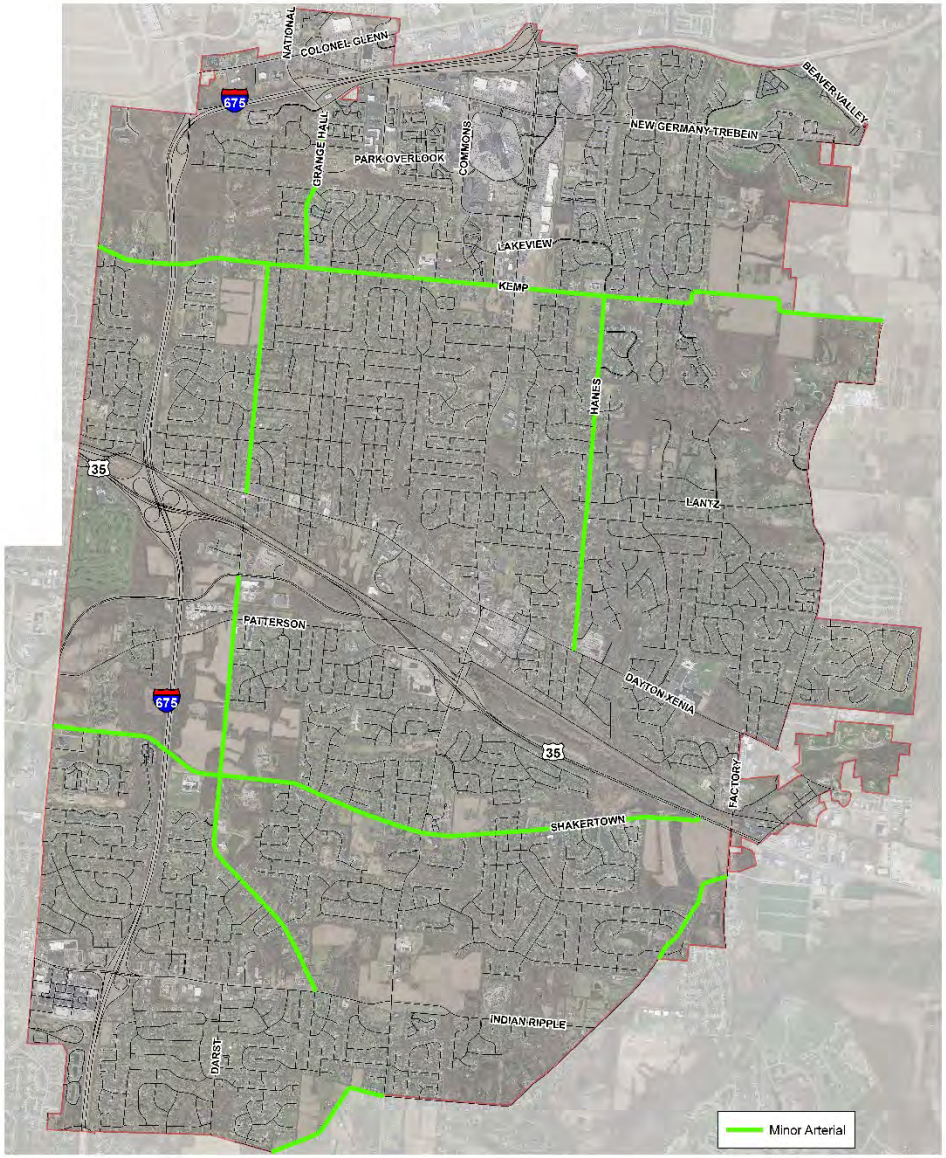
Major Arterials	Miles
Beaver Valley Road	2.1
Dayton-Xenia Road	2.9
Factory Road	0.9
Grange Hall Road	0.5
Indian Ripple Road	2.6
New Germany-Trebein Road	2.0
North Fairfield Road	2.0
Pentagon Boulevard	1.5
South Fairfield Road	0.6
Total	**15.0**



Minor Arterials

This class of street serves as a through connector. Residential properties should be serviced by side streets with these intersections employing a variety of traffic controls. These streets usually have carrying capacity of 2,000 to 10,000 daily trips.

Minor Arterials	Miles
Alpha-Bellbrook Road	0.7
Grange Hall Road	4.9
Hanes Road	2.1
Kemp Road	4.8
Shakertown Road	4.0
Swigart Road	0.8
Total	**17.2**



Collectors

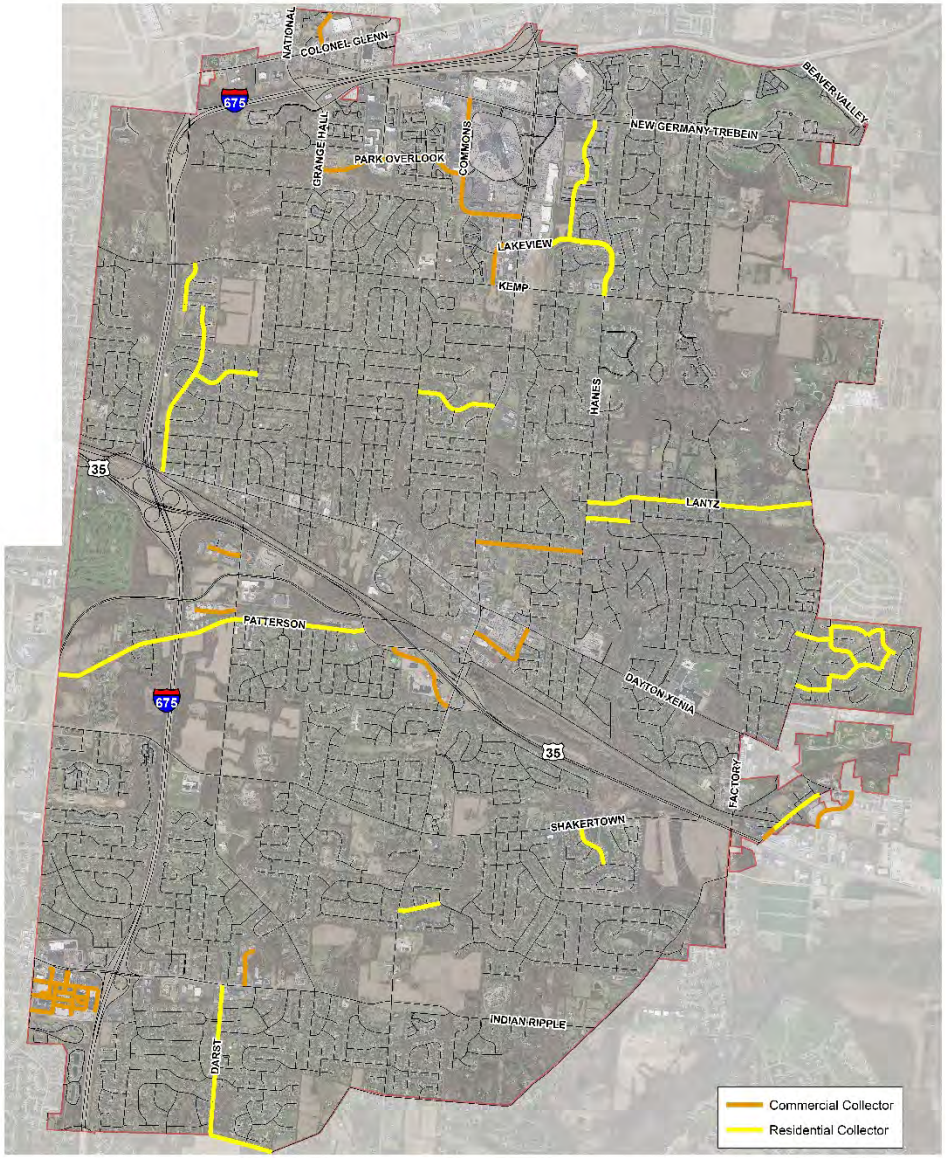
Commercial Collectors

This low to moderate capacity class of street serves major commercial developments. Typically this class of road is short, but should have a long-term heavy duty weight capacity. Signalized access to arterial roads is usually recommended in the best interest of safety.

*Residential Collectors**

This class of street serves internal traffic movements within areas of the City, such as subdivisions, and acts as feeders to the arterial system. These streets are usually short, ½ mile to one mile, and are not designed to handle through trips. This class of street does not usually have signalized intersection control and handles between 500 and 2,000 daily trips, and are typically a minimum 36 feet wide.

* Several residential streets throughout existing mature subdivisions serve as a residential collector for that neighborhood, however do not meet the criteria set forth in the definition for residential collectors and are therefore not listed on the map as such.



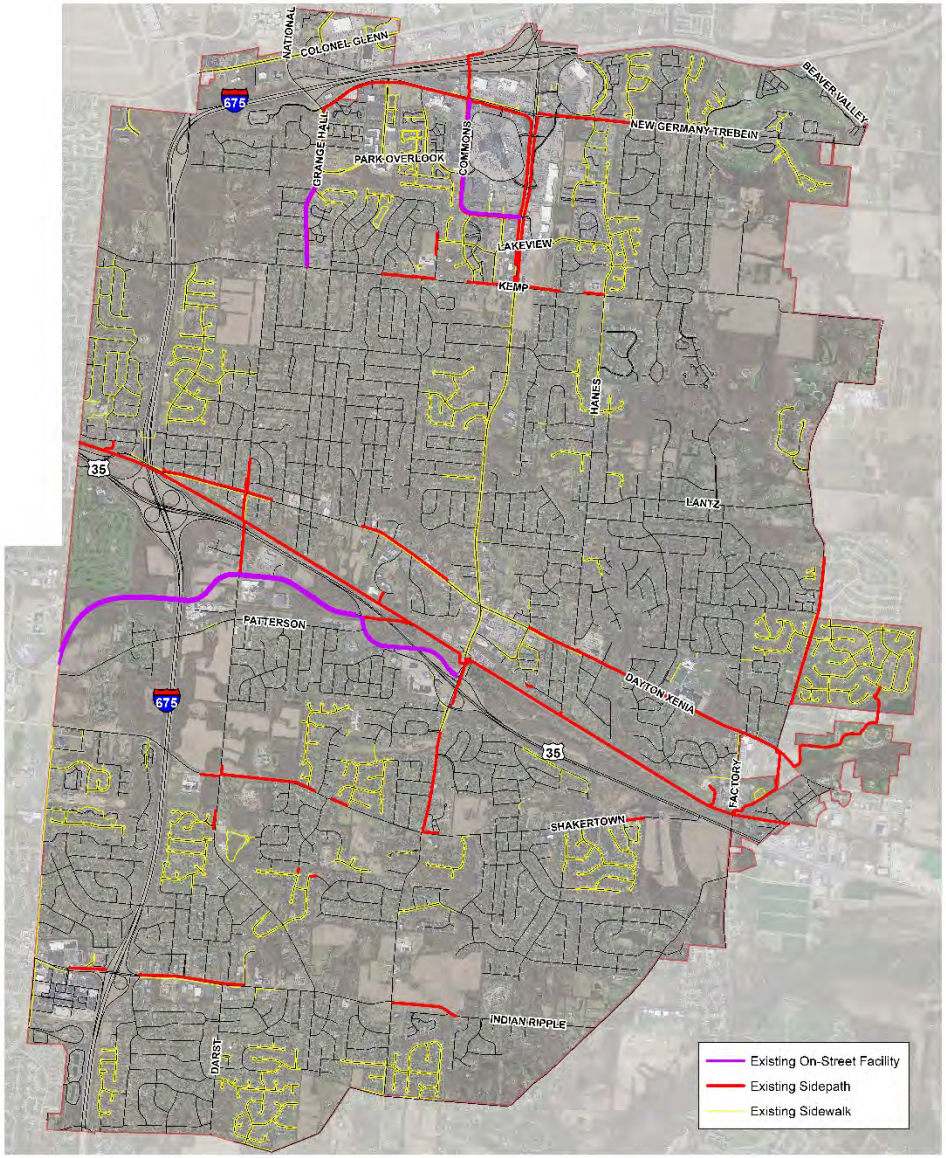
Non-Motorized Transportation Facilities

Non-motorized transportation facilities can be either on-street facilities, such as bike lanes, sharrows or widened shoulders, or could be off-street facilities, separated from the roadway altogether, such as sidewalks or multi-use paths. Ideally, there should be neighborhood facilities, such as 5-foot to 8-foot sidewalks or signed neighborhood connectors funneling pedestrians and bikers into community routes, such as the multi-use paths on Dayton-Xenia Road and Pentagon Boulevard, which in turn funnel riders onto regional routes such as Creekside Trail.

As seen on the map to the right, there are fragments of multi-use paths along Shakertown Road, Kemp Road and Indian Ripple Road. These have been completed over the last several years in conjunction with localized roadway construction projects. As projects continue to progress, these gaps will ultimately be filled. Similarly, in residential neighborhoods, sidewalks have been constructed since the early 1980's as each individual project has progressed. As on going residential neighborhoods and commercial projects move to completion, the gaps in the neighborhood system will be completed.

While there is a limited number of on-street facilities in the City to date, there has been an increase of lane mileage over the last few years. The three instances of on-street facilities are 5.49 miles of widened shoulders on Research Boulevard, 1.42 miles on Grange Hall Road and 1.98 miles of sharrows Commons Boulevard, for a total of 8.89 miles. This is an increase of 1.42 miles since 2012.

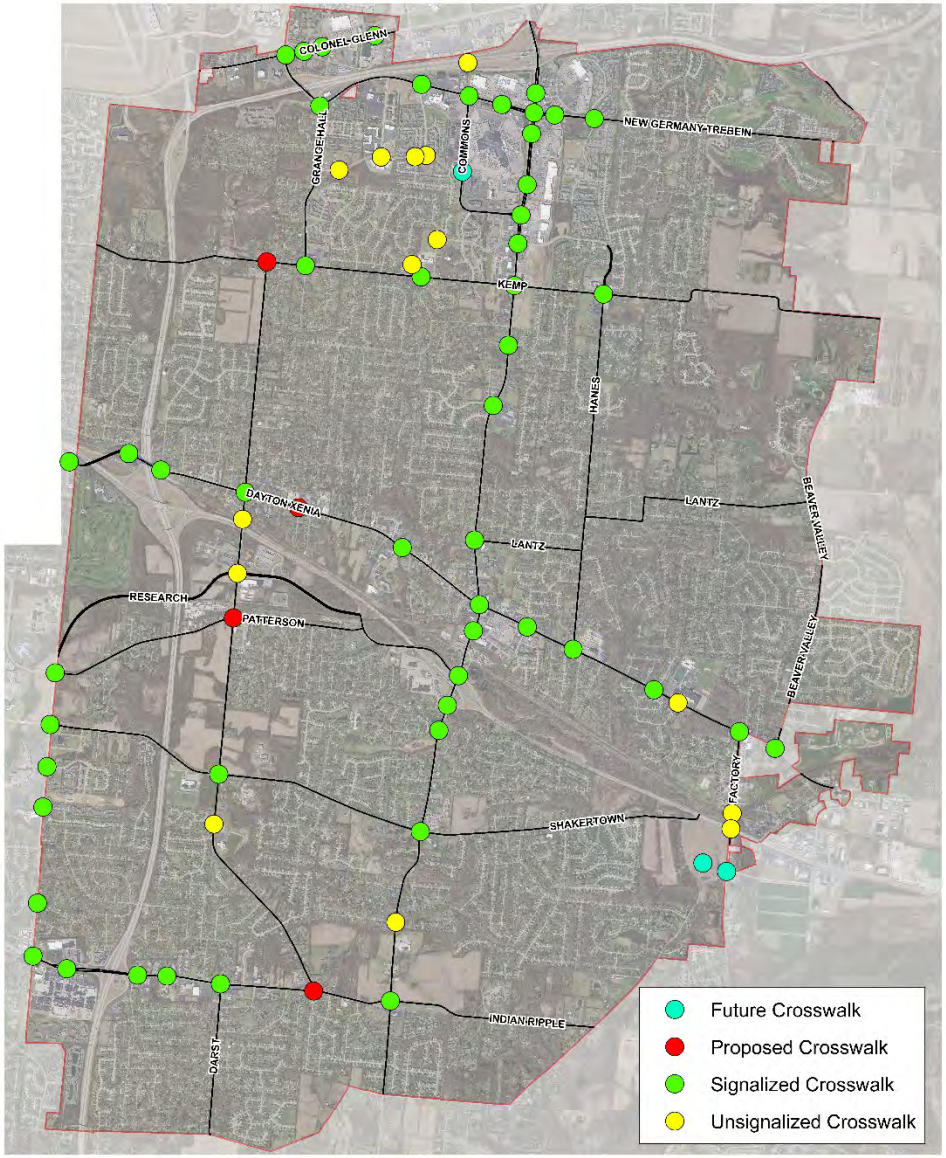
Non-Motorized Facilities	Miles
Sidepath	22.0
On-Street Facility	8.9
Signed Neighborhood Connector	13.8
Sidewalk	111.7
Total	**156.4**



Location of Crosswalks

Closer proximity to a signalized or designated crosswalk decreases the chances of jaywalking, making it more likely the pedestrian or bicyclist will use the crosswalk, and therefore making it safer for pedestrians/bicyclists.

Vehicle drivers are more likely expecting bicyclists or pedestrians within the vicinity of signalized crosswalks, which in turn makes them safer for pedestrians and bicyclists.



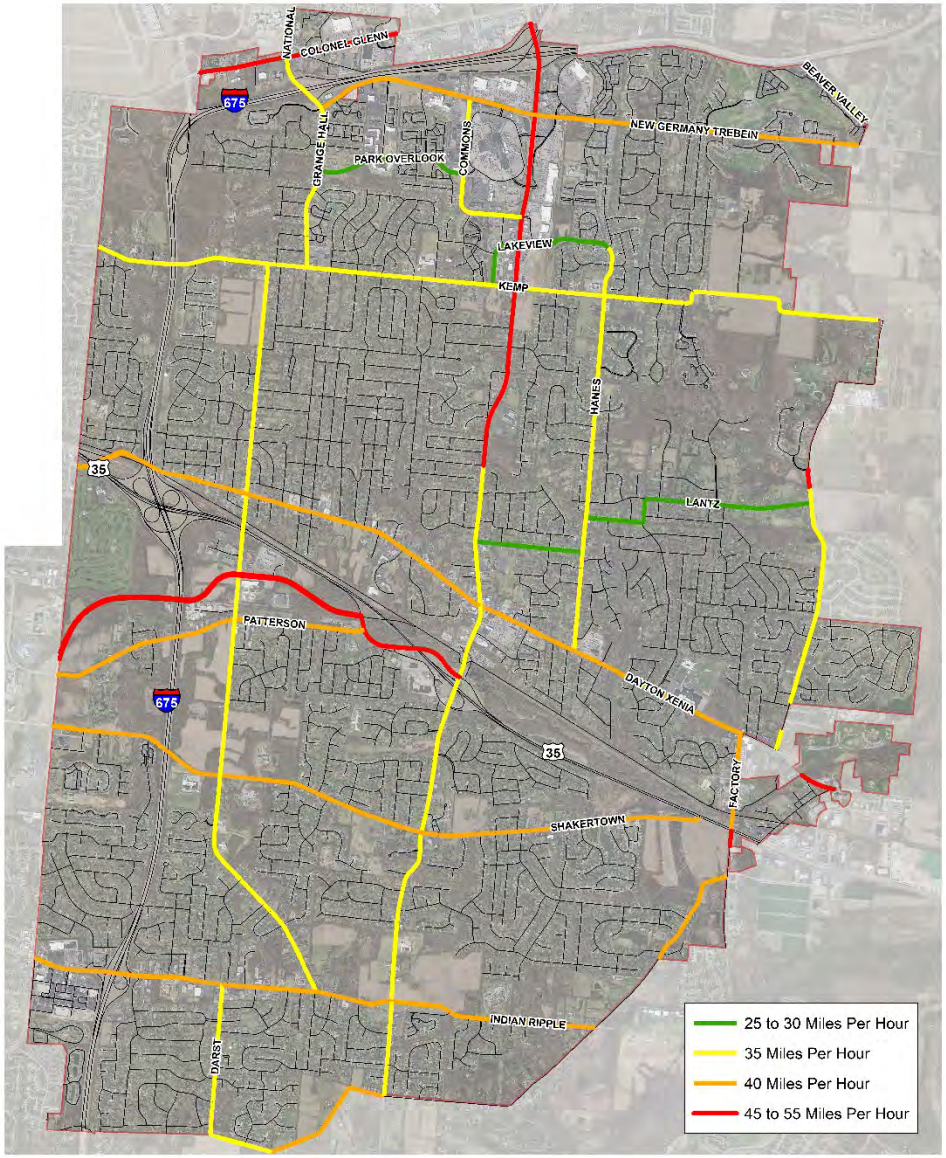
"Future Crosswalks" are part of plans that are already under construction or in the final stages of planning. "Proposed Crosswalks' are those that should be included in future roadway projects as the roadway projects are planned or crosswalks that will be constructed as a individual project, but has yet been planned.

