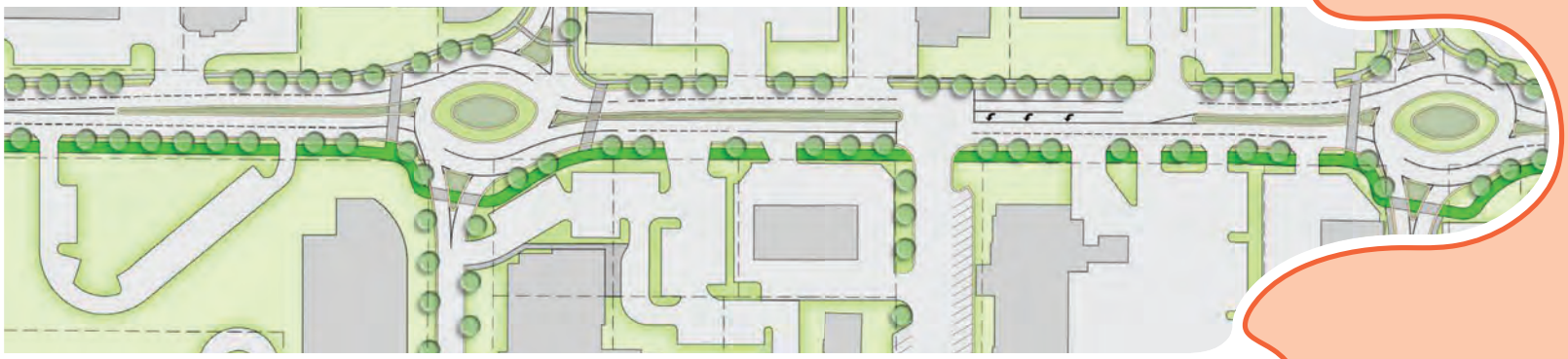

NORTH OAK CORRIDOR: COMPLETE STREETS PLAN

KANSAS CITY + GLADSTONE, MISSOURI

A Planning Sustainable Places Project

February 2020

FORWARD

This project establishes a recommended vision for integrating new pedestrian and bicycle facilities into the busy North Oak Corridor. The resulting recommendations are a direct result of the extensive community and stakeholder input received during the planning process.

The planning team extends our appreciation to all that participated in the planning process. We listened, and trust this plan accurately reflects the community's desires for improving the corridor.

ACKNOWLEDGMENTS

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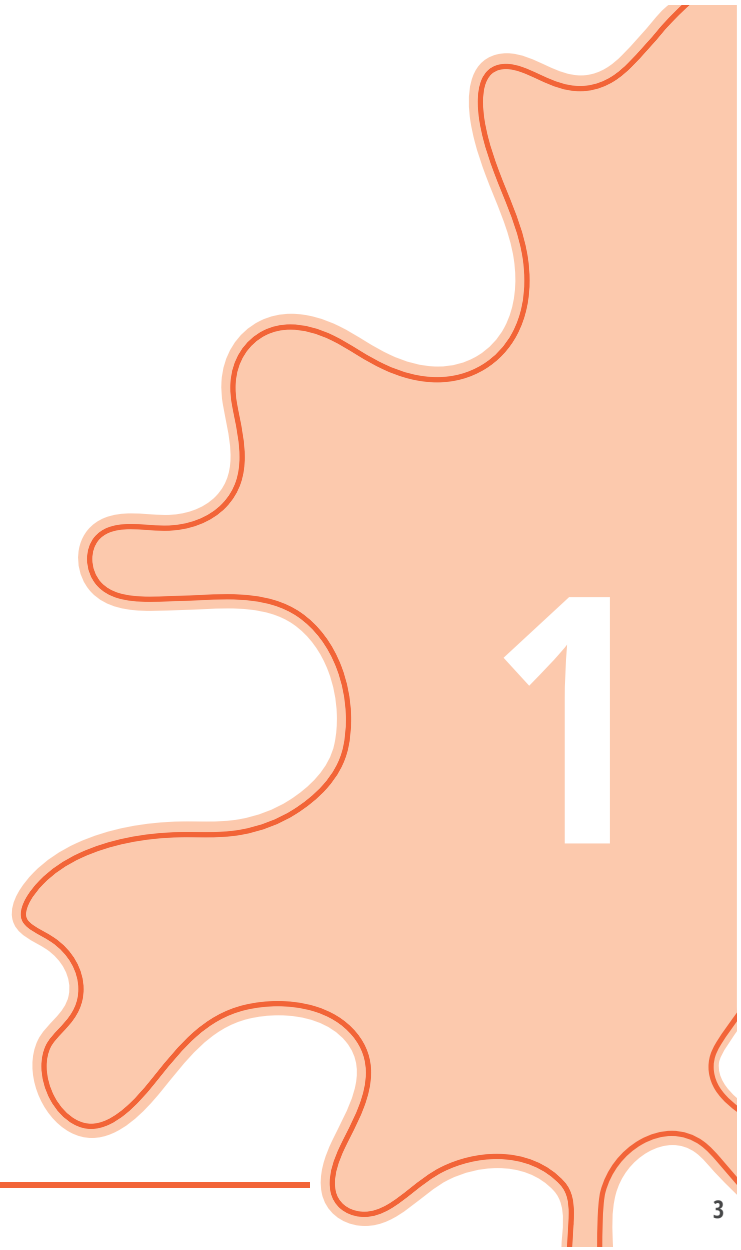


INTRODUCTION

CORRIDOR OVERVIEW

HISTORY + SIGNIFICANCE

The North Oak Corridor is a major north/south arterial road in Clay County that begins in North Kansas City and extends North to NE Cookingham Road which represents the current extents of major suburban development in that area of the Kansas City region. This corridor is unique in that it extends through several municipalities within a relatively short distance. These municipalities include Kansas City and Gladstone and the villages of Oaks, Oakwood, Oakwood Park, Oakview.

The North Oak Corridor is a workhorse for traffic, accommodating approximately 20,000 cars a day, and is able to support numerous commercial and retail centers. Iconic local restaurants such as Cascone's and In-a-Tub have called this corridor home for decades. The North Oak Corridor has been instrumental in the growth of the Northland communities in Kansas City and with more population growth predicted in the near future for the Northland, this corridor will continue to be a critical north/south route.

With the growth of Northland communities, the North Oak Corridor has had to grow as well to better accommodate increased traffic volumes. For many decades, the North Oak Corridor experienced multiple uncoordinated expansion projects. That has led to the fractured corridor we have today with drastic variations in Right-of-Way (ROW - an easement reserved for roadway corridor maintenance or expansion) width, excessive amounts of curb cuts for adjacent commercial properties, incomplete sections of sidewalks, utility poles obstructing walking paths, high levels of vehicle crashes, and an overall arterial road that moves large quantities of traffic on a daily basis at the expense of safe conditions for drivers, pedestrians and cyclists.

RideKC operates a regularly serviced bus route along the North Oak Corridor and offers riders an alternative transportation option into Downtown Kansas City. This route will soon be optimized with an increased level of service, which will continue to positively transform this corridor. These improvements will be discussed later in this plan.

Development patterns are changing with more and more people choosing to live in mixed-use urban centers. With continued economic changes, people will be likely encouraged to work closer to where they live. In order for that to happen, our aging and outdated transportation networks need to adapt. Denser living patterns require a revised hierarchy of transportation, one that accommodates not only personal vehicles, but also cyclists, pedestrians, public transit and ride sharing. To ensure that the North Oak Corridor is able to foster new types of mixed-use development, there must be a cohesive vision that outlines improvements to create a corridor for all modes of transit. This plan lays out that vision.

PROJECT SIGNIFICANCE

The North Oak Corridor Complete Streets Plan is a collaborative effort from Kansas City, Gladstone and The Oak Villages to assess the feasibility and implementation of high-quality pedestrian-oriented infrastructure and successfully integrated transit while maintaining the vehicular needs of the corridor. By building upon previous planning efforts and continuing a robust public engagement process, this study will provide a cohesive vision that accommodates all road users for the North Oak Corridor.

This plan is funded through the Planning Sustainable Places Program (PSP) which according to Mid-America Regional Council (MARC), provides local governments with financial support to advance detailed local planning and project development activities. Community funding helped form this plan and with that comes the responsibility to create a vision that serves to improve the quality of life for all those in the community.

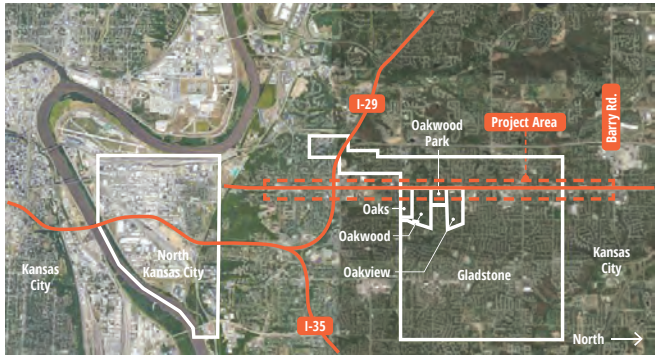


FIGURE 1.1 - *PROJECT CONTEXT MAP*

FIGURE 1.2 - *THE FOUNTAIN AT ANITA B. GORMAN PARK IS AN ICONIC ELEMENT ALONG THE NORTH OAK CORRIDOR*

FIGURE 1.3 - *AERIAL VIEW OF NORTH OAK (LOOKING SOUTH) OVER DOWNTOWN GLADSTONE*

FIGURE 1.4 - *CASCONE'S LOCATED AT THE SOUTHERN END OF THE STUDY AREA, IS A WELL KNOWN LOCAL RESTAURANT*

FIGURE 1.5 - *THE NORTH OAK CORRIDOR HAS LONG BEEN AN ANCHOR FOR COMMERCIAL REAL ESTATE, INCLUDING IN-A-TUB*

STUDY LIMITS

This study analyzed a ~5.7 mile stretch of the North Oak Corridor stretching from Indiananola Drive in the south to Barry Road in the north.

The typology of land use varies along the corridor and includes pockets of single-family residential, higher-density residential, suburban commercial often characterized by big box retail and large surface parking lots, and light industrial.

Major retailers along the corridor include Lowe's, Price Chopper, Sam's Club, Hy-Vee, Gordman's, Aldi, and many other nation-wide chain stores. In addition, institutions such as the Midwest Baptist Theological Seminary and the Northland Innovation Center are located on the North Oak Corridor and represent important educational anchors on the corridor.

As one of the major north/south corridors in the Northland, the North Oak Corridor provides access to several east/west corridors including Interstate 29, Vivion Road, Englewood Road, Shady Lane Drive, 72nd Street and Barry Road.

FIGURE 1.7 - *STREET VIEW PHOTOS (1-3) OF VARIOUS CONDITIONS ALONG THE NORTH OAK CORRIDOR*

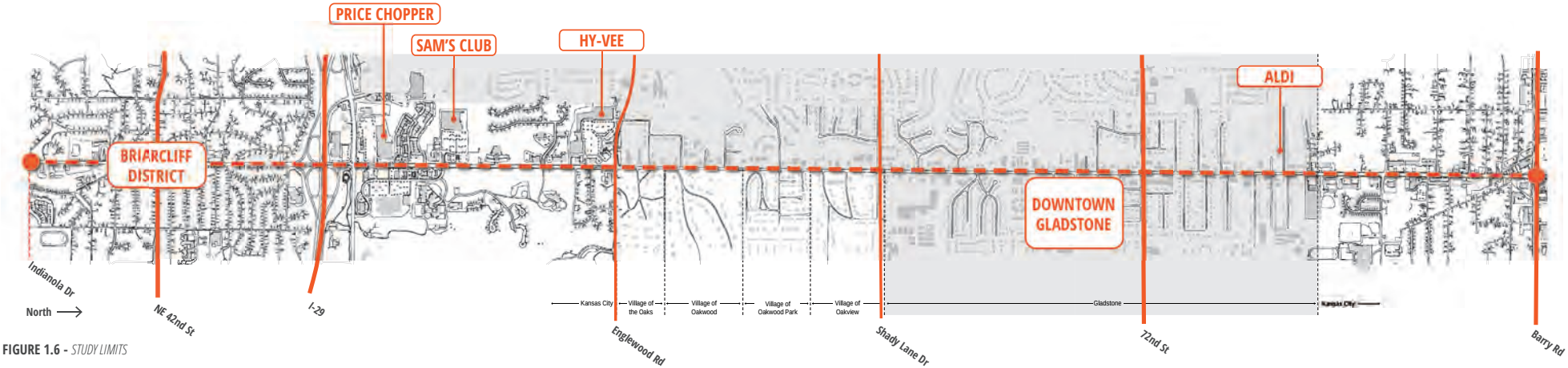


FIGURE 1.6 - *STUDY LIMITS*

ALIGNING PLANNING EFFORTS

Over the last 15+ years, numerous planning initiatives have been undertaken along the North Oak Corridor, and the community has participated several times to consider the future of the corridor regarding physical configuration, streetscape aesthetics, land uses and anticipated transit services along with other things. There is a fair amount of meeting fatigue within the community, as most of these initiatives to date have not led to construction implementation.

It was important for the planning team to understand these prior initiatives, and to incorporate these findings and recommendations into a holistic vision for transforming the North Oak Corridor into a Complete Street - one that is safe and efficient not only for vehicular use but also for other mobility options including pedestrians, bicycles and scooters/e-bikes. The map on the following page illustrates three of these study improvement areas (Figure 1.14).

A **North Oak Corridor Streetscape Master Plan (2011) -** The purpose of this plan was to establish a plan for improving the physical appearance and functionality of the corridor through streetscape design - and to prepare improvement recommendations and anticipated costs while communicating the proposed design intent associated with this transformation. Many prior roadway configurations and design strategies had already been explored during this previous study and guided many of the proposed streetscape improvements outlined in this plan.

Select excerpts from the 2011 North Oak Corridor Streetscape Master Plan are included on this page for reference. The full Master Plan can viewed on the City of Kansas City, Missouri's website.

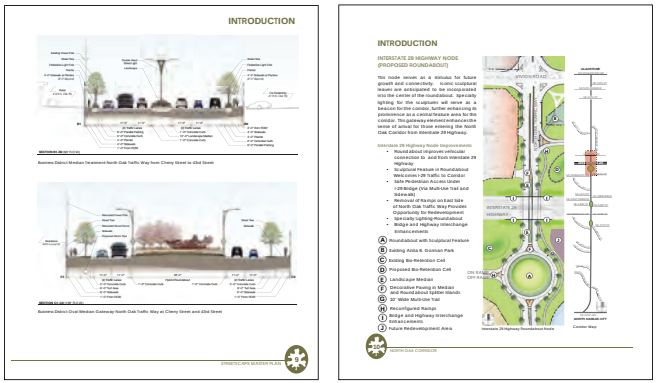


FIGURE 1.8 - *EXCERPTS FROM 2011 NORTH OAK CORRIDOR STREETSCAPE MASTER P LAN (2011)*

FIGURE 1.9 - *PLANNED STREETSCAPE IMPROVEMENTS IN THE BRIARCLIFF DISTRICT (2011)*

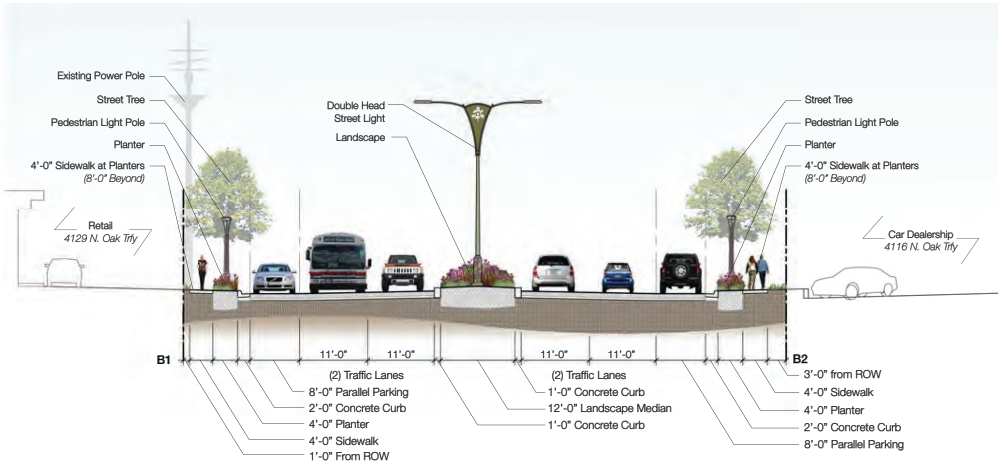


FIGURE 1.10 - *TYPICAL SECTIONS ACROSS NORTH OAK IN THE BRIARCLIFF DISTRICT (2011)*

FIGURE 1.11 - *PROPOSED STREETSCAPE LIGHTING ELEMENTS (2011)*

FIGURE 1.12 - *BRANDING AND WAYFINDING OPPORTUNITIES (2011)*

FIGURE 1.13 - *PROPOSED GATEWAY MARKERS (2011)*

B **Burlington Corridor Complete Street Plan (2016) -**
In 2016, the Burlington Corridor Complete Street Plan was completed, outlining a vision for the Burlington Corridor (MO 9 Highway) to accommodate all modes of transportation. These included vehicle, public transportation, pedestrians and cyclists. At its southern terminus, the North Oak Corridor merges into the Burlington Corridor, and so it was imperative that this study be integrated into the corridor's planning context.

Construction on the Burlington Corridor should commence in the near future, and as such, bicycle infrastructure and complete street features, will extend from Downtown Kansas City to the North Oak Corridor through North Kansas City.

C **North Oak Trafficway Reconstruction (2019) -**
A portion of this corridor was recently improved by the City of Kansas City, Missouri from East 32nd Avenue north to Northeast Indianola Drive. These improvements integrate new bicycle infrastructure in the form of a separated shared-use path on the east side of the corridor. There are four vehicular lanes in this segment, two in each direction, which were reduced in width to accommodate the shared-use path.

This segment of roadway extends from the northern end of the Burlington Corridor's planned two-way cycle track facility - leading to the southern terminus of our corridor study area.

Briarcliff - Winnwood Area Plan (2009) - The goal of this plan was to help the Briarcliff and Winnwood areas achieve their vision of a sustainable and "green" community consisting of strong and healthy neighborhoods. The plan was intended to serve as the vision and framework for long-range public policy decisions related to future land use, urban design, neighborhoods and housing, transportation, infrastructure, and public services. Additionally, the plan promoted the economic growth potential of the area and stabilizing existing neighborhoods through a citizen-based planning approach.

North Oak Corridor Transit Study (2012) - This plan examined how transit can serve as an economic development catalyst while also supporting sustainable residential neighborhoods and commercial uses along the corridor. The study explored the relationship between different modes of transit, ranging from standard bus service to modern streetcar service, and the level of residential and employment densities that could typically be supported with each service along the corridor. This plan also examined existing sidewalk networks along the corridor, and the relationship between sidewalk infrastructure/steep terrain and transit ridership.

North Oak Corridor Transit Study (2019) - This plan examined better serving the Northland's transit needs along the North Oak Corridor. The proposed Bus Rapid Transit (BRT) service is anticipated to be an improvement over the existing bus routes serving the corridor and adjacent areas.

Enhanced transit stations are anticipated to be provided at identified station locations, improving physical access and providing shelter for bus riders. According to this study, 85% of public responses indicated public transportation is either extremely or very important to the community. This plan outlines the anticipated costs for capital and operations associated with providing this improved service for the corridor.

Bike KC Plan (Ongoing) - This plan looks to continue the momentum currently happening throughout Kansas City 'by recommending progressive approaches to bicycling infrastructure improvements and programs, while also acknowledging the pragmatic realities of fiscal constraint, maintenance needs, and the size of the City.'

In this plan, the North Oak Corridor is designated as one of the primary north/south arterial bike routes and as such, is recommended to have a 'Major Separation' bike facility. The planning team has incorporated those recommendations into this Complete Street Plan.

Greater Kansas City Regional Bikeway Plan (2015) - This plan, adopted by MARC in 2015, envisions a cohesive regional network of bikeways, connected across city, county and state boundaries, that promotes active transportation. As a component of that regional network, this plan designates the North Oak Corridor as a high priority regional corridor. The plan is available on MARC's website.

FIGURE 1.15 - *BURLINGTON CORRIDOR COMPLETE STREET PLAN*

FIGURE 1.14 - *PAST AND CURRENT PLANNING EFFORTS*

COMPLETE STREETS

The term 'Complete Streets' was developed in the early 2000's to describe a rediscovered way of designing streets in the United States. According to Smart Growth America, Complete Streets are integrated and connected networks of streets that are safe and accessible for all people, regardless of age, ability, income, ethnicity, or chosen mode of travel. Complete Streets makes active transportation such as walking and bicycling convenient; provides increased access to employment centers, commerce, and educational institutions; and promotes alternative travel choices so that transportation doesn't drain a family's financial resources.

In order to adopt a Complete Streets policy, municipalities must:

- Set a high-level policy direction
- Change the everyday decision-making processes and systems
- Implement changes incrementally
- Have a long-term vision

In many ways, the concept of a Complete Street is nothing new. Communities for centuries were built compactly for efficiency purposes and because of technological limitations. However, as cars changed our ability to move farther and farther, communities became increasingly spread out and streets were redesigned to allow faster automobile transportation.

More recently, studies show that people want to live in walkable, bikable neighborhoods. By creating this type of environment, communities are often healthier, happier and more environmentally sustainable. Using a Complete Street approach to create the street environment provides many tangible benefits to improve the quality of life for nearby neighborhoods.

For the purposes of this North Oak Corridor Complete Street Plan, these principles were discussed and considered during the planning process. Right-of-way conditions were studied to determine the ability to implement elements such as wider pedestrian sidewalks, bicycle facilities, transit stations and green infrastructure.

Kansas City has implemented efforts to encourage more complete streets throughout the metro. In December 2017, Kansas City, Missouri passed a Complete Streets ordinance (No. 170949) and can be viewed on the City's website. Additionally, the Transportation Outlook 2040 includes strategies that support the implementation of complete streets.

MARC has also developed its own Complete Streets policy in 2012 that is intended to guide planning and programming activities. MARC requires that projects applying for funding must be in compliance with the Complete Streets policy.

FIGURE 1.17 - *PROTECTED BIKE LANES RECENTLY IMPLEMENTED ON ARMOUR ROAD IN KANSAS CITY, MISSOURI*

FIGURE 1.18 - *RECOMMENDED COMPLETE STREET IMPROVEMENTS TO BURLINGTON ROAD IN NORTH KANSAS CITY*

FIGURE 1.16 - *EXAMPLES OF COMPLETE STREETS (1-2)*

FIGURE 1.19 - *ARMOUR ROAD IN NORTH KANSAS CITY REDESIGNED WITH COMPLETE STREET ELEMENTS (3-5)*

EXISTING CONDITIONS

RIGHT-OF-WAY WIDTH

A big challenge when looking at the entire North Oak Corridor study area is the dramatic change in Right-of-Way (ROW) width that occurs. This width varies from 60' to over 100' which creates challenges in crafting recommendations for consistent improvements throughout the corridor. Efforts were undertaken to keep improvement recommendations within existing ROW while minimizing the need for any additional ROW acquisition.

Figures 1.18, 1.19, 1.20 and 1.21 document four of the typical ROW widths that exist along the North Oak Corridor. As shown, the roadway varies in the number of lanes, lane widths and sidewalks depending on the available roadway width. These vignettes demonstrate both the most generous and most constricted ROW zones, illustrating typical conditions.

The map below (Figure 1.17) shows locations where these ROW width variations and configurations occur. In particular, Downtown Gladstone and areas immediately south represent the most constricted zones for roadway improvements.

A

FIGURE 1.21 - *EXISTING 5-LANE CONFIGURATION WITH BIKE LANES - 103' ROW*

B

FIGURE 1.22 - *EXISTING 4-LANE CONFIGURATION WITH INADEQUATE SIDEWALK CONDITIONS - 101' ROW*

C

FIGURE 1.23 - *EXISTING 4-LANE CONFIGURATION WITH SETBACK SIDEWALKS - 91' ROW*

D

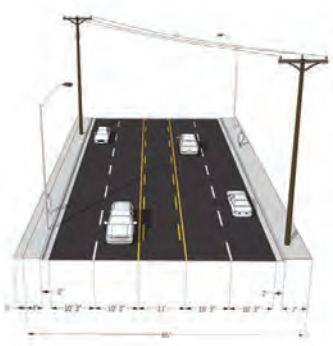


FIGURE 1.24 - *EXISTING 5-LANE CONFIGURATION WITH UNSAFE AND UNACCESSIBLE SIDEWALK CONDITIONS - 66' ROW*

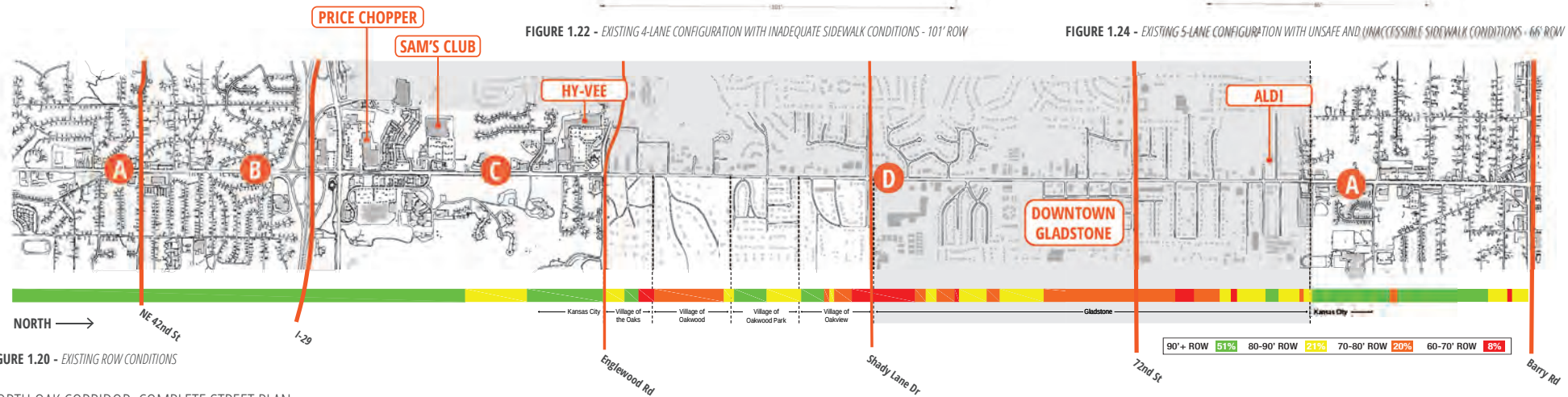


FIGURE 1.20 - *EXISTING ROW CONDITIONS*

SOUTH (Indianola Dr. to Baptist Seminary Dr.):

This segment has the highest traffic volumes on North Oak because of important connections to Burlington Street, I-29, and Vivion Road. The Briarcliff District is an important node in this segment and contains the only current bike lanes present in the study area. Traveling north, residential driveways dot the roadway. The interchange with I-29 sees upwards of 20,000 cars a day and is often clogged with traffic, especially during peak hours. No sidewalk or bicycle connections exist under the highway overpass which makes it extremely dangerous to get from one side to the other for any user except motorists.

