ADOPTED NOVEMBER 15, 2016
RESOLUTION 2016-19

DOWNTOWN POWELL
STREET SYSTEM & CIRCULATION PLAN
A KEEP POWELL MOVING INITIATIVE

DOWNTOWN POWELL
STREET SYSTEM & CIRCULATION PLAN

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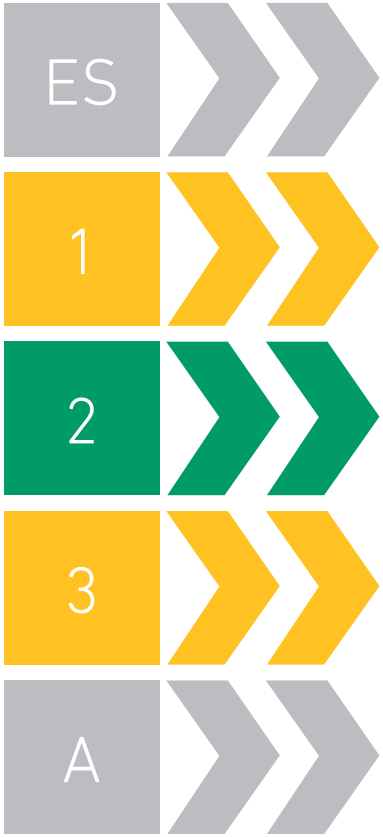


Executive Summary

This plan is part of a larger initiative by the City to improve the transportation system through strategic investments and partnerships.

ES EXECUTIVE SUMMARY

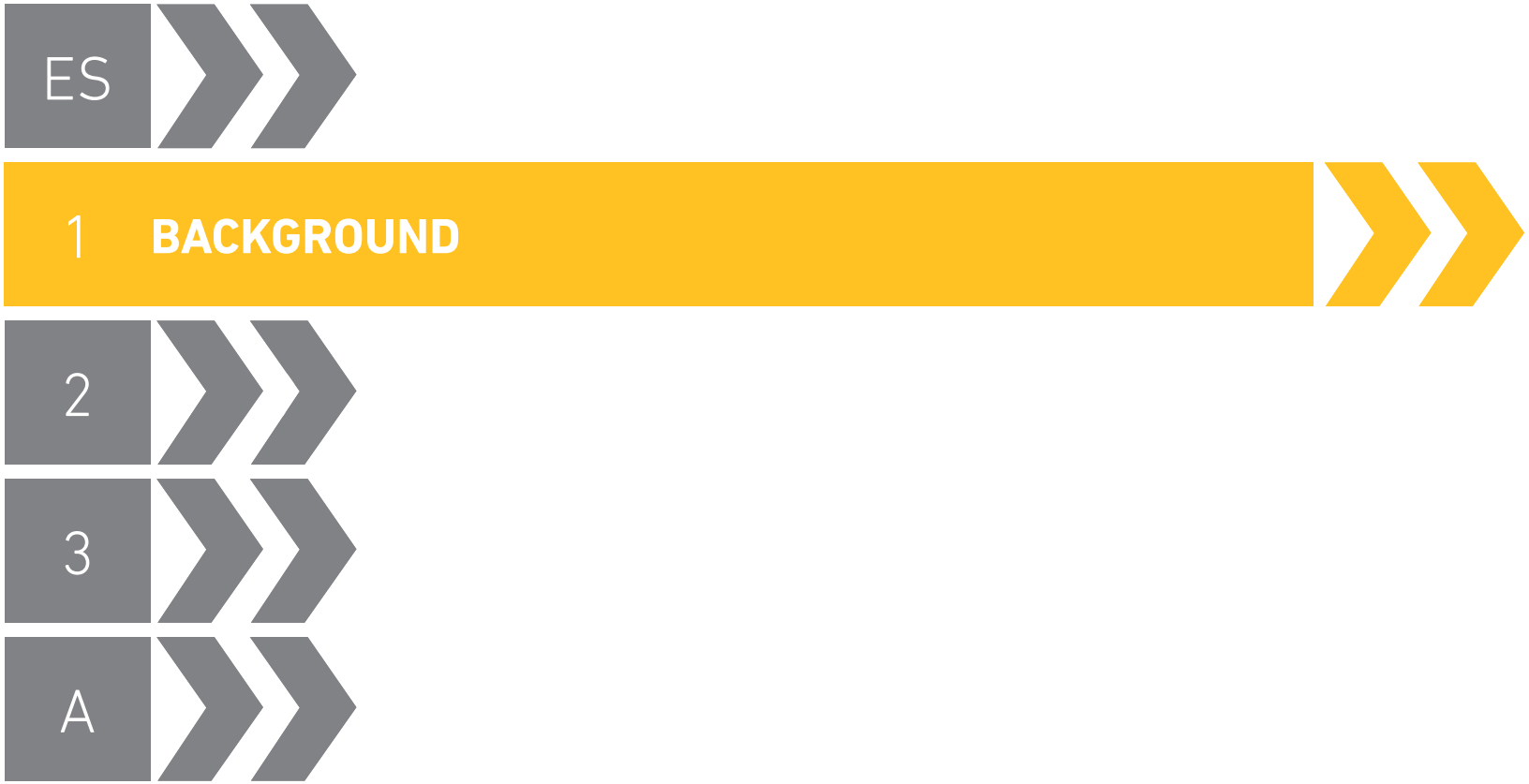
The Downtown Powell Street System and Circulation Plan represents one of the key implementation initiatives recommended by the 2015 City of Powell Comprehensive Plan. This more focused planning effort was undertaken to develop design concepts for physical improvements to existing streets and parking areas and for new potential street and alley connections that will help to alleviate congestion and improve traffic flow at the Four Corners. This is part of a larger initiative by the City to improve the transportation system through strategic investments and partnerships. This plan lays out a framework for implementation based on thorough planning, urban design principles, and traffic engineering analysis.

This section provides a series of recommendations for expanding the network of streets and parking connections in Downtown, how those improvements should be designed, and other strategies to improve traffic flow and circulation. Recommendations include over 20 specific capital improvement projects to enhance vehicular, pedestrian and bicycle flow and circulation in and around Downtown. Phasing priorities, preliminary cost estimates and funding considerations are also identified.

Priority improvements include the reconfiguration of Olentangy Street to create a left turn lane at Hall Street, and the creation of a new street (Martin-Perry Drive) to provide access into the Southeast Quadrant of Downtown from the Grace Drive/Olentangy Street intersection. Each of these improvements, and many of the other recommendations, will trigger a series of additional needed projects, such as interconnecting and consolidating parking areas, enhancing the streetscapes and pedestrian spaces in Downtown, and creating other alternative circulation options. The ultimate goal of these improvements is to provide enough options for circulation that will allow for full restriction of left turns at the Four Corners, thus facilitating traffic flow through Powell's most congested intersection.

Section 1

This section introduces the Downtown Powell study area, outlines project objectives, and provides background history and context that sets the stage for recommendations in the next section.


ES
1 BACKGROUND
2
3
A

Introduction & Study Area

Introduction

The Downtown Powell Street System and Circulation Plan represents one of the key implementation initiatives recommended by the 2015 City of Powell Comprehensive Plan. Much of the comprehensive planning process revolved around the significant traffic congestion experienced on a daily basis by residents and others traveling through the Four Corners intersection of Olentangy Street (State Route 750) and Liberty Street. Extensive transportation analysis and planning dialogue revealed a clear need to create a more robust street network in Downtown Powell. The resulting Thoroughfare Plan was developed through a collaborative public process that weighed the pros and cons of various alternatives for transportation improvements in downtown to meet community needs and address concerns of residents and business owners.

This more focused planning effort was undertaken to develop design concepts for physical improvements to existing streets and parking areas and for new potential street and alley connections that will help to alleviate congestion and improve traffic flow at the Four Corners. This is part of a larger initiative by the City to improve the transportation system through strategic investments and partnerships. This plan lays out a framework for implementation based on thorough planning, urban design principles, and traffic engineering analysis.

This comprehensive design ensures that new capital improvements will balance the needs of improving traffic flow, ensuring pedestrian mobility and safety, and preserving (and enhancing) community character.

This document represents the first phase of multi-phase effort that will lead to construction of priority capital improvements. The plan recommends a detailed street network plan, design guidelines for streets, a phasing strategy for implementation, and key priorities for immediate advancement to the next step of design.

Study Area

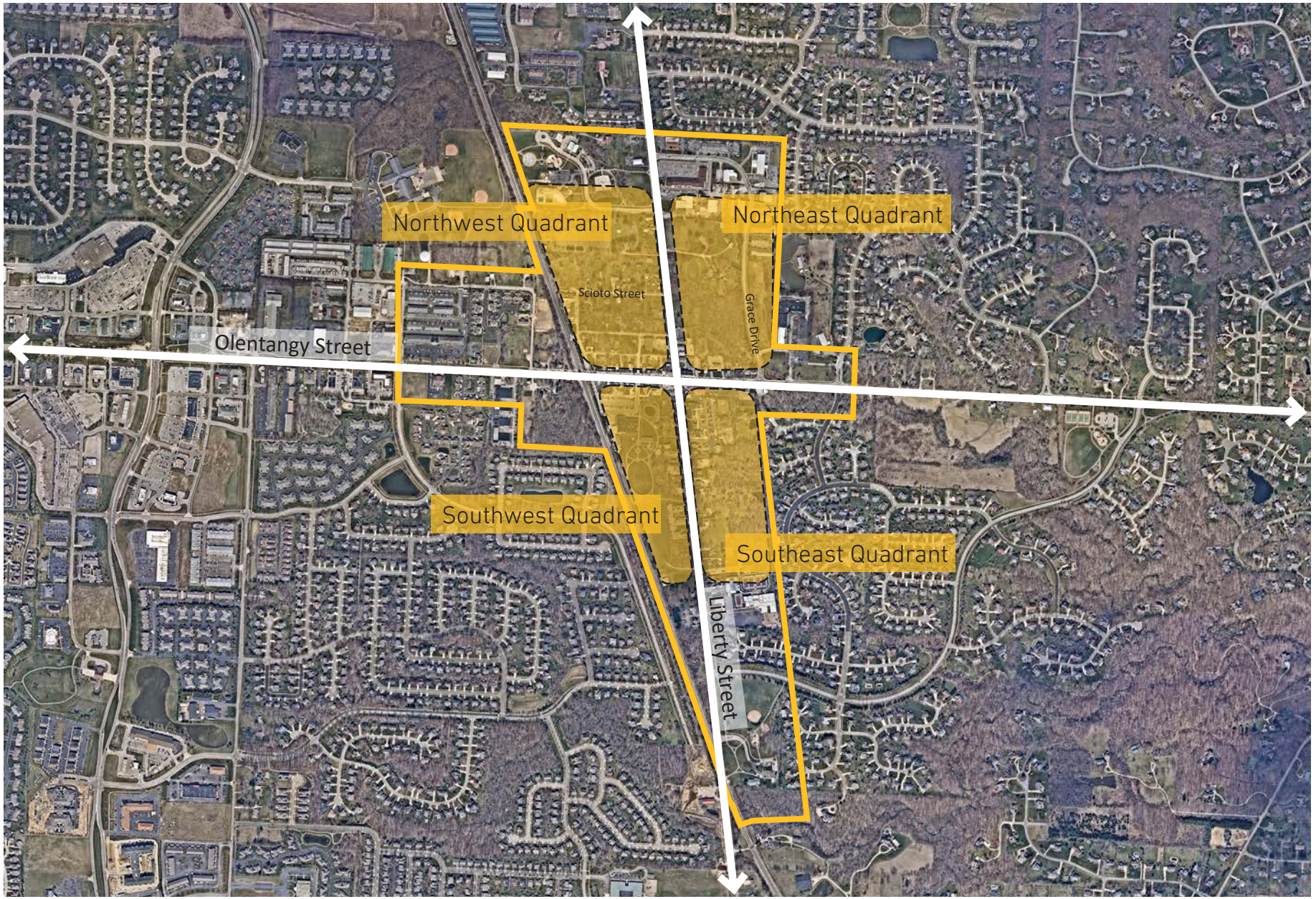
The focus of this plan is primarily on improvements to the downtown core within each of the four quadrants surrounding the Four Corners. Recommendations are also provided for portions of Powell Road and Liberty Road extending beyond the village center, as well as other strategic roadway and intersection improvements in the vicinity of Downtown Powell. While the traffic problems in Powell are the result of both local and regional transportation issues, the situation is most acute in the downtown core as traffic approaches the Four Corners – this plan is an effort by the City to direct its resources where it has the most control. At the same time, the plan recommends (as does the Comprehensive Plan), a broader effort to coordinate with surrounding jurisdictions and transportation agencies to address regional transportation concerns.

As often occurs in Central Ohio, a single roadway can have multiple names or route designations. Powell Road is designated as State Route 750 for its entire length, but within Powell's historic village center it also takes the name of Olentangy Street. Similarly, Liberty Road is referred to as Liberty Street within the downtown core. The signifier "street" captures the more urban character of these roadways as they enter the historic center. For the purposes of this study, the names Olentangy Street and Liberty Street are used to refer to those portions of the roadways located immediately within the downtown study area, while the names Powell Road and Liberty Road refer to portions outside of the core.

Project Objectives

- **1** Facilitate better traffic movement through and around the Four Corners
- **2** Enhance access, parking, and circulation to Downtown businesses and events
- **3** Preserve and enhance downtown character and walkability

Study Area


Northwest Quadrant
Northeast Quadrant
Southwest Quadrant
Southeast Quadrant
Olentangy Street
Scioto Street
Grace Drive
Liberty Street

Background

History

Powell was settled as a rural crossroads community at the beginning of the 19th Century and remained a small rural outpost for over 150 years. The settlement centered around the intersection of two County roads that came to be called Powell Road and Liberty Road, near a north-south rail line connection to Columbus. For decades the community remained isolated from the relatively distant activity of Columbus, Delaware, and other similarly small rural communities. In 1937, Powell Road was designated as State Route 750, connecting State Route 257 (Riverside Drive) with State Route 315 (Olentangy River Road). Ten years earlier, the Columbus Zoological Gardens opened at the intersection of County Road 126 (Glick Road) and Riverside Drive, which would become a major regional destination, less than three miles west of Powell.

For decades after incorporating as a village in 1947, Powell remained a small, quiet community, until suburban growth reached Liberty Township in the 1980's with the regional access made possible by the completion of the Interstate 270 outerbelt and SR 315 as a freeway into Columbus. Since then, Powell has grown rapidly in size and population, expanding outward from the historic village center, as have the surrounding townships, the City of Columbus, and other suburban cities. In 1997, State Route 750 was extended east across the Olentangy River, connecting to US 23, and routing along Polaris Parkway to an interchange with Interstate 71. With continued residential growth in northern Franklin County and southern Delaware County, the massive expansion and continued popularity of the Columbus Zoo & Aquarium and the growth of the Polaris Mall and surrounding commercial development as a center of regional commerce, Downtown Powell now sits along one of Central Ohio's busiest regional thoroughfares.

The Four Corners in Context

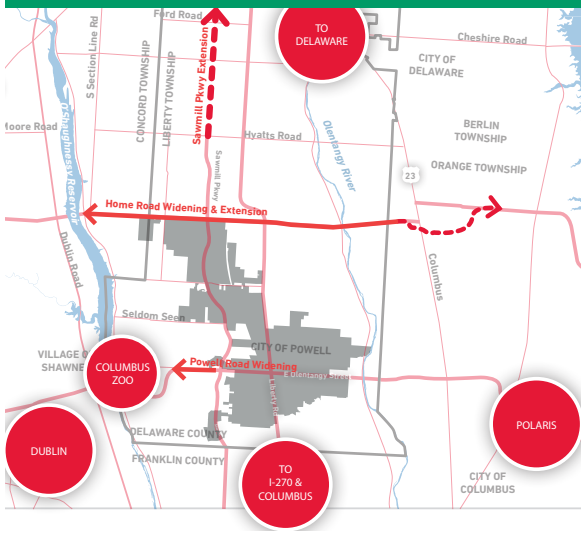
The heavy traffic that flows through Downtown Powell on a daily basis is exacerbated by a number of factors, not the least of which is the limited number of regional east-west routes in southern Delaware County. Hard Road provides a more limited east-west connection to the south between SR 315 and SR 257, and Home Road provides a northern connection from US 23 to SR 745. Each of these routes is over two and half miles from SR 750, and neither provides the same level of regional connectivity that Powell Road provides. Additionally, the Olentangy and Scioto Rivers create natural barriers to east-west routes, and the man-made barriers of the CSX rail line and disconnected suburban subdivisions have further limited options to relieve the traffic burden on Powell Road. Recent and planned improvements to Home Road will increase its capacity and connectivity. Still Powell Road will remain a heavily traveled route for the foreseeable future.

At the same time, the popularity of Powell's historic village center has grown in recent years, with rehabilitation and reuse of historic structures and new infill development providing a growing number of shopping and dining destinations in an authentic, walkable place. This popularity brings many Powell residents and out-of-town visitors to Downtown Powell on a regular basis, adding to traffic during peak evening hours. The potential for continued development in and near the downtown core has led to additional community concern that the associated traffic will add to the already frustrating traffic congestion in the area. While the potential traffic impacts of development should always be addressed as part of the development review process, it should also be acknowledged that new development can help to improve the transportation system by building new roads or contributing tax revenue for infrastructure, and that not all development has a significant level of traffic generation. In particular, the incorporation of mixed use development in and near the walkable environment of Downtown Powell has a greater potential for minimizing traffic by placing residents and employees in a walkable or bikeable distance of daily destinations. On the other hand, the continued suburban growth at the edges of Powell and in surrounding Liberty and Concord Townships is primarily what has brought about the traffic demands through the Four Corners.

The traffic congestion in Downtown Powell, particularly at the Four Corners intersection, has been a point of concern for the community for many years. Community surveys consistently rank traffic as the number one issue to be addressed by the City. A number of concepts have been considered to alleviate the situation. Some measures, such as peak hour restrictions of left turns, have been implemented in order to facilitate traffic movement. More substantial measures, such as widening Powell Road and adding left turn lanes at the Four Corners, have been considered in the past but not implemented due to costs and physical constraints.

Community attitude surveys consistently cite traffic as a top community concern in Powell

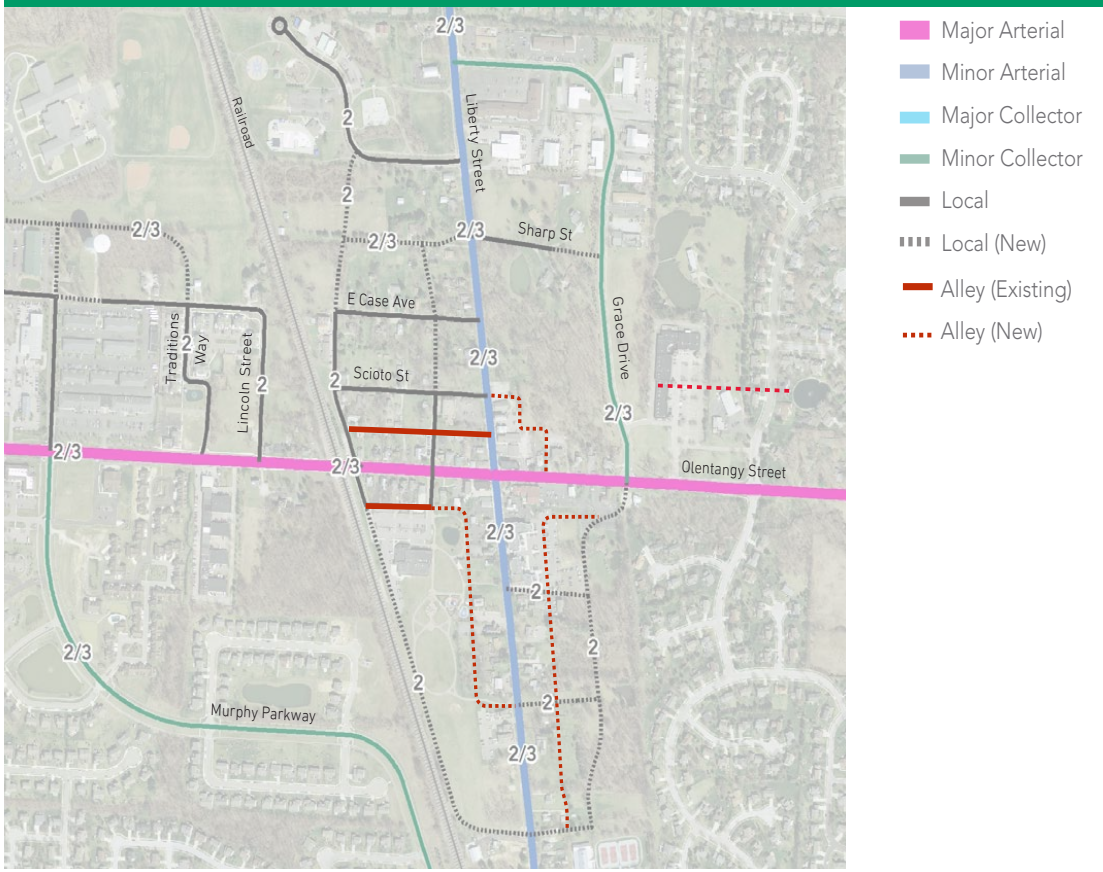
Regional Transportation Improvements



The Comprehensive Plan & Transportation Analysis

In 2014 the City of Powell undertook a major update of its comprehensive plan, which was adopted in 2015. Improving traffic flow, both regionally and within Downtown Powell, featured prominently in the public discussion as the plan was being developed, and the process included extensive transportation analysis to understand the likely future impacts of growth on Powell's transportation system. The adopted Thoroughfare Plan and associated recommendations seek to balance the objectives of improving traffic flow through Downtown, while also preserving the historic character and walkability of the village center. Most significantly, the transportation analysis found that adding dedicated left turn lanes at the Four Corners would actually have a counterproductive effect, resulting in greater traffic delays and longer back-ups on Powell Road than would restricting all left turns at all times.

Thoroughfare Plan | Downtown Network (2015 City of Powell Comprehensive Plan)



The Plan also recognizes that substantial widening of Powell Road through downtown is physically infeasible, although a targeted addition of left turn lanes at other key intersections is recommended. Restricting left turns at the Four Corners brings with it a number of other considerations that must be addressed before this effort is implemented, not the least of which is the effect this would have on access to local businesses and circulation within Downtown. For this reason, the Plan recommends the creation of an interconnected street and alley system to create alternative routes and allow motorists to make left turns from Olentangy and Liberty Streets before reaching the Four Corners.

It should be noted that this concept is not intended to create a bypass system within Downtown that would route regional traffic away from the Four Corners. Rather, the intent is primarily to create an interconnected street system to serve those whose destination is within Downtown, providing access to parking, businesses, and homes while reducing delay and improving traffic flow at the Four Corners. Beyond downtown, other improvements will help to provide alternative regional traffic routes, such as the Murphy Parkway extension to Liberty Road, scheduled for completion in the fall of 2016. Refer to the City of Powell Comprehensive Plan for a detailed explanation of the transportation analysis that led to the recommendations explored in this implementation study.

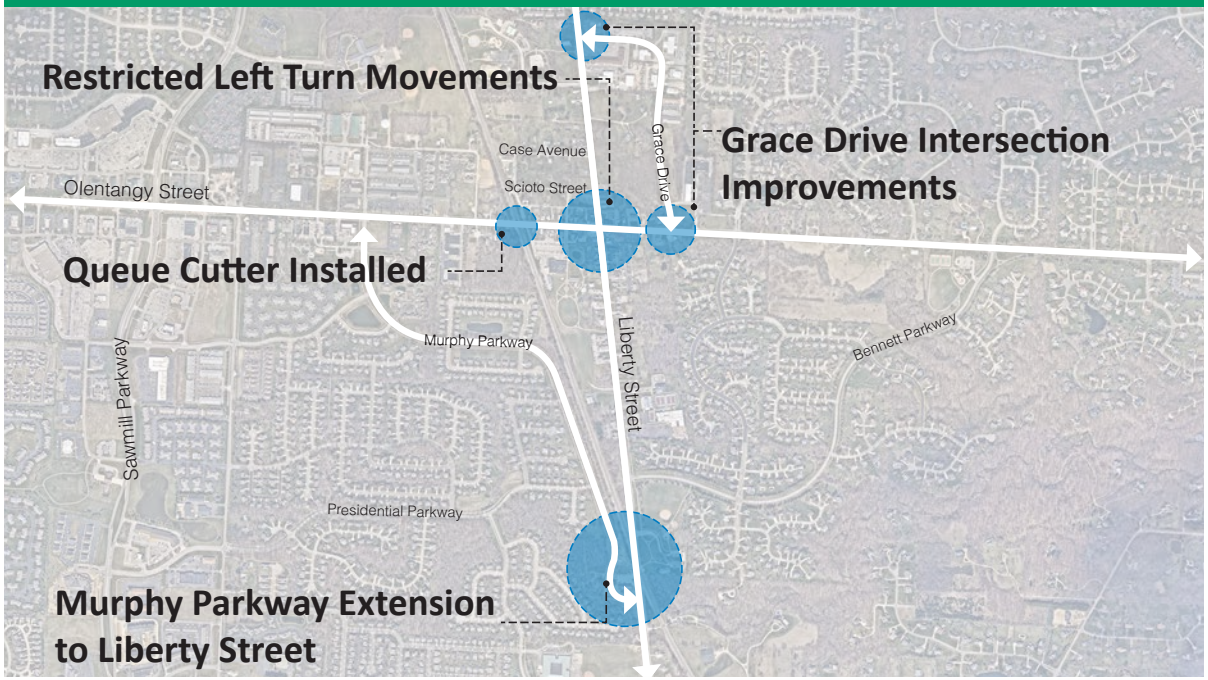
Preliminary concept for adding a left turn lane on Olentangy Street at Hall Street (2015 City of Powell Comprehensive Plan)

Keep Powell Moving

As an outgrowth of the Comprehensive Plan recommendations, the City immediately began to outline a strategy to address the traffic problem. This strategy is embodied in the Keep Powell Moving initiative, which encapsulates the various efforts being taken by the City to improve traffic flow. These include the completion of Murphy Parkway, traffic signal and turn lane improvements at both ends of Grace Drive, and a detailed planning and design process to advance the street system and circulation improvements in Downtown Powell. This document represents the results of that planning process and recommendations for next steps to implement the improvements.