Roadway Speed Limits

When a pedestrian or bicyclist is about to cross any given roadway where there is no signalized crosswalk, the greater the time between vehicles passing that location, the less likely the pedestrian or bicyclist will be involved with conflict with a vehicle. Slower speeds will, in general, give pedestrians or bicyclists more time to cross the road safely.

The average speed limit of all major roads in the City is 38.3 MPH.

Speed	% of Major Roads*
25 to 30 MPH	7.2%
35 MPH	39.8%
40 MPH	35.9%
45 to 55 MPH	17.1%

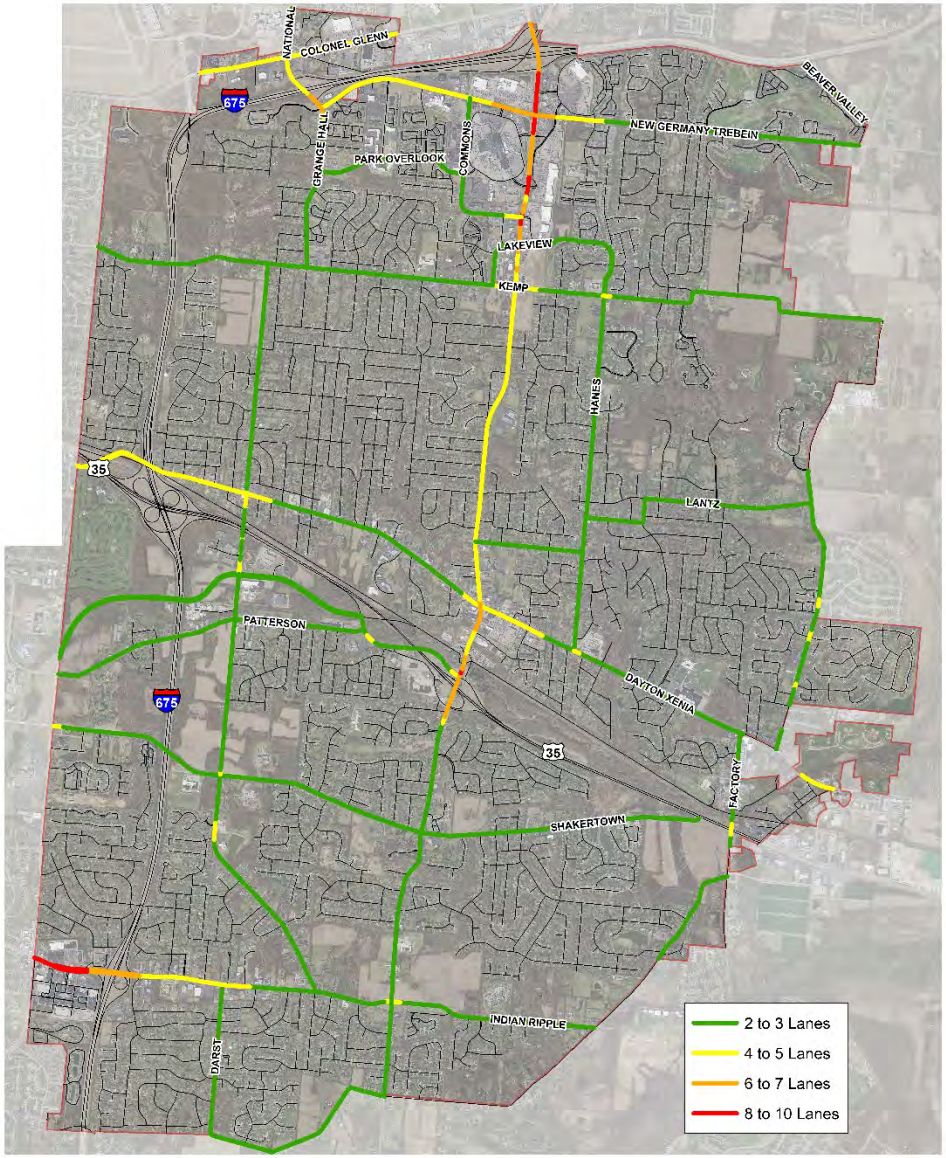


*For the purposes of this map, major roads include: Alpha-Bellbrook Road, Beaver Valley Road, Colonel Glenn Highway, Commons Boulevard, County Line Road, Darst Road, Dayton-Xenia Road, Factory Road, North/South Fairfield Road, Grange Hall Road, Hanes Road, Indian Ripple Road, Kemp Road, Lakeview Drive, Lantz Road, National Road, New Germany-Trebein Road, Park Overlook Drive, Patterson Road, Pentagon Boulevard, Research Boulevard, Shakertown Road, Swigart Road and Zink Road.

Number of Lanes

- The less distance a pedestrian or bicyclist has to travel across a street, the less time the bicyclist will be in the travel lane, and therefore the safer the crossing is.
- The average number of lanes of all major roads in the City 3.14.

Number of Lanes	% of Major Roads*
2 to 3	75.5%
4 to 5	17.4%
6 to 7	5.0%
8 to 10	2.1%



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Access Management Regulations

POLICY FOR DRIVEWAY ACCESS TO ARTERIAL STREETS

Driveway access to arterial streets is of primary concern to the City of Beavercreek. The long term effects of poor access management are:

1. Erosion of roadway capacity.
2. High accident frequency.

To protect the general public, an arterial street driveway access control policy should be used in conjunction with existing subdivision regulations and the zoning ordinance.

DRIVEWAY ACCESS TO PRINCIPAL & MAJOR ARTERIAL STREETS. Residential driveway access to arterial streets should be totally controlled with access limited to residential or commercial collector.

DRIVEWAY SPACING. Driveways should be spaced a minimum of 200 feet (example for 35 mph arterial) apart to provide safe traffic operation on arterials during all periods (peak and off-peak) of the day.

DRIVEWAY ACCESS TO ARTERIAL (Other than principal & major). Future driveway access to an arterial road should be controlled with access from major residential or commercial development permitted only. The following condition should apply:

- Where such spacing cannot be readily achieved within a particular parcel, joint access with an adjoining property should be sought.

If officials are satisfied that sufficient attempts to secure joint access have been made and that joint access is still not possible, and access cannot be provided via another street, driveway access to the arterial may be granted if minimum corner clearances are met. However, this access should be limited to right turns in and out (left turns in and out prohibited).

CORNER CLEARANCE (example for 35 mph arterial). The minimum tangent curb length between a driveway and an intersection of the arterial with an intersection street should be 100 feet.

However, in no case should variations in corner clearances be permitted, since they are critical to safe, efficient intersection operation.

If the intersection is or is likely to be signalized, then traffic movements to and from any driveway within 125 feet of an intersection with a collector and 250 feet of an intersection with an arterial should be limited to right turns only.

PROPERTY CLEARANCE. The minimum distance between the property line of a parcel and the nearest edge of the nearest driveway to that property line should be 75 feet, except if the driveway provides joint access to more than one parcel. A joint access driveway may be located on the property line.

SIGHT DISTANCE. Adequate sight distance should be available at every driveway. Any movement for which inadequate sight distance is available should not be permitted. Joint access or access to another street should be sought.

MEDIAN OPENINGS. If and when medians are constructed on an arterial street, spacing between median openings should be at least 400 feet. The spacing may be reduced to 300 feet if a competent traffic study shows that the lesser spacing will still safely and efficiently accommodate left-turn movements to existing and projected future development in the immediate vicinity.

NUMBER OF DRIVEWAYS. Each parcel should be permitted access through one driveway, either on the parcel or as part of joint access. Additional driveways may be needed and provided under the following conditions.

1. If the daily volume using one driveway would exceed 5,000 vehicles (both directions).
2. If traffic using one driveway would exceed the capacity of a stop sign controlled intersection during one peak street traffic hour or the peak site traffic hour.
3. A traffic analysis shows that traffic conditions warrant two or more driveways.

In all cases, minimum spacings and clearances should be provided. For major traffic generators, it may be more appropriate to signalize certain driveway intersections than to provide more non-signalized driveways. Any driveway signals should be located to provide proper spacing of signals.

NUMBER OF LANES PER DRIVEWAY. To a great extent, the width for ingress movements will be determined by the turning requirements. Egress width will be determined by peak turning volumes. Generally, if egress left turns exceed 100 per hour, two egress lanes should be provided. Otherwise, one lane will be sufficient.

PROHIBITION OF TURNS. Left turns should be prohibited to and/or from driveways under the following conditions:

- Inadequate corner clearance (Prohibit left turns to and from).
- Inadequate sight distance (Prohibit left turns with inadequate sight distance).
- Inadequate driveway spacing (Prohibit left turns to and from).
- Median opening would be too close to another median opening (prohibition dependent on specific locations at adjacent openings).
- Parcel has signalized driveway on same arterial at which left turns can be made (prohibit left-turn movements provided at signalized driveways).
- Other capacity, delay, or safety conditions identified by agency make specific left turns detrimental to public interest.

Left-turn prohibitions are most desirably physically implemented with median channelization (if a median exists) or driveway channelization. Signing should also be installed as necessary. In cases where multiple driveways with limited turns are needed, right turns may need to be prohibited. Effective channelization should be provided for such driveways.

Access Management Regulations (cont.)

LEFT-TURN LANES. When the peak hour, left-turn warrant is met, left-turn lanes with the appropriate storage length should be provided.

RIGHT-TURN LANES. A right-turn deceleration lane should be installed at each driveway with an average daily volume of at least 1,000 vehicles and an average peak-hour inbound right-turn volume of at least 40 vehicles.

Where several successive driveways meet the above warrant or where driveway spacing is not adequate to avoid encroachment of the right-turn lane on another driveway, a continuous right-turn lane should be used. Continuous right-turn lanes should also be provided when 20 percent of the directional volume on an arterial (35 mph or higher) makes right turns.

PARKING. Curb parking should be prohibited on all arterial streets.

FRONTAGE ROADS (if applicable). All driveway access along arterials with existing or planned frontage roads should be provided to (future) one-way frontage roads. To gain temporary direct access to the arterial (prior to improvement of that facility and construction of the frontage road system), the petitioner should construct the section of the frontage road adjacent to his/her property. This frontage road section should be located where planned. Any right-of-way within 100 feet of the arterial centerline not previously dedicated should be dedicated prior to issuance of a temporary direct access (to the arterial) driveway permit.

Future Needs:

Roadways

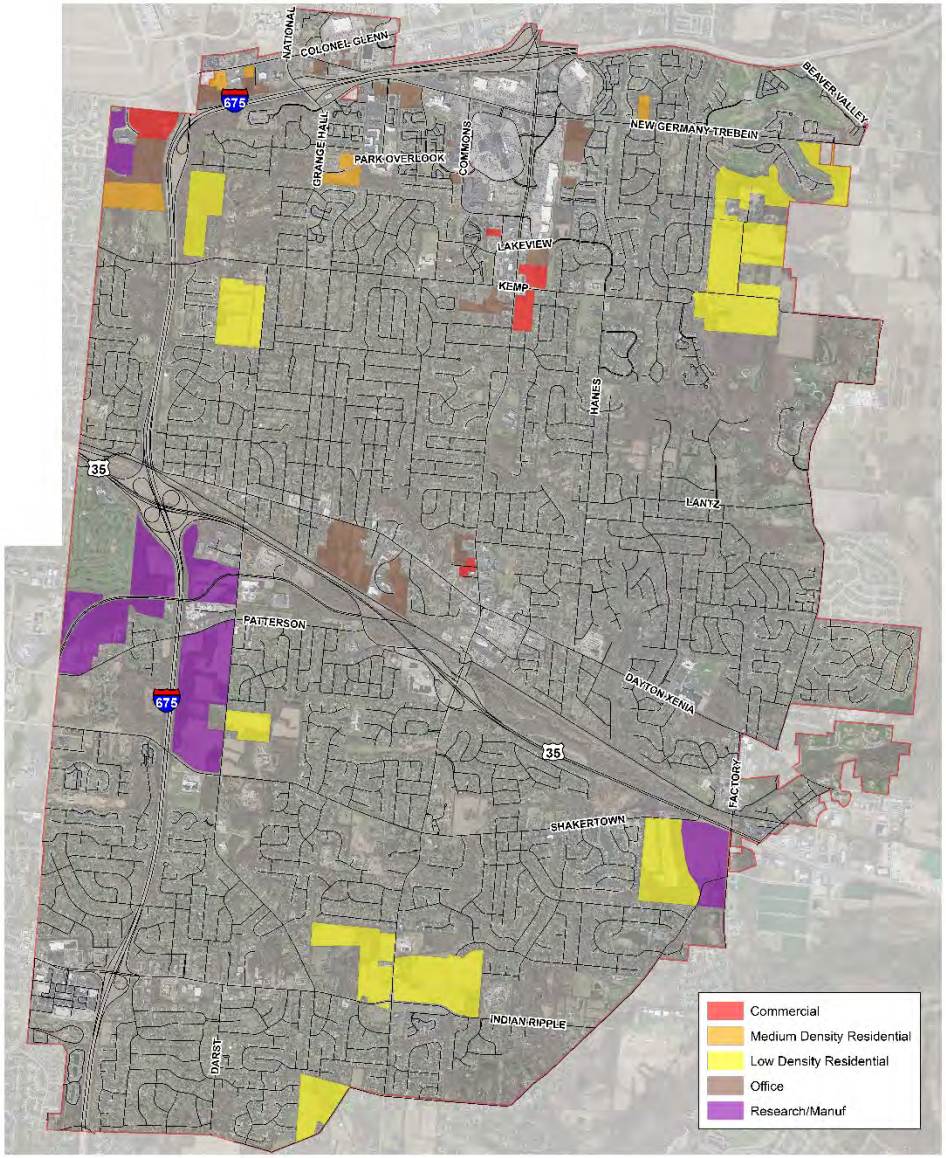
Anticipated Development Trends

When trying to gauge where future roadway extensions and/or lane widening projects will be needed, it is necessary to first anticipate and analyze future development. By comparing classifications on the Beavercreek Land Use Plan with vacant land areas, places that have a higher likelihood for development become evident, as seen in the map to the right.

Based on the map to the right, approximately 784.2 acres of land are more likely poised for future development of low or medium density family residential, while 210.1 acres are likely for office, 447 acres for research and development and 62.7 acres for future retail.

In reality, areas designated on the map to the right for research and development or office will not develop completely for that use. Developments of that size and strategic location (i.e. fronting on I-675) will more than likely have ancillary retail and hotels/hospitality type uses as well that will support the major office or R/D center to help keep the area vibrant.

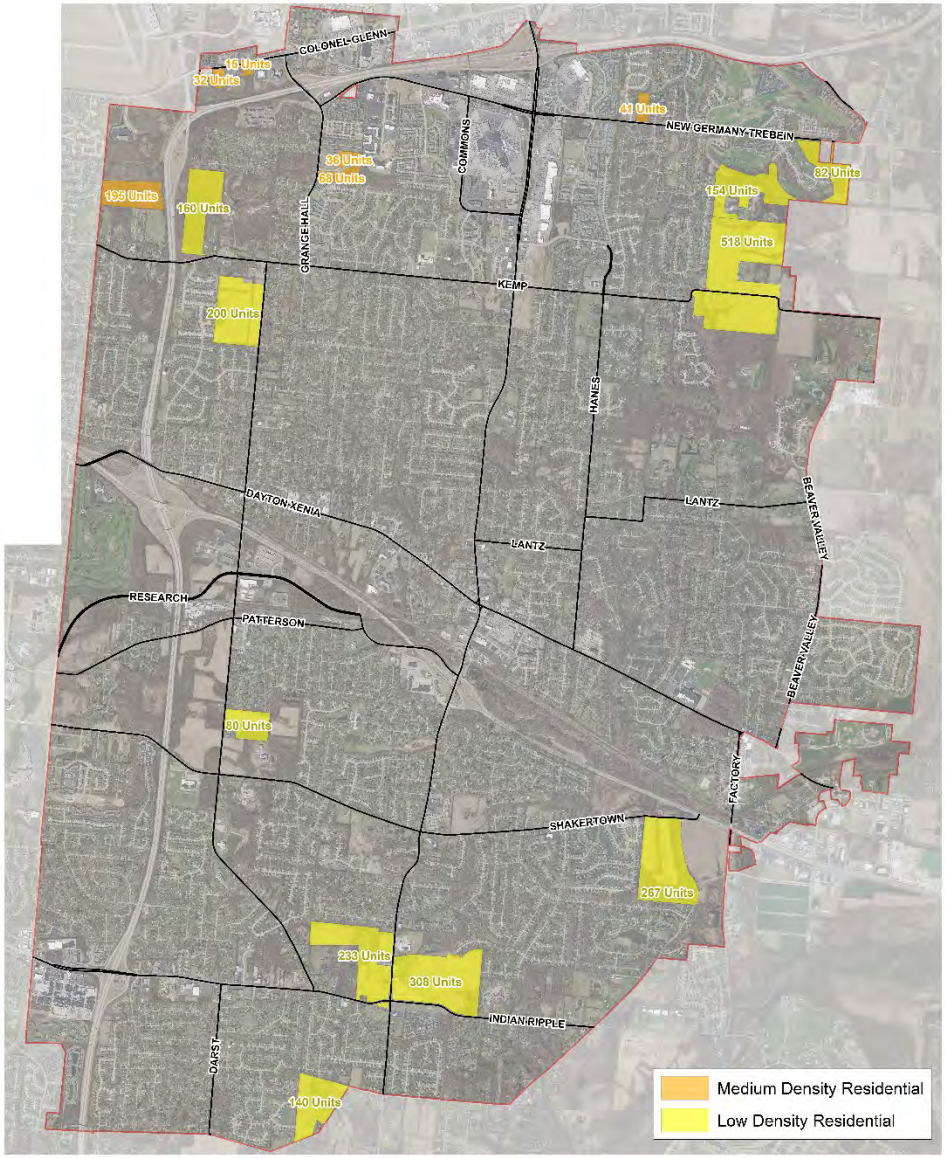
It should noted that the use division of the 123-acre area associated with Mission Point on Colonel Glenn Highway is not intended to show where particular uses within that development will or should occur. It is split up by what is envisioned will be the proportion of each use within the development. Uses throughout can be inter-mixed, as market dictates.



Areas of Higher Potential for Residential

The areas highlighted in yellow and orange on the map to the right are those areas that have the highest potential for development of residential neighborhoods. This is based on current vacancy status and the current classification on the 2015 Updated Land Use Plan. The estimated number of units shown over each of the highlighted properties is based on taking maximum density possible for low-density family residential (3 dwelling units per acre) and medium-density family residential (5.5 dwelling units per acre), and multiplying by the number of acres of the potential development.

While there are 2,529 potential units shown on the map to the right, that doesn't necessarily mean that all of these will be constructed by 2040. Over the last 10 years, there have been 487 single family units constructed within the City, an average of 49 units per year. If that trend continues, between 2019 and 2030 there is a potential for an additional 539 units, and between 2019 and 2040, 1,029 additional units. Over the past five years, a slightly lower average of 38 units per year has been constructed. If that average continues, then the number of additional units between 2019 and 2030 would be 418, and 798 additional units between 2019 and 2040.