The Vivion Road intersection North to Baptist Seminary Drive has many large format retailers, high-density residential and the Midwest Baptist Theological Seminary. This area also has high traffic volumes and acceptable sidewalk space for pedestrians.

CENTRAL (Baptist Seminary Dr. to Shady Lane Dr.):

The segment between Baptist Seminary Drive and Shady Lane Drive is primarily a 4-lane configuration with the exception of the intersection at Englewood Road. Here, the roadway expands to 5-lanes to accommodate turning movements. In general, commercial properties dot the western side of North Oak throughout this section while commercial properties and residential side streets exist on the east side. Located within the Creekwood Commons shopping center at Englewood Road, the existing Hy-Vee grocery store generates a lot of traffic.

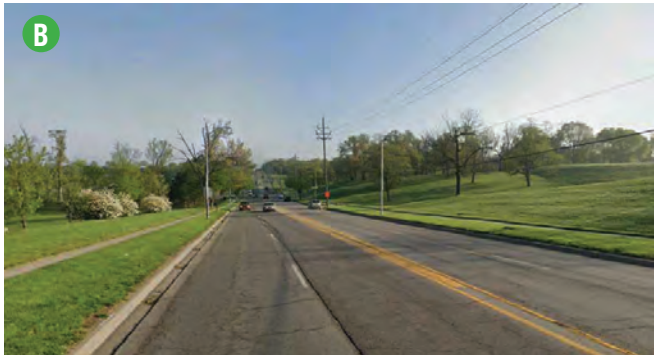
Pedestrian accommodations in this segment vary. North of Englewood Road, sidewalks are present only the west side of the road until just south of Shady Lane Drive, but these sidewalks are in poor condition and often placed adjacent to the curb, presenting an uncomfortable environment for pedestrians.

NORTH (Shady Lane Dr. to Barry Rd.):

The longest segment, Shady Lane Drive to Barry Road has a wide variation in physical conditions with both 4-lane and 5-lane configurations present. Many small businesses and shopping plazas result in prolific curb cuts. These cause confusion, safety and accessibility issues for pedestrians and physically impaired persons.

The north segment traverses through Downtown Gladstone, though suburban-style commercial development is still the prevailing land use. The 72nd Street corridor is a major east/west connection, as is Barry Road, which serves as the terminus of the study area.

This entire segment has sidewalks on both sides of North Oak, but with so many curb cuts and sometimes poorly placed utilities, many conditions could still be improved for pedestrians.



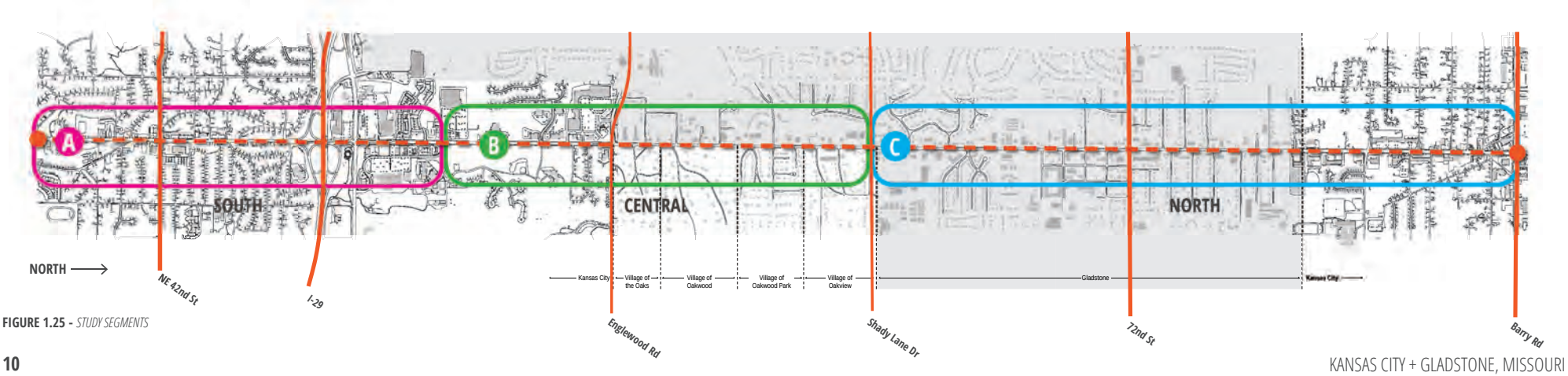


FIGURE 1.25 - *STUDY SEGMENTS*

EXISTING AND FUTURE BIKE CONNECTIONS

The current Bike KC Plan designates the North Oak corridor to have a major separation bicycle facility extending from the planned cycle track on Burlington Street in North Kansas City to Cookingham Road farther North. This investment represents the final link in the only planned continuous major separation North / South route extending from Downtown Kansas City. The map below displays the existing and planned bike routes within close proximity to the North Oak corridor. Currently, the only bike facilities that exist on North Oak are located between NE Briarcliff Parkway and Indianola Drive (on-street bike lanes). The Bike KC Master Plan Update recommends facilities only on Kansas City roadways. It is recommended that all municipalities along the corridor incorporate similar bicycle infrastructure into their respective segments of the North Oak corridor to ensure continuous multi-modal transportation improvements.

FIGURE 1.27 - *EXISTING BIKE LANES IN THE BRIARCLIFF DISTRICT*

FIGURE 1.28 - *VIVION TRAIL AT ANITA B. GORMAN PARK*

- A North Oak Bike Lane (Indianola to Briarcliff)
- B Cherry St Bike Lane (North Kansas City to 41st St.)
- C Vivion Trail (To Claycomo)
- D 69th Street Bike Lane (Locust St to Holmes St)
- E Barry Road Trail (To Bridge Point Park Trail)
- F 79th Terrace Bike Lane (To N Main St)
- G North Oak Shared-Use Path; Kansas City (Planned)
- H North Oak Shared-Use Path; Gladstone (Planned)

FIGURE 1.29 - *BRIDGE POINT PARK TRAILHEAD*

Existing Bike Facility

Planned Major Separation Facility

Planned Major Separation Facility (Gladstone)

Planned Minor Separation Facility

Planned Shared Street Facility

FIGURE 1.26 - *EXISTING AND FUTURE BIKE CONNECTIONS*

EXISTING SIDEWALK CONDITIONS

Reviewing and documenting the various sidewalk conditions throughout the corridor was an important activity to better understand existing pedestrian challenges, and to recognize opportunities for improving access for nearby residents. Our analysis of the corridor study area determined that only 21% of the corridor contains sidewalks south of I-29. The vast majority of this portion of the corridor is completely inaccessible to anyone except motorists.

On the north side of I-29, approximately 91% of the corridor contains sidewalks. While this is a drastic improvement, there are many instances where the sidewalks either have utilities obstructing a clear path or the walks are often positioned directly adjacent to the curb line. These create uncomfortable, and in some cases unsafe, walking conditions.

The following pictures and descriptions convey the range of sidewalk conditions found along the North Oak Corridor.

A Obstruction by utility poles makes pedestrian travel difficult and is not accessible by those in wheelchairs or with other physical impairments.

B Sidewalks often end without warning.

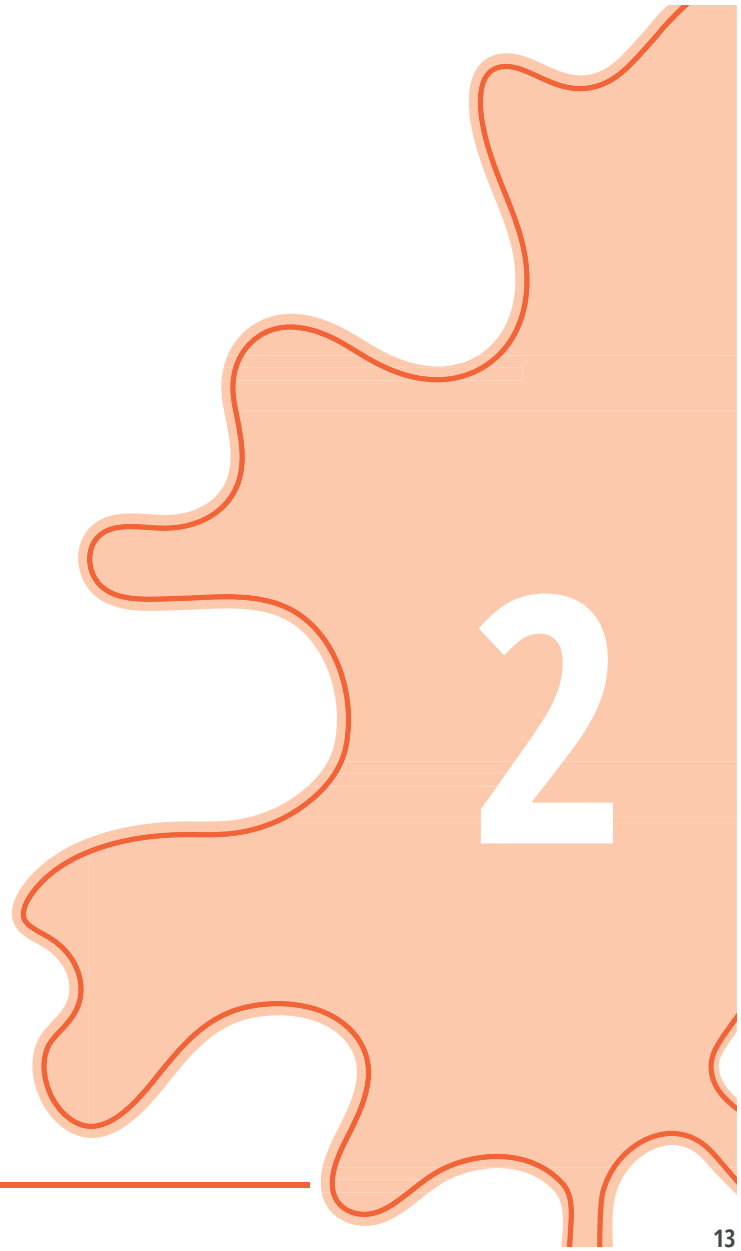
C Under the I-29 overpass, there are no sidewalks. Lanes that simultaneously act as highway on/off ramps create a dangerous traffic pattern for cars and pedestrians alike.

D In rare locations, sidewalks are set back from the road a comfortable distance and are in good condition.

E Some sections of North Oak have no sidewalks at all, which makes walking along the corridor extremely difficult.

F The abundance of entrance curb cuts and areas of paving for business parking makes sidewalk conditions undefined and unsafe.

FIGURE 1.30 - *VARIOUS SIDEWALKS CONDITIONS ALONG NORTH OAK*



PROCESS + PARTNERS

PUBLIC PROCESS

The vision for the corridor outlined in this plan is the result of an open and transparent planning process. Key stakeholders and the community were directly involved at key steps of the planning process to learn about project goals, assist in crafting and evaluating alternatives, and provide input on future recommendations.

The following meetings were conducted during this process:

- Steering Committee Project Kick-Off Meeting: July 31st, 2019
- Steering Committee #2: August 29th, 2019
- Public Meeting #1: September 3rd, 2019
- Steering Committee #3: October 2nd, 2019
- Public Meeting #2: October 16th, 2019
- Steering Committee #4: January 22nd, 2020
- Public Open House: February 5th, 2020

STEERING COMMITTEE INVOLVEMENT

A steering committee was appointed by Kansas City and Gladstone to work collaboratively with the planning team to review, evaluate and guide future corridor improvement recommendations.

The planning team facilitated a series of five meetings with the steering committee. Each of these meetings provided opportunities for the committee to better understand the issues being explored as part of the planning process, to ask questions and obtain additional information, and to provide their input and direction for shaping the proposed plan.

During this collaborative process, a baseline understanding of technical definitions and design strategies was presented. The planning team, steering committee and community members also engaged in several meaningful discussions regarding the direction of the project. The steering committee and public provided invaluable input to the planning team, and their collective input shaped the final direction outlined in this plan.

FIGURE 2.2 - *COLLABORATION WITH STEERING COMMITTEE MEMBERS*

FIGURE 2.3 - *INPUT REGARDING CORRIDOR CHALLENGES DURING THE FIRST PUBLIC MEETING*

FIGURE 2.1 - *STEERING COMMITTEE MEETING*

FIGURE 2.4 - *DISCUSSION AND CONVERSATION DURING THE SECOND PUBLIC MEETING*

COMMUNITY ENGAGEMENT

In addition to working with the steering committee, the planning team also collaborated with and gathered input from residents and community members along the corridor. A total of three community meetings were facilitated throughout the planning process. Notifications of these meetings were posted on the websites for Gladstone, Kansas City and various existing social media outlets.

In addition to these meetings, the planning team also attended Gladfest - an annual fall festival in Gladstone that draws attendees from throughout the Northland. Members of the planning team spoke shared project information with festival attendees and gathered additional valuable feedback.

The intent of the first public meeting was to inform the community about the project, including improvement goals and initial recommendations crafted by the steering committee and planning team. Questionnaires were provided to meeting attendees, and both the presentation materials and questionnaires were also shared with the public online to gather additional input from those not able to attend the meeting.

After a period of further corridor analysis and concept refinement, a second public meeting was conducted to share additional project information with the community. We shared the results of the initial community outreach efforts and the steering committee's initial vision for the corridor. Corridor analysis information was also shared - including project goals and initial ideas for transforming the corridor. The open house format of the meeting provided attendees the ability to share comments and discuss specific project aspects directly with the planning team and City representatives.

During the final public meeting / open house the primary themes, concepts, and recommendations outlined in this plan were shared. This meeting provided an opportunity for the community to preview plan recommendations.

FIGURE 2.6 - *MEMBERS OF THE PUBLIC VIEWING INFORMATIONAL DIAGRAMS AT THE FIRST PUBLIC MEETING*

FIGURE 2.8 - *RESIDENTS LEARNING ABOUT EXISTING CONDITIONS ALONG THE NORTH OAK CORRIDOR*

FIGURE 2.9 - *UNDERSTANDING CURRENT EXISTING CONDITIONS AND SAFETY CONCERNS ALONG THE CORRIDOR*

FIGURE 2.5 - *SPEAKING WITH COMMUNITY MEMBERS AT THE SECOND PUBLIC MEETING*

FIGURE 2.7 - *COMMUNITY DISCUSSION ABOUT NORTH OAK CORRIDOR VISION*

CORRIDOR "BUILD-IT" EXERCISE

Given existing ROW conditions that drastically fluctuate along North Oak, it was important to convey to the steering committee and the community that challenges associated with introducing safe new bicycle and pedestrian infrastructure into the corridor without any impacts to existing vehicular traffic and use of the corridor. Compromises would have to be made to address the identified future mobility needs of the corridor.

In helping meeting members understand this concept, the planning team administered a Corridor "Build-It" Exercise. Participants were given pre-arranged templates corresponding with the following elements:

- Sidewalk
- Shared-Use Path
- Vehicular Lane Configurations
- Protected Bike Lane
- Separated Bike Lane
- Separated Cycle Track
- Separated Cycle Track with Amenity Zone
- Protected Cycle Track with Amenity Zone
- Integrated Transit

Participants were asked to arrange their own unique combinations of these scaled templates on each of three different ROW widths found along the corridor.

Given fixed lane widths, participants quickly realized that what they might have thought would be an ideal solution might not fit in another portion of the corridor given the limited available ROW width. This hands-on activity allowed participants to better understand the real challenges associated with allocating improvements to benefit each mode of transportation. Compromises had to be made to ensure a design solution that addressed the needs of all corridor users. Utilizing the three different ROW conditions allowed participants to realize the future design of the street would likely have to fluctuate throughout the corridor.

This activity also gave participants insight into the planning process and helped attendees understand the give-and-take evaluation that needs to occur when confronted with challenging site conditions and space constraints.

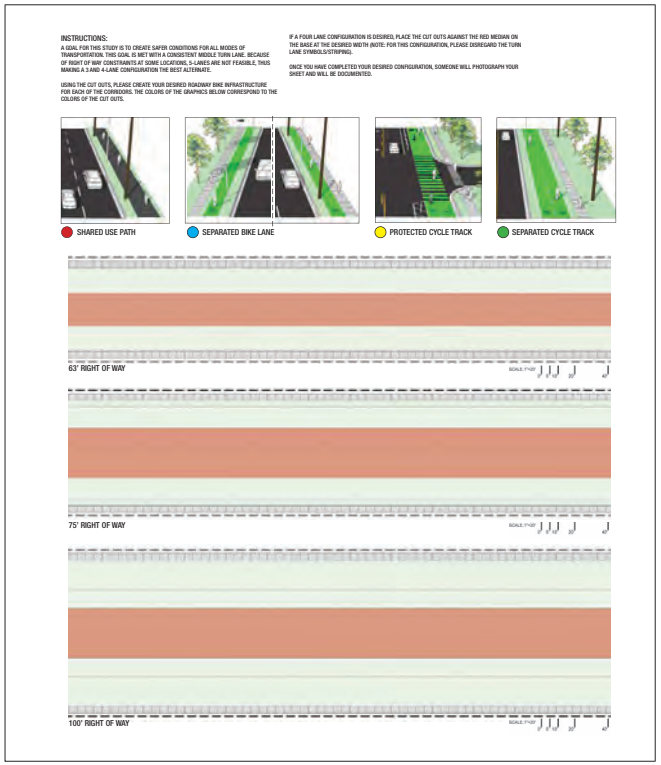


FIGURE 2.9 - *BUILD-IT SURVEY ROW TEMPLATE*

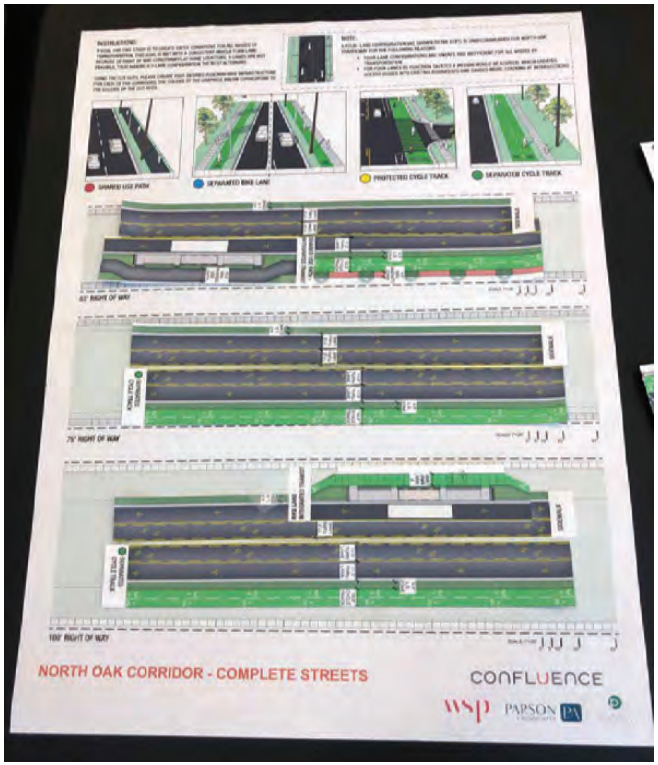


FIGURE 2.11 - *COMPLETED BUILD-IT EXERCISE TEMPLATE*

FIGURE 2.10 - *STEERING COMMITTEE ENGAGING IN THE BUILD-IT EXERCISE*

FIGURE 2.12 - *COMMUNITY MEMBERS ENGAGING IN THE BUILD-IT EXERCISE*

TRAFFIC DATA AND ANALYSIS

As part of this study, a detailed traffic analysis was undertaken. This included obtaining existing traffic counts, creating microsimulation models, and quantifying the impacts of potential changes to the roadway configuration.

TRAFFIC VOLUMES

Traffic volumes along the North Oak corridor were obtained from the City of Kansas City and through independent collection by the planning team. Traffic volumes were obtained for all intersections with traffic signals along with a few additional intersections without traffic signals in the Downtown Gladstone area for the AM and PM peak hours of the day.

The traffic volumes were provided in the form of PDF traffic counts and as Synchro modeling software models. From the peak hour traffic counts collected, total daily volume was estimated for the street segments based on typical Kansas City traffic patterns. The chart to the right (Figure 2.13) shows the approximate daily traffic volume of vehicles on each segment of the study corridor.

In addition to the existing traffic counts, the travel demand model created in conjunction with the Buck O'Neil Bridge Planning and Environmental Linkages (PEL) study was referenced. This Dynamic Traffic Assignment model was created to determine the potential impacts of a reconstruction of the Buck O'Neil bridge on US-169 over the Missouri River.

This model predicted that when the Buck O'Neil bridge is rebuilt, the traffic volumes on the North Oak Corridor would either remain the same or drop by up to 25% depending on the location. For this reason, it was assumed that the traffic volumes today and traffic modeling conducted with this plan could reasonably be assumed to represent traffic conditions well into the future.

Operation Green Light (OGL) is a cooperative effort to improve the coordination of traffic signals and incident response on major routes through the Kansas City area. As elements of this study are implemented, coordination is needed with OGL to ensure unnecessary delays and greenhouse gas emissions are reduced and traffic flows improve.

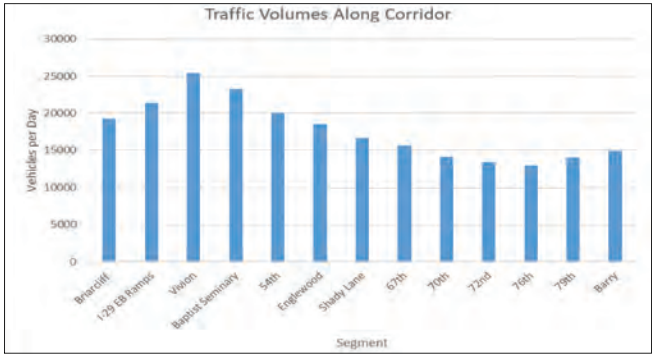


FIGURE 2.13 - *TRAFFIC VOLUMES ALONG CORRIDOR*

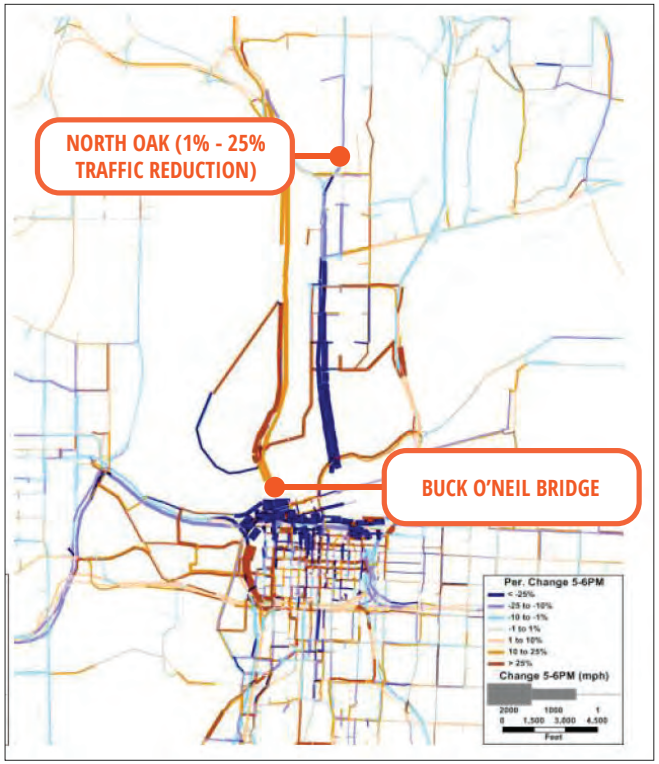


FIGURE 2.14 - *BUCK O'NEIL PEL STUDY TRAFFIC ANALYSIS*

FIGURE 2.15 - *VIVION / NORTH OAK / I-29 INTERCHANGE - HIGHEST TRAFFIC VOLUMES IN THE STUDY AREA*

FIGURE 2.16 - *76TH STREET / NORTH OAK - LOWEST TRAFFIC VOLUMES IN THE STUDY AREA*

FIGURE 2.17 - *BUCK O'NEIL BRIDGE*

EXISTING CONDITIONS TRAFFIC ANALYSIS

A detailed traffic analysis was conducted based on the existing roadway configuration and traffic volumes. This analysis was based on typical traffic operations during the PM peak hour. The analysis was performed using Trafficware's Synchro software's Highway Capacity Manual (HCM) procedures and SimTraffic software's arterial report. To get an accurate understanding of the traffic flow along the corridor, the measure of travel time was calculated as a metric. Based on the existing traffic and lane geometry, traffic flows relatively well along the corridor with the exception of some moderate congestion at the Briarcliff Parkway, Vivion Road, and Englewood intersections. Figure 2.18 shows the existing travel time along the corridor by segment along with the average speed to travel along each segment.

ROAD DIET FEASIBILITY ANALYSIS

A road diet scenario was explored for the corridor where the 4-lane and 5-lane roadway segments would be reduced to 3-lane roadway segments. Reducing the number of lanes would allow more of the available right of way space to be allocated for other uses such as on-street parking or transit, pedestrian, or bicycling amenities. Typically, 3-lane road configurations (one lane in each direction and a two-way left-turn lane) are feasible on a road segment with less than 18,000 – 20,000 vehicles per day, depending on how much traffic volume exists on the side streets. Figure 2.19 shows this threshold plotted against the traffic volumes along the North Oak segments.

Several segments fall outside this 3-lane road feasibility range from Briarcliff Parkway to Baptist Seminary Drive. Because of the higher traffic volumes from Briarcliff Parkway to Baptist Seminary Drive, the 3-lane configuration was not a candidate for use in the road diet scenario.

The initial roadway configurations explored in the road diet scenario included:

- 4-lanes (two in each direction) from Indianola Dr to I-29.
- 5-lanes (two in each direction and a center turn lane/ median) from I-29 to Baptist Seminary Drive.
- 3-lanes (one lane in each direction and a center turn lane/ median) from Baptist Seminary Drive to Barry Road.

The results of these changes are shown in Figure 2.21. For each segment, there is a modest increase in travel time from between a 5 second increase to a 1 minute 25 second increase in travel time. The total increase in travel time if one were to drive the full 5.75-mile corridor would be approximately two to three minutes of additional travel time.

