Neighborhood Traffic Calming Study

City of Saint Louis, Wards 14 and 16

Prepared for:

City of Saint Louis

Board of Public Service

March 2017

CBB TRANSPORTATION ENGINEERS+PLANNERS

CHIPPEWA KING&HIGHWAY SOUTHAMPTON EICHELBERGER HAMPTON

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Study Background

Figure 1: Macklind Business District banner

The Southampton neighborhood is a part of Wards 14 and 16 in the City of Saint Louis. Ward 14 includes all or part of Bevo Mill, Princeton Heights, Southampton, and Tower Grove South; Ward 16 includes all or part of the neighborhoods of Princeton Heights, Southampton, Saint Louis Hills, and Lindenwood Park. Each of these neighborhoods has its own community and distinct sense of place.

Southampton (also known as SoHa) is a vibrant neighborhood. SoHa began in the early twentieth century and as grown and evolved through the years. It offers a mixture of commercial and residential properties, creating an exciting community where people live, work, and play. With these changes and developments in the neighborhood, the area's transportation faces new challenges.

Southampton is bordered by three arterials (Kingshighway Boulevard, Hampton Avenue, and Chippewa Street) that are major commercial corridors. Additionally, the neighborhood is bisected by Macklind Avenue and the Macklind business district, a lively neighborhood commercial area that is a mixture of restaurants, retail stores, and other services.

Ward 14 Alderwoman Carol Howard and Ward 16 Alderwoman Donna Baringer initiated this study due to concerns about traffic, circulation, access, parking, and pedestrian safety within the neighborhood. Residents had previously communicated that traffic speeds are too high, that local streets are being used for traffic cutting through the neighborhood, and that there is not enough parking for residents on some streets due to shared parking with businesses. There is a consensus for a desire to enhance traffic and pedestrian safety within the neighborhood, as well as the livability of the area.

Figure 2: Macklind Business District

The goal of this study is to develop a traffic calming plan for the Southampton neighborhood. The aim is to help to create a system that balances the needs of residents and businesses. It is important to promote active transportation and a well-connected system for residents to access all parts of their neighborhood, including the Macklind Business District, as well as other nearby shopping and entertainment. Additionally, walkable neighborhoods promote better public health, increased economic development, and a better quality of life.

Currently, Southampton residents have a wide range of ages, and providing a range of transportation choices is becoming more important. National trends in transportation and community building promote active and healthy lifestyles by providing transportation options that encourage walking and biking. Providing these options is good for the neighborhood.

The process for the study includes public engagement, City and stakeholder coordination, thorough traffic data collection, an infrastructure inventory, and analyses of key locations. The information was used to develop recommendations that may be implemented within Southampton in the coming years through using Ward Capitol Improvement funds. Recommendations are made for a hierarchy of projects that can be implemented in the short, medium, and long term to make use of the limited funding as it becomes available.

Study Area

Southampton is in south Saint Louis City, in both Wards 14 and 16. Shown in ***Figure 3***, it is bounded by Chippewa Street to the north, South Kingshighway Boulevard to the east, Eichelberger Street to the south, and Hampton Avenue to the west. Though Southampton is bordered by two principal arterials (Hampton Avenue and Kingshighway Boulevard) and one minor arterial (Chippewa Street), this study focused primarily on the collectors and local roads within these limits.

Southampton was chosen for the traffic study due to the large numbers of concerns that the residents expressed to their Alderwomen. Though the study does look at traffic within the entire neighborhood, a select number of locations were chosen for more focused attention: Macklind Avenue, Brannon Avenue, Wherry Avenue, and Neosho Street. These streets were selected based on the number of complaints, existing conditions, and field observations, which identified them as problematic hot spots.

Figure 3: Southampton

Study Process

The project's public kick-off occurred on April 6, 2016 at Saint Mary Magdalen Church. At this meeting, the project team presented materials on the study process, launched a study survey, and solicited feedback on specific areas of concern from the residents to assist with moving the study forward. Resident concerns were voiced during an open question and answer session, with interactive boards, and with comment cards. The study survey was kept open through the end of April, and was intended to solicit input from neighborhood residents about specific experiences, areas of concerns, and information on their preferred traffic calming measures for the neighborhood.

Figure 4: Pocket park in Macklind Business District

Data collection started in May, (to include school traffic), and continued through the summer. The collected data included a transportation infrastructure inventory (vehicle, bicycle, and pedestrian facilities), volume and speed counts, manual traffic counts, parking surveys, crash history, and field observations. CBB used the existing conditions data, field data, and issue identification to move forward in developing alternatives for traffic calming recommendations.

Figure 5: National Night Out

CBB conducted a series of small group community meetings in August and September. These groups included business owners on the Macklind Business District as well as residents along Wherry, near the Buder Elementary School, and along Neosho. CBB also met with Buder Elementary School principal, Anna Russell. Principal Russell and team members discussed the transportation modes of students and the current drop-off and pick-up procedures at the school. Finally, CBB spent time in the neighborhood, for example, having multiple conversations with residents along Brannon and Neosho.

After incorporating feedback and developing a range of possible improvement alternatives, a second public meeting was held at the Southampton Church on September 14, 2016 to share the findings and proposed recommendations with Southampton residents. Keypad polling was used to allow residents to provide their opinions and preferences related to each recommendation. The period of September to December 2016 was used to compile, refine, and finalize the study alternatives based upon resident feedback and other data collected. Draft recommendations were presented to residents at the Southampton Church through a public open house on December 12, 2016.

Figure 6: Neighborhood landscaping

Stakeholder Engagement

April 6, 2016 Kick-Off Public Meeting

Early discussions with 14th Ward Alderwoman Carol Howard and 16th Ward Alderwoman Donna Baringer indicated residents' traffic-related concerns centered on speeding, cut-through traffic, stop sign compliance, and availability of parking for residents and business patrons. With these concerns in mind, the project team conducted a neighborhood meeting on April 6, 2016 at Saint Mary Magdalen Church to introduce and to discuss the traffic study. A summary of the April 6, 2016 public meeting is provided in **Appendix A**. An opening presentation shared the study goals, process, community engagement plan, and an overview of traffic calming. Survey information was given out, questions were answered, and concerns were discussed. Following the presentation, residents participated in three exercises to give input on their neighborhood concerns. The activities are documented below.

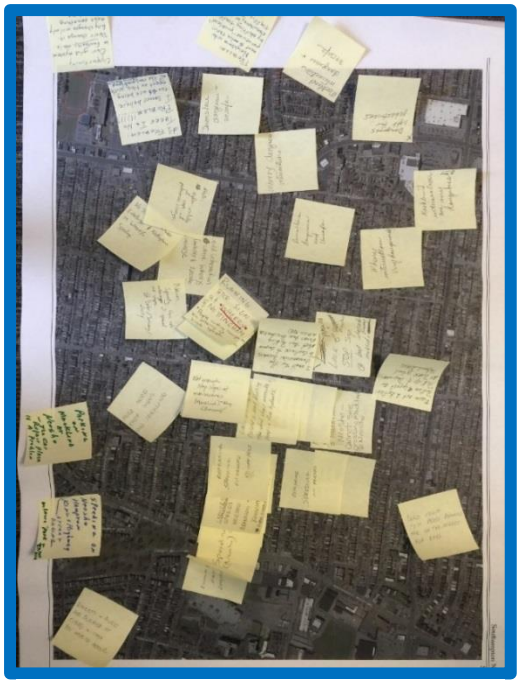

Figure 7: Aerial Exercise

- **Aerial Map Exercise –** The project team provided aerial maps of Southampton; an example is shown in ***Figure 7***. Post-It notes, Sharpies, stickers, and other materials were provided for residents to note specific concerns or ideas. Attendees could indicate specific intersections or corridors where they had concerns, as well as put notes about any ideas they had for various areas of the neighborhoods. Comments on the maps were documented as part of the public feedback.
- **Dot Exercise** – Four boards, each presenting different traffic calming techniques (eighteen techniques total), were posted; one of these boards is shown in ***Figure 8***. When residents entered the meeting, they were given three blue dots. With these dots, residents were asked to indicate the traffic calming measures they would be most interested in seeing within their neighborhood. Attendees could put all dots on one technique or place their dots on several techniques. The techniques listed on the boards were: 1) signing and striping (bicycle lanes/narrow lanes, high visibility crosswalks, stop sign, pedestrian flashing beacon); 2) horizontal deflection (midblock crossing, intersection bump-out, chicane, mini roundabout, center island, choker); 3) vertical deflection (speed humps, speed tables, raised intersections); and 4) traffic diversions (road closures, street direction change, half closures, median barriers, diverters). The project team compiled this information in a spreadsheet (compiled in **Appendix A**). Some notes were placed on the board with alternate ideas that were noted as well. This exercise determined the most popular traffic calming techniques to be:
    - Speed humps (46%)
    - Intersection bump-outs (40%)
    - High visibility crosswalks (26%)
    - Street direction change (21%)
    - Speed tables (20%).

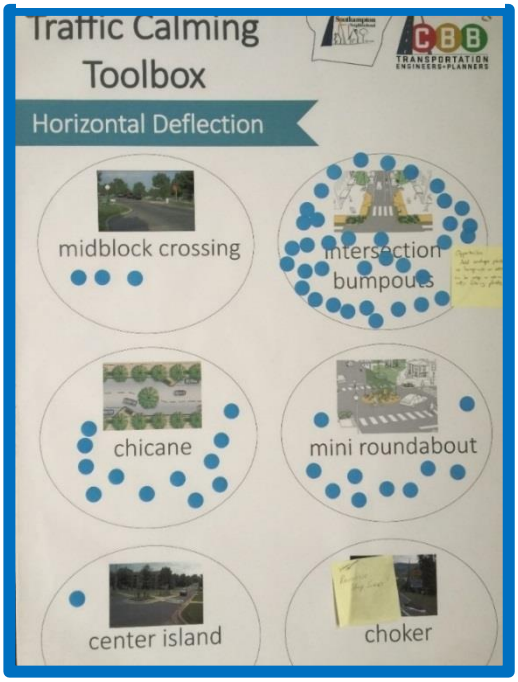

Figure 8: Dot Exercise

- **Breakout Groups –** Based on quick analysis the participants were separated into five breakout groups. Each group, led by a member of the project team, discussed one general them for twenty minutes. These themes were: 1) Speeding on Wherry, 2) Speeding on Neosho, 3) Parking in and around Macklind Business District, 4) Issues on Sutherland, and 5) General Concerns. Notes were taken, an example is shown in ***Figure 9***. This information was documented with the public meeting feedback (**Appendix A**).
- **Comment Cards and Surveys –** Residents at the public meeting were encouraged to fill out hard copy comment cards. Statements from the comment cards were compiled with the public meeting feedback (**Appendix A**).

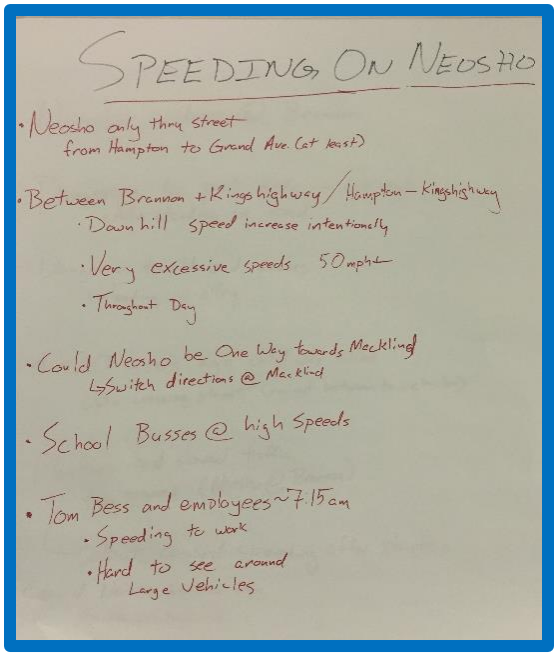

Figure 9: Notes from a breakout group

Neighborhood Survey

A neighborhood survey was conducted to get feedback from neighborhood residents and business owners related to traffic concerns and to help identify existing issues. Additionally, the survey outlined specific traffic calming measures and asked participants to indicate which measures they would be interested in seeing implemented within their neighborhood. The survey was formally introduced at the first public meeting on April 6, 2016, and remained open until April 30, 2016. The survey was available online, though a hard copy could be requested through Alderwomen Howard and Baringer. A total of 425 respondents participated. A copy of the survey can be found in **Appendix B** and survey results are reported in **Appendix C**.

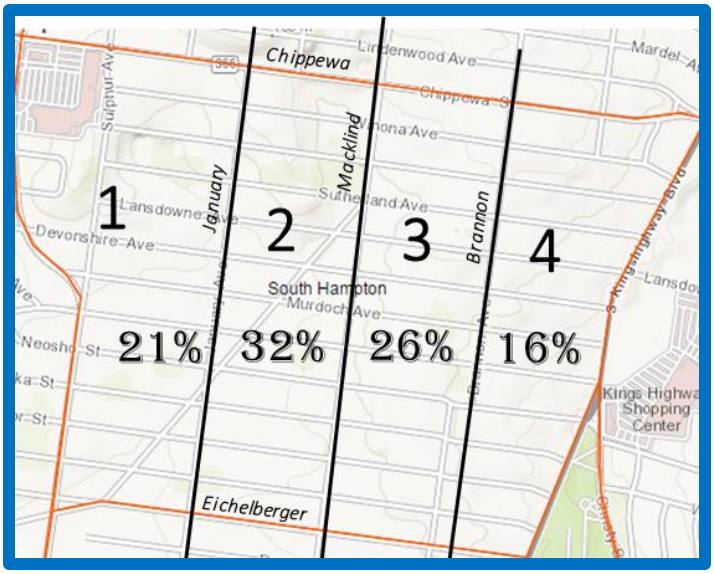

Figure 10: Percentage of survey respondents by quadrant

Demographics

Ninety-three percent of the survey respondents live within the Southampton neighborhood, with the remaining seven percent being a mix of neighborhood business owners only or both business owners and residents. The map was divided into four quadrants when determining where respondents lived within Southampton. The response breakdown by neighborhood residential area is shown in ***Figure 10***. Twenty-one percent of respondents live in the first quadrant, thirty-two percent live in the second, twenty-six live in the third, and sixteen in the fourth. The breakdown by neighborhood, with over half of the participants in the middle two quadrants, may indicate that the survey shows parking issues to be of such a high concern, as these are the two sections that are most affected by parking in the Macklind Business District.

Seven percent of the respondents are aged 20 to 29 years, thirty-seven percent are 30 to 39 years, twenty-two percent are 40 to 49 years, eighteen percent are 50 to 59 years, eleven percent are 60 to 69 years, and five percent are older than 70 years. Most of the respondents fit three categories: Millennials, Gen Xers, and Baby Boomers. Moving forward, transportation systems within the neighborhood need to be planned to meet all population needs. As the population ages, fewer Baby Boomers will drive, and--given general Millennial trends with a preference for active transportation and public transit--it is important to focus on pedestrian safety within the neighborhood.

Only five percent of respondents had an individual in their house who was elderly or disabled who does not drive. Thirty-seven percent of respondents have children under the age of 18 that live in the household. Of these households, seventy-two percent of the respondents report that their children get to school each day by private car, nine percent said that the children walk, four percent of them reported that their children take the bus, and three percent said that the children bike to school. The remaining twelve percent replied that their children use another method or a mix of various modes.

Top Concerns

The survey results agreed with the results of the April public meeting and confirmed the highest concerns of residents are high traffic speeds, inadequate parking, and difficult crossings at intersections.

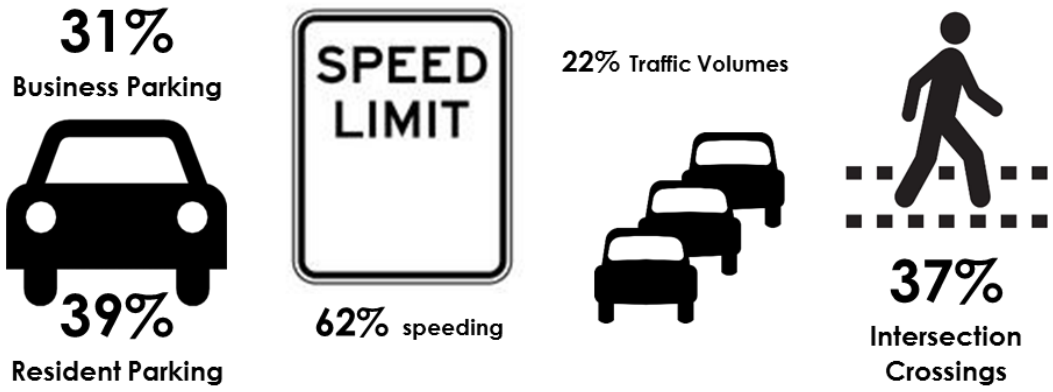

Figure 11: Top Concerns Expressed in the Neighborhood Survey

The top concern of residents is speeding: sixty-two percent are very concerned, twenty-eight percent are somewhat concerned, and only eight percent were not concerned. Primary concerns for speeding are along Wherry and Neosho (especially between Macklind and Kingshighway). When asked about parking, the responses to whether residents felt that there was inadequate parking in the neighborhood is divided almost evenly between very concerned (thirty-one percent), somewhat concerned (thirty percent), and not concerned (thirty-three percent); the concern about adequate business parking was much higher: thirty-nine percent were very concerned, thirty-six percent were somewhat concerned, and only nineteen percent were not concerned. The distribution of these numbers is likely reflective of how close the respondents lived to the area businesses. In addition to other concerns, sixty-four percent of respondents are very concerned or somewhat concerned about the difficulty of crossing the road at intersections (for both vehicular and pedestrian traffic), which was further reinforced in the comments section. Primary intersections of concern included: Macklind/Murdoch and Macklind/Neosho as well as Macklind, Wherry, and Brannon intersections with and Sutherland, Itaska, and Neosho. Other general concerns included parking too close to curbs and alleys, stop sign compliance, and cut-through traffic.

Preferred Traffic Calming Measures

Survey results show most residents are interested in many of the ten traffic calming measures listed in the survey (speed humps, continental crosswalks, speed tables, chicanes, midblock crossings, bump-outs, mini roundabouts, bicycle lanes, pedestrian flashing beacons, and stop signs). The top four measures were continental crosswalks, stop signs, speed humps, and pedestrian flashing beacons.

It should also be noted that many residents wrote comments indicating that the number and location of existing stop signs is problematic and should be assessed. There is a general concern for speeding and running stop signs, and these respondents believe that the existing number and/or spacing of stop signs may be a contributing factor.

A representative from CBB provided a brief study update on July 13, 2016 at a meeting of the Southampton Neighborhood Association. A short presentation was made, updating residents on the additional data collection and study time-line. At the end of the presentation, the floor was open for questions and comments. From that point CBB began a series of small group community meetings which were held in August and September.

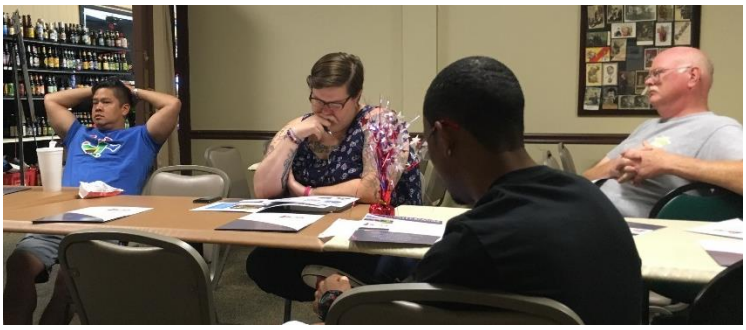

Figure 12: Macklind Business District focus group meeting

Community Focus Group Meetings

Community focus group meetings were held to facilitate in-depth conversations about each of the focus areas. Residents and business owners from in and around the focus area were invited to attend the meetings, which consisted of a short summary of the study and a round-table discussion about the various alternatives of traffic calming methods.

The first meeting was with members of the Macklind Business District, at Macklind Avenue Deli. CBB and the business owners discussed the intersection crossings and parking in and around the Macklind Business District. The business owners all agreed that intersection crossings were a major issue, especially for the safety of pedestrians. The consensus was that Neosho and Murdoch were there primary issues. Neither of these intersections have four-way stops. The Neosho crossing was especially problematic because of limited sight-distance at the intersection. However, the intersection of Murdoch and Macklind was identified as a higher priority as more people cross there. The group also discussed lighting along Macklind and various issues and strategies related to parking.

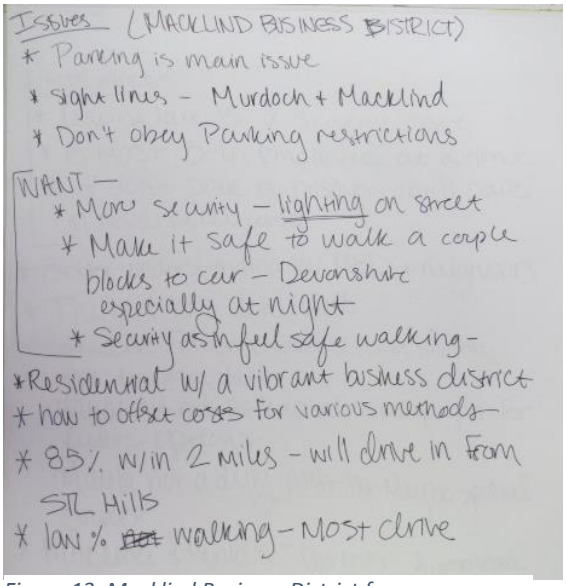

Figure 13: Macklind Business District focus group meeting notes

Figure 14: Wherry focus group meeting

The second meeting was for Brannon Avenue and Neosho Street. Though several residents expressed interest, only one resident attended. However, he provided insights on crossings around Buder School, where the playground is used by children of Southampton. Additional information was gained about speeding on Neosho and a group of families that are worried about safety. Team members made a field visit to the area and talked with these homeowners, which allowed team members to identify a primary location for a traffic calming measure. Furthermore, due to the low turnout at the community focus group meeting, team members went to the intersection of Brannon Avenue and Neosho Street to gain the feedback of residents most affected by that intersection.

The third meeting discussed issues along the length of Wherry Avenue. Residents and team members identified intersections where traffic calming measures are most likely able to be the most effective in slowing down traffic speeds. Several residents at this meeting were in favor of either extended curb bump-outs or either a closure or partial closure of January Avenue between Neosho and Itaska.

The fourth meeting was focused on traffic flow and associated issues with the drop-off and pick-up at Buder Elementary School. Prior to this meeting, team members met with Anna Russell, the principal of Buder Elementary School. This meeting, held at the school, gave the school's perspective on the issues, and their preferences for solutions. This idea was presented at the community focus group, where pros and cons of the current and new circulation plans were discussed.

As a part of the community focus group effort, CBB attended the neighborhood's National Night Out event on August 2nd. A summary of the community focus group meetings can be found in Appendix D.

