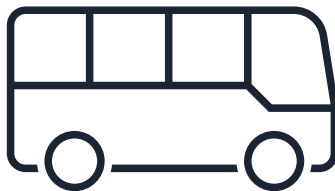


Considering the Best Public Transit and Street Design Options for West Fond Du Lac Avenue

Prepared for: Carl Glasemeyer, 1,000 Friends of Wisconsin



Ava Gagner, Tayler Jones, Anna Kissel, Kyle
David Nelson

Autumn 2023

December 12th, 2023

Carl Glasemeyer, Transportation Policy Analyst
1000 Friends of Wisconsin
820 W Wingra Dr #259704, Madison, WI 53725

Dear Carl Glasemeyer,

Finding a solution to the crisis happening on West Fond Du Lac Avenue in Milwaukee is a multi-faceted issue, but we are confident our recommended alternative will be a step in the right direction create better condition for all roadway users. After hearing from speakers representing the local residents and businesses, we concluded that the community desired more than just a new public transit option. Our mission was to focus on improving safety, multi-modal options, and the overall perception of the street. The challenge will not be solved through one policy decision, and continued efforts will be needed. However, we visualize our solution being a first step in aiding the City in their goal of Vision Zero, and restoring vibrancy to this corridor that affects the daily lives of thousands of residents of Milwaukee.

Our team researched multiple alternatives to provide the best public transit option and street design for the 5-mile segment of West Fond du Lac Avenue from West Walnut Street and West Hampton Avenue. Our recommendation is to construct a dedicated bus land and protected bike lane. Three additional alternatives were explored that we feel would improve the current roadway conditions, however, did not meet all our stringent effectiveness, equity, efficiency, and political feasibility criteria. Any solution will not come without significant challenges. This project will require approval or support from statewide, regional, and local stakeholders. Additionally, completing five miles of infrastructure construction is costly and will require a federal grant plus financial support from government agencies. Finally, as a direct route connecting the northwest side of Milwaukee, the project cannot sacrifice person-throughput entirely.

Our preferred alternative creates a complete street that prioritizes economic development and safety, shifting the corridor's priorities away from vehicle level of service. The street design still allows lanes for personal vehicle and freight travel, while adding a bus and bike lane to promote those modes of transportation. Our recommended alternative aims to create a more sustainable, equitable, and livable corridor for all roadway users.

We thank you for the opportunity to explore this pressing problem and aid your organization to improve West Fond Du Lac Avenue. Please contact us if there are any questions about our research and recommendations.

Sincerely,
Ava Gagner, Tayler Jones, Anna Kissel, and Kyle Nelson

Executive Summary

Problem

West Fond Du Lac Avenue, one of the most dangerous streets in Milwaukee, must be redesigned to increase safety, improve public transit, and create a desirable environment that supports local businesses. Historically, this diagonal street has prioritized automobile traffic with a large number of people taking West Fond Du Lac Avenue between Downtown Milwaukee and the northwest side of Milwaukee County. The redesign will provide an opportunity to shift the street's priority from automobiles to public transit, pedestrians, bicyclists, and local businesses.

Criteria

- **Effectiveness:** The preferred alternative must increase capacity for person throughput.
- **Equity:** The preferred alternative must decrease the Pedestrian Level of Traffic Stress to a score of 1 or 2 at the 6 major intersections and 4 key segments on West Fond Du Lac Avenue.
- **Efficiency:** The cost of the preferred alternative cannot exceed \$60 million and must receive at least 80% coverage from federal grant programs.
- **Political Feasibility:** The preferred alternative must be publicly championed by nearby neighborhood groups.

Alternatives

1. Use Policy and Education to Address Driver Speed: Seeks to change driver behavior by lowering the speed limit, creating safer turning movements, and educational campaigns on West Fond Du Lac Avenue.
2. Implement Bus Rapid Transit: Implements a BRT route on West Fond Du Lac Avenue using a dedicated center lane design and queue jump lanes with designated signals.
3. Enhance Intersections and Current Bus Stops: Enhances six intersections on West Fond Du Lac Avenue using traffic calming infrastructure. It also enhances current bus stops at these intersections with bus shelters, murals, and green roofs.
4. Add Dedicated Bus Lane and Protected Bike Lanes: Creates a dedicated bus lane and protected bike lanes throughout the entire stretch of West Fond Du Lac Avenue. The alternative also adds curb bump-outs, in-lane bus stops, and a landscaped median.

Recommendation

We recommend moving forward with alternative 4, adding a dedicated bus lane and protected bike lanes to West Fond Du Lac Avenue, as it passed all four criteria. This alternative will shift the priority of the street away from automobiles to public transit, pedestrians, bicyclists, and local businesses.

Problem Statement

West Fond Du Lac Avenue, one of the most dangerous streets in Milwaukee¹, must be redesigned to increase safety, improve public transit, and create a desirable environment that supports local businesses. West Fond Du Lac Avenue is on Milwaukee's high injury street network¹, and since 2018, there have been 136 serious injuries and 28 fatalities resulting from traffic crashes in the five-mile stretch between West Walnut Street and West Hampton Street². Historically, this arterial street has prioritized automobile traffic with a large number of people taking West Fond Du Lac Avenue between Downtown Milwaukee and the northwest side of Milwaukee County. The redesign will provide an opportunity to shift the priority of the street away from automobiles to public transit, pedestrians, bicyclists, and local businesses.