DISTRICT	SEGMENT NORTHBOUND	SEGMENT LENGTH (mi)	PM EXISTING TRAVEL TIME	PM EXISTING AVERAGE SPEED
Briarcliff District	Indianola Dr to Baptist Seminary Dr	1.5	3 min 23 sec	27 mph
Englewood District	Baptist Seminary Dr to Shady Lane Dr	1.75	3 min 43 sec	28 mph
Downtown District	Shady Lane Dr to Barry Rd	2.5	4 min 56 sec	30 mph
TOTAL		5.75	12 min 2 sec	29 mph

DISTRICT	SEGMENT SOUTHBOUND	SEGMENT LENGTH (mi)	PM EXISTING TRAVEL TIME	PM EXISTING AVERAGE SPEED
Briarcliff District	Indianola Dr to Baptist Seminary Dr	1.5	4 min 21 sec	34 mph
Englewood District	Baptist Seminary Dr to Shady Lane Dr	1.75	4 min 2 sec	26 mph
Downtown District	Shady Lane Dr to Barry Rd	2.5	3 min 18 sec	27 mph
TOTAL		5.75	11 min 41 sec	30 mph

FIGURE 2.18 - *EXISTING TRAVEL TIMES ALONG NORTH OAK CORRIDOR (COLORS CORRESPOND TO CORRIDOR SEGMENTS - FIGURE 1.25 ON PAGE 10)*

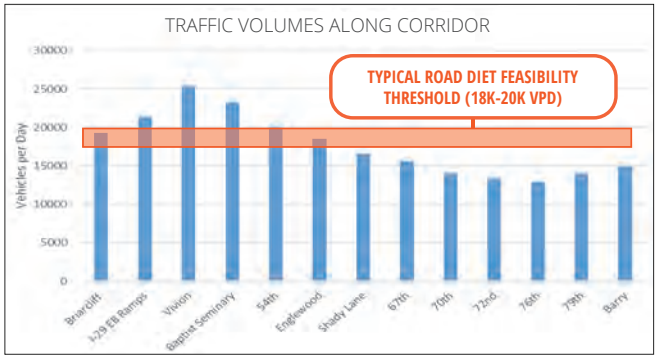


FIGURE 2.19 - *TRAFFIC VOLUMES COMPARED WITH ROAD DIET FEASIBILITY*

FIGURE 2.20 - *TRAFFIC AT NORTH OAK / ENGLEWOOD INTERSECTION*

ROADWAY RECONFIGURATION RECOMMENDATIONS

Through the planning team's efforts to engage the steering committee, key stakeholders, elected officials and the community in evaluating potential road diet scenarios, a consistent theme and direction for vehicular lane configurations was received. Even though a case could be made based on traffic volumes and engineering criteria, there was no community desire to reduce portions of the corridor to a three-lane configuration.

There were multiple reasons provided in support of avoiding a three-lane configuration, including that community members and elected officials felt that the model's findings for increased travel times associated with this scenario were higher than desired. This could cause some traffic to utilize alternative routes and could negatively affect commercial activity along the corridor. The recent in-progress transformation of North Kansas City's Armour Road Corridor from four-lanes to three-lanes was also noted. That project only incorporated pavement striping at the time the North Oak Corridor options were being evaluated - and the lack of curbs and streetscape amenities did not provide a convincing aesthetic case for significantly changing the corridor.

As a result, the improvement recommendations detailed in this report maintain the existing four-lane configurations throughout the corridor. As the overall configuration remains very similar from a traffic planning perspective, there is no increase in travel time expected with the recommendations in this plan.

Several intersection improvements are recommended that will change the operations of the roadway (but not the overall travel time). These changes are proposed in the Briarcliff District, at the I-29 interchange, and in the Downtown Gladstone District. The changes recommended include adding roundabout intersections at key locations so that the roadway intersections/ interchanges can be simplified, and access management can be implemented. All of the roundabouts are proposed as having two lanes in the northbound and southbound directions and a single lane in the eastbound and westbound directions. These roundabouts are proposed at the intersections of:

- Cherry Street/Northcrest Drive & North Oak
- 43rd Street & North Oak
- I-29 Eastbound Ramps & North Oak
- 69th Street & North Oak
- 70th Terrace & North Oak

Traffic modeling was conducted on these roundabouts, and it was found that all will result in very minimal delay (less than 10 seconds of additional delay on average) and operate with a level of service of "A" in the PM peak hour.

DISTRICT	SEGMENT NORTHBOUND	SEGMENT LENGTH (mi)	PM ROAD DIET TRAVEL TIME	PM ROAD DIET AVERAGE SPEED	PM ROAD DIET TRAVEL TIME INCREASE
Briarcliff District	Indianola Dr to Baptist Seminary Dr	1.5	4 min 16 sec	21 mph	+0 min 53 sec
Englewood District	Baptist Seminary Dr to Shady Lane Dr	1.75	5 min 6 sec	21 mph	+1 min 23 sec
Downtown District	Shady Lane Dr to Barry Rd	2.5	5 min 55 sec	25 mph	+0 min 58 sec
TOTAL		5.75	15 min 16 sec	23 mph	+3 min 14 sec

DISTRICT	SEGMENT SOUTHBOUND	SEGMENT LENGTH (mi)	PM ROAD DIET TRAVEL TIME	PM ROAD DIET AVERAGE SPEED	PM ROAD DIET TRAVEL TIME INCREASE
Briarcliff District	Indianola Dr to Baptist Seminary Dr	1.5	4 min 27 sec	34 mph	+0 min 5 sec
Englewood District	Baptist Seminary Dr to Shady Lane Dr	1.75	5 min 27 sec	19 mph	+1 min 25 sec
Downtown District	Shady Lane Dr to Barry Rd	2.5	4 min 20 sec	21 mph	+1 min 2 sec
TOTAL		5.75	14 min 14 sec	24 mph	+2 min 33 sec

FIGURE 2.21 - *PREDICTED TRAVEL TIME CHANGES WITH ROAD DIET (COLORS CORRESPOND TO CORRIDOR SEGMENTS - FIGURE 1.25 ON PAGE 10)*

FIGURE 2.22 - *A VISSIM MODEL WAS USED TO CALCULATE TRAVEL TIMES AFTER ROADWAY IMPROVEMENTS*

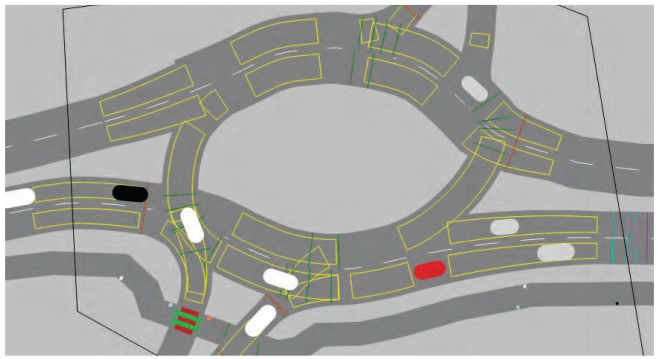


FIGURE 2.23 - *SCREENSHOT OF CODING PROCESS THAT RESULTED IN FINAL VISSIM TRAFFIC MODELING CALCULATIONS*

TRAFFIC CRASH ANALYSIS

Safety is a key factor of any complete street analysis. One of the key goals is to provide safe facilities for all ages and abilities of street users with any mode of transportation. To assess the areas where traffic safety may be a concern, a comprehensive analysis of vehicle, pedestrian, and bicycle crash data was conducted. Crash data was obtained from the Mid-America Regional Council for the most recent ten-year period available (2008 – 2018). Crash records originate from police reports at crash scenes and are collected and entered into a geo-referenced database by the Missouri Department of Transportation and the Mid-America Regional Council. This crash data contains myriad information including crash type, time, date, crash type, severity, location, and more.

Crash data was obtained for only the study corridor. Despite relatively short mileages of roadway contained in this study, there was a very high number of crashes. In the ten-year period of crash data, there were over 2,800 crashes on these corridors. Nearly 800 of these crashes (27%) resulted in an injury or death. Two crashes resulted in a death, and 57 resulted in someone receiving a disabling injury.

CRASH COSTS TO SOCIETY

By utilizing the published cost of crashes from the United States Department of Transportation, a crash cost to society resulting from these crashes can be calculated. This crash cost includes costs borne by residents, businesses, and visitors to the area due to property damage, medical bills, lost productivity, insurance, emotional distress, and more. It was found that crashes on the study corridors resulted in over $120 million in cost to society in this ten-year period. The crash costs to society can be found in Figure 2.26.

In addition to determining overall crash impacts, crash rates were calculated. A crash rate is calculated by comparing the number of crashes (the frequency), and the amount of traffic through the intersection. This gives an "apples to apples" comparison, so that high traffic volume and high crash frequency intersections can be effectively compared to low traffic volume and low crash frequency intersections. The crash rates are noted in Figure 2.27.

To determine which roads, have a statistically significant high crash rate, the concept of the "critical crash rate" has been developed. If a road segment has a crash rate above the critical crash rate, then it is considered a "high crash segment."

Every intersection studied on the corridor has a crash rate above the critical crash rate, which indicates that every intersection along the North Oak corridor should be considered a high crash intersection in need of safety countermeasures. Some of the segments have crash rates as high as 8 times the critical crash rate. The highest crash rate segments along the corridor occur in the Gladstone area of the corridor from 67th Street to 76th Street.

The high crash segments on North Oak generally correlate to segments with:

- 4-lane cross sections (two lanes in each direction and no center turn lane/median)
- High concentrations of driveway access points
- Poor pedestrian infrastructure

The injury/death rates are also charted on Figure 2.24 for each segment of North Oak.

FIGURE 2.25 - *NORTH OAK BETWEEN 67TH AND 70TH STREET HAD THE HIGHEST CRASH RATE OF ANY SEGMENT*

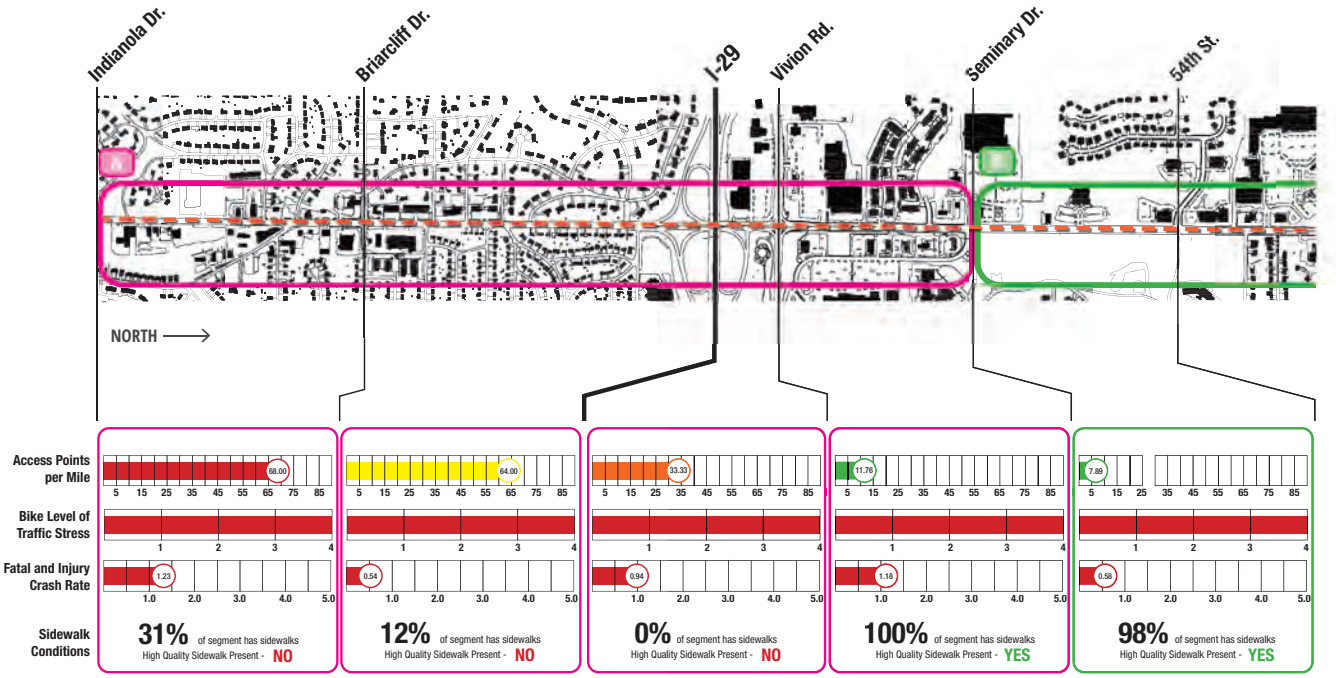


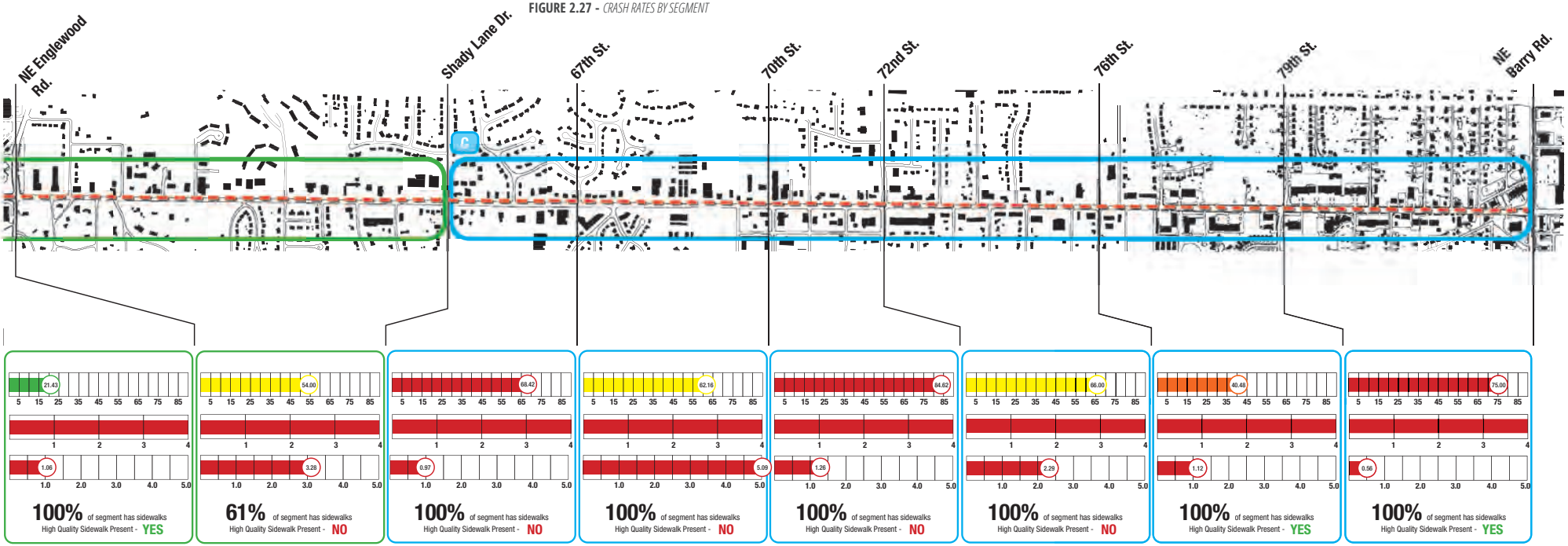
FIGURE 2.24 - *NORTH OAK CRASH AND SAFETY DATA*

Crash Type	Crash Cost to Society
Rear-End	$52,286,050.00
Angle	$37,949,350.00
Fixed Object	$14,531,000.00
Head-On	$6,565,800.00
Bicycle / Pedestrian	$3,262,750.00
Sideswipe	$2,882,500.00
Overturn	$1,504,450.00
Other	$1,815,200.00
Grand Total	**$120,797,100.00**

FIGURE 2.26 - *VEHICLE CRASH COSTS TO SOCIETY*

Segment Start	Segment End	Total Crash Rate	Critical Crash Rate	Critical Crash Segment?
Barry	79th	2.82	1.70	Yes
79th	76th	3.68	1.71	Yes
76th	72nd	10.75	1.93	Yes
72nd	70th	6.76	1.71	Yes
70th	67th	15.70	1.92	Yes
67th	Shady Lane Drive	2.36	1.69	Yes
Shady Lane Drive	Englewood	8.95	1.89	Yes
Englewood	54th	3.33	1.67	Yes
54th	Baptist Seminary	1.66	1.65	Yes
Baptist Seminary	Vivion	5.36	1.64	Yes
Vivion	I-29 EB Ramps	4.27	1.64	Yes
I-29 EB Ramps	Briarcliff	1.79	1.65	Yes
Briarcliff	Indianola	3.60	1.87	Yes

FIGURE 2.27 - *CRASH RATES BY SEGMENT*



PERSONAL MOBILITY COMFORT + SAFETY

The comfort and safety of walking, using a wheelchair, bicycling, and utilizing other personal mobility devices for transportation purposes are critical components in the creation of a successful complete street. These alternative modes of transportation allow people the ability to individually travel from one place to another without a vehicle in the street. These modes are also relevant regarding transit accessibility, as virtually all transit users utilize sidewalks or trails at either the beginning or end of their trips. The quality of existing trail and sidewalk infrastructure varies greatly along the corridor.

SIDEWALK INFRASTRUCTURE ANALYSIS

Sidewalks are the primary means of travel by foot or wheelchair within the study area. There are currently very few trails that are parallel or adjacent to the corridor, and the few that do exist are relatively short in length and typically do not fulfill a specific transportation need. Generally, sidewalks exist on one or both sides of the major streets and collector streets in the study area. Most residential streets have sidewalks, but there are several examples of streets lacking sidewalks and/or curb infrastructure. Many existing sidewalks are in poor condition, creating a difficult walking experience.

Safe street crossings at intersections is also an essential component of providing accessibility for pedestrians and wheelchair users. The existing North Oak Corridor poses a major barrier with regard to street crossings due to the wide cross-section distance, high traffic volumes and relatively high speeds of vehicular traffic. It is unsafe for pedestrians to cross North Oak without using designated intersection crossings specifically designed for this purpose. Most of the traffic signals in the study area include pedestrian crossing accommodations for both the minor street and major street crossings. The average distance between designated pedestrian street crossings in the study area is approximately 1/2 mile.

Street crossing distances spaced at greater than 1/4-mile increments substantially increases the amount of time and distance people are required to walk for what could have potentially been much shorter trips. Longer street crossing spacings discourage people from choosing to walk to restaurants over the lunch hour, children from walking to school, or people choosing to walk to multiple destinations. Longer spacings can also lead to people choosing to cross the street at unsafe locations in order to minimize the length of their trip.

Having a sidewalk on only one side of the street can also be a major hindrance to pedestrians. If the beginning and end of a pedestrian's trip is on the side of the street without a sidewalk, that pedestrian must cross the street twice—once at the beginning and once at the end—if they wish to walk on the sidewalk. This can be a particularly problematic and limiting factor for the disabled and elderly.

An analysis of the percentage of each roadway segment has high quality sidewalks, those with walks located on both sides of the street with a 5-foot minimum buffer between the walk and the street, can be found in Figure 2.24 (page 20-21).

FIGURE 2.28 - *SIDEWALKS CLOSE TO CURB AND LONG DISTANCES BETWEEN CROSSINGS RESULT IN LOW WALKING COMFORT*

FIGURE 2.29 - *SIDEWALKS AT THE SAME ELEVATION AS THE ROAD WITH NO SEPARATION, RESULT IN LOW WALKING COMFORT*

FIGURE 2.30 - *SIDEWALK CONDITIONS JUST NORTH OF VIVION ROAD REPRESENT A HIGH LEVEL OF WALKING COMFORT*

BICYCLE INFRASTRUCTURE ANALYSIS

A quantitative analysis of existing bicycling was made to determine what the level of traffic stress is within the study area. The Bicycle Level of Traffic Stress (LTS) was used to determine the level of biking skill needed to utilize the roadways in the study area and by reflection the number of cyclists the area roadways serve.

Bike LTS is a quantitative measurement that relates the features of a roadway to the type of cyclists that are likely to utilize that facility. The types of cyclists are grouped by their skill level which relates to the amount of traffic stress they are willing to tolerate on a facility. The LTS is based on what type of biking facilities exist on the street, the speed limit of the section, and the number of lanes per direction on the particular street segment. The chart to the right (Figure 2.32) shows criteria for different levels of traffic stress for cyclists.

The Bicycle Levels of Traffic Stress range from 1 - 4. The definitions for the levels can be found below.

- **Comfort Level 1 -** Low traffic stress. A facility likely to be used by all cyclists, even young children under 10 years of age. These are typically very low volume, low speed facilities, or facilities that are separated from motor vehicle traffic.
- **Comfort Level 2 -** Little traffic stress, but requires more attention, especially for children.
- **Comfort Level 3 -** Moderate traffic stress - suitable for confident cyclists.
- **Comfort Level 4 -** High traffic stress. A facility on which only very skilled cyclists will choose to ride. The cyclists willing to ride on an LTS 4 facility typically only represent about 1% of the total number of cyclists in an area.

The bike LTS for the study corridor is shown on the map in Figure 2.24 (Pages 20 and 21). All study corridors have an LTS of 4, indicating that fewer than 1% of cyclists are skilled or confident enough to ride on the North Oak Corridor today.

FIGURE 2.31 - *UNPROTECTED BIKE LANES REPRESENT A LOW BICYCLE COMFORT FACILITY*

FIGURE 2.33 - *SEPARATED CYCLE TRACKS REPRESENT A HIGH BICYCLE COMFORT FACILITY*

Street Characteristics			Bike Facility Type						
Typical # of Lanes	Prevailing Speed	Traffic Volume	Shared Street	Bicycle Boulevard	Bike Lane	Buffered Bike Lane	Protected Bike Lane	Two-Way Cycle Track	Separated Bike Facility
2 lanes	25	<500	1	1	1	1	1	1	1
		500-1,500	2	1	1	1	1	1	1
		1,500-3,000	2	2	1	1	1	1	1
		3,000-10,000	3	3	2	1	1	1	1
3-4 lanes		10,000-20,000	4	4	3	2	1	1	1
4+ lanes		>20,000	4	4	4	3	2	1	1
2 lanes	30	<1,500	2	2	2	1	1	1	1
		1,500-3,000	3	2	2	2	1	1	1
		3,000-10,000	3	3	2	2	1	1	1
3-4 lanes		10,000-20,000	4	4	3	3	2	1	1
4+ lanes		>20,000	4	4	4	3	2	2	1
2 lanes	35	<1,500	3	2	2	2	1	1	1
		1,500-3,000	3	3	3	2	1	1	1
		3,000-10,000	4	4	3	3	2	1	1
3-4 lanes		10,000-20,000	4	4	4	3	2	2	1
4+ lanes		>20,000	4	4	4	4	3	2	1

FIGURE 2.32 - *BIKING LEVEL OF COMFORT*

BIKE + PEDESTRIAN FACILITIES

NATIONAL PRECEDENT PROJECTS

Two precedent projects from the Midwest region were reviewed to better understand how other communities came to implement successful shared mobility infrastructure projects.

Cultural Trail - Indianapolis, IN: In 2013, Indianapolis celebrated the opening of the Cultural Trail, an 8-mile complete street project that focused on implementing an 8'-wide separated cycle track through the heart of the City. As an automobile-oriented Midwest city, this project is notable as it sent a clear message that streets are for everyone, not just vehicles.

Known as the "High Line of the Midwest", the effects of this project have been clear and robust. Residential living was bolstered and increased in the area, green infrastructure elements were implemented that has reduced stormwater runoff, transit systems have been better connected, and a system of branding and wayfinding, have enhanced the streetscapes of downtown Indianapolis.

This project has also helped the tourism industry of Indianapolis. With the location of the Cultural Trail in the heart of the City and with how prolific bike sharing has become, visitors are able to see the City in a new way. This then translates into more ground-level retail and restaurants, which all work together to reinvigorate the city.

N Street - Lincoln, NE: Through its Downtown Master Plan, Lincoln targeted N Street for a protected bikeway project. Connecting several important institutions and cultural spaces in Lincoln, N Street was a logical corridor for this investment. It is defined by a cycle track that is protected by angled parking and a green infrastructure planted buffer. After some basic education to both cyclists and drivers, this project has been a success in Lincoln and has only fostered more development in that area of the city. See example photo (Figure 2.31).

LOCAL PRECEDENT PROJECTS

In addition to reviewing national precedent projects, two local projects were reviewed also. Steering committee members were encouraged to visit these projects to see first-hand how potential complete street design strategies had been implemented in other locations and to observe the challenges and/or successes. These local projects included:

Armour Road, North Kansas City, MO: This recently completed project demonstrates the effect of reducing traffic lanes to accommodate protected bicycle infrastructure. Reduced from 5 to 3 traffic lanes, directional bicycle lanes now exist along the curb with a lane dedicated for parking and bus stops protecting cyclists from motorists. This project received some initial complaints and resistance from the community as commuters adjusted to the changes. However, these initial reactions to change eventually subsided and traffic flow interruptions have been reduced as travelers have successfully adapted to the new configuration.

Diamond Parkway, North Kansas City, MO: This new development adjacent to the east side of Interstate 35 and south of Armour Road is one of the only separated cycle track facilities in the region. Buffered from the roadway by a large landscape strip, this project provides ideal conditions for cyclists, pedestrians and vehicles to co-exist within a corridor.

As a completely new development, the implementation of this type of bicycle and shared mobility infrastructure was a bit more straightforward than retrofitting an existing roadway corridor. The North Oak Corridor does not have this same luxury.

FIGURE 2.35 - *N STREET: LINCOLN, NE - EXAMPLE OF A CYCLE TRACK*

FIGURE 2.36 - *ARMOUR ROAD BUFFERED BIKE LANES - NORTH KANSAS CITY*

FIGURE 2.34 - *CULTURAL TRAIL: INDIANAPOLIS, IN - EXAMPLE OF SEPARATED CYCLE TRACK*

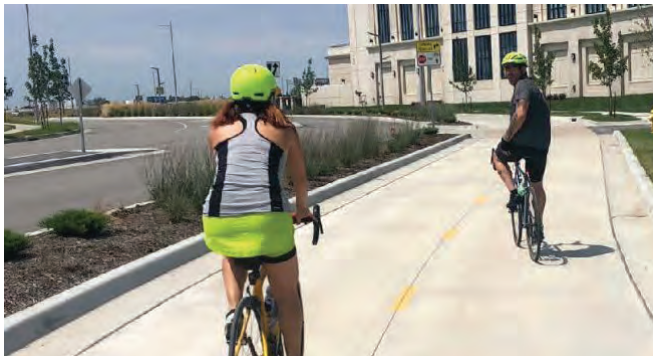


FIGURE 2.37 - *DIAMOND PARKWAY CYCLE TRACK - NORTH KANSAS CITY*

MOBILITY OPTIONS

Several initial mobility options were considered for the North Oak Corridor. These options are presented to the right and are listed in order of magnitude starting with those that are least safe for cyclists and motorists and ending with those most safe. In general, this order corresponds to the relative level of cost/investment needed to implement each.

For the purposes of this study, the first two mobility opens, Sharrows and Unprotected Bike Lane, were not truly considered. These options only require minimal striping on the road for demarcation, which does not provide any physical separation of bikes and vehicles. Given the high traffic volume and speeds, these options did not adequately address safety concerns and were not considered or recommended for consideration for use in the corridor.