September 14, 2016 Alternatives Public Meeting

The second public meeting was held at Southampton Church during the Southampton Neighborhood Association meeting on September 14, 2016. Multiple alternatives were shown to the public, and residents were asked to express their preferences via keypad polling. A summary of this meeting can be found in Appendix E.

Figure 15: September 14, 2016 Public Meeting

December 12, 2016 Public Open House

On December 12, 2016, an open house was held for residents of Southampton at the Southampton Church, from 6 p.m. to 9 p.m. Boards were displayed showing the final recommendation for each focus area. They were grouped for short-term recommendations, mid-term recommendations, and long-term recommendations. Residents were asked to complete a short questionnaire to give their feedback on whether they agreed with the recommendations and priorities, and to provide any additional comments. Results are summarized in Appendix F.

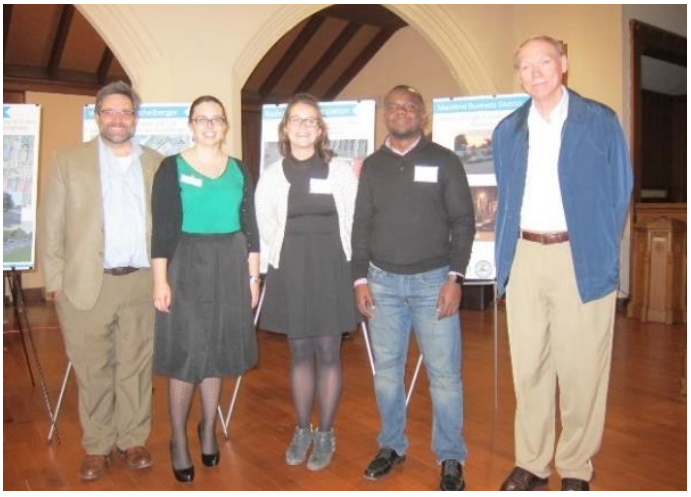

Figure 16: Project Team at December 12, 2016 Public Open House

Existing Conditions

Study Area Descriptions

The Southampton neighborhood is designed along a grid system, much the same as other neighborhoods in the City of Saint Louis. In this pattern, most of the east-west streets are double blocks that meet north-south streets at a ninety-degree angle. The north-south streets are two-way while most of the east-west streets are one way, with traffic alternating between eastbound and westbound street by street. In Southampton, however, there are a few deviations from this pattern, which create unique traffic features in the neighborhood.

The first of these unique features is Wherry Avenue, which cuts diagonally across the grid system. Because of the angle of Wherry Avenue to the other streets, three wedges are created. The first is at the intersection of Wherry Avenue, Macklind Avenue, and Sutherland Avenue. This wedge, called the Buder Wedge due to its placement across from Buder Elementary School, is a green area that doubles as the gateway to the Macklind Business District (seen in ***Figures 17 and 18***). The other two wedges are where Wherry Avenue and January Avenue intersect. On each of these wedges, Wherry Avenue forms one side and January Avenue forms the second. The third side is formed by Neosho Street on one triangle, and by Itaska Street on the other triangle. Both Wherry/January wedges are landscaped (*seen in* ***Figures 19-22***).

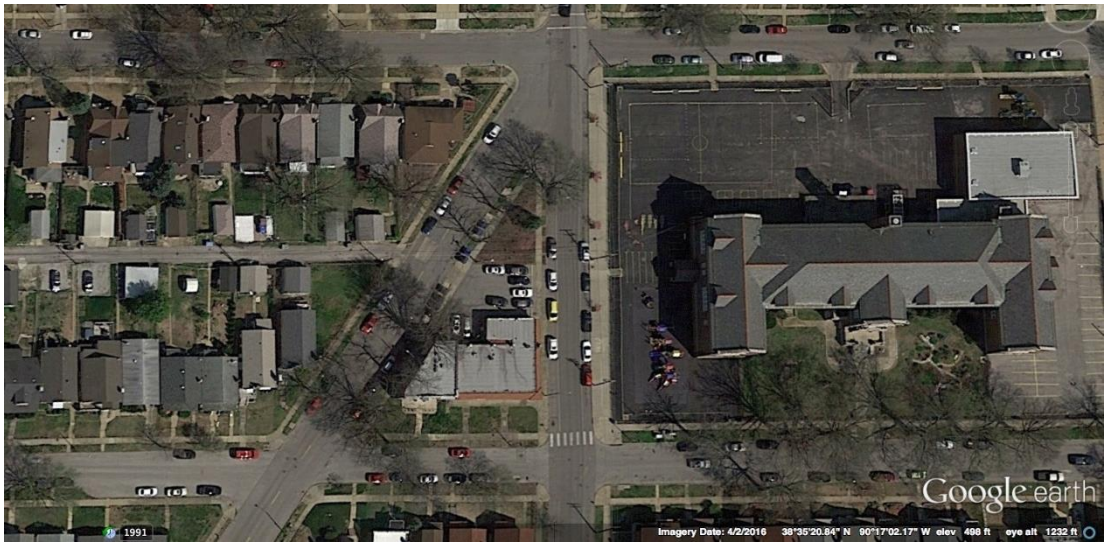

Figure 17: Aerial view of the Buder Wedge

Figure 18: Street view of the Buder Wedge

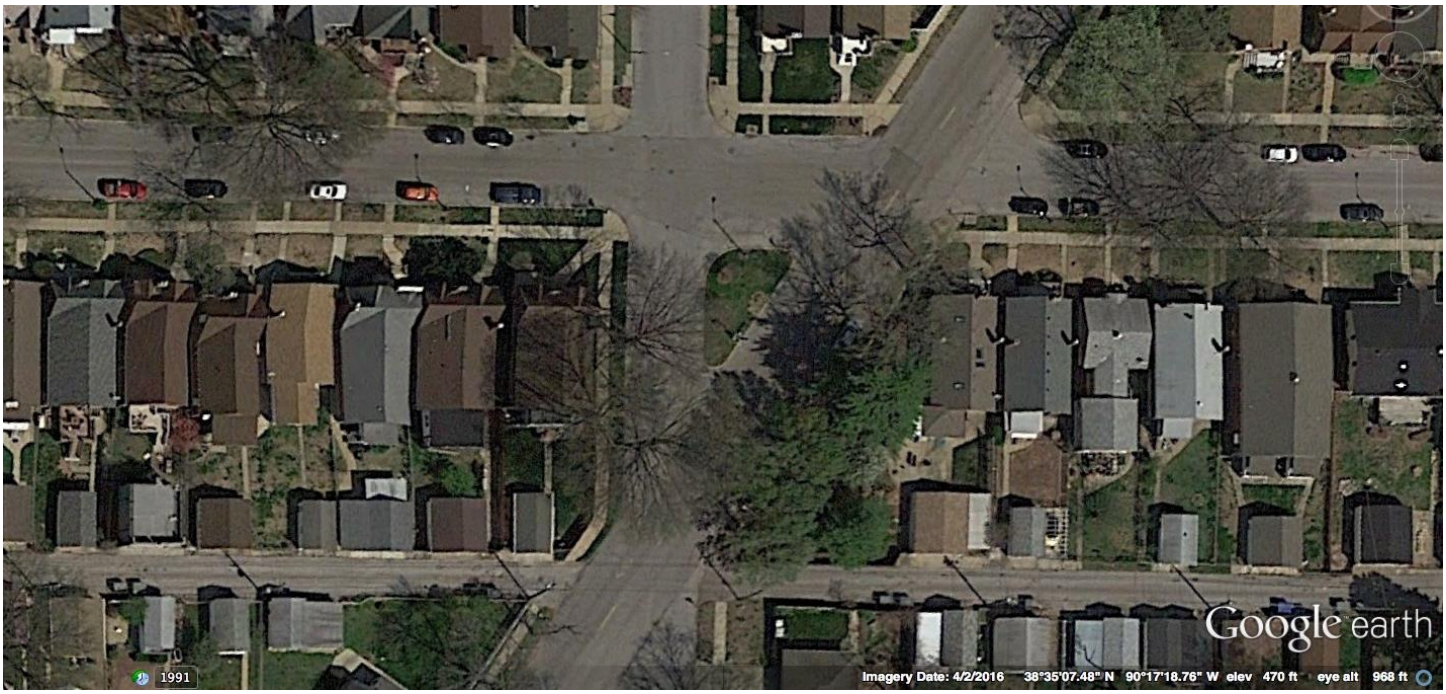

Figure 19: Aerial view of the Wherry/January/Neosho Wedge

Figure 20: Street view of the Wherry/January/Neosho Wedge

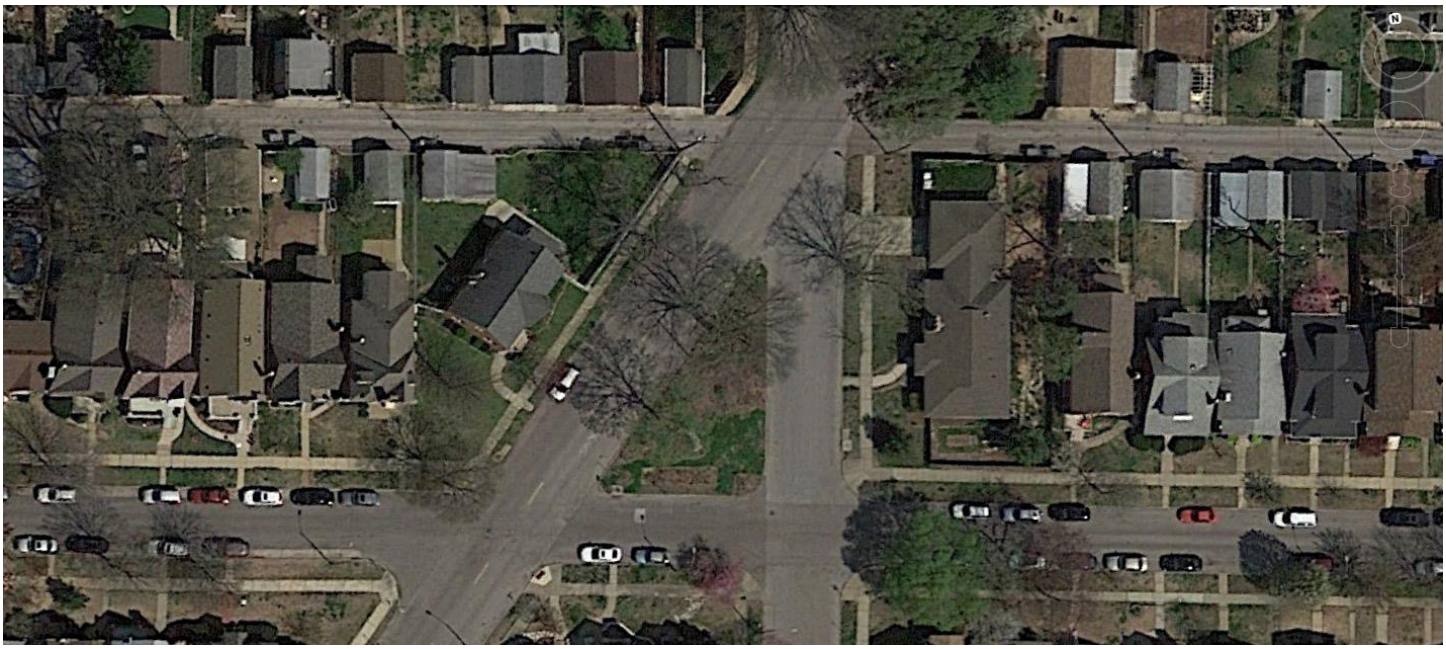

Figure 21: Aerial view of the Wherry/January/Itaska Wedge

Figure 22: Street view of the Wherry/January/Itaska Wedge

Another deviation from the grid is the pattern of one way streets is in the northeast corner of the neighborhood. Here, one block of Winona Avenue (from Macklind Avenue to Brannon Avenue) allows for eastbound traffic, but the adjacent block (from Brannon Avenue to Kingshighway Boulevard) allows for westbound traffic. This creates two approaches to Brannon Avenue from opposite directions.

Brannon Avenue creates a slight variation at Neosho Street. Here, the two sides of the street, one north of Neosho Street and one south of Neosho Street, do not line up. Instead, there is a separation of about 180 feet. Neosho Street is only one way, forcing southbound drivers along Brannon Avenue to the east, instead of continuing on Brannon Avenue (*seen in* ***Figures 23 and 24***).

Figure 23: Aerial view of the Brannon/Neosho intersection

Figure 24: Street view of southbound Brannon Ave. north of Neosho St.

Roadway Functional Classification

When evaluating roadway operations, it is important to consider how the facility works (or is intended to work) within the surrounding street network. The hierarchy of roadways and their usage is described by their functional classification. The purpose of roadway functional classification is to formally describe how travel is channelized through our roadway network. Roadways are classified according to their urban or rural setting and the type of service they provide based on considerations such as: connectivity, mobility, accessibility, vehicle miles traveled, average annual daily traffic, and abutting land use. In the St. Louis region, the East-West Gateway Council of Governments is responsible for maintaining and updating the region's Roadway Functional Classification System.

For nomenclature purposes, those roadways that provide a high level of mobility and a low level of accessibility are called "arterials," those that provide a more balanced blend of mobility and access are called "collectors," and those that provide a low level of mobility and a high level of accessibility are called "locals." Mobility and access are considered within the context and livability of the environment.

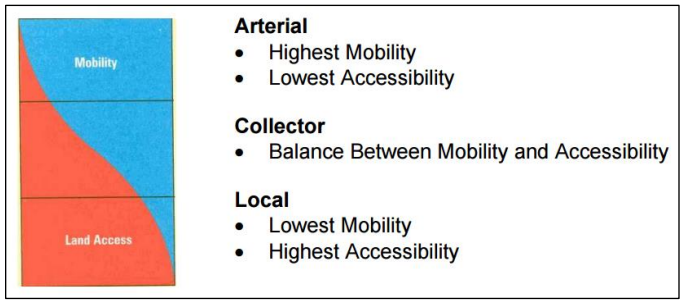

Figure 25: Relationship between Mobility and Accessibility (Functional Classification Procedure Manual, East-West Gateway Coordinating Council, 2007)

Arterials are typically roadways with high traffic volumes and are frequently the route of choice for intercity buses and trucks. Minor arterials provide service for trips of moderate length, serve geographic areas that are smaller than their higher ("major") arterial counterparts and offer connectivity to the higher mobility parts of the system (major arterials, expressways, freeways, interstates). In an urban context, they connect and augment the higher arterial system, provide intra-community continuity, and may carry local bus routes. The general range for daily traffic volumes on a minor arterial is 3,000-14,000 vehicles per day (vpd).

As their name implies, collectors collect traffic from local roads and connect it to arterial roadways. Collector routes are typically shorter than arterial routes but longer than local roads. Collectors often provide traffic circulation within residential neighborhoods as well as commercial, industrial, or civic districts. The general range for daily traffic volumes on a major collector is 1,100 – 6,300 vpd.

Minor (or "residential") collectors are characterized by on-street parking, direct access to residential driveways, and average daily volumes typically less than 5,000 vpd. If total daily traffic increases to more than 5,000 vpd, the character of the road may shift to that of a major (or "system") collector. In general, a system collector has restrictions for on-street parking and fewer curb cuts to enable better traffic flow.

Roads classified as local roads account for the largest percentage of all roadway mileage. They are designed for direct access to abutting land. Due to this provision, they are not intended for use in long distance travel, except at the origin or destination end of the trip. Also, local roads are designed to discourage through traffic, and are not generally part of bus routes bus routes. As public roads, they should be accessible for public use throughout the year. The general range of daily traffic volumes on a local road is less than 1,000 vpd.

Kingshighway Boulevard

Kingshighway Boulevard forms the eastern border of the Southampton neighborhood. It is classified as a principal arterial by the EWGCG and is one of the major north-south routes within the City of Saint Louis, connecting to West Florissant Avenue at its north end and to Gravois Avenue at its south end. Along the way, it intersects Interstates 44, 64, and 70. The #95 Kingshighway MetroBus runs along this corridor, connecting to the Central West End MetroLink Station, Gravois-Hampton Transit Center, and North Broadway MetroBus Loop. This is one of the Metro System's most heavily traveled bus routes, moving residents between several neighborhoods, shopping districts, employment centers, and large attractions.

Figure 26: South Kingshighway Blvd.

Chippewa Street

Chippewa Street marks the northern boundary of the Southampton neighborhood. It is a minor arterial that travels in an east-west direction for most of the width of the city. To the east, it ends just before the Mississippi River, at Marine Avenue. To the west, Chippewa continues over the River Des Peres, before turning into Watson Road. The #11 Chippewa route provides service to the Southampton neighborhood, linking it with the Shrewsbury and Union Station MetroLink Stations. Additionally, it travels to other neighborhoods, local businesses, large employers, shopping centers, major attractions, the Amtrak train station, and the Greyhound bus terminal. Chippewa Street is part of the Bike St. Louis network. It has shared lane markings within the neighborhood.

Figure 27: Chippewa St.

Hampton Avenue

Hampton Avenue forms the western border of the Southampton neighborhood. It is classified as a principal arterial by the EWGCG and is a major north-south route for the southern part of the City of Saint Louis. Hampton Avenue starts at Forest Park and Interstate 64/Missouri 40 at its north end, and terminates at Gravois Avenue where the street continues as Germania Street. It intersects both Interstate 44 and Interstate 64. The #90 Hampton MetroBus connects the Southampton neighborhood to the Forest Park-DeBaliviere MetroLink Station, the Riverview MetroBus Center, the Gravois-Hampton Transit Center, and the Catalan Loop. The #90 Hampton connects Southampton with other popular routes, neighborhoods, shopping districts, employers, and large attractions. Hampton Avenue is not a bicycle route within the Southampton neighborhoods. However, the bicycle routes through Southampton intersect Hampton Avenue at Eichelberger Street. From there, the routes continue south on Hampton Avenue, where bicyclists have shared lane markings.

Figure 28: Hampton Ave.

Eichelberger Street

Eichelberger Street forms the southern boundary of the Southampton neighborhood. It is classified as a major collector by the EWGCG. The street is two-way, with one driving lane in both directions and parking lanes on both sides of the street; the street is striped in the middle, but there is no edge line striping between the parking and driving lanes. The speed limit is 30 mph, with a school zone at Hope Lutheran School that is 25 mph. Eichelberger Street is part of the Bike Saint Louis network and has shared lane markings and signage. It has sidewalks along both sides through the width of the corridor. Additionally, it has crosswalks at all four crossings at the intersection of Kingshighway Boulevard, and crosswalks on either side of Brannon Avenue (to access Hope Lutheran School).

Figure 29: Eichelberger St.

Macklind Avenue

Macklind Avenue is a north-south route that is classified as a major collector. It bisects the Southampton neighborhood and is the heart of the Macklind Business District. The speed limit is 30 mph for Macklind Avenue, though it does have a 25-mph school zone for Buder Elementary School. The average daily volume for Macklind Avenue is about 3000 vehicles per day.

The width of Macklind Avenue ranges from thirty-two feet to thirty-eight feet in Southampton. At the north end of the Southampton neighborhood (from Chippewa Street to Bancroft Avenue) it is thirty-eight feet, and has two lanes in each direction; one lane in each direction can also be used as a parking lane, though there are time restrictions. Macklind Avenue is thirty-two feet wide from Sutherland Avenue to Bancroft Avenue. It is thirty-four feet in the Business District (from Sutherland Avenue to Itaska Street). It is thirty-seven feet wide from Itaska Street to Walsh Street, and it is thirty-six feet wide from Walsh Street to Eichelberger Street. The entire stretch from Sutherland Avenue to Eichelberger Street is one driving lane in each direction and one parking lane on either side of the street.

Macklind Avenue is part of the Bike St. Louis network, and has signage and road markings to indicate that bicyclists share the road with motorists. Additionally, Macklind Avenue has several bike racks through the business district.

Macklind Avenue has sidewalks along both sides of the street for the length of the Southampton neighborhood. It has several crosswalks through the Business District and to access Buder Elementary School. There are crosswalks at Neosho Street, Nottingham Avenue, Murdoch Avenue, Devonshire Avenue, and Lansdowne Avenue. Most of these crosswalks are standard crosswalks, and none of the intersections are fully ADA compliant. Furthermore, though Macklind has a high number of pedestrians for the Business District, it has lighting only on the west side of the street, making the east side much darker, with a lower comfort for safety and walkability.

Figure 30: Macklind Ave.

Wherry Avenue

Wherry Avenue is classified as a major collector. It runs in a northeast-southwest direction that cuts a diagonal through the grid system created by the rest of the streets in the Southampton neighborhood. The average daily traffic per day is about 2300 vehicles per day. Wherry Avenue is thirty-six feet wide for the entire length of the street. It has one lane of traffic in both directions and parking lanes on both sides. While the street is striped in the middle, there is no edge line striping between the driving and parking lanes. The speed limit is 25 mph, except at the north end, at Buder Elementary School, where there is a school zone speed limit of 20 mph.

Wherry Avenue is a shared traffic lane bike route and has shared lane signs and markings. It has sidewalks most of the length of the corridor; they are interrupted at the green space triangles where Wherry Avenue intersects January Avenue.

Figure 31: Wherry Ave.

Brannon Avenue

Brannon Avenue is classified as a local road, and is located parallel to, and just one block west of Kingshighway Boulevard. There are no longitudinal roadway striping and the posted speed limit is 25 mph. On-street parking is permitted on both sides of the street through the neighborhood. The average daily traffic for Brannon Avenue is about 1200 vehicles per day. The width of Brannon Avenue ranges from thirty-two feet to thirty-six feet within the neighborhood. Brannon Avenue has sidewalks along the length of Southampton. It has a standard crosswalk at Eichelberger, near Hope Lutheran School, and an unmarked crosswalk at Hope Lutheran Church. At Neosho Street, the north side and south sides of Brannon Avenue are not aligned. Neosho Street is one way, making it difficult for drivers to travel south from Chippewa Street to Eichelberger Street using Brannon Avenue.

Figure 32: Brannon Ave.

Devonshire Avenue

Devonshire Avenue is classified as a major collector by EWGCG. It is two-way, with one driving lane and one parking lane in both directions. Devonshire Avenue is striped in the middle, but has no edge line striping. The street width is forty feet east of Macklind Avenue, and thirty-five feet west of Macklind Avenue. The speed limit is 25 mph.

Figure 33: Devonshire Ave.

Neosho Street

Neosho Street is classified as a local road and is one-way, with drivers traveling east, through the Southampton neighborhood. The street is twenty-six feet wide, and has one driving lane and parking on both sides of the street. The average daily volume for Neosho Street is about 800 vehicles per day. The speed limit for Neosho Street is 25 mph. As mentioned above, Neosho Street is one way between the two offset sides of Brannon Avenue.

Figure 34: Neosho St.

Bancroft Avenue

Bancroft Avenue is a local road that runs parallel to, and two blocks south of Chippewa Street. It has a speed limit of 25 mph. The segment of Bancroft Avenue between Sulphur Avenue and Macklind Avenue is two-way and has a width of thirty feet. While parking is allowed on both sides of the street, this section does not have any sidewalks and residents have driveways at the fronts of the houses. The segment of Bancroft Avenue between Macklind Avenue and Kingshighway Boulevard is one-way, with cars traveling east, and is twenty-six feet wide. Cars can park on both sides of the street.