KEEP Powell MOVING

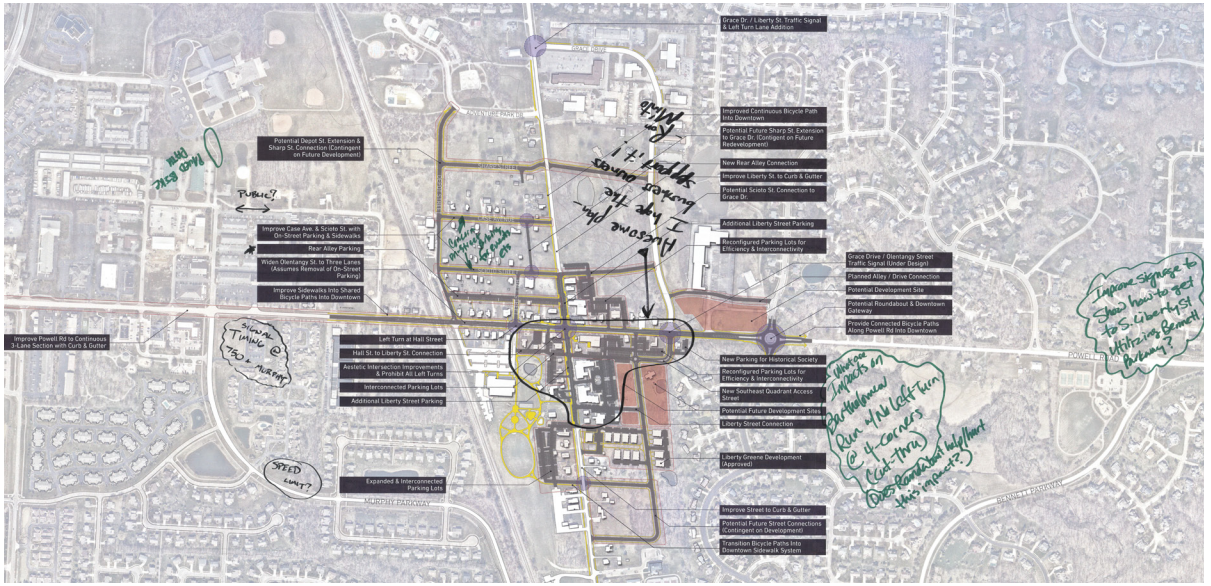
What is Being Done Now?



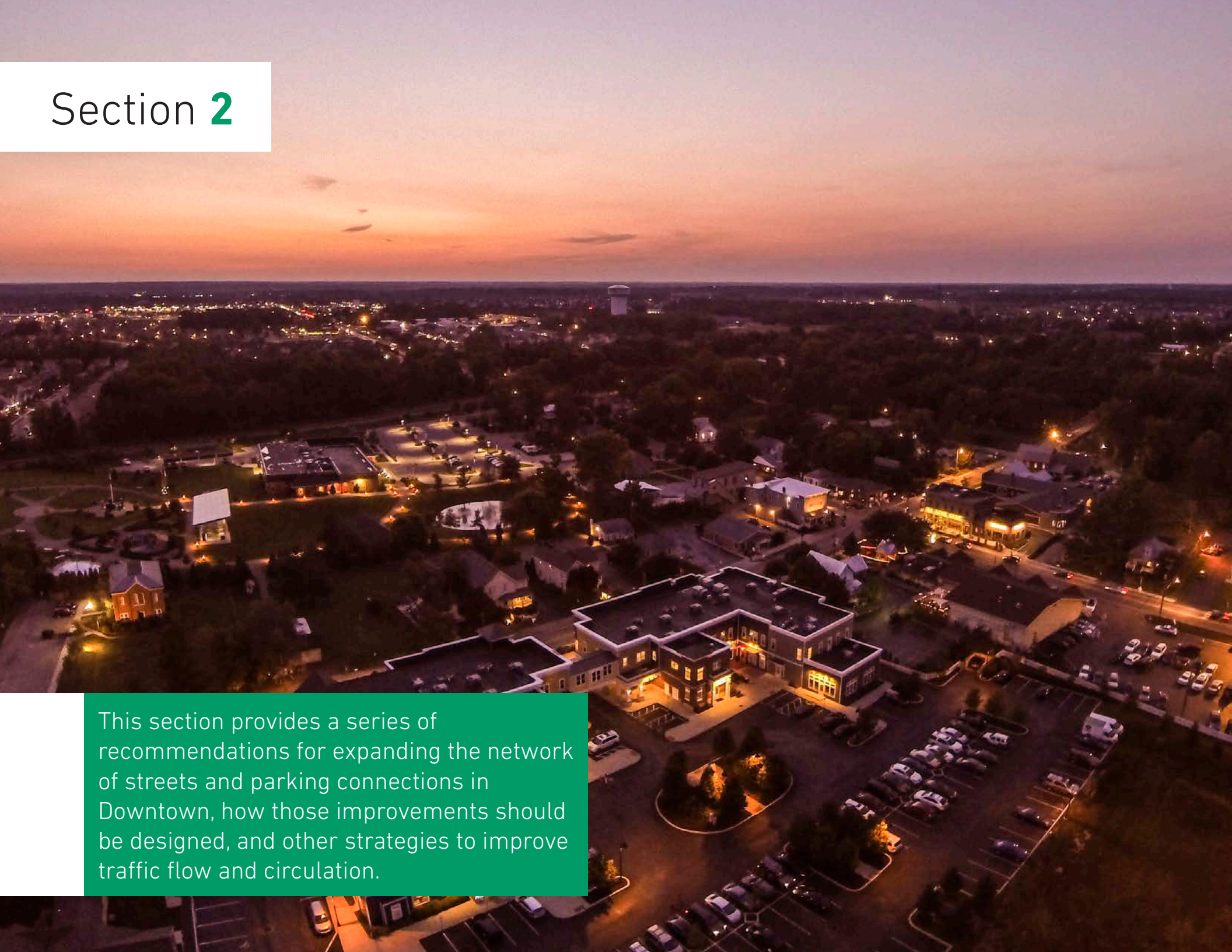
PROJECT	EXPECTED COMPLETION
Murphy Parkway extension (Powell)	Fall 2016
Sawmill Road extension and resurfacing (Delaware County)	Fall 2016
Widening State Rt. 750 and new shared-use path (ODOT)	Fall 2016
Widening of Hard Road to State Rt. 315 (Columbus)	Winter 2016
Shared-use bike path connections on Liberty & Rutherford (Powell)	Spring 2017
New traffic signals on Grace Drive at Olentangy Street & North Liberty Street (Powell)	Spring 2017
Improvements at Liberty Road & Seldom Seen Road intersection (Delaware County)	Seeking grant funds

Process & Public Engagement

This process began with a technical analysis of various physical improvements that could be implemented to improve traffic flow and circulation in Downtown Powell. Multiple alternatives for street and alleyway alignments and reconfigured parking areas were explored by a technical team working in close consultation with the City of Powell planning, development and engineering staff. The project team reviewed initial concepts with Downtown stakeholder groups, including residents, business owners, property owners and others with a direct interest in the future of Downtown Powell. Preliminary concepts and recommendations were presented for review and discussion at a public workshop on June 28, 2016. Refined concepts and final recommendations were presented at a subsequent workshop on August 30, 2016. Refer to the Appendix for public comments provided via discussion station maps.



Section 2



This section provides a series of recommendations for expanding the network of streets and parking connections in Downtown, how those improvements should be designed, and other strategies to improve traffic flow and circulation.

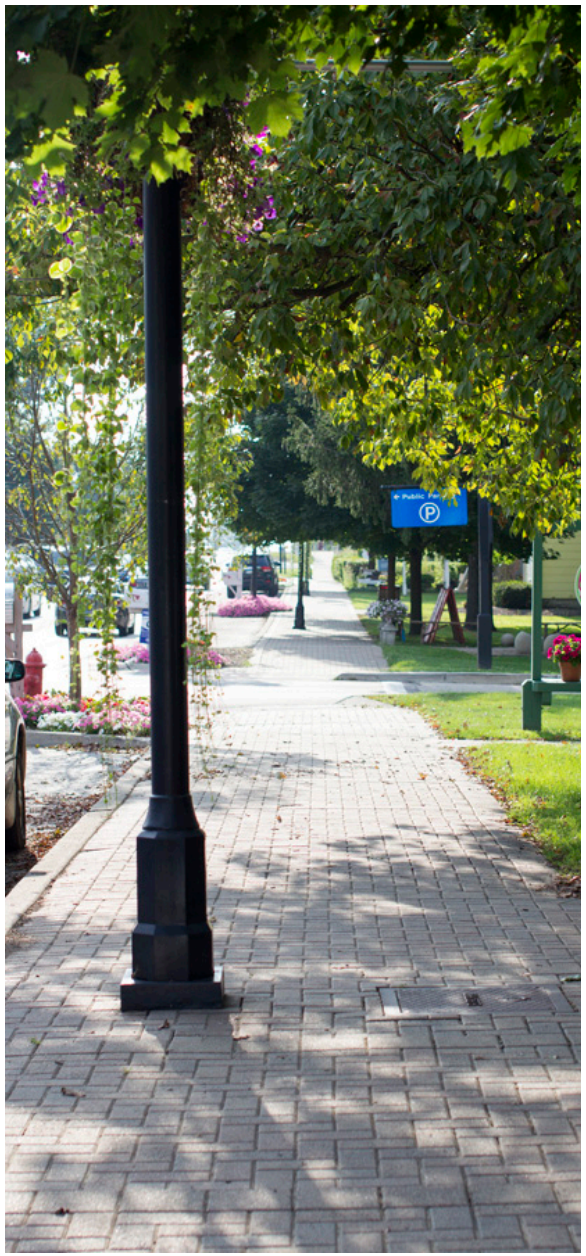

ES
1
2 MOVING FORWARD
3
A

Existing Conditions

Powell's downtown street network is extremely limited today in terms of connectivity. While an expansive network of residential streets has been constructed with surrounding subdivisions over the years, none of these connect directly to downtown. Instead, collector streets funnel nearby residential traffic to Powell Road and Liberty Road outside of the village center. Grace Drive serves as a commercial bypass of sorts on the outskirts of the northeast quadrant, but lacks other connections to the system. Although the northwest quadrant has the makings of a modest street network comprised of East Case Avenue, Scioto Street, Depot Street and Hall Street, the other quadrants lack any such network. The southwest quadrant includes extensions of Hall Street and Depot Streets that provide access to the Powell Village Green, Municipal Building, and some businesses, but there is no vehicular connection to Liberty Street. Businesses fronting Liberty Street in this quadrant as well as the northeast and southeast quadrants must be accessed directly from Liberty Street, and most of these businesses do not share share parking; instead, each has a separate parking lot with its own curb cut access from the street. The same condition exists for East Olentangy Street.

Significant streetscape upgrades were completed for Olentangy and Liberty Streets in 1997, but the need to maintain parking lot access for the numerous disconnected lots made it impractical to create a truly cohesive streetscape design in downtown. The result is a mixture of brick paver, concrete, and asphalt sidewalks, and in some locations, no sidewalks at all. Stretches of both streets include a mixture of curbed edges and uncurbed shoulders. On-street parking is provided on West Olentangy Street, but the line between public right-of-way and private parking lots is blurred east of the Four Corners. On-Street parking is also provided in limited stretches of Liberty Street. The construction of the 50 South Liberty development in 2007 was a successful example of expanding the streetscape design with an infill redevelopment project, but the design changes abruptly at adjacent properties.

In the northwest quadrant, Case Avenue and Scioto Streets are narrow, uncurbed, and for the most part lack sidewalks. Both of these streets have an inverse crown – a center drainage design which is problematic from a maintenance perspective. Although a number of homes front Case and Scioto, their designs are more typical of alleys than residential streets. Despite their narrow, non-standard dimensions, residents consistently report speeding and cut-through traffic attempting to avoid the Four Corners intersection.



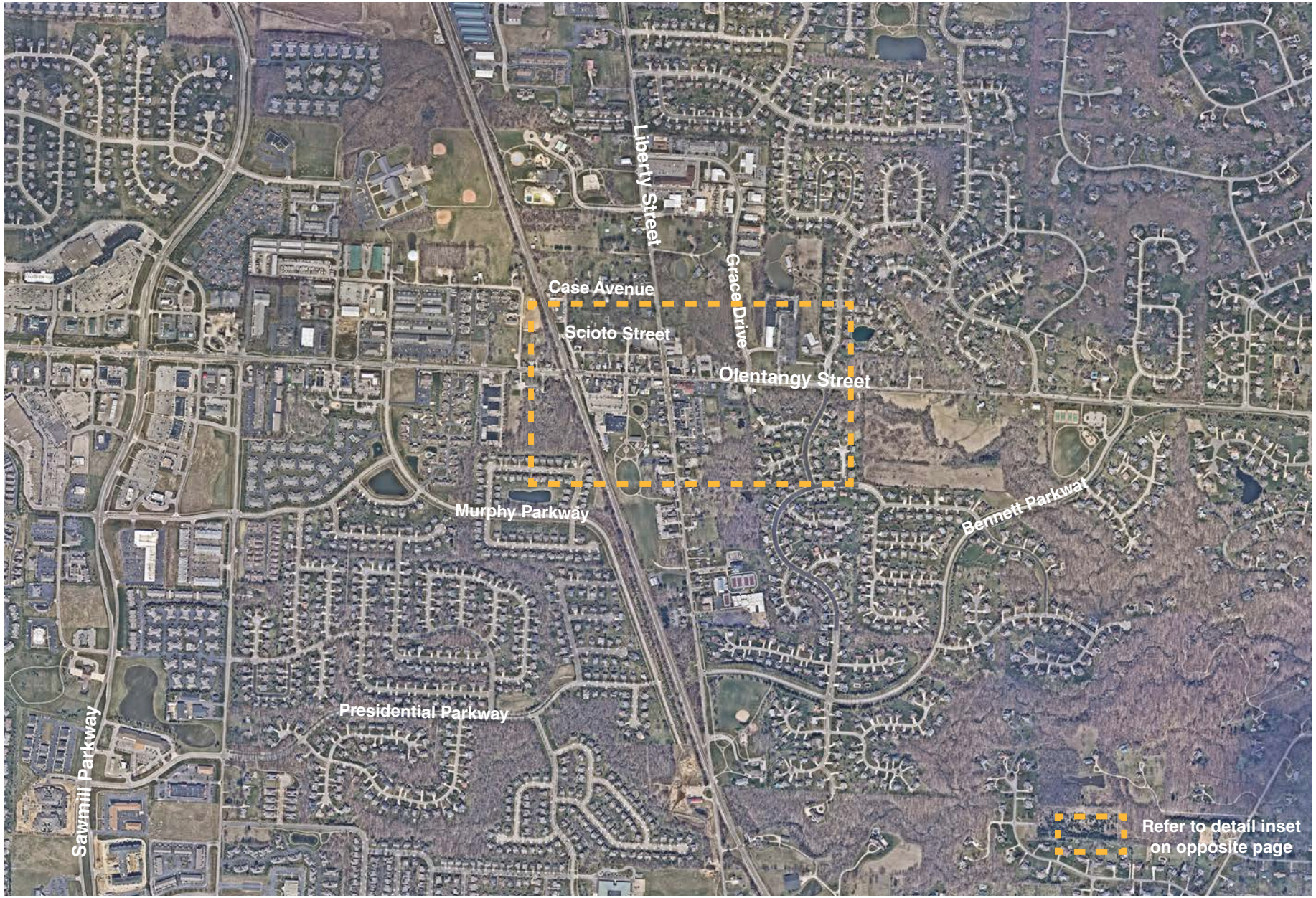
Olentangy Looking West at Four Corners

Margello Plaza

Jeni's & Cutler Buildings

Powell-Liberty Historical Society

Existing Conditions




Scioto Street
Liberty Street
Grace Drive
Olentangy Street

Conceptual Improvements

Creating Left Turn Alternatives to the Four Corners

While prohibiting left turns at the Four Corners can be as simple as installing signage and enforcing the rule, setting the conditions that will make this a workable solution will require a series of more substantial physical improvements to the street network and circulation system in Downtown. Most importantly, this will require the creation of dedicated left turn lanes at other intersections on SR 750 to provide access to each quadrant of Downtown. The 2015 Comprehensive Plan identified Grace Drive and Hall Street as targeted locations for left turns. In Fact, the Grace Drive/Olentangy Street intersection already includes a center turn lane providing northbound access to Grace Drive and southbound access into the parking lot of the Powell-Liberty Historical Society. A traffic signal is currently being designed for this intersection to further facilitate turning movements, along with a signal and new left turn lane at the intersection of Grace Drive and Liberty Street.

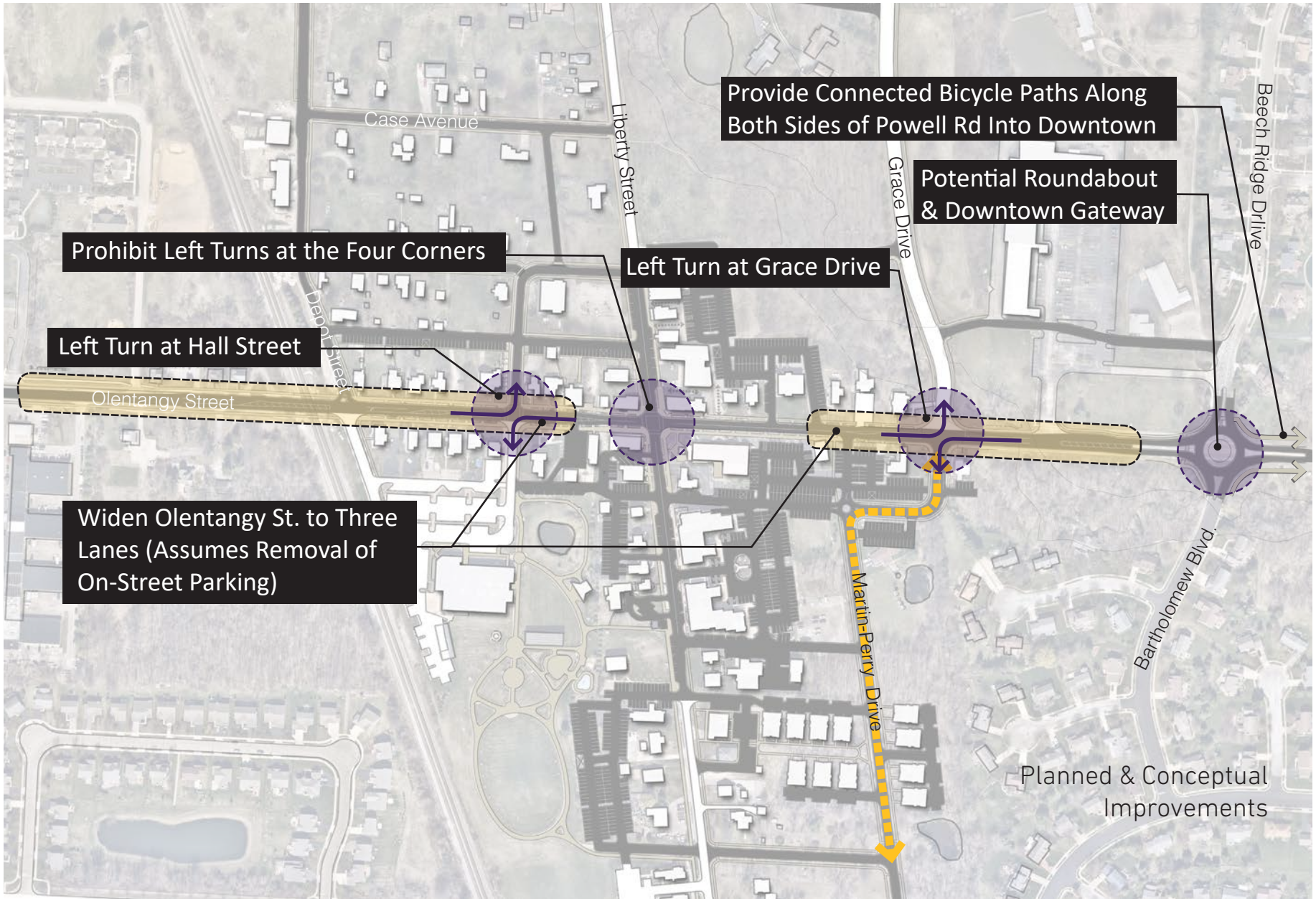
Martin-Perry Drive: A New Street for the Southeast Quadrant

The Comprehensive Plan also recommended the creation of new street in the southeast quadrant, extending southward from the Grace Drive intersection, through the current Historical Society parking lot and providing access to parking areas and new development sites within the quadrant. A series of alternative alignments were explored as part of this master planning process. Each option had different physical impacts in terms of the amount of right-of-way needed and the residual land area remaining for development, as well as the extent of impacts on current parking areas and the ability to efficiently and safely accommodate turning movements and circulation in the area.

This new street, referred to in this plan as Martin-Perry Drive in recognition of the nearby Historical Society building, will be designed to transition from a three-lane section (two travel lanes and a turn lane at Olentangy Street) to a neighborhood-scaled street as it extends southward and connects to the future neighborhood street that has been approved as part of the planned Liberty Green residential development. The street will accommodate two-way travel at slow speeds and have the potential to accommodate on-street parking on one side. The street will also provide frontage for new development, bringing with it the potential for financial partnerships to help fund its construction. As this concept advances through a more detailed design process, it will be necessary to work with the developer of Liberty Green to ensure consistent and coordinated design of the street, pedestrian facilities and associated utilities. It will also be important to work with nearby residential property owners to provide landscape buffering from the new street and their backyards.

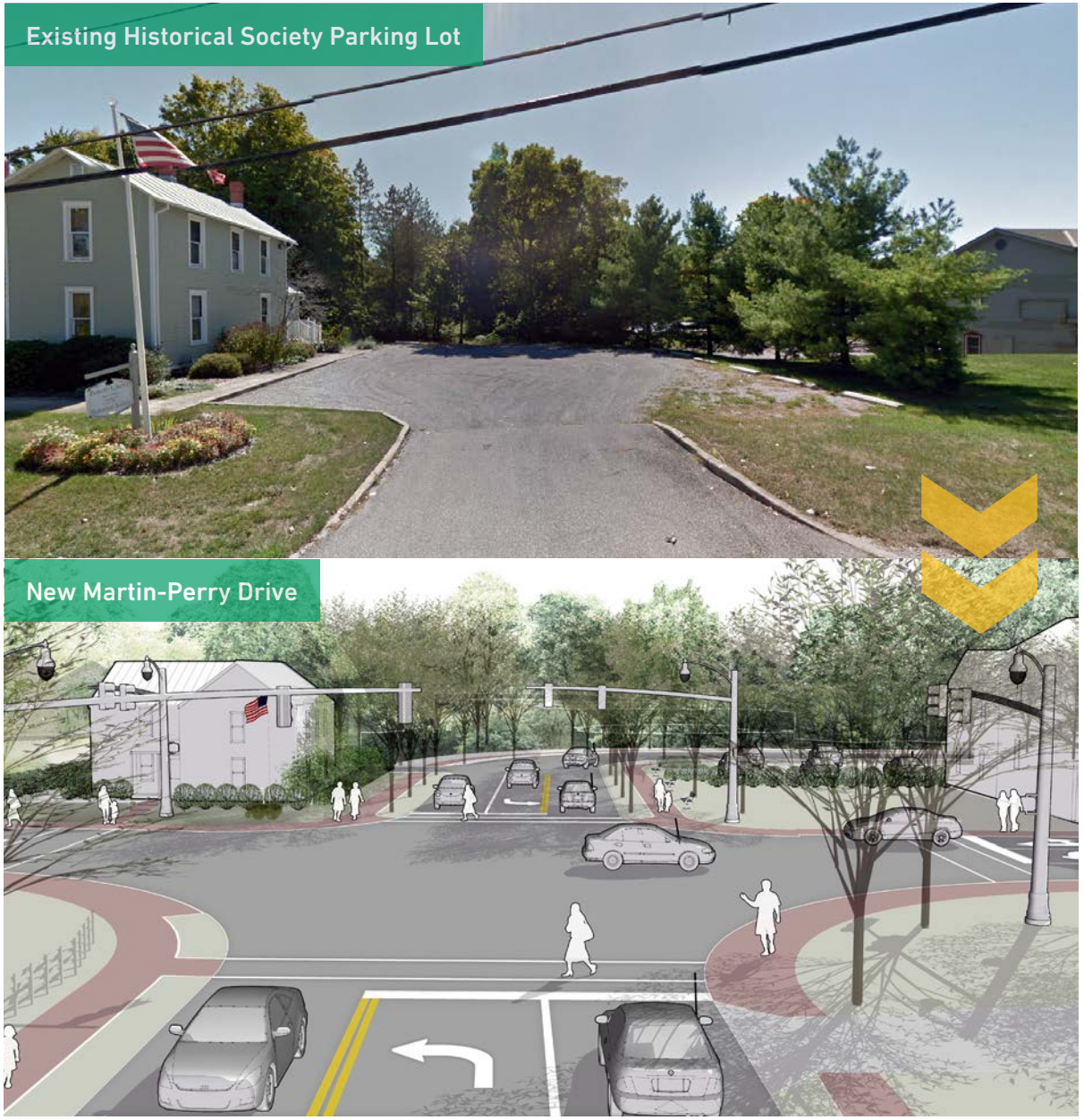
A Systematic Approach

The recommendations in this plan are cumulative - they each will contribute to facilitating traffic flow and circulation in Downtown Powell, and will build on one another to incrementally improve the performance of the transportation system. But they will not all be implemented at once, and some will have more immediate and noticeable effects than others. As improvements are made to alleviate traffic congestion at the Four Corners, the impacts should be continually monitored to help inform the need for additional measures. This plan should be recalibrated from time to time to ensure recommendations and priorities remain aligned with the community's needs and the benefits of proposed improvements continue to warrant the investment necessary for implementation.