The following options, Shared-Use Path, Buffered Bike Lane, Protected Bike Lane, Separated Bike Lane, Protected Cycle Track and Separated Cycle Track were all initially considered for use along the North Oak Corridor. All of these systems separate cyclists from motorists through some combination of additional distance, the addition of vertical barriers and/or elevation change.

The ultimate goal of this study is to create a vision for North Oak that makes the road accessible and safe to all different users. These mobility options provide that opportunity. A full description of these options can be found on the following pages.

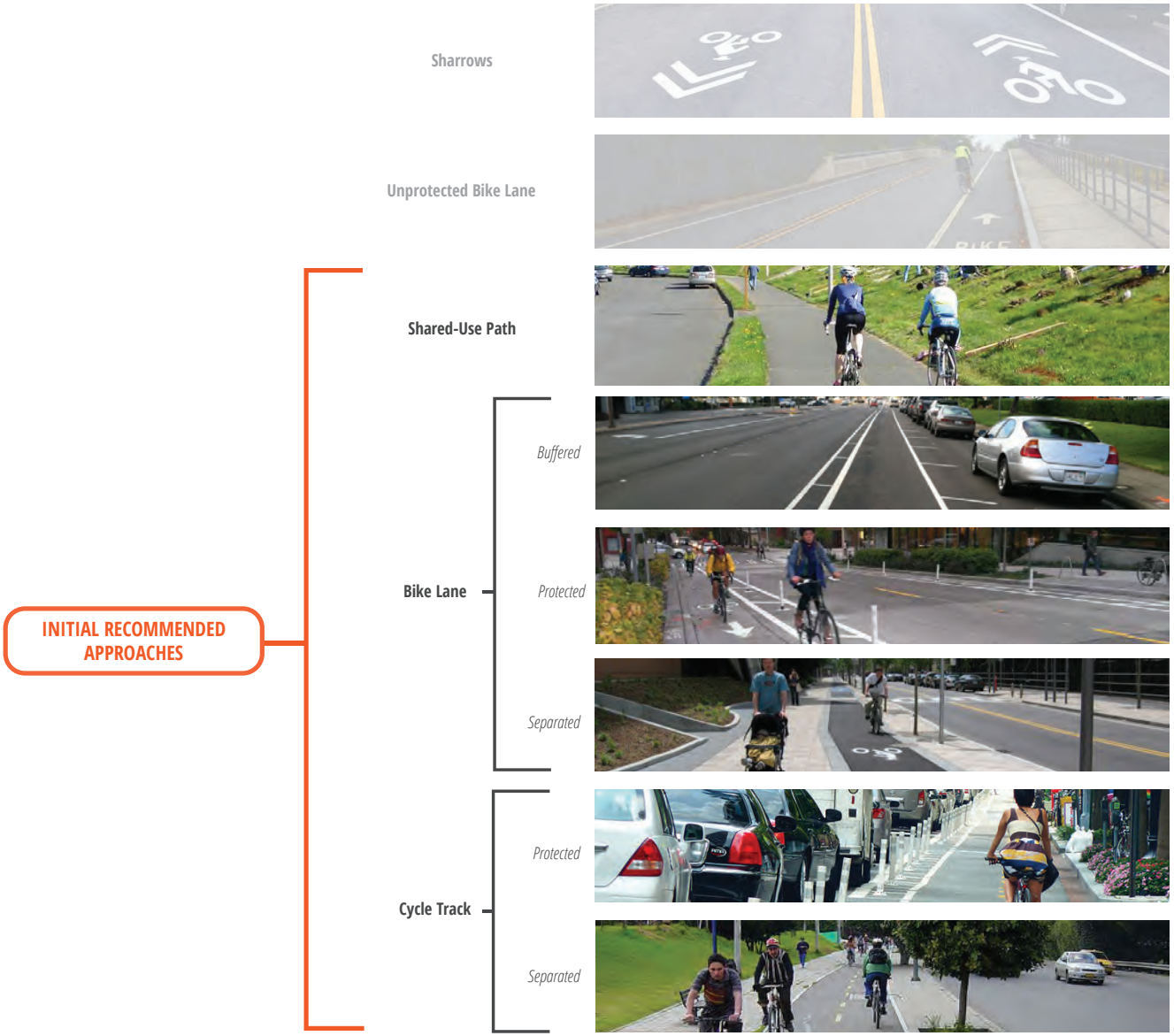


FIGURE 2.38 - *POSSIBLE MOBILITY OPTIONS FOR NORTH OAK*

SHARED-USE PATH

Shared-Use Paths are used by pedestrians, cyclists and other modes of personal transportation. These can include, but are not limited to, rollerbladers, skateboarders, and scooters. They are typically 10-12' in width and are generally placed on one side of the road. An example of a shared-use path in the Kansas City metro area is along the North Oak Corridor adjacent to Water Works Park.

BUFFERED BIKE LANE

Buffered Bike Lanes are on-street bike facilities that allow for one-way cycle traffic, usually in the same direction as the adjacent vehicular lanes. Buffered bike lanes are typically 5' in width and are buffered from the adjacent traffic lanes by a minimum 3-4' wide striping.

PROTECTED BIKE LANE

Protected Bike Lanes are on-street bike facilities that allow for one-way cycle traffic, usually in the same direction as the adjacent vehicular lanes. Protected bike lanes are typically 5' in width and are separated by a 3-4' minimum buffer lane that includes striping and a vertical barrier. The vertical barrier could include flexible bollards, permanent bollards or parked vehicles.

SEPARATED BIKE LANE

Separated Bike Lanes are designed to be used by cyclists and are physically separated from vehicle traffic. This separation is usually created through a difference in elevation either higher or lower than the adjacent roadway - and may incorporate additional landscape and/or other buffering opportunities when space allows. Separated bike lanes are typically 5' in width and are intended for one-way cycle traffic.

PROTECTED CYCLE TRACK

Protected cycle tracks are wider facilities designed to accommodate two-way cycle traffic and are typically placed on one side of a vehicular corridor. A protected cycle track is typically at least 10' in width (5' lanes for each direction) and are separated by a 3'-4' minimum buffer area that includes some type of vertical barrier. The vertical barrier options include flexible bollards, permanent bollards, parked vehicles or landscape. Cycle tracks are contra flow and are integrated into the traffic signalization system at street intersections.

SEPARATED CYCLE TRACK

Separated cycle tracks also accommodate two-way cycle traffic and are physically separated from the road, usually by a difference in elevation. Typically, 10' wide, separated cycle tracks are recommended to be integrated into the signalization systems at intersections.

STEERING COMMITTEE QUESTIONNAIRE

The planning team presented these bicycle facility options with the steering committee and discussed the relative merits and opportunities for how each of these facilities can contribute to a successful complete street environment. The Steering Committee then assessed this information and shared their initial thoughts and opinions for options they felt would be best for consideration in the corridor.

To assist in gaining a deeper understanding of the Steering Committee's opinions, the planning team developed a set of questions to garner individual responses. These responses provided a baseline direction to begin drafting conceptual ideas for improving the corridor.

RESPONSE SUMMARY

The general consensus from the Steering Committee was that safety is the most important goal in creating a complete street project for the North Oak Corridor. Understanding that North Oak experiences higher than average crash rates, this goal makes total sense and is a strong basis for making positive improvements. Rounding out the top three goals for the corridor were to provide convenience and comfort for pedestrians/cyclists/transit, and to continue providing access to the corridor's many businesses.

The Committee's responses are indicative of a community that wants to ensure the North Oak Corridor continues to serve the needs of both residents and commercial areas. There is also a desire for corridor improvements to be made that address identified safety challenges while encouraging multi-modal transportation and promoting thriving businesses.

Committee members were asked to consider the biggest challenges and opportunities for implementing complete streets along the corridor. The word clouds are a graphic representation of their responses. The biggest challenges include ROW constraints, gathering public support, obtaining construction funding for the project and any potential effect on increasing drive times. The biggest opportunities included increased safety and accessibility, enhancing economic development potential throughout the corridor, and improving the aesthetic character and streetscape appearance.

One final question asked committee members to rank their top choices for which bike lane or cycle track option they preferred. The top three answers were:

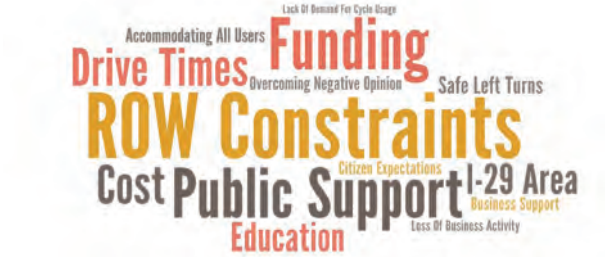
1. Separated Bike Lane
2. Separated Cycle Track
3. Shared-Use Path.

Based on these responses, it was clear the Steering Committee preferred a separated bicycle facility to ensure the safest condition for both cyclists and motorists.

1. What are the **MOST IMPORTANT GOALS** in creating a complete street project for North Oak?

- **1st** Safety
- **2nd** Pedestrian / Cyclists / Transit Convenience + Comfort
- **3rd** Business Access
- **4th** Quality of Life
- **5th** Aesthetics
- **6th** Drive Time

2. What will be the **BIGGEST CHALLENGE** in successfully implementing complete streets along the North Oak Corridor?



3. What will be the **BIGGEST OPPORTUNITY** when implementing complete streets along the North Oak Corridor?

4. Based on your knowledge of today's bike lanes / cycle track options, select your top three, **1 being your most preferred**.

Shared-Use Path

Buffered Bike Lane

Protected Bike Lane

Separated Bike Lane

Protected Cycle Track

Separated Cycle Track

PLACEMAKING + MOBILITY OPPORTUNITIES

BRIARCLIFF DISTRICT (Cherry St. to NE 43rd St.) - The Briarcliff District was a focus of Confluence's prior 2011 Placemaking Study for the corridor. This prior study effort proposed two modified roundabout facilities (referenced then as chicanes) to facilitate traffic movement where North Oak intersects with Cherry Street / NE Northcrest Drive and NE 43rd Street. The chicane proposal improved safety and alignment of these intersections while also maintaining traffic flow and the accessibility of local businesses.

However, nine years later, the original chicane concept is no longer utilized by most transportation engineers due to on-going safety concerns. The planning team improved upon the original use of chicanes - utilizing hybrid roundabouts at these same locations to achieve the same functionality and features. On-street parking within this district was also removed from the 2011 plan to accommodate a proposed shared-use path on the east side.

I-29 INTERCHANGE - The prior 2011 study also focused on modifying this interchange located on the south side of I-29 with a new roundabout. This would consolidate ramp entrances and exits, allowing the existing deceleration/acceleration lane under I-29 to be removed. This "found" space provides adequate room for the proposed shared-use path on the east side, allowing for safe pedestrian and cyclist connectivity under I-29. The removal and consolidation of two highway access ramps (without losing any accessibility) also creates a significant land parcel in the southeast quadrant of this interchange - which could be redeveloped for the benefit of the community.

DOWNTOWN GLADSTONE DISTRICT (NE 69th St. to NE 72nd St.) - To facilitate additional Downtown growth and development while also improving safety and providing placemaking opportunities, the use of two hybrid roundabouts is proposed for the North Oak Corridor at NE 69th Street and NE 70th Terrace. Further details are provided on the following pages.

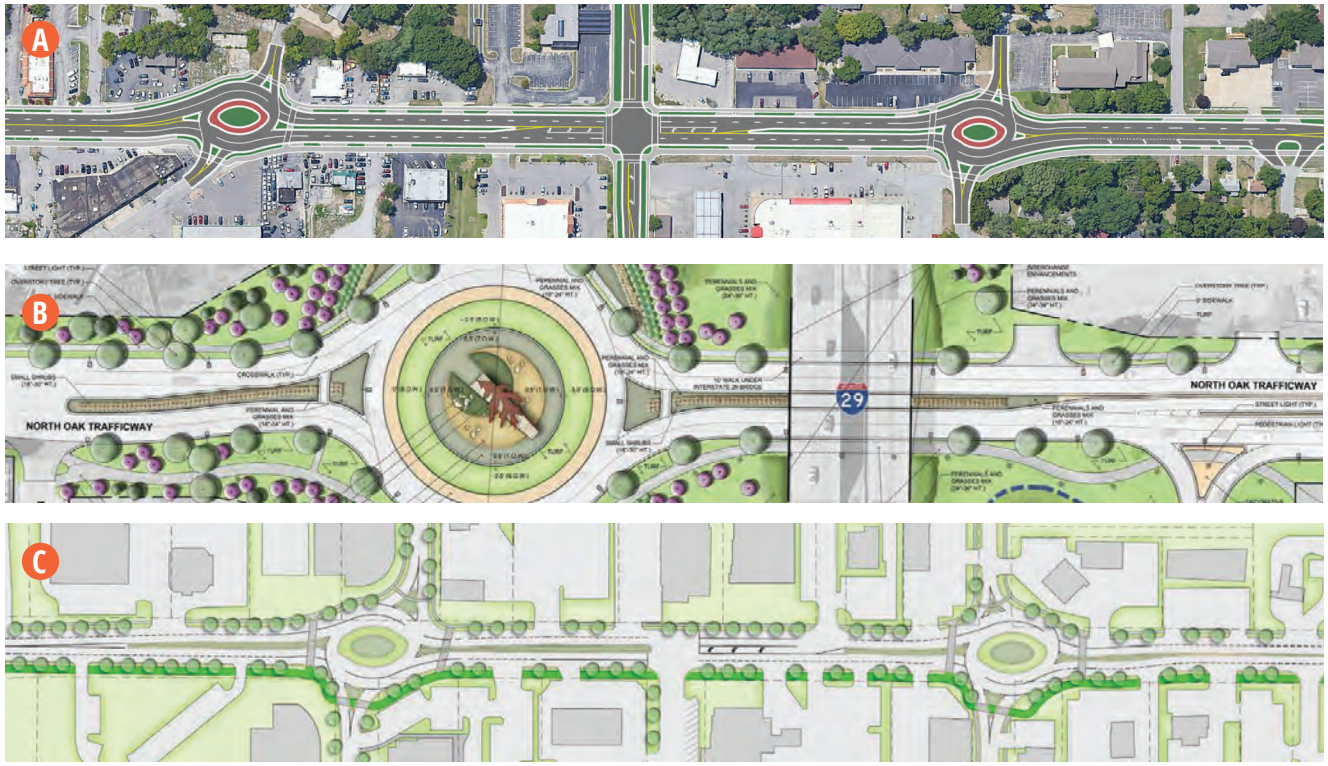


FIGURE 2.40 - *PROPOSED ROUNDABOUTS ALONG THE CORRIDOR*

FIGURE 2.39 - *PROPOSED ROUNDABOUT LOCATIONS ALONG NORTH OAK*

DOWNTOWN GLADSTONE - EXISTING CONTEXT

One of the primary opportunities for creating a focus area to showcase the complete streets and placemaking improvements is within the Downtown District in Gladstone. The North Oak Corridor serves the Downtown area, and as it continues to grow to encompass additional properties to the west of the corridor, North Oak will eventually traverse through the middle of Gladstone's Downtown District.

As such, it becomes a significant gateway opportunity to create a sense of arrival into the district, while also strengthening the multi-modal connectivity between the east and west sides of the corridor. The current width, fast moving traffic and few pedestrian crossings along this portion of the corridor act as a fairly significant physical and psychological east-west barrier - one that needs to be addressed through this planning process.

The City of Gladstone has made great investments and crafted strong public-private partnerships in recent years in support of creating the Downtown District. Improvement projects include the creation of Linden Square, the Gladstone Community Center and Natatorium, The Heights Mixed-Use Development, the Post Office Redevelopment, the iWerx Redevelopment, the expansion of Oakhill Day School, the Innovation Center, and a new Marriott Fairfield Inn. The combination of these projects is creating a new energy, adding vitality to this emerging urban district.

The City of Gladstone plans to develop a future parkway connector leading from North Oak/NE 69th Street west to connect with the Broadway/NE 68th Street corridors. This future parkway will eventually improve the transportation network serving Downtown Gladstone and will provide increased accessibility for properties on the west side of the North Oak Corridor. The existing NE 70th Terrace corridor also provides public street access to properties on the west side of the corridor and serves as an important linkage between the east and west sides of the Downtown District.

It is important to consider this future context as it relates to the complete street improvements being contemplated for the corridor at this time, and to anticipate how these initial corridor improvements will eventually support the opportunity to someday potentially expand the Downtown District.

FIGURE 2.41 - *EXISTING ROADWAY CONDITIONS LIMIT DOWNTOWN GLADSTONE'S POTENTIAL TO THE EAST SIDE OF NORTH OAK*

DOWNTOWN GLADSTONE - FUTURE IMPROVEMENTS

Considering the future context of the Downtown District, as well as the future Parkway extension and the NE 70th Street corridor serving as an east-west street network - the treatment of these intersections with the North Oak Corridor Complete Street improvements will be a key to developing a cohesive and holistic solution for the area. The proposed corridor improvements have the potential to tap the unique potential for not only connecting both sides of the street, but to creating a unique identity and sense of arrival into Gladstone's Downtown District.

The design recommendation for enhancing this portion of the corridor is to integrate two hybrid roundabouts at the intersections of NE 69th Street and NE 70th Terrace with a new median and a shared-use path located along the east side of the North Oak Corridor. The NE 70th Street intersection will remain signalized and is located in between these two hybrid roundabout features.

A creative name for these hybrid roundabout features could be considered - something that reflects their unique shape and function. Options include:

- Swivels
- Dizzies
- Ovals
- Whippits
- Pivots
- Orbits
- Turnabouts
- Gateways

The City of Gladstone should be the final arbiter of a creative name for these features (if any is used).

These new hybrid roundabout features provide numerous opportunities to enhance the Downtown District while also accomplishing the complete street goals. They provide safe east-west crossings for vehicles, pedestrians and bicyclists while still allowing mostly uninterrupted traffic flow along the corridor. Medians on North Oak will provide a place of refuge for pedestrians, so they do not have to traverse the entire roadway at once.

The use of a roundabout allows the future Parkway to be aligned in a manner that maximizes the development potential of a City-owned parcel located across from the Innovation Center. This allows for the future Parkway to abut the northern property line of this parcel while still creating a safe and attractive intersection with North Oak.

These hybrid roundabout features also create unique opportunities for placemaking elements such as community art, monuments, identification and wayfinding signage, enhanced landscape features, and unique aesthetic lighting. These elements can be combined to create an attractive and welcoming sense of arrival into the Downtown District, while also creating a pleasant walking environment and encouraging visitors to stay in the District for longer periods of time.

The proposed shared-use path, shown in bright green, is located on the east side of the corridor - providing a connection for residents and visitors to access Downtown Gladstone using alternate modes of transportation.

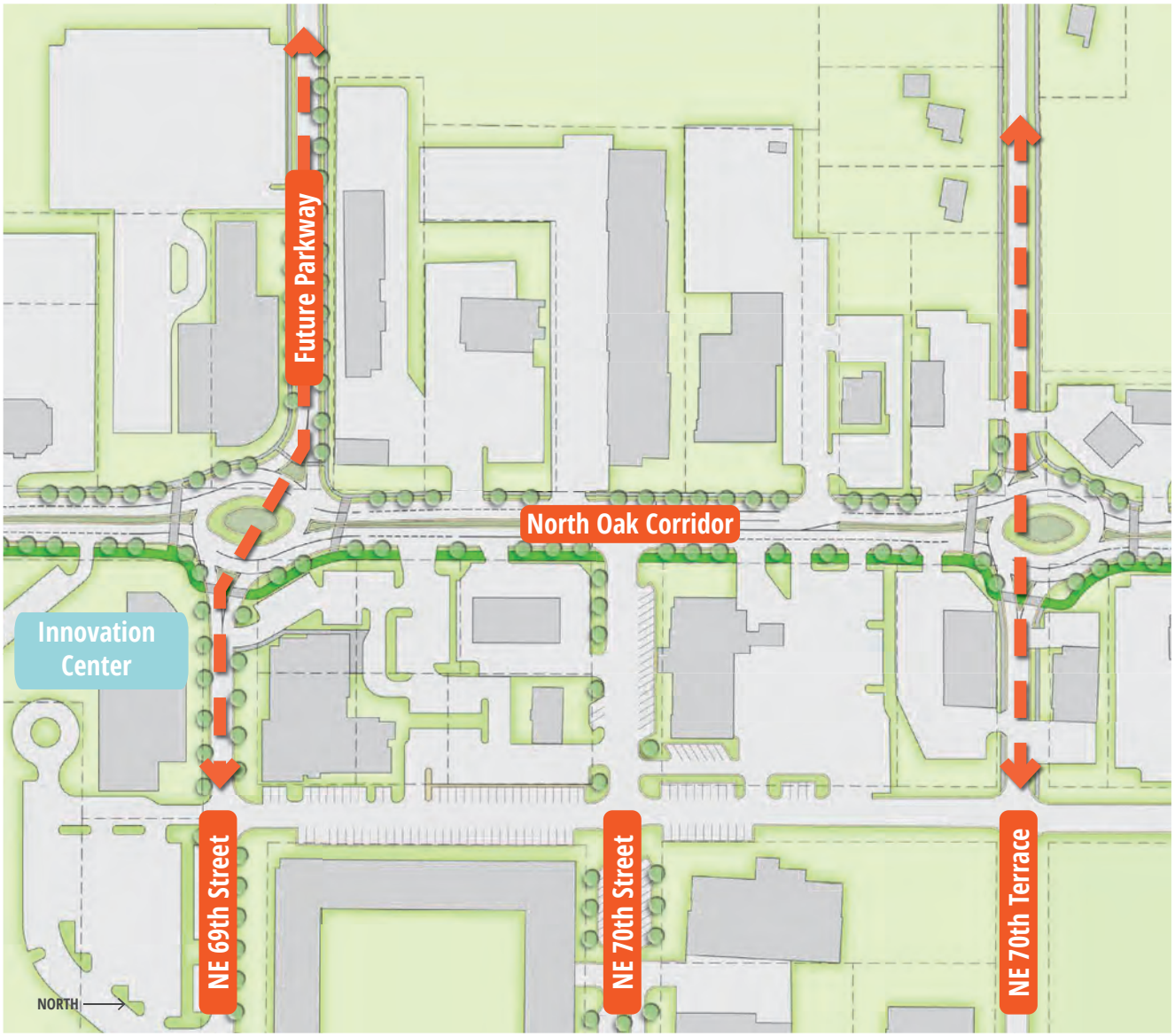


FIGURE 2.42 - *PROPOSED ROUNDABOUT LOCATIONS IN DOWNTOWN GLADSTONE FACILITATE GROWTH TO THE WEST SIDE OF THE CORRIDOR*

Community Priorities

A brief online survey of six questions was administered to gain additional insight into the community's opinions, thoughts and priorities regarding this important corridor. This tool augmented the public meetings, as not everyone can attend these meetings, but they were still provided opportunities to review the information and share their thoughts and suggestions. These types of surveys also allow community members to provide input from a place and at a time that is convenient for them.

This survey was one of the most successful methods of public input utilized during this planning process. The results were reviewed by the planning team and helped to shape the final vision for the North Oak Corridor.

The following charts depict the survey responses from the community, which included 547 responses received.

1 What are the most important goals in creating a Complete Street project for North Oak? **Please rank the following six items 1-6, with 1 being your highest priority and 6 being the lowest.**

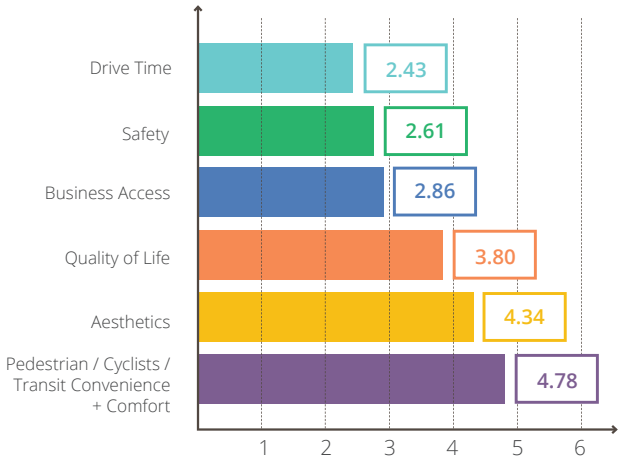


FIGURE 2.43

2 A mobility lane is a separated facility for running, biking, scooters, and rollerblading, etc. How would you use the mobility lane on North Oak Corridor? **Please select your top 3 priorities.**

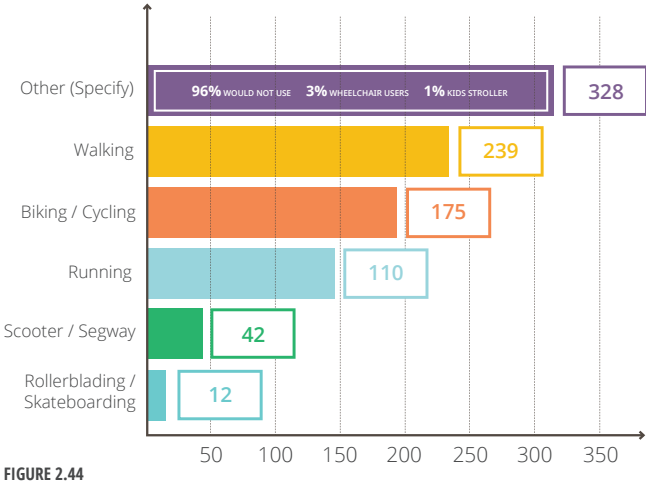


FIGURE 2.44

3 How would you use the mobility lane/pedestrian path? **Mark all that apply.**

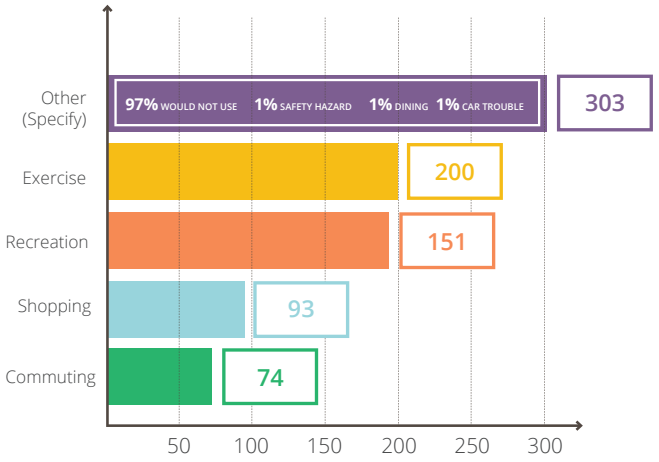


FIGURE 2.45

4 A shared-use path is a combined pedestrian/mobility lane system. A cycle track or bike lane is a separated system. Would you prefer separated pedestrian traffic from bike and scooter traffic (mobility lane) or would you prefer they be combined as one facility?

FIGURE 2.46

5 Would you consider a road diet (removing a lane) to provide more bike options and increased pedestrian comfort and safety or would you prefer the lane configuration to remain unchanged for fastest vehicular travel time?