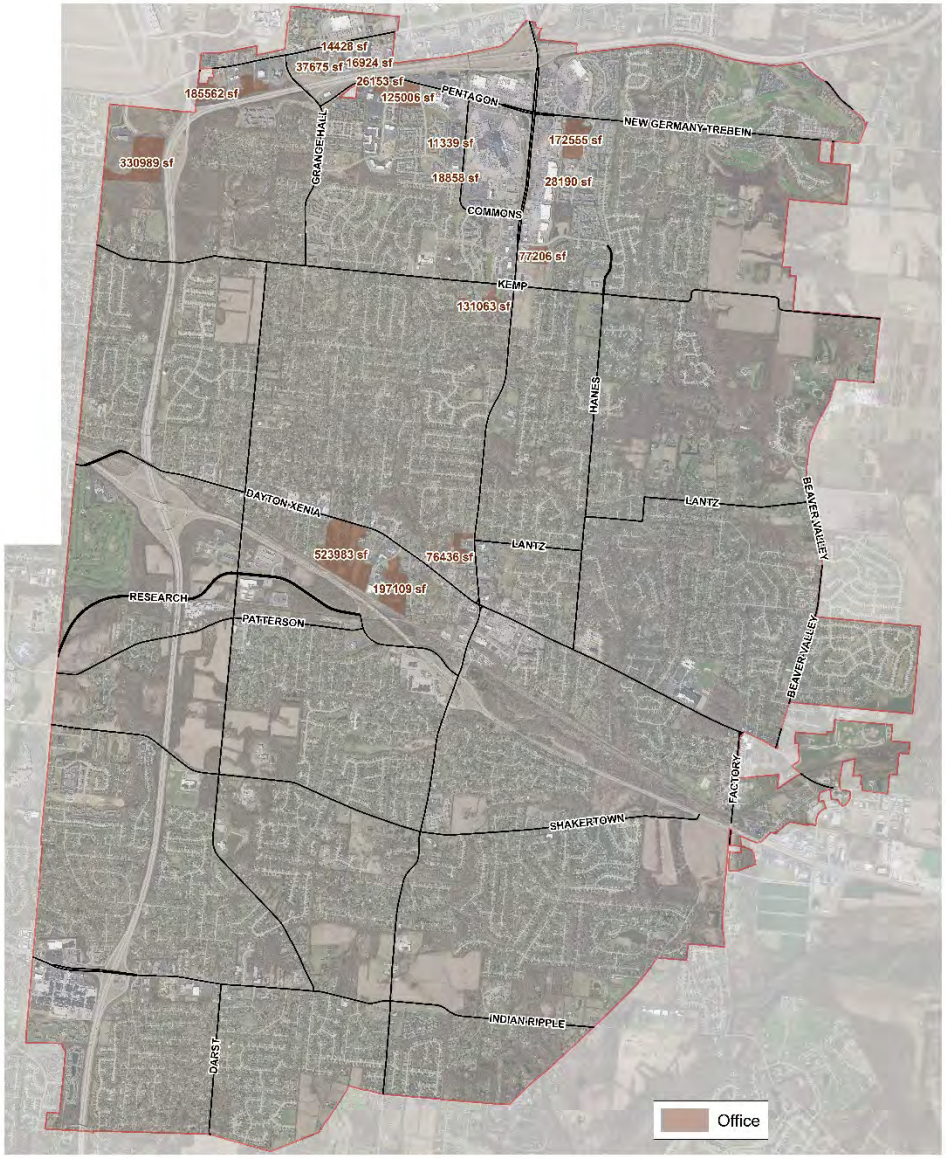


General Areas of Higher Potential for Office

The areas highlighted in brown on the map to the right are those areas that have the highest potential for development of professional office facilities. As with the residential areas, these areas have higher potential based on current vacancy status and the current classification on the 2015 Updated Land Use Plan. The estimated square footage shown over each of the highlighted properties is based on the average square feet per acre in office developments over the last 5 years, (approximately 9,391 square feet of building per acre) multiplied by the property's acreage.

Dayton-Xenia Road and Pentagon Boulevard/New Germany-Trebein Road are the two corridors with the highest potential for significant grown of office square footage. Both North Fairfield Road and Pentagon Boulevard have high potential for square footage, and have seen upgrades in the form of curb, gutter and sidewalks/sidepaths over the last several years.

While there is potential for up to 2 million square feet of office shown in the map to the right, that doesn't necessarily mean that all, or even most of this will be constructed by 2040. Nor should it be implied that this is the maximum square footage that could be, or is allowed to be built on each of the highlighted areas. Over the last 10 years, there has been an average of 74,641 square feet of office space constructed per year. If the trend continues, between 2019 and 2030 there is a potential for an additional 821,051 square feet, and between 2019 and 2040, 1,567,461 additional square feet.



Over the last five years, the trend has shown a slight decrease of the annual office construction, with an average of 62,674 square feet of office space constructed per year. If the recent trend continues, a potential 689,414 additional square feet could be constructed between 2019 and 2030, and 1,316,154 square feet between 2019 and 2040.

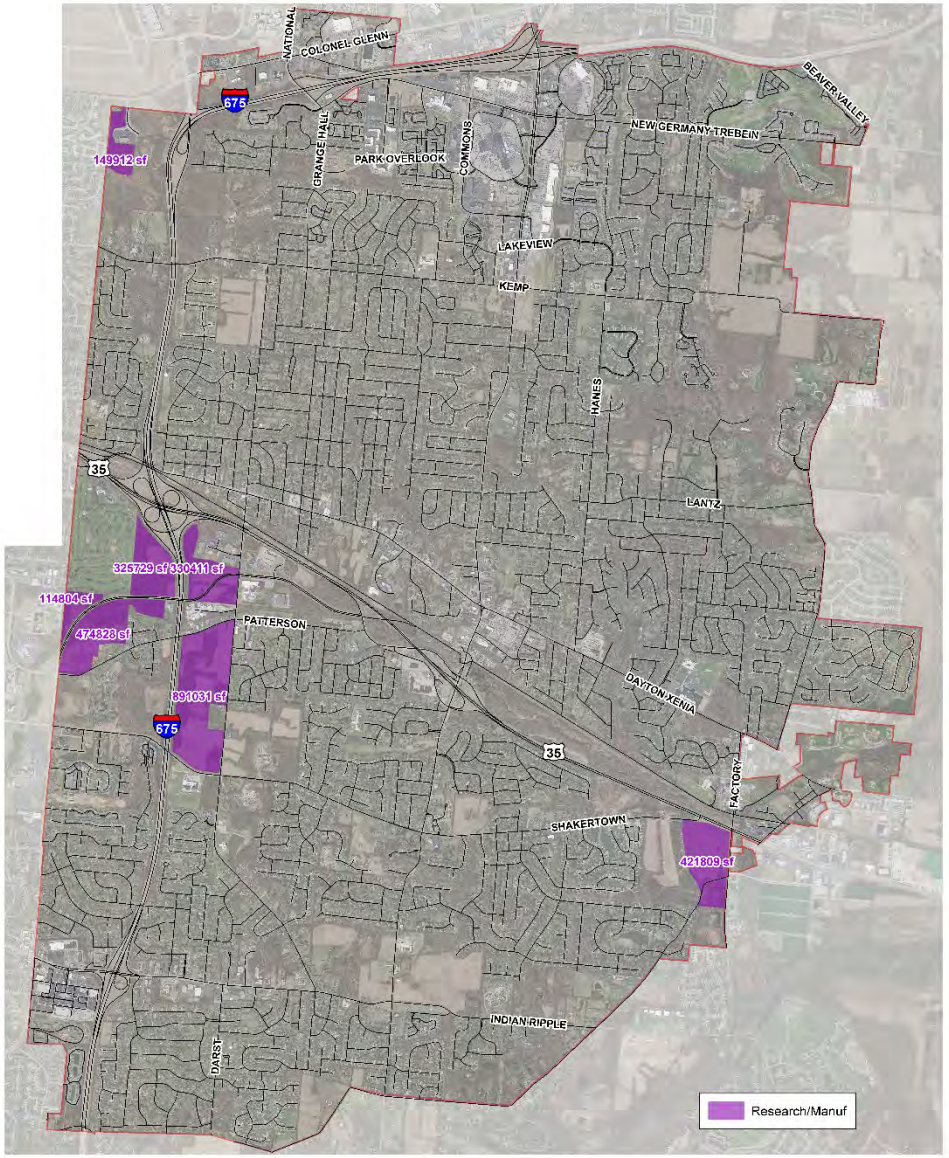
General Areas of Higher Potential for Research

The areas highlighted in purple on the map to the right are those areas that have the highest potential for Research and Development/Office/High Tech Manufacturing facilities. As with the residential and office areas, these areas have higher potential based on current vacant status and the current classification on the 2015 Updated Land Use Plan. The estimated square footage is based on the average square feet per acre of \ construction of research and development projects over the last five years, (approximately 6,060 square feet per acre) multiplied by the property's acreage.

The majority of vacant land available for development of Research and Development/Office/ High Tech Manufacturing facilities is located within Miami Valley Research Park off Grange Hall Road. Mission Point on Col. Glenn Highway and the Eastbelle Property on Factory Road are the remaining significant areas for potential development, and may have up to a combined 571,721 square feet of Research and Development/Office/High Tech Manufacturing facilities in the future.

While there is 2.7 million potential square feet shown in the map to the right, that doesn't necessarily mean that all of this will be constructed by 2040. Over the last 10 years there has been an annual average of 48,930 square feet of research and development facilities constructed per year. If that trend continues, between 2019 and 2030, there is a potential for an additional 538,230 square feet, and between 2019 and 2040, 1,027,530 additional square feet. Over the last five years, the trend has shown significantly less research/development space being constructed, with an average of 12,830 square feet of research and development constructed per year. If the recent trend continues, a potential 141,130 additional square feet could be constructed between 2019 and 2040, and 269,430 square feet between 2019 and 2040.

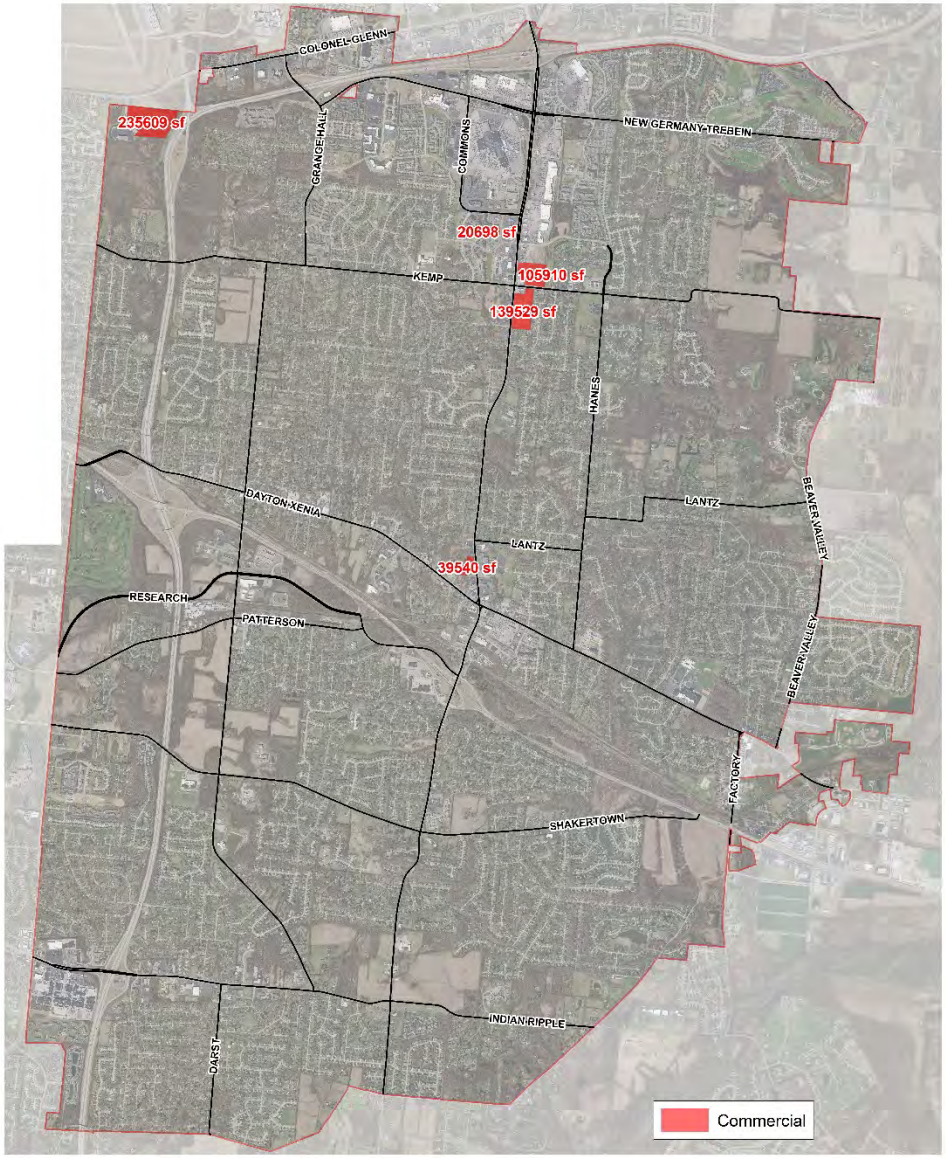
In reality, without a major change in the market for research and development facilities by the private sector, a majority of the vacant land will remain as vacant in 2030 and potentially, 2040.



General Areas of Higher Potential for Commercial

The areas highlighted in red on the map to the right are those areas that have the highest potential for future retail development. As with the research and development and office areas, these areas have higher potential based on current vacant status and the current classification on the 2015 Update Land Use Plan. The estimated square footage is based on the average square feet per acre of retail developments over the last five years (approximately 83,363 square feet per acre) multiplied by the property's acreage.

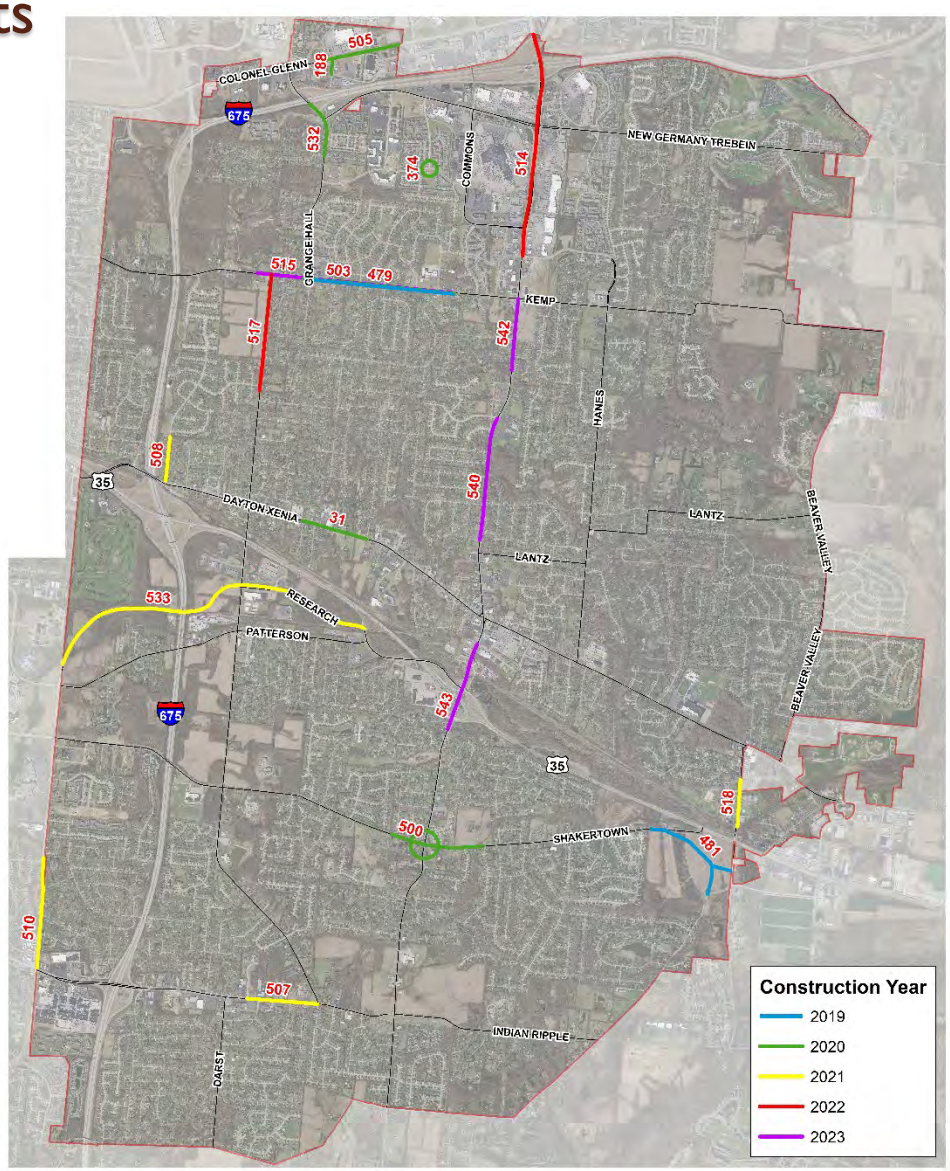
While there are 541,287 square feet of potential retail shown in the map to the right, that doesn't necessarily mean that all of this will be constructed by 2040, nor does it imply these are the only areas where retail can or will go. Over the last 10 years there has been an annual average of 74,110 square feet of retail constructed per year. If that trend continues, between 2019 and 2030 there is a potential for an additional 815,210 square feet, and between 2019 and 2040, 1,556,310 additional square feet. Over the last five years, the trend has shown slightly more retail being constructed, with an average of 83,363 square feet of retail constructed per year. If the recent trend continues, a potential 916,993 additional square feet could be constructed between 2019 and 2030, and 1,750,623 square feet between 2019 and 2040.



5-Year Capital Improvements Plan

The City of Beavercreek 5-Year Capital Improvement Plan accounts for all infrastructure improvements within the City's corporate limits. This includes the street and road network, storm water drainage facilities, building facilities, and traffic signal installations and systems. The map to the right highlights the major roadway construction projects planned within the City over the next five years. For a project to be in the Capital Improvement Plan, money must be either planned for in the current City budget or be able to be reasonably accommodated in a budget within the next five years. For specific information on project costs and funding sources, see the 5-Year Capital Improvements Plan 2019-2023.