Provide Connected Bicycle Paths Along Both Sides of Powell Rd Into Downtown
Potential Roundabout & Downtown Gateway
Prohibit Left Turns at the Four Corners
Left Turn at Grace Drive
Left Turn at Hall Street
Widen Olentangy St. to Three Lanes (Assumes Removal of On-Street Parking)
Case Avenue
Liberty Street
Grace Drive
Beech Ridge Drlive
Depot Street
Olentangy Street
Martin-Perry Drive
Bartholomew Blvd.
Planned & Conceptual Improvements

Mitigating Impacts on the Historical Society

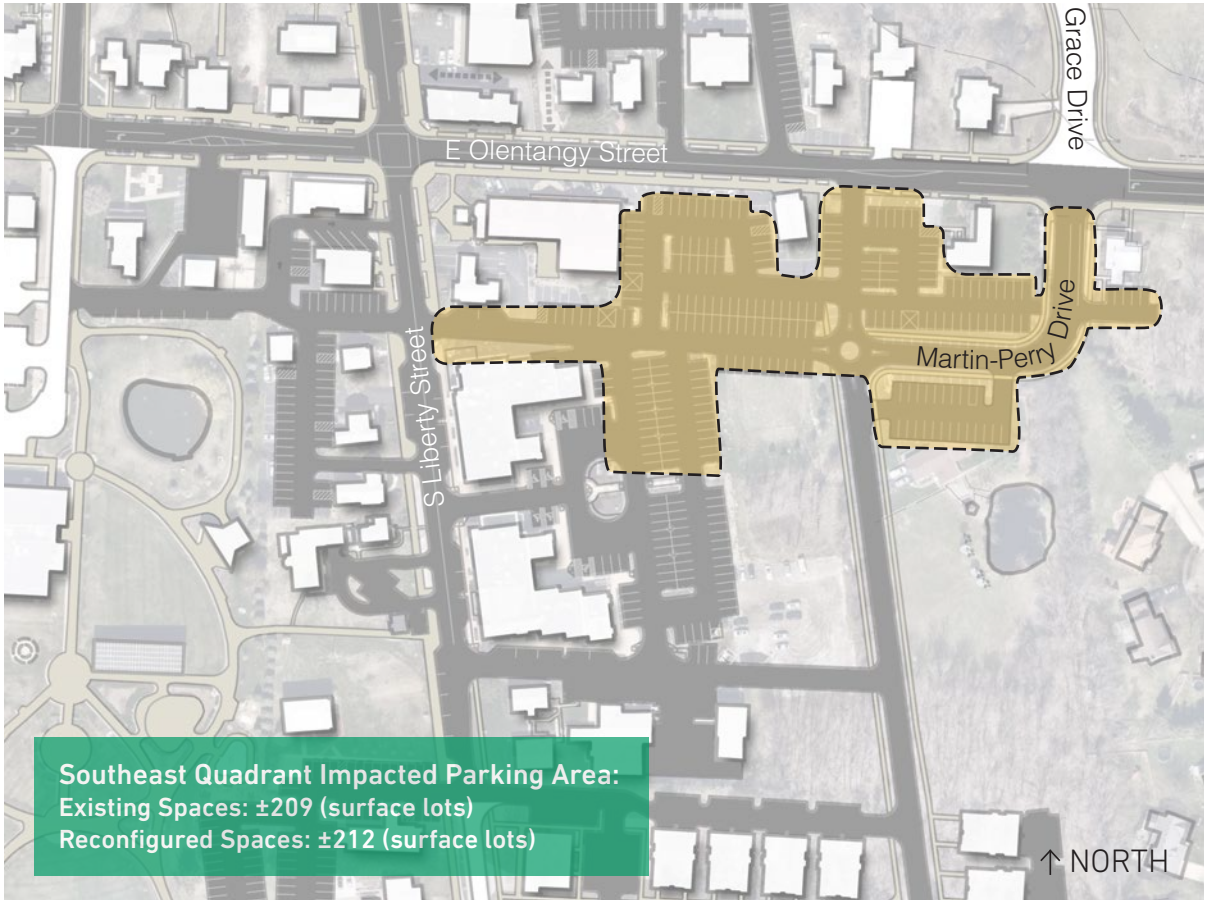
The intersection of Grace Drive and Olentangy Street creates limited opportunities for aligning the new street to the south. It will need to extend through the existing Historical Society parking lot and thus will be located in relatively close proximity to the Martin-Perry House. Realigning existing Grace Drive to shift the intersection westward would have a substantial financial cost, as it would require extending a stream culvert at Bartholomew Run. However, through the master planning process adjustments were made to the design concept to mitigate impacts on the Historical Society. By slightly skewing the center line of the new street from that of Grace Drive and restriping approximately 50 feet of the travel lanes on Grace Drive, the new curb line of Martin-Perry Drive can be shifted further away from the Martin-Perry House, providing additional landscape buffer space between the building and a new public sidewalk. The preliminary design concept provides 15 feet of separation between the building and edge of sidewalk, and twenty-five feet from the curb line, a setback relationship consistent with other historic buildings in the Downtown core. The house is also slightly elevated above likely grade of the new street, creating an additional physical separation that can be enhanced with dense landscaping. Finally, this new public street will include a crosswalk and new sidewalk connections on Olentangy Street, helping to physically tie the Historical Society into the walkable character



of Downtown Powell, and encouraging foot traffic to the facility. This concept also includes convenience parking behind the building, and a new parking lot to the south of Martin-Perry Drive within walking distance to the Historical Society.

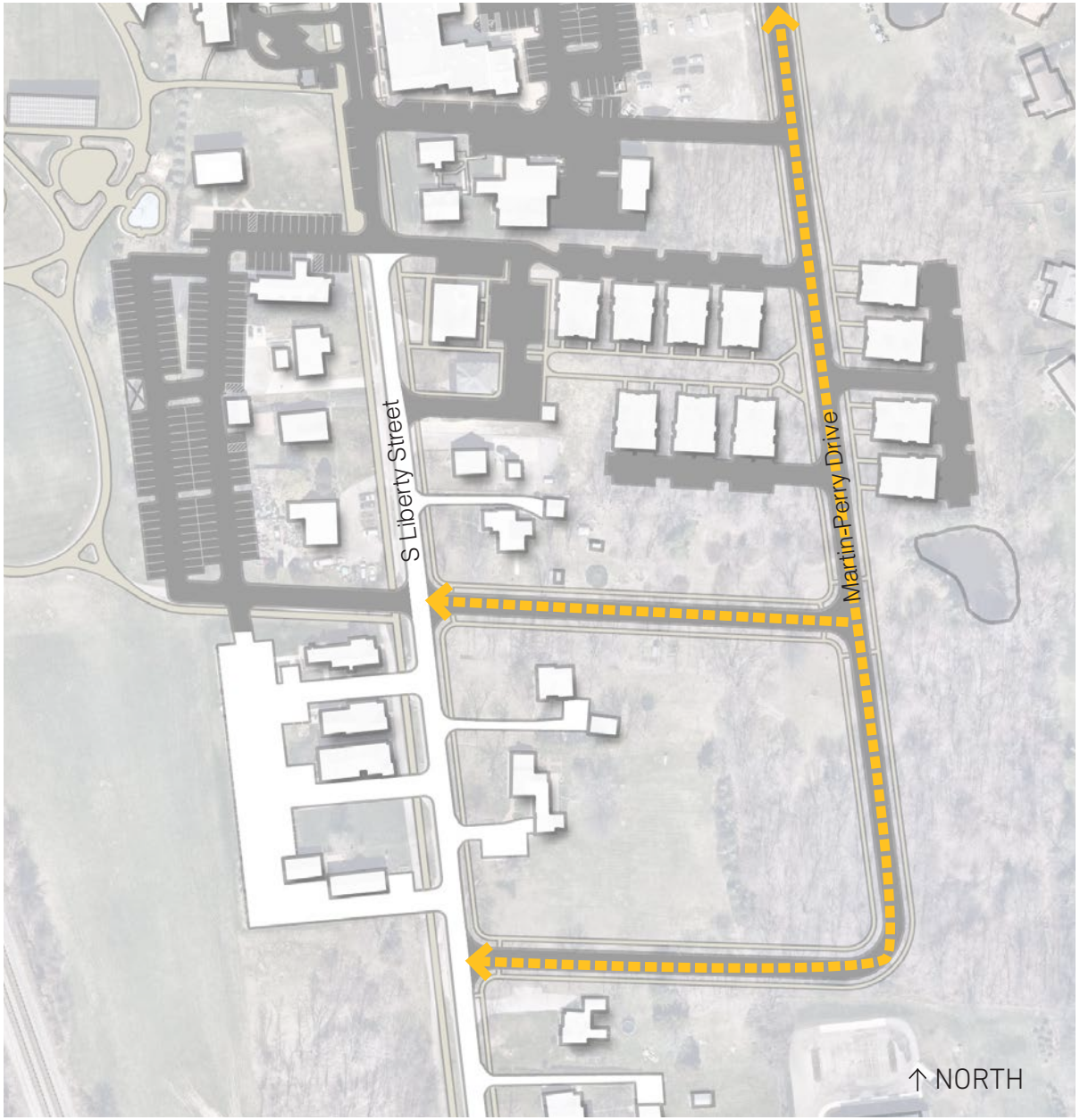
Rethinking Parking in the Southeast Quadrant

The new Martin-Perry Drive will also have a significant impact on existing surface parking lots that serve businesses along East Olentangy Street. In addition to the Historical Society parking lot, the alignment will affect private parking areas that serve the Salons of Powell building and Local Roots restaurant. The popularity of Local Roots as a dining destination necessitates a significant amount of parking, and the impacted parking areas, despite being relatively far removed from the restaurant, are regularly filled to capacity during peak evening and weekend dining hours. For this reason, the construction of Martin-Perry Drive will also require a substantial reconfiguration of parking lots in the Southeast Quadrant to preserve capacity, ideally with a more efficient layout that will provide more parking than exists today.
As part of this master planning process, a detailed study was undertaken to analyze alternative layouts for the parking areas. The most efficient option, as illustrated in the recommended design concept, involves the integration of various adjacent but physically separated parking lots within the quadrant, most notably the large parking fields that serve Local Roots and nearby 50 South Liberty development. Integrating these lots will also provide the opportunity to create a vehicular drive aisle connection to Liberty Street between 50 South Liberty and the coffee shop at 22 Liberty Street. In this concept, a "mini-roundabout" provides an intersection control where the public street transitions to off-street parking areas. Critical to the success of this plan, it will be necessary for the City to work closely with the affected property owners and businesses to negotiate the details of design, construction, long-term maintenance and shared use agreements to ensure equitable and practical implementation.



Expanding the Grid

The Martin-Perry Drive concept provides an opportunity to create a network of neighborhood-scale streets and walkable blocks as part of grid street network in the Southeast Quadrant, typical of most small village centers. A driveway on the south side of 50 South Liberty that currently provides access to that development's parking lot could be connected to the new street, and could itself be upgraded to act as a new east-west street. While there are no immediate development proposals for properties to the south of the Liberty Green site, it is likely that new development will occur at some point in the future. At that time, Martin-Perry Drive should be extended southward and new east-west street connections to Liberty Street should be provided to expand the neighborhood grid and create traditional village-scale development blocks, as illustrated in this master plan. The details of specific street locations and block sizes will need to be determined as part of future development proposals.



Turning Left at Hall & the Impact on Olentangy Street

At Hall Street, those attempting to turn left currently cause traffic delays because they must stop in a travel lane and wait for a gap in oncoming traffic to make the turn. The 2015 Comprehensive Plan included a preliminary concept to reconfigure Olentangy Street west of the Four Corners by converting the parking lane on the south side of the street to a travel lane, allowing for the creation of a center turn lane. This concept was further explored as part the master planning effort, along with a series of other alternatives. Each alternative has a number of trade-offs in terms of traffic flow, parking, walkability, right-of-way impacts, engineering, urban design, and business operation considerations.

Option 1: South Parking Lane Conversion

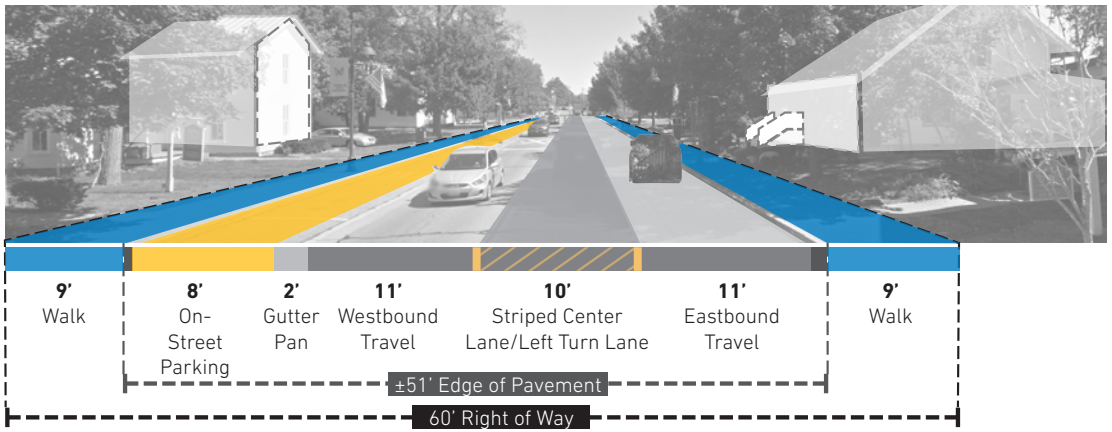
This alternative was originally explored as part of a design concept that had assumed the installation of a left turn lane on Olentangy Street at the Four Corners intersection. Due to physical space limitations in the right-of-way and narrow building setbacks on the north side of Olentangy Street, this design concept required expansion of the street pavement section entirely to the south of the street centerline. Parking on the south side of Olentangy Street would be removed, but on-street parking would be preserved on the north side. As a result, the sidewalk on the south side of Olentangy Street would be located immediately adjacent to a moving lane of traffic, an undesirable condition in terms of pedestrian comfort. This concept was modified in the 2015 Comprehensive Plan, with the removal of the left turn lane concept at the Four Corners, but maintaining the assumed pavement expansion only to the south. The modified design would require an off-set taper in the centerline of the roadway as it transitions from a two-lane section at the Four Corners to a three-lane section approaching Hall Street, an undesirable condition in terms of driver expectations.

Option 2: Widening On-Center with On-Street Parking

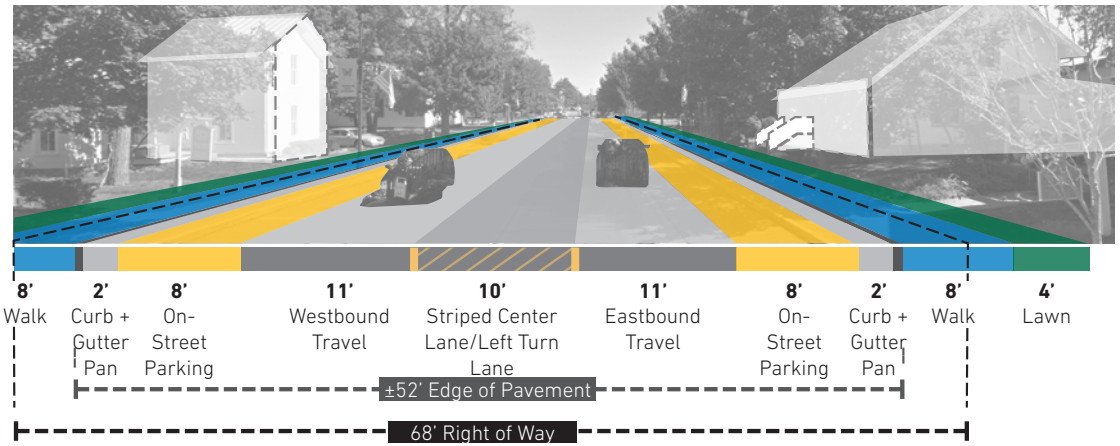
The transportation analysis indicated that left turn lanes will be more effective if located at intersections other than the Four Corners. For this reason, widening for a turn lane at the Olentangy and Liberty Streets was not recommended in the Thoroughfare Plan. As a result, the concept for widening Olentangy to the west of Hall Street is no longer constrained by the location of buildings at the Four Corners. Option 2 explored the

potential to widen the pavement section to both the north and south of the existing Olentangy Street centerline, and moving the curb line on both sides of the street to maintain on-street parking. This alignment provides a more consistent transition from two to three lanes and will be less awkward from a motorist's perspective. From an urban design perspective, on-street parking is a desirable element of streets in traditional downtowns. It adds to the parking supply by providing parking directly in front of businesses, while also creating a physical buffer between the sidewalk and moving traffic lanes. However, given the unique circumstances of traffic congestion on State Route 750 through Downtown Powell and the ultimate objective of improving traffic flow on this busy thoroughfare, continued provision of on-street parking will add another element of friction to the movement of vehicles as motorists maneuver in and out of parallel parking spaces. Another significant impact of this alternative is the need to acquire additional right-of-way in order to maintain sufficient sidewalk dimensions, which in turn would impact street trees planted behind the existing sidewalk, and bring the right-of-way in close proximity to existing buildings.

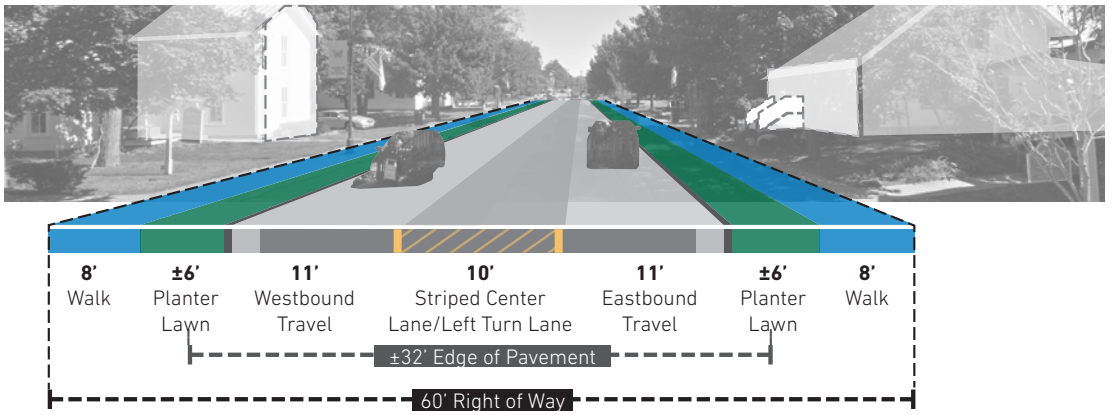
Option 1



Option 2



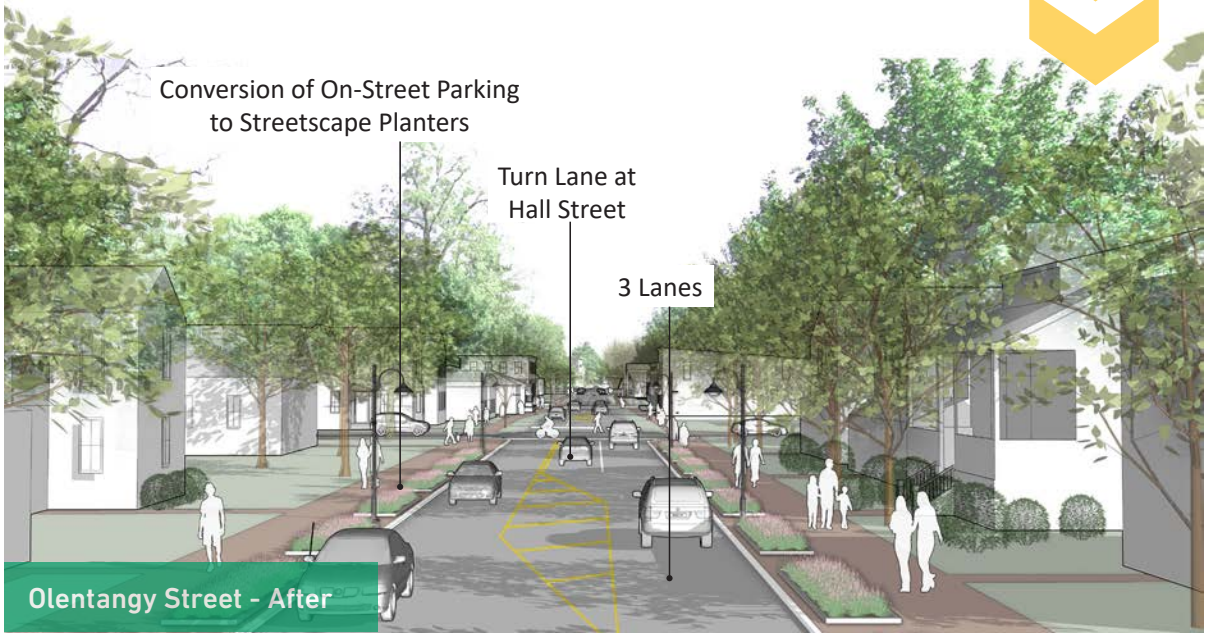
Option 3



Option 3: Widening On-Center with Expanded Streetscape

The third alternative combines the simpler alignment and transition from two to three lanes described for Option 2, but does not include on-street parking. In this concept, on-street parking is removed from both the north and south sides of Olentangy Street. By doing so, the actual curb to curb width of the pavement can be narrowed from 42 feet as it exists today, to 36 feet. The additional space can be used to expand the streetscape by adding raised planters that will buffer the sidewalk from the adjacent moving travel lanes. The result is an improved pedestrian space and streetscape aesthetic that does not require acquisition of additional right-of-way. Through discussion with City staff and public review, this third option was identified as the preferred solution and is included in the final conceptual design plan.

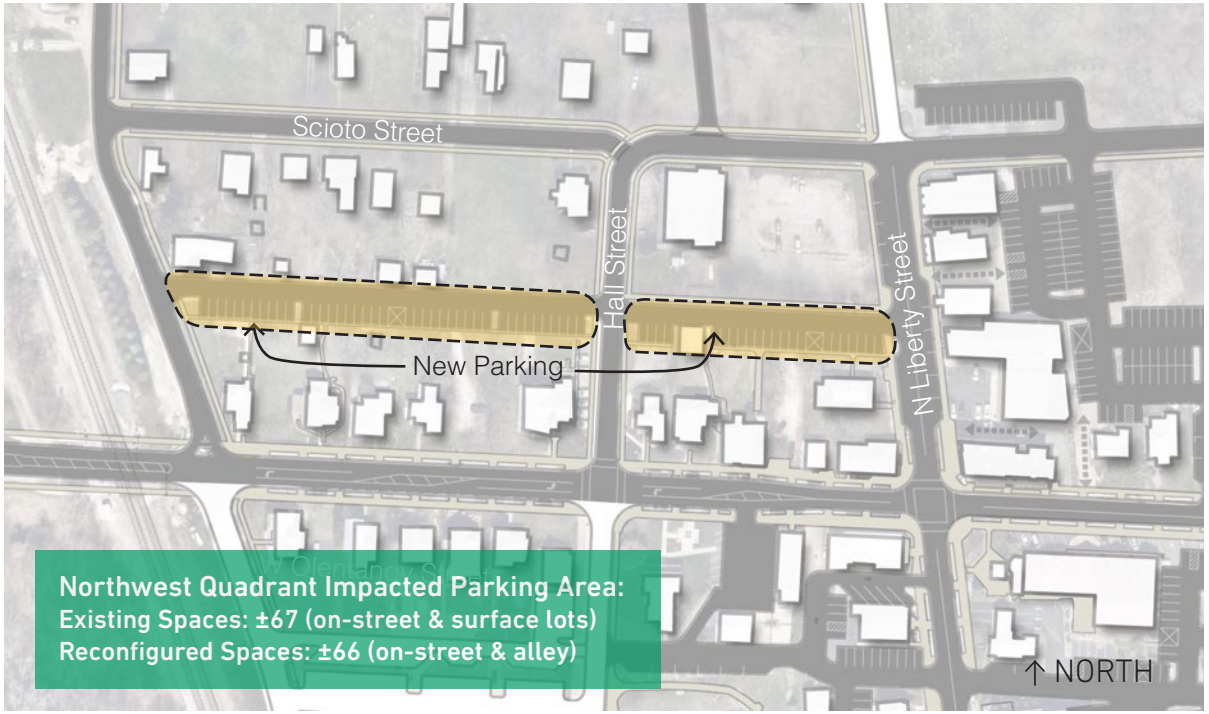
Olentangy Street - Before



Olentangy Street - After

Providing New Parking for the Northwest Quadrant

With the removal of on-street parking on West Olentangy Street, it will be necessary to create alternative parking areas to serve the businesses in this area. While the businesses on the south side of the street have access to the municipal parking lot located behind the buildings, no such parking exists on the north side. Instead, some of the businesses on the north side of Liberty Street have individual parking lots while others rely on the existing on-street parking. This master plan recommends improving the rear alley that serves these businesses with a consolidated line of parking that would be publicly available and shared amongst the properties along West Olentangy Street. As with the shared parking concept in the Southeast Quadrant, it will be necessary for the City to work closely with the affected property owners and businesses to negotiate the details of design, construction, long-term maintenance and shared use agreements to ensure equitable and practical implementation.