FIGURE 2.47

6 If space in the right-of-way allowed, what amenities would you like to see along the mobility lane / pedestrian path? **Check all that apply.**

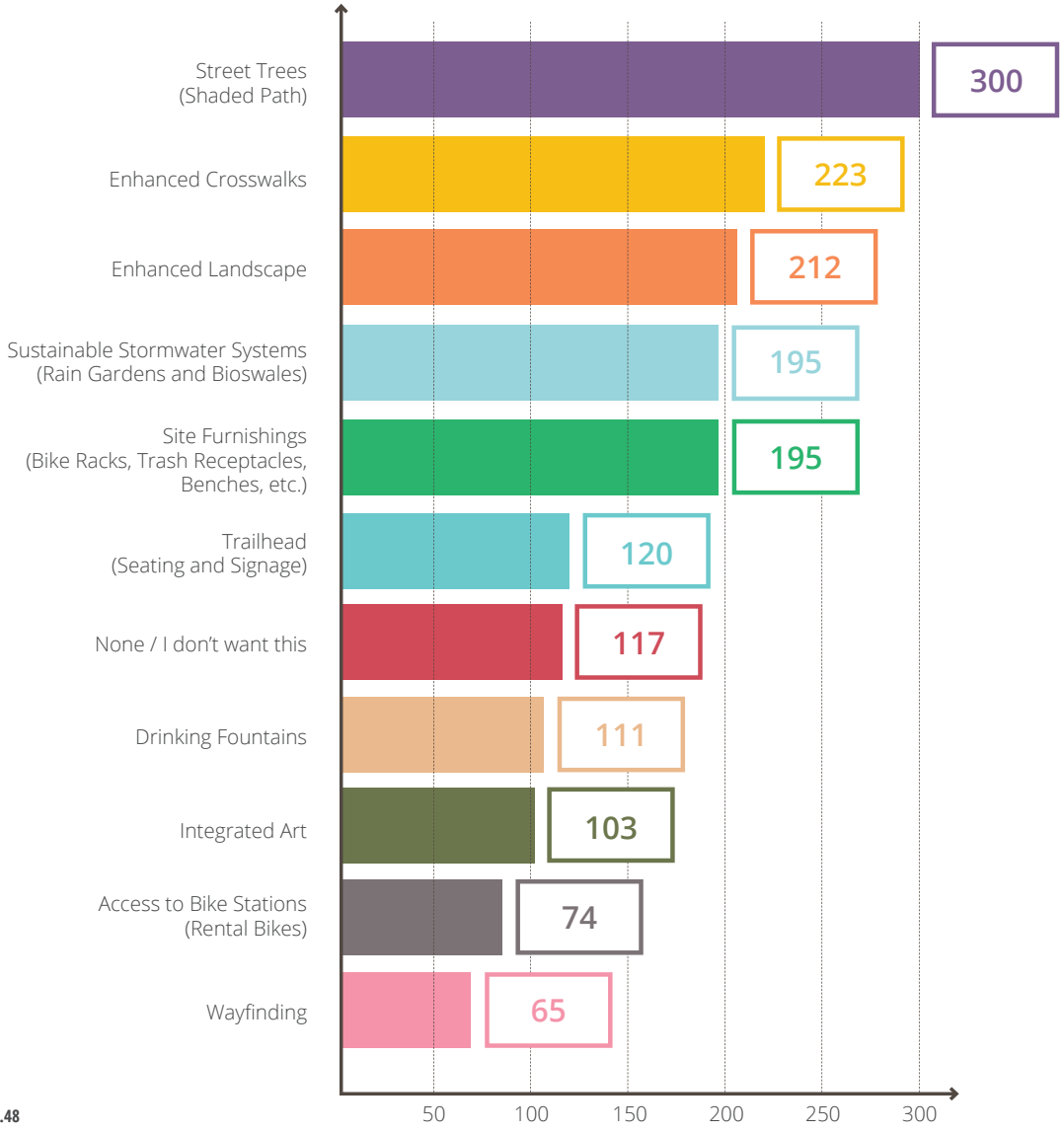


FIGURE 2.48

CONCERNS AND OPPORTUNITIES

The community and steering committee input gave the planning team a clear indication of primary concerns and potential opportunities for the North Oak Corridor.

The two most important goals shared by the community included not increasing drive time and improving safety (Figure 2.39). Achieving these two goals will require a balanced approach and will likely mean a compromise is needed to address both issues adequately. Other answers that received high marks were maintaining business access and the existing quality of life. Lesser goals were to enhance corridor aesthetics and improve the convenience and comfort for pedestrians/cyclists/transit users.

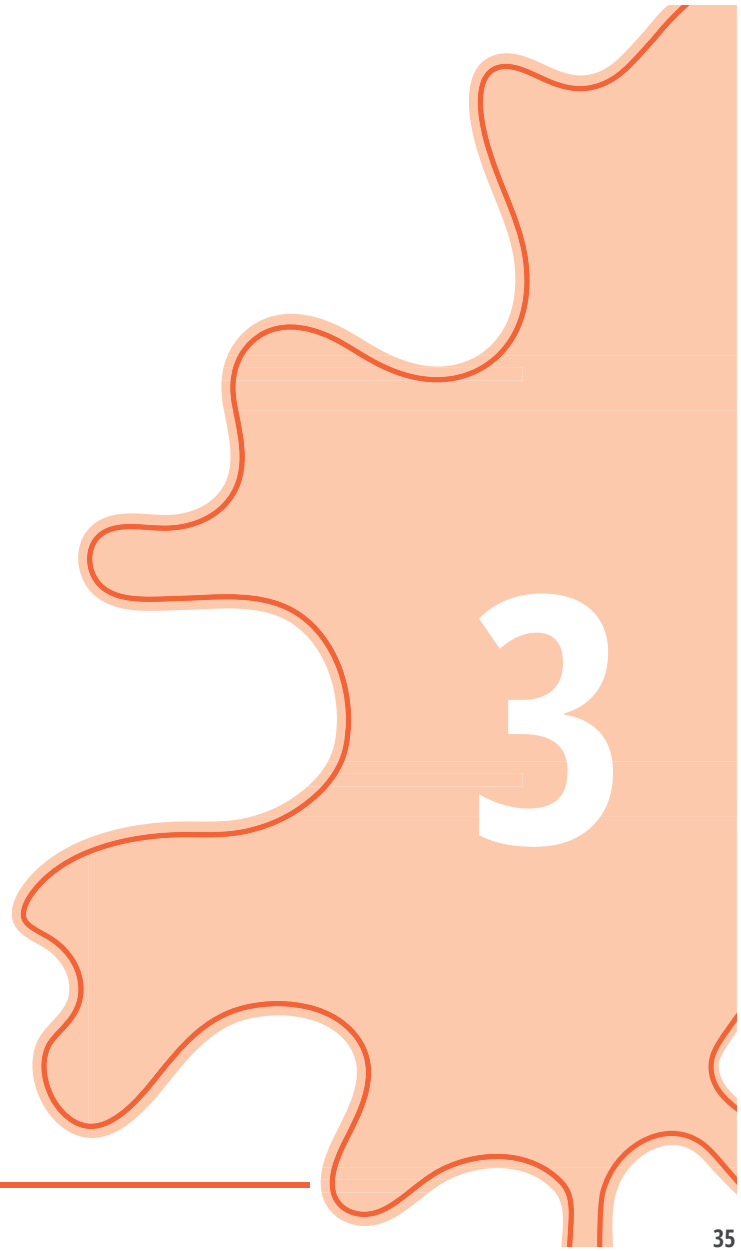
A majority of respondents indicated that they would use a mobility facility for walking, biking/cycling, and running listed as the top three specific uses. A large portion of respondents indicated they would not use the mobility facility (Figure 2.40).

For those voting for daily activities, exercise and recreation garnered the highest amount of responses while shopping and commuting scored lower. Again, a fair amount of responses said they would not use the mobility facility (Figure 2.41).

The vast majority of respondents (71%) indicated that a combined system, where pedestrians and cyclists use the same mobility facility, was their preferred approach (Figure 2.42). This response likely stems from the reality of ROW constraints and the understanding that a combined facility would require less space to implement.

There was a lot of concern from the community regarding the potential for a road diet to narrow the street to a three-lane section, with 86% of survey respondents preferring there to be no road diet on North Oak. This survey occurred at approximately the same time that North Kansas City's Armour Road Corridor road diet project was being constructed, and several comments and concerns were expressed about the potential for increased travel times and congestion (Figure 2.43).

The last question (Figure 2.44) asked respondents to indicate what street amenities they felt were most important along the corridor. The elements with the highest responses included street trees/shaded paths, enhanced crosswalks, enhanced landscaping, sustainable stormwater systems and site furnishings such as bike racks and benches. Lower scoring items included wayfinding signage, access to bike stations and integrated art.



COMPLETE STREET RECOMMENDATIONS

COMPLETE STREET RECOMMENDATIONS

The map below (Figure 3.1) illustrates the complete street vision for the entire North Oak Corridor. Following an extensive period of public engagement and coordination with the Steering Committee, this vision reflects the input received during the planning process and presents a corridor that will be safe, efficient and accessible for all users.

PREFERRED ROADWAY RECOMMENDATIONS

The final vision in most cases recommends no travel lane reductions in response to the concerns from the public, which will ensure traffic will continue to flow as it does currently. Depending on ROW constraints, lane widths are reduced to accommodate the integration of a new shared-use path mobility facility. All proposed lane width modifications still meet necessary requirements and reflect the changes made recently to the south end of the corridor adjacent to Water Works Park.

The roundabout at the reconfigured I-29 interchange, and the use of hybrid roundabouts in the Briarcliff District and Gladstone's Downtown District addresses safety and connectivity needs, maintains efficient traffic flow, creates unique gateway placemaking opportunities and accommodates a consistent separated shared-use path on the east side of the corridor.

PREFERRED MOBILITY IMPROVEMENTS

Utilizing input received throughout the planning process, a separated shared-use path is the preferred mobility facility for use throughout the North Oak Corridor. This shared-use path combines use for both pedestrians and cyclists, which reduces the amount of physical space needed to accommodate these improvements.

The ROW constraints along the corridor coupled with the community's desire to not reduce the number of travel lanes makes this the safest and most pragmatic option.

The shared-use path is located on the east side of the corridor to connect with the recent corridor improvements adjacent to Water Works Park and will provide a unifying feature linking the entire corridor. A consistent sidewalk is also proposed to be constructed on the west side of corridor and is not intended for use by bicycles.

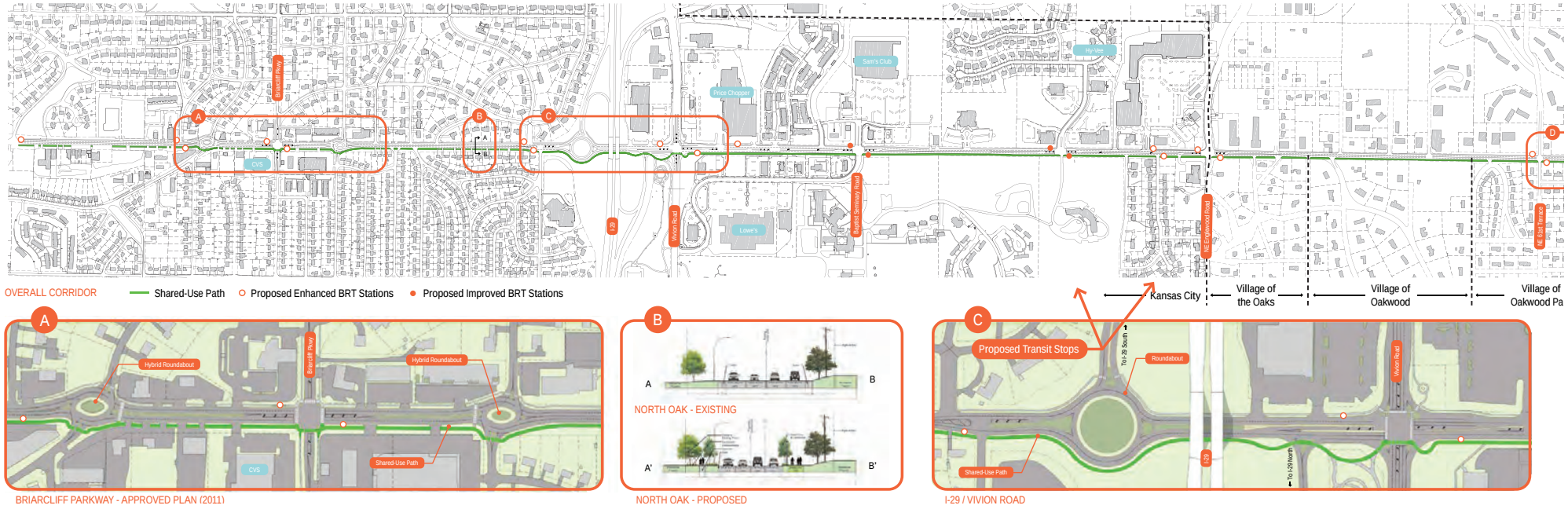


FIGURE 3.1 - *OVERALL VISION FOR NORTH OAK CORRIDOR*

GATEWAY OPPORTUNITIES

At appropriate locations along North Oak, district gateways should be implemented to give travelers a sense of place and feeling of arrival. Repeated gateways will contribute to the vitality of the overall corridor. Gateways are recommended at the following locations:

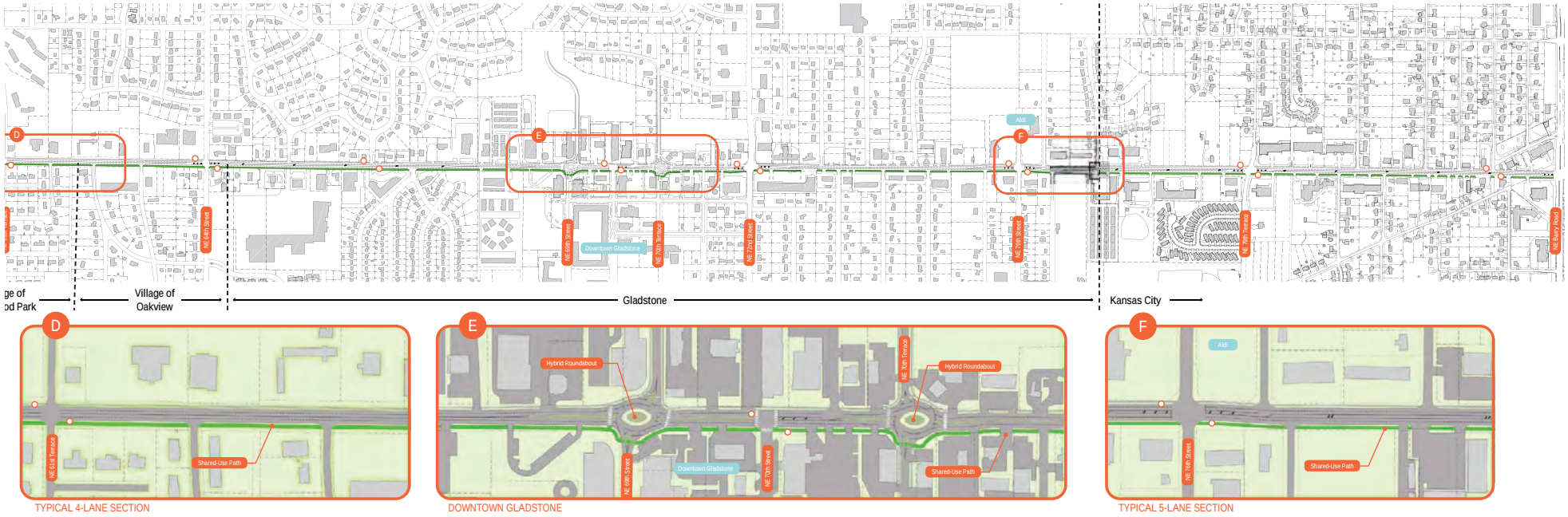
- Briarcliff District (Cherry Street to NE 43rd Street)
- I-29 and Vivion Road Interchange/Intersection
- Gladstone's Downtown District (NE 69th Street to NE 72nd Street)

In addition to these focused areas, thematic streetscape elements following the previous North Oak Corridor Streetscape Master Plan recommendations should be placed throughout the entire corridor. Elements such as seating, pedestrian lighting, signage and landscaping will enhance the corridor for drivers, cyclists and pedestrians alike. Iconic features like public art and vertical monuments should also be considered to make a lasting visual impact.

TRANSIT STATIONS AND INTEGRATION

With the planned future BRT service on North Oak, it was important to consider how the mobility options discussed in this plan would integrate with future transit station improvements. In general, transit stations will be located on the far side of intersections, directly adjacent to the curb line, eliminating the need for bus pull offs. Enhanced stations will likely be raised so that the platform and bus are at the same elevation, eliminating the need for the buses to use their handicap ramps. With two traffic lanes, vehicles will still be to bypass stopped buses along the corridor. The proposed shared-use path will shift in alignment to accommodate the proposed transit stops (Figure 3.2). These future improvements may require some limited property acquisition, and further study is needed to determine any specific needs. To encourage bicycle to bus ridership integration, all transit stations are recommended to provide bike amenities such as bike racks and possibly repair stations. Future coordination with KCATA and each municipality will be needed to develop specific action items.

FIGURE 3.2 - *EXAMPLE OF SHARED-USE PATH AND TRANSIT STATION INTEGRATION*



DESIGN RECOMMENDATIONS

BRIARCLIFF DISTRICT

As a planned urban district, the area around Briarcliff Parkway and North Oak was a focus area for this study. Two hybrid roundabouts, at Cherry Street and NE 43rd Street, function as gateways into the Briarcliff District while also alleviating misaligned intersections (Figure 3.3). The implementation of these roundabouts will require some limited property acquisition - which will depend on final roadway alignments to delineate the extent of any necessary acquisitions.

A center median between the roundabouts eliminates left hand turns across traffic into businesses while a signalized intersection at Briarcliff Parkway remains. To access businesses on the other side of the road, drivers will need to reach the approaching hybrid roundabout and circle back in the opposite direction. While this will require a small increase in travel time, it is a safe and pragmatic solution to facilitate access into the many businesses in this district.

The shared-use path is located on the east side of North Oak and new pedestrian crossings are located at each of the roundabout locations.

RESIDENTIAL AREA

North Oak between NE 43rd Street and NE 46th Street is characterized by many single-family homes with several steep driveways, making access to some of these homes challenging. To address this challenge and accommodate the shared-use path, the alignment of the roadway is proposed to slightly shift to the west while reducing the width of the travel lanes from 13.5' to 10'. The ROW in this location is wide enough to accommodate this shift without the need to acquire additional property (Figures 3.4 and 3.5).

I-29 ROUNDABOUT INTERCHANGE RECONFIGURATION

The proposed roundabout was discussed previously in this plan - and these improvements will allow the separated shared-use path to safely traverse through this area. With the elimination of the merging lane under I-29, the shared-use path is able to bring pedestrians and cyclists under the highway safely. Connection is made to the Vivion Trail in Anita B. Gorman Park, giving pedestrians and cyclists access to additional mobility options (Figure 3.6).

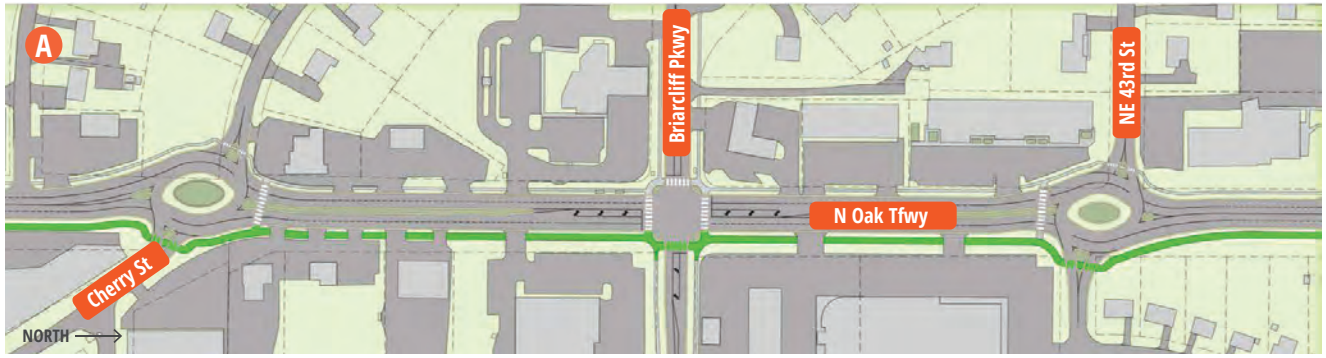


FIGURE 3.3 - *CORRIDOR RECOMMENDATIONS FOR THE BRIARCLIFF DISTRICT*

FIGURE 3.4 - *EXISTING CONDITIONS BETWEEN NE 43RD STREET AND NE 46TH STREET*

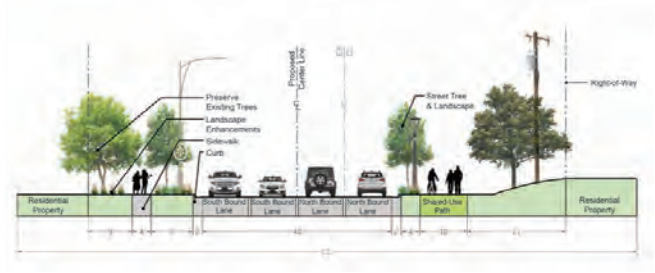


FIGURE 3.5 - *PROPOSED CONDITIONS BETWEEN NE 43RD STREET AND NE 46TH STREET*

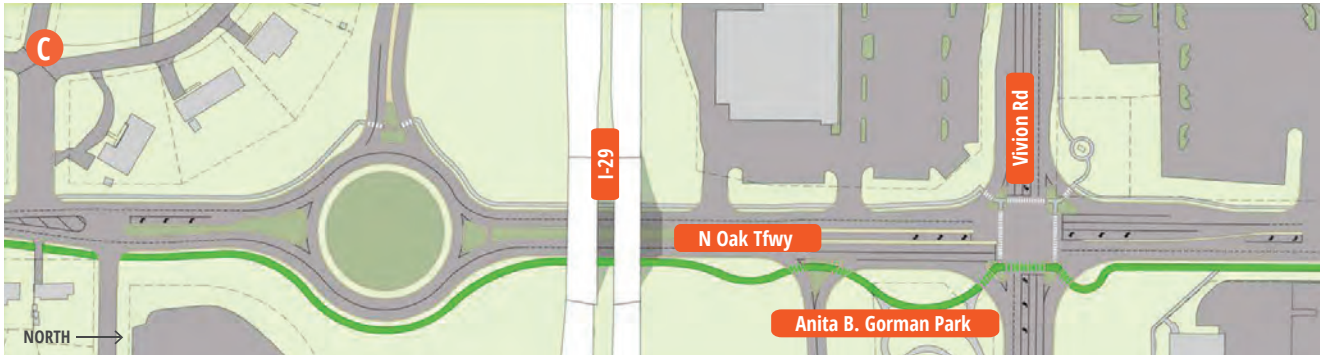


FIGURE 3.6 - *PROPOSED ROUNDABOUT AT I-29 / VIVION ROAD*

TYPICAL 4-LANE CONFIGURATION

The images in Figure 3.7 and Figure 3.8 illustrate the proposed typical 4-lane configuration for the North Oak Corridor. In this location at NE 61st Terrace, the ROW did not allow for any roadway expansion and so the current 4-lane configuration needed to remain. Although this is not the ideal roadway condition in terms of safety, it does allow room for the shared-use path, giving pedestrians and cyclists a safe and comfortable way to use the corridor.

GLADSTONE'S DOWNTOWN DISTRICT

The vision for the North Oak Corridor through Gladstone's Downtown District has been discussed in previous sections. Figure 3.9 illustrates the recommended hybrid roundabouts and public street connections across North Oak. The implementation of these roundabouts will require some limited property acquisition - which will depend on final roadway alignments to delineate the extent of any necessary acquisitions. See the following pages for further definition of the strategy for Downtown Gladstone.

TYPICAL 5-LANE CONFIGURATION

The images in Figure 3.10 and Figure 3.11 illustrate the proposed typical 5-lane configuration for North Oak. This location at NE 76th Street demonstrates the safest conditions for both drivers and pedestrians / cyclists. No alterations are proposed, the roadway is currently 5-lanes, and the existing ROW width allowed for the addition of the shared-use path along the east side of the corridor.

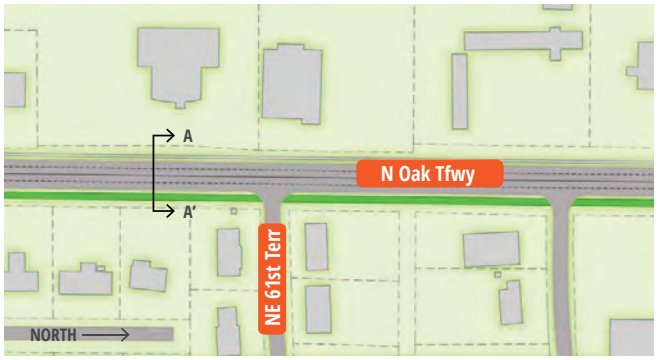


FIGURE 3.8 - *TYPICAL 4-LANE CONFIGURATION - PLAN*

FIGURE 3.7 - *TYPICAL 4-LANE CONFIGURATION - SECTION*

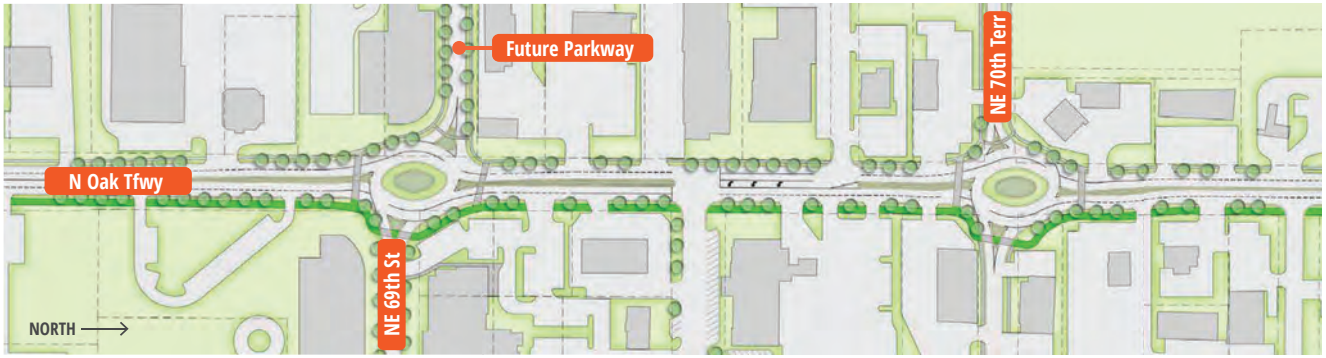


FIGURE 3.9 - *CORRIDOR RECOMMENDATIONS FOR DOWNTOWN GLADSTONE*

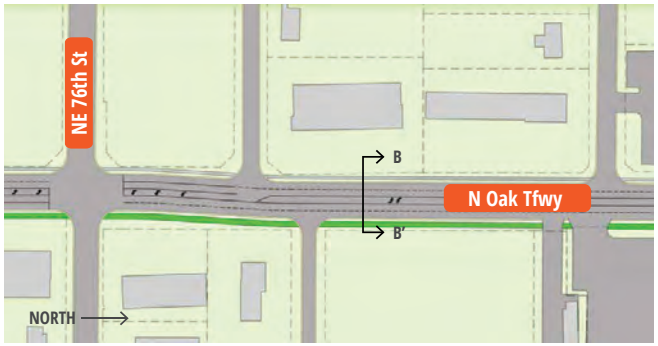


FIGURE 3.11 - *TYPICAL 5-LANE CONFIGURATION - PLAN*

FIGURE 3.10 - *TYPICAL 5-LANE CONFIGURATION - SECTION*

DOWNTOWN GLADSTONE PLACEMAKING

As was discussed previously in this plan, there are currently no gateway or placemaking elements along North Oak in Downtown Gladstone to give travelers an indication they have arrived in the community's core business district. The proposed roundabouts at NE 69th Street and NE 70th Terrace act as district anchors and provide a unique opportunity to incorporate gateway features. Figure 3.12 shows the two roundabouts within the context of Downtown Gladstone.