Figure 35: Bancroft Ave.

Winona Avenue

Winona Avenue runs east-west, parallel to, and just one block south of Chippewa Street. Winona Avenue has a pavement width of thirty feet and a speed limit of 25 mph. The block between Sulphur Avenue and January Avenue has sidewalks for only part of the length of the block. The block between January Avenue and Macklind Avenue, unlike most of the rest of the neighborhood, has no sidewalks and the houses have driveways at the front of the house. The block between Macklind Avenue and Brannon Avenue, is one-way, with traffic flowing east. The block between Brannon Avenue and Kingshighway Boulevard is also one-way, but traffic flows west. These two blocks of Winona Avenue create an "imploding intersection" at Brannon Avenue. Both streets approach Brannon Avenue, while drivers from Brannon Avenue are not able to access either block. This also creates a variation in the east and west flows of the one-way streets in the neighborhood.

Figure 36: Winona Ave.

Murdoch Avenue

Murdoch Avenue is a local road that runs parallel to, and one block south of Devonshire Avenue. The speed limit on Murdoch Avenue is 25 mph. It is one-way, with only eastbound traffic allowed. Cars can park on both sides of the street. The street width between Sulphur Avenue and Macklind Avenue is twenty-six feet, and the street width between Macklind Avenue and Kingshighway Boulevard is thirty feet.

Figure 37: Murdoch Ave.

Sutherland Avenue

Sutherland Avenue is a local road that runs parallel to, and three blocks south of Chippewa Street. The speed limit on Sutherland Avenue is 25 mph, though it has a 20-mph school zone near Buder Elementary School. East of Macklind, Sutherland Avenue is one-way, with only westbound traffic allowed. Cars are able to park on both sides of the street. The street width between Sulphur Avenue and Macklind Avenue is between twenty-eight and thirty-two feet, and the street width between Macklind Avenue and Kingshighway Boulevard is twenty-six feet. Sutherland Avenue intersects with Macklind Avenue and Wherry Avenue at the Buder Wedge. Additionally, access to the Buder Elementary School parking lot is from Sutherland Avenue; there are parking restrictions at this driveway.

Figure 38: Sutherland Ave.

Lansdowne Avenue

Lansdown Avenue is a local road that runs parallel to, and four blocks south of Chippewa Street. The speed limit on Lansdowne Avenue is 25 mph, though it has a 20-mph school zone near Buder Elementary School. It is one way, with only eastbound traffic allowed. Cars are able to park on both sides of the street. The street width between Sulphur Avenue and Macklind Avenue is twenty-six feet (though it does widen to thirty-five feet just before Wherry Avenue); the street width between Macklind Avenue and Kingshighway Boulevard is thirty feet.

Figure 39: Lansdowne Avenue

Nottingham Avenue

Nottingham Avenue is a local road that runs parallel to, and two blocks south of Devonshire Avenue. The speed limit on Nottingham Avenue is 25 mph. It is one-way, with only westbound traffic allowed. Cars can park on both sides of the street. The street width between Sulphur Avenue and Macklind Avenue is twenty-six feet, and the street width between Macklind Avenue and Kingshighway Boulevard is thirty feet.

Figure 40: Nottingham Ave.

Itaska Street

Itaska Street is a local road that runs parallel to, and four blocks south of Devonshire Avenue. The speed limit on Neosho Street is 25 mph. It is one-way, with only westbound traffic allowed. Cars are able to park on both sides of the street. The street width is thirty feet.

Figure 41: Itaska St.

Delor Street

Delor Street is a local road that runs parallel to, and five blocks south of Devonshire Avenue. The speed limit on Delor Street is 25 mph. It is one-way, with only westbound traffic allowed. Cars can park on both sides of the street. The street width is between twenty-six and thirty feet.

Figure 42: Delor St.

Walsh Street

Walsh Street is a local road that runs parallel to, and six blocks south of Devonshire Avenue. The speed limit on Walsh Street is 25 mph, though it has a 20-mph school zone near Hope Lutheran School. It is one-way, with only westbound traffic allowed. Cars are able to park on both sides of the street. The street width is between twenty-eight and thirty feet.

Figure 43: Walsh St.

Pedestrian Facilities

There are sidewalks through most of the Southampton neighborhood. However, there are not sidewalks along Winona from west of January Avenue to Macklind Avenue, along Bancroft Avenue from Sulphur Avenue to Macklind Avenue, or along the sides of the January/Wherry wedges.

Most of these sidewalks do not have fully ADA compliant ramps at each corner. Furthermore, most of the intersections that do have ADA ramps with truncated domes have only one ramp that is angled forty-five degrees to each direction of travel. Only one corner, at Macklind Avenue and Murdoch Avenue, has truncated domes with ramps parallel to the direction of travel. Additionally, these ramps do not always align with the striped crosswalks in Southampton. There are truncated domes ramps at:

- The northeast corner of Sutherland Avenue and Sulphur Avenue
- The southeast corner of January Avenue and Delor Street
- The northeast corner of Macklind Avenue and Murdoch Avenue
- The southwest corner of Macklind Avenue and Eichelberger Street
- The northwest corner of Wherry Avenue and Eichelberger Street
- The southeast corner of Wherry Avenue and Itaska Street
- The southeast corner of Wherry Avenue and Delor Street

Figure 44: Sidewalks and crosswalks across Macklind

The Southampton neighborhood has a variety of styles of crosswalks: some have no striping, some have standard striping, and some have continental striping. Also, as noted above, not all marked crosswalks and ADA ramps align.

Figure 45: Continental crosswalk across Macklind Ave. at Neosho St.

Figure 46: Pedestrian Crossing Sign at Brannon Ave. (Hope Lutheran Church)

Figure 47: Bicyclists in Southampton

Bicycle Facilities

The Southampton Neighborhood is connected to various parks and neighborhoods through the Bike St. Louis Network. The Gateway Bike Plan (shown in ***Figure 48***) names Macklind between Chippewa and Wherry, Wherry, Eichelberger, and Chippewa as shared traffic lanes. These streets have markings and signage to let motorists and cyclists know to share the road. There are also Bike St. Louis signs indicating direction and distance to various locations. Additionally, there are several bike racks outside area businesses.

Figure 48: Southampton in the Gateway Bike Plan

Bus Facilities

The Southampton neighborhood is connected to the larger Saint Louis network through the three bus lines that run along the perimeter of the neighborhood: the # 11 Chippewa, the # 90 Hampton, and the # 95 Kingshighway. These busses connect to four MetroLink Stations and one transit center as well as, dozens of other bus routes, businesses, and retail centers.

The #11 Chippewa bus connects to the Shrewsbury and Union Station MetroLink Stations. Eastbound stops are midway through Sulphur Avenue and January Avenue, at Macklind Avenue, at Brannon Avenue, and at Hereford Street. Westbound stops are at Hereford Street, at Brannon Avenue, midway between Regal Place and January Avenue, and at January Avenue. The bus runs in the neighborhood from about 4:30 a.m. until 11:40 p.m. (based on the Kingshighway and Chippewa stop). It runs every twenty minutes through morning and evening peak hours, every thirty minutes through the day, and every forty minutes in the late evening.

The #90 Hampton bus connects to the Forest-Park DeBaliviere MetroLink Station, the Gravois-Hampton Transit Center, and the Catalan Loop. Northbound stops are at Eichelberger Street, Delor Street, Devonshire Avenue, and Hampton Village. Southbound stops are at Sutherland Avenue, Neosho Street, and Delor Street. The bus runs in the neighborhood from about 4:30 a.m. to 1 a.m. (based on the Hampton and Chippewa stop). It runs about every twenty-five minutes through the evening peak hours and every forty minutes through the late evening Mondays through Fridays. Saturdays, it runs every thirty minutes through the day and every forty minutes through the late evening; Sundays it runs every forty minutes all day.

The #95 Kingshighway bus connects to the Central West End MetroLink Station, the Gravois-Hampton Transit enter, and the North Broadway MetroBus Loop. Northbound stops are at Delor Street. and Winona Avenue. Southbound stops are at Bancroft Avenue, Devonshire Avenue, Nottingham Avenue, and Eichelberger Street. The bus runs in the neighborhood from about 6 a.m. to 1 a.m. (based on the Kingshighway and Chippewa stop). It runs every twenty minutes through the evening peak hours and every thirty minutes in the late evening, Mondays through Fridays. It runs every thirty minutes on Saturdays and every forty minutes on Sundays.

Traffic Volume and Speed

Traffic volume and speed data, collected by traffic count machines, was used to compute daily traffic volumes and the prevailing speeds for segments of roadways in Southampton (see Appendix G). This data was then evaluated by comparing actual traffic conditions to the street's intended purpose, current posted speed limit, and general character. The following tables identify the average daily traffic volume (ADT), 85th percentile travel speed, 50th percentile travel speed, and additional data.

Traffic engineering experience maintains that most drivers will travel at an operating speed that they consider both comfortable and safe based upon street geometrics and surrounding conditions. The 85th percentile speed is the speed that 85% of drivers will voluntarily travel at or below in free-flow traffic conditions; it is one of the primary factors used in engineering studies to determine appropriate speed limits.

Data Collection

The project team collected traffic volume and speed data at selected locations to identify the prevailing traffic and pedestrian conditions and behaviors. Count types and locations were determined based on input from the residents during the first public meeting and the resident survey. Several types of count data were collected.

Automatic machine traffic counters were placed at eight different locations for seven days. These counters measured traffic volumes (to be summarized both hourly and daily) and travel speeds. The machine counters ("tubes") were placed at the following locations:

- Neosho Street between Hampton Avenue and January Avenue
- Neosho Street between January Avenue and Macklind Avenue
- Neosho Street between Brannon and Kingshighway Boulevard
- Wherry Avenue between Eichelberger Street and Itaska Street
- Wherry Avenue between Devonshire Avenue and Sutherland Avenue
- Macklind Avenue between Devonshire Avenue and Neosho Street
- Macklind Avenue between Neosho Street and Eichelberger Street
- Brannon Avenue between Nottingham Avenue and Devonshire Avenue

Manual traffic/pedestrian counts were collected at six intersections. Vehicular turning movement and pedestrian volumes were counted for morning and evening peak hours. The count periods were from 7 a.m. to 9 a.m. and 4 p.m. to 6 p.m. on a weekday. The intersections counted were:

- Wherry Avenue and Neosho Street
- Wherry Avenue and Itaska Street
- Wherry Avenue, Sutherland Avenue, and Macklind Avenue
- Neosho Street and Macklind Avenue
- Neosho Street and Brannon Avenue
- Wherry Avenue and Eichelberger Street

The traffic data is summarized in the following sections.

Wherry Avenue

A summary of Wherry Avenue volumes and speeds is shown in ***Table 1***. Wherry Avenue is classified as a major collector. The general range of volumes for a major collector is 1,100 to 6,300 vpd. The average weekday traffic volumes along Wherry Avenue ranged from 2,200 vpd to 2,350.

One of the primary concerns voiced by Southampton residents at both the first public meeting and through the resident survey is speeding along Wherry Avenue. Residents primarily identified the southern stretch of Wherry, between Nottingham and Eichelberger, as particularly problematic and dangerous. Residents felt that drivers are more prone to speeding along this stretch because of a lack of stop signs. The posted speed limit is 25 mph, except for the north end, which has a 20-mph school zone speed limit. The 85th percentile speed varied from 30 to 32 mph. The average speed ranged from 26 to 27 mph. Based on the machine data, speeding does appear to be an issue on Wherry Avenue, along the entire length of the route.

Table 1: Traffic Data on Wherry Avenue

Traffic Volumes and Speeds for Wherry Ave.		Average Weekday Daily Traffic	Posted Speed	85th Percentile Speed (mph)	50th Percentile Speed (mph)
Between Eichelberger St. and Itaska St.	Southbound	1,183	25	32	27
	Northbound	1,002			
	Total	2,185			
Between Devonshire Ave. and Sutherland Ave.	Southbound	1,219	25	30	26
	Northbound	1,105			
	Total	2,324			

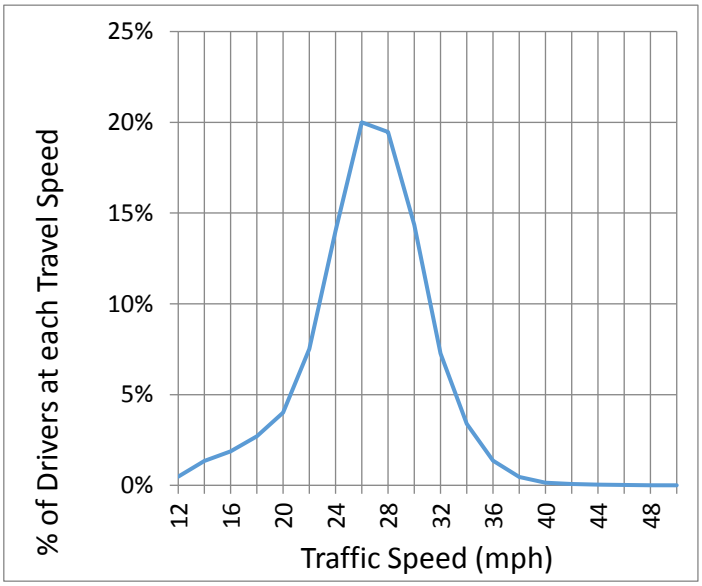

Figure 50: Traffic Speeds - Wherry Ave. between Sutherland Ave. and Devonshire Ave

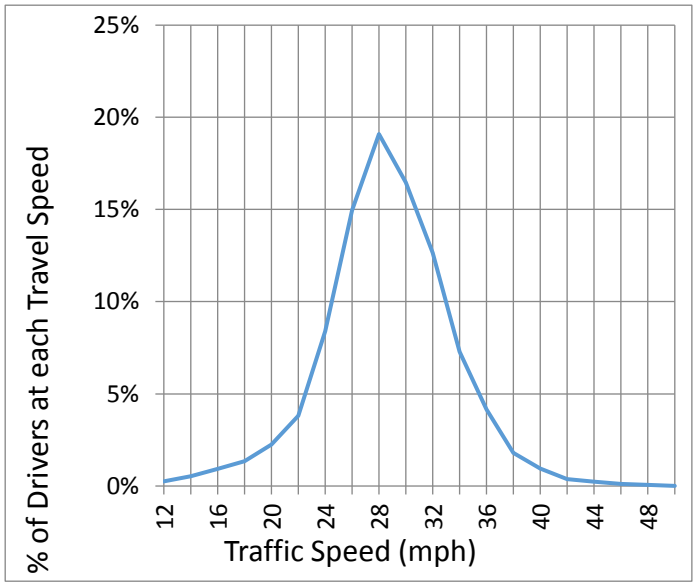

Figure 49: Traffic Speeds - Wherry Ave. between Itaska St. and Eichelberger St

Neosho Street

A summary of Neosho Street volumes and speeds is shown in ***Table 2***. Neosho Street is classified a local road. The general range of volumes for a local road is less than 1,000 vpd. Average weekday traffic volumes along Neosho Street ranged from 650 vpd between January Avenue to Macklind Avenue, to 800 vpd between Hampton Avenue and January Avenue, to nearly 1,000 vpd between Brannon Avenue and Kingshighway Boulevard.

One of the primary concerns voiced by Southampton residents at both the first public meeting and through the resident survey is speeding on Neosho Avenue. The posted speed limit is 25 mph though all of Southampton. The average speed through this segment of Neosho is 23-26 mph with the faster speeds and higher traffic volumes nearer to Hampton and Kingshighway. The 85th percentile speed varies from 27 mph in the center of the segment 30 mph closer to the arterials. Speeds and volumes are highest between Brannon and Kingshighway with volumes nearly 1,000 vpd, with the 85th percentile speed at 31 mph.

Table 2: Traffic Data on Neosho Street

Traffic Volumes and Speeds for Neosho St.		Average Weekday Daily Traffic	Posted Speed	85th Percentile Speed (mph)	50th Percentile Speed (mph)
Between Hampton Ave. and January Ave.	Eastbound	792	25	30	24
	Westbound	9			
	Total	801			
Between January Ave. and Macklind Ave.	Eastbound	641	25	27	23
	Westbound	4			
	Total	645			
Between Brannon Ave. and Kingshighway Blvd.	Eastbound	956	25	31	26
	Westbound	0			
	Total	956			

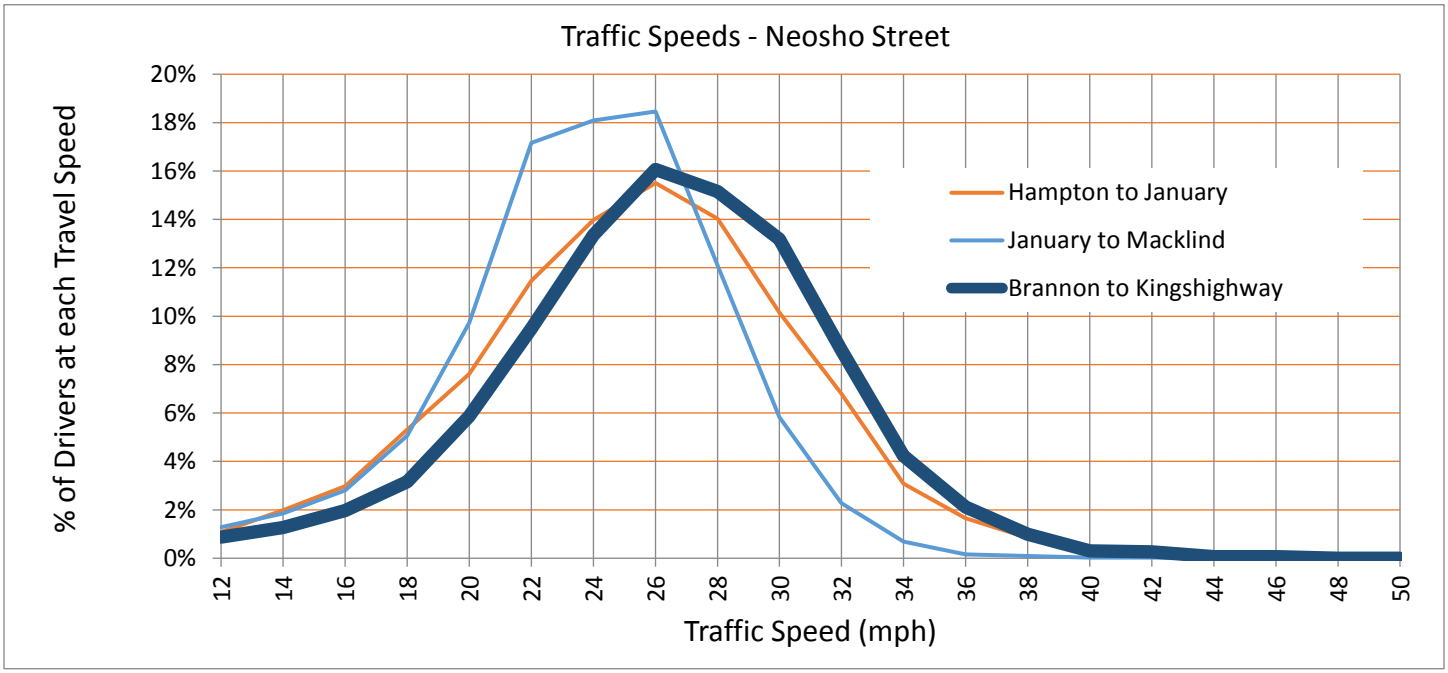

Figure 51: Traffic Speeds – Neosho Street

Brannon Avenue

A summary of Brannon Avenue volumes and speeds is shown in ***Table 3***. Brannon Avenue is classified as a local road. The general range of volumes for a local road is less than 1,000 vpd. Average weekday traffic volumes along Brannon Avenue were 1,200 vpd between Nottingham Avenue and Devonshire Avenue. The posted speed limit is 25 mph through this section of Brannon Avenue. The average speed is 21 mph and the 85th percentile speed is 25 mph.

Table 3: Traffic Data on Brannon Avenue

Traffic Volumes and Speeds for Brannon Avenue		Average Weekday Daily Traffic	Posted Speed	85th Percentile Speed (mph)	50th Percentile Speed (mph)
Between Nottingham Avenue and Devonshire Avenue	Southbound	499	30	24	21
	Northbound	634			
	Total	1,133			

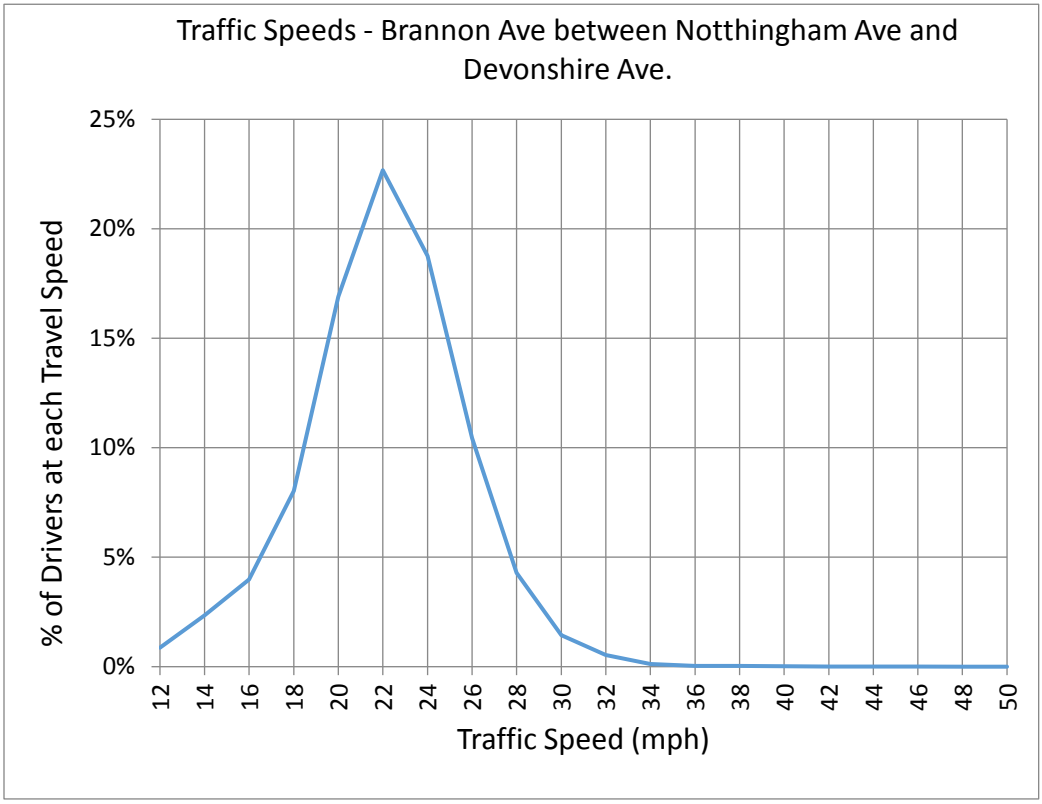

Figure 52: Traffic Speeds - Brannon Ave between Nottingham Ave and Devonshire Ave.