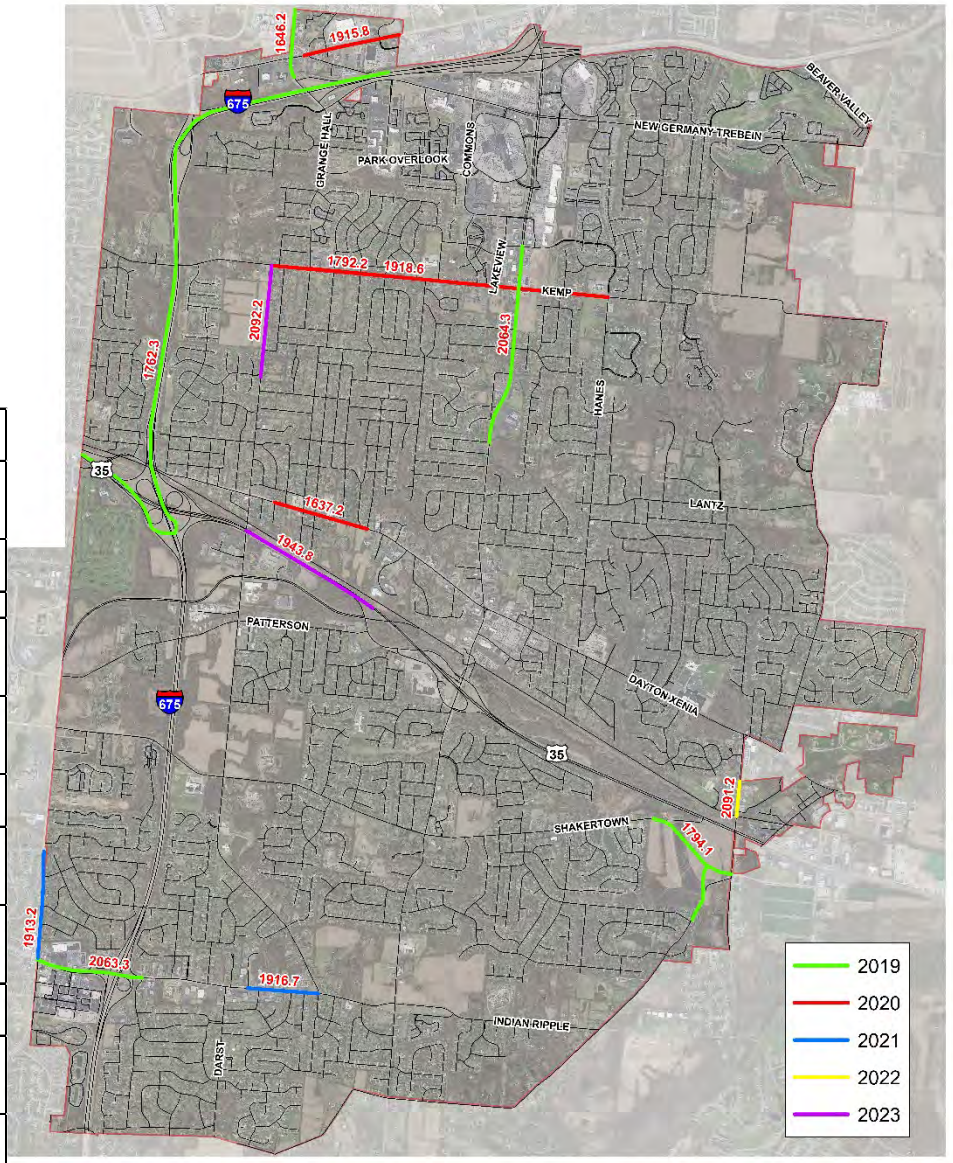
Project ID	Project Description	Construction Year
479	Widening Kemp Road from Grange Hall Road to Meadowcourt Drive	2019
481	Extension of Shakertown Road to Factory Road	2019
532	Milling and resurfacing Grange Hall Road from Gardenview Drive to I-675	2020
188	Extension of Zink Road between Colonel Glenn Highway and Germany Lane	2020
505	The installalation of decorative lighting and other features along Colonel Glenn Highway between Zink Road and the east corporation limit	2020
374	Construction of a round-a-bout at the intersection of Park Overlook Drive and Royal Gateway	2020
503	Traffic signal upgrades including fiber optic cable installation, controller upgrades, etc. on Kemp Road	2020
31	Widen Dayton-Xenia Road to three lanes from East Lynn Drive to Wood Drive	2020
500	Shakertown Road widening at the intersection of North Fairfield Road and Shakertown Road, and add in turn lane	2020
533	Milling and resurfacing State Route 835 from Patterson Road to western corporation limit	2021
510	Widen County Line Road to 5 lanes between Willow Rin Drive and Indian Ripple Road	2021
507	Installation of curb and sidewalks along Indian Ripple Road from Marydale Drive to Grange Hall Road	2021
518	Widen Factory Road to three lanes with pedestrian facilities between Nutter Park and Creekside Trail entrance	2021
508	Extend sidewalk along west side of Stedman Lane to connect Summerfield neighborhood to Dayton-Xenia Road	2021
517	Widen Grange Hall Road between Kemp Road and Summerfield to three lanes along with pedestrian improvements	2022
514	Milling, resurfacing and pavement repairs to North Fairfield Road from Lakeview Drive to the north corporation limit	2022
515	The construction of pedestrian improvements along Kemp Road between Grange Hall Road and Oxmoor Dive	2023
542	Widen North Fairfield Road to five lanes from Claydor Drive to Kemp Road	2023
540	Widen North Fairfield Road to five lanes from Lawson Drive to Fairwood Drive	2023
543	Milling and resurfacing North Fairfield Road from Jonathan Drive to Beaver-Vu Drive	2023



MVRPC - TIP

Miami Valley Regional Planning Commission's (the regional MPO- Metropolitan Planning Organization) TIP or Transportation Improvement Program highlights all projects that have been deemed regionally significant by the MPO, and have been approved for the use of federal and/or state transportation money within the next five years. The projects highlighted on the map to the right are those which are approved in the current TIP and are located either partially or completely in the City of Beavercreek. In order for a project to be in the TIP, it first must be in MVRPC's Long Range Plan.

Project Number	Project Description	Construction Year
1794.1	Relocation and extension of Shakertown Rd. and realigment of Alpha Belbrook Rd. to intersect Shakertown Rd. west of Factory Rd.	2019
1646.2	Widening for right turn lanes, extension of second northbound thru-lane, signal modifications.	2019
1762.3	Resurfacing and pavement repair.	2019
2063.3	Milling and resurfacing, the placement of a SAMI layer over the existing concrete base, curb repairs, pavement markings, and the installation of raised pavement markings.	2019
2064.3	Milling and resurfacing, upgrading curb ramps to ADA compliance, repair to deteriorated curb and sidewalk, and the installation of raised pavement markers	2019
1637.2	Widening to provide a center two way left turn lane, addition of sidewalks along both sides of the roadway	2020
1918.6	Expansion of the fiber optic signal network to connect the Kemp at Hanes, Kemp at Turnbull and Kemp at Grange Hall intersections to the City's network.	2020
1792.2	Widening from 2 to 3 lanes to include a center turn lane with curb and gutter and new storm sewer. An 8' wide sidepath will be included along the north side of the road and a 5' wide sidewalk	2020
1915.8	Installation of elements such as brick pavers, seating walls and lighting.	2020
1916.7	Construct an 8' wide sidepath and a 5' wide sidewalk along the south side of the road from east of Marydale Dr. to Grange Hall Rd.	2021
1913.2	Widening to a five lane cross section, with two 12' through lanes in each direction and a 12' center left turn lane.	2021
2091.2	Widen the roadway to three lanes with curb, gutter, storm sewer, and sidewalks on both sides of the roadway.	2022
1943.8	Minor pavement rehabilitation with pavement repair.	2023
2092.2	The existing two lane section will be widened to a three lane section. This will include one through lane in each direction and a two way left turn lane.	2023
1895.5	Rehabilitate bridges by strengthening the piers with Fiber Reinforced Polymer (FRP) and installing vandal protection fences.	2024

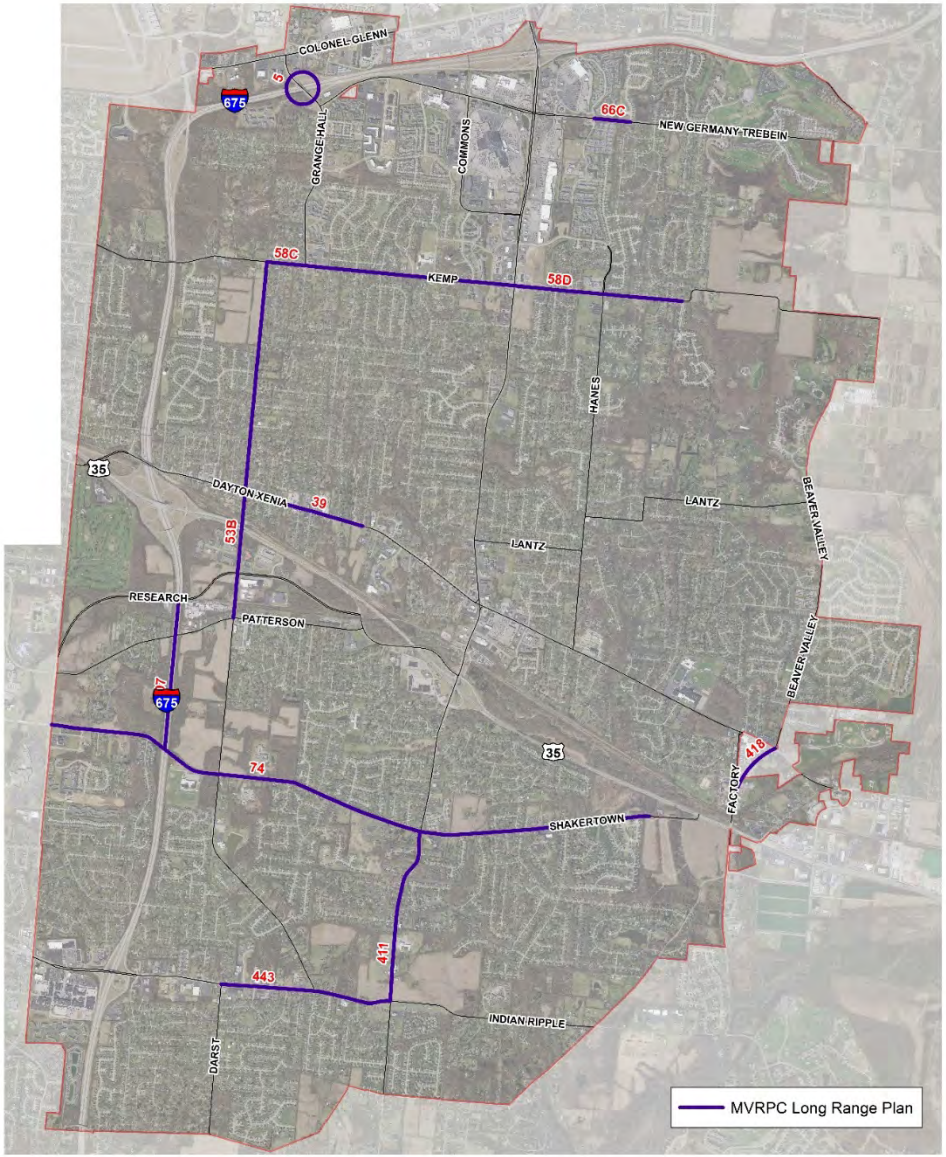


MVRPC - LRP

The Miami Valley Regional Planning Commission's LRP or Long Range Plan highlights all projects that have been deemed regionally significant by the MPO and are reasonably fiscally feasible. However, unless the project is in the TIP (short range plan) Federal and/or State funding has not yet been allocated for projects by the MPO. Prior to a plan being in the TIP, it first must be within the LRP.

As seen on the map to the right, many of the City of Beavercreek's major corridors are included in MVRPC's LRP.

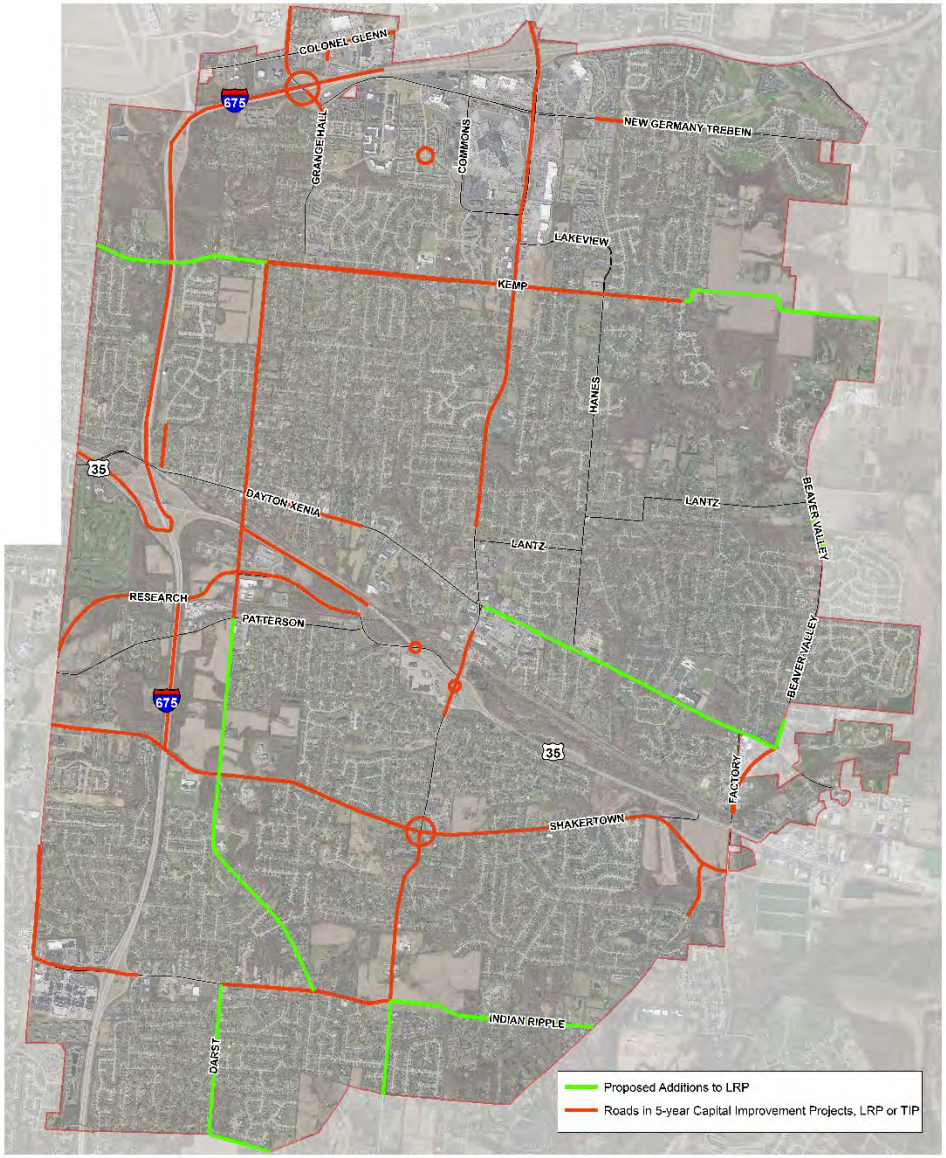
PID	Project Description	Potential Construction
39	Widen from E. Lynn Drive to Woods Drive to provide a center two way left turn lane, add sidewalks along both sides of the roadway, install curb and gutter and storm sewer improvement	2016-2020
58C	Widen from 2 to 3 lanes from Grange Hall Road to Meadowcourt Road.	2016-2020
411	Widen from 2 to 3 lanes from Shakertown Road to Indian Ripple Road	2021-2025
58D	Widen from 2 to 3 lanes from N. Fairfield Road to Hidden Woods Boulevard	2021-2025
407	Feasibility study to construct new interchange on I-675 in the vicinity of Shakertown Road to improve job access to land in Beavercreek and Kettering.	2026-2030
53B	Widen from Kemp Road to Southview Drive and SR 835 to Patterson Road from 2 lanes to 3 lanes and add pedestrian and bicycle amenities	2026-2030
58C	Widen from 2 to 3 lanes from Meadowcourt Drive to Gerspacher Road, then transition to meet existing 5-lane section at N.Fairfield Road.	2026-2030
66C	Widen from 3 to 5 lanes from Lillian Lane to Big Woods Drive.	2026-2030
74	Widen from 2 to 3 lanes from County Line Road to relocated Shakertown Road	2031-2035
418	Extension of Beaver Valley Road to bypass intersection of Dayton-Xenia Road with Factory Road.	2031-2035
5	Add full movements at Grange Hall Road interchange.	2031-2035
443	Widening from 3 to 5 lanes from Darst to Grange Hall Roads and widening from 2 to 3 lanes from Grange Hall to N. Fairfield Roads and extension of sidepath system from Darst to N. Fairfield Roads.	2031-2035



Projects to add to Long Range Plan

By overlaying MVRPC's TIP and Long Range Plan on the City's 5-Year Capital Improvement Plan, it becomes apparent that many of the improvements that are necessary to facilitate the projected growth areas are already under consideration. However, the southern end of Grange Hall Road and the eastern end of Indian Ripple Road is not on any of the three plans. In the future, when Research Park has built hundreds of thousands of square feet of Office and Research and Development/Office/High Tech Manufacturing facilities, and the projected 500+ homes are built near the intersection of Indian Ripple and North Fairfield, these two corridors are going to be traveled much more heavily than presently. Not only by the residents of new homes potentially going to work at Research Park, but also traveling to the Greene Towne Center, onto I-675 or trying to get onto US 35. The potential for a new school on Indian Ripple Road, just east of the city boundary, as well as new homes currently under construction across from Russ Research center, also outside of the city, will also cause an increase traffic on Indian Ripple Road.

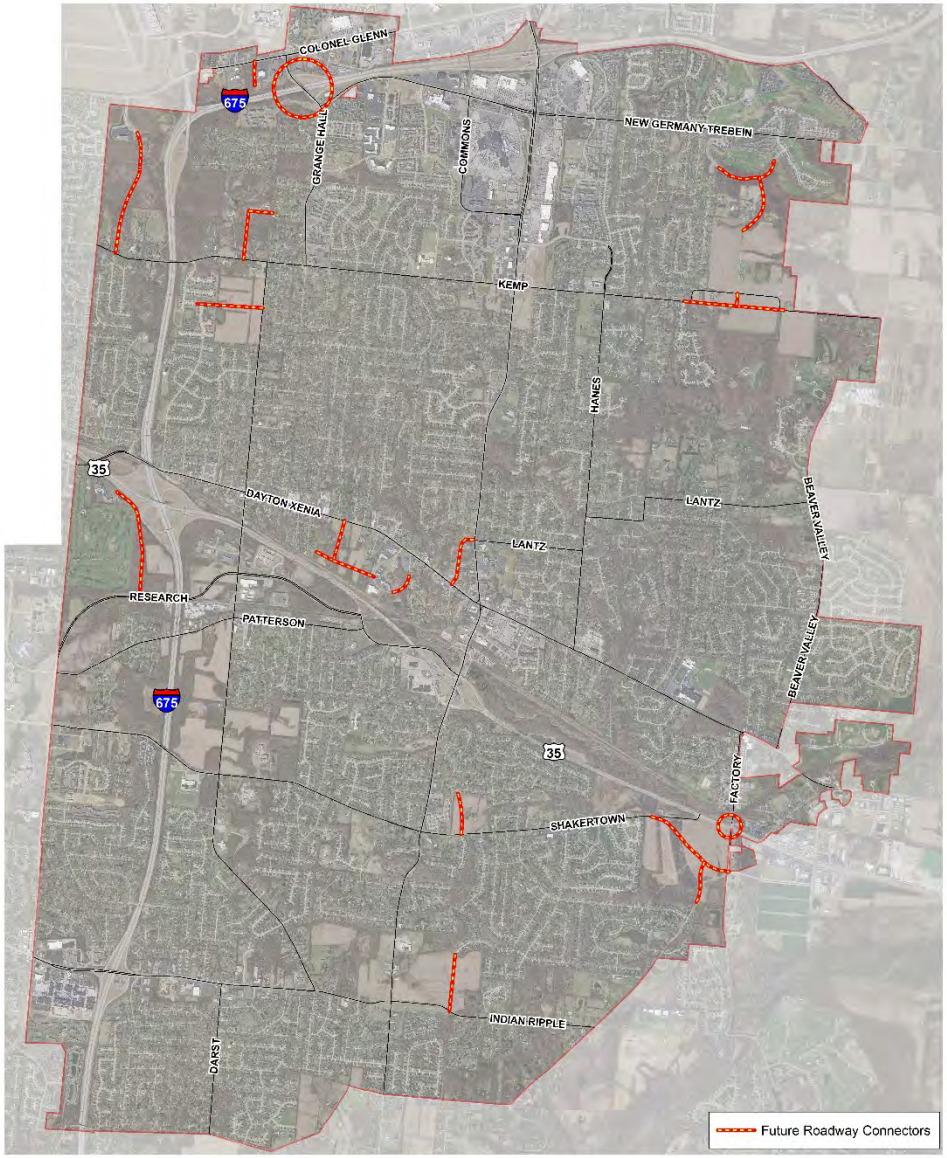
The southern end of Grange Hall Road, and the east end of Indian Ripple Road in between North Fairfield Road and Alpha-Bellbrook Road needs to be added to the MVRPC Long Range Plan, to have the opportunity in the future to be added to the TIP and increase the chances of getting on the City's 5-year Capital Improvement Plan. Other roadways to potentially add to the MVRPC Long Range Plan include Darst and Swigart Roads (to prepare for traffic spurred by development along Swigart and potentially in Sugarcreek Township(, Dayton-Xenia Road, east of North Fairfield Road, western Kemp Road (to straighten out the double S-curve), and eastern Kemp Road.



Future Roadway Extensions

With the projected residential, office, research and development, and retail growth in the City, as shown on the map on page 27, there will not only be a need to expand existing corridors shown on the previous page, there will be a need to construct new roadway extensions and connectors. These new connectors will not only facilitate new growth, but will help alleviate existing traffic congestion in sensitive areas. Future development projects located adjacent to projects shown on the map to the left will be required to include the construction of the portion of roadway that fronts their projects, unless otherwise exempted by City Council from doing so.

The locations and paths of future roadways extensions shown should be considered approximate. The final design and exact locations will be based on recommendations by City Staff during the planning and engineering phase of the project. The final design will consider such variables as topography, natural impediments (i.e. rivers, floodways, springs), as well as existing private property acquisitions/right-of-way needed.