A concept for potential gateway signage within the roundabout at NE 69th Street is shown in Figure 3.13. The oak leaf perched upon a limestone pedestal speaks to the identity of the North Oak Corridor while Gladstone signage facing both northbound and southbound traffic clearly signals to drivers they have arrived in the Downtown District. Aesthetic lighting can be utilized to showcase the leaf at night and with highly efficient LED technology, lighting themes can change colors and intensity depending on the day or season.

Enhanced landscaping within the roundabout as well as in the medians and shoulders beautify the intersection and help soften the hardscape environment. Smaller gateway features, located in the bottom right of Figure 3.13, add another level of detail and can be appreciated by cyclists and pedestrians using the shared-use path. All of these improvements provide a visual connectivity throughout Downtown Gladstone.

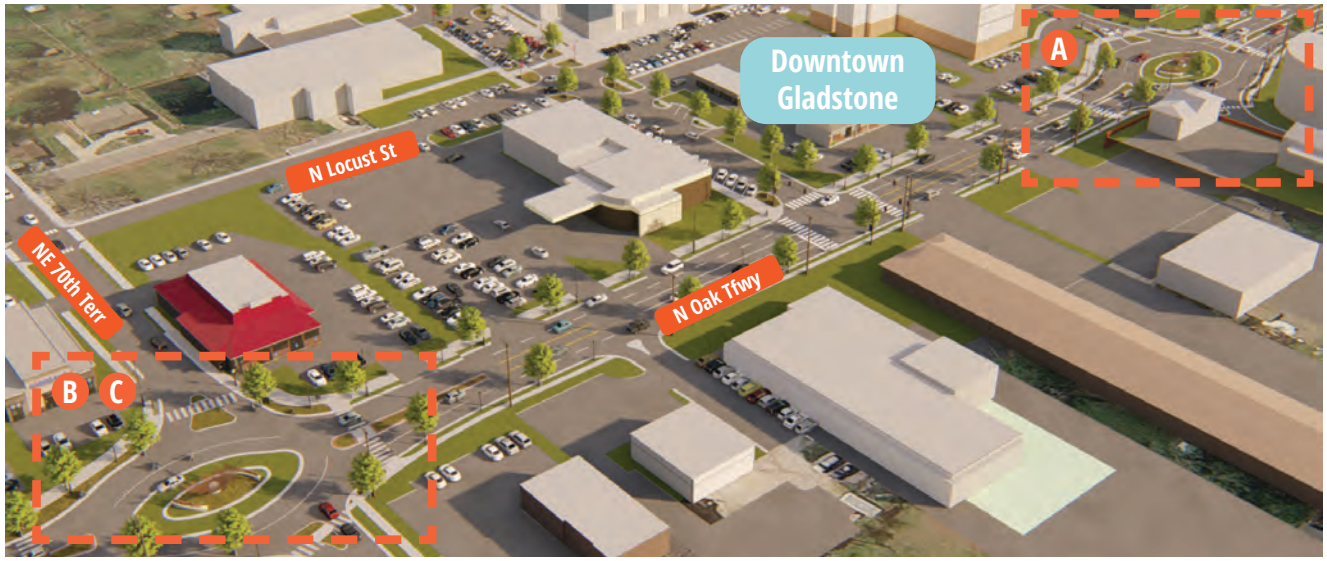


FIGURE 3.12 - *AERIAL VIEW OF ROUNDABOUTS IN DOWNTOWN GLADSTONE*

FIGURE 3.13 - *OAK LEAF SCULPTURE AS A PLACEMAKING ELEMENT*

Looking North at the NE 70th Terrace roundabout (Figure 3.14), this view illustrates how the landscape and aesthetic treatments within the roundabout, median and along the curb and sidewalk, will greatly increase the aesthetic quality of this area. Street trees and pedestrian lighting further enhance the corridor and also provide greater protection for pedestrians along the sidewalks and pedestrians/cyclists on the shared-use path, located along the east side of the road.

Figure 3.15 shows the NE 70th Terrace roundabout from the perspective a driver. From this view, it is clear that the identification signage can create a memorable placemaking element within the Downtown District along the North Oak corridor. Clear crosswalk markings and a pedestrian refuge/ vehicular splitter island within the median make this intersection much safer and easier for pedestrians to navigate than the current configuration.

Thematic streetlight and pedestrian light poles and other streetscape enhancements such as bus stops, wayfinding signage and site furnishings can integrate previous North Oak corridor branding to further strengthen the sense of place along the corridor.

FIGURE 3.14 - *ROUNDABOUT AT NE 70TH TERRACE WITH PLACEMAKING ELEMENTS - AERIAL VIEW*

FIGURE 3.15 - *ROUNDABOUT AT NE 70TH TERRACE WITH PLACEMAKING ELEMENTS - DRIVER'S PERSPECTIVE*

Figure 3.16 shows two options for Gladstone gateway identification signage in relation to the NE 69th Street roundabout. Image A shows the concept discussed on the previous page. An alternate concept shows Gladstone signage located adjacent to the roundabout in between the curb and shared-use path. This sign can be slightly more prominent than the interior roundabout option. The location of this sign is such that when drivers are negotiating the turn of the roundabout, it is located directly in front of them.

Bright green leaves make this signage feature visually "pop" and would be considered an iconic placemaking element. Situated along the shared-use path, the limestone base of the sign can also act as a seat wall for pedestrians.

Figure 3.17 shows concept B from the perspective of a driver. The green leaves create visual contrast and as a backdrop for the signage letters.

An alternate option to the sculptural oak leaf concept is the use of a vertical masonry monument. Much different than the leaf in form and material, the monument serves the same purpose in creating an iconic welcoming element along the North Oak corridor.

The limestone material speaks to the native stone of this area and perched on top of the monument is an acorn which will tie this monument together with other placemaking elements along the corridor. As with the leaf concept, Gladstone signage in front of the vertical monument can create a cohesive visual composition for a memorable moment along the corridor (Figure 3.18).

Figure 3.19 shows the alternate signage option, located adjacent to the roundabout, with the vertical monument.

FIGURE 3.16 - *ALTERNATE OPTION FOR GLADSTONE SIGNAGE (A-B)*

FIGURE 3.17 - *ALTERNATE OPTION FOR GLADSTONE SIGNAGE*

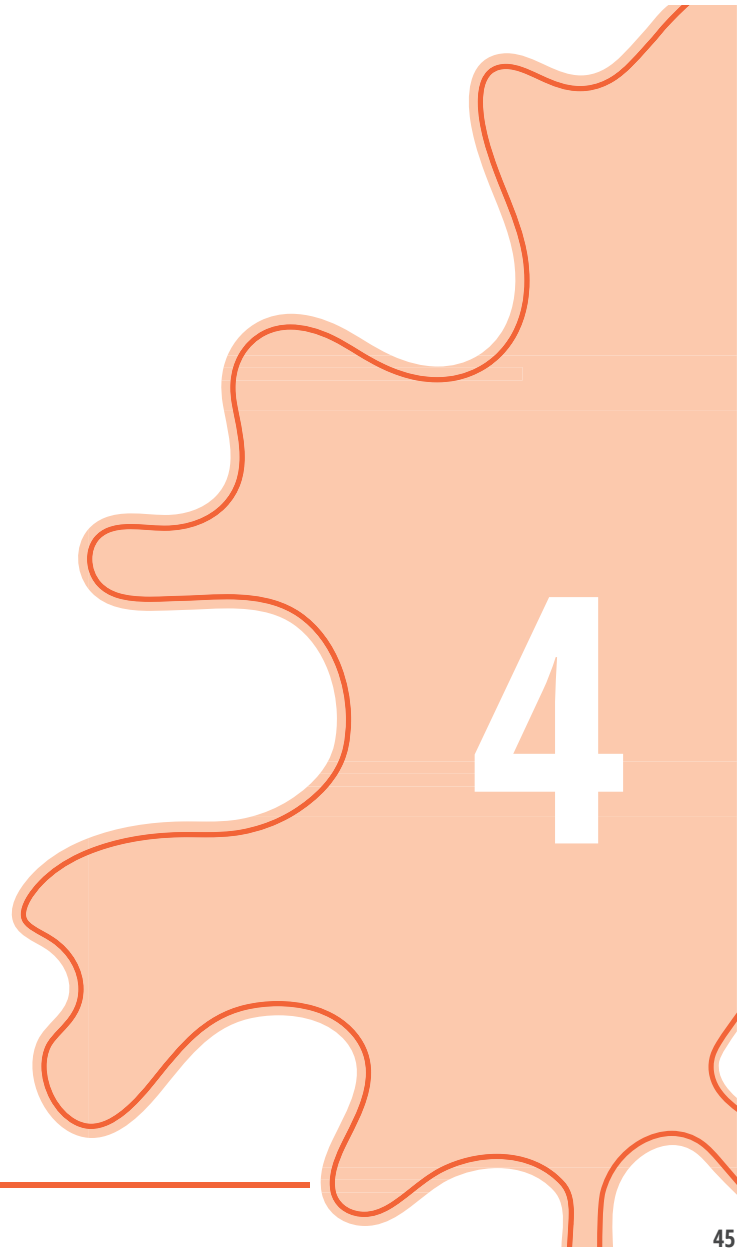
FIGURE 3.18 - *VERTICAL MONUMENT AS A PLACEMAKING ELEMENT WITH INTERIOR ROUNDABOUT GLADSTONE SIGNAGE*

FIGURE 3.21 - *SIGN OPTION A - WITHIN THE ROUNDABOUT*

FIGURE 3.19 - *ALTERNATE OPTION FOR GLADSTONE SIGNAGE COMBINED WITH VERTICAL MONUMENT*

FIGURE 3.20 - *ALTERNATE OPTION FOR GLADSTONE SIGNAGE COMBINED WITH VERTICAL MONUMENT*

FIGURE 3.22 - *SIGN OPTION B - ADJACENT TO THE ROUNDABOUT*



IMPLEMENTATION

Engineering Exploration - Further Study

This plan has conceptualized complete street improvements for North Oak according to the vision of the stakeholders and based on planning and engineering best practices. However, there is more work that will need to take place before a final design is completed and ready for construction due to the nature of the improvements.

TRAFFIC ENGINEERING

This project included comprehensive traffic modeling for the PM peak hour of the day. This is the highest volume period of the day on North Oak and represents the highest congestion of the day. Because no lane reductions are proposed for the corridor, the plan recommendations will have very little impact to traffic. The proposed roundabouts were also modeled and expected to have very little impact to traffic delay. Because of this, it is not expected that an additional traffic study will be needed moving forward with one exception.

The interchange of I-29 and North Oak coupled with the intersection of Vivion Road and North Oak will require additional consideration. The traffic modeling on this project was limited to North Oak intersections. However, the proposed changes to the interchange ramps at I-29 will affect the traffic characteristics on I-29 itself due to the altered traffic patterns. The effects of this should be analyzed with further traffic engineering and safety analysis.

UTILITIES AND DRAINAGE

For the most part, the recommendations in this plan will have limited drainage and utility impact due to the limited nature of the street reconstruction proposed. For the most part, it is not recommended that the location of the curb and gutter and associated curb drainage inlets be moved. With the construction of the shared use path, the adjacent storm sewer infrastructure will not be significantly affected.

The one exception to this is along the segment from Briarcliff Parkway to I-29. This section utilizes a roadside ditch to convey water to field inlets (Figure 4.1). To implement the recommendations in this plan, this storm sewer will need to be enclosed on at least one side of the street.

The other main utility consideration on North Oak is with overhead power lines. A major overhead power distribution line runs along the North Oak for the entire length of the corridor. South of approximately 64th Street, the power line is located on the east side of the street. North of 64th Street, the power line is on the west side of the street. It appears that the power line is located within the public right of way.

Additional investigation into whether this power line is inside or outside of the public right of way should be made. If the power line is inside the public right of way, then the electrical utility provide will be required to move the line at their cost if necessary, with the construction project. If not, the utility relocation costs will need to be accounted for as part of the project cost.

Because of the age and central location of North Oak, it is highly likely that many underground utilities such as communications, natural gas, water, and wastewater also exist along the corridor. It is unlikely that these utilities will be significantly impacted due to the limited nature of reconstruction recommended with this plan. Nonetheless, there should be further study into where these utilities exist and what specific impacts, they could pose to project cost and schedule.

FIGURE 4.1 - *DRAINAGE DITCHES ON NORTH OAK BETWEEN BRIARCLIFF AND I-29 WILL REQUIRE ADDITIONAL CONSIDERATION*

FIGURE 4.2 - *MAJOR ELECTRICAL DISTRIBUTION LINE ALONG NORTH OAK WILL HAVE A SIGNIFICANT IMPACT TO THE PROJECT*

Universal Corridor Recommendations

In addition to the specific recommendations included in this report, some corridor-wide recommendations should be observed with the implementation of every phase of this project. These include access management, transit stop integration, and pedestrian crossings.

ACCESS MANAGEMENT

Every business or residence needs access from the street to the front door. For motor vehicle access, this can either be provided by on-street parking adjacent to the building, or a driveway accessing on-site private parking. No on-street parking is allowed on North Oak today and none is proposed with this plan. This means that all of the businesses and residences along the corridor are accessed by driveways connecting to private parking.

Through the safety analysis conducted with this plan, it was noted that a high concentration of commercial driveways was correlated to high crash segments of the road. This is due to the high number of turning conflicts and conflicting turning movements that arise with this situation. As a result, reducing the number of access points on a roadway can help mitigate safety issues. According to the FHWA, corridor access management can reduce injury and fatal crashes on a road by up to 30%.

Access points can be limited by consolidating driveways or converting driveways to right-in/right-out access only. Limiting access to businesses can prove very detrimental to the business so this must be done with special consideration. However, some global principals can be implemented with limited business impacts.

ACCESS MANAGED ROUNDABOUT CORRIDORS

Two locations are proposed for roundabout construction which allows for business to maintain full access, but with the driveways converted to right-in/right-out only driveways. This can be done because the roundabouts provide easy U-turn opportunities, so a driver who needs to make a left-turn into the business can simply make a U-turn and a right-turn into the business (Figure 4.3). With the construction of the roundabouts near Briarcliff Parkway and in Downtown Gladstone, raised medians should be constructed to limit driveway access in those areas.

The one exception to this is along the segment from Briarcliff Parkway to I-29. This section utilizes a roadside ditch to convey water to field inlets. To implement the recommendations in this plan, this storm sewer will need to be enclosed on at least one side of the street.

DRIVEWAY CONSOLIDATION & RESTRICTION

Many of the properties along North Oak have multiple access points to the private parking lots on the property. However, many of these parking lots are small and do not need multiple access points to function. All parking lots along the North Oak corridor should only be allowed one access point on North Oak unless an engineering study shows definite need for a second driveway or particular site constraints exist that require multiple driveways (such as for businesses with one-way drive-through facilities). This will not reduce business access and will actually benefit the property owner by allowing for more car parking on the lot due to the space reclaimed from the driveway space (Figure 4.4).

Existing driveways should be consolidated according to these recommendations through the reconstruction process. Additionally, new developments should not be allowed to have more than one access point on North Oak unless the previously stated exceptions exist. Wherever practical, driveways should maintain at least 200 foot spacing between adjacent driveways and intersections.

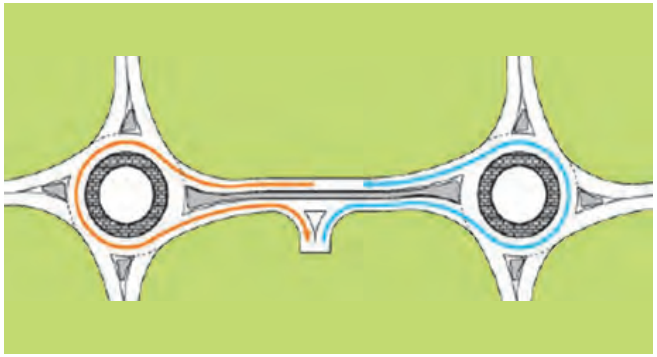


FIGURE 4.3 - *ROUNDABOUT ACCESS MANAGEMENT (SOURCE: FHWA)*

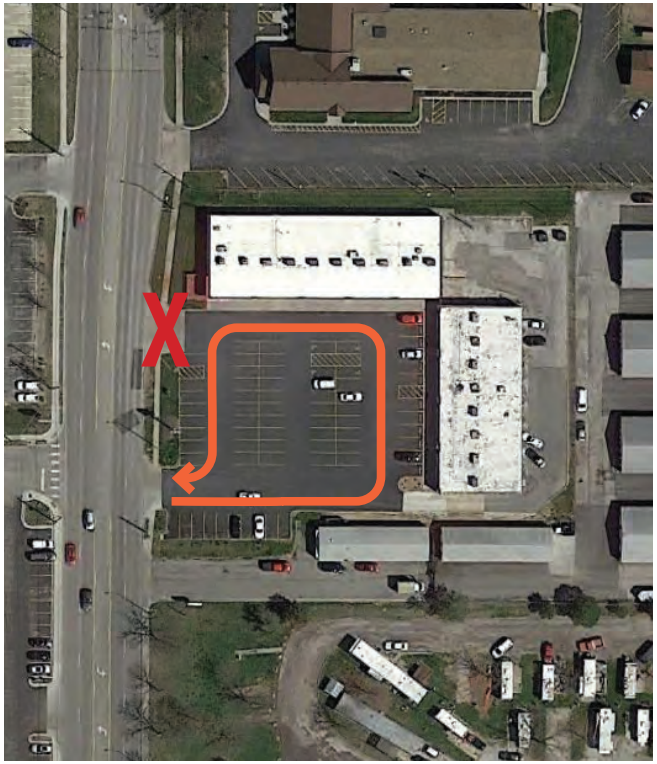


FIGURE 4.4 - *EXAMPLE OF SITE WHERE DRIVEWAY CONSOLIDATION WOULD NOT IMPACT BUSINESS OPERATIONS*

DRIVEWAY DESIGN STANDARDS

In addition to consolidation of driveways or conversion to limited access, driveways should be reconstructed only as wide as necessary. Many of the driveways existing today on North Oak are wider than necessary to accommodate vehicle turning movements. Driveways that are wider than necessary create undue costs the property owner and city due to unnecessary pavement maintenance needs, create additional stormwater runoff, and create safety issues for pedestrians and cyclists.

The maximum preferred driveway width on North Oak should be 20 feet wide (24 feet wide as measured from the back of the curb and gutter if it exists). An engineering study should be required to justify a driveway wider than 20 feet be constructed. In no case should a driveway be constructed wider than 30 feet wide, which is the current maximum driveway width allowed according to the Kansas City Metropolitan APWA Chapter standard drawings. All driveways should be reconstructed to these standards with implementation of this project.

PEDESTRIAN CROSSING DESIGN

Currently, pedestrian crossings are typically spaced approximately 1/2 mile apart from each other on North Oak. This is even true where transit stations exist. Nearly all transit users in the North Oak corridor are commuters who will use the same transit station in the morning as in the afternoon. This means that the transit user will need to cross North Oak to reach their destination or transit stop one time or another. In many locations, the transit stops are 1/4 mile or further from a signalized crossing of North Oak. The majority of transit users will not add an additional 1/2 mile walk to their trip and will opt to cross North Oak at an unsafe location.

The primary recommendation of this plan as relates to pedestrian and bicycle access is to create a shared use path on the east side of the street. Without regular crossing opportunities, this shared use path will not be accessible to users that need to start or end their trip on the west side of the street. Because of this, it is important to provide regular crossing opportunities to maximize the use of this facility.

To provide safe crossing opportunities for pedestrians, especially at transit stops, additional safe crossings should be constructed on North Oak. At every major transit stop proposed in the North Oak Complete Streets Plan a pedestrian crossing should be provided directly adjacent to the transit stop. In no case should safe pedestrian crossings be located more than 1/4 mile apart from each other. In high activity areas, such as in the Briarcliff area, the Vivion Road area, and the Downtown Gladstone area, pedestrian crossings should be considered at even closer spacing, preferably spaced no more than 1/8 mile apart from each other.

Because of the high speeds and high traffic volume on North Oak, pedestrian crossings represent a very high risk to safety. To create a safe pedestrian crossing on North Oak, specific high impact treatments are necessary. Four options are available to create a safe crossing on North Oak. No pedestrian crossing should be considered safe on North Oak without utilizing one of these four treatments:

- Roundabout.
- Full traffic signal.
- Pedestrian Hybrid Beacon (PHB, sometimes referred to as a HAWK signal).
- Rapid Rectangular Flashing Beacon (RRFB) with a pedestrian refuge island.

Roundabouts are proposed with this plan, and full traffic signals already exist at regular intervals along the corridor. These treatments provide pedestrian safety benefits but should not be implemented if the need is solely for pedestrian crossing access.

For locations where a safe pedestrian crossing is needed on North Oak and no signal or roundabout exists, the PHB option or RRFB + refuge island should be used. Where the road is 4-lanes wide (with no center turn lane/median), a PHB should be installed. Where the road is 5-lanes (including a center turn lane/median), then a RRFB + refuge island can be considered adequate to provide a safe pedestrian crossing. An RRFB should not be considered a safe crossing treatment on North Oak without a refuge island provided.

FIGURE 4.5 - *TRANSIT STOP NEAR SALVATION ARMY. NEAREST PEDESTRIAN CROSSING IS A 10 MINUTE WALK AWAY*

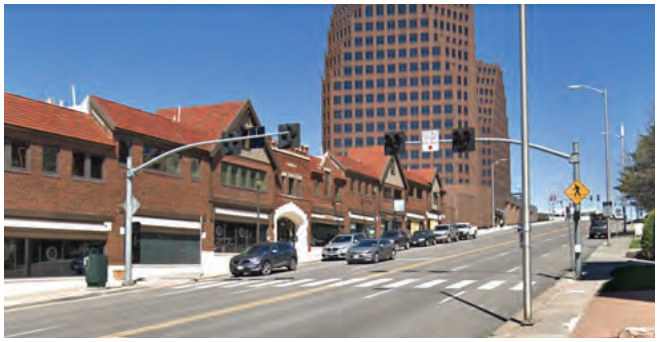


FIGURE 4.6 - *EXAMPLE OF PEDESTRIAN HYBRID BEACON (PHB) USE IN KANSAS CITY, MO*

FIGURE 4.7 - *TYPICAL RAPID RECTANGULAR FLASHING BEACON (RRFB) INSTALLATION WITH PEDESTRIAN REFUGE ISLAND*

PHASING STRATEGY

Implementing the North Oak Complete Streets Plan will require a phased approach and coordination between the various municipalities along the corridor. Many different options for phasing exist but continuing North from the planned work on Burlington Street and the recent completion of North Oak construction south of Indianola Drive, is critical. This section of the corridor is under Kansas City jurisdiction and so construction will be dependent on Kansas City Public Works funding availability.

Further North, work could simultaneously begin on the Gladstone segment based on their preferred schedule. Construction between Englewood Road and Shady Lane Drive will require coordination by the Oaks Villages and the City of Gladstone, as North Oak is split East / West by those various municipalities.

A high priority project is the roundabout and road alignment at I-29, Vivion Road and North Oak. This project will allow safe pedestrian and cyclist connection under I-29 and improve traffic flows to and from the highway. Without this project, the vision of providing safe pedestrian and cycling conditions along the entire corridor cannot be realized.

- **A** Work recently completed at Water Works Park.
- **B** Continuing North from Water Works Park is a phasing option.
- **C** I-29 roundabout is a high priority project.
- **D** Gladstone Roundabouts

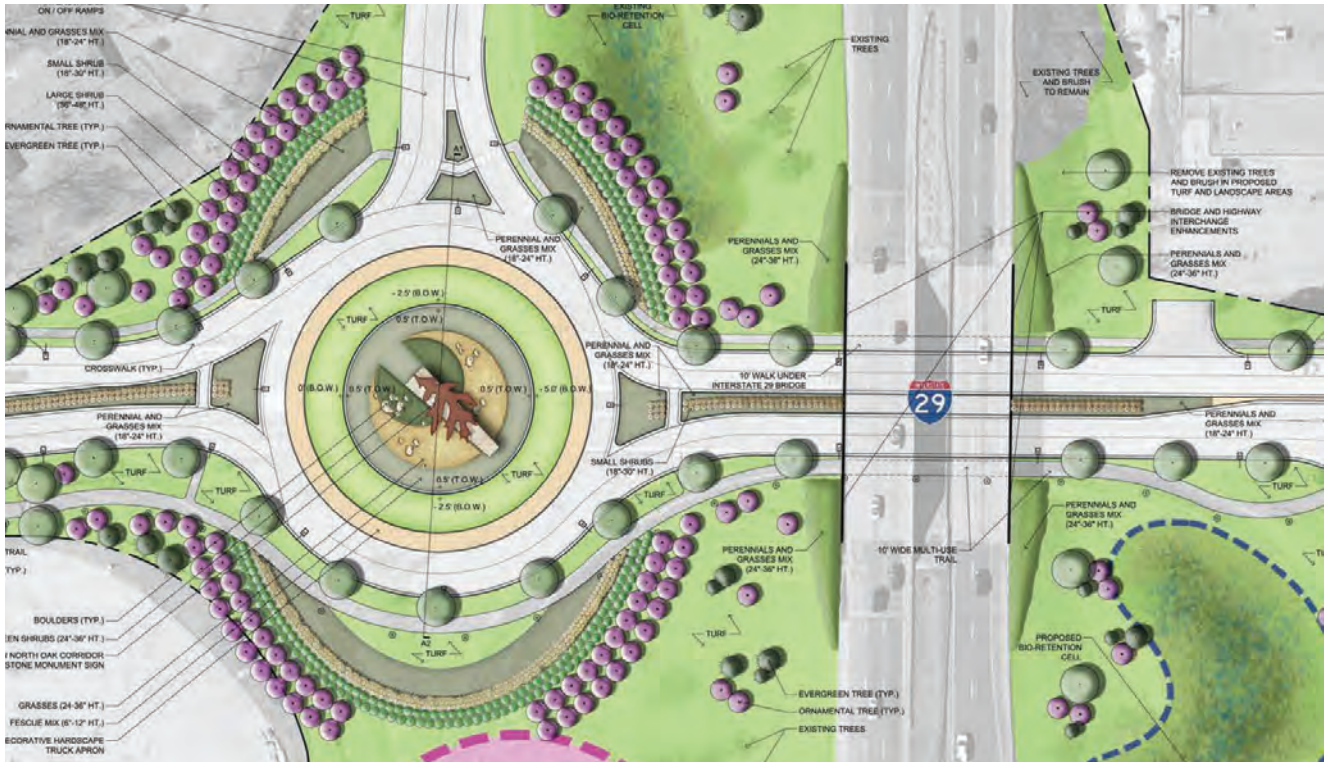


FIGURE 4.9 - *I-29 IS A HIGH PRIORITY PROJECT FOR THE NORTH OAK COMPLETE STREET CORRIDOR*

FIGURE 4.8 - *POSSIBLE PHASING STRATEGY*

Funding Strategies

Developing funding for projects of the nature recommended in this plan often come with challenges. The project does not necessarily fit within the jurisdiction's planned operations, maintenance, or capital improvement project list neatly. Because of this, alternative funding sources are sometimes used. There are three primary funding sources used for these types of projects:

- Local Bonds & Funds
- Federal Funds
- Tax Incentive Districts

LOCAL BONDS AND FUNDS

Bonding projects by leveraging existing local municipality investments and using local budgetary funds are commonly used to construct municipal infrastructure such as streets. Bonds may be issued to pay for the project, to be paid back to the bond issuer by the city over a period of years. Local funds can be allocated through the local budgeting process of the municipality for the project to be constructed in a future year when the funds are available. These are traditional funding mechanisms for street construction projects. However, these funding mechanisms may not be available for quick implementation of a planned project.