Macklind Avenue

A summary of Macklind Avenue volumes and speeds is shown in ***Table 4***. Macklind Avenue is classified a major collector. The general range of volumes for a major collector is 1,100-6,300 vpd. The average weekday traffic volumes along Macklind Avenue ranged from 2,600 vpd between Neosho Street and Eichelberger Street to near 4,000 vpd between Devonshire Avenue and Neosho Street.

The posted speed limit is 30 mph, except the 25-mph school zone near Sutherland Avenue. The average speed for Macklind Avenue is 19 mph in the Business District and 25 mph between Neosho Street and Eichelberger Street. The 85th percentile speed is 23 mph in the Business District and 27 mph between Neosho Street and Eichelberger Street. The data shows that most drivers are driving under the speed limit.

Table 4: Traffic Data on Macklind Avenue

Traffic Volumes and Speeds for Macklind Ave.		Average Weekday Daily Traffic	Posted Speed	85th Percentile Speed (mph)	50th Percentile Speed (mph)
Between Devonshire Ave. and Neosho St.	Southbound	1,566	30	23	19
	Northbound	1,551			
	Total	3,445			
Between Neosho St. and Eichelberger St.	Southbound	1,225	30	28	24
	Northbound	1,289			
	Total	2,514			

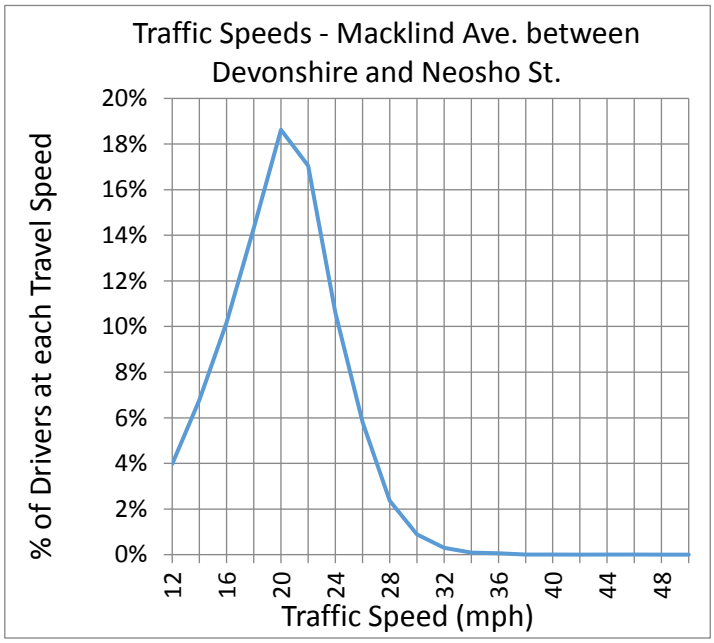

Figure 54: Traffic Speeds - Macklind Ave. between Devonshire and Neosho St.

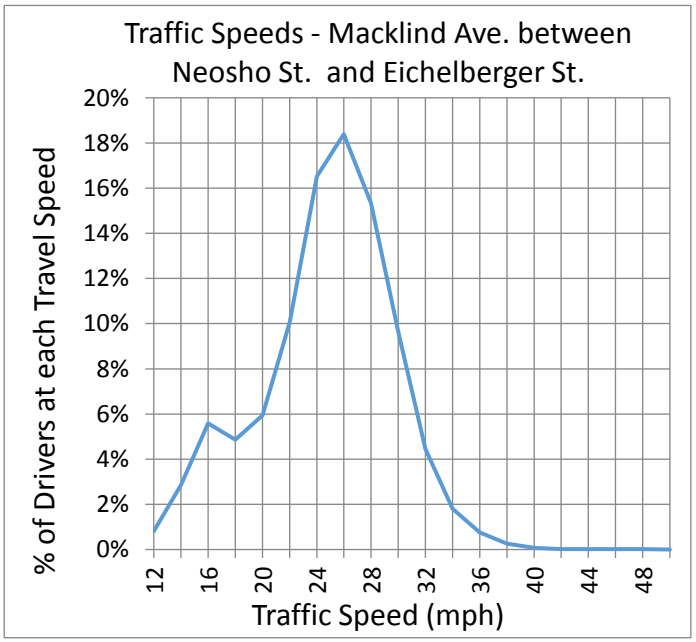

Figure 53: Traffic Speeds - Macklind Ave. between Neosho St. and Eichelberger St.

Parking Usage

A parking study was performed in June 2016 to understand the availability of parking and how it is being used in the Southampton neighborhood, especially in the areas surrounding the business district. Parking counts were performed at various times to assess the parking usage. Parking counts were performed for:

- A weekday overnight count
- A weekday mid-day count (from 10 am to noon)
- A weekday evening count (from 4 pm to 8 pm)
- A weekend mid-day count (from 8 am to noon)
- A weekend evening count (from 6 pm to 10 pm)

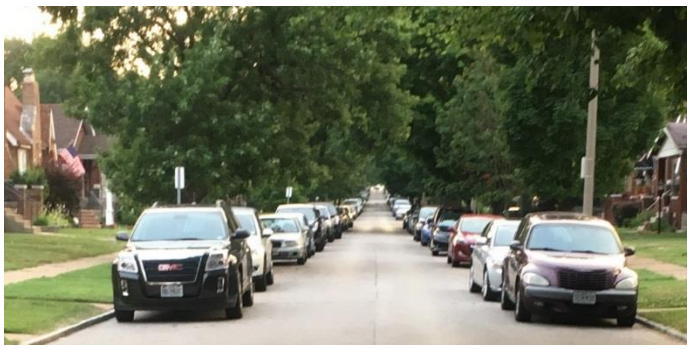

Figure 55: On-Street Parking in the Study Area

Parking counts were grouped into areas, based on their position in the neighborhood. The nine areas, plus Wherry Avenue and Macklind Avenue, are shown in ***Figure 56***. Counts are included in Appendix H.

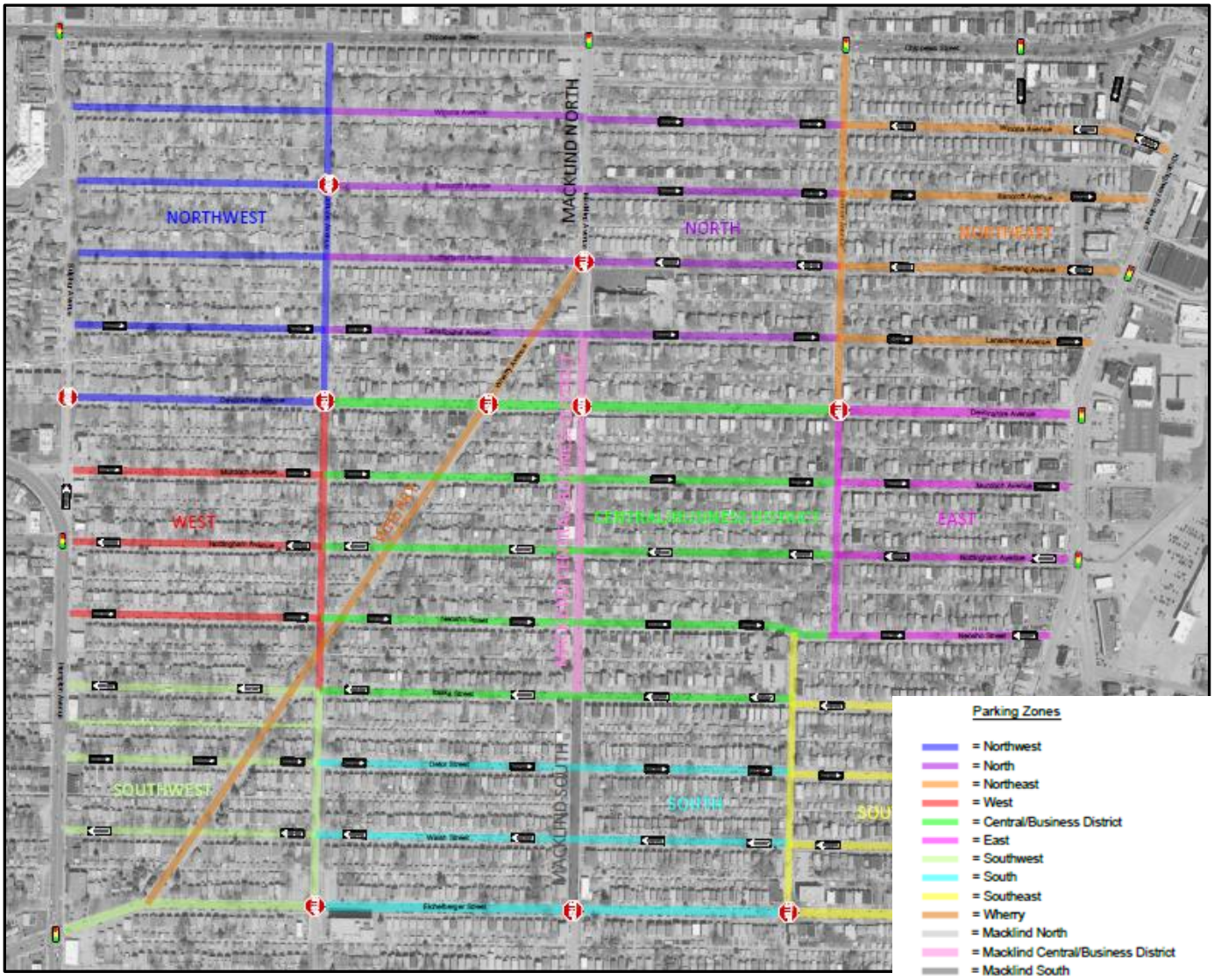

Figure 56: Parking zones

Based on data from the original counts, a second weekend evening count was conducted to assess the parking around the Macklind Business District. A summary of the results of both counts is provided below and additional information is provided in Appendix H. For most areas, the maximum usage occurred overnight and the minimum usage was mid-day on weekdays.

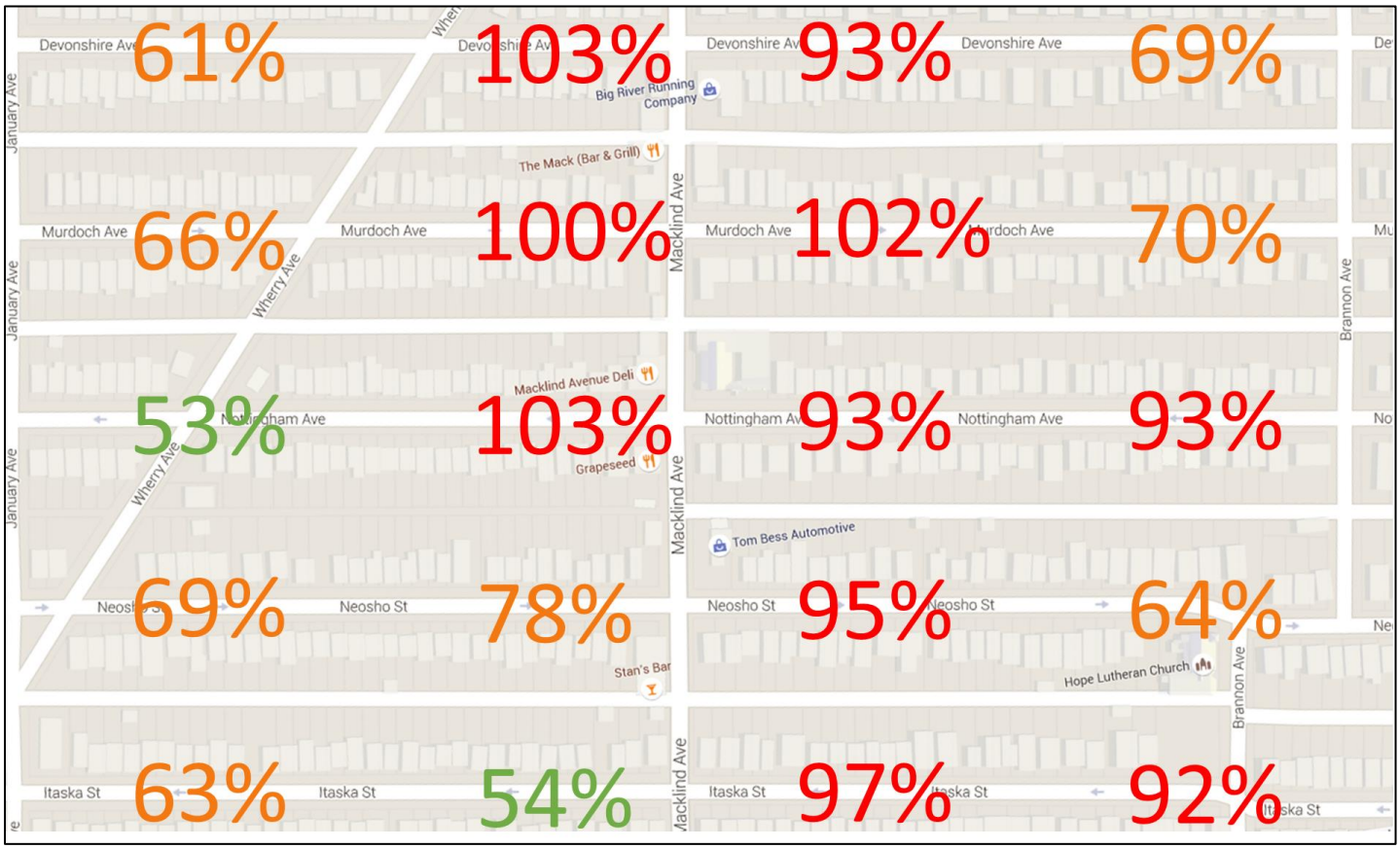

Figure 57: Macklind Business District Peak Parking Usage During Weekend, Evening Hours

The parking counts show parking trends in the neighborhood. First, the Macklind Business District, is heavily parked. This area includes the stretch of Macklind from Devonshire to Itaska as well as the cross streets from January to Brannon. The evening parking, especially on weekends, is the most parked time as both residents and business patrons are using almost all available parking. Macklind, between Devonshire and Nottingham, and the cross-streets, are more heavily parked, with parking usage averaging ninety-two percent during evening weekend hours. Furthermore, parking on some blocks was calculated at over one hundred percent usage, indicating a likelihood that people were parking illegally (in no parking zones) and too close to intersections.

Macklind shows a low overnight count, indicating that this parking is mainly business patrons. The average of parking usage on the east-west streets is seventy-five percent usage during weekend evening (max parked) times. However, this drops to fifty-five percent during overnight hours. From this, it is concluded that about twenty to twenty-five percent of the parking on the cross streets is from non-residents. However, one cannot determine if it is from business patrons or residents' guests.

Outside the Business District, the max usage average is sixty-eight, versus seventy-eight percent for the Business District. The minimum usage outside the Business District is thirty-two percent, while within the Business District, it is forty-one percent. Table 3 shows all maximum and minimum usage, by percent used and time of day. However, it should be noted

that the Macklind Avenue count includes the stretch of Macklind from Chippewa to Eichelberger (not just the Business District), which includes several parking time restrictions, especially on the north end at Buder Elementary School.

The north-south streets—January, Wherry, Macklind (except the stretch from Devonshire to Nottingham), and Brannon—are all sparsely parked. This is due, in part, to few residences or business fronting these streets. Additionally, during the focus group meetings, residents explained that they feel it is unsafe to park along Wherry because of speeding drivers. Traffic calming devices can be installed to reduce the speeding, which will make parking a more attractive option. A more heavily parked street, in turn, will further reduce speeding.

With this information, CBB determined there is sufficient public parking available in the neighborhood for existing conditions. However, there is a clear preference for drivers to park along the already-crowded Macklind Avenue between Devonshire Avenue and Neosho Street and along the side streets adjacent to the business district, instead of parking along the north or south ends of Macklind Avenue or along Wherry and Brannon. This leads to saturated parking conditions along and adjacent to Macklind Avenue as well as drivers parking in no parking zones.

Table 5: Parking Usage

	Max Use	Max. Use Time		Min Use	Min. Use Time	
Wherry Avenue	24%	Weekend	7 pm to 9 pm	8%	Weekday	12 pm to 1 pm
Macklind Avenue	53%	Weekend	8 pm to 9 pm	12%	Weekday	Overnight
Northwest Area	43%	Weekday	Overnight	20%	Weekday	11 am to 12 pm
North Area	72%	Weekday	Overnight	33%	Weekday	11 am to 12 pm
Northeast Area	69%	Weekday	Overnight	31%	Weekday	12 pm to 1 pm
West Area	72%	Weekend	8 am to 9 am	29%	Weekday	12 pm to 1 pm
Business District	78%	Weekday	Overnight	41%	Weekday	11 am to 12 pm
East Area	69%	Weekday	Overnight	37%	Weekday	12 pm to 1 pm
Southwest Area	65%	Weekday	Overnight	35%	Weekday	4 pm to 5 pm
South Area	78%	Weekday	Overnight	33%	Weekday	10 am to 11 am
Southeast Area	73%	Weekday	Overnight	29%	Weekday	11 am to 12 pm

Crash History

Crash data was obtained from the City of Saint Louis Traffic Division for streets within the study area for 2012 to 2015. Most of the crashes are clustered on Macklind Avenue. The data is provided by intersection and is summarized in ***Figure 58***.

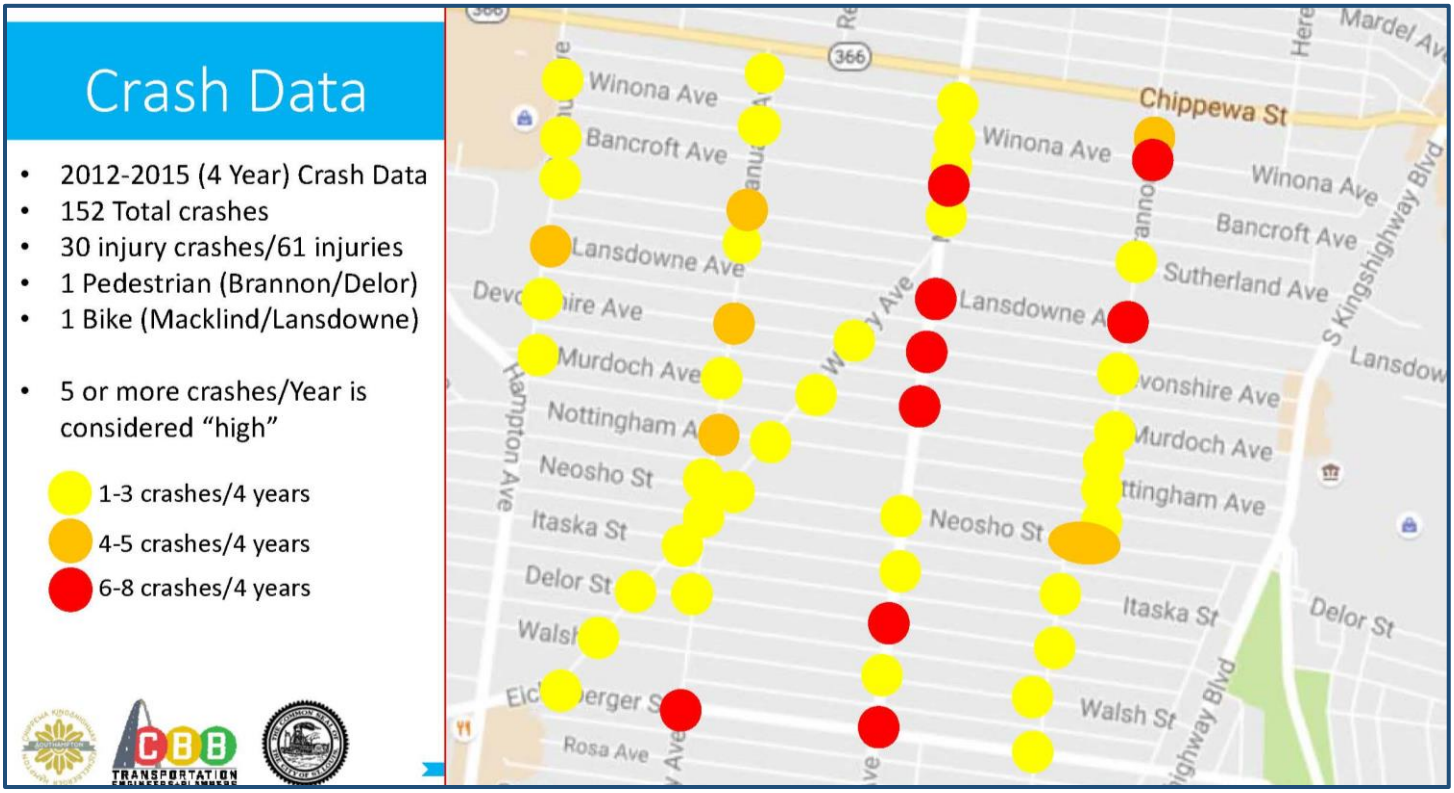

Figure 58: Study Area Crash History

One-third (or 50 of 152) crashes in the Southampton neighborhood occurred along Macklind Avenue. This is the highest for the neighborhood. Twenty-three percent of injury crashes were along Macklind, the second highest for the neighborhood. Additionally, the only cyclist injury in the neighborhood was along Macklind, at Macklind and Lansdowne. The relitivilly high number of crashes on Macklind Avene are likely due to higher traffic volumes and the commercial activitiy along the corridor.

Conversely, Wherry has a lower number of crashes as compared to Macklind Avenue, with 19 of the 152 crashes (about thirteen percent). However, twenty percent of the injury crashes were along Wherry. It should be noted that sixty-three percent of the crashes along Wherry were between Nottingham and Eichelberger as well as were sixty-seven percent of the injury crashes. The relatively high severity of the crashes along Wherry are is likely due to the higher speeds on Wherry as compared to Macklind Avenue.

Twenty-six percent of the crashes in the neighborhood were along Brannon, the second highest number in the neighborhood. The intersections with the highest number of crashes at Winona (8), Lansdowne (6), and Neosho (5). Twenty-seven percent of the injury crashes in the neighborhood were along Brannon, which is the highest percent for the neighborhood. Additionally, the only pedestrian injury in Southampton was along Brannon, at Brannon and Delor.

Seven percent of the crashes in Southampton were along Neosho, which is relatively low for the neighborhood. However, five crashes happened at Neosho and Brannon, which is relatively high for the neighborhood. Of the crashes along Neosho, two were injury crashes, one of which was at Brannon.

Infrastructure Inventory

A high-level overview of the transportation infrastructure in the study area was performed to document the existing conditions. The inventory utilized GIS databases and other existing electronic sources, such as Google Earth, to note the general infrastructure (e.g. the presence, configuration and general dimensions of roadways, sidewalks, bike lanes and pedestrian ramps). The summary map is provided in **Appendix I**.

Observations

CBB completed observations within the neighborhood during May, June, and July. Observations were done at multiple times throughout the day, including morning peak times (7 a.m. to 9 a.m.), lunch times (11 a.m. to 1 p.m.), evening peak and dinner times (4 p.m. to 10 p.m.). Due to the number of restaurants on Macklind, observations were done on the weekend as well as weekdays.