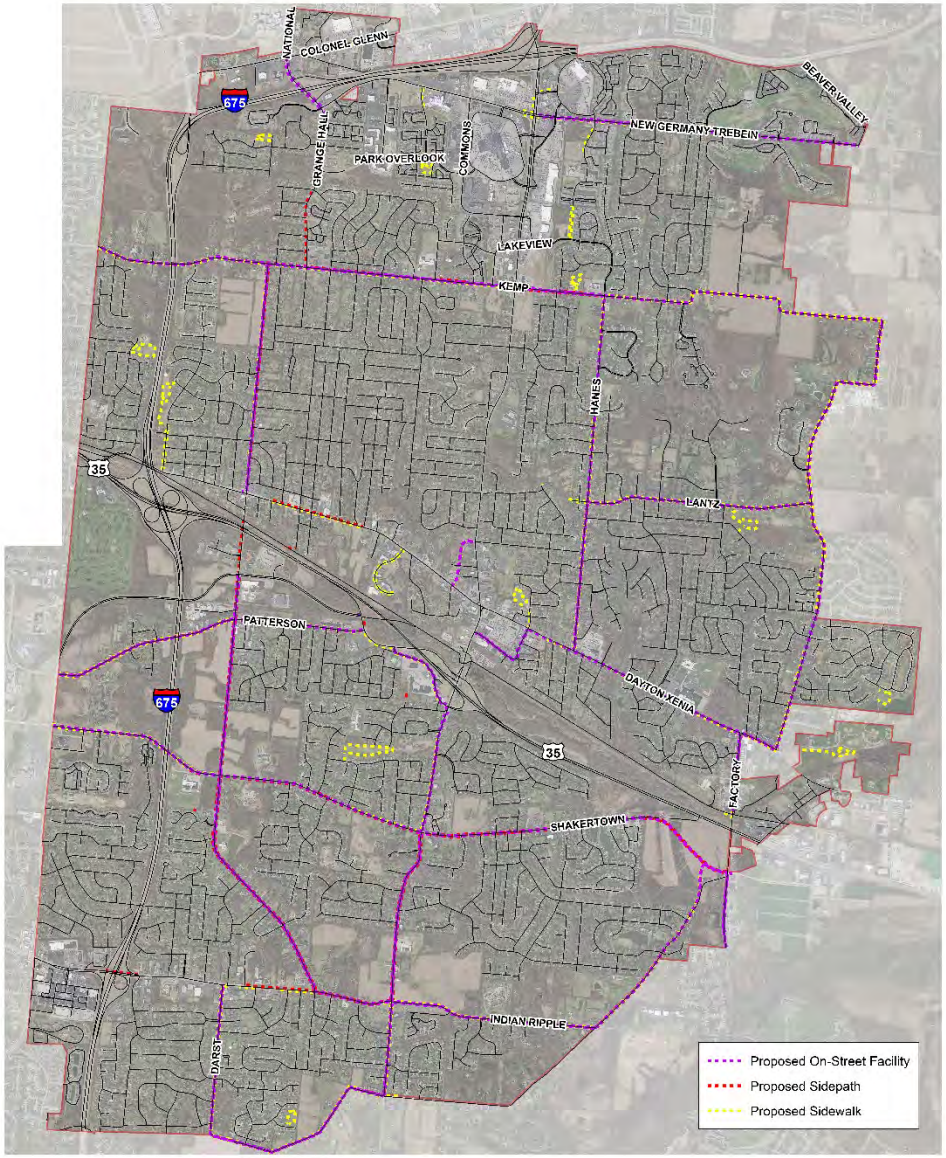
Future Needs:

Non-Motorized Transportation

Future Non-Motorized Transportation Facilities

A complete and accessible non-motorized system can provide numerous benefits to the City of Beavercreek. A thoroughly planned and implemented non-motorized system can improve the general health of Beavercreek residents, can benefit the City economically, can increase accessibility to physically and financially disadvantaged individuals, can promote a cleaner environment and can act as a catalyst to bring the community together in a social setting. Over the last several years, the City of Beavercreek has continued to develop a non-motorized transportation system. In the past, the focus has been on completing off-street, separate pedestrian and bicyclist facilities, such as the multi-use paths along Dayton-Xenia Rd., Grange Hall Rd, Pentagon Blvd and the Creekside Trail. However, this is only one piece of a complete system. To complete the system and accommodate both recreational and commuter users, the plan needs to include both on-street and off-street facilities. While the plan to the right does show the use of on-street facilities in main roadways, no specific type of on-street facility has been shown, as this should be decided on a case-by-case basis. It should be noted the proposed plan to the right is not intended to show immediate requirements for construction of the non-motorized facilities, but is intended to show which non-motorized facilities should be included in any major future roadway improvement project as determined by the City Engineer. If it becomes apparent, while engineering future projects that such facilities are a practical impossibility, City Council will always have the authority to deviate from the proposed plan.

Future development projects located adjacent to projects shown on the map to the right will be required to include the construction of the portion of roadway and non-motorized transportation facility that fronts their projects, unless otherwise exempted by City Council (based on the recommendation of the City Engineer) from doing so.



For detailed corridor information, please see Appendix A

Definitions

For the purpose of the Thoroughfare Plan, the following definitions shall apply unless the context clearly indicates or requires a different meaning. In case of any difference of meaning or implication between the text of this chapter and any caption or illustration, the text shall control.

SIDEPATH or SHARED USE PATH. A facility separated from motor vehicle traffic by an open space or barrier, either within the roadway right-of-way or within an independent right-of-way. These are typically used by pedestrians, joggers, skaters and bicyclists. Typically these facilities are constructed of a permanent and continuous hard surface of one or more of following: Portland cement concrete, bituminous/asphalt concrete, or a solid brick paver surface and are 8 feet or more in width.

Shared Use or Sidepath

Sidewalk

SIDEWALK. A facility separated from motor vehicle traffic by an open space or barrier, either within the roadway right-of-way or within an independent right-of-way. These are typically used by pedestrians, joggers, skaters and bicyclists. Typically they are constructed of a permanent and continuous hard surface constructed of one or more of the following: Portland cement concrete, bituminous/asphalt concrete, or a solid brick paver surface, and are less than 8 feet in width.

Definitions (cont.)

ON-STREET FACILITIES. Facilities that are not physically separated from the vehicle travel lane, which are primarily designated for the use of commuter bicycle travel. Numerous forms of on-street facilities existing including:

WIDENED TRAVEL LANES. Moderate capacity Collector street travel lanes that should be a minimum 14 feet wide. This definition does not apply to higher capacity road classifications.

BICYCLE BOULEVARDS. The operation of a local street is modified to function as a through street for bicyclist while maintaining local access for automobiles. Traffic calming devices control traffic speeds and discourage through trips by automobiles. Traffic controls limit conflict between automobiles and bicyclists and give priority to through bicycle movement.

BIKE LANES or BICYCLE LANES. A portion of the roadway, which has been designated by striping, signing and/or pavement markings for the preferential or exclusive use of bicyclists in one-way travel. The minimum width for a bicycle lane is five feet, separated from motor vehicle traffic by a solid, six to eight-inch painted white line.

SHOULDER BIKEWAYS. A paved shoulder that provides a suitable area for bicycling, reducing conflict with faster moving motor vehicle traffic.

SHARED LANE MARKING or SHARROWS. Lane markings placed in the travel lane at specified intervals, to indicate that a bicyclist may use the full lane. Per federal guidelines, the maximum posted speed limit of roadways utilizing ***SHARROWS*** is 35 MPH.

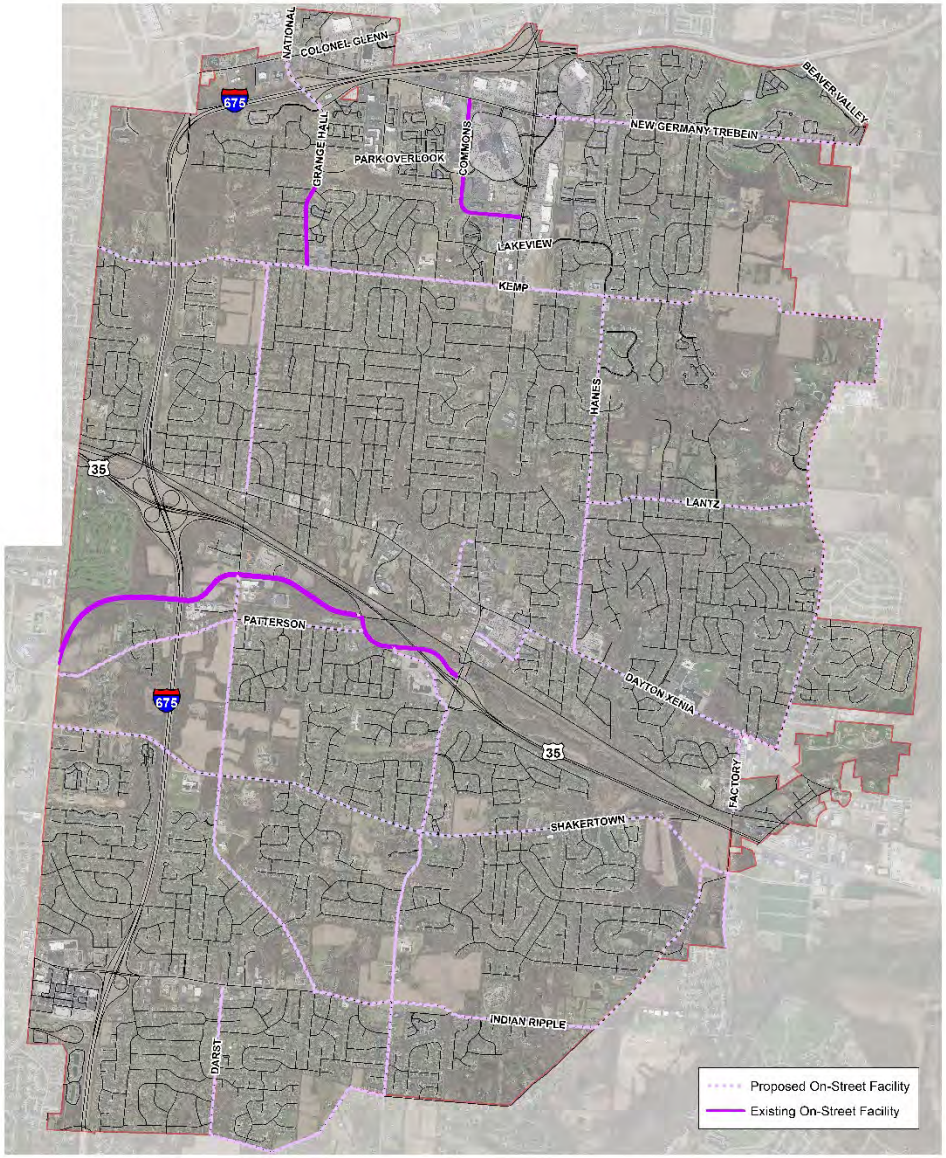
SIGNED NEIGHBORHOOD CONNECTORS or SHARED ROADWAY. Roadways designed as preferred bikeway paths on the Non-Motorized Transportation map where bicyclist and motorist ride in the same travel lanes, while signage alerts motorist to the increased possibility of bicycle traffic.

Signed Neighborhood Connector

"Sharrow"

On-Street Facilities

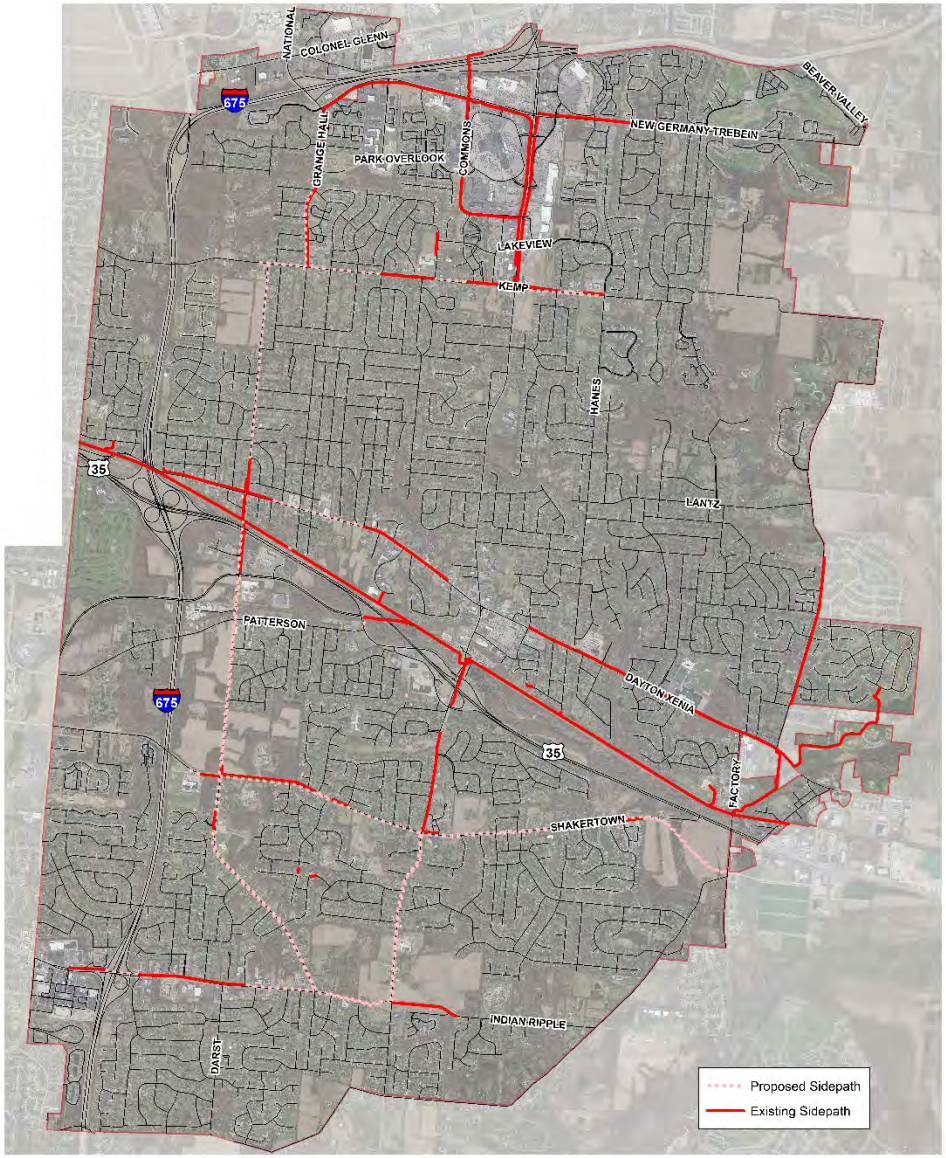
The 5.49 miles of widened shoulders on Research Boulevard, the 1.98 miles of sharrows on Commons Boulevard represents and the 1.43 miles of bike lanes on Grange Hall Road north of Kemp are the extent of the existing on-street facilities in the City (for a total of 8.9 miles). The proposed plan shows an additional 69.77 miles of on-street facilities to be included in construction projects on most of the arterials and commercial/residential collectors in the City. The proposed on-street facilities are intended to connect the signed neighborhood connectors with each other, as well as provide an express route to the Creekside Trail for commuter bicyclists, who may be reluctant to use segregated shared use paths because of potential conflicts with joggers and recreational bicyclist.



Sidepaths

The 22.03 miles of shared use paths which include sections along Pentagon Blvd., Commons Blvd., Dayton-Xenia Rd., Shakertown Rd., Indian Ripple Rd., North Fairfield Rd. and on Creekside Trail are a significant piece of a complete non-motorized transportation system in the City.

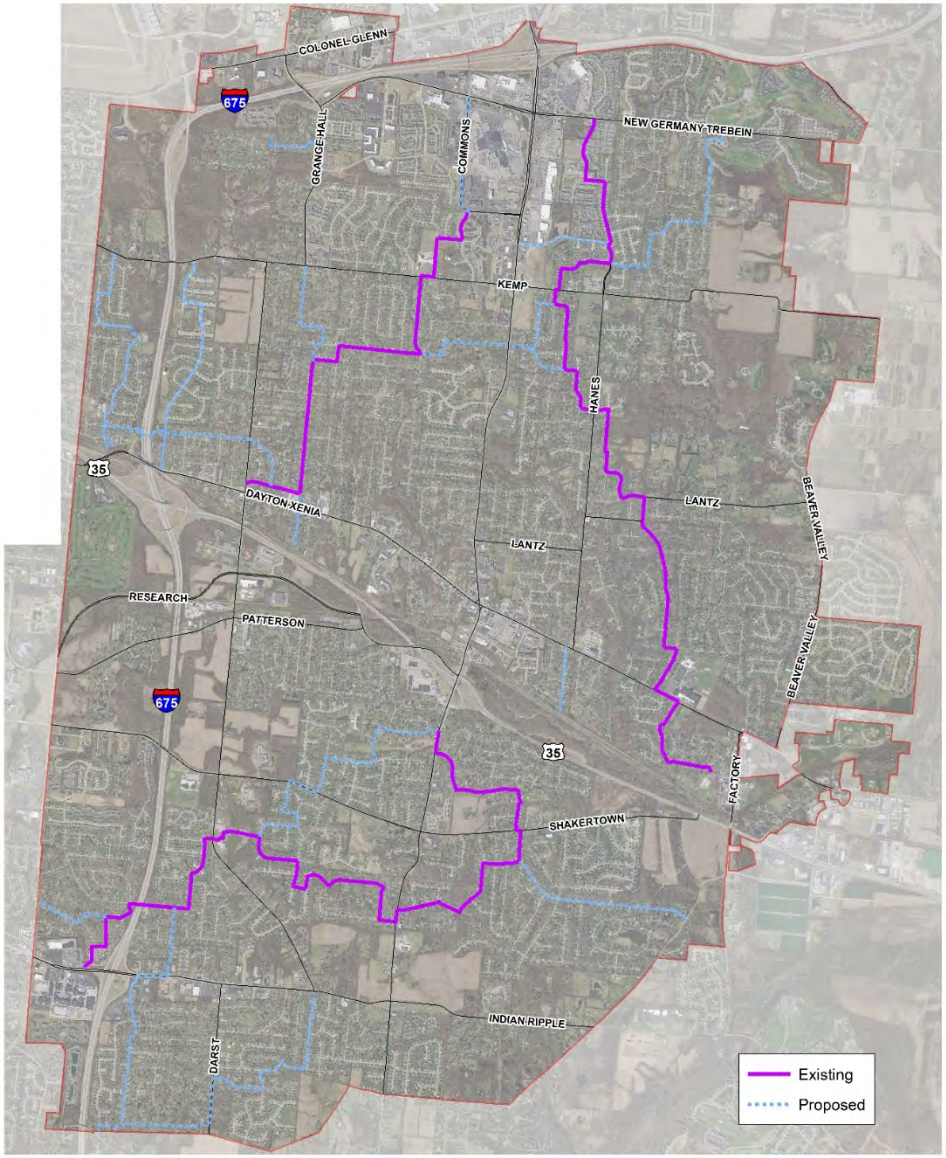
The proposed plan shows an additional 17.42 miles of sidepaths to be included in future construction projects on most of the arterials and commercial/ residential collectors in the City highlighted in red on the map to the right. As with the on-street facilities, the proposed shared use paths are intended to connect the signed neighborhood connectors with each other, as well as provide an express route to the Creekside Trail. However, in contrast with on-street facilities, sidepaths are intended more for pedestrians and recreational bicyclists, and can be used by commuter bicyclists, who are reluctant to ride in traffic with motor vehicles.



Signed Neighborhood Connectors

Signed neighborhood connectors represent the "preferred way" for bicyclists and pedestrians to utilize existing roadways, on sidewalks or in the absence of sidewalks along roadways, to transverse from one part of the City to another, or from one shared use path/on-street facility to another, as recommended by the City's Bikeway and Non-Motorized Transportation Advisory Committee.

Signed Neighborhood Connector A, E, and portions of L and M, a combined 13.84 miles, make up the existing signed routes. An additional 17.20 miles are planned, as shown in the map to the right. Appendix B further details a proposal to name each of the signed neighborhood connectors, as well as signage needed for each route..