In Gladstone, these funds would likely come out of the general fund through the City Council budgeting process or from bonds issued specially for the project. In Kansas City, Missouri, the funds would likely originate through the Public Improvements Advisory Committee process or from GO Bond funds. The Oaks Villages would need to partner with Gladstone to help for their section of North Oak.

FEDERAL FUNDS

The Federal Government has many special transportation funding mechanisms for alternate mode projects similar to the North Oak project. These funds are generally administered by the state DOT or the Metropolitan Planning Organization. In the case of the North Oak project, these funds would be administered by the Mid-America Regional Council. Figure 4.10 shows a list of the funding programs that could be used for portions of the North Oak project recommendations.
Federal funds are a good source of funding, as they require minimal investment from the local jurisdiction. However, many of the programs do require a local matching funding source, typically 20% or less. If a local jurisdiction cannot fully fund a project, the funds that are available may be leveraged to win the Federal matching funds.

Federal funding also comes with some restrictions and additional regulations. Many of these restrictions and regulations can complicate the construction process, increase cost, and prove to have difficult schedule restrictions. The contracting requirements with general construction contractors are generally more onerous, and the schedule compressed, so that bids are often higher on projects with Federal funds than with local funds.

Federal programs that may be especially applicable to the North Oak project are BUILD, CMAQ, STBG and TA. The BUILD program is designed for medium sized transportation projects (typically in the $5M - $25M range). These funds are allocated directly by the USDOT to the local jurisdiction (with no administration by the state DOT or MPO). The USDOT typically looks for projects that have a high level of community support and show a positive benefit to society. The benefit to society is calculated through an economic analysis and compared to the costs to determine a benefit-to-cost ratio. The application process is onerous, and the funds come with a compressed schedule. The project must be let to a contractor within 18 months of being awarded the project.

CMAQ and TA funds are administered through MARC, and the application process is more straightforward than the BUILD program. These funds are applied for to MARC and a committee of local agency representatives scores and allocates fund from the program to jurisdictions throughout the metro area. Surface Transportation Block Grant Program (STBG) funding is also a good source of federal funding. This is a more traditional funding source transportation project and is administered through MARC through a similar process as the CMAQ and TA funds. All of these programs are regional and highly competitive and given the price and range of improvements for the North Oak Corridor, the STBG program should be emphasized as it is the largest and most flexible of the funding programs administered by MARC.

TAX INCENTIVE DISTRICTS

The State of Missouri has several special assessment districts that can be formed to fund street construction and maintenance. Probably the most relevant to the North Oak project would be the Transportation Development District (TDD) and Community Improvement District (CID). Both of these tools asses a special tax within the district boundaries, usually property tax or sales tax. Because of the nature of the tools, these are most commonly applied only in commercial areas.

The special taxes are administered by a TDD or CID board of directors that allocates the funds for specific uses outlined for the district. The funds can be used for new construction or maintenance of facilities in the public right of way among other things. Importantly, the funds can be used as a local match to the Federal funding programs outlined above. This can be a good way for a local district to fund improvements without needing any money from the local jurisdiction.

Currently, only two small CIDs exist in the areas studied in this plan in Kansas City including the North Oak Village CID and the Creekwood Commons CID. There are no TDDs in the area. An opportunity exists, in the commercial areas along the corridor for the formation of a special taxing district to fund improvements.

Cost Estimation*

Segment	Cost
Indianola Drive to Cherry Street	**$2,390,000.00**
Cherry Street Roundabout	**$2,060,000.00**
Cherry Street to 43rd Street	**$1,930,000.00**
43rd Street Roundabout	**$2,090,000.00**
43rd Street to Normandy Lane	**$2,990,000.00**
I-29 Interchange	**$4,010,000.00**
I-29 to Englewood	**$5,150,000.00**
Englewood to 69th Street	**$6,490,000.00**
69th Street Roundabout	**$2,040,000.00**
69th Street to 70th Terrace	**$1,300,000.00**
70th Terrace Roundabout	**$2,150,000.00**
70th Terrace to 76th Street	**$3,260,000.00**
76th Street to Barry Road	**$3,840,000.00**
Total Costs	**$39,700,000.00**

*Costs reflect 2020 costs and will incur 4-6% of inflation per year.

FIGURE 4.10 - *COST ESTIMATE SUMMARY*

Pedestrian and Bicycle Funding Opportunities / U.S. Department of Transportation, Transit, Highway and Safety Funds											
Activity or Project Type	**BUILD**	**TIFIA**	**FTA**	**ATI**	**CMAQ**	**HSIP**	**NHPP**	**STBG**	**TA**	**RTP**	**SRTS**
Bicycle lanes on road	$	$	$	$	$	$	$	$	$		$
Bicycle parking	~$	~$	$	$	$		$	$	$	$	$
Bike racks on transit	$	$	$	$	$			$	$		
Bicycle repair station (air-pump, simple tools)	$	$	$	$	$		$	$	$		
Crosswalks (new or retrofit)	$	$	$	$	$*	$	$	$	$	$	$
Curb cuts and ramps	$	$	$	$	$*	$	$	$	$	$	$
Landscaping, streetscaping (pedestrian and/or bicycle route; transit access); related amenities (benches, water fountains); generally as part of a larger project	~$	~$	$	$			$	$	$		
Lighting (pedestrian and bicyclists scale associated with pedestrian / bicyclists project)	$	$	$	$		$	$	$	$	$	$
Paved shoulders for pedestrian and/or bicyclists use	$	$			$*	$	$	$	$		$
Separated bicycle lanes	$	$	$	$	$	$	$	$	$		$
Shared use paths / transportation trails	$	$	$	$	$*	$	$	$	$	$	$
Sidewalks (new or retrofit)	$	$	$	$	$	$	$	$	$	$	$
Signs / signals / signal improvements	$	$	$	$	$	$	$	$	$		$
Signed pedestrian or bicycle routes	$	$	$	$	$		$	$	$		$
Stormwater impacts related to pedestrian and bicycle projects	$	$	$	$		$	$	$	$	$	$
Traffic calming	$	$	$			$	$	$	$		$
Trail construction and maintenance equipment							$RTP	$RTP	$		
Trail / highway intersections	$	$			$*	$	$	$	$	$	$
Trailside and trailhead facilities (includes restrooms and water, but not general park amenities; see program guidance)	~$*	~$*						$*	$*	$*	
Key: $=Funds may be used for this activity (restrictions may apply). $* = See program-specific notes for restrictions. ~$= Eligible, but not competitive unless part of a larger project.											

Abbreviations	
BUILD: Better Utilizing Investments to Leverage Development Transportation Discretionary Grants	NHPP: National Highway Performance Program
TIFIA: Transportation Infrastructure Finance and Innovation Act (loans)	STBG: Surface Transportation Block Grant Program
FTA: Federal Transit Administration Capital Funds	TA: Transportation Alternatives Set-Aside (formerly Transportation Alternatives Program)
ATI: Associated Transit Improvement (1% set-aside of FTA)	RTP: Recreational Trails Program
CMAQ: Congestion Mitigation and Air Quality Improvement Program	SRTS: Safe Routes to School Program / Activities
HSIP: Highway Safety Improvement Program	

FIGURE 4.11 - *ADAPTED FROM FHWA PEDESTRIAN AND BICYCLE FUNDING OPPORTUNITIES GUIDE*

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APPENDIX

Indianola Drive to Cherry Street Improvements

Removal of bike lanes, reconstruction of curb, new 10' wide shared use path
from approximately Indianola Drive to Cherry Street (excluding roundabout improvements at Cherry Street)

Approximate length of improvements = 3475 feet

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 100,000.00	1	$ 100,000.00	L.S.
Pavement Removal	$ 38,611.11	3861	$ 10.00	S.Y.
Driveway Demolition	$ 16,000.00	1600	$ 10.00	S.Y.
Miscellaneous Demolition	$ 10,000.00	1	$ 10,000.00	L.S.
Earthwork Grading	$ 18,870.37	1887	$ 10.00	C.Y.
Fine Grading	$ 28,305.56	5661	$ 5.00	S.Y.
Concrete Driveway Reconstruction	$ 90,000.00	1200	$ 75.00	S.Y.
Sidewalk / Trail	$ 163,055.56	3261	$ 50.00	S.Y.
Pedestrian Crossing (incl. signs, islands, signals, etc.)	$ 70,000.00	2	$ 35,000.00	Ea.
ADA Ramps	$ 18,000.00	6	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 173,750.00	6950	$ 25.00	L.F.
Pavement Markings	$ 3,000.00	1	$ 3,000.00	L.S.
Signs (incl. base and pole)	$ 5,000.00	10	$ 500.00	Ea.
Landscape	$ 20,000.00	1	$ 20,000.00	L.S.
Sod	$ 19,305.56	1931	$ 10.00	S.Y.
Storm Sewer Inlets	$ 27,000.00	6	$ 4,500.00	Ea.
Storm Sewer Pipe	$ 7,500.00	100	$ 75.00	L.F.
Dry Utility & Water Main Relocation	$ 25,000.00	1	$ 25,000.00	L.S.
Street Lights	$ 280,000.00	14	$ 20,000.00	Ea.
Signage/Wayfinding	$ 40,000.00	1	$ 40,000.00	L.S.
Site Furnishing	$ 5,000.00	1	$ 5,000.00	L.S.
Transit Station	$ 453,000.00	1	$ 453,000.00	L.S.
Erosion Control / Incidentals	$ 25,000.00	1	$ 25,000.00	L.S.
Subtotal	$ 1,636,398.15			
Contingency (30%)	$ 490,919.44			
Professional Design Services (12%)	$ 255,278.11			
Grand Total	$ 2,382,595.70			
Rounded Grand Total	**$ 2,390,000.00**			

ROW Acquisition **0.00 Acres**

FIGURE 5.01 - *COST ESTIMATE - INDIANOLA DRIVE TO CHERRY STREET*

Cherry Street Roundabout Improvements

Proposed 2-lane/1-lane Roundabout Construction

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 150,000.00	1	$ 150,000.00	L.S.
Pavement Removal	$ 27,222.22	2722	$ 10.00	S.Y.
Miscellaneous Demolition	$ 50,000.00	1	$ 50,000.00	L.S.
Earthwork Grading	$ 76,148.15	7615	$ 10.00	C.Y.
Fine Grading	$ 28,555.56	5711	$ 5.00	S.Y.
Asphalt Pavement	$ 214,166.67	2856	$ 75.00	S.Y.
Concrete Pavement	$ 31,111.11	311	$ 100.00	S.Y.
Sidewalk / Trail	$ 29,444.44	589	$ 50.00	S.Y.
ADA Ramps	$ 36,000.00	12	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 58,500.00	1950	$ 30.00	L.F.
Pavement Markings	$ 20,000.00	1	$ 20,000.00	L.S.
Signs (incl. base and pole)	$ 14,000.00	28	$ 500.00	Ea.
Landscape	$ 30,000.00	1	$ 30,000.00	L.S.
Sod	$ 6,333.33	633	$ 10.00	S.Y.
Storm Sewer Inlets	$ 36,000.00	8	$ 4,500.00	Ea.
Storm Sewer Pipe	$ 45,000.00	600	$ 75.00	L.F.
Dry Utility & Water Main Relocation	$ 150,000.00	1	$ 150,000.00	L.S.
Street Lights	$ 120,000.00	6	$ 20,000.00	Ea.
Signage/Wayfinding	$ 200,000.00	1	$ 200,000.00	L.S.
Site Furnishing	$ 15,000.00	1	$ 15,000.00	L.S.
Transit Station	$ -		$ 25,000.00	L.S.
Erosion Control / Incidentals	$ 75,000.00	1	$ 75,000.00	L.S.
Subtotal	$ 1,412,481.48			
Contingency (30%)	$ 423,744.44			
Professional Design Services (12%)	$ 220,347.11			
Grand Total	$ 2,056,573.04			
Rounded Grand Total	**$ 2,060,000.00**			

ROW Acquisition **0.18 Acres**

FIGURE 5.02 - *COST ESTIMATE - CHERRY STREET ROUNDABOUT*

Cherry Street to 43rd Street Improvements

Removal of bike lanes/storm sewer channel, reconstruction of curb, 10' wide shared use path and 5' wide sidewalk, raised median from approximately Cherry to 43rd (excluding roundabout improvements)

Approximate length of improvements = 1075 feet

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 50,000.00	1	$ 50,000.00	L.S.
Pavement Removal	$ 29,861.11	2986	$ 10.00	S.Y.
Driveway Demolition	$ 8,500.00	850	$ 10.00	S.Y.
Miscellaneous Demolition	$ 10,000.00	1	$ 10,000.00	L.S.
Earthwork Grading	$ 8,164.35	816	$ 10.00	C.Y.
Fine Grading	$ 12,246.53	2449	$ 5.00	S.Y.
Concrete Driveway Reconstruction	$ 47,812.50	638	$ 75.00	S.Y.
Sidewalk / Trail	$ 58,715.28	1174	$ 50.00	S.Y.
ADA Ramps	$ 24,000.00	8	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 107,500.00	4300	$ 25.00	L.F.
Pavement Markings	$ 5,000.00	1	$ 5,000.00	L.S.
Signs (incl. base and pole)	$ 5,000.00	10	$ 500.00	Ea.
Landscape	$ 40,000.00	1	$ 40,000.00	L.S.
Sod	$ 23,888.89	2389	$ 10.00	S.Y.
Storm Sewer Inlets	$ 36,000.00	8	$ 4,500.00	Ea.
Storm Sewer Pipe	$ 56,250.00	750	$ 75.00	L.F.
Traffic Signal Adjustments	$ 20,000.00	1	$ 20,000.00	L.S.
Dry Utility & Water Main Relocation	$ 25,000.00	1	$ 25,000.00	L.S.
Street Lights	$ 260,000.00	13	$ 20,000.00	Ea.
Signage/Wayfinding	$ 15,000.00	1	$ 15,000.00	L.S.
Site Furnishing	$ 25,000.00	1	$ 25,000.00	L.S.
Transit Station	$ 430,000.00	2	$ 215,000.00	L.S.
Erosion Control / Incidentals	$ 25,000.00	1	$ 25,000.00	L.S.
Subtotal	$ 1,322,938.66			
Contingency (30%)	$ 396,881.60			
Professional Design Services (12%)	$ 206,378.43			
Grand Total	$ 1,926,198.69			
Rounded Grand Total	**$ 1,930,000.00**			
ROW Acquisition	**0.00 Acres**			

FIGURE 5.03 - *COST ESTIMATE - CHERRY STREET TO 43RD STREET*

43rd Street Roundabout Improvements

Proposed 2-lane/1-lane Roundabout Construction

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 150,000.00	1	$ 150,000.00	L.S.
Pavement Removal	$ 39,595.56	3960	$ 10.00	S.Y.
Miscellaneous Demolition	$ 50,000.00	1	$ 50,000.00	L.S.
Earthwork Grading	$ 104,848.89	10485	$ 10.00	C.Y.
Fine Grading	$ 26,212.22	5242	$ 5.00	S.Y.
Asphalt Pavement	$ 196,591.67	2621	$ 75.00	S.Y.
Concrete Pavement	$ 31,111.11	311	$ 100.00	S.Y.
Sidewalk / Trail	$ 27,222.22	544	$ 50.00	S.Y.
ADA Ramps	$ 36,000.00	12	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 51,000.00	1700	$ 30.00	L.F.
Pavement Markings	$ 20,000.00	1	$ 20,000.00	L.S.
Signs (incl. base and pole)	$ 14,000.00	28	$ 500.00	Ea.
Landscape	$ 30,000.00	1	$ 30,000.00	L.S.
Sod	$ 6,666.67	667	$ 10.00	S.Y.
Storm Sewer Inlets	$ 36,000.00	8	$ 4,500.00	Ea.
Storm Sewer Pipe	$ 45,000.00	600	$ 75.00	L.F.
Storm Culvert Extension	$ 10,000.00	50	$ 200.00	L.F.
Dry Utility & Water Main Relocation	$ 150,000.00	1	$ 150,000.00	L.S.
Street Lights	$ 120,000.00	6	$ 20,000.00	Ea.
Signage/Wayfinding	$ 200,000.00	1	$ 200,000.00	L.S.
Site Furnishing	$ 15,000.00	1	$ 15,000.00	L.S.
Transit Station	$ -		$ 25,000.00	L.S.
Erosion Control / Incidentals	$ 75,000.00	1	$ 75,000.00	L.S.
Subtotal	$ 1,434,248.33			
Contingency (30%)	$ 430,274.50			
Professional Design Services (12%)	$ 223,742.74			
Grand Total	$ 2,088,265.57			
Rounded Grand Total	**$ 2,090,000.00**			
ROW Acquisition	**0.12 Acres**			

FIGURE 5.04 - *COST ESTIMATE - 43RD STREET ROUNDABOUT*

43rd Street to Normandy Lane Improvements

Removal of storm sewer channel, construction of curb, 10' wide shared use path and 5' wide sidewalk from approximately 43rd to Normandy (excluding roundabout improvements)

Approximate length of improvements = 1575 feet

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 100,000.00	1	$ 100,000.00	L.S.
Pavement Removal	$ 35,000.00	3500	$ 10.00	S.Y.
Driveway/Side Street Demolition	$ 12,000.00	1200	$ 10.00	S.Y.
Miscellaneous Demolition	$ 10,000.00	1	$ 10,000.00	L.S.
Earthwork Grading	$ 15,350.00	1535	$ 10.00	C.Y.
Fine Grading	$ 23,025.00	4605	$ 5.00	S.Y.
Concrete Driveway/Side Street Reconstruction	$ 99,000.00	1320	$ 75.00	S.Y.
Sidewalk / Trail	$ 98,250.00	1965	$ 50.00	S.Y.
Pedestrian Crossing (incl. signs, islands, signals, etc.)	$ 70,000.00	2	$ 35,000.00	Ea.
ADA Ramps	$ 36,000.00	12	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 78,750.00	3150	$ 25.00	L.F.
Pavement Markings	$ 5,000.00	1	$ 5,000.00	L.S.
Signs (incl. base and pole)	$ 5,000.00	10	$ 500.00	Ea.
Landscape	$ 20,000.00	1	$ 20,000.00	L.S.
Sod	$ 17,500.00	1750	$ 10.00	S.Y.
Storm Sewer Inlets	$ 47,250.00	11	$ 4,500.00	Ea.
Storm Sewer Pipe	$ 141,750.00	1890	$ 75.00	L.F.
Dry Utility & Water Main Relocation	$ 25,000.00	1	$ 25,000.00	L.S.
Street Lights	$ 520,000.00	26	$ 20,000.00	Ea.
Signage/Wayfinding	$ 15,000.00	1	$ 15,000.00	L.S.
Site Furnishing	$ 5,000.00	1	$ 5,000.00	L.S.
Transit Station	$ 645,000.00	1	$ 645,000.00	L.S.
Erosion Control / Incidentals	$ 25,000.00	1	$ 25,000.00	L.S.
Subtotal	$ 2,048,875.00			
Contingency (30%)	$ 614,662.50			
Professional Design Services (12%)	$ 319,624.50			
Grand Total	$ 2,983,162.00			
Rounded Grand Total	**$ 2,990,000.00**			
ROW Acquisition	**0.00 Acres**			

FIGURE 5.05 - *COST ESTIMATE - 43RD STREET TO NORMANDY LANE*

I-29 Interchange Improvements

Proposed 2-lane roundabout construction, ramp removal, intersection reconstruction, and trail/sidewalk from approximately Normandy Lane to the I-29 WB Ramps

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 200,000.00	1	$ 200,000.00	L.S.
Pavement Removal	$ 166,666.67	16667	$ 10.00	S.Y.
Miscellaneous Demolition	$ 100,000.00	1	$ 100,000.00	L.S.
Earthwork Grading	$ 275,911.11	27591	$ 10.00	C.Y.
Fine Grading	$ 51,733.33	10347	$ 5.00	S.Y.
Asphalt Pavement	$ 388,000.00	5173	$ 75.00	S.Y.
Concrete Pavement	$ 46,666.67	467	$ 100.00	S.Y.
Sidewalk / Trail	$ 134,888.89	2698	$ 50.00	S.Y.
ADA Ramps	$ 45,000.00	15	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 105,000.00	4200	$ 25.00	L.F.
Pavement Markings	$ 50,000.00	1	$ 50,000.00	L.S.
Signs (incl. base and pole)	$ 20,000.00	40	$ 500.00	Ea.
Landscape	$ 50,000.00	1	$ 50,000.00	L.S.
Sod	$ 41,111.11	4111	$ 10.00	S.Y.
Storm Sewer Inlets	$ 67,500.00	15	$ 4,500.00	Ea.
Storm Sewer Pipe	$ 161,250.00	2150	$ 75.00	L.F.
Storm Culvert Extension	$ 100,000.00	500	$ 200.00	L.F.
Dry Utility & Water Main Relocation	$ 150,000.00	1	$ 150,000.00	L.S.
Street Lights	$ 200,000.00	10	$ 20,000.00	Ea.
Signage/Wayfinding	$ 250,000.00	1	$ 250,000.00	L.S.
Site Furnishing	$ -	1	$ -	L.S.
Transit Station	$ -		$ 25,000.00	L.S.
Erosion Control / Incidentals	$ 150,000.00	1	$ 150,000.00	L.S.
Subtotal	$ 2,753,727.78			
Contingency (30%)	$ 826,118.33			
Professional Design Services (12%)	$ 429,581.53			
Grand Total	$ 4,009,427.64			
Rounded Grand Total	**$ 4,010,000.00**			
ROW Acquisition	**0.00 Acres**			

FIGURE 5.06 - *COST ESTIMATE - I-29 INTERCHANGE IMPROVEMENTS*

I-29 to Englewood Improvements

Construction of 10' wide shared use path
from approximately I-29 EB ramps to Englewood (excluding roundabout improvements)
Approximate length of improvements = 5575 feet

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 100,000.00	1	$ 100,000.00	L.S.
Miscellaneous Demolition	$ 10,000.00	1	$ 10,000.00	L.S.
Sidewalk / Trail	$ 309,722.22	6194	$ 50.00	S.Y.
Pedestrian Crossing (incl. signs, islands, signals, etc.)	$ 140,000.00	4	$ 35,000.00	Ea.
ADA Ramps	$ 39,000.00	13	$ 3,000.00	Ea.
Pavement Markings	$ 5,000.00	1	$ 5,000.00	L.S.
Signs (incl. base and pole)	$ 5,000.00	10	$ 500.00	Ea.
Landscape	$ 45,000.00	1	$ 45,000.00	L.S.
Sod	$ 30,972.22	3097	$ 10.00	S.Y.
Dry Utility & Water Main Relocation	$ 25,000.00	1	$ 25,000.00	L.S.
Street Lights	$ 1,340,000.00	67	$ 20,000.00	Ea.
Signage/Wayfinding	$ 50,000.00	1	$ 50,000.00	L.S.
Site Furnishing	$ 25,000.00	1	$ 25,000.00	L.S.
Transit Station	$ 1,382,000.00	1	$ 1,382,000.00	L.S.
Erosion Control / Incidentals	$ 25,000.00	1	$ 25,000.00	L.S.
Subtotal	$ 3,531,694.44			
Contingency (30%)	$ 1,059,508.33			
Professional Design Services (12%)	$ 550,944.33			
Grand Total	$ 5,142,147.11			
Rounded Grand Total	**$ 5,150,000.00**			
ROW Acquisition	**0.00 Acres**			

FIGURE 5.07 - *COST ESTIMATE - I-29 TO ENGLEWOOD*

Englewood to 69th Street Improvements

Relocate east curb 4' west (convert 11' lanes to 10' lanes). Const. 10' wide shared use path between curb and electrical poles (excluding roundabout construction) from approximately Englewood to 69th Street
Approximate length of improvements = 8600 feet

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 150,000.00	1	$ 150,000.00	L.S.
Pavement Removal	$ 57,333.33	5733	$ 10.00	S.Y.
Driveway Demolition	$ 11,500.00	1150	$ 10.00	S.Y.
Miscellaneous Demolition	$ 25,000.00	1	$ 25,000.00	L.S.
Earthwork Grading	$ 75,203.70	7520	$ 10.00	C.Y.
Fine Grading	$ 56,402.78	11281	$ 5.00	S.Y.
Concrete Driveway Reconstruction	$ 64,687.50	863	$ 75.00	S.Y.
Sidewalk / Trail	$ 477,777.78	9556	$ 50.00	S.Y.
Pedestrian Crossing (incl. signs, islands, signals, etc.)	$ 210,000.00	6	$ 35,000.00	Ea.
ADA Ramps	$ 60,000.00	20	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 215,000.00	8600	$ 25.00	L.F.
Pavement Markings	$ 10,000.00	1	$ 10,000.00	L.S.
Signs (incl. base and pole)	$ 10,000.00	20	$ 500.00	Ea.
Landscape	$ 20,000.00	1	$ 20,000.00	L.S.
Sod	$ 47,777.78	4778	$ 10.00	S.Y.
Storm Sewer Inlets	$ 81,000.00	18	$ 4,500.00	Ea.
Traffic Signal Adjustments	$ 40,000.00	2	$ 20,000.00	L.S.
Dry Utility & Water Main Relocation	$ 25,000.00	1	$ 25,000.00	L.S.
Street Lights	$ 1,640,000.00	82	$ 20,000.00	Ea.
Signage/Wayfinding	$ 15,000.00	1	$ 15,000.00	L.S.
Site Furnishing	$ 15,000.00	1	$ 15,000.00	L.S.
Transit Station	$ 1,121,000.00	1	$ 1,121,000.00	L.S.
Erosion Control / Incidentals	$ 25,000.00	1	$ 25,000.00	L.S.
Subtotal	$ 4,452,682.87			
Contingency (30%)	$ 1,335,804.86			
Professional Design Services (12%)	$ 694,618.53			
Grand Total	$ 6,483,106.26			
Rounded Grand Total	**$ 6,490,000.00**			
ROW Acquisition	**0.00 Acres**			