Special attention was paid to specific behaviors and locations, based on resident feedback at the first public meeting and on the neighborhood survey. Potential issues included problematic traffic flow during drop-off and dismissal at Buder Elementary School, stop sign compliance, sight distance at intersections, and pedestrian crossings. Specific locations observed included Macklind Avenue through the Business District, Wherry Avenue, Brannon Avenue, and Neosho Street.

Buder Elementary School Drop-off and Pick-up

The study team observed the drop-off and dismissal procedures at Buder Elementary School. Roughly one-half of the children attending the school arrive by bus with the other half arriving either by car or walking in from the neighborhood. There are several issues with the current drop-off and dismissal procedures. Most immediate, parents tend to drop-off and pick-up children from Sutherland, in the drive lane, or from the alley on the east side of the school. The stopping blocks the street for the residents. Since Sutherland is one-way westbound, this traffic blockage is a problem for residents who are not able to leave the neighborhood. Occasionally, parents will park in the alley on the east side of the school and in the Sutherland drive lane to go inside of the school, completely blocking the street. Residents also expressed concern about parents speeding to the east of the school. Another issue is the limited bus parking on Macklind in front of the school. Busses tend to park so that parts of the bus block the crosswalks, and occasionally the intersection. This blocks traffic and impedes the sight distance for other drivers. Furthermore, we observed that the crossing guard had to continuously move to see around the bus to make sure that no cars were approaching the crosswalk.

Figure 59: Buder School pick-up

Stop Sign Compliance

Drivers in Southampton were often seen "rolling" or running through stops. This was noticed most along Brannon Avenue and Eichelberger Street. At the intersection of Brannon Avenue and Lansdowne, more than one-third of motorists along Brannon Avenue were seen rolling or running the stop signs on Brannon Avenue. This was particularly noticed in cars that turned onto Lansdowne towards Kingshighway. This behavior was also seen along Eichelberger Street. Furthermore, this behavior was often seen when drivers did not "take their turn" at the stop sign, and traveled through the intersection without yielding to a motorist who had approached the intersection first.

Sight Distance at Intersections

Sight distance is an issue at many of the intersections. Many reasons contribute including landscaping, parked cars, and intersection angles. Cars were frequently parked too close to the corner, limiting sight distance throughout the neighborhood. Vehicles were often seen parked too close to the intersections of both streets and alleys. This limits the sight distance between the driver and cars approaching from the cross street. It also made it more difficult for drivers to see pedestrians in the crosswalks. This was especially problematic in the Macklind Business District. Cars along the side streets were often seen stopping at the stop sign then slowly driving forward to see around cars. They would often have to stop midway through the intersection to yield to approaching traffic or pedestrians. The Wherry Wedge, depending on the approach, also has limited sight distance, due to landscaping and the angles of the intersection. One of the most difficult intersections noted during observations was the approach along January Avenue at Wherry Avenue. Drivers have to look over their shoulders to see oncoming cars. Trees within the Wherry Wedge limit sight distance for northbound drivers along January Avenue.

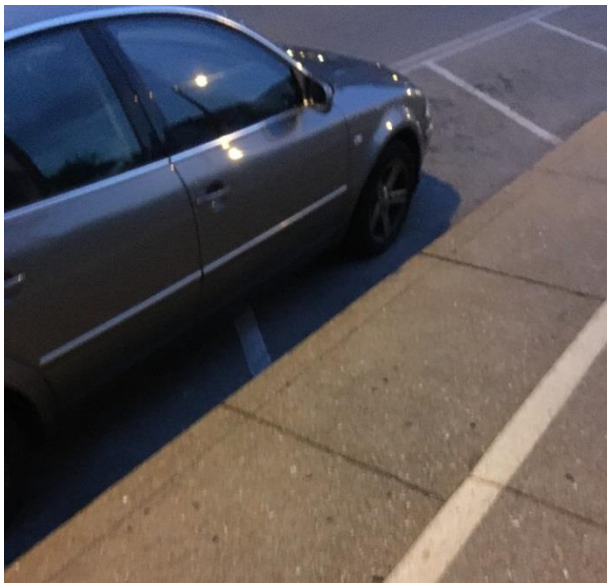

Figure 60: Car parked in the striped No Parking zone in the Macklind Business District

Macklind Business District

The most common problem observed in the Macklind Business District is difficult intersection crossings. This includes parking too near intersections, poor sight distance, and failure to yield to pedestrians. Another problem that was seen in the Macklind Business District was the impeding of traffic due to delivery trucks unloading to the restaurants. Trucks often stopped in the driving lanes, rather than along the side of the road or an alley or parking lot. Parking in the Macklind Business District was also a concern of residents. The densest parking is on Macklind between Devonshire and Nottingham and adjacent cross streets, with few open spots available within this area during peak times. Finally, pedestrian crossings can be problematic. Cars often drive up to the crosswalks in the business district while pedestrians were crossing. There are also two crosswalks, one at Murdoch Avenue and one at Neosho Avenue, which are not paired with stop signs. Drivers were seen to ignore the pedestrian right of way and drive through the intersection, regardless of the presence of pedestrians.

Figure 61: The Macklind Business District

Wherry Avenue

The most observed problem along the Wherry Wedge was the sight distances mentioned above. Though there are not sidewalks along the Wherry Wedge, pedestrians were seen using the opposite side of the street (which does have crosswalks) rather than walking on the street or on the grass. The differences in the routes between the intersection of Hampton Avenue / Eichelberger Street and Chippewa Street / Macklind Avenue were compared to evaluate how attractive this route is for cut-through traffic. Timed drives were completed in both morning and evening peak hours. The route along Hampton Avenue and Chippewa Street has five more stoplights, is half a mile longer, and is about two minutes longer compared to the route along Wherry Avenue. Wherry Avenue is clearly a more attractive route for drivers. Observations confirmed that many drivers are using Wherry Avenue to travel to and from points outside of the neighborhood.

Figure 62: January and Neosho

Brannon Avenue

There are several traffic issues related to Brannon Avenue. The most evident is the that the network of one-way streets in the northeast corner of the neighborhood. Specifically, Winona Avenue flows in opposite directions on either side of Brannon Avenue, (one block allows only eastbound travel and the other only westbound travel). Both sides allow the approach to Brannon Avenue but drivers cannot turn on either of them. In most Saint Louis neighborhoods, including Southampton, one way streets typically alternate directions of travel. While one street will travel east, the streets north and south of it will travel west, and vice versa. The opposing directions on Winona Avenue interrupt this pattern. Drivers may look at the signage for one block and assume that the direction of travel is the same for the other block, causing them to turn the wrong way. Similar assumptions may be made by drivers approaching Bancroft Avenue. Having encountered a street with only eastbound travel allowed, drivers may assume that the next street allows only westbound travel. Bancroft, however, allows only eastbound travel. Additionally, the stop sign compliance was mentioned above may have some relation to stop sign placement. The placement of stop signs along Brannon Avenue does not follow a pattern. Drivers were often seen running or rolling stop signs, especially at Lansdowne Avenue. Furthermore, many drivers were seen pausing at intersections that did not have stop signs, indicating that one was expected.

Figure 63: Neosho Street at Brannon Avenue

Neosho Street

There are two concerns relating to Neosho Street. The first is the one-way travel between the off-set sides of Brannon Avenue, and the other is speeding between Brannon Avenue and Kingshighway Boulevard. Residents reported that a number of cars would travel the wrong way along Neosho Street to continue driving south along Brannon Avenue. During a forty-five-minute observation, four cars were seen doing this. Furthermore, many ran or rolled the stop sign and would accelerate through the intersection; it is likely they were rushing to get through the intersection and to continue on Brannon Avenue without encountering oncoming cars. While it was not observed, it is expected that oncoming cars would not necessarily see those cars traveling the wrong way due to a curve in the road right before the Brannon Avenue intersection. Speed is a concern on Neosho, especially in the section between Brannon and Kingshighway. The speed data discussed previously confirms excessive speeds in this segment.

Issue Identification

Speeding

Residents have consistently expressed concerns about speeding in the neighborhood; the concern is connected to the perception that this traffic is generated by cut-through vehicles. Many survey respondents indicated they felt speed is a major problem on interior streets as motorists avoid stoplights at the arterial streets. Specific streets of concern most consistently mentioned include Wherry Avenue, Macklind Avenue, Neosho Street, and Brannon Avenue. Due to residential concerns, speed studies were performed for this study on those four streets.

The locations on each route were chosen to gather data from different areas of the network. The speed data indicate that average speeds on two of the routes (Macklind Avenue and Brannon Avenue) operate at or below than 25 mph. Neither Macklind and Brannon Avenue have a demonstrated speed problem in the neighborhood.

However, the average speeds on Neosho Street are in excessive of 25 mph east of Brannon with 85th percentile speeds in excess of 30 mph. Neosho Street has a significant number of drivers traveling over 30 mph (15-20% near Kingshighway). Likewise, average speeds on Wherry are in excessive of 25 mph with 85th percentile speeds more than 30 mph. Wherry also has significant numbers of drivers traveling over 30 mph (15-25 percent) and over 35 mph (near 5 percent). Speeds on Wherry are highest between Eichelberger Street and Itaska Street. The data supports the residents' concerns about speeding on Wherry. Recommendations are provided in the following sections for reducing speeds on both Wherry and Neosho.

Figure 64: Radar speed sign at the Wherry/January/Neosho Wedge

Cut-Through Traffic

Many residents voiced concern about cut-through traffic in the neighborhood, especially to avoid stoplights at Kingshighway and Hampton. Residents referred to neighborhood streets as raceways and speedways for traffic trying to cut through their area. The perception among residents that was received at the public meeting and indicated in the survey is that because the cut-through traffic is trying to get somewhere quickly, they are 'barreling' through the neighborhood and creating an unsafe environment.

Wherry and Neosho were specifically noted. Wherry connects Chippewa and Hampton, and can be used to avoid the longer route of taking Hampton to Chippewa, as well as multiple traffic lights. It was indicated that Neosho is used to avoid larger, parallel streets when traveling east-west between Hampton and streets east of Kingshighway; it is the only local road that connects to streets east of Kingshighway without a stoplight.

Given the relatively low traffic volumes recorded in the center of the neighborhood, Neosho Street does not appear to be a cut-through route. Rather it appears that most of the traffic on Neosho is from the Southampton neighborhood. However, the high speeds and traffic volumes on Wherry support the concerns that cut-through traffic is using this route. The use of various traffic calming measures along Wherry may help to slow speeds and encourage through traffic back to the surrounding arterial system.

Parking

The opening of more businesses along Macklind has resulted in heavier parking demand and greater competition for available parking. During the first two public meetings, the survey, and the community focus group meetings, residents and business owners were given the opportunity to express their thoughts and feelings on this issue. Residents, in general, were very supportive of the businesses and are happy to see so many businesses thriving. They feel that having a variety of strong businesses is a large asset to the neighborhood. However, they also expressed their frustration at not being able to park near their homes, and the ongoing inconvenience of not being able to find close parking spaces. The business owners have similar feelings. They understand that many of the Southampton residents are their customers, and want them to be happy as both customers and neighbors. However, the business owners are frustrated by a lack of options for safe and problem-free parking for their staff and customers. Their priorities when it comes to parking is to have a safe place for their customers and for their staffs to park.

Because this have been an ongoing problem, the Macklind Business District has explored various options to alleviate the parking problems. They have considered satellite parking and using a shuttle or valet service, but have found these ideas unfeasible at this time. This is due to a lack of nearby parking areas, liability and insurance issues, safety concerns, the thought that few customers would use it, and the prohibitive cost. Satellite parking for employees was explored, but location and safety concerns made this an unattractive option. Another option was to have employees park at least one block away from the business, allowing customers to park closer to the business instead of in front of residences. This, however, just meant that employees from one business were parking in front of another business or in front of residences.

During the Macklind Business District focus group meeting, the business owners agreed that this is an ongoing problem and agreed to continue exploring options for it. One of the issues with parking that continued to surface was safety. As many of the employees work late (until 2 a.m. or later), parking far away from the businesses is unsafe, especially since the street is not well lit and parking is concentrated within the central segment of Macklind. They did, however, agree that if the lighting were extended and brighter lighting was used, it would give more security to employees and customers alike. This, in turn, would make parking further north and south on Macklind to be a better option for both employees and customers. Along with the idea of extending parking, the Macklind Business District agreed that wayfinding signage would further encourage customer parking along Macklind.

While there is sufficient overall public parking available in the neighborhood, it is inconvenient at many times of the day. Residential parking is heavy on many of neighborhood's east-west streets, especially during overnight hours. Interviews with residents provided a consistent message that people like to use the on-street parking immediately adjacent to their homes. This allows for greater convenience in loading and unloading and a greater sense of safety. The neighborhood seems to have an "unwritten rule" that residents should park in front of their home and not in front of another's home. When there is concurrent activity in the Macklind Business District, parking can become saturated on and adjacent to Macklind. Then "overflow" parking spills down the blocks of the east-west streets. At the same time Wherry and Brannon are very lightly parked. One parking strategy for the neighborhood to consider in the longer term is to encourage more people to park on Wherry and Brannon. One way to accomplish this is to enhance the lighting and wayfinding signage between Wherry and Brannon and the business district to make people feel more comfortable parking a little further from the businesses. Recommendations to improve lighting and way-finding signage in the neighborhood are provided in the following sections.

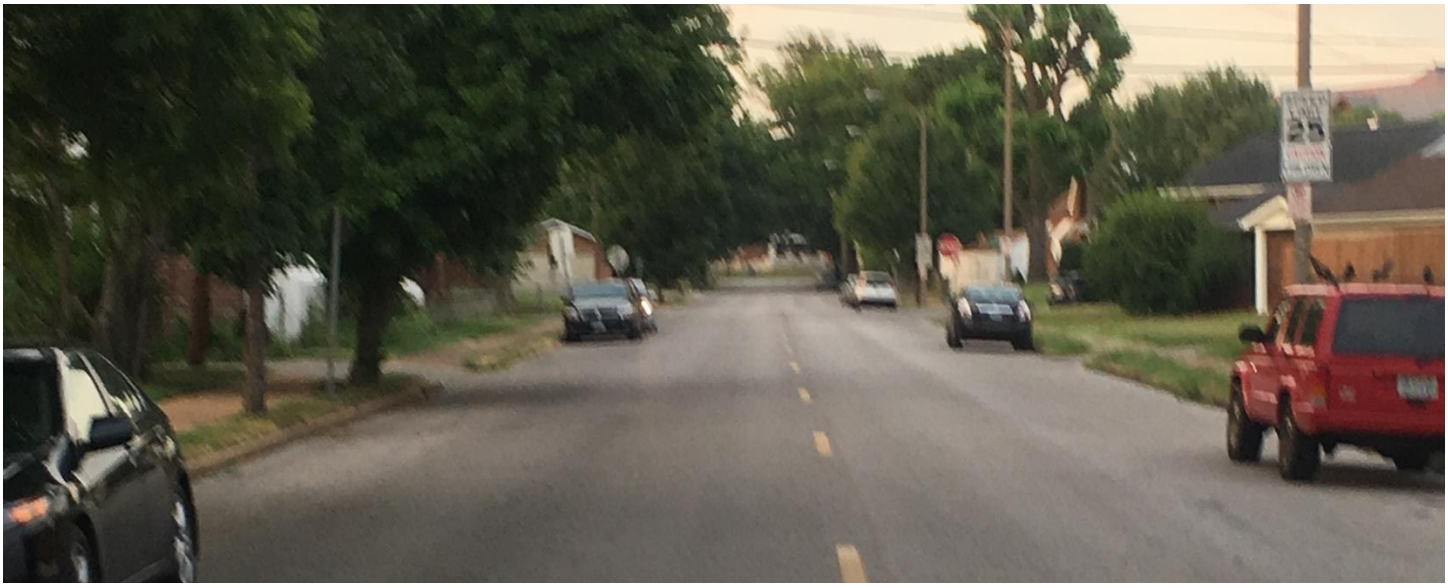

Figure 65: Parking on Wherry

Figure 66: Parking on Macklind

Stop Sign Compliance

Residents expressed concerned about motorists running stop signs within the area. While the behavior was not observed to be drastic during the peak observations, it was mentioned several times in survey responses and at the public meeting and is an important issue for the neighborhood. Specific routes where running stop signs was indicated as a problem include Wherry Avenue, Macklind Avenue, and Brannon Avenue. There are various calming measures that may be added in conjunction with these stop signs to increase driver visibility and promote a full stop, such as bump-outs. Some residents want to remove multiple stop signs and it is important to address where these concerns are valid, but it is also important to note that some residents indicated they would be interested in adding stop signs to certain streets. The recommended intersection improvements would help encourage better stop sign compliance. There are a small number of recommendations given to change stop sign configurations along and adjacent to Wherry.

Street Network

Survey comments related concerns that many residents have with one-way streets. Responses indicated that cars often travel the wrong way on Bancroft Avenue and Sutherland Avenue. This is likely a secondary effect of the direction-change of the block of Winona Avenue between Macklind Avenue and Brannon Avenue. This is challenging to correct because changing one-way direction on one or more blocks would disrupt the one-way pattern on other blocks. Another issue mentioned was the intersection of Neosho and Brannon. Here, Brannon Avenue is offset, and Neosho Street is one-way eastbound. At this location, southbound cars have to either travel the wrong way on Neosho Street or exit the neighborhood via Kingshighway. Field observations found many drivers traveling the wrong way on Neosho Street in the Brannon jog. In the past, Neosho Street was two ways between the two sides of Brannon Avenue and some residents would like to see this again.

Figure 67: Bancroft Ave. at Brannon Ave.

Traffic Calming Alternatives

Traffic Calming Overview

The Institute of Transportation Engineers (ITE) defines traffic calming as, "The combination of mainly physical measures that reduce the negative effects of motor vehicle use, alter driver behavior, and improve conditions for non-motorized street users." By design, traffic calming is a self-enforcing traffic management approach that forces motorists to alter their speed or direction of travel. The purpose of traffic calming is to improve safety, especially for pedestrians and bicyclists, and to improve the environment or "livability" of streets for residents and visitors. Enhanced safety is one of the most fundamental benefits of traffic calming. By decreasing volume and/or reducing speed the number and severity of accidents is greatly diminished. The objectives of traffic calming include:

- To reduce the frequency and severity of collisions
- To increase safety for non-motorized street users
- To slow vehicular travel speeds
- To reduce cut-through motor vehicle travel patterns
- To increase access for all modes
- To reduce the need for police enforcement
- To enhance the street environment

Figure 68: Example of a Neighborhood Traffic Calming Sign

Traffic calming measures can generally be separated into three groups based on the goal they are trying to achieve: speed control, volume control, and safety enhancement. These three categories are not as distinct as they may seem – for example, speed reduction measures may divert traffic to other streets (reducing volume) and efforts to control cut-through traffic may also decrease the speeds of the traffic using the road. Similarly, certain safety enhancements have the additional benefit of raising driver awareness and slowing traffic. Effective traffic calming strategies often include using more than one tool. Traffic calming should be designed with a systematic approach, appropriate spacing of measures, and consideration for secondary effects of the installations. Examples of the three strategies are:

- Speed-Control Strategies:
  - Pavement Markings: Edge Line Markings, Striped Crosswalks/Textured and Colored Pavement
  - Horizontal Alignment: Narrowed Lane, On-street Parking, Landscaping, Street Trees, Curb Extensions, Bulbs, Bump-outs, Reduced Corner Radii, Chicane, Median, or Island, Modern Roundabout
  - Vertical Alignment: Speed Hump, Speed Table, Raised Crosswalk/Intersection
- Volume-Control Measures
  - Roadway Closure, Diverter, Turn-restriction
  - One-way Street, Circulation Change
- Safety Enhancements
  - Lighting, Dedicated Bike Facilities, Pedestrian Refuge Areas

A table summarizing these strategies and outlining their potential benefits and issues can be found in Appendix J. Note that the table provides a general outline, but the success of these alternatives is site-specific. There is not a single tool to solve all traffic issues, and one tool that may work well in one area for a particular issue may not be effective in another situation.

Multiple strategies are applicable to the Southampton study area, as discussed in the following sections. These alternatives will have varying degrees of potential benefits and costs, and they depend partially on their location and degree of installation. It is recommended that suggested alternatives be implemented in a tiered or layered approach. Some of the lower-cost and less disruptive strategies may provide significant improvement. Area traffic patterns and behaviors should be observed for some time after installation of any improvement. If, after some time, additional mitigation is warranted, another strategy can be implemented. It is recommended that lower-cost approaches be tried first and that traffic then be monitored for improvement. Additional alternatives can then be installed as needed.

Pavement Markings

Pavement markings can elevate the spatial and temporal awareness of travelers of all modes. At the same time, pavement markings are generally less expensive, easier to install, more familiar to road users, less likely to delay emergency service vehicles, and less disruptive to drainage patterns when compared to other traffic-calming devices.

Lateral Striping (Crosswalks and Stop-Bars)

Lateral striping (e.g. pedestrian crosswalks and stop-bars) breaks up long vistas and creates the perception of multiple travel segments. Crosswalks have the added benefit of making motorists and cyclists more aware of their surroundings and elevating the presence of pedestrians and cyclists within the corridor.

Very few intersections within the study corridor currently have striped crosswalks or stop-bars, although most intersections are served by sidewalks. Crosswalks are an extension of the sidewalk path and denote the dedicated pedestrian zone in a roadway. A stop bar installed before the crosswalk (in the direction of pedestrian travel) notes where the driver should stop to provide a buffer to crossing pedestrians, elevating their user comfort. Providing these marked links may also increase usage of the pedestrian facilities within the corridor.

There are multiple styles of crosswalk striping. In the Saint Louis area, “standard” (two parallel lines in the direction of travel) and “continental” (multiple bars perpendicular to the direction of travel) are typically used. The continental crosswalks provide higher visibility than standard crosswalks and offer the potential to last longer.

Figure 69: Example of continental striped crosswalk (foreground); standard crosswalk (background); and stop bar (right side)

Longitudinal Striping

Longitudinal striping (e.g. edge line striping) visually restricts a driver’s travel path, which has been shown to reduce driver speeds, particularly on long, straight roadways with wide travel lanes. Also, linear striping used to denote other roadway uses such as parking or bike lanes defines the various functions of the roadway as a multi-use neighborhood facility.

There are numerous longitudinal striping alternatives that can be used for traffic calming; the basic concept is to reduce the driver's perceived width of the roadway. By doing this, motorists tend to reduce speed, which may in turn divert drivers from the route, due to real or perceived lower travel speeds. There are several alternatives for striping as traffic calming[1]:

- Centerline stripe –a typical single dashed yellow line or double-yellow stripe between the travel directions
- Edge lines – white lines added to the outside of the travel lane
- Striped median – a two-way left-turn lane (TWLTL) or yellow-striped buffer
- Striped choker or chicane – although not as prominent as a raised curb, it does provide some of the operational features and/or can be installed temporarily
- Striped speed hump without the vertical displacement – especially useful where vertical displacement is undesirable

The photo shows an example of edge line striping visually narrowing a roadway. Before and after studies have shown that speed reductions in the range of one to seven miles per hour are easily accomplished through roadway striping.