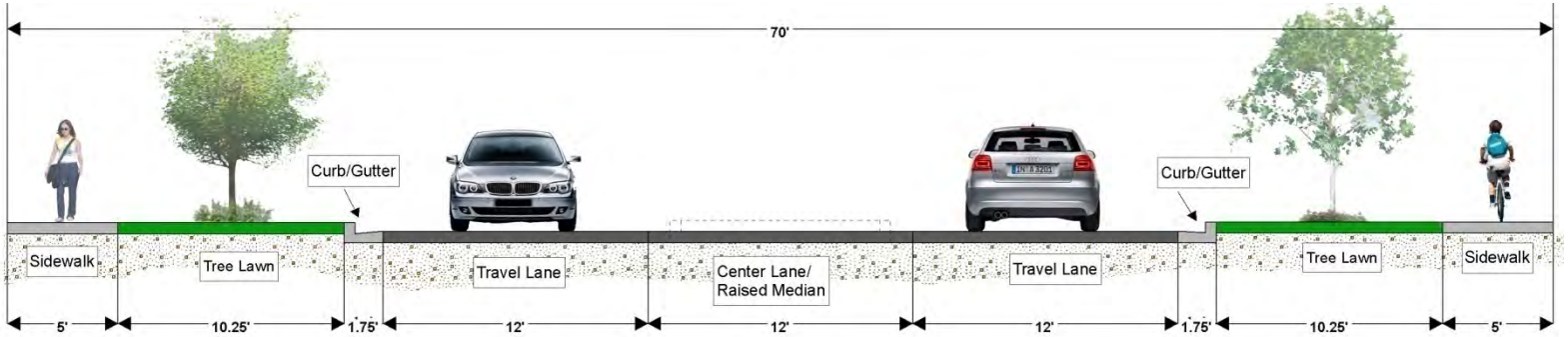
Typical Roadway Cross Sections

Typical Roadway Cross-Sections

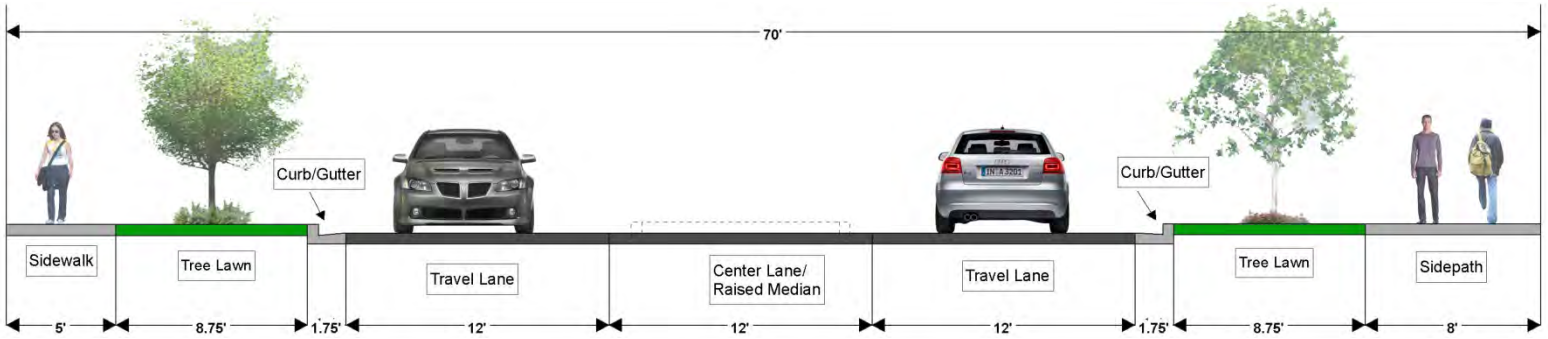
A set of typical roadway sections guides right-of-way acquisitions and reservations along any particular corridor, ensures adequate building setbacks for future construction projects and recognizes the variety of type and size of amenities for all roadway users. Planning and preserving future right-of-way will minimize or avoid new development being located in the path of needed improvements along corridors.

70-Foot Right of Way

Three lane road, with a five-foot sidewalk on each side:



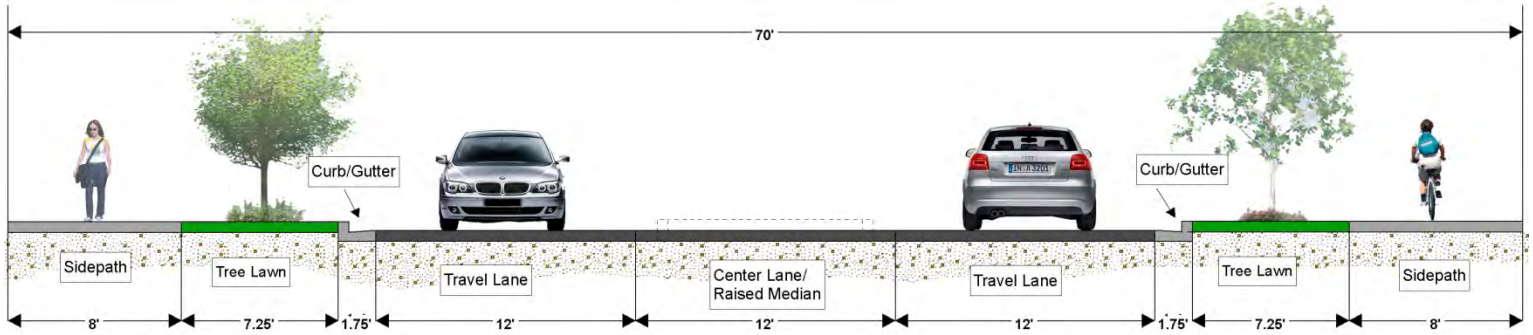
Three lane road, with a five-foot sidewalk on one side and an eight-foot shared-use path on the other:



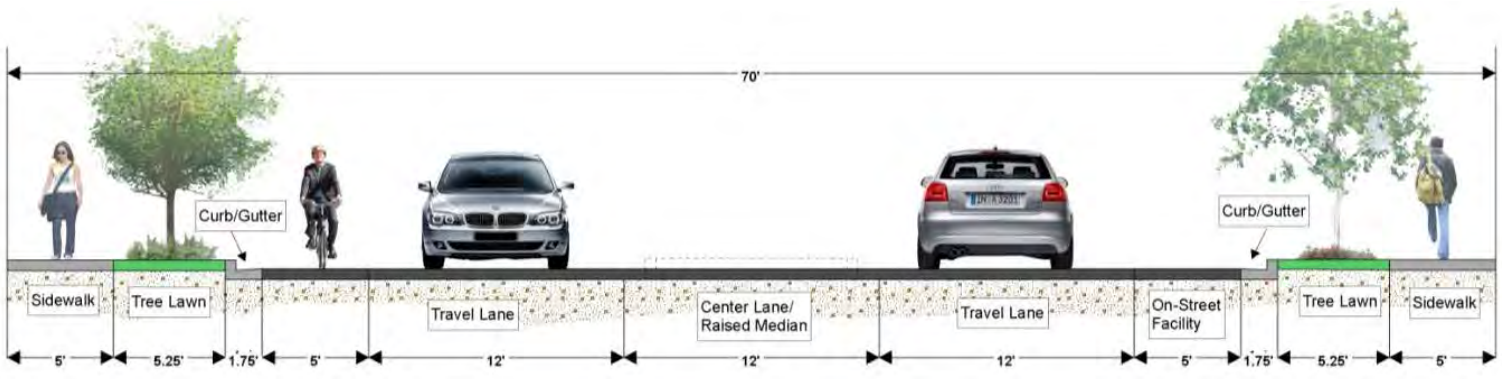
Typical Cross-Sections (cont.)

70-Foot Right of Way (cont.)

Three lane road, with an eight-foot shared-use path on each side:



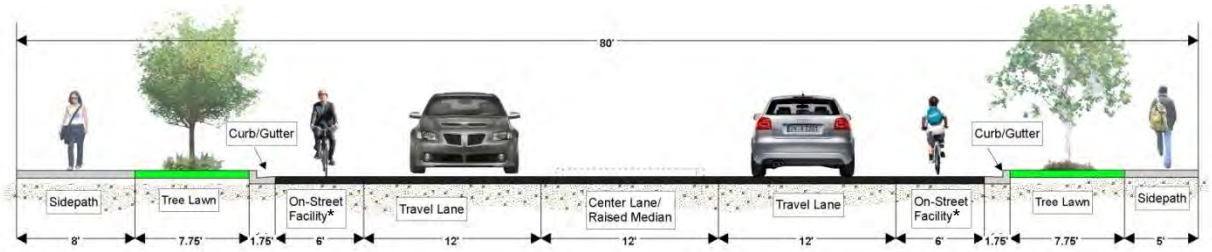
Three lane road and on-street bike facilities, with a five-foot sidewalk on each side:



Typical Cross-Sections (cont.)

80-Foot Right of Way

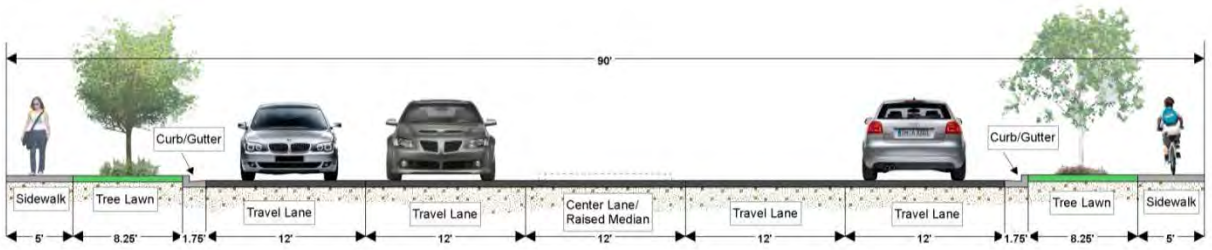
Three lane road and on-street bike facilities, with a five-foot sidewalk on one side and an eight-foot shared use path on the other:



90-Foot Right of Way

**On street facility could also be a widened shoulder, sharrows or other appropriate facility, as determined by the City Engineer at the time of design*

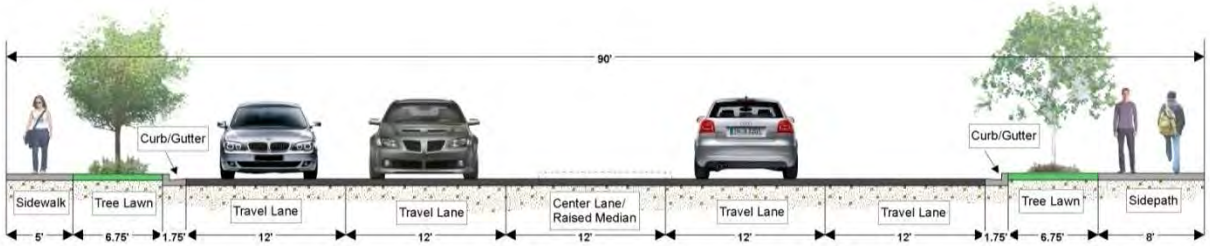
Five lane road, with a five-foot sidewalk on each side:



Typical Cross-Sections (cont.)

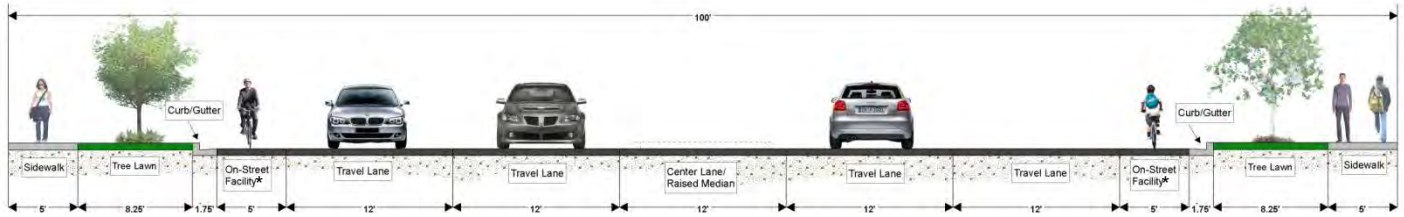
90-Foot Right of Way (cont.)

Five lane road, with a five-foot sidewalk on one side and an eight-foot shared-use path on the other:



100-Foot Right of Way

Five lane road and on-street bike facilities, with a five-foot sidewalk on each side:

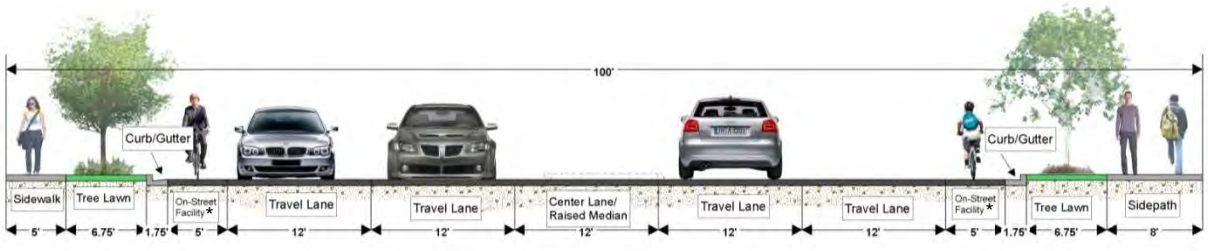


**On street facility could also be a widened shoulder, sharrows or other fappropriate facility, as determined by the City Engineer at the time of design*

Typical Cross-Sections (cont.)

100-Foot Right of Way (cont)

Five lane road and on-street bike facilities, with a five-foot sidewalk on one side and an eight-foot shared use path on the other:



**On street facility could also be a widened shoulder, sharrows or other fppropriate facility, as determined by the City Engineer at the time of design*

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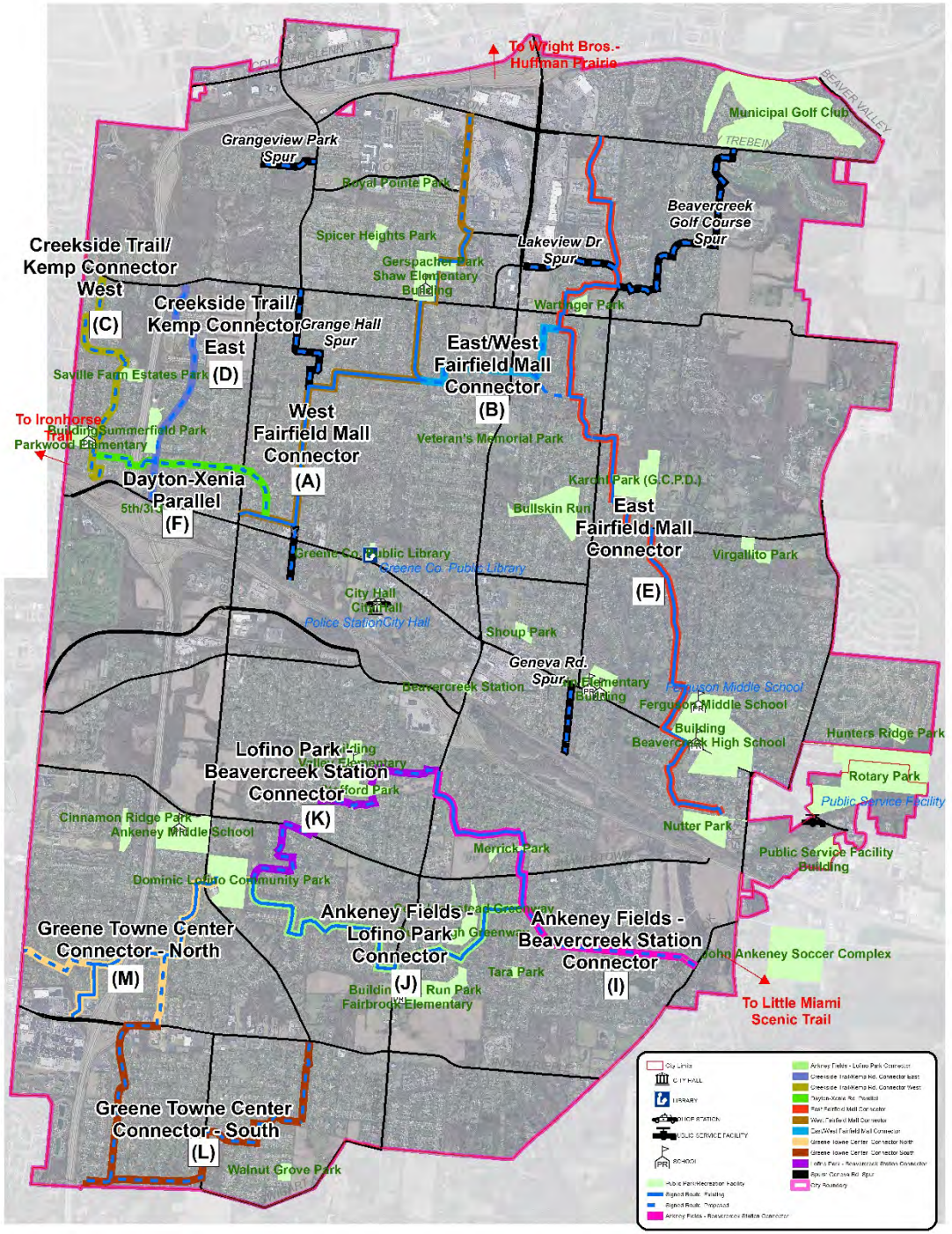
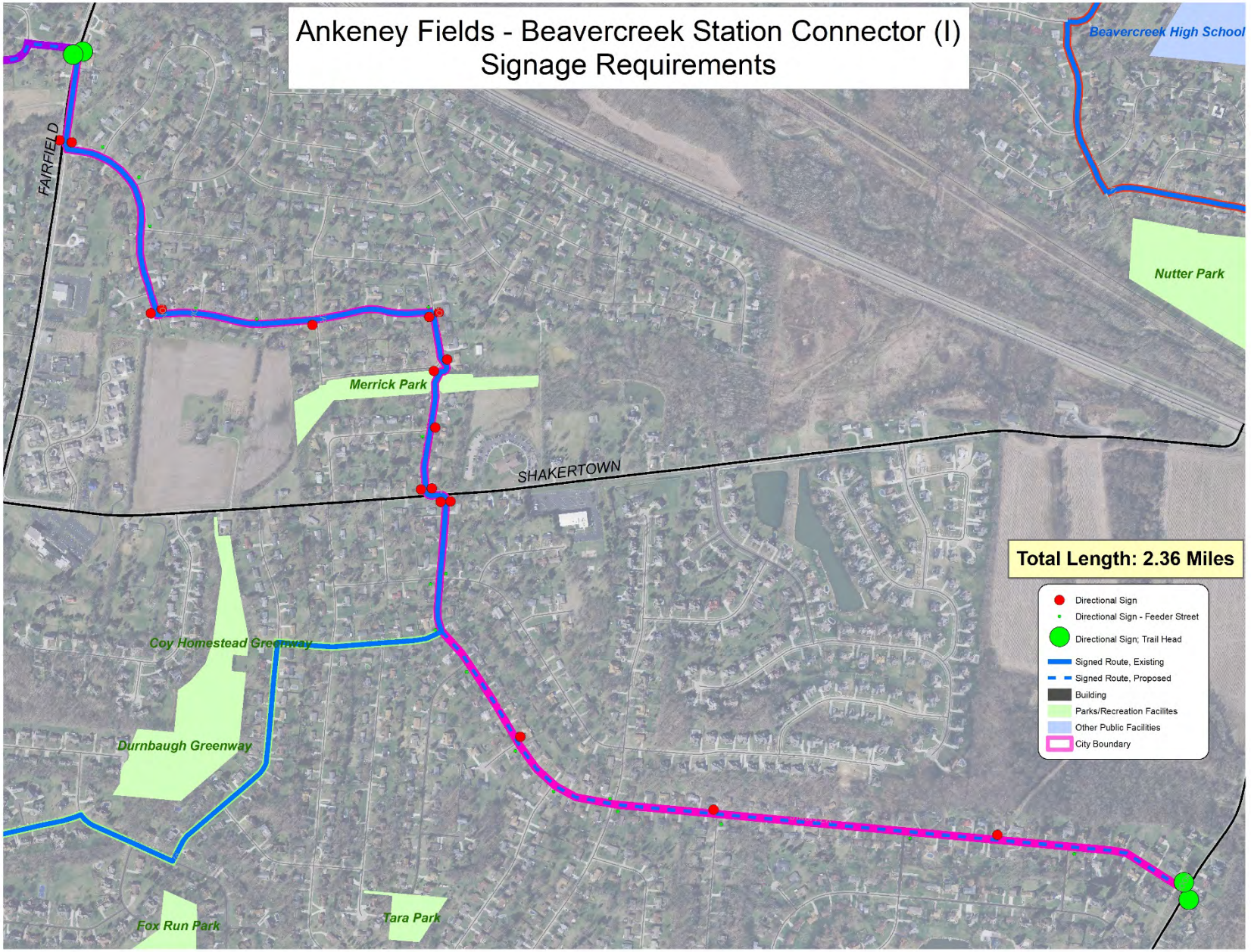
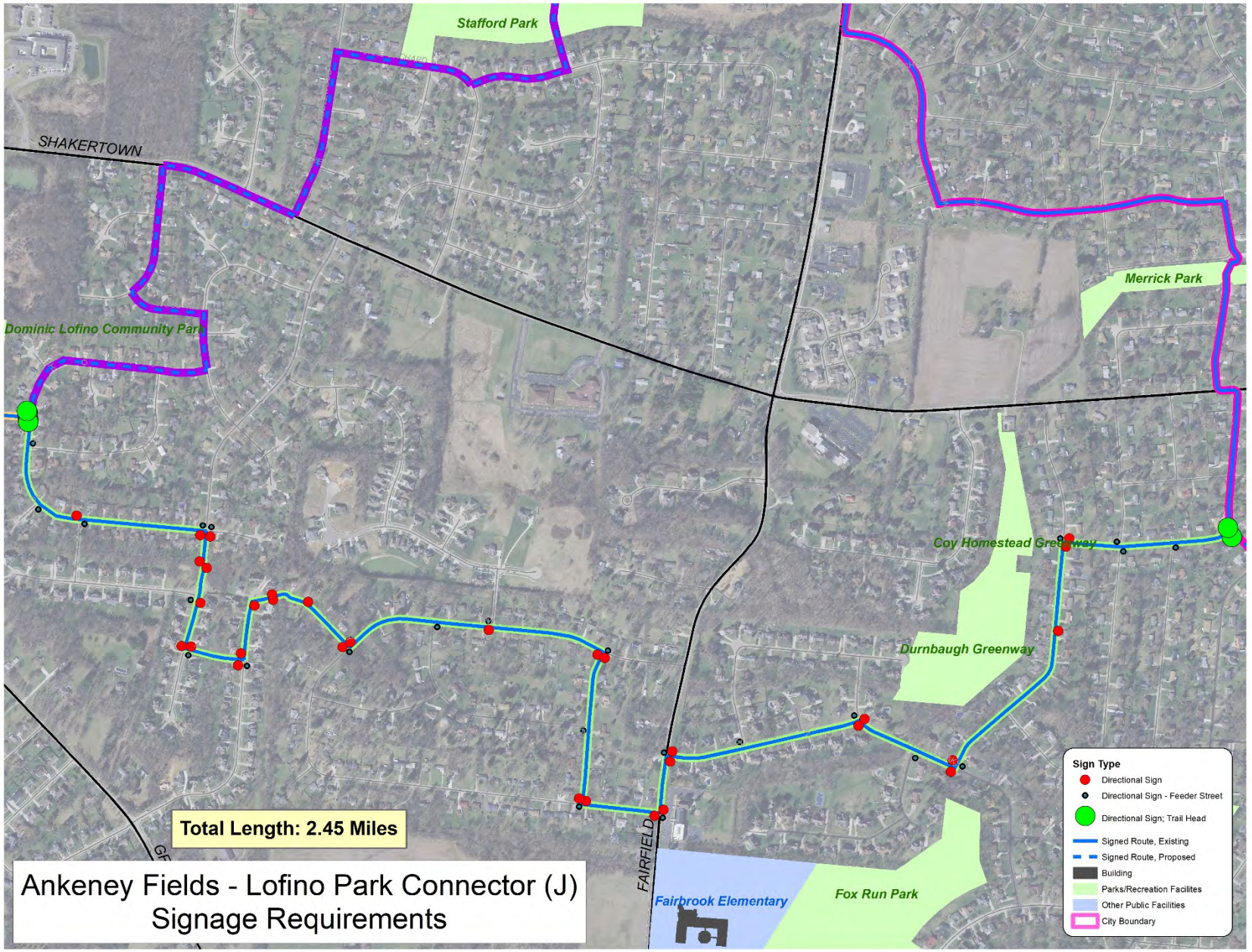
Appendix A