FIGURE 5.08 - *COST ESTIMATE - ENGLEWOOD TO 69TH STREET*

69th Street Roundabout Improvements

Proposed 2-lane/1-lane Roundabout Construction

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 150,000.00	1	$ 150,000.00	L.S.
Pavement Removal	$ 33,333.33	3333	$ 10.00	S.Y.
Miscellaneous Demolition	$ 50,000.00	1	$ 50,000.00	L.S.
Earthwork Grading	$ 64,888.89	6489	$ 10.00	C.Y.
Fine Grading	$ 24,333.33	4867	$ 5.00	S.Y.
Asphalt Pavement	$ 182,500.00	2433	$ 75.00	S.Y.
Concrete Pavement	$ 31,111.11	311	$ 100.00	S.Y.
Sidewalk / Trail	$ 34,166.67	683	$ 50.00	S.Y.
ADA Ramps	$ 24,000.00	8	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 51,000.00	1700	$ 30.00	L.F.
Pavement Markings	$ 150,000.00	1	$ 150,000.00	L.S.
Signs (incl. base and pole)	$ 10,000.00	20	$ 500.00	Ea.
Landscape	$ 30,000.00	1	$ 30,000.00	L.S.
Sod	$ 7,222.22	722	$ 10.00	S.Y.
Storm Sewer Inlets	$ 27,000.00	6	$ 4,500.00	Ea.
Storm Sewer Pipe	$ 37,500.00	500	$ 75.00	L.F.
Dry Utility & Water Main Relocation	$ 100,000.00	1	$ 100,000.00	L.S.
Street Lights	$ 100,000.00	5	$ 20,000.00	Ea.
Signage/Wayfinding	$ 200,000.00	1	$ 200,000.00	L.S.
Site Furnishing	$ 15,000.00	1	$ 15,000.00	L.S.
Transit Station	$ -		$ 25,000.00	L.S.
Erosion Control / Incidentals	$ 75,000.00	1	$ 75,000.00	L.S.
Subtotal	$ 1,397,055.56			
Contingency (30%)	$ 419,116.67			
Professional Design Services (12%)	$ 217,940.67			
Grand Total	$ 2,034,112.89			
Rounded Grand Total	**$ 2,040,000.00**			
ROW Acquisition	**0.53 Acres**			

FIGURE 5.09 - *COST ESTIMATE - 69TH STREET ROUNDABOUT*

69th Street to 70th Terrace

Convert to 10' lanes, reconstruction of curb, 10' wide shared use path and 5' wide sidewalk, raised median from approximately 69th Street to 70th Terrace (excluding roundabout improvements)

Approximate length of improvements = 600 feet

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 50,000.00	1	$ 50,000.00	L.S.
Pavement Removal	$ 16,666.67	1667	$ 10.00	S.Y.
Driveway Demolition	$ 5,000.00	500	$ 10.00	S.Y.
Miscellaneous Demolition	$ 25,000.00	1	$ 25,000.00	L.S.
Earthwork Grading	$ 17,500.00	1750	$ 10.00	C.Y.
Fine Grading	$ 8,750.00	1750	$ 5.00	S.Y.
Concrete Driveway Reconstruction	$ 28,125.00	375	$ 75.00	S.Y.
Sidewalk / Trail	$ 50,000.00	1000	$ 50.00	S.Y.
ADA Ramps	$ 12,000.00	4	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 60,000.00	2400	$ 25.00	L.F.
Pavement Markings	$ 5,000.00	1	$ 5,000.00	L.S.
Signs (incl. base and pole)	$ 5,000.00	10	$ 500.00	Ea.
Landscape	$ 60,000.00	1	$ 60,000.00	L.S.
Sod	$ 13,333.33	1333	$ 10.00	S.Y.
Storm Sewer Inlets	$ 18,000.00	4	$ 4,500.00	Ea.
Traffic Signal Adjustments	$ 20,000.00	1	$ 20,000.00	L.S.
Dry Utility & Water Main Relocation	$ 25,000.00	1	$ 25,000.00	L.S.
Street Lights	$ 180,000.00	9	$ 20,000.00	Ea.
Signage/Wayfinding	$ 25,000.00	1	$ 25,000.00	L.S.
Site Furnishing	$ 25,000.00	1	$ 25,000.00	L.S.
Transit Station	$ 215,000.00	1	$ 215,000.00	L.S.
Erosion Control / Incidentals	$ 25,000.00	1	$ 25,000.00	L.S.
Subtotal	$ 889,375.00			
Contingency (30%)	$ 266,812.50			
Professional Design Services (12%)	$ 138,742.50			
Grand Total	$ 1,294,930.00			
Rounded Grand Total	**$ 1,300,000.00**			
ROW Acquisition	**0.00 Acres**			

FIGURE 5.10 - *COST ESTIMATE - 69TH STREET TO 70TH TERRACE*

70th Terrace Roundabout Improvements

Proposed 2-lane/1-lane Roundabout Construction

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 150,000.00	1	$ 150,000.00	L.S.
Pavement Removal	$ 41,666.67	4167	$ 10.00	S.Y.
Miscellaneous Demolition	$ 50,000.00	1	$ 50,000.00	L.S.
Earthwork Grading	$ 109,333.33	10933	$ 10.00	C.Y.
Fine Grading	$ 27,333.33	5467	$ 5.00	S.Y.
Asphalt Pavement	$ 205,000.00	2733	$ 75.00	S.Y.
Concrete Pavement	$ 31,111.11	311	$ 100.00	S.Y.
Sidewalk / Trail	$ 45,555.56	911	$ 50.00	S.Y.
ADA Ramps	$ 36,000.00	12	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 55,500.00	1850	$ 30.00	L.F.
Pavement Markings	$ 20,000.00	1	$ 20,000.00	L.S.
Signs (incl. base and pole)	$ 14,000.00	28	$ 500.00	Ea.
Landscape	$ 30,000.00	1	$ 30,000.00	L.S.
Sod	$ 7,888.89	789	$ 10.00	S.Y.
Storm Sewer Inlets	$ 36,000.00	8	$ 4,500.00	Ea.
Storm Sewer Pipe	$ 52,500.00	700	$ 75.00	L.F.
Dry Utility & Water Main Relocation	$ 150,000.00	1	$ 150,000.00	L.S.
Street Lights	$ 120,000.00	6	$ 20,000.00	Ea.
Signage/Wayfinding	$ 200,000.00	1	$ 200,000.00	L.S.
Site Furnishing	$ 15,000.00	1	$ 15,000.00	L.S.
Transit Station	$ -		$ 25,000.00	L.S.
Erosion Control / Incidentals	$ 75,000.00	1	$ 75,000.00	L.S.
Subtotal	$ 1,471,888.89			
Contingency (30%)	$ 441,566.67			
Professional Design Services (12%)	$ 229,614.67			
Grand Total	$ 2,143,070.22			
Rounded Grand Total	**$ 2,150,000.00**			
ROW Acquisition	**0.24 Acres**			

FIGURE 5.11 - *COST ESTIMATE - 70TH TERRACE ROUNDABOUT*

70th Terr to 76th Street Improvements

Relocate east curb 4' west (convert 11' lanes to 10' lanes). Const. 10' wide shared use path between curb and electrical poles (excluding roundabout construction) from approximately 70th Terr to 76th Street

Approximate length of improvements = 3350 feet

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 100,000.00	1	$ 100,000.00	L.S.
Pavement Removal	$ 22,333.33	2233	$ 10.00	S.Y.
Driveway Demolition	$ 8,500.00	850	$ 10.00	S.Y.
Miscellaneous Demolition	$ 25,000.00	1	$ 25,000.00	L.S.
Earthwork Grading	$ 33,314.81	3331	$ 10.00	C.Y.
Fine Grading	$ 24,986.11	4997	$ 5.00	S.Y.
Concrete Driveway Reconstruction	$ 47,812.50	638	$ 75.00	S.Y.
Sidewalk / Trail	$ 186,111.11	3722	$ 50.00	S.Y.
Pedestrian Crossing (incl. signs, islands, signals, etc.)	$ 35,000.00	1	$ 35,000.00	Ea.
ADA Ramps	$ 36,000.00	12	$ 3,000.00	Ea.
Concrete Curb & Gutter	$ 83,750.00	3350	$ 25.00	L.F.
Pavement Markings	$ 10,000.00	1	$ 10,000.00	L.S.
Signs (incl. base and pole)	$ 10,000.00	20	$ 500.00	Ea.
Landscape	$ 25,000.00	1	$ 25,000.00	L.S.
Sod	$ 18,611.11	1861	$ 10.00	S.Y.
Storm Sewer Inlets	$ 49,500.00	11	$ 4,500.00	Ea.
Traffic Signal Adjustments	$ 20,000.00	1	$ 20,000.00	L.S.
Dry Utility & Water Main Relocation	$ 25,000.00	1	$ 25,000.00	L.S.
Street Lights	$ 540,000.00	27	$ 20,000.00	Ea.
Signage/Wayfinding	$ 30,000.00	1	$ 30,000.00	L.S.
Site Furnishing	$ 20,000.00	1	$ 20,000.00	L.S.
Transit Station	$ 860,000.00	4	$ 215,000.00	L.S.
Erosion Control / Incidentals	$ 25,000.00	1	$ 25,000.00	L.S.
Subtotal	$ 2,235,918.98			
Contingency (30%)	$ 670,775.69			
Professional Design Services (12%)	$ 348,803.36			
Grand Total	$ 3,255,498.04			
Rounded Grand Total	**$ 3,260,000.00**			
ROW Acquisition	**0.00 Acres**			

FIGURE 5.12 - *COST ESTIMATE - 70TH TERRACE TO 76TH STREET*

76th Street to Barry Road Improvements
Construction of 10' wide shared use path
from approximately 76th Street to Barry Road
Approximate length of improvements = 5200 feet

Item	Total Cost	QTY	Unit Price	Unit
Construction Staging/Maintenance of Traffic	$ 100,000.00	1	$ 100,000.00	L.S.
Miscellaneous Demolition	$ 10,000.00	1	$ 10,000.00	L.S.
Sidewalk / Trail	$ 288,888.89	5778	$ 50.00	S.Y.
Pedestrian Crossing (incl. signs, islands, signals, etc.)	$ 210,000.00	6	$ 35,000.00	Ea.
ADA Ramps	$ 24,000.00	8	$ 3,000.00	Ea.
Pavement Markings	$ 5,000.00	1	$ 5,000.00	L.S.
Signs (incl. base and pole)	$ 5,000.00	10	$ 500.00	Ea.
Landscape	$ 35,000.00	1	$ 35,000.00	L.S.
Sod	$ 28,888.89	2889	$ 10.00	S.Y.
Dry Utility & Water Main Relocation	$ 25,000.00	1	$ 25,000.00	L.S.
Street Lights	$ 760,000.00	38	$ 20,000.00	Ea.
Signage/Wayfinding	$ 20,000.00	1	$ 20,000.00	L.S.
Site Furnishing	$ 20,000.00	1	$ 20,000.00	L.S.
Transit Station	$ 1,075,000.00	5	$ 215,000.00	L.S.
Erosion Control / Incidentals	$ 25,000.00	1	$ 25,000.00	L.S.
Subtotal	$ 2,631,777.78			
Contingency (30%)	$ 789,533.33			
Professional Design Services (12%)	$ 410,557.33			
Grand Total	$ 3,831,868.44			
Rounded Grand Total	**$ 3,840,000.00**			
ROW Acquisition	**0.00 Acres**			

FIGURE 5.13 - *COST ESTIMATE - 76TH STREET TO BARRY ROAD*

NORTH OAK COMPLETE STREETS PUBLIC MEETING #1 - SURVEY

1. WHAT ARE THE **MOST IMPORTANT GOALS** IN CREATING A COMPLETE STREET PROJECT FOR NORTH OAK?

*PLEASE RANK THE FOLLOWING SIX ITEMS 1-6, WITH **1 BEING YOUR HIGHEST PRIORITY** AND **6 BEING THE LOWEST**.*

- ☐ **SAFETY (VEHICULAR + PEDESTRIANS / CYCLISTS)**
- ☐ **BUSINESS ACCESS**
- ☐ **AESTHETICS**
- ☐ **DRIVE TIME**
- ☐ **QUALITY OF LIFE**
- ☐ **PEDESTRIAN / CYCLISTS / TRANSIT CONVENIENCE + COMFORT**

2. A MOBILITY LANE IS A SEPARATED FACILITY FOR RUNNING, BIKING SCOOTERS, AND ROLLER BLADING, ETC. HOW WOULD YOU USE THE MOBILITY LANE ON NORTH OAK CORRIDOR?

*PLEASE RANK YOUR TOP 3 PRIORITIES **WITH 1 BEING THE HIGHEST AND 3 BEING THE LOWEST***

- ☐ **WALKING**
- ☐ **RUNNING**
- ☐ **BIKING/CYCLING**
- ☐ **SCOOTER/SEGWAY**
- ☐ **ROLLERBLADING/SKATEBOARDING**
- ☐ **OTHER** _____

3. HOW WOULD YOU USE THE MOBILITY LANE/ PEDESTRIAN PATH? (MARK ALL THAT APPLY)

- ☐ **COMMUTING**
- ☐ **RECREATION**
- ☐ **EXERCISE**
- ☐ **SHOPPING**
- ☐ **OTHER** _____

4. A SHARED-USE PATH IS A COMBINED PEDESTRIAN/MOBILITY LANE SYSTEM. A CYCLE TRACK OR BIKE LANE IS A SEPARATED SYSTEM.

WOULD YOU PREFER SEPARATED PEDESTRIAN TRAFFIC FROM BIKE AND SCOOTER TRAFFIC (MOBILITY LANE) OR WOULD YOU PREFER THEY BE COMBINED AS ONE FACILITY?

☐ **SEPARATE**

☐ **COMBINED**

5. WOULD YOU CONSIDER A ROAD DIET (REMOVING A LANE) TO PROVIDE MORE BIKE OPTIONS AND INCREASED PEDESTRIAN COMFORT AND SAFETY OR WOULD YOU PREFER THE LANE CONFIGURATION TO REMAIN UNCHANGED FOR FASTEST VEHICULAR TRAVEL TIME?

- ☐ **ROAD DIET (3 LANE CONFIGURATION)**
- ☐ **UNCHANGED ROAD CONFIGURATION**

6. WHAT WILL BE THE BIGGEST **CHALLENGE** IN SUCCESSFULLY IMPLEMENTING COMPLETE STREETS ALONG THE NORTH OAK CORRIDOR?

7. WHAT IS THE BIGGEST **OPPORTUNITY** WHEN IMPLEMENTING COMPLETE STREETS ALONG THE NORTH OAK CORRIDOR?

8. IF SPACE IN THE RIGHT-OF-WAY ALLOWED, WHAT AMENITIES WOULD YOU LIKE TO SEE ALONG THE MOBILITY LANE/PEDESTRIAN PATH?

CHECK ALL THAT APPLY

- ☐ **STREET TREES - SHADED PATH**
- ☐ **DRINKING FOUNTAINS**
- ☐ **WAYFINDING**
- ☐ **TRAILHEAD (SEATING AND SIGNAGE)**
- ☐ **ENHANCED CROSSWALKS**
- ☐ **SUSTAINABLE STORMWATER SYSTEMS (RAIN GARDENS AND BIOSWALES)**
- ☐ **ACCESS TO BIKE STATIONS (RENTAL BIKES)**
- ☐ **SITE FURNISHINGS (BIKE RACKS, TRASH RECEPTACLES, AND BENCHES)**
- ☐ **INTEGRATED ART**
- ☐ **ENHANCED LANDSCAPE**

ADDITIONAL COMMENTS:

FIGURE 5.14 - *PUBLIC MEETING SURVEY*

LANE SUMMARY

Site: 101 [N Oak & 69th St]

New Site
Site Category: Existing AM (Recount)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: N Oak													
Lane 1	186	3.0	1325	0.141	100	3.9	LOS A	0.6	15.4	Full	1600	0.0	0.0
Lane 2[d]	186	3.0	1325	0.141	100	3.9	LOS A	0.6	15.4	Full	1600	0.0	0.0
Approach	373	3.0		0.141		3.9	LOS A	0.6	15.4				
East: 69th Street													
Lane 1[d]	117	3.0	1019	0.115	100	4.6	LOS A	0.4	10.9	Full	1600	0.0	0.0
Approach	117	3.0		0.115		4.6	LOS A	0.4	10.9				
North: N Oak													
Lane 1	321	3.0	1277	0.251	100	5.0	LOS A	1.2	30.8	Full	1600	0.0	0.0
Lane 2[d]	321	3.0	1277	0.251	100	5.0	LOS A	1.2	30.8	Full	1600	0.0	0.0
Approach	641	3.0		0.251		5.0	LOS A	1.2	30.8				
Intersection	1132	3.0		0.251		4.6	LOS A	1.2	30.8				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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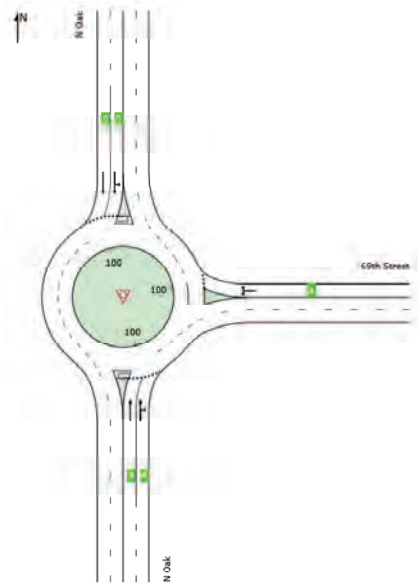
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [N Oak & 69th St]

New Site
Site Category: Existing AM (Recount)
Roundabout

	Approaches South	East	North	Intersection
LOS	A	A	A	A



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HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [N Oak & 69th St]

New Site
Site Category: Existing PM Peak (Recount)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: N Oak													
Lane 1	464	3.0	1334	0.347	100	5.9	LOS A	1.9	49.2	Full	1600	0.0	0.0
Lane 2[d]	464	3.0	1334	0.347	100	5.9	LOS A	1.9	49.2	Full	1600	0.0	0.0
Approach	927	3.0		0.347		5.9	LOS A	1.9	49.2				
East: 69th Street													
Lane 1[d]	85	3.0	651	0.130	100	7.0	LOS A	0.4	11.4	Full	1600	0.0	0.0
Approach	85	3.0		0.130		7.0	LOS A	0.4	11.4				
North: N Oak													
Lane 1	360	3.0	1309	0.275	100	5.2	LOS A	1.4	35.1	Full	1600	0.0	0.0
Lane 2[d]	360	3.0	1309	0.275	100	5.2	LOS A	1.4	35.1	Full	1600	0.0	0.0
Approach	720	3.0		0.275		5.2	LOS A	1.4	35.1				
Intersection	1732	3.0		0.347		5.6	LOS A	1.9	49.2				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
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Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

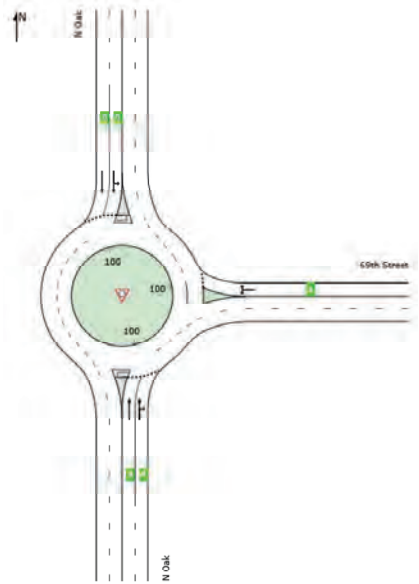
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [N Oak & 69th St]

New Site
Site Category: Existing PM Peak (Recount)
Roundabout

	Approaches South	East	North	Intersection
LOS	A	A	A	A



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Roundabout LOS Method: Same as Sign Control.
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HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.

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LANE SUMMARY

Site: 101 [N Oak & 70th Terr]

New Site
Site Category: Existing AM Peak Hour (Recount)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: N Oak													
Lane 1	215	3.0	1352	0.159	100	4.0	LOS A	0.7	17.9	Full	1600	0.0	0.0
Lane 2[d]	215	3.0	1352	0.159	100	4.0	LOS A	0.7	17.9	Full	1600	0.0	0.0
Approach	430	3.0		0.159		4.0	LOS A	0.7	17.9				
East: 70th Terr													
Lane 1[d]	18	3.0	948	0.020	100	4.0	LOS A	0.1	1.7	Full	1600	0.0	0.0
Approach	18	3.0		0.020		4.0	LOS A	0.1	1.7				
North: N Oak													
Lane 1	317	3.0	1356	0.234	100	4.6	LOS A	1.1	28.7	Full	1600	0.0	0.0
Lane 2[d]	317	3.0	1356	0.234	100	4.6	LOS A	1.1	28.7	Full	1600	0.0	0.0
Approach	634	3.0		0.234		4.6	LOS A	1.1	28.7				
West: 70th Terr													
Lane 1[d]	18	3.0	789	0.023	100	4.8	LOS A	0.1	2.0	Full	1600	0.0	0.0
Approach	18	3.0		0.023		4.8	LOS A	0.1	2.0				
Intersection	1101	3.0		0.234		4.4	LOS A	1.1	28.7				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: Same as Sign Control.
Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.
LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).
Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 6).
Roundabout Capacity Model: US HCM 6.
HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies.
Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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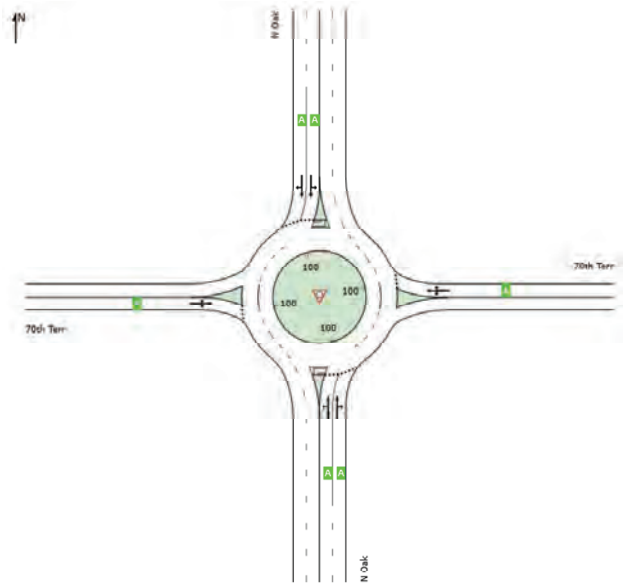
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [N Oak & 70th Terr]

New Site
Site Category: Existing AM Peak Hour (Recount)
Roundabout

	Approaches South	East	North	West	Intersection
LOS	A	A	A	A	A



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Roundabout LOS Method: Same as Sign Control.
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LANE SUMMARY

Site: 101 [N Oak & 70th Terr]

New Site
Site Category: Existing PM Peak Hour (Recount)
Roundabout

Lane Use and Performance

	Demand Flows Total veh/h	HV %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Average Delay sec	Level of Service	95% Back of Queue Veh	Dist ft	Lane Config	Lane Length ft	Cap. Adj. %	Prob. Block. %
South: N Oak													
Lane 1	372	3.0	1359	0.274	100	5.0	LOS A	1.4	35.5	Full	1600	0.0	0.0
Lane 2[d]	372	3.0	1359	0.274	100	5.0	LOS A	1.4	35.5	Full	1600	0.0	0.0
Approach	745	3.0		0.274		5.0	LOS A	1.4	35.5				
East: 70th Terr													
Lane 1[d]	25	3.0	722	0.035	100	5.3	LOS A	0.1	2.9	Full	1600	0.0	0.0
Approach	25	3.0		0.035		5.3	LOS A	0.1	2.9				
North: N Oak													
Lane 1	490	3.0	1358	0.361	100	5.9	LOS A	2.1	52.6	Full	1600	0.0	0.0
Lane 2[d]	490	3.0	1358	0.361	100	5.9	LOS A	2.1	52.6	Full	1600	0.0	0.0
Approach	979	3.0		0.361		5.9	LOS A	2.1	52.6				
West: 70th Terr													
Lane 1[d]	37	3.0	584	0.063	100	6.9	LOS A	0.2	5.3	Full	1600	0.0	0.0
Approach	37	3.0		0.063		6.9	LOS A	0.2	5.3				
Intersection	1786	3.0		0.361		5.6	LOS A	2.1	52.6				

Site Level of Service (LOS) Method: Delay & v/c (HCM 6). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
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Gap-Acceptance Capacity: Traditional M1.
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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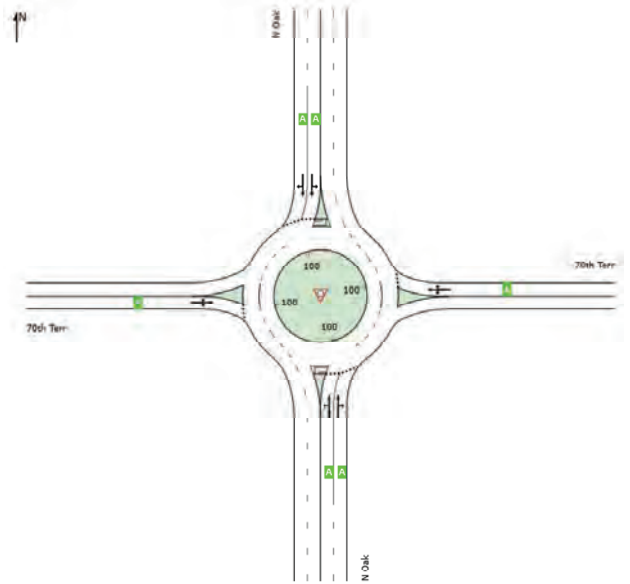
LANE LEVEL OF SERVICE

Lane Level of Service

Site: 101 [N Oak & 70th Terr]

New Site
Site Category: Existing PM Peak Hour (Recount)
Roundabout

	Approaches South	East	North	West	Intersection
LOS	A	A	A	A	A



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