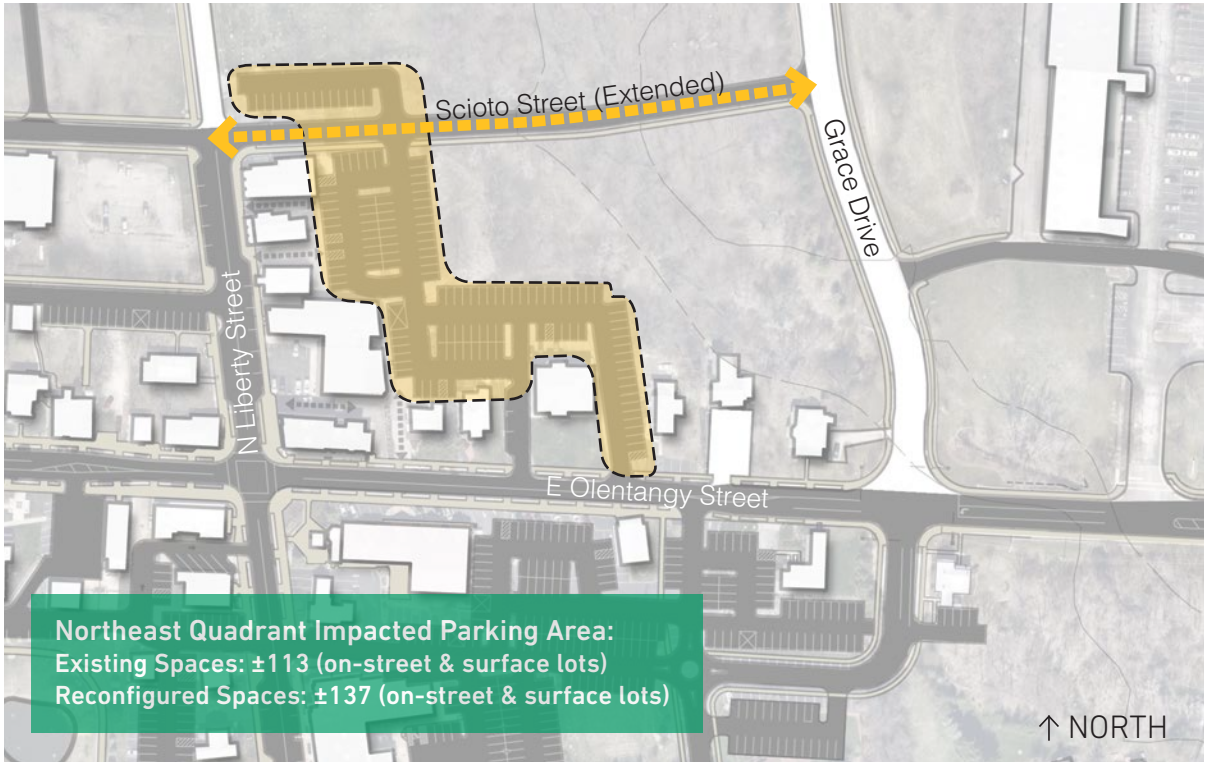


Continuous head-in parking along the rear alley would serve multiple businesses along Olentangy Street.

Interconnecting the Northeast Quadrant

As with the Southwest and Southeast Quadrants, properties in the Northwest Quadrant are divided into a series of separate private parking lots, each with their own driveway connection to Olentangy Street or Liberty Street. As a result, the pedestrian streetscapes are divided up by numerous curb cuts, often situated side by side, and sometimes having continuous parking edges that bleed into the street with no sidewalk. Not only does this detract from the walkability of downtown, it also creates substandard conditions for vehicular circulation, limiting ingress and egress options to each individual property. Similar to the concept described for the Southeast Quadrant, this master plan recommends the creation of a larger consolidated parking area that would serve all of the businesses within the quadrant, allowing for the elimination of some curb cuts on Olentangy and Liberty Streets. For businesses that currently have private surface parking lots located between the front of the building and the street, the creation of shared parking to the rear provides the option of converting front-located parking into outdoor plaza or patio space. In particular, if buildings with this site condition are converted to restaurant space in the future, property owners should be encouraged to convert these lots to outdoor dining, with the assurance that parking is available nearby. Where existing driveways can be eliminated, these offer opportunities to create attractive pedestrian-ways between buildings from rear parking areas to the street, and may provide additional locations for outdoor dining.

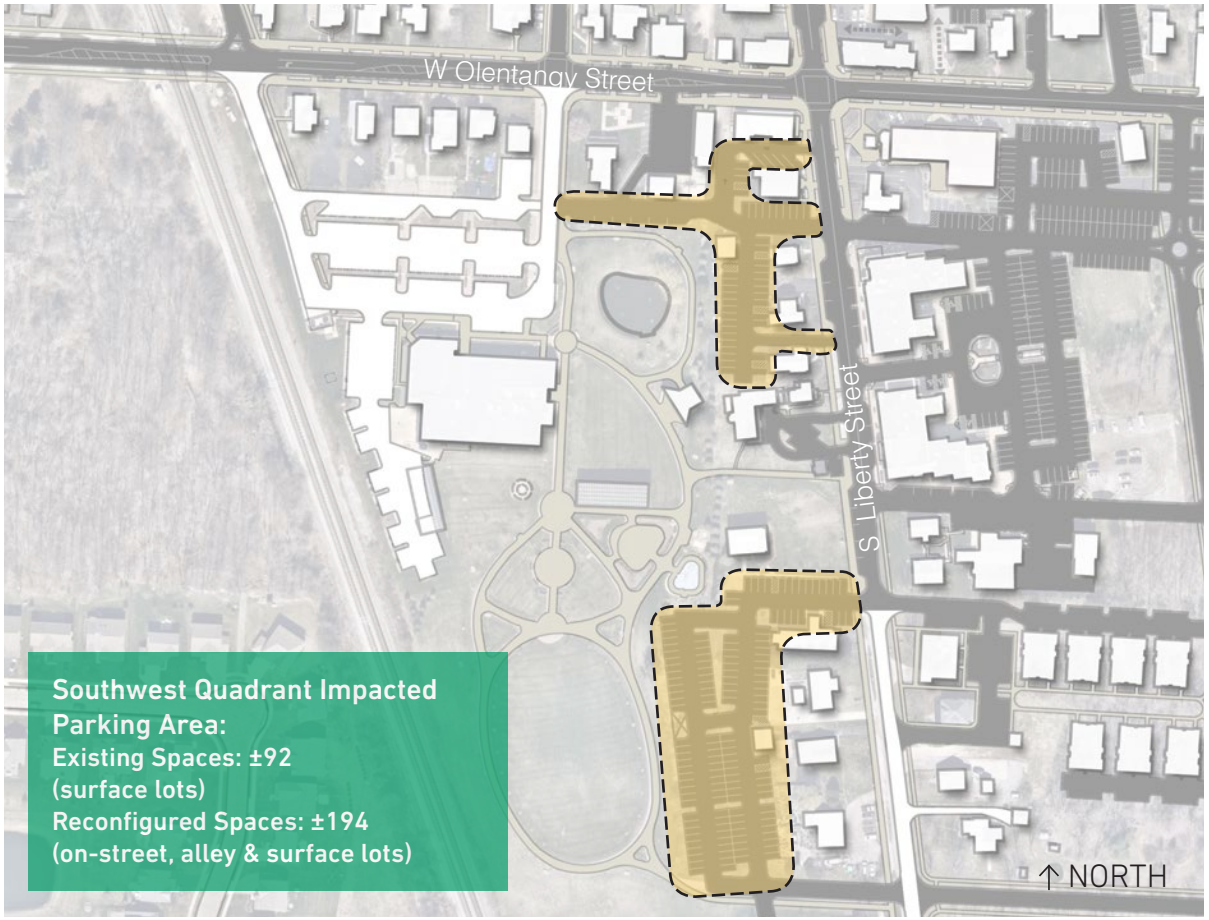
The plan also includes the potential to extend Scioto Street eastward from its current terminus at Liberty Street, through the 44 N. Liberty Street parking lot, across the Bartholmew Run and connecting to Grace Drive, a concept that was originally envisioned in the 2003 Downtown Powell Revitalization Plan. The Scioto Street extension would provide a public street access point to the consolidated parking area behind the businesses, and also create street frontage for a potential development site behind the 44 Liberty building. Given the significant costs and physical challenges of crossing the stream, the project could be phased to provide near-term access to the new parking area and development site. Long-term, a connection to Grace Drive would enhance overall circulation by expanding the street grid in the downtown core, providing an alternate but still direct route to both the Northeast and Northwest Quadrants.



Interconnecting the Southwest Quadrant

The Southwest Quadrant is unique in that much of it is dedicated to the Powell City Hall and the Village Green, although these civic uses are located within the interior of the quadrant, with Olentangy and Liberty Streets lined with businesses. The Downtown Thoroughfare Plan network anticipated the extension of Depot Street southward along the railroad tracks and connecting to Liberty Street south of downtown. However, this master plan does not include the concept, primarily because the Murphy Parkway extension will serve a similar travel pattern without having an impact on the Village Green. The Comprehensive Plan also recommended creation east-west and north-south alley/ parking lot connections within the quadrant. Specifically, there is an opportunity to create a direct alley connection between Hall Street and Liberty Street by extending the parking lot drive aisle that parallels Olentangy Street eastward to Liberty. This alley connection would provide additional public parking, and align with a similar connection recommended in the Southeast Quadrant as described previously.

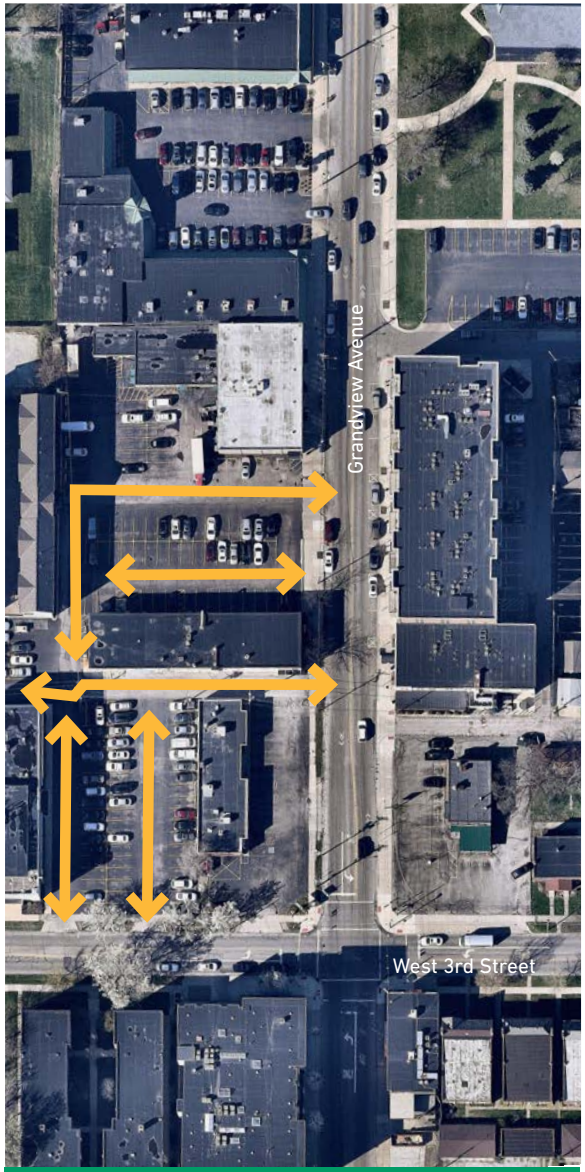
As with the other quadrants, there is also an opportunity to reconfigure and interconnect separate adjacent parking lots for businesses fronting South Liberty Street, improving circulation and allowing for some curb cuts to be eliminated, thereby creating additional room for on-street parking. However, due to the layout of the Village Green and the development pattern along South Liberty Street, it will not be feasible to interconnect parking lots on either side of the historic schoolhouse at 77 South Liberty. Parking lots to the north of schoolhouse can be linked together and accessed via the new alley described above. To the south of the schoolhouse, a similar approach can be taken to interconnect existing parking areas with a more efficient layout. This area also provides an opportunity to create a larger field of consolidated parking behind the businesses and adjacent to the Village Green, which could serve the park during community events.



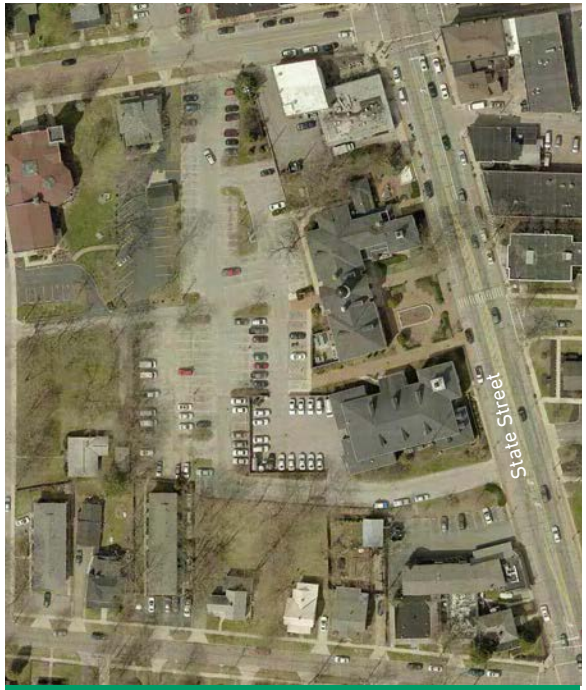
CASE STUDY: SHARED PARKING

Identifying opportunities for shared parking and for interconnected parking lots will improve the overall efficiency of the downtown parking system. Shared parking conditions occur when two or more downtown businesses or property owners agree to share their available parking. In areas where parking can be limited, such as downtowns, this allows for more consolidated parking areas.

Providing strong vehicular and pedestrian connections both between parking areas and to the storefronts is also important. Creating direct visual and physical paths improves circulation, encourages a more efficient layout of parking areas, and improves the overall parking experience for downtown visitors. Parking lots in Downtown Grandview Heights (left) and Uptown Westerville (below) demonstrate how multiple connections and shared parking can serve multiple properties.



INTER-CONNECTED LOTS - GRANDVIEW



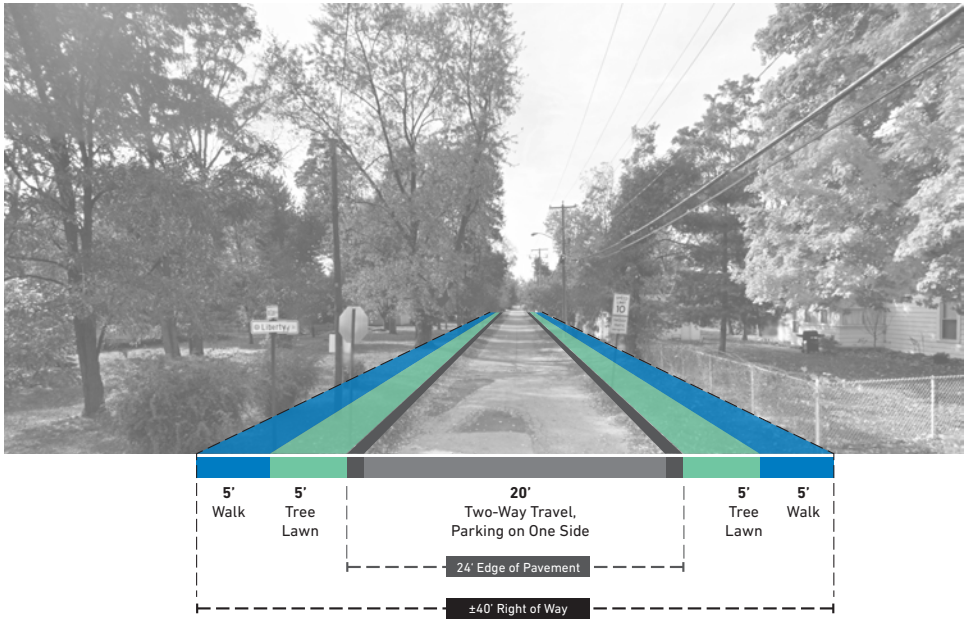
WESTERVILLE CITY HALL LOT - BEFORE

WESTERVILLE CITY HALL LOT - AFTER

Improving Neighborhood Streets in the Northwest Quadrant

There has been ongoing concern amongst residents of the northwest quadrant regarding speeding and cut-through traffic by motorists seeking to avoid the Four Corners intersection. In particular, residents report today that during peak travel hours, some southbound to westbound traffic bypasses the Four Corners by using Case Avenue and Scioto Streets to turn right on West Olentangy Street from Depot Street – and that much of this traffic travels at excessive speeds through the neighborhood. During the planning process, concerns were also raised that recommendations to expand the street network in the Northwest Quadrant would further exacerbate this issue, creating unsafe and undesirable living conditions in the area.

All of the neighborhood streets in the Northwest Quadrant are constructed to out-dated standards. Portions of Case Avenue and Scioto Street nearest Liberty Street are 20 feet in width, but Case Avenue quickly narrows to 16 feet, as does Scioto to the west of Hall Street. Both of these streets have an inverse crown design with drainage in the center rather than standard curb drainage. While not center-drained, Depot Street also lacks curbs and sidewalks. With the exception of a few lots on Scioto Street, there are no sidewalks on these streets. It is unclear where the public right-of-way and private front yards begin, with portions of the right-of-way



graveled over and used as informal parallel parking in front of homes. This practice generally occurs on the north side of Case and Scioto.

As part of improvements to the downtown street network, this plan recommends design upgrades to each of these existing streets. The intent is to bring the streets up to modern standards that will calm traffic flow, enhance pedestrian safety, improve the visual character of the neighborhood, and ensure that motorists respect the fact that they are driving through a residential area. Recommended improvements include widening the pavement sections for Case, Scioto and Depot to a consistent 20-foot pavement section with vertical curbs and curbside storm drainage. Sidewalks and tree lawns would be added to both sides of the street within the existing right-of-way. By adding curbs, on-street parallel parking can be formalized, and restricted to the north side of the street. This will have the effect of narrowing the effective travel lane width, which will naturally cause motorists to slow down while traveling these streets. Although these streets are narrow today, some homeowners pull off of the pavement to park adjacent to the street, leaving the entire street width open to travel. With formalized on-street parking, portions of the street will be reduced to a single lane, naturally indicating to drivers they should slow down. This design also creates a "yield street" condition, in which drivers must negotiate on-coming traffic. In addition to parking, the introduction of fixed vertical elements at the street edge, such as curbs and street trees will help to slow motorists. Locating parallel parking on the north side of these streets will also provide an immediate visual impediment to westbound motorists entering from Liberty Street. During the public engagement process, some residents expressed concern with the possibility that patrons of downtown businesses might be encouraged to park on Scioto Street or Case Avenue if the streets are improved to allow for on-street parking. This is a possibility, although the addition of other designated parking areas closer to businesses will help to minimize the issue. There may actually be a benefit in allowing visitors to park on these streets, as more parked cars will help to maintain slow speeds. However, should this become a problem for residents, the City could implement time restrictions or permit parking.

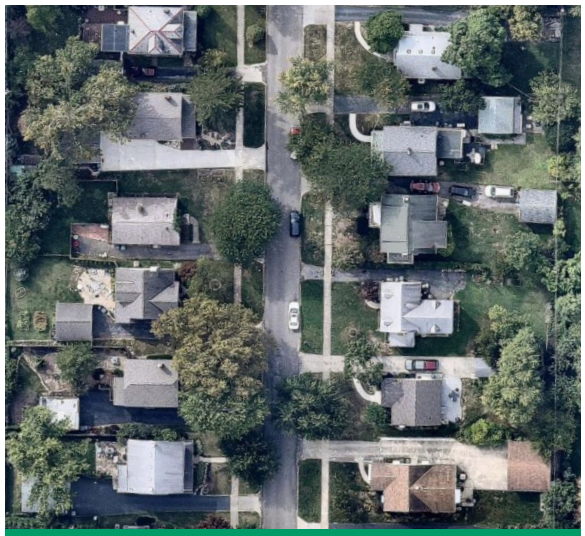
One-Way or Two-Way Travel?

During the stakeholder and public engagement process, the idea of converting Case Avenue and Scioto Street to one-way circulation was posed. Ultimately, this could be implemented, but this plan recommends first implementing other design improvements to upgrade these roadways, calm traffic and discourage cut-through traffic. One issue with implementing a one-way system is it could have the unintended consequence of concentrating through traffic on whichever street is designated for westbound movement, rather than dispersing the traffic more evenly.

There is also a traffic calming benefit to two-way traffic, particularly in a residential "yield street" condition in which drivers must negotiate on-coming traffic, slow down, pull into a parking lane and allow another driver to pass. In a one-way condition, even with parked cars, there is no on-coming traffic to force a driver to slow. However, with the completion of recommended improvement projects, the traffic conditions on Case Avenue and Scioto Street should be continually monitored, with implementation of a one-way system an option for consideration if problems persist.

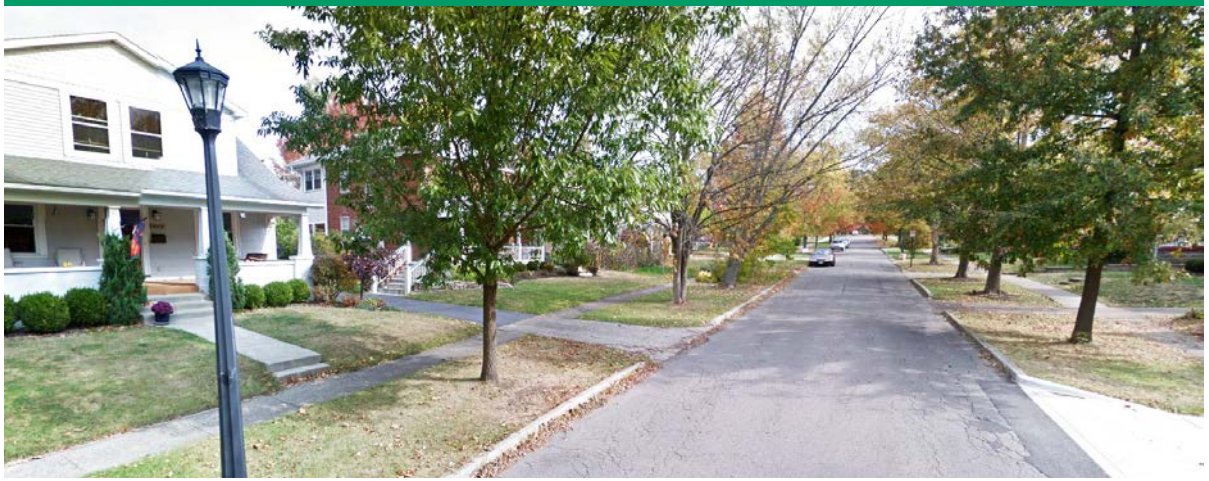
CASE STUDY: YIELD STREETS

Yield streets are a common street design in traditional urban neighborhoods. Residential yield streets are designed with a narrow pavement width (typically 20 to 26 feet), and cars are permitted to park on one or both sides of the street. These streets are designated for two-way travel, but parked cars reduce the effective travel area to a single lane in some portions of the street. In other areas, cars can pass one another, but at slow speeds. As drivers approach parked cars from opposite directions, they must acknowledge the on-coming traffic and one driver must pull over into the parking lane to allow the other to pass.

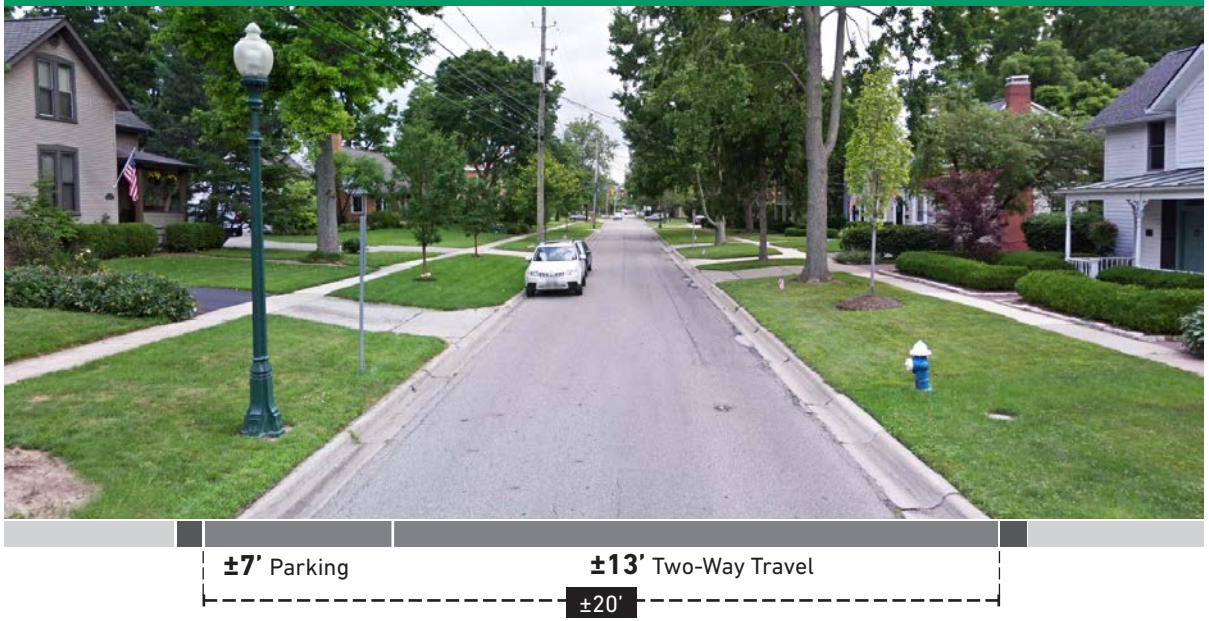


BLENHEIM ROAD - COLUMBUS, OH

PARKING RESTRICTED TO NORTH SIDE | BLENHEIM ROAD - COLUMBUS, OH



PARKING RESTRICTED TO WEST SIDE | HARTFORD STREET - WORTHINGTON, OH



Creating More Direct Circulation Routes

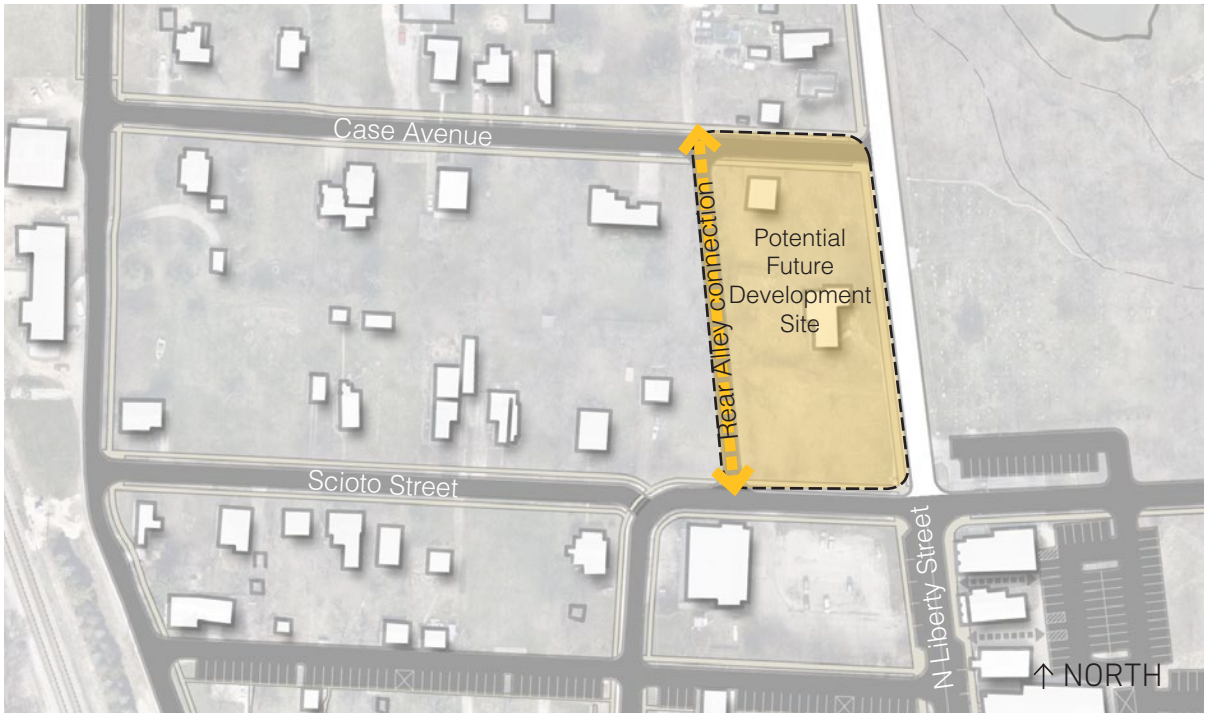
As an alternative to introducing one-way restrictions, this plan recommends reconfiguring the intersection of Scioto and Hall Street to facilitate traffic movement between West Olentangy Street and North Liberty Street. In this concept, the intersection is redesigned with a continuous curve from the east leg of Scioto Street to Hall Street. The west leg of Scioto Street is adjusted to tie into this curve at an angle, and could be designed with a raised crosswalk. This design is intended to more naturally direct westbound traffic from Scioto Street onto Hall Street to Olentangy Street, and likewise, northbound traffic from Hall Street onto Scioto Street en route to Liberty. This design would provide a deterrent to drivers who might otherwise travel west on Scioto, as they would be forced to make a deliberate turn onto the residential portion of the street rather than continuing onto Hall Street.