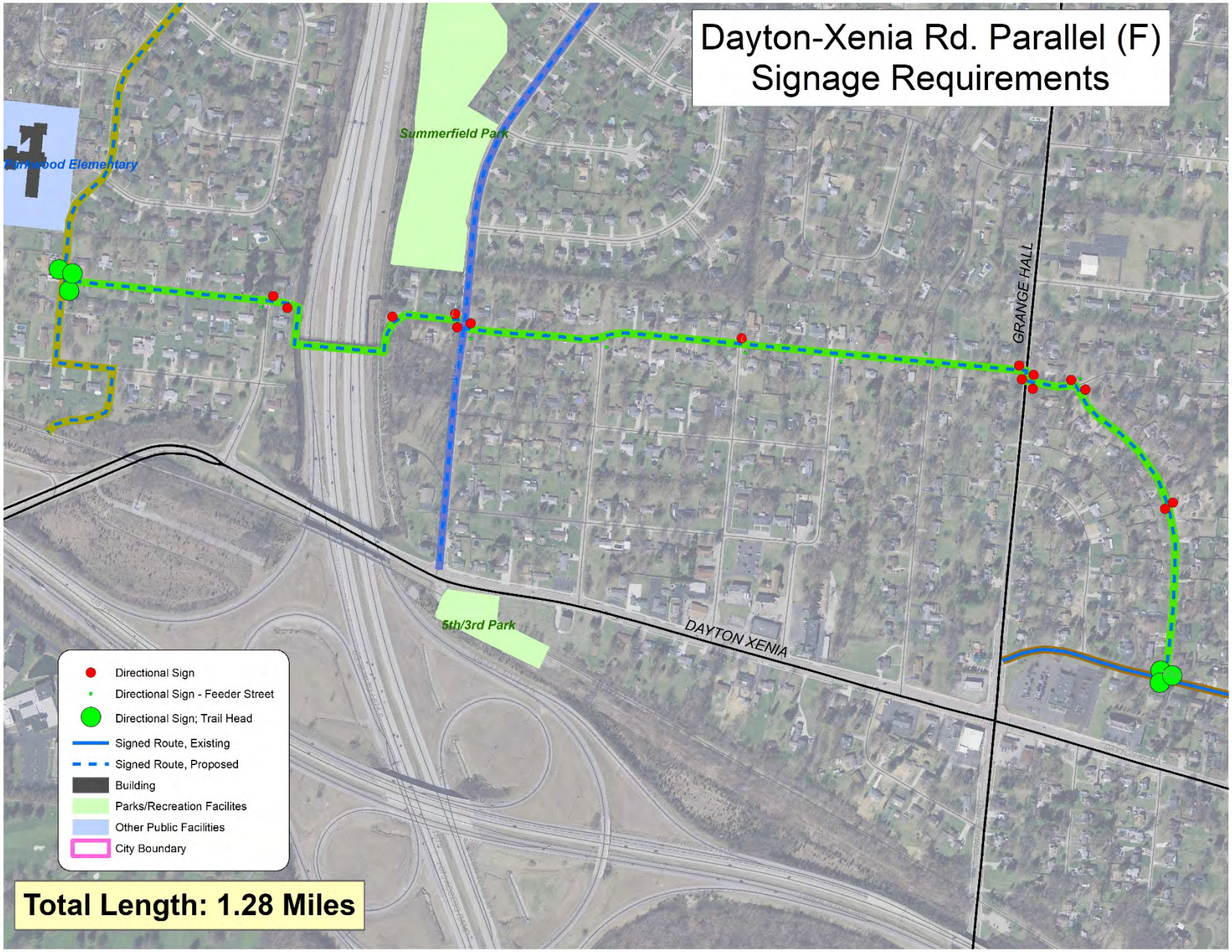
Neighborhood Connectors Detailed Signage Plan

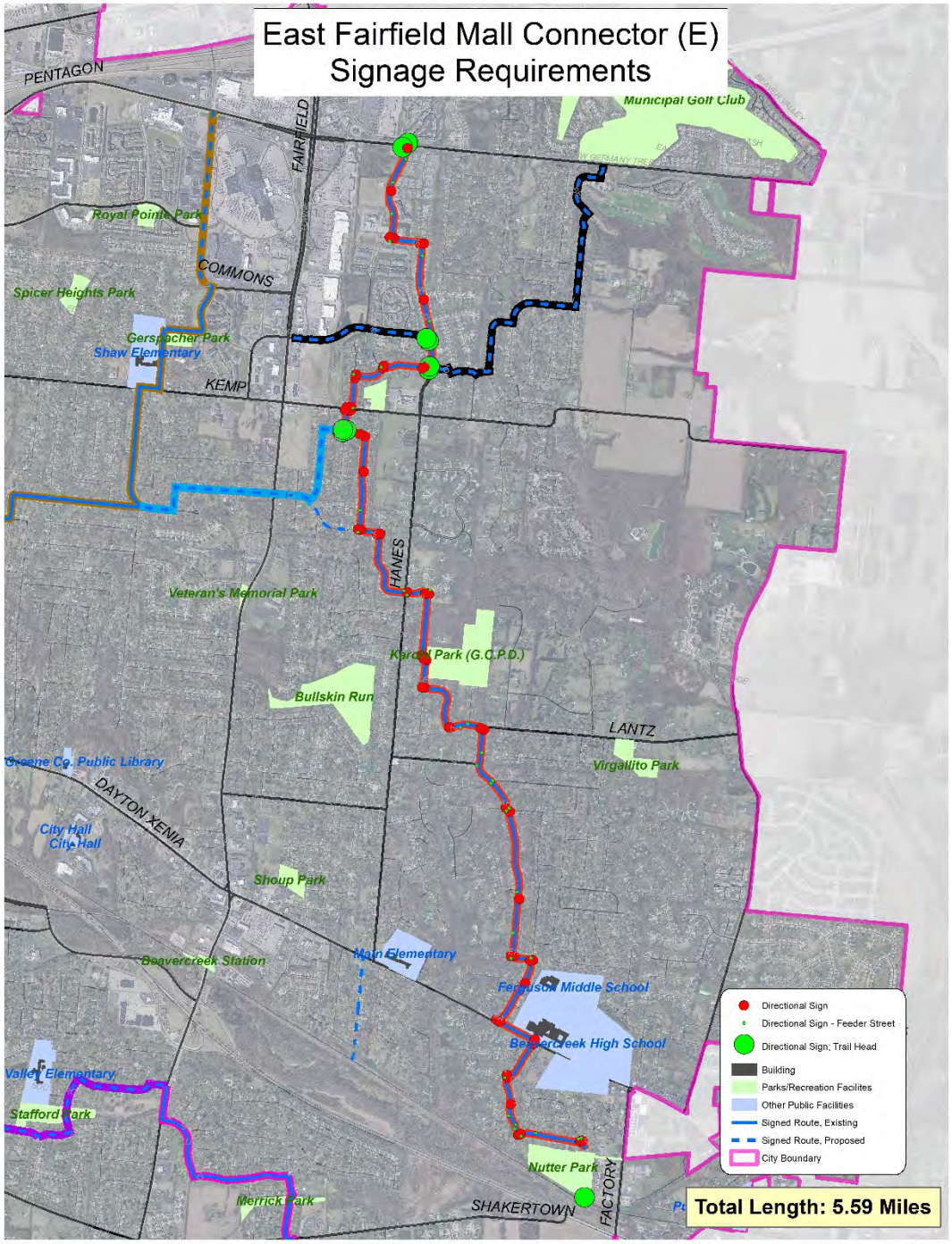
Signed Neighborhood Connectors – Complete System

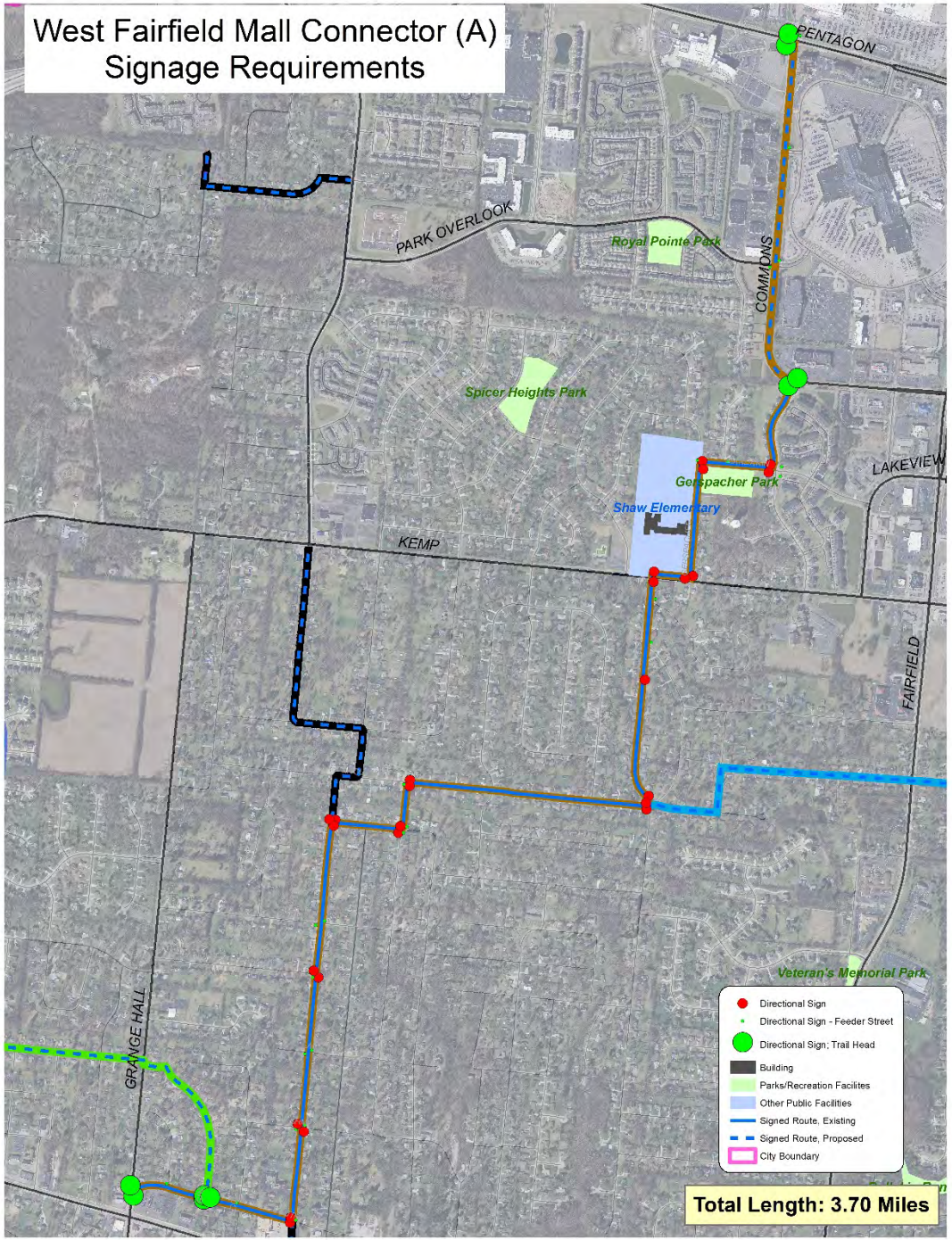



Ankeney Fields - Beavercreek Station Connector (I)
Signage Requirements
Beavercreek High School
FAIRFIELD
Nutter Park
Merrick Park
SHAKERTOWN
Total Length: 2.36 Miles
Directional Sign
Directional Sign - Feeder Street
Directional Sign; Trail Head
Signed Route, Existing
Signed Route, Proposed
Building
Parks/Recreation Facilites
Other Public Facilities
City Boundary
Coy Homestead Greenway
Durnbaugh Greenway
Fox Run Park
Tara Park

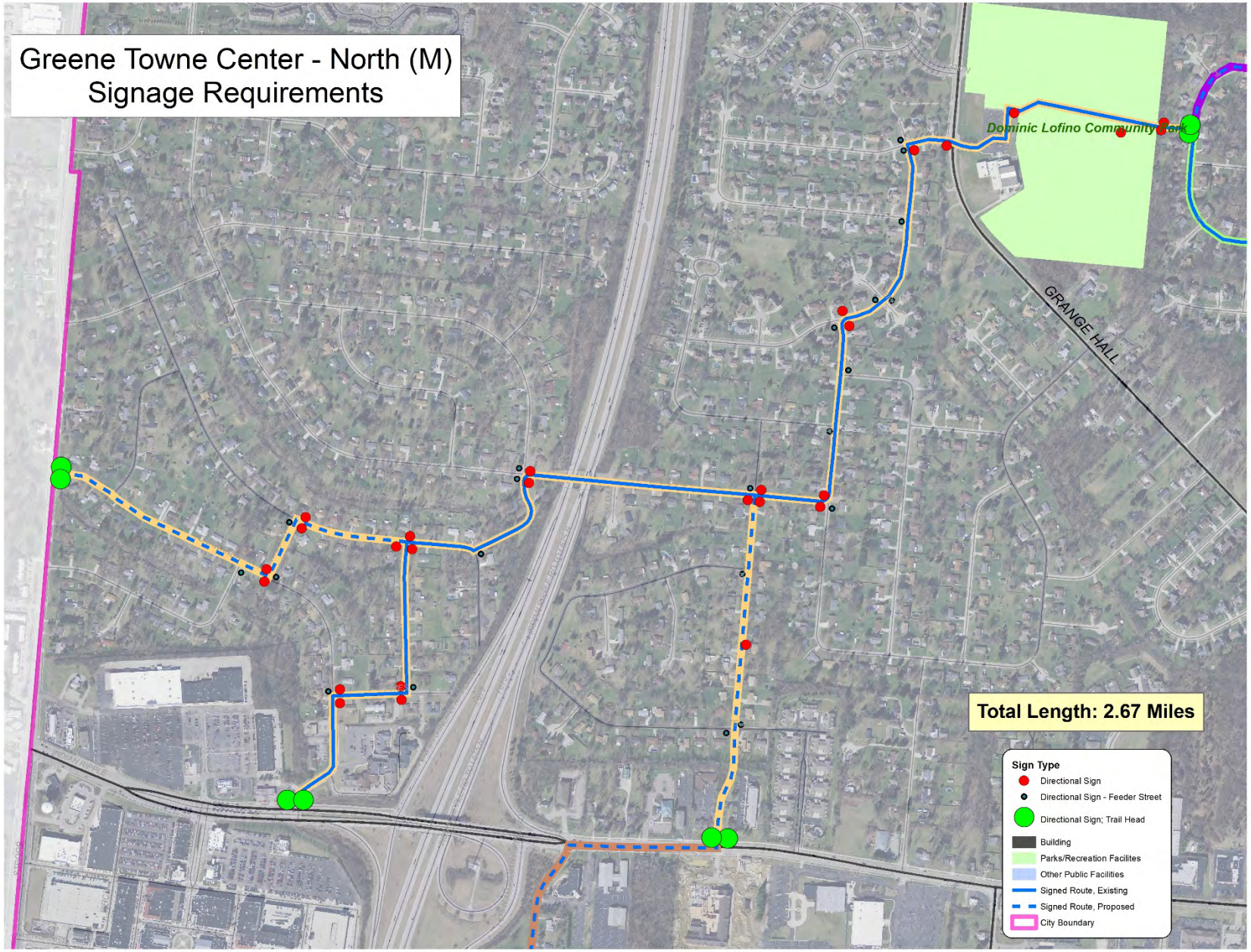

Stafford Park
SHAKERTOWN
Dominic Lofino Community Park
Merrick Park
Coy Homestead Greenway
Durnbaugh Greenway
FAIRFIELD
Fairbrook Elementary
Fox Run Park
Total Length: 2.45 Miles
Ankeney Fields - Lofino Park Connector (J)
Signage Requirements
Sign Type
Directional Sign
Directional Sign - Feeder Street
Directional Sign; Trail Head
Signed Route, Existing
Signed Route, Proposed
Building
Parks/Recreation Facilites
Other Public Facilities
City Boundary