Figure 70: Example of edge line striping, which visually reduces roadway width

Horizontal Deflection

This category of traffic-calming techniques includes all techniques that reduce the area of the street designated exclusively for motor vehicle travel and/or which require the drivers to stray from the perceived path to complete their movement. "Reclaimed" space from area reductions is typically used for pedestrian or cyclist amenities, parking, and/or landscaping.

Curb Bulbs, Bump-outs, or Extensions

Curb bulbs are extensions or enlargements of the sidewalks that narrow the street, either at mid-block locations or intersections. At mid-block locations, they are typically called chokers and can narrow the street to two narrow lanes or even a single lane. Curb extensions can be installed as vertical curbs or as striped or painted areas. Vertical curb extensions work well with speed humps, speed tables and raised median islands; however, they should be carefully considered for streets with bike lanes as cyclists do not like to be forced into the vehicular lanes. Designing for appropriate roadway drainage is a key consideration for vertical curbs; although some installations utilize a channel for drainage, these can be very difficult to maintain (i.e. they can easily fill with debris and must be manually cleaned out). Curb extensions for a crosswalk will reduce the pedestrian crossing width and increase their visibility (as they are nearer to the driving lanes when standing at the curb edge). Therefore, curb extensions offer the potential to both increase pedestrian safety and decrease travel speeds by physically narrowing the roadway. Finally, curb extensions can also offer an opportunity for landscaping and decorative elements.

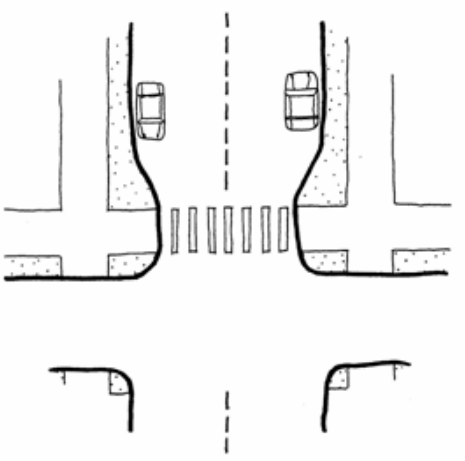

Figure 71: Curb extensions

[1] *Roadway Striping as a Traffic Calming Option*: Robert Kahn, PE and Allison Kahn Godecke, MBA; 2011

Chicanes

Chicanes utilize curb extensions or on-street parking to curve or alter the driver's path, often creating s-shaped curves within a mid-block segment. The intent of a chicane is to reduce vehicle speeds, although they must be carefully designed so that drivers cannot cut straight paths across the centerline. Twelve-foot driving lanes have been utilized in the past as a measure of safety; providing ample room for vehicles and accommodating small deviations (errors) in path.

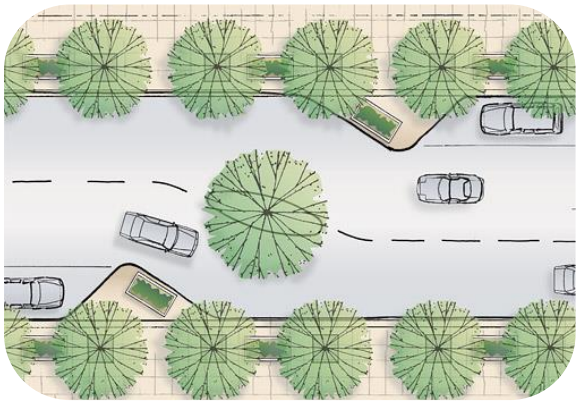

Figure 72: Chicane

Narrowed Lanes

However, the additional room for error has also encouraged higher speeds on roads. Narrowed lanes encourage drivers to reduce speeds and be more attentive to driving behaviors. Narrowed lanes can also reduce pedestrian crossing distances and provide dedicated space for cyclists, parking, and landscaping. It is not uncommon for local streets to be as narrow as 28-feet with parking on both sides. These are sometimes referred to as "queuing streets" as two vehicles cannot pass side-by-side where cars are parked on both sides. These streets have been demonstrated to be as safe (or safer) than wider streets.

Figure 73: Narrow Lanes

On-Street Parking

The sense of enclosure resulting from parked cars, the varied appearance of parked cars, the entry/exit vehicle maneuvers, and the pedestrian traffic generated by occupants of parking and departing vehicles all contribute to traffic calming on streets with parking. Curbside parking can be parallel or diagonal, but all types should be considered in the context of bicycle use of the street as parking maneuvers and door openings are obstacles to bicyclists.

Figure 74: A "queuing street"

Vertical Deflection

This category includes all traffic-calming devices raised above pavement level, requiring drivers to slow down to navigate them comfortably.

Speed Humps

Speed humps are rounded, raised areas of pavement placed across the roadway perpendicular to the flow of traffic. Speed hump are three to four inches high at their peak. They typically are used on local streets (avoiding transit and primary emergency service corridors, are placed mid-block (not at intersections), and work well with mid-block curb extensions. Speed humps are typically marked with striping and advance warning signage. They are often used to reduce speeds but, like stop signs, can sometimes cause an increase in speeds between successive installations. Speed humps are typically unpopular with cyclists and can potentially increase traffic noise due to braking and acceleration of vehicles (especially buses and trucks); their design also needs to carefully consider roadway drainage patterns.

Figure 75: Speed hump

Speed Tables / Raised Crosswalk

Speed tables are similar to speed humps, but have a flat section in the middle and tapered approaches (i.e. are wider in the direction of travel). The flat "top" of a speed table is roughly ten feet wide—as wide as the wheelbase of a passenger car—with six-foot-wide ramp approaches. Like speed humps, they are usually three to four inches tall and need to carefully consider roadway drainage in their design. Speed tables work well with curb extensions and are often combined with crosswalks to elevate the pedestrian and increase their visibility (increasing the likelihood that a driver will yield). As raised crosswalks, they elevate the visibility of pedestrians while also proving them a continuously level crossing path (benefitting accessible-design).

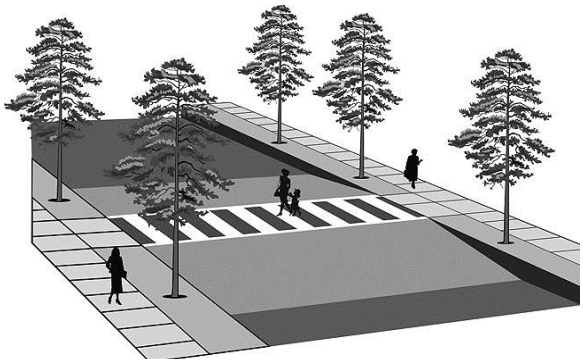

Figure 76: Speed table/raised crosswalk

Traffic Diversion

Traffic diversion is, historically, one of the most widely applied traffic calming concepts; it includes all devices that cause motor vehicles to slow and change direction to travel around a physical barrier. Physical barriers used to divert traffic can range from trees planted in medians, to roundabout intersections, to full street closures.

One-Way Streets / Circulation Change

Streets are designed as (or converted to) one-way traffic flow for various reasons including increasing capacity, reducing the number of potential conflicts (for drivers and pedestrians), and/or changing network circulation patterns. One-way streets typically work best in central business districts and/or heavily congested areas. However, one-way streets often tend to have higher speeds than two-way streets, as drivers do not need to be cautious of oncoming traffic. One-way streets can also increase travel distances of motorists and create confusion for non-local residents. Some places are converting one-way streets back to two-way to allow better local access and to slow traffic. Two-way streets tend to be slower due to "friction," especially on residential streets without a marked centerline.

Traffic Diverters

Traffic diverters are physical barriers installed at intersections that restrict motor vehicle movements in certain directions. They may be designed to prevent left- or right-hand turns or to block through travel. The "Schoemehl pots" frequently utilized in the Saint Louis area would be considered traffic diverters. As with all traffic-calming strategies, accommodations for pedestrians and cyclists (as well as transit routes and access) should be carefully considered when designing with diverters.

Modern Roundabout Intersections

Modern roundabouts are a channelized intersection in which all traffic moves counterclockwise around a central traffic island. Traffic approaching the intersection is "deflected" to approach the circular roadway at an angle, which slows approaching traffic speeds. The center islands may be painted or raised and may include landscaping or other improvements. Roundabouts are designed to move traffic at speeds of, roughly, 15 mph through the intersection.

Figure 77: Roundabout intersection

Modern roundabouts are used on all classifications of streets. They have proven to be effective in reducing motor vehicle speeds and the number and severity of intersection

crashes versus signalized intersections as well as being less costly to maintain. Modern roundabouts can have larger or smaller center islands, depending on the size of the intersection and the number of intersecting roadways. However, roundabouts typically require more right-of-way than traditional intersections and, for this reason, can be difficult to implement in developed areas. Roundabouts can also be tricky for pedestrians and cyclists to navigate.

Mini-Roundabouts or Traffic Circles

Figure 78: Traffic circle

Mini-roundabouts, also called traffic circles, are often confused with modern roundabouts. These installations have smaller center islands are and mainly placed in the intersection of two local streets, with no modifications to the approaching roadway geometry. Traffic circle medians are usually less than ten feet in diameter, and can be painted or raised. They usually are installed with signage alerting drivers of the diversion. However, the signage or landscaping that is frequently installed in the circle can impact sight distance for drivers, especially concerning pedestrians crossing the circle "behind" them. The warning signs can also be unpopular with residents in areas where there are concerns over too much signage.

The City of Saint Louis has recently initiated a program where a temporary traffic circle, can be installed in a location to test its effectiveness and popularity. If there is neighborhood interest, these temporary installations can be requested from and coordinated with the City Streets Department.

Figure 79: Example of a pop-up traffic calming circle

Safety Enhancements

The term traffic calming is applied to many design interventions that make streets safer by reducing opportunities for speeding and aggressive driving. There are additional strategies in the traffic calming toolbox that are aimed at improving safety for pedestrians and cyclists. Like other strategies, many of these can overlap multiple goals – contributing towards reductions in vehicular speeds and volumes as well.

Dedicated Facilities

Dedicated bike lanes are on-street facilities intended to define a portion of the roadway for cyclists. Bike lanes are at least five feet wide and are generally marked with painted lines, although some bike lanes have physical barriers between motorized traffic and cyclists. Bike lanes benefit the transportation network in many ways; they:

- Provide space for all users
- Support the bicycle network
- Reduce pedestrian crossing distances
- Create additional buffer space for pedestrians
- Increase drivers' visibility and awareness of cyclists
- Reduce turning conflicts as drivers know where to look for cyclists
- Calm traffic by reducing or narrowing lanes

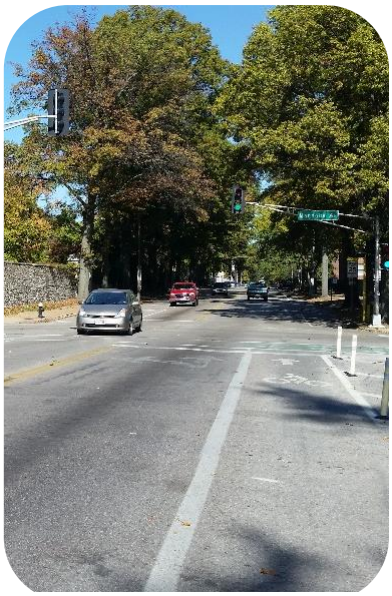

Figure 80: Dedicated bike lanes, Arsenal St., Saint Louis

Mid-Block Crossings

Mid-block crossings provide additional roadway crossing points for pedestrians. Mid-block crossings can also be safer than intersection crossings because they are free of vehicle turning movements. These crossings are most effective when placed in locations where pedestrians are already crossing without dedicated or marked facilities. Marked mid-block crosswalks should be accompanied by signage or dedicated signals to help ensure motorists yield to pedestrians.

Figure 81: Mid-block crossing with pedestrian refuge areas

Pedestrian Refuge Areas

The goal of pedestrian refuge areas is to support pedestrians and cyclists trying to cross a busy roadway. They are often provided in street medians or near the curb, and reduce the amount of time a pedestrian is exposed to potential vehicular conflicts. This is especially important to elderly and disabled persons, as well as those traveling with small children

Street Furniture

Street furniture also creates a sense of enclosure and "passive" activity in the corridor. This category includes elements such as signs, signals, lights, walls, gateways, fencing, and furnishings for pedestrians and cyclists. Street furniture can both provide separation for the pedestrian pathway and traffic, and create "passive" activity in the corridor, encouraging slower speeds.

Figure 82: Example of street furniture

Lighting

Lighting can affect the apparent width and feel of the roadway in several ways: by the size and placement of the poles, by the height and pattern of the illuminated lights, and through the sense of enclosure created by overhead lights. Pedestrian-scale lighting provides illumination for the sidewalk as well as the roadway, signifying an area of special concern where pedestrians may be present. Pedestrian-scale lighting discourages crime and makes it more inviting to walk at night. The streetlamps also function as street furniture and can contribute to a more pleasant atmosphere even during the day. Pedestrian scale lighting has lamp heights of twelve to fifteen feet, spaced approximately fifty to seventy-five feet apart.

Street Trees

Tree trunks lining the roadside are another way to create a sense of enclosure and contribute to a reduced apparent width. The overhead tree canopy further adds to the perception of a narrowed road, since the light/shade patterns created on the pavement create a sense of texture. Street trees enhance the pedestrian environment by creating shade and more comfortable temperatures.

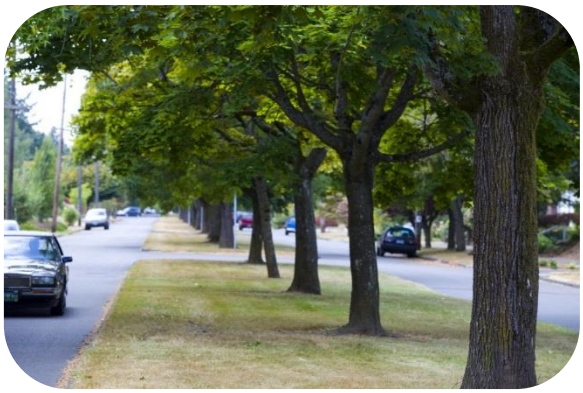

Figure 83: Street trees used for traffic calming

Recommendations

This section provides a menu of traffic calming options for the neighborhood. In many cases both lower and higher cost improvements can be considered, and may be implemented either alone or in combination with other improvements. Lower cost improvements generally include the use of planter boxes, flexible tubular markers, painted medians and bump-outs, continental crosswalks, painted stop-bars, and in some cases upgraded ADA ramps and sidewalk improvements. However, low-cost improvements at some intersections may require resurfacing before any improvements can be added. The pavement at some intersections is deteriorated such that mill and resurface or a Micro-seal treatment may be required before new paint can be applied. Mill and overlay treatments can cost on the order of $100,000 to $200,000 per intersection. Micro-seal treatment can range between $20,000 and $40,000 per intersection. Mill and overlay treatments may require update of curb ramps to meet ADA compliance. High-cost, permanent measures usually are constructed with concrete and other permanent materials, are low maintenance, often require moving utilities, frequently have landscaping requirements, and have a significantly higher cost than other options. In all cases implementation is dependent on funding, alderman approval, resident input, and City design approval.

Near-term/Lower-cost Recommendations

There are several lower cost/higher priority improvements that should be considered for shorter-term implementation. These recommendations are discussed in below.

In addition to the recommendations listed below, it is recommended that the signage program in the neighborhood be updated to have consistent type and placement of signs in the neighborhood. Consistency within the neighborhood allow drivers to anticipate where to find the information for intersection stop control and Currently, some stop signs include the information that the intersection is an all-way stop, or if cross-traffic does not stop, and some do not. All stop signs should include this. Additionally, not all one-way signs are at the same relative corner of the intersections. Placing stop signs so that they are on the same corner lets drivers to find the street direction more easily. Furthermore, low-cost gateways should be considered at streets where the pattern in traffic directions change:

- Winona Avenue, east and west of Brannon Avenue
- Bancroft, west of Brannon Avenue
- Sutherland, east of Brannon Avenue
- Sutherland, east of Macklind Avenue

Figure 84: Low-cost gateway treatment from The Hill, St. Louis, MO

Install edge line striping on Devonshire Avenue

Devonshire Avenue is the major east-west street through Southampton. It is a major collector and a plow route. The width of Devonshire is thirty-five feet west of Macklind and forty feet east of Macklind, making it the widest street in the neighborhood. Though Devonshire is heavily parked on both sides of the street, edge line striping will further narrow the driving lanes for motorists, as well as create a zone for loading and unloading cars. The edge line should be striped ten feet from the center line of the road.

Install speed hump on Neosho Street between Brannon Avenue and Kingshighway Boulevard

Speeding on Neosho is a concern with local residents, and excessive speeding on the segment between Brannon and Kingshighway was confirmed in speed studies. A speed hump on Neosho, midway between Brannon and Kingshighway could help reduce speeds on this section of roadway. 85% of residents polled responded that either a speed hump or choker would be an effective treatment at this location, with more residents preferring a speed hump as compared to a choker (49% preferred a speed hump versus 36% preferring a choker). The speed hump is preferable in that chokers can have a greater impact on parking. The recommended configuration is shown in ***Figure 85***. It is further recommended that before/after speed studies be completed to gauge the effectiveness of this treatment and gather data for developing a city-wide policy for the installation of speed humps. The estimated cost is $ 7,500.

ITEM DESCRIPTION	Costs
INTERSECTION IMPROVEMENTS	
SPEED HUMP	$6,500.00
SIGNAGE ($ 250 PER SIGN, 4 TOTAL)	$1,000.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$7,500.00**

Figure 85: Speed hump on Neosho St. between Brannon Ave. and Kingshighway Blvd.

Upgrade Intersection of Wherry/Eichelberger

The other location in the Southampton neighborhood with a demonstrated speed problem is Wherry. Speeds are highest near Eichelberger as the skewed intersection at that location encourages high speeds. The recommended installation is both a bump-out on the east side of the intersection and a center median. Keypad polling at the September public meeting resulted in 95% of residents preferring either a bump-out and/or a center median at this location. The combined treatment would force traffic to slow from Eichelberger entering the neighborhood. This treatment can initially be temporary construction (planters and bollards) and upgraded to permanent construction as funding becomes available. The estimated cost for permanent treatments at this intersection is $35,300.

ITEM DESCRIPTION	Costs
INTERSECTION IMPROVEMENTS	
BUMP OUTS ($ 21,500 PER CORNER)	$21,500.00
ADA RAMPS ($2,000 EACH/ $4,000 PER CORNER)	$2,000.00
CROSSWALK STRIPING (PAINTED)	$400.00
STOPBAR (PAINTED)	$250.00
RELOCATE SIGNS ($ 150 EACH)	$150.00
RELOCATE STORMWATER INLET ($ 1,500 EACH)	$3,000.00
CONCRETE MEDIAN	$5,500.00
ADDITIONAL STRIPING	$2,500.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$35,300.00**

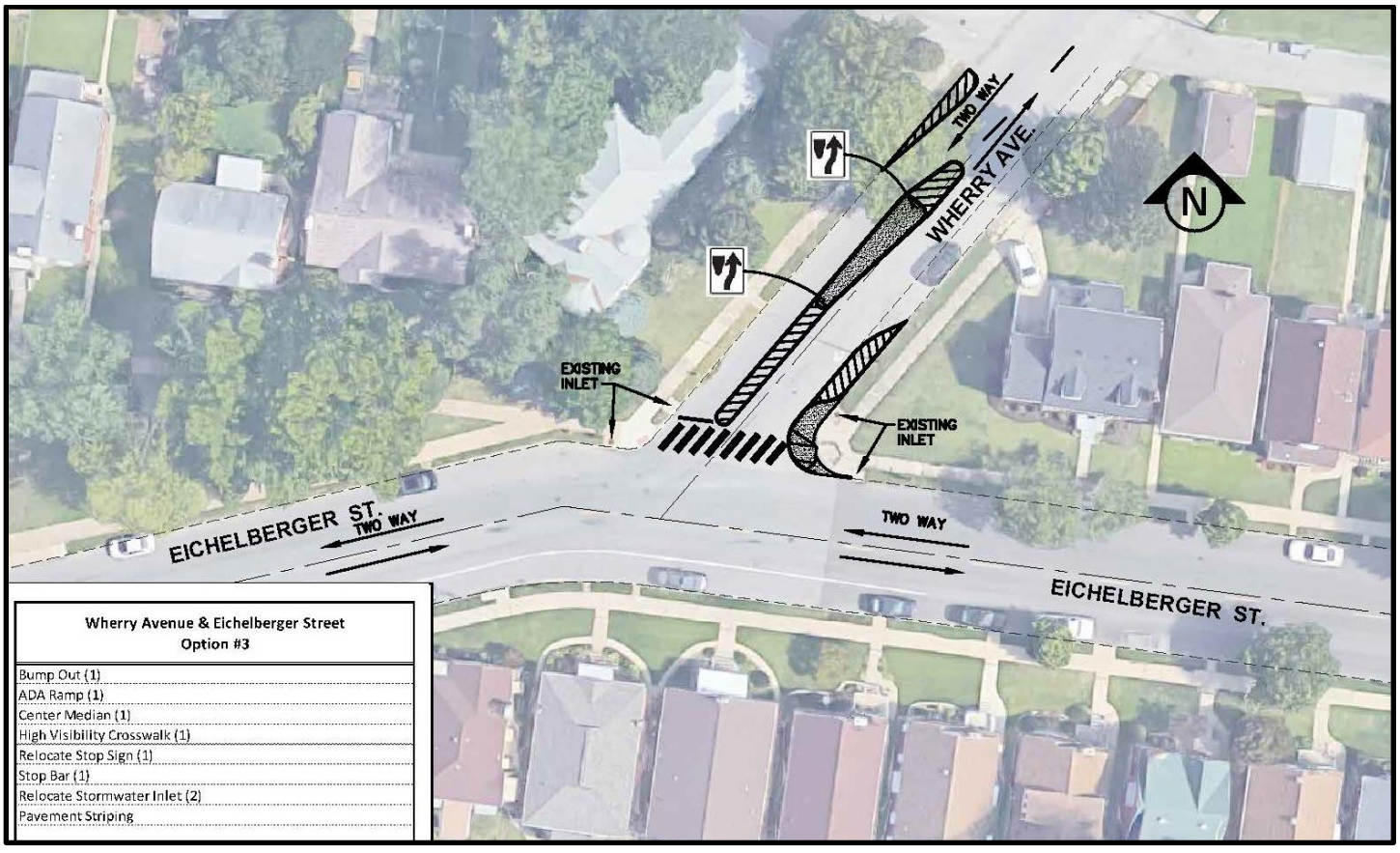

Figure 86: Curb extension, center median, and crosswalks at Wherry Ave. and Eichelberger St.