Creating A Rear Access Connection

A similar intersection condition as described previously could be created on Case Avenue with the construction of a new alley/ street connection between Case and Scioto Street, paralleling Liberty Street. This connection was originally illustrated in the Comprehensive Plan and suggested as a direct extension of Hall Street northward, ultimately connecting beyond Case Avenue to an expanded grid of streets and providing a north-south alternative to Liberty Street. A variety of potential alignments and intersection configurations were explored for this connection as part of the street network planning process. The conceptual design plan illustrates an alley that parallels Liberty Street and thus has an off-set intersection from Hall Street at Scioto Street. This alignment is possible without physically impacting existing structures, unlike the alignment suggested in the Thoroughfare Plan. However, it would require motorists to make a turning movement in order to travel north-south.

An alternative alignment could curve to connect to the existing Hall/Scioto intersection, providing a more continuous north-south movement. For this reason, if the reconfigured Scioto/Hall Street intersection design is implemented, it should be designed in a manner that would not preclude extension of Hall Street to the north as part of future phase of construction.

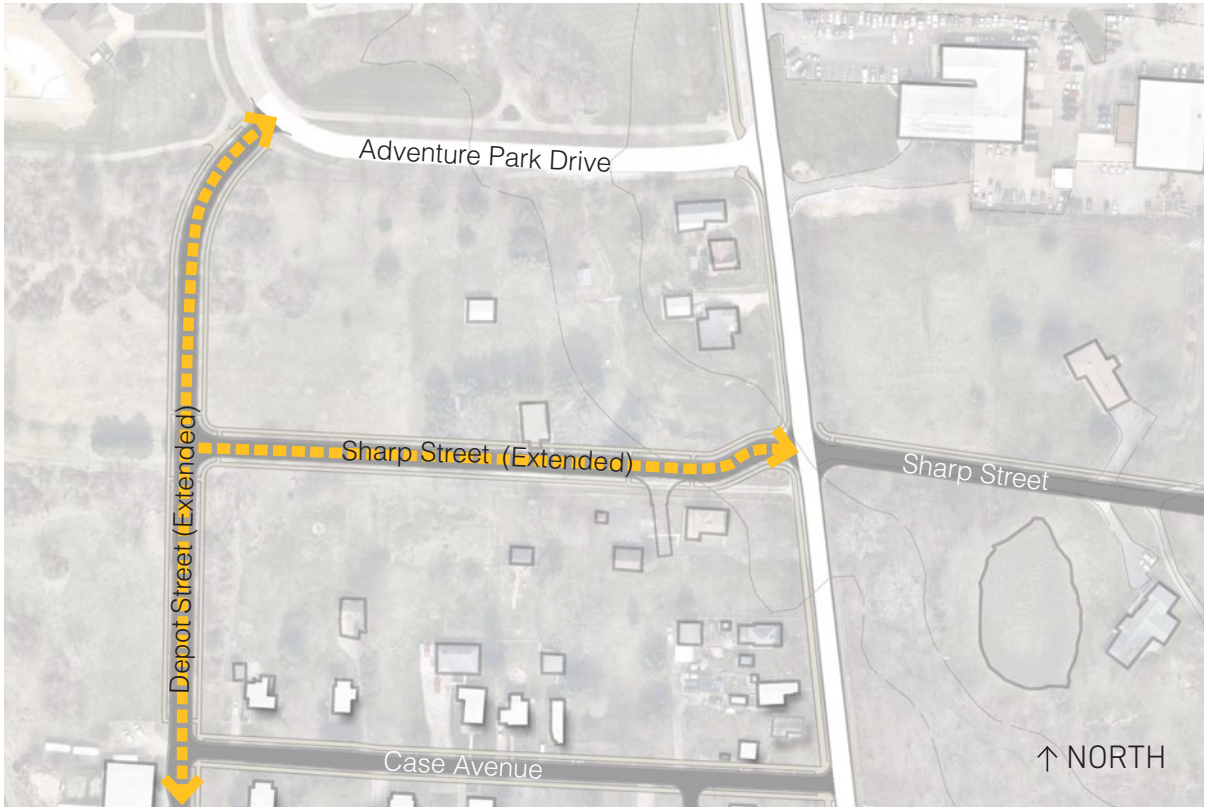
Further engineering study will be necessary to determine a preferred alignment and intersection configuration and appropriate construction phasing considerations. Regardless of the precise alignment, this connection would provide a valuable access point for a potential redevelopment site along Liberty Street. By providing access to the rear, building frontage can be maximized on Liberty Street, and the pedestrian-oriented streetscape can remain uninterrupted by driveway curb cuts.



Expanding the Grid to the North

Additional street connections in the Northwest Quadrant were recommended as part of the Downtown Thoroughfare Plan in the Comprehensive Plan. Some of these connections, particularly the connection of Depot Street to Adventure Park Drive, have been proposed as part of a past development proposal for the area, which has since been withdrawn. A potential future extension of Sharp Street is also recommended. As with the future street network expansion described earlier for the Southeast Quadrant, these connections on the periphery of the downtown core will be reliant on private development, which would construct the streets as part of a larger development project. The Thoroughfare Plan, and this master plan, recommends these connections in order to establish a functional street grid that Downtown Powell lacks today.

As future development occurs, it will be critical to ensure that new residents, employees and visitors have sufficient route options for access and circulation. Continued development of disconnected dead-end streets and cul-de-sacs will only serve to exacerbate traffic problems that such development patterns have helped to create. However, it is equally critical to ensure that new traffic does not have an adverse impact on existing residents. As noted earlier in this document, there have been neighborhood concerns with the concept of extending Depot Street and providing other street connections within this quadrant. The intent of this plan is to create a network of similarly designed neighborhood streets, creating frontage for new homes or businesses and integrating into the historic village scale and character of the existing neighborhood. New streets should not be designed to promote cut-through traffic at high speeds, but rather to distribute local traffic at appropriately low speeds, while providing for safe and convenient pedestrian and bicycle mobility through the neighborhood and into Adventure Park. As with the recommended design upgrades for Case Avenue, Scioto Street and Depot Street, new streets should be kept to minimum widths, accommodating on-street parking in a "yield" condition.



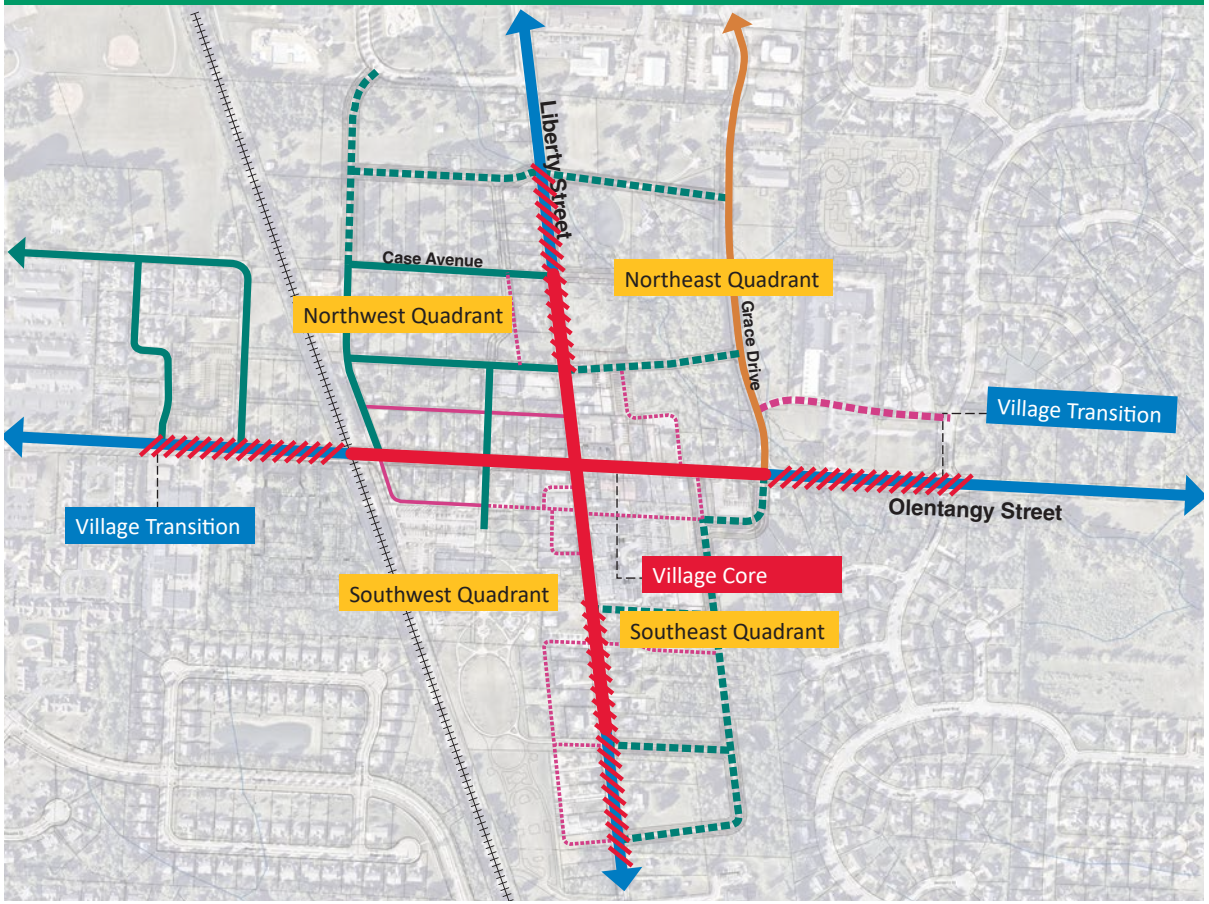
Village Core Streets

Substantial streetscape improvements for Olentangy Street and Liberty Street were completed by the City of Powell in 1997. These introduced on-street parking, brick paver sidewalks, streetscape landscaping, pedestrian-scaled street lamps and other streetside amenities. Where space allowed, street trees were located behind the sidewalks to minimize conflicts between tree canopies and truck traffic on SR 750. At the time, it was not feasible to implement a consistent streetscape design for all portions of Olentangy and Liberty within the downtown core.

Olentangy Street

The improvements recommended in this plan will require a redesign and reconstruction of the original streetscapes. The proposed conceptual design retains and expands the use of brick paver sidewalks along Olentangy Street within the downtown core to create a consistent streetscape treatment. The removal of on-street parking on West Olentangy Street, described earlier in the plan, will allow for expanded streetscape width, maintaining 8-foot wide sidewalks and also incorporating low raised planters to create a buffer between the sidewalk and the moving lanes of traffic. This would be implemented on both sides of the street from the Four Corners to Depot Street. With the reconfiguration of parking areas in the Southeast and Northeast Quadrants, the same streetscape design can be extended from the Four Corners to Grace Drive and Martin-Perry

Street & Alley Connections



- Village Core
- Neighborhood Street
- Business Collector
- Community Transition
- Village Transition
- Alley/Parking Connection

Drive. Additional trees can be added behind the sidewalk where space allows, within new outdoor dining spaces, parking lot edges and front yards.

Liberty Street

Similarly, the design will extend along Liberty Street for the first block north and south of the Four Corners, although space for raised planters is more limited. The conceptual design extends the streetscape to Scioto Street and to the south edge of 50 South Liberty, with the incorporation of new on-street parking spaces in targeted locations where space is available, made possible in some locations by consolidating parking areas and access points as previously described.

The Four Corners

While the purpose of restricting left turns at the four corners is to ease traffic flow through the intersection, this solution has the added benefit of preserving sidewalk space at the intersection and maintaining a short pedestrian crossing distance. As the most prominent intersection in Powell, the Four Corners represents the heart of the community and serves as the focal point of the village center. As streetscape upgrades are implemented, this conceptual design plan recommends also upgrading the intersection itself with a brick paver surface or similar design treatment to enhance the Four Corners and promote its community identity.

Liberty Street - Before

Liberty Street - After

Street Typologies | Representative Benchmarks

Village Core

Village Core Streets

Olentangy and Liberty Streets within the immediate village core will be designed with a high quality pedestrian realm. Olentangy will be reconfigured with left turn lanes at strategic locations. Liberty will include additional on-street parking where space is available.

Village Transition

Village Transition Streets

Olentangy and Liberty Streets extending out of the village core will continue some streetscape elements, such as wide brick paths to accommodate pedestrians and cyclists. The streetscape will transition from raised planters to a continuous curb lawn.

Community Transition

Community Transition Roadways

As Olentangy (Powell Road) and Liberty transition to more suburban development areas, the roadways should be improved with left turn lanes where needed, curbed edges, and continuous multi-use paths.

Neighborhood Street

Neighborhood Streets

Existing and new residential streets should be designed with curbs, tree lawns and sidewalks. Streets should be kept to minimal widths, with on-street parking to keep traffic moving at low speeds.

Alley/Parking Connection

Alley/Parking Connections

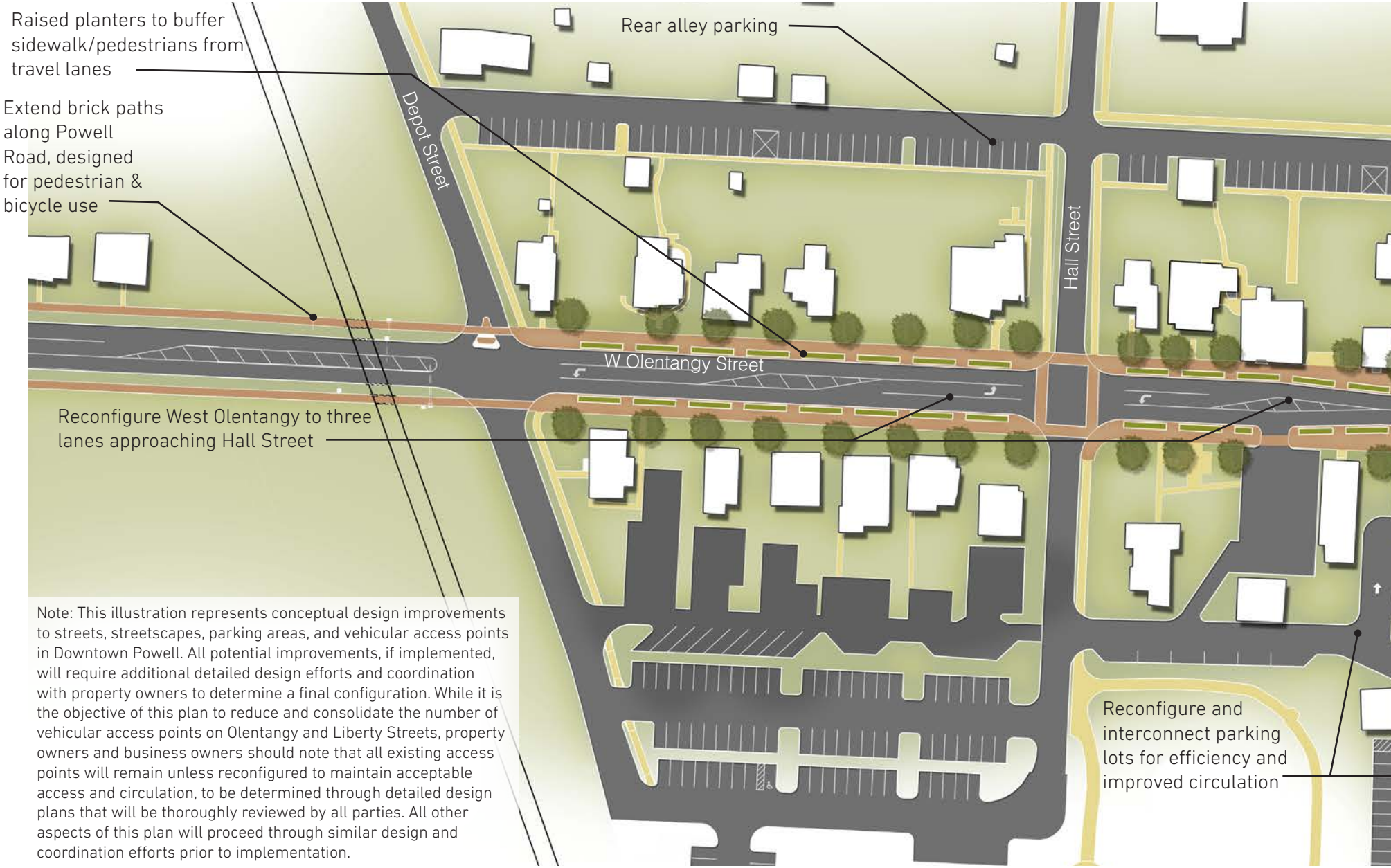
Alleys and parking lot connections will take a variety of designs depending on the location, but are critical to improving circulation throughout each quadrant of Downtown.

Business Collector

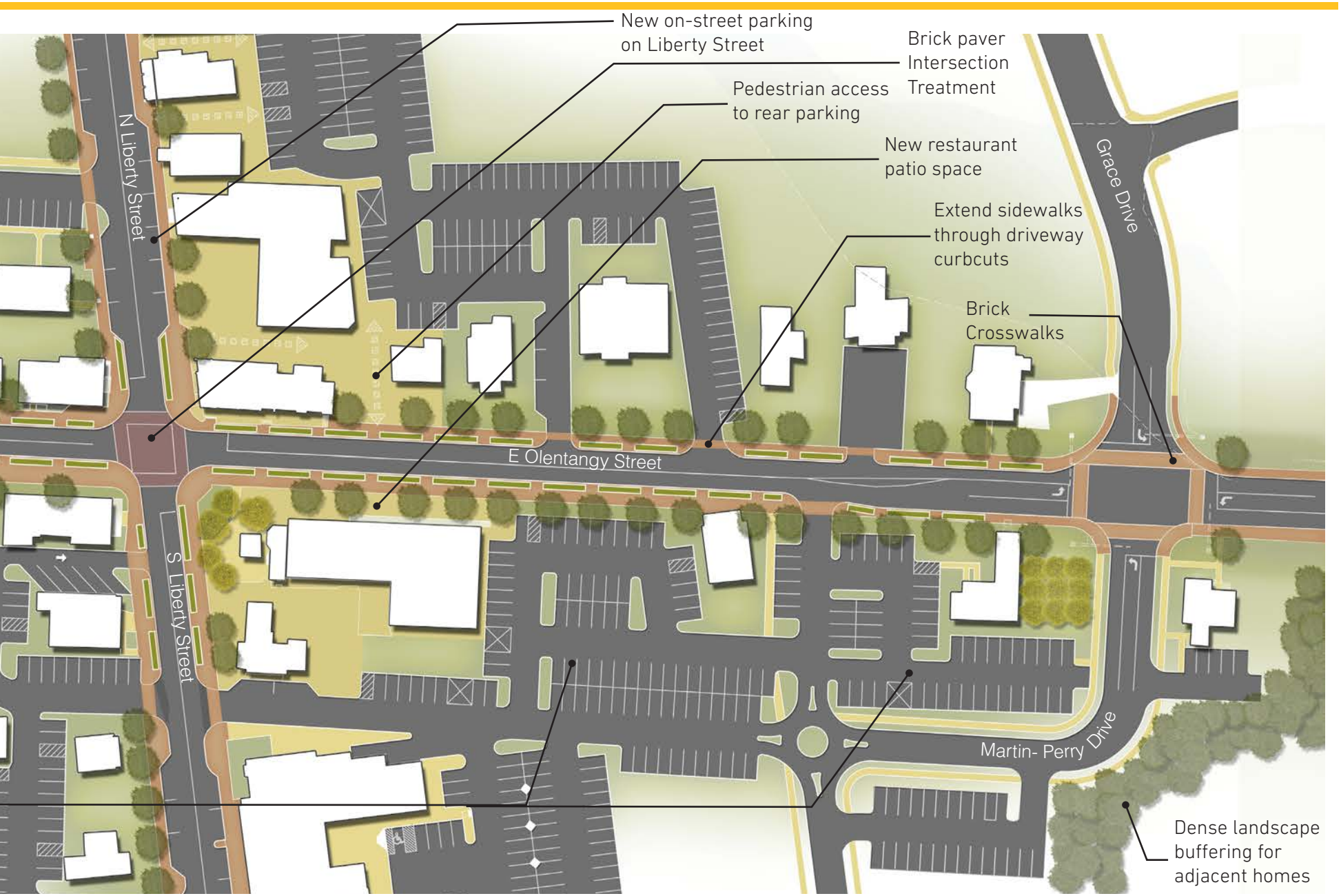
Business Collector

Grace Drive should be improved with a wider multi-use path to accommodate cyclists, similar to the image shown here.

Conceptual Streetscape and Circulation Improvements



Note: This illustration represents conceptual design improvements to streets, streetscapes, parking areas, and vehicular access points in Downtown Powell. All potential improvements, if implemented, will require additional detailed design efforts and coordination with property owners to determine a final configuration. While it is the objective of this plan to reduce and consolidate the number of vehicular access points on Olentangy and Liberty Streets, property owners and business owners should note that all existing access points will remain unless reconfigured to maintain acceptable access and circulation, to be determined through detailed design plans that will be thoroughly reviewed by all parties. All other aspects of this plan will proceed through similar design and coordination efforts prior to implementation.


New on-street parking on Liberty Street
Brick paver Intersection Treatment
Pedestrian access to rear parking
New restaurant patio space
Extend sidewalks through driveway curbcuts
Brick Crosswalks
N Liberty Street
Grace Drive
E Olentangy Street
S Liberty Street
Martin- Perry Drive
Dense landscape buffering for adjacent homes

Conceptual Improvements | East Olentangy Street (Looking West) - Today

Olentangy Street - After

Village Transition Streets

Olentangy Street

Extending outside of the core, the streetscape design will begin to transition in character. The conceptual design extends the use of brick paver paths on SR 750 past the railroad tracks to just past Traditions Way, where new development is expected to frame Powell Road and expand the walkable character of downtown. These paths will be expanded to 8 feet to accommodate cyclists and pedestrians on both sides of the street. Instead of raised planters, the sidewalks will be buffered by a continuous lawn or landscape strip. The three-lane road section will be extended past the railroad tracks, integrating with the existing three-lane section west of Traditions Way. The roadway design will be converted from existing surface drainage to curb and gutter edges.

Similarly, 8-foot wide brick multi-use paths will be extended past the Grace Drive/Martin-Perry Drive/Olentangy Street intersection to Bartholomew Boulevard, signifying a transition into the village core to those traveling from the east. Immediately east of Grace Drive and the Martin-Perry House, the roadway crosses Bartholomew Run with a stream culvert. In this location, existing concrete sidewalks are located immediately behind the curb, with guardrails located behind the walks. As the roadway design for SR 750 proceeds through a more detailed engineering and design, opportunities should be explored to improve the stream crossing with aesthetic treatments, such as a low limestone wall.

Liberty Street

Extending north and south of the village core, Liberty Street should be improved with curbed edges. Brick walks will transition to asphalt multi-use paths on the west side of the street. This is generally consistent with existing conditions, although some sections of path should be reconstructed to improve pavement conditions and provide an expanded grass buffer from the street edge where space allows. A curb treatment will help to better define the edge and separation between the path and roadway. North of the Powell Cemetery, steep grades associated with the Bartholomew Run create a physical constraint that may limit opportunities for a path on the east side of the street. However, between Sharp Street and Grace Drive, pedestrian/bicycle paths should be incorporated along Liberty Street with future development or redevelopment.

South of the 50 South Liberty development, there are currently no sidewalks or bicycle paths on the east side of Liberty Street until the Village Academy school. The approved Liberty Green development plans incorporate a 5-foot wide concrete sidewalk separated from the roadway with a grass strip. This treatment should be extended southward with improvements to Liberty Street and/or as additional development occurs, providing a continuous path connection to the existing pedestrian/bicycle crossing at the Village Academy.