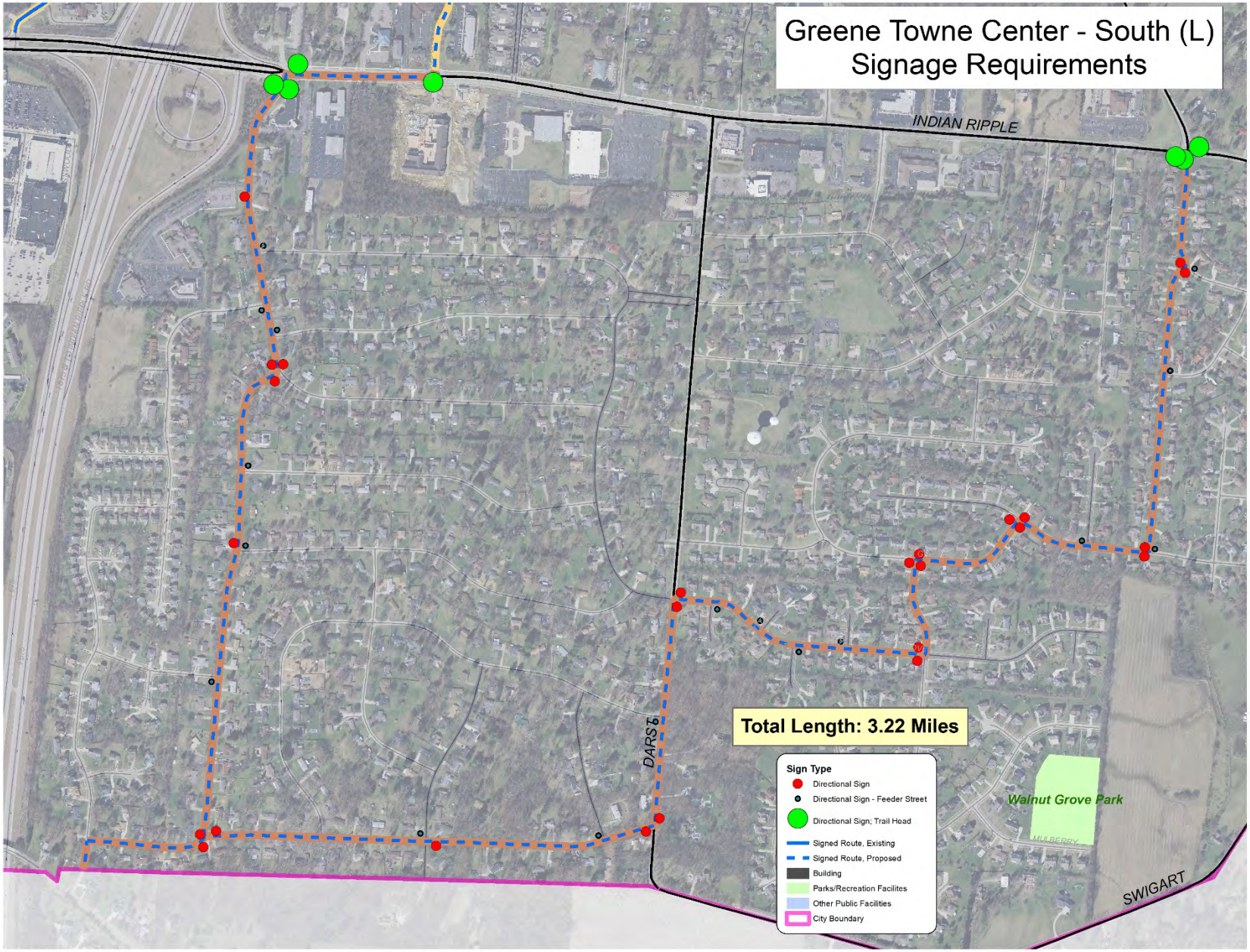

Dayton-Xenia Rd. Parallel (F)
Signage Requirements
Summerfield Park
Elmwood Elementary
GRANGE HALL
DAYTON XENIA
5th/3rd Park
Directional Sign
Directional Sign - Feeder Street
Directional Sign; Trail Head
Signed Route, Existing
Signed Route, Proposed
Building
Parks/Recreation Facilites
Other Public Facilities
City Boundary
Total Length: 1.28 Miles

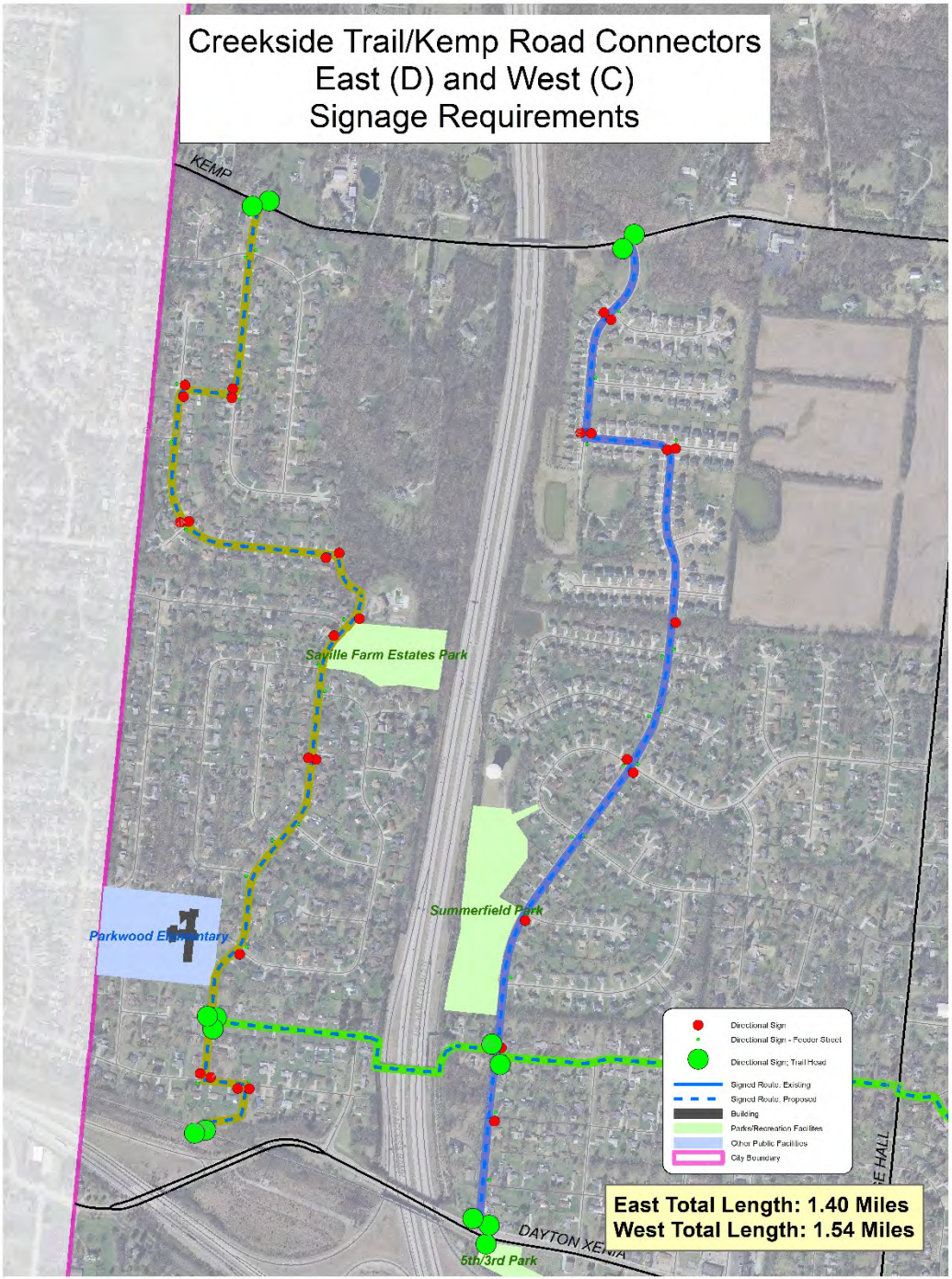

East Fairfield Mall Connector (E)
Signage Requirements
PENTAGON
FAIRFIELD
Municipal Golf Club
Royal Pointe Park
COMMONS
Spicer Heights Park
Gerspacher Park
Shaw Elementary
KEMP
HANES
Veteran's Memorial Park
Bullskin Run
LANTZ
Greene Co. Public Library
Virgalitto Park
DAYTON XENIA
City Hall
Shoup Park
Beavercreek Station
Main Elementary
Fergusson Middle School
Beavercreek High School
Valley Elementary
Stafford Park
Nutter Park
Merrick Park
SHAKERTOWN
FACTORY
Directional Sign
Directional Sign - Feeder Street
Directional Sign; Trail Head
Building
Parks/Recreation Facilites
Other Public Facilities
Signed Route, Existing
Signed Route, Proposed
City Boundary
Total Length: 5.59 Miles

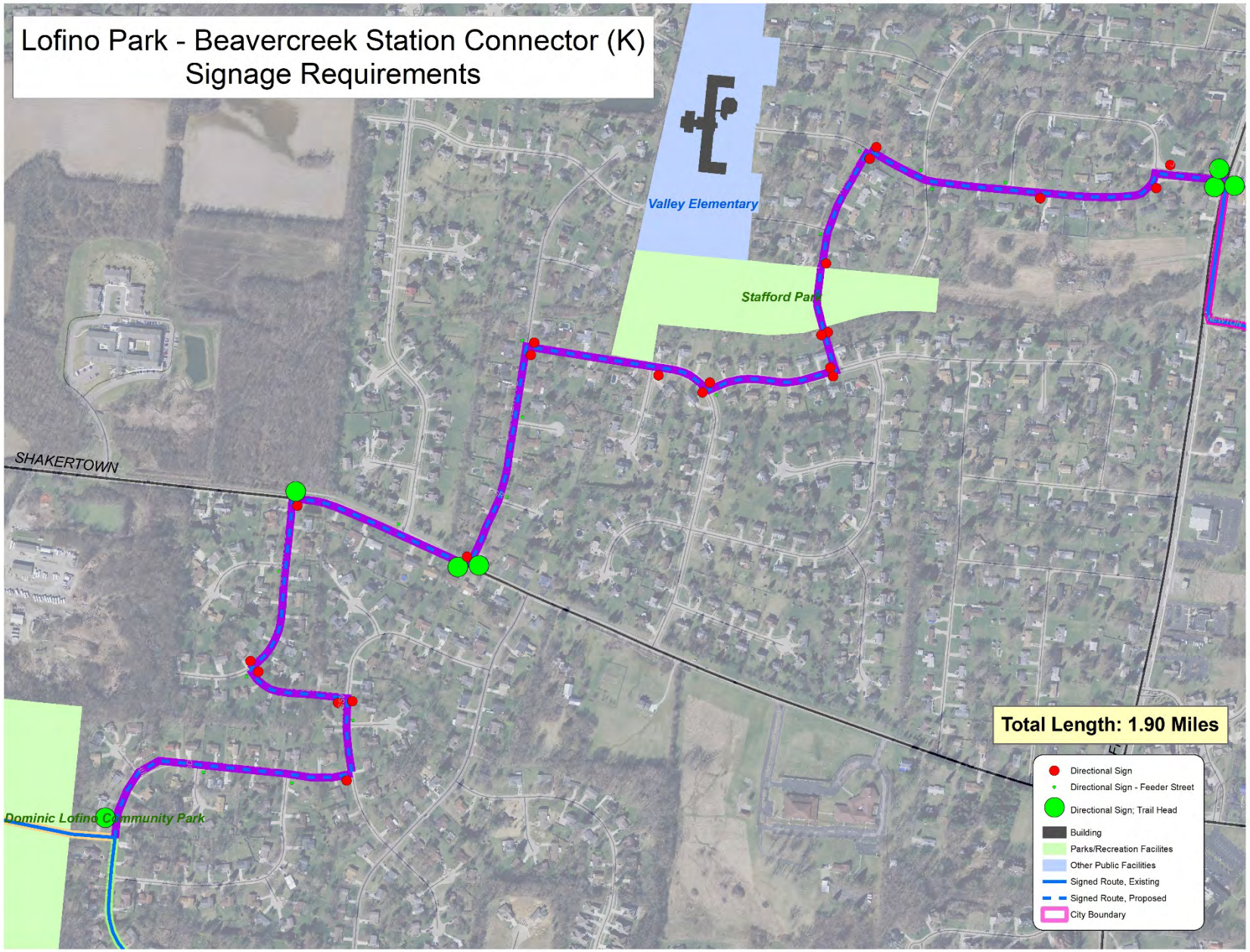

West Fairfield Mall Connector (A)
Signage Requirements
PENTAGON
PARK OVERLOOK
Royal Pointe Park
COMMONS
Spicer Heights Park
LAKEVIEW
Gerspacher Park
Shaw Elementary
KEMP
FAIRFIELD
Veteran's Memorial Park
GRANGE HALL
Directional Sign
Directional Sign - Feeder Street
Directional Sign; Trail Head
Building
Parks/Recreation Facilites
Other Public Facilities
Signed Route, Existing
Signed Route, Proposed
City Boundary
Total Length: 3.70 Miles

Greene Towne Center - North (M) Signage Requirements

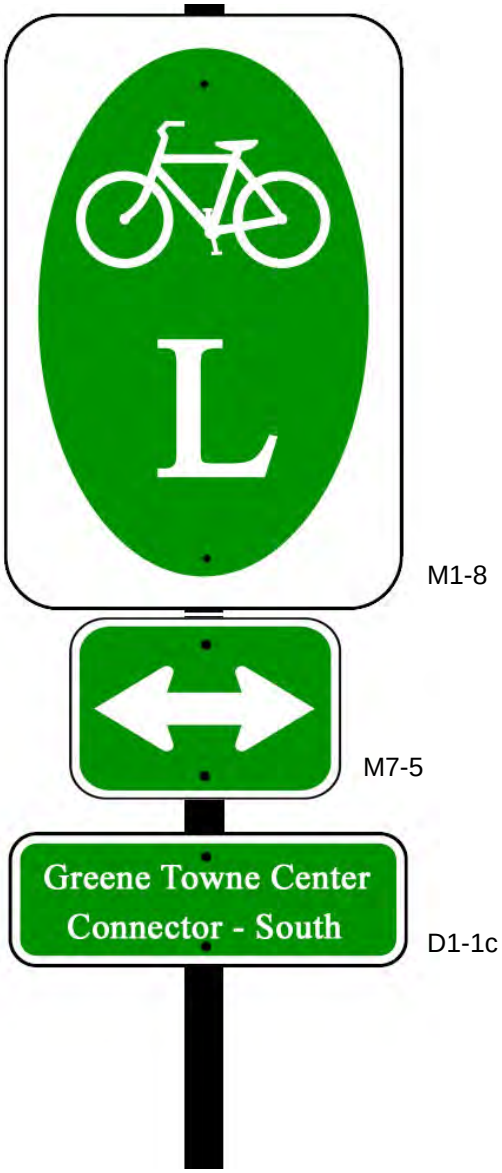



Greene Towne Center - South (L)
Signage Requirements
INDIAN RIPPLE
DARST
SWIGART
Walnut Grove Park
MULBERRY
Total Length: 3.22 Miles
Sign Type
Directional Sign
Directional Sign - Feeder Street
Directional Sign; Trail Head
Signed Route, Existing
Signed Route, Proposed
Building
Parks/Recreation Facilites
Other Public Facilities
City Boundary

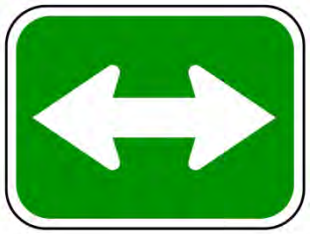

Creekside Trail/Kemp Road Connectors
East (D) and West (C)
Signage Requirements
KEMP
Saville Farm Estates Park
Summerfield Park
Parkwood Elementary
5th/3rd Park
DAYTON XENIA
Directional Sign
Directional Sign - Feeder Street
Directional Sign; Trail Head
Signed Route, Existing
Signed Route, Proposed
Building
Parks/Recreation Facilities
Other Public Facilities
City Boundary
East Total Length: 1.40 Miles
West Total Length: 1.54 Miles


Lofino Park - Beavercreek Station Connector (K)
Signage Requirements
Valley Elementary
Stafford Park
SHAKERTOWN
Dominic Lofino Community Park
Total Length: 1.90 Miles
Directional Sign
Directional Sign - Feeder Street
Directional Sign; Trail Head
Building
Parks/Recreation Facilites
Other Public Facilities
Signed Route, Existing
Signed Route, Proposed
City Boundary

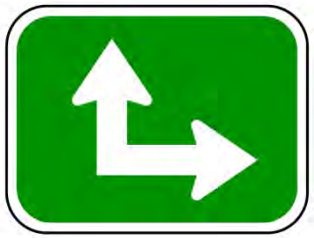
Trail Head Signage Example



Route Directional Signs (examples)



M7-5



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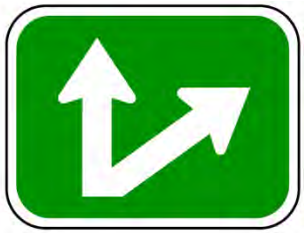
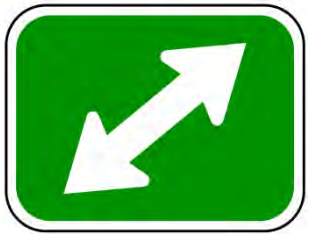


M7-7

M7-2



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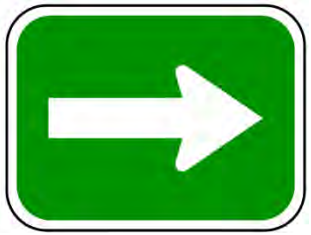


M7-1

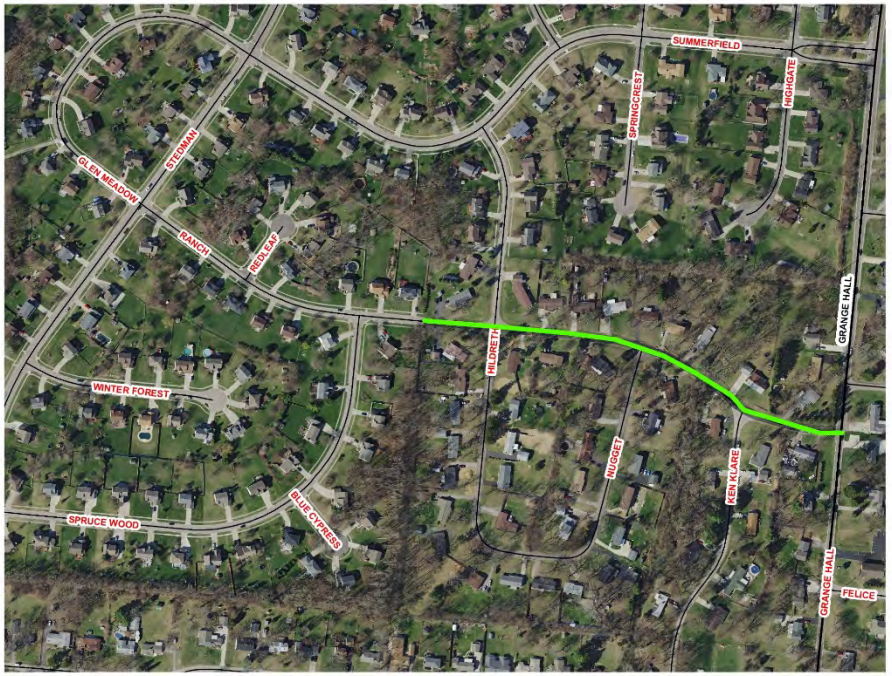
Appendix B

Special Projects

(Bikeway and Non-Motorized Transportation Advisory Committee preferred Projects)

Ranch Drive

- Heavily traveled street with sidewalks at west end only. Used as a cut-through to get to Stedman Drive. Prefer sidewalk extensions or speed humps.



City Hall Bike Rack

- Increase or enhance the current bike rack is small and not suitable for more than a few bikes.

Curb Cuts on Beaver Vu Drive at North Fairfield Road

- Make easier transition from sidewalk on North Fairfield Road to the roadway on Beaver Vu Drive.

Carlsbrook Drive Curb/Merrick Park

- Drop off near the pedestrian bridge makes transition from road to bridge and bridge to road challenging