Implement new Circulation Plan for Buder Elementary School

Discussions with Anna Russell, the principal of Buder Elementary School resulted in a plan for a much more organized circulation plan for drop-off and dismissal. Currently there is not an organized traffic plan and parents approach the school from Lansdowne and Sutherland and find parking as close to the school as they can. Parking is not allowed on Macklind in front of the school because that is where busses queue. The proposed plan would leave the busses on Macklind but create a counter-clockwise circulation around the school. The drop-off and pick-up area would be in the alley on the east side of the school. That alley would be converted to one-way northbound traffic only. Parking would be restricted on the north side of Lansdowne in front of the school to the same hours/conditions as are on Macklind between Lansdowne and Sutherland to provide a place for vehicles to queue while waiting in line. Keypad polling at the September public meeting resulted in 56% of residents in favor of these changes. A diagram is shown in ***Figure 87***. This improvement would require new and relocated signs and could be implemented for under $2,500.

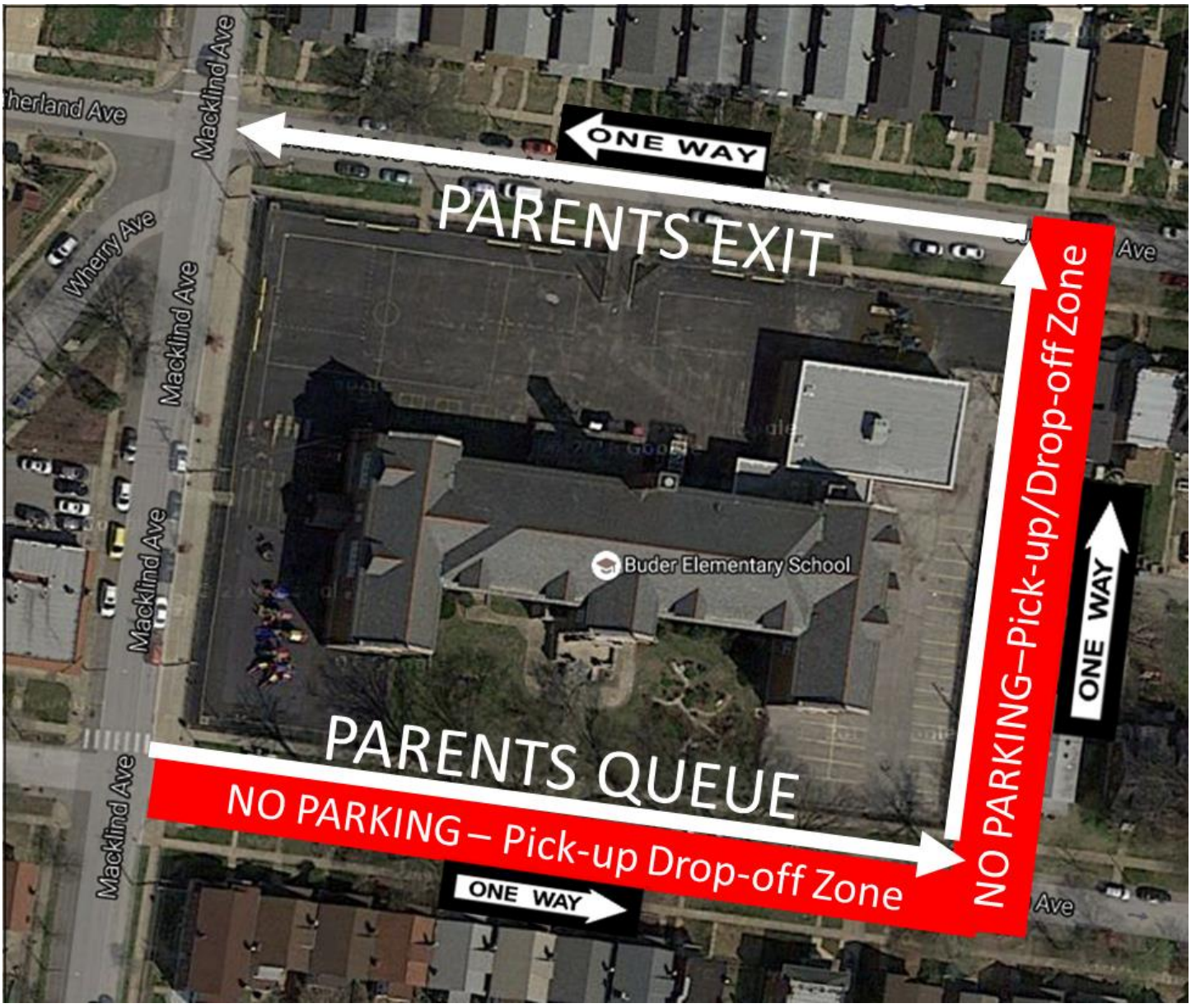

Figure 87: Proposed Buder Elementary School circulation plan

Figure 88: Current lighting in the Macklind Business District

Install LED Light fixtures on Macklind

Lighting improvements are recommended to promote walking and encourage parking further away from high demand areas. A low-cost option to make some modest improvements is to replace the light fixtures on Macklind with LED fixtures. LED street lights offer brighter lighting levels and truer colors, which improves the sense of security.

If the street is better lit, it becomes a more attractive option for parking for both business employees and customers. Currently, Macklind north of Devonshire and south of Neosho is very lightly parked, even during peak parking hours for the Business District.

Replacement of existing incandescent light fixtures with LED light fixtures = $200 per fixture

Figure 89: Before and After LED lighting installation

Mid-term/Mid-range Cost Recommendations

Several higher cost yet higher priority projects are recommended as funding becomes available. These improvements are focused on Macklind, Wherry, and Neosho and are described in the following sections.

Improve Macklind

Upgrade curb ramps to be ADA compliant and install continental crosswalks.

- Macklind and Devonshire
- Macklind and Nottingham
- Macklind and Itaska

Install curb extensions to improve sight lines and reduce pedestrian crossing distances. Initial construction can be of temporary nature using planters and bollards. Upgrade to permanent configuration as funding becomes available. Upgrade to ADA compliant curb ramps and install continental crosswalks.

- Macklind, Wherry, and Sutherland (intersection adjacent to Buder School)
- Macklind and Lansdowne (intersection adjacent to Buder School)
- Macklind and Murdoch (currently side street stop control)
- Macklind and Neosho (currently side street stop control)

The resulting road configuration is shown in ***Figure 90***.

Figure 90: Current and proposed Macklind intersections

Macklind, Wherry, and Sutherland (intersection adjacent to Buder School)

This intersection is adjacent to the Buder School and is awkward and wide to cross. As shown in ***Figure 91***, the proposed improvmeents shorten crosswalks, will increase stop-sign compliance, and lower speeds through the intersection. The intersection is apporpriately configured with four-way stop control. During keypad polling 70% of resdients were supportive of the proposed improvements. The estimated cost for permanent treatments at this intersection is $139,100.

ITEM DESCRIPTION	Costs
INTERSECTION IMPROVEMENTS	
BUMP OUTS ($ 21,500 PER CORNER)	$107,500.00
ADA RAMPS ($2,000 EACH/ $4,000 PER CORNER)	$16,000.00
CROSSWALK STRIPING (PAINTED)	$1,300.00
STOPBAR (PAINTED)	$1,350.00
RELOCATE SIGNS ($ 150 EACH)	$450.00
NEW SIGN	$500.00
RELOCATE STORMWATER INLET ($ 1,500 EACH)	$12,000.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$139,100.00**

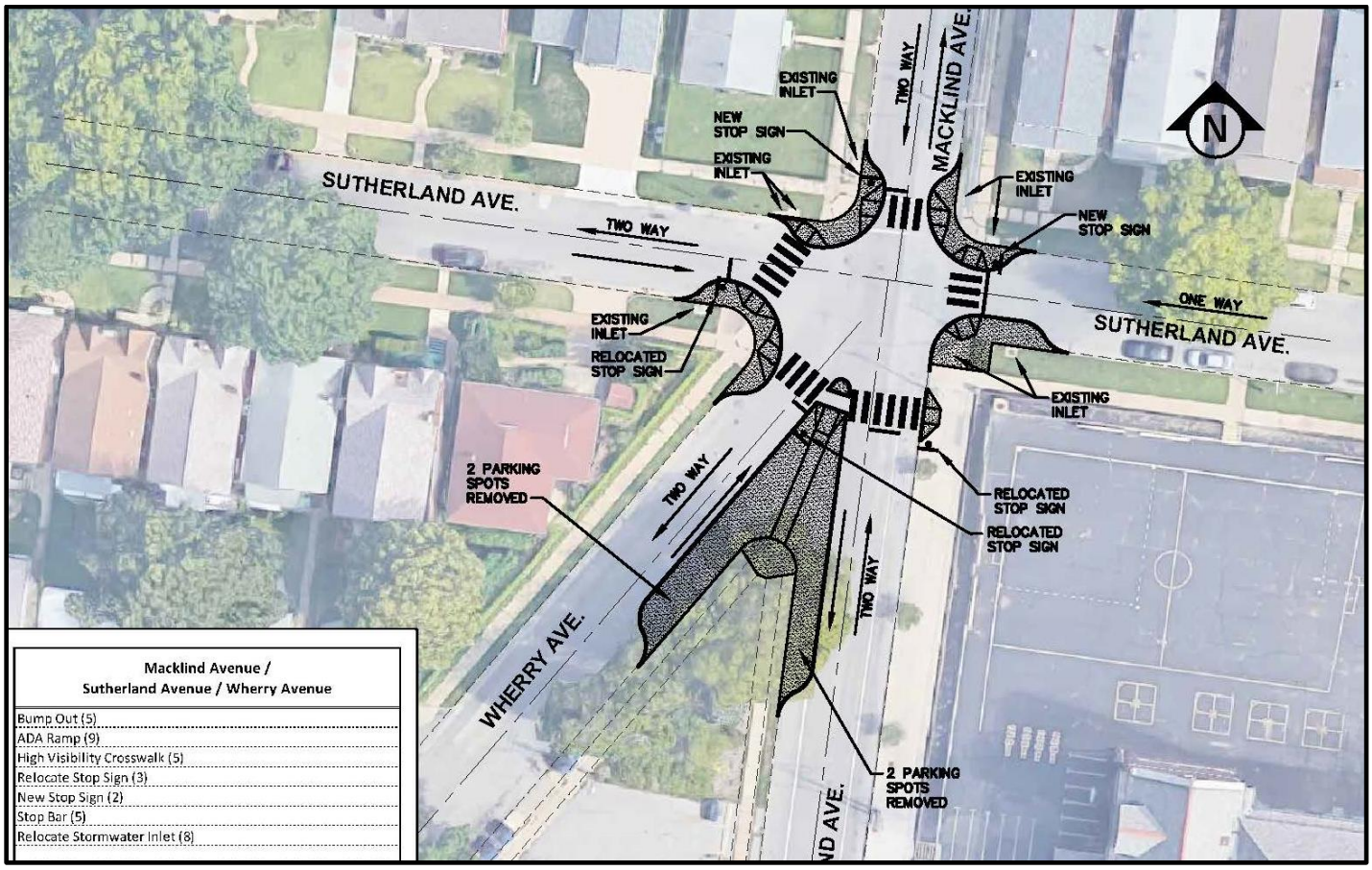

Figure 91: Curb extensions and crosswalks at Macklind Ave., Wherry Ave., and Sutherland Ave.

Macklind and Lansdowne (intersection adjacent to Buder School)

Although not as wide and akward to cross, this intersection is also adjacent to the Buder School. As shown in ***Figure 92***, the proposed improvmeents shorten crosswalks, will increase stop-sign compliance, and lower speeds through the intersection. The intersection is also apporpriately configured with 4-way stop control. During keypad polling 57% of resdients were supportive of the proposed improvements. The estimated cost for permanent treatments at this intersection is $125,100.

ITEM DESCRIPTION	Costs
INTERSECTION IMPROVEMENTS	
BUMP OUTS ($ 21,500 PER CORNER)	$86,000.00
ADA RAMPS ($2,000 EACH/ $4,000 PER CORNER)	$16,000.00
CROSSWALK STRIPING (PAINTED)	$1,000.00
STOPBAR (PAINTED)	$650.00
RELOCATE SIGNS ($ 150 EACH)	$450.00
RELOCATE STORMWATER INLET ($ 1,500 EACH)	$6,000.00
RELOCATE FIRE HYDRANT	$15,000.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$125,100.00**

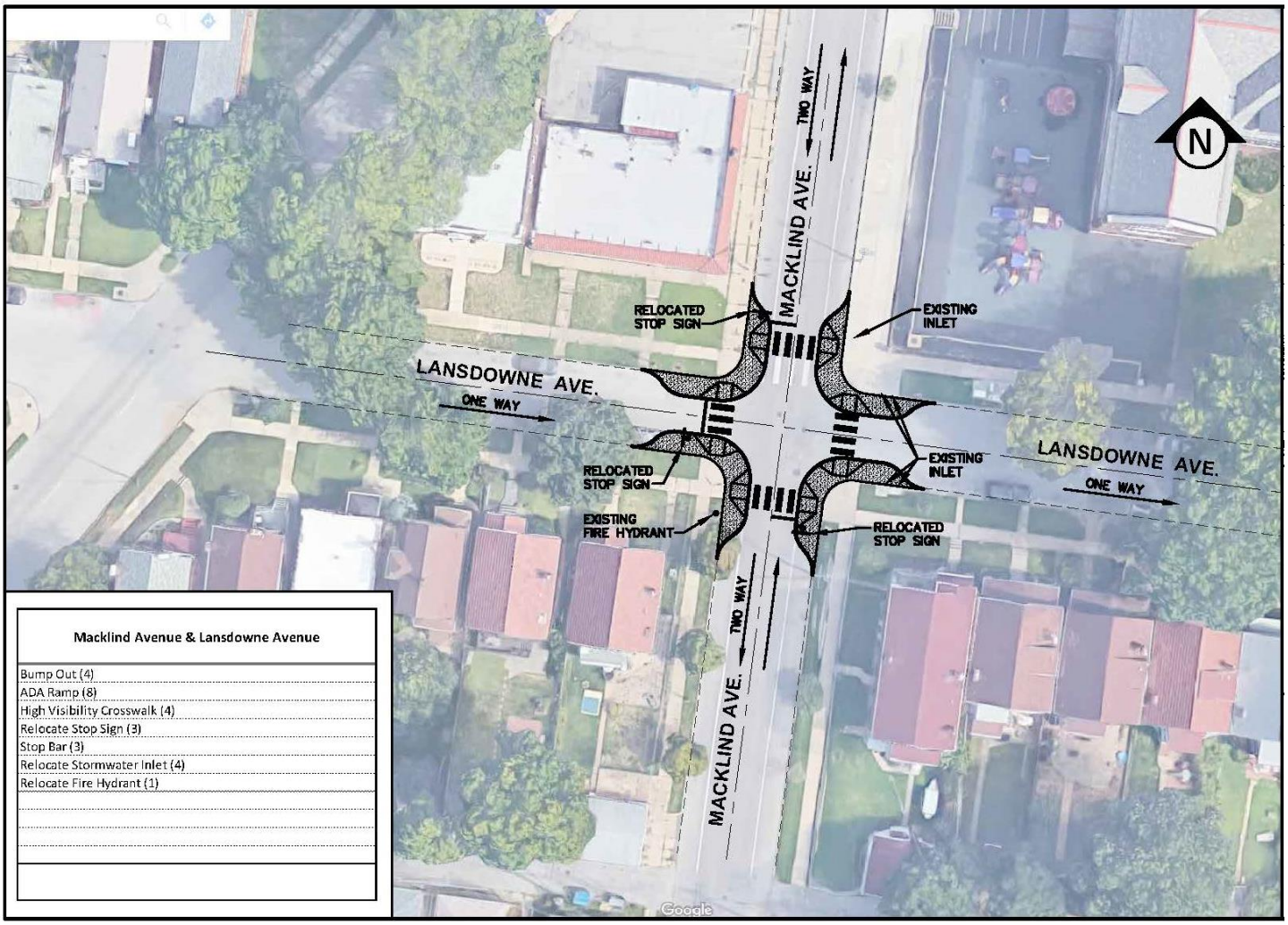

Figure 92: Curb extensions and crosswalks at Macklind Ave. and Lansdowne Ave.

Macklind and Murdoch and Neosho

The intersections of Macklind with Murdoch and Neosho are both side-street stop controlled. Traffic on Macklind does not stop. Sight distance is limited at both locations as cars tend to park very close to the intersection. The proposed bump-outs at these locations will shorten crosswalks, will increase stop-sign compliance, and lower speeds through the intersection. The improvments will also provide an opportunity for vehicles to pull out a bit further into the intersection to improve sight-lines before pulling into traffic. The proposed improvements are shown in ***Figure 93*** (Murdoch) and ***Figure 94*** (Neosho). During keypad polling 74% of resdients were supportive of the proposed improvements at Murdoch and 72% of resdients were supportive of the proposed improvements at Neosho. The estimated cost for permanent treatments is $125,800 at Murdoch and $133,400 at Neosho.

ITEM DESCRIPTION: Macklind and Murdoch	Costs
INTERSECTION IMPROVEMENTS	
BUMP OUTS ($ 21,500 PER CORNER)	$86,000.00
ADA RAMPS ($2,000 EACH/ $4,000 PER CORNER)	$16,000.00
CROSSWALK STRIPING (PAINTED)	$900.00
STOPBAR (PAINTED)	$250.00
RELOCATE SIGNS ($ 150 EACH)	$150.00
RELOCATE STORMWATER INLET ($ 1,500 EACH)	$7,500.00
RELOCATE FIRE HYDRANT	$15,000.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$125,800.00**

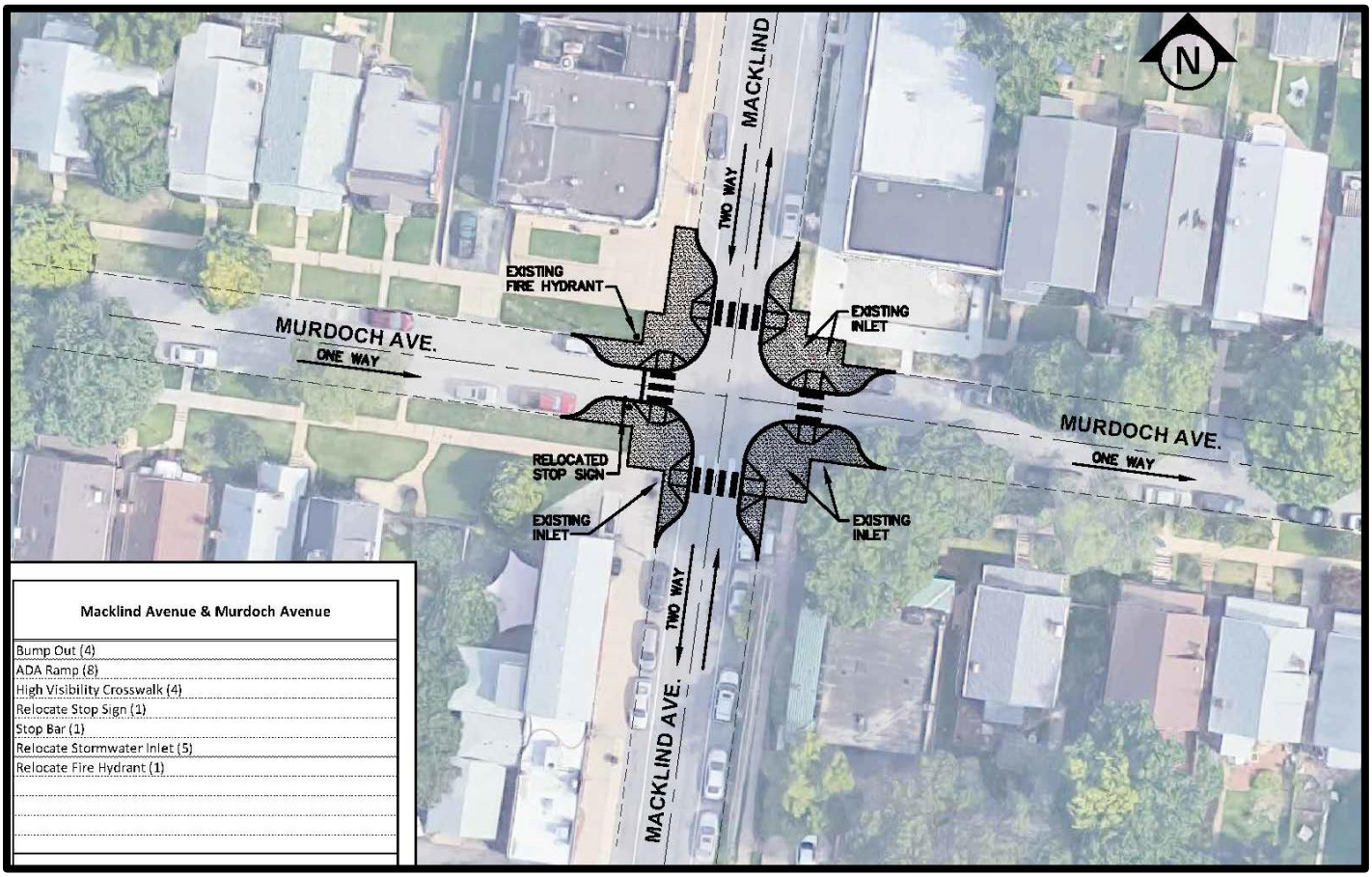

Figure 93: Curb extensions and crosswalks at Macklind Ave. and Murdoch Ave.