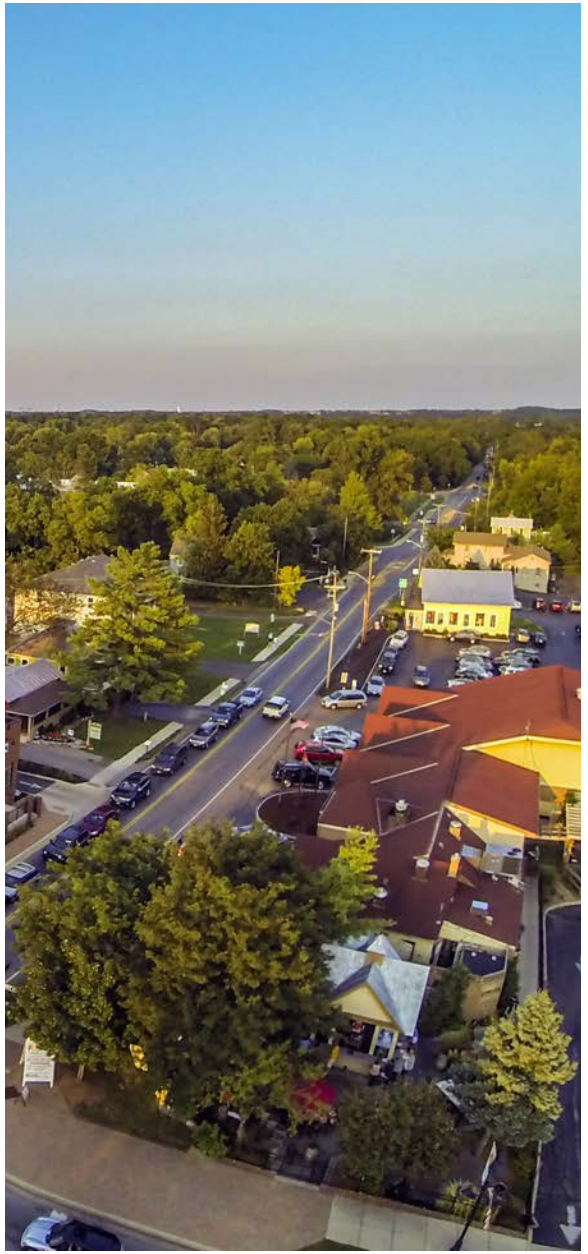
Community Transition Roadways

Powell Road

Extending past Traditions Way to the west and Bartholomew Boulevard to the east, Powell Road will again transition in character along with the character of adjacent development, which becomes more modern and suburban in style. As originally recommended in the Thoroughfare Plan, Powell Road should be consistently widened to a three-lane section approaching downtown. Curb and gutter design should be implemented to create a consistent edge and storm drainage treatment. Multi-use paths will be constructed with asphalt in these areas, and should be extended on both sides of the roadway, filling gaps in the current path system. In some stretches of Powell Road east of downtown, particularly near the Bennett Farm property, it may be physically impractical to construct a complete three-lane roadway section with multi-use paths on both sides. If a multi-use path is only possible on one side of the roadway, safe pedestrian/bicycle crossing points should be designed at intersections where the path system changes.

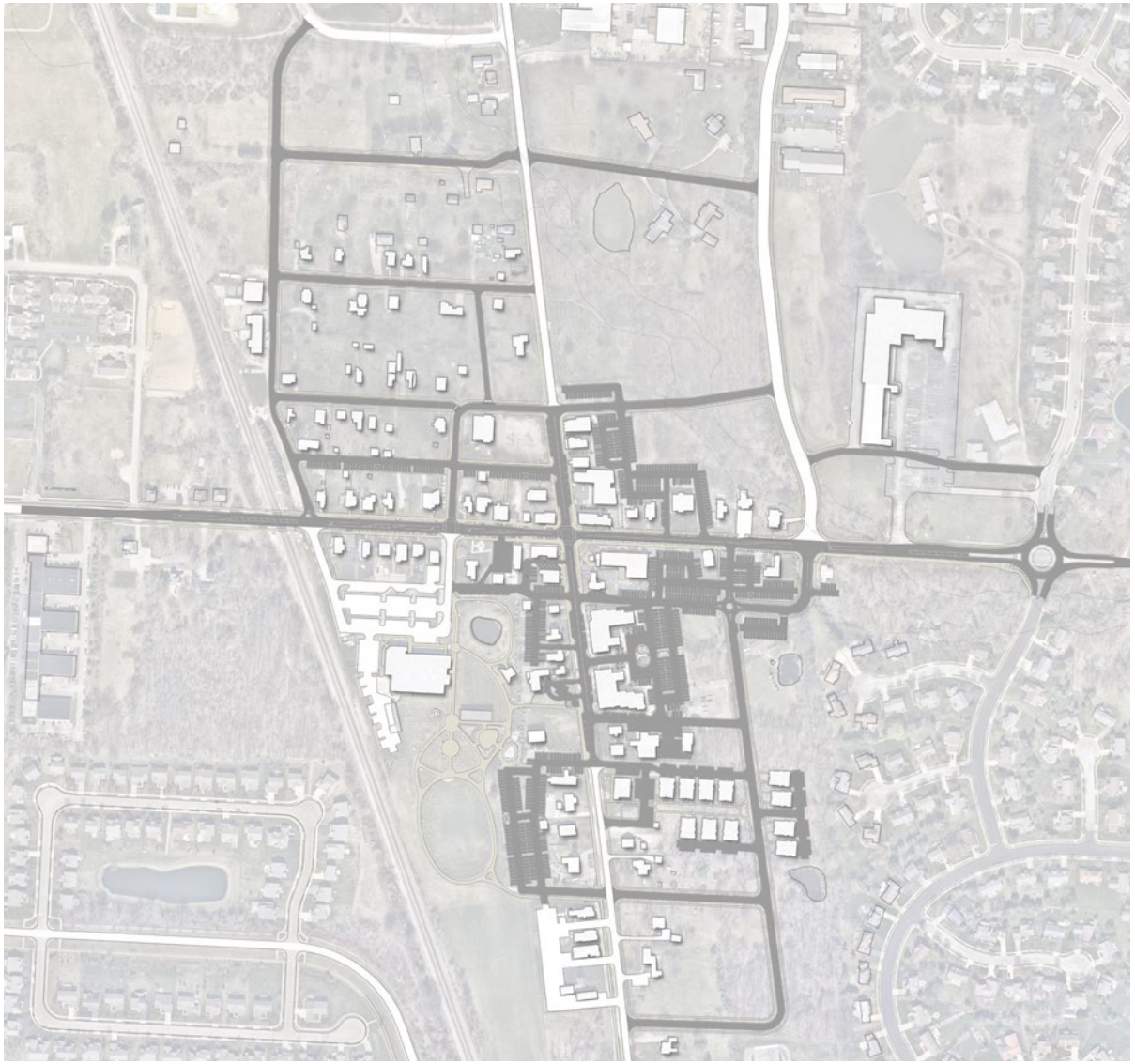
Liberty Road

As with Powell Road, the existing multi-use path system contains numerous gaps beyond the village core and transition areas. These should be completed as opportunities allow. As Liberty Road extends into more a more suburban and rural development character, the roadway will likely remain uncurbed with surface drainage. However, these areas generally provide more space for grass buffer between the path and roadway. Multi-use asphalt paths, at least 8-feet in width should be provided on at least one side of Liberty Road for its entire length through Powell, and ideally on both sides, with safe crossing points where the condition changes. To the south of downtown Powell, the multi-use path system currently terminates at Library Park, where the CSX railroad crosses Liberty Road. With the extension of Murphy Parkway its adjacent multi-use path to Liberty Road, there will be a short gap in the path system along Liberty. Safe railroad path crossings require close coordination with the railroad owner, and this particular crossing would include additional complications due to the angle at which the rail line crosses the roadway. As the City advances other improvements to Liberty Road and to the larger multi-use path system, it should work with CSX to design and construct a safe crossing point that will complete this gap.



Creating a Network of Neighborhood Streets and Service Streets – A Policy of Connectivity

In addition to the various connections already described in this plan, other less prominent connections, such as a service drive connection between Beech Ridge Drive and Grace Drive, and improvement of West Case Street from Traditions Way to Village Point Drive, will help to enhance circulation and access to residents and businesses on the edges of Downtown Powell. Such connections exemplify a general policy of establishing an interconnected street network that should be continually pursued by the City with capital improvement projects and with private development proposals. While this policy should be pursued community-wide, as recommended in the Comprehensive Plan, it is particularly critical to the long term success of Downtown and to managing traffic flow. As described throughout this plan, most of these new street connections are not intended to funnel high volumes of traffic at high speeds through or around Downtown. Rather, they are part of a larger system of neighborhood streets, service drives, alleys, and parking lot connections designed to accommodate cars, pedestrians, and bicyclists, and to more evenly distribute local traffic. These connections will be implemented incrementally as opportunities arise. As such, it will be critical for the City to ensure that as development proposals are considered, those plans advance the policy of connectivity, extending streets and alleys where possible. In this way, a more functional street grid will be established over time.

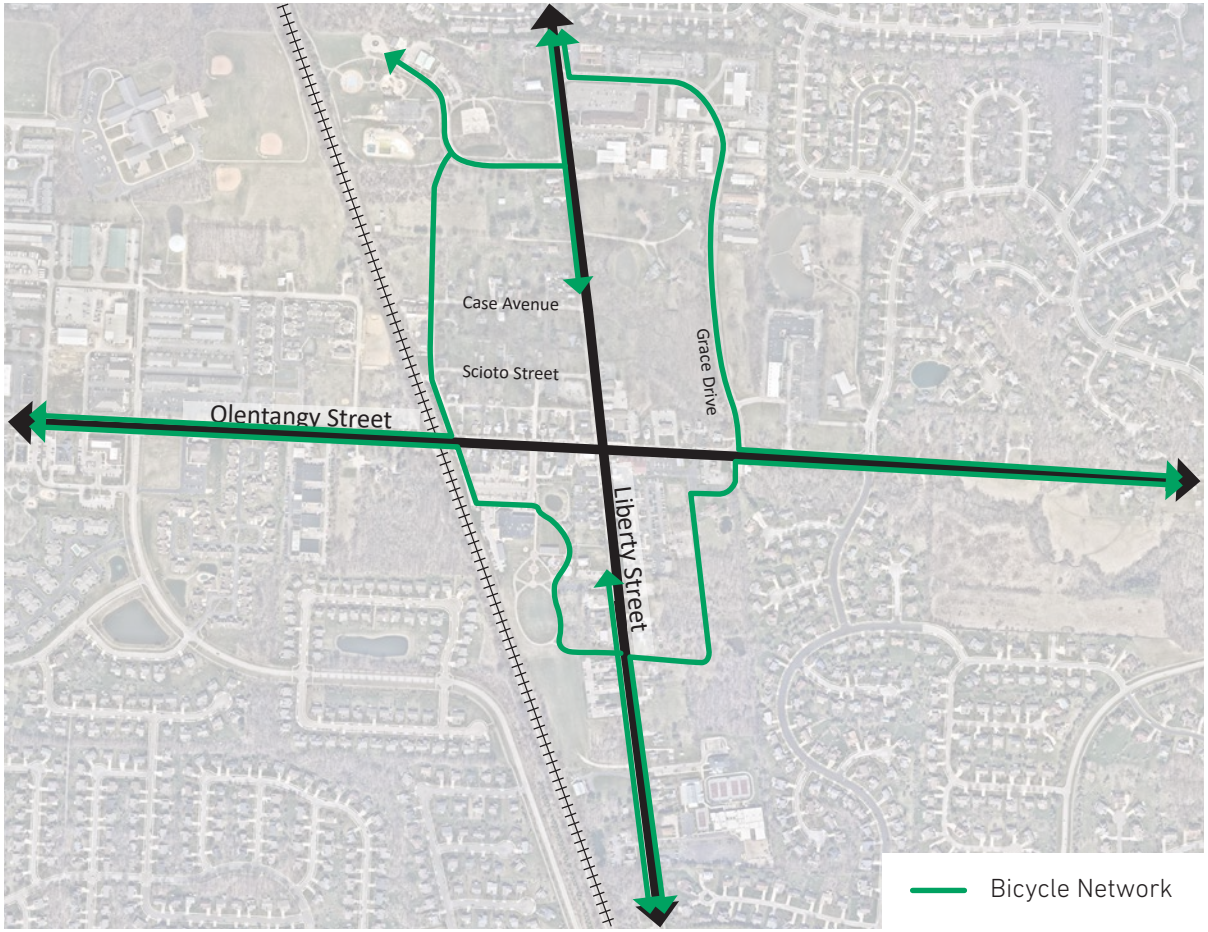


Facilitating Bicycle Travel to and around Downtown - A Policy of Multi-Modalism

As with street connections, the City should implement a policy to continually improve and expand pedestrian and bicycle infrastructure with each new street or road improvement, as appropriate to the street type. This plan recommends improvements to the multi-use/bicycle path system along Powell and Liberty Roads to facilitate bicycle travel into Downtown, consistent with the recommendations of the Bikeway Plan included in the Powell Comprehensive Plan. Within the village core, the conceptual streetscape design includes 8-foot wide sidewalks, which are consistent in width to other multi-use paths. While bicyclists may continue to ride on these sidewalks within Downtown, it will be important that they ride at very slow speeds to avoid conflicts with pedestrians.

Although the addition of on-street bike lanes was considered in the planning process, space limitations make installation of continuous on-street and streetside facilities impractical in the village core. Utlimately, a robust system of side paths leading into Downtown will serve the broadest range of age groups and riding abilities. However, opportunities to install bike lanes beyond the core should be explored with future study.

For those wishing to travel by bike without traveling through the Four Corners, the street network should be designed to facilitate safe bicycle travel. In particular, this plan recommends that the existing 5-foot path along Grace Drive be improved to an 8-foot multi-use path. Recreational paths along the Bartholomew Run and along the CSX railroad tracks should also be explored as an expansion of the community greenway system. In addition to dedicated multi-use paths, one of the benefits of designing neighborhood streets to naturally calm traffic is that these streets can also accommodate safe bicycle travel within the street. Additional pavement markings such as sharrows, or designation of certain neighborhood streets as a "bicycle boulevard" should be considered to create continuous bicycle-friendly connections through downtown.

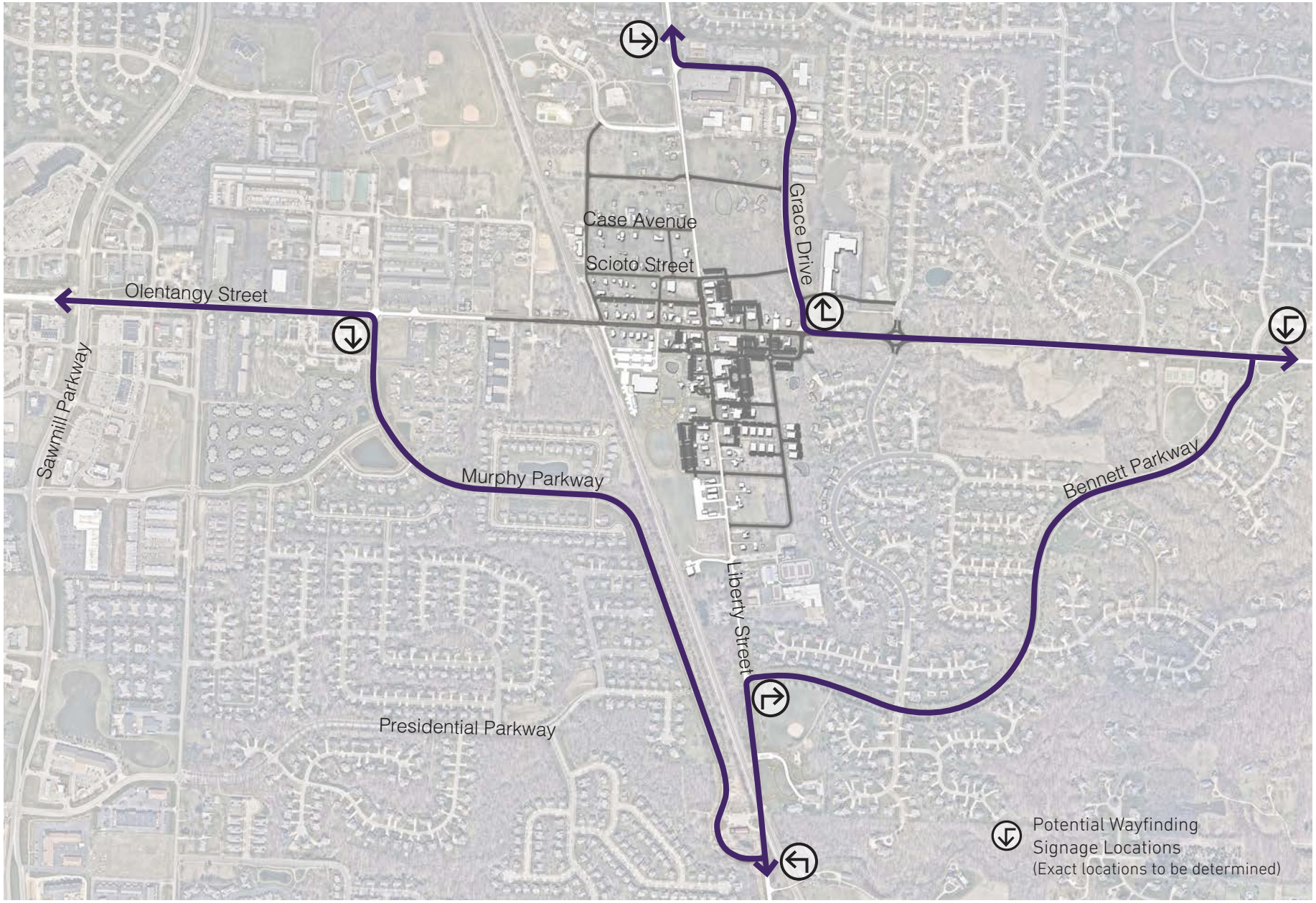


Beyond Downtown: Improving Community Circulation and Wayfinding

With the completion of Murphy Parkway, a significant community connection has been made that now provides an alternate route around the Southeast Quadrant of Downtown, providing a new option for many motorists who typically travel through the Four Corners along South Liberty Street and West Olentangy Street. Likewise, the improvement of the Grace Drive intersections at Olentangy Street and Liberty Street with traffic signals and left turn lanes will help to improve circulation around the Northeast Quadrant. Intersection improvements at Liberty Road and Seldom Seen Road will further facilitate traffic movements to the north of downtown, and long-term, a new grade-separated railroad crossing of Seldom Seen Road, as recommended in the Thoroughfare Plan, will create a much improved circulation system from Sawmill Road to Powell Road. In the Southeast Quadrant, the proposed Martin-Perry Drive connection is not intended to act as a bypass, but rather as a neighborhood street that improves access and circulation within the Downtown Core. Instead, Bennett Parkway already serves as a significant alternative route that allows motorists to travel between Liberty Road and Powell Road while avoiding the Four Corners.

To further facilitate traffic flow along this route and others, the feasibility of roundabouts should be studied for the intersections of Bennett Parkway with SR 750 and Liberty Road. Similarly, while modern roundabouts are not recommended for the village core due to space constraints, the implementation of roundabouts on other intersections along Powell Road and Liberty Road outside of the core should be considered. For instance, this master plan recommends a potential roundabout at East Olentangy Street and Beech Ridge Drive/Bartholomew Boulevard. This would serve the dual purpose of facilitating residential traffic to and from SR 750 from the adjacent neighborhoods, while creating a gateway feature that announces arrival into Downtown Powell, slowing traffic as it enters the village core while still facilitating traffic flow. By emphasizing the use of Bennett Parkway and improving its intersection with Powell Road, the potential for facilitating cut-through traffic on Bartholomew Boulevard can be mitigated. For this reason, part of the City's larger strategy for discouraging cut-through traffic and promoting alternative routes that avoid the Four Corners should include a robust community wayfinding system, with prominent signage that directs motorists to more efficient routes, such as Bennett Parkway, Murphy Parkway and Grace Drive to Seldom Seen Road. At regional scale, the City should also work with Delaware County and ODOT to promote the use of alternate routes to regional destinations, such as the Columbus Zoo, by emphasizing the use of Home Road, I-270, and Sawmill Road.

Coordinated wayfinding signage will assist motorists in finding more efficient routes and avoiding the Four Corners.


Case Avenue
Scioto Street
Grace Drive
Olentangy Street
Sawmill Parkway
Murphy Parkway
Bennett Parkway
Liberty Street
Presidential Parkway
Potential Wayfinding
Signage Locations
(Exact locations to be determined)

Section 3

This plan recommends over 20 specific capital improvement projects to enhance vehicular, pedestrian and bicycle flow and circulation in and around Downtown. This section identifies immediate priorities and cost considerations for implementation.


ES
1
2
3 IMPLEMENTATION
A

Phasing and Cost Considerations

As demonstrated by the extensive transportation analysis conducted during Powell's 2015 Comprehensive Plan update, the strategy for improving traffic flow through Downtown Powell hinges on creating an interconnected circulation system that will allow for the complete prohibition of left turning movements at the Four Corners intersection. The recommendations and conceptual street design improvements described in this master plan all contribute toward this objective in one manner or another. While some improvements will have a more immediate and direct impact, it is critical to recognize the close interrelationship of the various improvements. For many of the design concepts, one improvement will immediately trigger another, and perhaps multiple other improvements, all of which must be completed in tandem or in close succession.

For example, adding a left turn lane on Olentangy Street at Hall Street will require the removal of on-street parking. In order for this change to be successful without harming the viability of business that rely on that parking, new parking areas must be created behind the businesses, with associated improvements to the rear alley system. This will also trigger the need to improve Hall Street and its intersection with Scioto Street. Similarly, constructing the new Martin-Perry Drive to provide access to the Southeast Quadrant will require the reconfiguration of parking lots and creation of shared parking arrangements within the area. The streetscape improvements to Olentangy Street and Liberty Street also require the reconfiguration and consolidation of off-street parking areas in order to fully implement the design vision.

This plan recommends over 20 specific capital improvement projects to improve vehicular, pedestrian and bicycle flow and circulation in and around Downtown. The exact timing of implementation has yet to be determined, but through consultation with the City and through public review, the projects have been divided into three general categories:

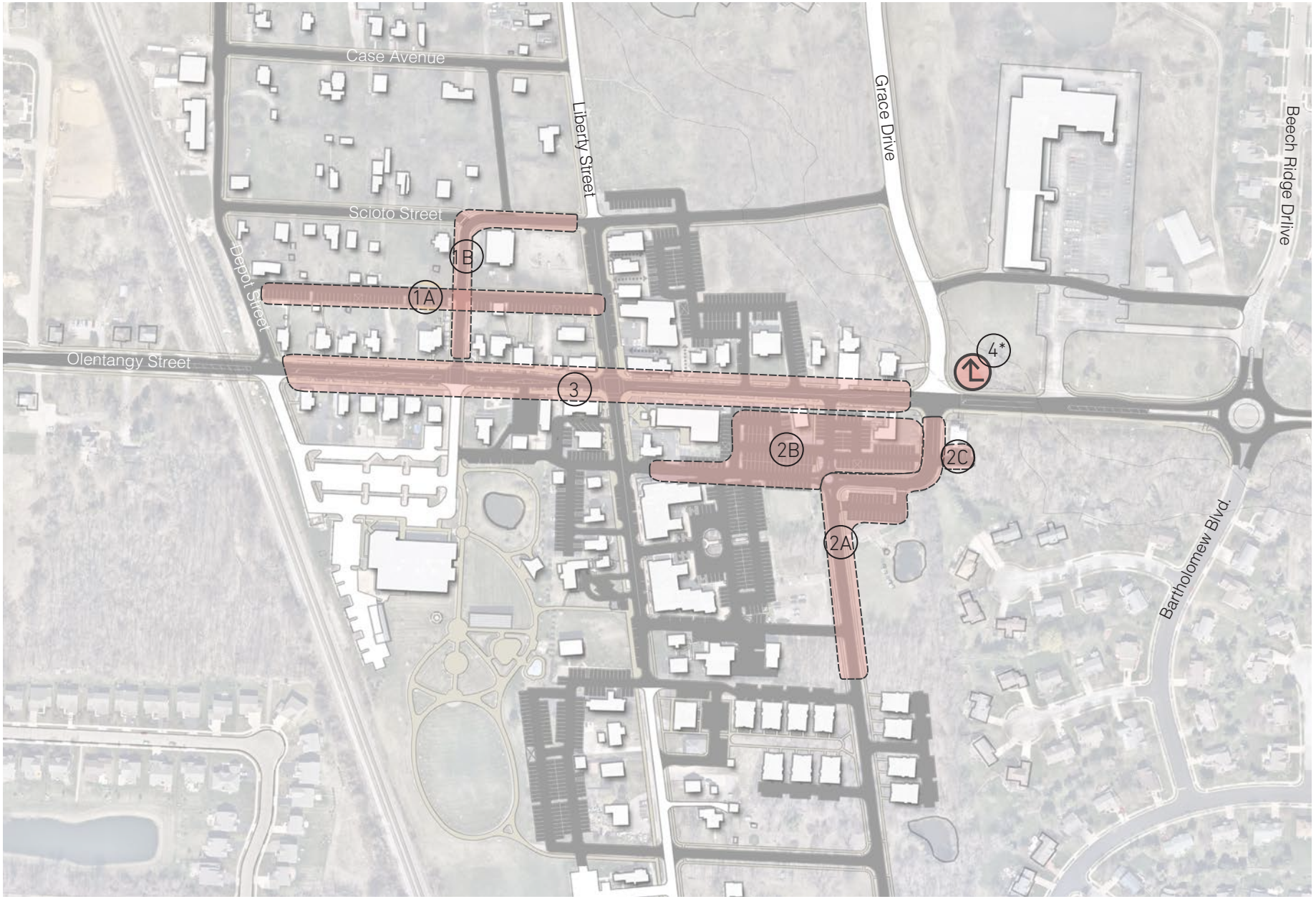
Primary Improvements are projects that are necessary to implement in advance of initiating the full prohibition of left turns at the Four Corners, along with the interrelated projects that they trigger. These projects should be pursued immediately for near term implementation, by advancing from the conceptual design developed in this plan through a more detailed design process. Preliminary order-of-magnitude cost estimates developed as part of this planning process indicate that the Primary Improvements may cost approximately $8.8 million to implement (refer to the Appendix for a complete summary of preliminary cost estimates and assumptions).

Before the design process can proceed beyond the concept level developed to this point, a detailed survey will be needed. This will allow for Schematic Design to proceed, which will lead to a refined cost estimate. Design and Construction Documentation will follow this step. This design timeline will require at least 12 months.

PRIMARY IMPROVEMENTS

- 1A — NW Quadrant Parking Area
- 1B — Hall Street Reconstruction
- 2A — Martin-Perry Drive & Associated Parking
- 2B — SE Quadrant Parking Area
- 2C — Historical Society Parking Area
- 3 — Olentangy Street Improvements
- 4* — Wayfinding Signage

(*Not all locations are depicted)


Case Avenue
Liberty Street
Grace Drive
Beech Ridge Drive
Scioto Street
Depot Street
Olentangy Street
Bartholomew Blvd.
1B
1A
3
4*
2B
2C
2A

Secondary Improvements are projects that are important for the long term function of the street network with improved circulation and access management in Downtown, but which are not immediately necessary to restrict left turns at the Four Corners. Preliminary costs for the Secondary Improvements are approximately $5.8 million.

Ancillary Improvements are projects having a less direct connection to the function of the Four Corners, but still important in terms of expanding the street network and improving vehicular, pedestrian, and bicycle facilities both within and beyond the downtown core. Preliminary costs for all ancillary improvements identified on the phasing plan are approximately $15.5 million.

Primary Improvements:
$8.8 million

Secondary Improvements:
$5.8 million

Ancillary Improvements:
$15.5 million

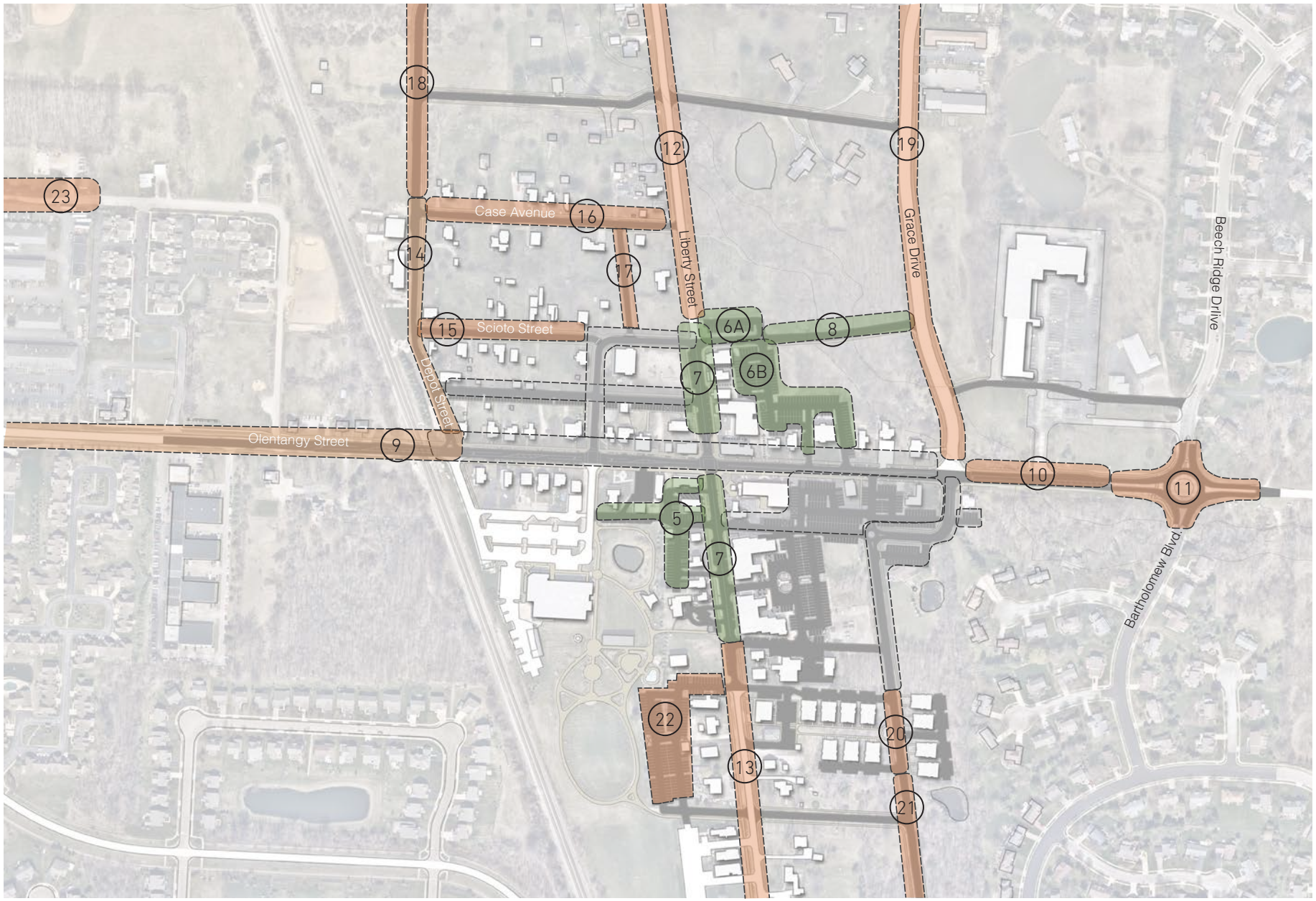
Grand Total
$30.1 million

SECONDARY IMPROVEMENTS

5	SW Quadrant Parking Area
6A	NE Quadrant Scioto Street Connection & Parking Area
6B	NE Quadrant Parking Area
7	Liberty Street Improvements
8	Scioto Street Extension

ANCILLARY IMPROVEMENTS

9	Olentangy St Shared-Use Path
10	Olentangy St Mill/Overlay (Grace Dr to Barth. Blvd)
11	Olentangy St Mill/Bartholomew Blvd Roundbabout
12	Liberty St Mill/Overlay (Scioto St to Grace Drive)
13	Liberty St Mill/Overlay (Liberty Green to Village Academy)
14	Depot Street Reconstruction (Olentangy St to Case Ave)
15	Scioto Street Reconstruction (Depot St to Hall St)
16	Case Avenue Reconstruction (Depot St to Liberty St)
17	Hall Street Extension (Scioto St to Case Ave)
18	Depot Street Extension (Case Ave to Adventure Park Dr)
19	Grace Drive Shared-Use Path
20	Martin-Perry Drive Integration with Liberty Green
21	Martin-Perry Drive (Liberty Green to Liberty Street)
22	Southwest Quadrant Parking Area #2
23	West Case Avenue Extension


18
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Case Avenue
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14
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Liberty Street
Grace Drive
Beech Ridge Drive
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Scioto Street
6A
8
7
6B
Depot Street
Olentangy Street
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11
5
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Bartholomew Blvd.
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20
13
21

Funding Considerations

Paying for these transportation improvements will require a combination of funds from local, state and federal sources. The following is a list of funding sources identified thus far.

City of Powell Budget

The City of Powell collects approximately $5.5 million in income taxes from residents and employees each year. About 45 percent of these collections go toward operating and maintaining existing infrastructure, but income tax revenues are not currently dedicated to new capital improvements. An additional $550,000 is generated annually via Powell's local share of the gasoline tax and driver/vehicle licensing fees. These funds are directed toward road improvements, but are only sufficient to cover annual repairs. There is never enough budget to meet all of the community's needs, so the City must rely on multiple sources of funds to pay for infrastructure improvements.

Bond Packages

City of Powell residents passed a $7.1 million bond levy in 2012 to fund a portion of Powell's infrastructure needs. This is helping to pay for the Murphy Parkway extension, shared-use path connections, traffic signals and a portion of the Park at Seldom Seen. A similar bond package could be approved to pay for all or portions of certain capital improvements.

Grants

There are a variety of state and federal grants that can be pursued; however, no one grant source will likely cover the entire cost of any of the proposed solutions. Local and/or private funds will likely be needed to "match" grant funds. Potential sources include ODOT, the Ohio Public Works Commission (OPWC), and the Mid-Ohio Regional Planning Commission (MORPC).

New Development

New development can bring jobs and new tax revenue which helps to pay for infrastructure improvements. There are a number of mechanisms for getting new development to help offset the cost of new or improved infrastructure, such as Tax Increment Financing (TIF) agreements and public-private partnerships. The City of Powell currently has a TIF established for Downtown; increased property tax revenues from new development that occurs within the district can be reinvested to help fund the recommended capital projects.

Relative Timing Considerations

Although these projects are grouped in terms of relative priority for restricting left turns at the Four Corners, this is not to suggest that no other Improvements should not be pursued until the Primary Improvements are complete. The City should be prepared to seize opportunities as they arise to implement specific projects. For instance, availability of certain grants or alternative funding sources could present an opportunity to pursue other projects that meet specific funding criteria. Likewise, private development interests could present opportunities to complete elements of the street network that were not originally anticipated in the near term.

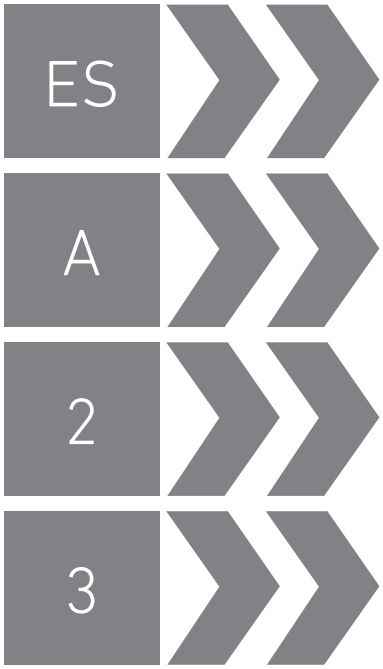
Monitoring and Evaluation

As the City implements specific projects, it will be critical to continually monitor their performance and evaluate how well the improvement is contributing to easing traffic flow through Downtown. This should begin with the completion of Murphy Parkway, which will provide a critical alternative route to the Four Corners and the pending installation of traffic signals at both ends of Grace Drive. Traffic volumes at and approaching the Four Corners should be monitored on a regular basis to compare volumes to pre-improvement conditions. This will help to inform decision-making about priorities and phasing of additional projects, and ultimately to determine at what point the Four Corners left turn restriction can be implemented.

Next Steps

1. Develop Funding Strategy
   - > Federal/State Funding
   - > TIF
   - > Bonding
   - > MPO/Regional Funding
   - > Grants
   - > Infrastructure Loans
2. Survey (Surface & Subsurface)
3. Schematic Design & Cost Estimate Refinement
4. Design Documentation
5. Construction Documentation
6. Project Bidding

Appendix

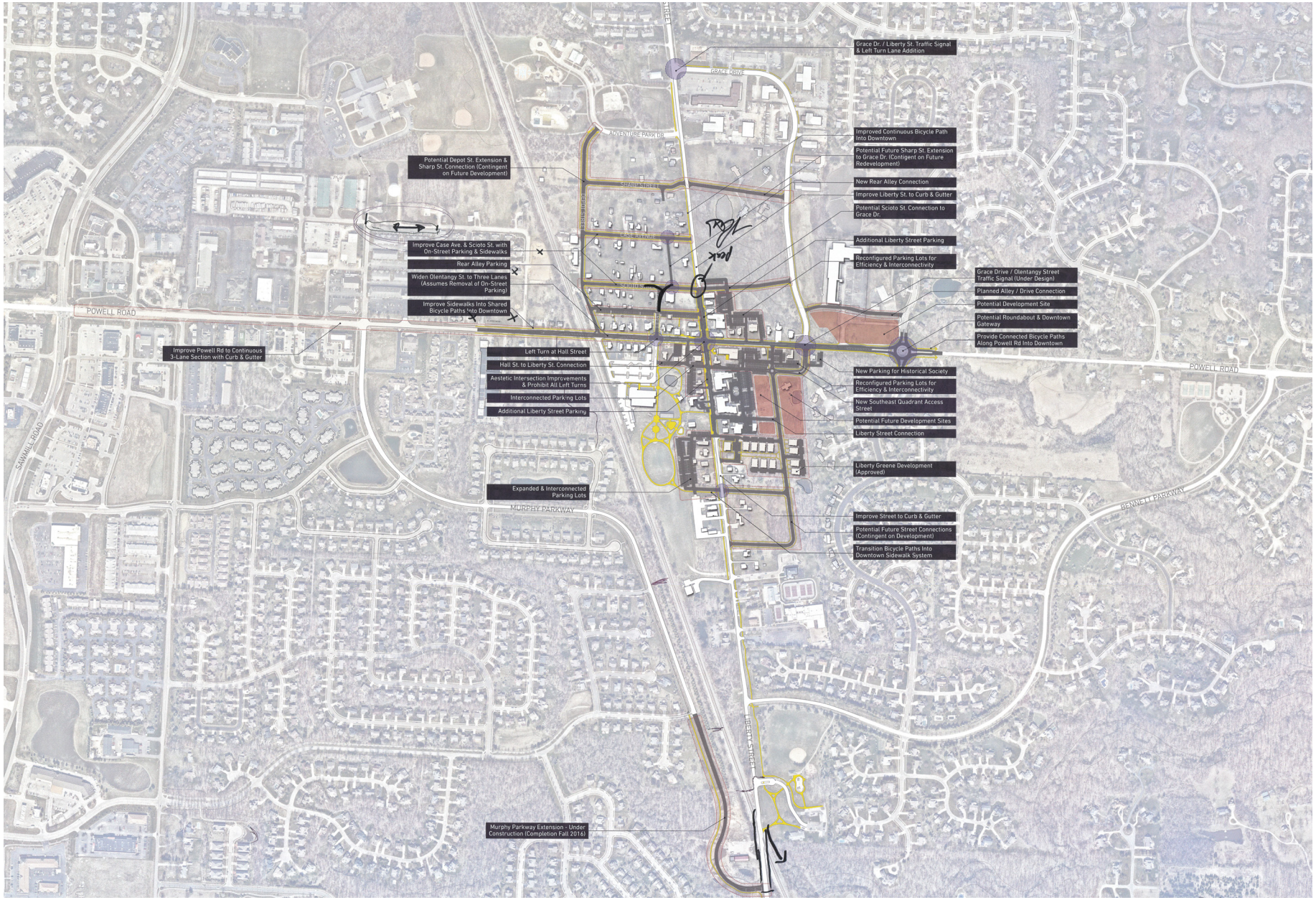


A APPENDIX

Powell Public Workshop Comments


Grace Dr. / Liberty St. Traffic Signal & Left Turn Lane Addition
Improved Continuous Bicycle Path Into Downtown
Potential Future Sharp St. Extension to Grace Dr. (Contigent on Future Redevelopment)
New Rear Alley Connection
Improve Liberty St. to Curb & Gutter
Potential Scioto St. Connection to Grace Dr.
Additional Liberty Street Parking
Reconfigured Parking Lots for Efficiency & Interconnectivity
Grace Drive / Olentangy Street Traffic Signal (Under Design)
Planned Alley / Drive Connection
Potential Development Site
Potential Roundabout & Downtown Gateway
Provide Connected Bicycle Paths Along Powell Rd Into Downtown
New Parking for Historical Society
Reconfigured Parking Lots for Efficiency & Interconnectivity
New Southeast Quadrant Access Street
Potential Future Development Sites
Liberty Street Connection
Liberty Greene Development (Approved)
Improve Street to Curb & Gutter
Potential Future Street Connections (Contingent on Development)
Transition Bicycle Paths Into Downtown Sidewalk System
Potential Depot St. Extension & Sharp St. Connection (Contingent on Future Development)
Improve Case Ave. & Scioto St. with On-Street Parking & Sidewalks
Rear Alley Parking
Widen Olentangy St. to Three Lanes (Assumes Removal of On-Street Parking)
Improve Sidewalks Into Shared Bicycle Paths Into Downtown
Improve Powell Rd to Continuous 3-Lane Section with Curb & Gutter
Left Turn at Hall Street
Hall St. to Liberty St. Connection
Aesteic Intersection Improvements & Prohibit All Left Turns
Interconnected Parking Lots
Additional Liberty Street Parking
Expanded & Interconnected Parking Lots
Murphy Parkway Extension - Under Construction (Completion Fall 2016)
GRACE DRIVE
AVENTURE PARK DR
POWELL ROAD
SAWMILL ROAD
MURPHY PARKWAY
BENNETT PARKWAY
LIBERTY STREET
Draft: June, 28 2016

Powell Public Workshop Comments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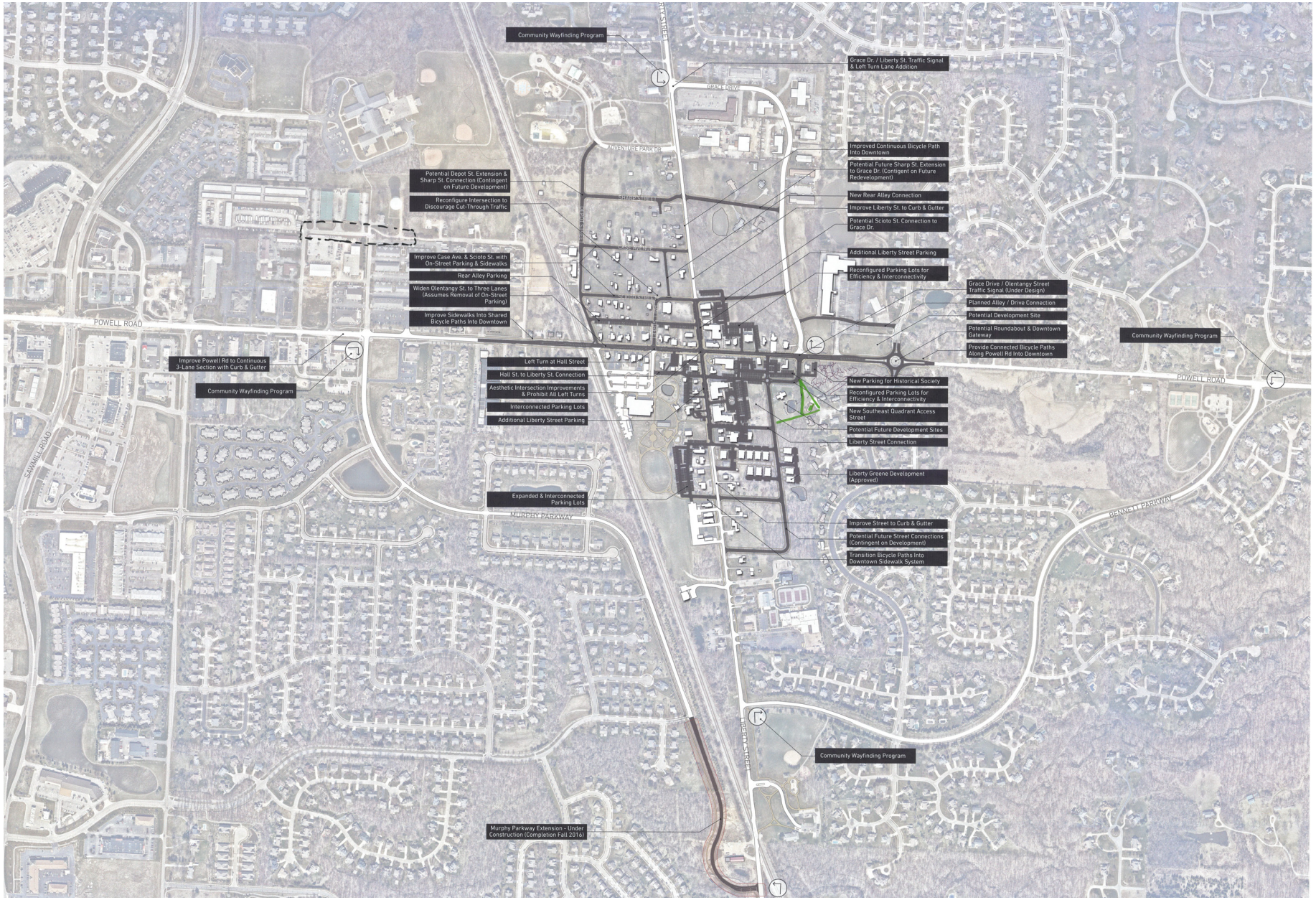
SAWMILL ROAD
MURPHY PARKWAY
GRACE DRIVE
ADVENTURE PARK DR
LIBERTY STREET
BENNETT PARKWAY

Powell Public Workshop Comments




Community Wayfinding Program
Potential Depot St. Extension & Sharp St. Connection (Contingent on Future Development)
Reconfigure Intersection to Discourage Cut-Through Traffic
Improve Case Ave. & Scioto St. with On-Street Parking & Sidewalks
Rear Alley Parking
Widen Olentangy St. to Three Lanes (Assumes Removal of On-Street Parking)
Improve Sidewalks Into Shared Bicycle Paths Into Downtown
Improve Powell Rd to Continuous 3-Lane Section with Curb & Gutter
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Transition Bicycle Paths Into Downtown Sidewalk System
Community Wayfinding Program
Community Wayfinding Program
Community Wayfinding Program
POWELL ROAD
POWELL ROAD
SAWMILL ROAD
MURPHY PARKWAY
BENNETT PARKWAY
LIBERTY STREET
LIBERTY STREET
ADVENTURE PARK DR.
ROUTE 23 NB

Powell Public Workshop Comments

Preliminary Opinion of Project Cost

Summary of Project Costs

Downtown Powell Street System

Project	Description	Right-of-Way Cost[1] (A)	Construction Cost (B)	Design Cost[2] (C)	Construction Administration Cost[3] (D)	Project Cost[4] (A+B+C+D)
	Primary Improvements					
1A	NW Quadrant Parking Area	$50,000	$756,100	$76,000	$63,000	$945,100
1B	Hall Street Reconstruction	$31,000	$677,300	$68,000	$56,000	$832,300
2A	Martin-Perry Drive	$170,000	$1,493,800	$149,000	$124,000	$1,936,800
2B	SE Quadrant Parking Area	$50,000	$1,394,100	$139,000	$116,000	$1,699,100
2C	Historical Society Parking Area	$17,000	$131,400	$13,000	$11,000	$172,400
3	Olentangy Street Widening	$241,000	$2,500,700	$250,000	$208,000	$3,199,700
4	Wayfinding Signage	$0	$43,200	$11,500	$3,600	$58,300
	Primary Improvements Subtotal =	**$559,000**	**$6,996,600**	**$706,500**	**$581,600**	**$8,843,700**
	Secondary Improvements					
5	SW Quadrant Parking Area	$50,000	$613,800	$61,000	$51,000	$775,800
6A	NE Quadrant Scioto Street Connection & Parking Area	$73,000	$342,200	$34,000	$29,000	$478,200
6B	NE Quadrant Parking Area	$162,000	$1,204,800	$120,000	$100,000	$1,586,800
7	Liberty Street Widening	$207,000	$1,169,300	$117,000	$97,000	$1,590,300
8	Scioto Street Extension	$145,000	$1,035,800	$104,000	$86,000	$1,370,800
	Secondary Improvements Subtotal =	**$637,000**	**$4,365,900**	**$436,000**	**$363,000**	**$5,801,900**
	Ancillary Improvements					
9	Olentangy Street Shared-Use Path	$0	$1,018,900	$102,000	$85,000	$1,205,900
10	Olentangy Street Mill/Overlay (Grace Dr. to Barth. Blvd.)	$0	$251,200	$25,000	$21,000	$297,200
11	Olentangy Street / Batholomew Boulevard Roundabout	$81,000	$1,105,100	$111,000	$92,000	$1,389,100
12	Liberty Street Mill/Overlay (Scioto Street to Grace Drive)	$0	$1,788,400	$179,000	$149,000	$2,116,400
13	Liberty Street Mill/Overlay (Liberty Green to Village Acad.)	$0	$973,100	$97,000	$81,000	$1,151,100
14	Depot Street Reconstruction (Olentangy St. to Case Ave.)	$20,000	$708,700	$71,000	$59,000	$858,700
15	Scioto Street Reconstruction (Depot St. to Hall St.)	$36,000	$592,700	$59,000	$49,000	$736,700
16	Case Avenue Reconstruction (Depot St. to Liberty St.)	$46,000	$793,100	$79,000	$66,000	$984,100
17	Hall Street Extension (Scioto St. to Case Ave.)	$24,000	$359,700	$36,000	$30,000	$449,700
18	Depot Street Extension (Case Ave. to Adventure Park Dr.)	$332,000	$1,004,000	$100,000	$84,000	$1,520,000
19	Grace Drive Shared-Use Path	$80,000	$245,500	$25,000	$20,000	$370,500
20	Martin-Perry Drive Reconstruction	$0	$237,600	$24,000	$20,000	$281,600
21	Martin-Perry Drive (Liberty Green to Liberty Street)	$350,000	$1,447,100	$145,000	$121,000	$2,063,100
22	Southwest Quadrant Parking Area #2	$0	$1,294,800	$129,000	$108,000	$1,531,800
23	West Case Avenue Extension	$48,000	$437,900	$44,000	$36,000	$565,900
	Ancillary Improvements Subtotal =	**$1,017,000**	**$12,257,800**	**$1,226,000**	**$1,021,000**	**$15,521,800**
	GRAND TOTAL =	**$2,213,000**	**$23,620,300**	**$2,368,500**	**$1,965,600**	**$30,167,400**

Notes

[1] Includes right-of-way costs, acquision fees, and private utility relocation fees.

[2] Design cost based on 12% of the pre-contingency construction cost.

[3] Construction administration cost based on 10% of the pre-contingency construction cost.

[4] Costs are in 2016 dollars and do not include inflation. Inflation of 3% to 5% inflation per year anticipted after 2016.