ITEM DESCRIPTION: Macklind and Neosho	Costs
INTERSECTION IMPROVEMENTS	
BUMP OUTS ($ 21,500 PER CORNER)	$86,000.00
ADA RAMPS ($2,000 EACH/ $4,000 PER CORNER)	$16,000.00
CROSSWALK STRIPING (PAINTED)	$1,000.00
STOPBAR (PAINTED)	$250.00
RELOCATE SIGNS ($ 150 EACH)	$150.00
RELOCATE STORMWATER INLET ($ 5,000 EACH)	$20,000.00
RELOCATE FIRE HYDRANT	$10,000.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$133,400.00**

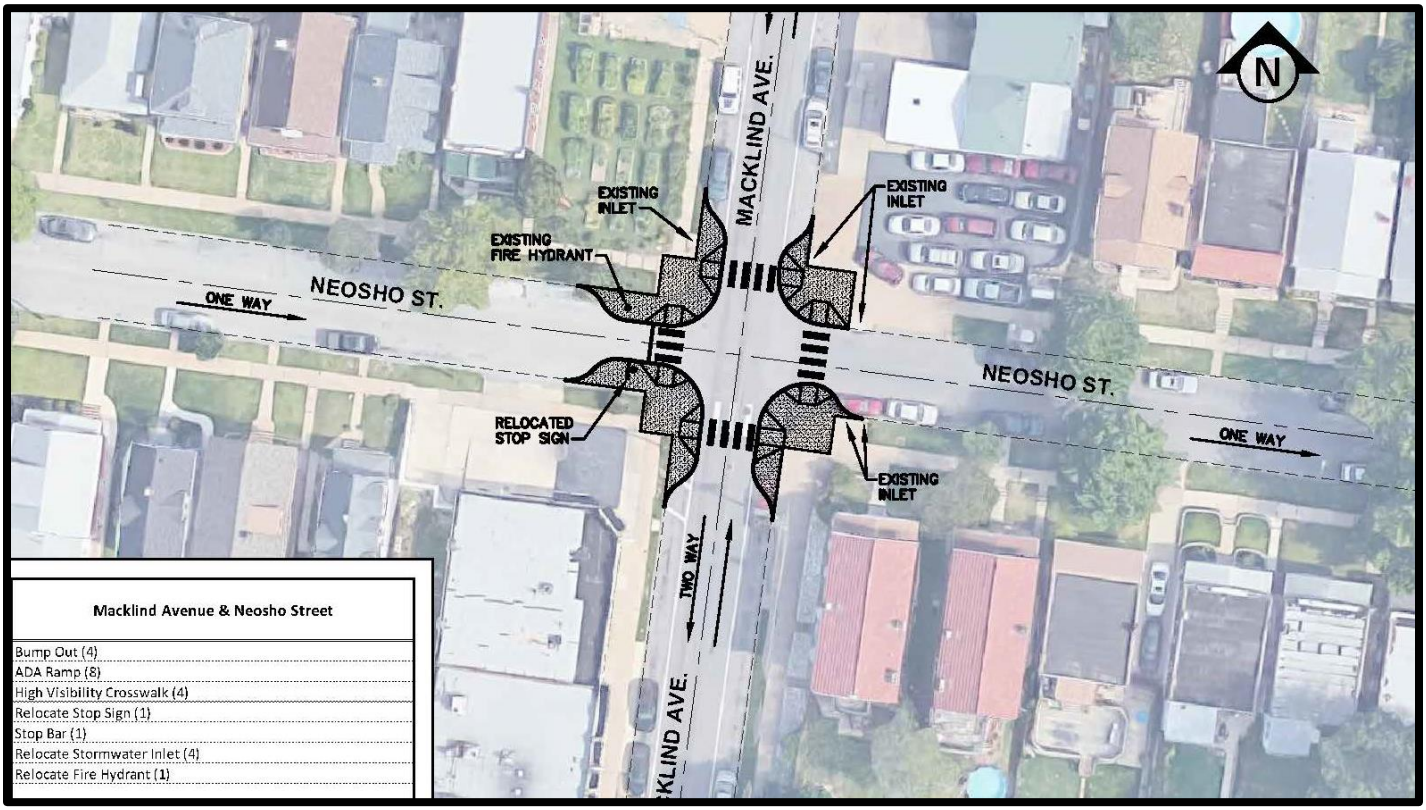

Figure 94: Curb extensions at Macklind Ave. and Neosho St.

Pedestrian Scale Lighting

Further improvements along Macklind could include pedestrian-scale lighting and improved wayfinding signage along Macklind in the Business District. Addition of pedestrian lighting typically costs in the range of $50,000 to $60,000 per 1000' of lighted sidewalk.

Finally, the City should continue to work with the Macklind Business District to explore the feasibility of satellite/valet parking opportunities. Early opportunities could include employee parking and parking for special events.

Figure 95: Example of pedestrian scale lighting, Skinker Blvd. Saint Louis

Improve Wherry

Install curb extensions to improve sight lines and reduce pedestrian crossing distances. Initial construction can be of temporary nature using planters and bollards. Upgrade to permanent configuration as funding becomes available. Upgrade to ADA compliant curb ramps and install continental crosswalks. Improvements can be made to the following intersections:

- Eichelberger (Short Term)
- Neosho and Itaska Wedge Areas (Mid Term) / Delore (Mid Term)
- Murdoch (Long Term).

The resulting road configuration is shown in **Figure 96.**

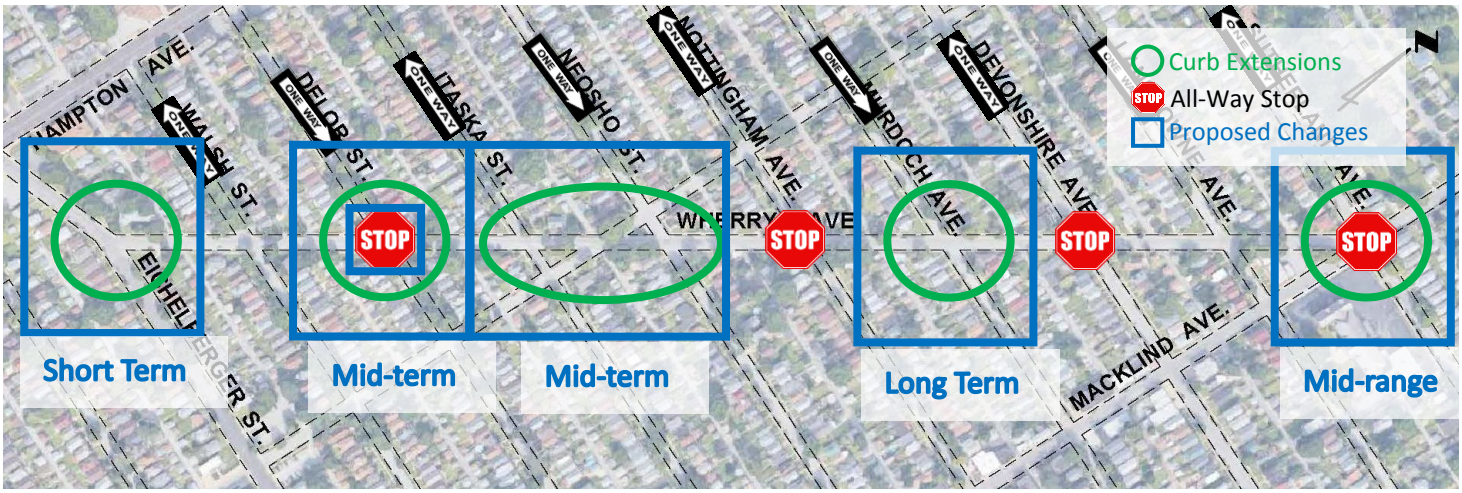

Figure 96: Current and proposed Wherry Ave. intersections

Wherry Wedges

This project will improve sight lines and reduce pedestrian crossing distances with curb extensions. The curb extensions can initially be temporary construction (planters and bollards) and upgraded to permanent construction as funding becomes available. Extend the sidewalks along Wherry through the "wedge" area. This will encourage greater use of these park areas and also help facilitate walking on Wherry. The proposed bump-outs at these locations will shorten crosswalks, will increase stop-sign compliance, and lower speeds along Wherry. The improvments will also provide an opportunity for vehicles to pull out a bit further into the intersection to improve sight-lines before pulling into traffic. Note that the improvements would modify stop sign configurations at the intersections of Neosho and January and Itaska and January. In both cases traffic on January would stop and traffic on Neosho and Itaska would proceed to a stop-sign on Wherry. The proposed improvements are shown in ***Figure 97***. The estimated cost for permanent treatments at this location is $295,950.

ITEM DESCRIPTION	Costs
INTERSECTION IMPROVEMENTS	
BUMP OUTS ($ 21,500 PER CORNER)	$215,000.00
ADA RAMPS ($2,000 EACH/ $4,000 PER CORNER)	$48,000.00
CROSSWALK STRIPING (PAINTED)	$5,500.00
STOPBAR (PAINTED)	$2,100.00
SOLID WHITE ARROW ($250 EACH)	$500.00
RELOCATE AND REMOVED SIGNS ($ 150 EACH)	$600.00
NEW SIGN ($ 250 EACH)	$1,250.00
SIDEWALK EXTENSION	$9,000.00
RELOCATE STORMWATER INLET ($ 1,500 EACH)	$6,000.00
CONCRETE MEDIANS	$5,000.00
REMOVE & REPLACE LANDSCAPING	$3,000.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$295,950.00**

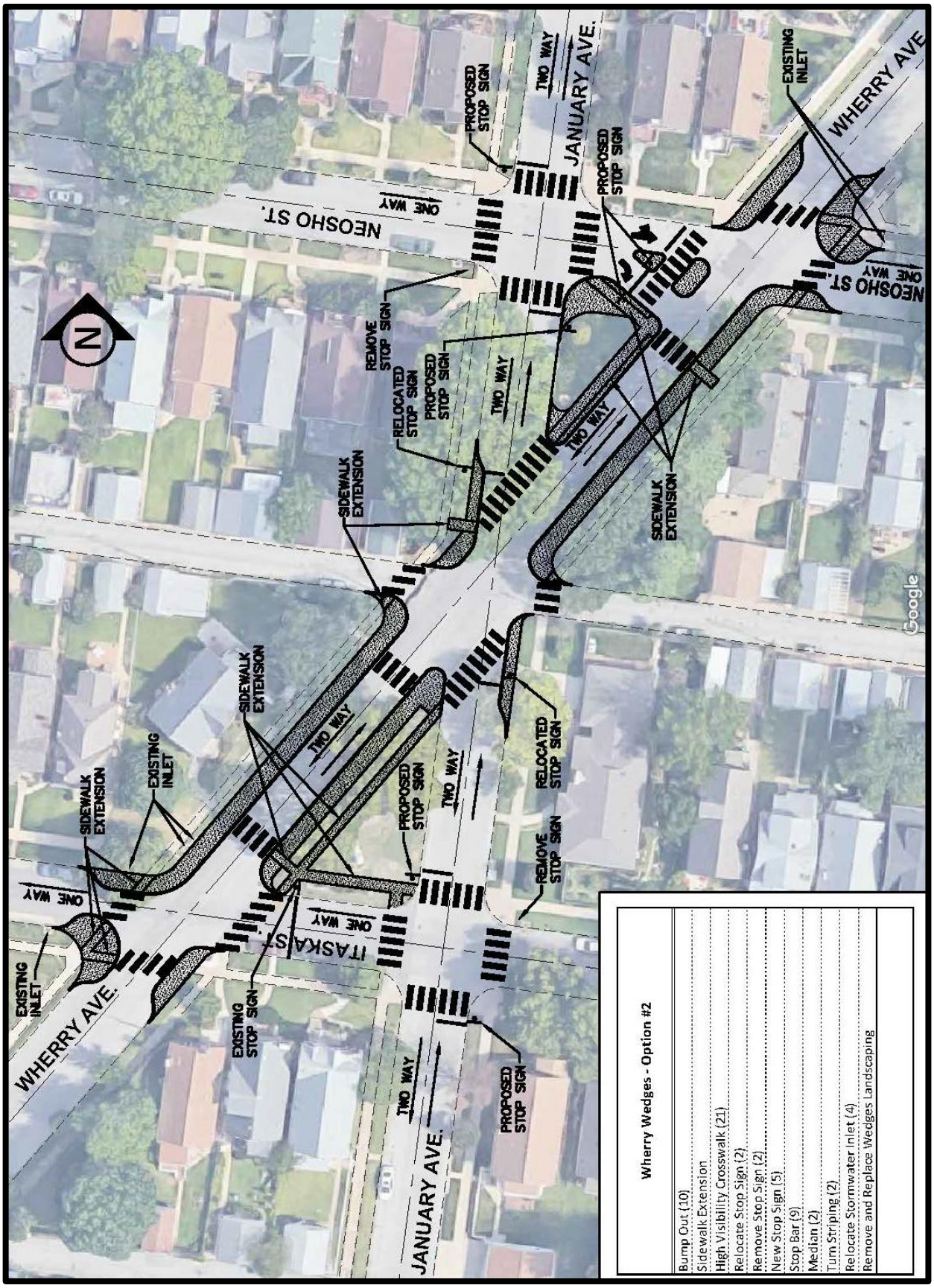

Figure 97: Proposed changes at the Wherry Ave. / January Ave. wedges

Upgrade Intersection at Wherry/Delor

Install bump-outs at Delor and reconfigure the intersection as a 4-way stop. The curb extensions can initially be temporary construction (planters and bollards) and upgraded to permanent construction as funding becomes available. The proposed bump-outs at these locations will shorten crosswalks, will increase stop-sign compliance, and lower speeds along Wherry. A new 4-way stop intersection is proposed at this location to help provide consistancy with the rest of the neighborhood and control speeds on Wherry. It should be noted that a 4-way stop is NOT reccomended without the implementation of bump-outs at this locaiton. Also note that at the December Open House local residents commented that they would rather see bump-outs on Wherry only (not on Delor) to help preserve as much of parking as possible. Keypad polling at the September public meeting resulted in 85% of residents preferring either a bump-out and/or a 4-way stop at this location. The proposed improvements are shown in ***Figure 98***. The estimated cost for permanent treatments at this intersection is $114,950.

ITEM DESCRIPTION	Costs
INTERSECTION IMPROVEMENTS	
BUMP OUTS ($ 21,500 PER CORNER)	$86,000.00
ADA RAMPS ($2,000 EACH/ $4,000 PER CORNER)	$16,000.00
CROSSWALK STRIPING (PAINTED)	$900.00
STOPBAR (PAINTED)	$900.00
RELOCATE SIGNS ($ 150 EACH)	$150.00
NEW SIGN ($ 250 EACH)	$500.00
RELOCATE STORMWATER INLET ($ 1,500 EACH)	$10,500.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$114,950.00**

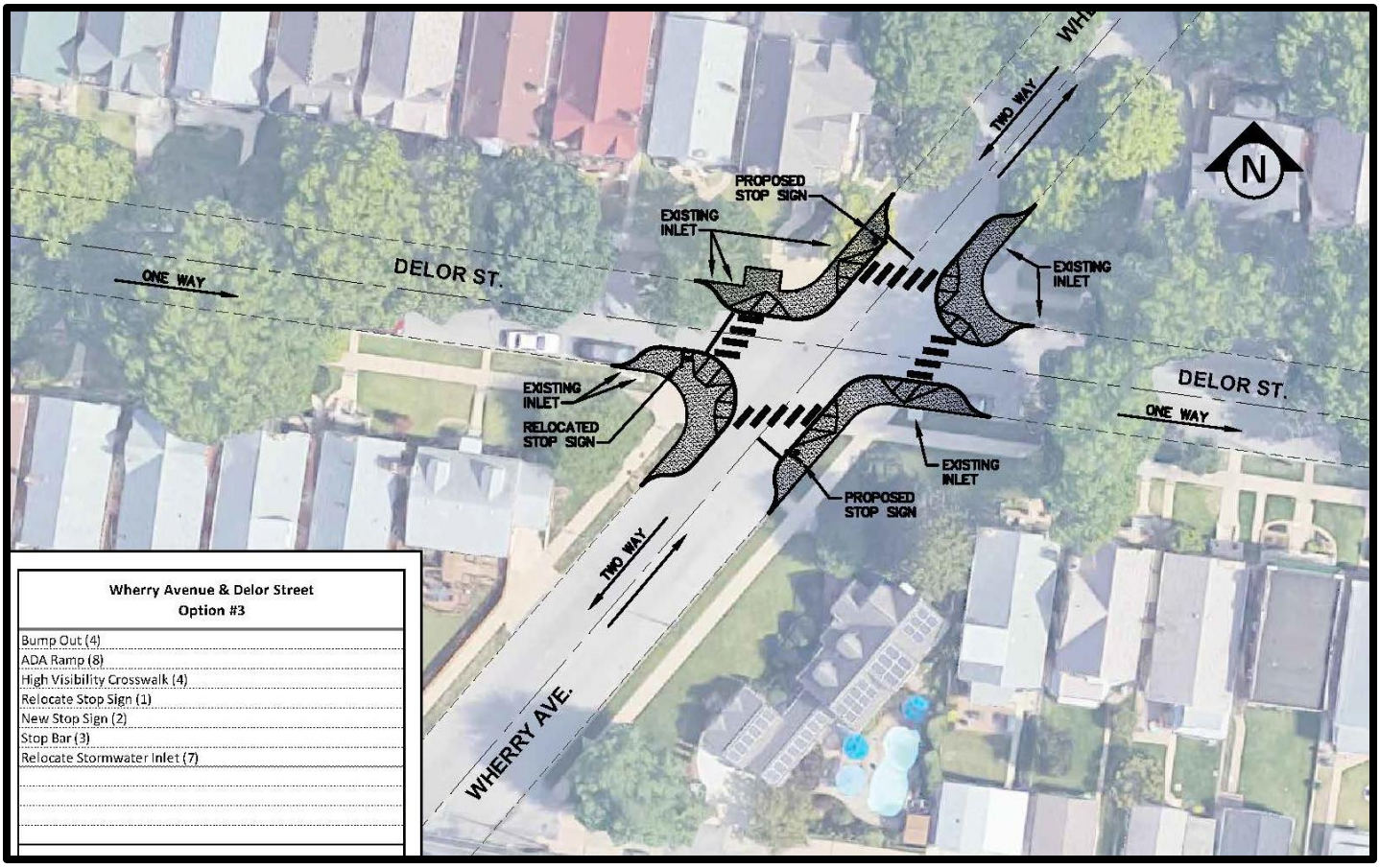

Figure 98: Curb extensions, crosswalks, and reconfiguration to 4-way stop at Wherry Ave. and Delor St.

Convert Traffic on Neosho to Two-Way Traffic between "Brannon Jog"

It is our understanding that historically the block of Neosho between North Brannon and South Brannon was open to two-way traffic to allow for passage along Brannon. Currently this section of Neosho is one-way only (eastbound) forcing southbound traffic out of the neighborhood and onto Kingshighway. Local neighbors were presented with three options: 1) leave it as it is, 2) reconfigure the intersection to physically prohibit wrong-way turns onto Neosho, and 3) reopen this section of Neosho to two-way traffic. Given these options, most residents (84%) prefer reopen this section of Neosho to two-way traffic. The project would also include installing a curb extension on west end of conversion to emphasize one-way traffic flow past the transition point. This curb extension can initially be temporary construction (planters and bollards); upgraded to permanent construction as funding becomes available. The proposed improvements are shown in ***Figure 100***. The estimated cost for permanent treatments at this intersection is $20,450.

Figure 99: Current view of Neosho, west of Brannon

ITEM DESCRIPTION	Costs
INTERSECTION IMPROVEMENTS	
OPTIONAL BUMP OUT	$12,750.00
ADA RAMPS ($2,000 EACH/ $4,000 PER CORNER)	$4,000.00
CROSSWALK STRIPING (PAINTED)	$400.00
STOPBAR (PAINTED)	$500.00
RELOCATE SIGNS ($ 150 EACH)	$300.00
RELOCATE STORMWATER INLET ($ 1,500 EACH)	$1,500.00
SIDEWALK EXTENSION	$1,000.00
INTERSECTION IMPROVEMENTS SUB-TOTAL=	**$20,450.00**

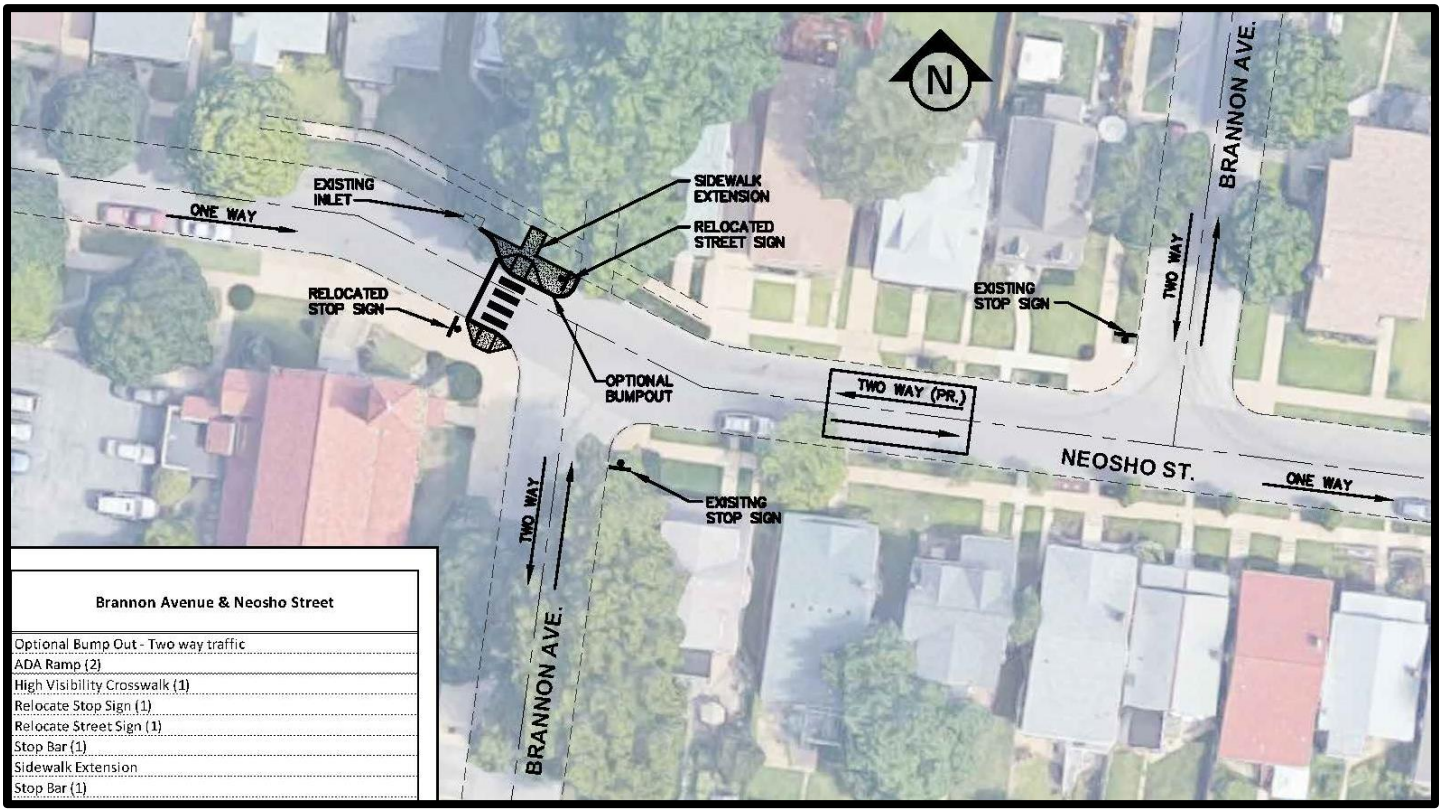

Figure 100: Two-way traffic on Neosho St. at "Brannon Jog"

Long-term/Higher-cost Recommendations

Install Additional Curb Extensions

The study team developed additional, lower priority locations for curb extensions to improve sight lines and reduce pedestrian crossing distances.

- Wherry Avenue and Murdoch Avenue
- Macklind Avenue and Devonshire Avenue, Nottingham Avenue, and Itaska Street (all currently 4-way stop controlled intersections).
- Brannon Avenue at Sutherland and Lansdowne Avenue (improve access to Buder School from Brannon).

Expand Pedestrian Scale Lighting

Moreover, pedestrian-scale lighting along Wherry Avenue, and Brannon Avenue, and Devonshire Avenue could help to help encourage parking on Brannon and Wherry by establishing a “walking route” to from these areas to the Macklind Business District.