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Preliminary Opinion of Project Cost

PROJECT 1A - NW Quadrant Rear Alley

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$50,000
Right-of-Way Subtotal (A) =	$50,000
Construction	
Roadway Subtotal =	$98,300
Erosion Control Subtotal =	$23,800
Drainage Subtotal =	$205,400
Pavement Subtotal =	$177,400
Lighting Subtotal =	$54,800
Landscaping Subtotal =	$30,400
Traffic Control Subtotal =	$10,000
Miscellaneous Subtotal =	$30,000
2016 Probable Construction Cost Subtotal	$630,100
20% Contingency =	$126,000
2016 Probable Construction Cost with Contingency =	$756,100
Design Engineering (12%) =	$76,000
Construction Engineering (10%) =	$63,000
2016 Estimated Base Construction Subtotal (B) =	**$895,100**
PROBABLE BASE PROJECT COST (A+B) =	**$945,100**

Notes

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Cost Estimates

Preliminary Opinion of Project Cost

PROJECT 1B - Hall Street Reconstruction

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$14,000
Purchase of Right-of-Way =	$17,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$31,000
Construction	
Roadway Subtotal =	$154,600
Erosion Control Subtotal =	$15,400
Drainage Subtotal =	$131,400
Pavement Subtotal =	$111,800
Water Works Subtotal =	$8,800
Lighting Subtotal =	$68,200
Landscape Subtotal =	$29,800
Traffic Control Subtotal =	$9,300
Miscellaneous Subtotal =	$35,000
2016 Probable Construction Cost Subtotal	$564,300
20% Contingency =	$113,000
2016 Probable Construction Cost with Contingency =	$677,300
Design Engineering (12%) =	$68,000
Construction Engineering (10%) =	$56,000
2016 Estimated Base Construction Subtotal (B) =	**$801,300**
PROBABLE BASE PROJECT COST (A+B) =	**$832,300**

Notes

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Preliminary Opinion of Project Cost

PROJECT 2A - Martin-Perry Drive

October 20, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$50,000
Purchase of Right-of-Way =	$120,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$170,000
Construction	
Roadway Subtotal =	$329,300
Erosion Control Subtotal =	$19,500
Drainage Subtotal =	$221,600
Pavement Subtotal =	$187,400
Water Works Subtotal =	$140,800
Sanitary Sewer Subtotal =	$104,400
Lighting Subtotal =	$94,600
Landscape Subtotal =	$62,300
Traffic Control Subtotal =	$12,900
Traffic Signal Modification Subtotal =	$10,000
Miscellaneous Subtotal =	$62,000
2016 Probable Construction Cost Subtotal	$1,244,800
20% Contingency =	$249,000
2016 Probable Construction Cost with Contingency =	$1,493,800
Design Engineering (12%) =	$149,000
Construction Engineering (10%) =	$124,000
2016 Estimated Base Construction Subtotal (B) =	**$1,766,800**
PROBABLE BASE PROJECT COST (A+B) =	**$1,936,800**

Notes

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Preliminary Opinion of Project Cost

PROJECT 2B - SE Quadrant Parking Area

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$50,000
Right-of-Way Subtotal (A) =	$50,000
Construction	
Roadway Subtotal =	$272,500
Erosion Control Subtotal =	$23,300
Drainage Subtotal =	$296,100
Pavement Subtotal =	$295,600
Lighting Subtotal =	$120,000
Landscaping Subtotal =	$60,800
Traffic Control Subtotal =	$16,800
Miscellaneous Subtotal =	$77,000
2016 Probable Construction Cost Subtotal	$1,162,100
20% Contingency =	$232,000
2016 Probable Construction Cost with Contingency =	$1,394,100
Design Engineering (12%) =	$139,000
Construction Engineering (10%) =	$116,000
2016 Estimated Base Construction Subtotal (B) =	**$1,649,100**
PROBABLE BASE PROJECT COST (A+B) =	**$1,699,100**

Notes

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Preliminary Opinion of Project Cost

PROJECT 2C - Historical Society Parking Area

October 20, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$5,000
Purchase of Right-of-Way =	$12,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$17,000
Construction	
Roadway Subtotal =	$58,500
Erosion Control Subtotal =	$4,200
Drainage Subtotal =	$10,800
Pavement Subtotal =	$12,400
Landscaping Subtotal =	$5,900
Traffic Control Subtotal =	$600
Miscellaneous Subtotal =	$17,000
2016 Probable Construction Cost Subtotal	$109,400
20% Contingency =	$22,000
2016 Probable Construction Cost with Contingency =	$131,400
Design Engineering (12%) =	$13,000
Construction Engineering (10%) =	$11,000
2016 Estimated Base Construction Subtotal (B) =	**$155,400**
PROBABLE BASE PROJECT COST (A+B) =	**$172,400**

Notes

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Cost Estimates

Preliminary Opinion of Project Cost

PROJECT 3 - Olentangy Street Widening

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$66,000
Purchase of Right-of-Way =	$100,000
Relocation of Private Utilities =	$75,000
Right-of-Way Subtotal (A) =	$241,000
Construction	
Roadway Subtotal =	$ 803,900
Erosion Control Subtotal =	$ 28,300
Drainage Subtotal =	$ 306,100
Pavement Subtotal =	$ 366,000
Water Works Subtotal =	$ 19,300
Sanitary Sewer Subtotal =	$ 1,800
Lighting Subtotal =	$ 159,500
Landscape Subtotal =	$ 255,000
Traffic Control Subtotal =	$ 21,800
Miscellaneous Subtotal =	$ 122,000
2016 Probable Construction Cost Subtotal	$2,083,700
20% Contingency =	$417,000
2016 Probable Construction Cost with Contingency =	$2,500,700
Design Engineering (12%) =	$250,000
Construction Engineering (10%) =	$208,000
2016 Estimated Base Construction Subtotal (B) =	**$2,958,700**
PROBABLE BASE PROJECT COST (A+B) =	**$3,199,700**

Notes

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Preliminary Opinion of Project Cost

PROJECT 4 - Wayfinding Signage

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$0
Construction	
Traffic Control Subtotal =	$36,000
2016 Probable Construction Cost Subtotal	$36,000
20% Contingency =	$7,200
2016 Probable Construction Cost with Contingency =	$43,200
Wayfinding Study (20%) =	$7,200
Design Engineering (12%) =	$4,300
Construction Engineering (10%) =	$3,600
2016 Estimated Base Construction Subtotal (B) =	**$58,300**
PROBABLE BASE PROJECT COST (A+B) =	**$58,300**

Notes

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Preliminary Opinion of Project Cost

PROJECT 5 - SW Quadrant Parking Area

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$50,000
Right-of-Way Subtotal (A) =	$50,000
Construction	
Roadway Subtotal =	$133,300
Erosion Control Subtotal =	$21,800
Drainage Subtotal =	$76,100
Pavement Subtotal =	$160,200
Lighting Subtotal =	$60,000
Landscaping Subtotal =	$30,400
Traffic Control Subtotal =	$10,000
Miscellaneous Subtotal =	$20,000
2016 Probable Construction Cost Subtotal	$511,800
20% Contingency =	$102,000
2016 Probable Construction Cost with Contingency =	$613,800
Design Engineering (12%) =	$61,000
Construction Engineering (10%) =	$51,000
2016 Estimated Base Construction Subtotal (B) =	**$725,800**
PROBABLE BASE PROJECT COST (A+B) =	**$775,800**

Notes

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Preliminary Opinion of Project Cost

PROJECT 6A - NE Quadrant Scioto Street Connection w/Parking Area

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$10,000
Purchase of Right-of-Way =	$33,000
Relocation of Private Utilities =	$30,000
Right-of-Way Subtotal (A) =	$73,000
Construction	
Roadway Subtotal =	$66,500
Erosion Control Subtotal =	$10,800
Drainage Subtotal =	$59,700
Pavement Subtotal =	$76,200
Lighting Subtotal =	$30,000
Landscaping Subtotal =	$20,300
Traffic Control Subtotal =	$1,700
Miscellaneous Subtotal =	$20,000
2016 Probable Construction Cost Subtotal	$285,200
20% Contingency =	$57,000
2016 Probable Construction Cost with Contingency =	$342,200
Design Engineering (12%) =	$34,000
Construction Engineering (10%) =	$29,000
2016 Estimated Base Construction Subtotal (B) =	**$405,200**
PROBABLE BASE PROJECT COST (A+B) =	**$478,200**

Notes

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Cost Estimates

Preliminary Opinion of Project Cost

PROJECT 6B - NE Quadrant Parking Area

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$10,000
Purchase of Right-of-Way =	$102,000
Relocation of Private Utilities =	$50,000
Right-of-Way Subtotal (A) =	$162,000
Construction	
Roadway Subtotal =	$ 234,900
Erosion Control Subtotal =	$ 20,600
Drainage Subtotal =	$ 244,400
Pavement Subtotal =	$ 282,600
Lighting Subtotal =	$ 116,200
Landscaping Subtotal =	$ 60,800
Traffic Control Subtotal =	$ 14,300
Miscellaneous Subtotal =	$ 30,000
2016 Probable Construction Cost Subtotal	$1,003,800
20% Contingency =	$201,000
2016 Probable Construction Cost with Contingency =	$1,204,800
Design Engineering (12%) =	$120,000
Construction Engineering (10%) =	$100,000
2016 Estimated Base Construction Subtotal (B) =	**$1,424,800**
PROBABLE BASE PROJECT COST (A+B) =	**$1,586,800**

Notes

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Preliminary Opinion of Project Cost

PROJECT 7 - Liberty Street Parking

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$55,000
Purchase of Right-of-Way =	$102,000
Relocation of Private Utilities =	$50,000
Right-of-Way Subtotal (A) =	$207,000
Construction	
Roadway Subtotal =	$ 431,500
Erosion Control Subtotal =	$ 18,400
Drainage Subtotal =	$ 172,300
Pavement Subtotal =	$ 141,500
Water Works Subtotal =	$ 82,200
Sanitary Sewer Subtotal =	$ 2,700
Lighting Subtotal =	$ 38,500
Landscape Subtotal =	$ 32,400
Traffic Control Subtotal =	$ 15,800
Miscellaneous Subtotal =	$ 39,000
2016 Probable Construction Cost Subtotal	$974,300
20% Contingency =	$195,000
2016 Probable Construction Cost with Contingency =	$1,169,300
Design Engineering (12%) =	$117,000
Construction Engineering (10%) =	$97,000
2016 Estimated Base Construction Subtotal (B) =	**$1,383,300**
PROBABLE BASE PROJECT COST (A+B) =	**$1,590,300**

Notes

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Preliminary Opinion of Project Cost

PROJECT 8 - Scioto Street Extension

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$20,000
Purchase of Right-of-Way =	$125,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$145,000
Construction	
Roadway Subtotal =	$158,800
Erosion Control Subtotal =	$13,800
Drainage Subtotal =	$102,000
Pavement Subtotal =	$75,700
Water Works Subtotal =	$81,400
Sanitary Sewer Subtotal =	$53,700
Lighting Subtotal =	$47,900
Landscape Subtotal =	$20,900
Traffic Control Subtotal =	$6,600
Structures =	$240,000
Miscellaneous Subtotal =	$62,000
2016 Probable Construction Cost Subtotal	$862,800
20% Contingency =	$173,000
2016 Probable Construction Cost with Contingency =	$1,035,800
Design Engineering (12%) =	$104,000
Construction Engineering (10%) =	$86,000
2016 Estimated Base Construction Subtotal (B) =	**$1,225,800**
PROBABLE BASE PROJECT COST (A+B) =	**$1,370,800**

Notes

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Preliminary Opinion of Project Cost

Olentangy Street Shared-Use Path (West of Railroad)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$0
Construction	
Roadway Subtotal =	$378,800
Pavement Subtotal =	$36,600
Landscape Subtotal =	$54,000
Traffic Control Subtotal =	$7,500
Railroad Crossing =	$357,000
Miscellaneous Subtotal =	$15,000
2016 Probable Construction Cost Subtotal	$848,900
20% Contingency =	$170,000
2016 Probable Construction Cost with Contingency =	$1,018,900
Design Engineering (12%) =	$102,000
Construction Engineering (10%) =	$85,000
2016 Estimated Base Construction Subtotal (B) =	**$1,205,900**
PROBABLE BASE PROJECT COST (A+B) =	**$1,205,900**

Notes

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Cost Estimates

Preliminary Opinion of Project Cost

Olentangy Street Mill/Overlay (Grace Drive to Bartholomew Blvd.)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$0
Construction	
Roadway Subtotal =	$ 173,200
Pavement Subtotal =	$ 22,700
Traffic Control Subtotal =	$ 6,300
Miscellaneous Subtotal =	$ 7,000
2016 Probable Construction Cost Subtotal	$209,200
20% Contingency =	$42,000
2016 Probable Construction Cost with Contingency =	$251,200
Design Engineering (12%) =	$25,000
Construction Engineering (10%) =	$21,000
2016 Estimated Base Construction Subtotal (B) =	**$297,200**
PROBABLE BASE PROJECT COST (A+B) =	**$297,200**

Notes

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Preliminary Opinion of Project Cost

Olentangy Street / Bartholomew Boulevard Roundabout

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$20,000
Purchase of Right-of-Way =	$36,000
Relocation of Private Utilities =	$25,000
Right-of-Way Subtotal (A) =	$81,000
Construction	
Roadway Subtotal =	$281,200
Erosion Control Subtotal =	$15,600
Drainage Subtotal =	$120,400
Pavement Subtotal =	$217,200
Water Works Subtotal =	$1,700
Lighting Subtotal =	$40,000
Landscape Subtotal =	$100,000
Traffic Control Subtotal =	$40,000
Miscellaneous Subtotal =	$105,000
2016 Probable Construction Cost Subtotal	$921,100
20% Contingency =	$184,000
2016 Probable Construction Cost with Contingency =	$1,105,100
Design Engineering (12%) =	$111,000
Construction Engineering (10%) =	$92,000
2016 Estimated Base Construction Subtotal (B) =	**$1,308,100**
PROBABLE BASE PROJECT COST (A+B) =	**$1,389,100**

Notes

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Preliminary Opinion of Project Cost

Liberty Street Mill/Overlay (Scioto Street to Grace Drive)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$0
Construction	
Roadway Subtotal =	$433,300
Erosion Control Subtotal =	$34,300
Drainage Subtotal =	$258,500
Pavement Subtotal =	$194,300
Water Works Subtotal =	$281,900
Sanitary Sewer Subtotal =	$2,700
Lighting Subtotal =	$176,000
Landscape Subtotal =	$38,400
Traffic Control Subtotal =	$24,000
Miscellaneous Subtotal =	$47,000
2016 Probable Construction Cost Subtotal	$1,490,400
20% Contingency =	$298,000
2016 Probable Construction Cost with Contingency =	$1,788,400
Design Engineering (12%) =	$179,000
Construction Engineering (10%) =	$149,000
2016 Estimated Base Construction Subtotal (B) =	**$2,116,400**
PROBABLE BASE PROJECT COST (A+B) =	**$2,116,400**

Notes

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Preliminary Opinion of Project Cost

Liberty Street Mill/Overlay (Liberty Green to Village Academy)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$0
Construction	
Roadway Subtotal =	$281,600
Erosion Control Subtotal =	$23,400
Drainage Subtotal =	$166,700
Pavement Subtotal =	$113,900
Water Works Subtotal =	$2,800
Sanitary Sewer Subtotal =	$2,700
Lighting Subtotal =	$110,000
Landscape Subtotal =	$48,000
Traffic Control Subtotal =	$15,000
Miscellaneous Subtotal =	$47,000
2016 Probable Construction Cost Subtotal	$811,100
20% Contingency =	$162,000
2016 Probable Construction Cost with Contingency =	$973,100
Design Engineering (12%) =	$97,000
Construction Engineering (10%) =	$81,000
2016 Estimated Base Construction Subtotal (B) =	**$1,151,100**
PROBABLE BASE PROJECT COST (A+B) =	**$1,151,100**

Notes

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Cost Estimates

Preliminary Opinion of Project Cost

Depot Street Reconstruction (Olentangy Street to Case Avenue)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$12,000
Purchase of Right-of-Way =	$8,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$20,000
Construction	
Roadway Subtotal =	$ 113,300
Erosion Control Subtotal =	$ 17,100
Drainage Subtotal =	$ 154,800
Pavement Subtotal =	$ 137,800
Water Works Subtotal =	$ 8,800
Lighting Subtotal =	$ 78,700
Landscape Subtotal =	$ 34,400
Traffic Control Subtotal =	$ 10,800
Miscellaneous Subtotal =	$ 35,000
2016 Probable Construction Cost Subtotal	$590,700
20% Contingency =	$118,000
2016 Probable Construction Cost with Contingency =	$708,700
Design Engineering (12%) =	$71,000
Construction Engineering (10%) =	$59,000
2016 Estimated Base Construction Subtotal (B) =	**$838,700**
PROBABLE BASE PROJECT COST (A+B) =	**$858,700**

Notes

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Preliminary Opinion of Project Cost

Scioto Street Reconstruction (Depot Street to Hall Street)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$16,000
Purchase of Right-of-Way =	$20,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$36,000
Construction	
Roadway Subtotal =	$ 116,600
Erosion Control Subtotal =	$ 13,900
Drainage Subtotal =	$ 119,900
Pavement Subtotal =	$ 104,700
Water Works Subtotal =	$ 6,600
Sanitary Sewer Subtotal =	$ 1,800
Lighting Subtotal =	$ 60,500
Landscape Subtotal =	$ 26,400
Traffic Control Subtotal =	$ 8,300
Miscellaneous Subtotal =	$ 35,000
2016 Probable Construction Cost Subtotal	$493,700
20% Contingency =	$99,000
2016 Probable Construction Cost with Contingency =	$592,700
Design Engineering (12%) =	$59,000
Construction Engineering (10%) =	$49,000
2016 Estimated Base Construction Subtotal (B) =	**$700,700**
PROBABLE BASE PROJECT COST (A+B) =	**$736,700**

Notes

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Preliminary Opinion of Project Cost

Case Avenue Reconstruction (Depot Street to Liberty Street)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$20,000
Purchase of Right-of-Way =	$26,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$46,000
Construction	
Roadway Subtotal =	$ 156,800
Erosion Control Subtotal =	$ 18,200
Drainage Subtotal =	$ 163,900
Pavement Subtotal =	$ 145,500
Water Works Subtotal =	$ 6,600
Sanitary Sewer Subtotal =	$ 1,800
Lighting Subtotal =	$ 84,700
Landscape Subtotal =	$ 37,000
Traffic Control Subtotal =	$ 11,600
Miscellaneous Subtotal =	$ 35,000
2016 Probable Construction Cost Subtotal	$661,100
20% Contingency =	$132,000
2016 Probable Construction Cost with Contingency =	$793,100
Design Engineering (12%) =	$79,000
Construction Engineering (10%) =	$66,000
2016 Estimated Base Construction Subtotal (B) =	**$938,100**
PROBABLE BASE PROJECT COST (A+B) =	**$984,100**

Notes

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Preliminary Opinion of Project Cost

Hall Street Extension (Scioto Street to Case Avenue)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$4,000
Purchase of Right-of-Way =	$20,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$24,000
Construction	
Roadway Subtotal =	$ 62,200
Erosion Control Subtotal =	$ 9,800
Drainage Subtotal =	$ 77,000
Pavement Subtotal =	$ 56,800
Lighting Subtotal =	$ 37,400
Landscape Subtotal =	$ 16,400
Traffic Control Subtotal =	$ 5,100
Miscellaneous Subtotal =	$ 35,000
2016 Probable Construction Cost Subtotal	$299,700
20% Contingency =	$60,000
2016 Probable Construction Cost with Contingency =	$359,700
Design Engineering (12%) =	$36,000
Construction Engineering (10%) =	$30,000
2016 Estimated Base Construction Subtotal (B) =	**$425,700**
PROBABLE BASE PROJECT COST (A+B) =	**$449,700**

Notes

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Cost Estimates

Preliminary Opinion of Project Cost

Depot Street Extension (Case Avenue to Adventure Park Drive)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$20,000
Purchase of Right-of-Way =	$312,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$332,000
Construction	
Roadway Subtotal =	$ 137,000
Erosion Control Subtotal =	$ 18,500
Drainage Subtotal =	$ 168,000
Pavement Subtotal =	$ 128,900
Water Works Subtotal =	$ 127,000
Sanitary Sewer Subtotal =	$ 87,600
Lighting Subtotal =	$ 85,800
Landscape Subtotal =	$ 37,500
Traffic Control Subtotal =	$ 11,700
Miscellaneous Subtotal =	$ 35,000
2016 Probable Construction Cost Subtotal	$837,000
20% Contingency =	$167,000
2016 Probable Construction Cost with Contingency =	$1,004,000
Design Engineering (12%) =	$100,000
Construction Engineering (10%) =	$84,000
2016 Estimated Base Construction Subtotal (B) =	**$1,188,000**
PROBABLE BASE PROJECT COST (A+B) =	**$1,520,000**

Notes

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Preliminary Opinion of Project Cost

Grace Drive Shared-Use Path

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$24,000
Purchase of Right-of-Way =	$56,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$80,000
Construction	
Roadway Subtotal =	$71,700
Pavement Subtotal =	$39,500
Landscape Subtotal =	$64,800
Traffic Control Subtotal =	$13,500
Miscellaneous Subtotal =	$15,000
2016 Probable Construction Cost Subtotal	$204,500
20% Contingency =	$41,000
2016 Probable Construction Cost with Contingency =	$245,500
Design Engineering (12%) =	$25,000
Construction Engineering (10%) =	$20,000
2016 Estimated Base Construction Subtotal (B) =	**$290,500**
PROBABLE BASE PROJECT COST (A+B) =	**$370,500**

Notes

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Preliminary Opinion of Project Cost

Martin-Perry Drive Reconstruction

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$0
Construction	
Roadway Subtotal =	$49,300
Erosion Control Subtotal =	$8,400
Drainage Subtotal =	$43,200
Pavement Subtotal =	$58,700
Water Works Subtotal =	$6,100
Sanitary Subtotal =	$2,700
Traffic Control Subtotal =	$4,200
Miscellaneous Subtotal =	$25,000
2016 Probable Construction Cost Subtotal	$197,600
20% Contingency =	$40,000
2016 Probable Construction Cost with Contingency =	$237,600
Design Engineering (12%) =	$24,000
Construction Engineering (10%) =	$20,000
2016 Estimated Base Construction Subtotal (B) =	**$281,600**
PROBABLE BASE PROJECT COST (A+B) =	**$281,600**

Notes

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Preliminary Opinion of Project Cost

Martin-Perry Drive (Liberty Green to Liberty Street)

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$30,000
Purchase of Right-of-Way =	$320,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$350,000
Construction	
Roadway Subtotal =	$240,800
Erosion Control Subtotal =	$21,600
Drainage Subtotal =	$302,800
Pavement Subtotal =	$157,500
Water Works Subtotal =	$150,100
Sanitary Sewer Subtotal =	$110,300
Lighting Subtotal =	$102,300
Landscape Subtotal =	$44,700
Traffic Control Subtotal =	$14,000
Miscellaneous Subtotal =	$62,000
2016 Probable Construction Cost Subtotal	$1,206,100
20% Contingency =	$241,000
2016 Probable Construction Cost with Contingency =	$1,447,100
Design Engineering (12%) =	$145,000
Construction Engineering (10%) =	$121,000
2016 Estimated Base Construction Subtotal (B) =	**$1,713,100**
PROBABLE BASE PROJECT COST (A+B) =	**$2,063,100**

Notes

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Cost Estimates

Preliminary Opinion of Project Cost

SW Quadrant Parking Area #2

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$0
Purchase of Right-of-Way =	$0
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$0
Construction	
Roadway Subtotal =	$273,100
Erosion Control Subtotal =	$30,100
Drainage Subtotal =	$255,900
Pavement Subtotal =	$301,400
Lighting Subtotal =	$111,500
Landscaping Subtotal =	$60,800
Traffic Control Subtotal =	$16,000
Miscellaneous Subtotal =	$30,000
2016 Probable Construction Cost Subtotal	$1,078,800
20% Contingency =	$216,000
2016 Probable Construction Cost with Contingency =	$1,294,800
Design Engineering (12%) =	$129,000
Construction Engineering (10%) =	$108,000
2016 Estimated Base Construction Subtotal (B) =	**$1,531,800**
PROBABLE BASE PROJECT COST (A+B) =	**$1,531,800**

Notes

Pricing reflects probable construction costs obtainable in the project locality on the date of this statement of probable costs. Unit rates have been obtained from historical records and/or discussion with contractors. The unit rates reflect current bid costs in the area. This estimate is a determination of fair market value for the construction of this project. It is not a prediction of low bid. Pricing assumes competitive bidding for every portion of the construction work for all subcontractors and general contractors. Experience indicates that a fewer number of bidders may result in higher bids, conversely an increased number of bidders may result in more competitive bids.

Since EMH&T has no control over the cost of labor, material, equipment, or over the contractor's method of determining prices, or over the competitive bidding or market conditions at the time of bid, the statement of probable construction cost is based on industry practice, professional experience and qualifications, and represents EMH&T's best judgment as a consultant familiar with the construction industry. EMH&T does not guarantee that the proposals, bids, or the construction cost

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Preliminary Opinion of Project Cost

West Case Avenue Extension

September 9, 2016

DESCRIPTION	ESTIMATED COST
Right-of-Way	
Right-of-Way Acquisition Services =	$6,000
Purchase of Right-of-Way =	$42,000
Relocation of Private Utilities =	$0
Right-of-Way Subtotal (A) =	$48,000
Construction	
Roadway Subtotal =	$120,200
Erosion Control Subtotal =	$12,800
Drainage Subtotal =	$80,600
Pavement Subtotal =	$94,800
Water Works Subtotal =	$4,800
Landscape Subtotal =	$26,400
Traffic Control Subtotal =	$8,300
Miscellaneous Subtotal =	$17,000
2016 Probable Construction Cost Subtotal	$364,900
20% Contingency =	$73,000
2016 Probable Construction Cost with Contingency =	$437,900
Design Engineering (12%) =	$44,000
Construction Engineering (10%) =	$36,000
2016 Estimated Base Construction Subtotal (B) =	**$517,900**
PROBABLE BASE PROJECT COST (A+B) =	**$565,900**

Notes

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