The street is also Wisconsin State Highway 145 and has high traffic volumes, ranging from 19,000 to 35,000 annual average daily traffic (AADT)³. West Fond Du Lac Avenue is a freight route, which are designated to have twelve-foot-wide lanes⁴. The Wisconsin Department of Transportation (WisDOT) plans to repave a portion of the street between North 12th and North 20th Streets. While this only spans a small segment of the whole street, the repaving project can be used as an opportunity to consider the future of West Fond Du Lac Avenue and align with the City of Milwaukee's Vision Zero goal to improve traffic safety⁵. While the street will still need to serve automobile and freight traffic since it is a state highway, there is an opportunity to shift the priorities of the street to other modes of transit and create a safer environment.

Many parts of the roadway have four travel lanes and are 120 feet wide. Wide streets with multiple lanes of traffic are dangerous because they create many points of conflict for cars and pedestrians.⁶ This not only impacts the number of crashes, but also pedestrians' perception of safety. The diagonal orientation of West Fond Du Lac Avenue creates many intersections with sharp approach angles, and many of these intersections have three crossing streets. This produces dangerous conditions for all users, increasing potential points of conflict and turning angles that drivers

¹ City of Milwaukee. (Jan 2023). "Milwaukee Crash Analysis." *Department of Public Works*. <https://www.milwaukee.gov/MKECrashAnalysisReport2022.pdf>.

² UW-Madison Traffic Information Center. (25 Aug 2023). "Community Maps – Crash Data." <https://transportal.cee.wisc.edu/partners/community-maps/crash/search/BasicSearch.do>.

³ Wisconsin Department of Transportation. (n.d.). "WisDOT Traffic Counts." GIS map webpage. <https://wisdot.maps.arcgis.com/apps/webappviewer/index.html?id=2e12a4f051de4ea9bc865ec6393731f8>.

⁴ Code of Federal Regulations. (Dec 2023). <https://www.ecfr.gov/current/title-23/chapter-I/subchapter-G/part-658/section-658.9>.

⁵ City of Milwaukee, "Vision Zero," https://city.milwaukee.gov/VisionZero&FB_Value=.

⁶ Johns Hopkins University. (2023). "How narrow traffic lanes can help reduce crashes." <https://publichealth.jhu.edu/2023/narrower-lanes-safer-streets>.

can take at high speeds. The size of the roadway provides potential for a range of redesigns; however, roadway construction costs are expensive and only increase over time⁷.

The two bus lines along West Fond Du Lac Avenue operated by the Milwaukee County Transit System (MCTS) offer public transportation options to residents in the surrounding neighborhoods, contributing to elevated levels of bus ridership and low car ownership rates⁸. The street has high levels of pedestrian activity and dozens of businesses that would benefit from increased real and perceived safety. Despite this neighborhood context, West Fond Du Lac Avenue's design prioritizes automobile traffic over pedestrian safety. West Fond Du Lac Avenue is located in a Neighborhood Revitalization Strategy Area (NRSA), where residents reported more negative perceptions of safety, security and enjoyment of travel modes⁹. Residents in NRSA's also report more traffic safety concerns with walking, biking, driving, and being an automobile passenger in their neighborhood⁹. Community stakeholders have stated that they avoid traveling on West Fond Du Lac Avenue if possible, and would not walk along it, if possible^{10, 11}. West Fond Du Lac Avenue must be redesigned to prevent traffic related deaths and serious injuries, improve quality of life for neighborhood residents, and improve public transportation.

⁷ Eno Center for Transportation. (Apr 2023). Highway Construction Costs Have Risen 50% in Two Years." <https://enotrans.org/article/highway-construction-costs-have-risen-50-in-two-years/>.

⁸ American Community Survey. Census Tract Data, Five-Year Estimates, 2017-2021. <https://data.census.gov>.

⁹ Schneider, R., Schmitz, A., & Schinkowsky, H. (Sept 2021). "Milwaukee Safe & Healthy Streets Surveys: Full Report." <https://city.milwaukee.gov/ImageLibrary/Groups/cityDPW/pavement/FullReportMilwaukeeSafeHealthyStreetsSurveys.pdf>.

¹⁰ Stacia Thompson. (28 Nov 2023). UWM Public Policy Analysis Class.

¹¹ Maricha Harris. (5 Dec 2023). UWM Public Policy Analysis Class.

Criteria

Effectiveness: The preferred alternative must increase capacity for person throughput on West Fond du Lac Avenue.

Rationale: According to the National Association of Transportation Officials (NACTO), as currently designed, West Fond Du Lac Avenue can move 2,000-5,600 persons per hour through motor mixed traffic with frequent buses and an added 9,000 per hour with sidewalks. This criterion seeks to improve the total volume of people beyond the current design for a range of users.

Equity: The preferred alternative must result in a Pedestrian Level of Traffic Stress (PLTS) score of 1 or 2¹² at 4 major intersections and 4 segments representative of West Fond Du Lac Avenue¹³.

Rationale: PLTS addresses the perception of safety felt by the most vulnerable road users.¹⁴ These intersections or segments currently all have a score of 3 or 4¹⁵. By lowering the score, this creates an environment that can cater to more pedestrian activity and ideally result in more objective safety improvements as well.

Efficiency: The cost of the preferred alternative cannot exceed \$60 million.

Rationale: WisDOT is currently working on a redesign project for a 2.5 mile stretch of West National Avenue, the cost of which is \$23 million^{16, 17}. The West Fond Du Lac Avenue project will be approximately five miles, so doubling the cost of the West National Avenue project and accounting for inflation brings our criterion figure to \$60 million.

Political Feasibility: The preferred alternative must be publicly championed by nearby neighborhood groups.

¹² See PLTS tables in Appendix A.

¹³ *Intersections of W. Walnut St.; W. Center St.; W. Capitol Dr.; W. Hampton Ave & Segments of Johnson Park (from 18th St. to 19th St.); Fondy's Farmers Market (21st St. to Meinecke Ave); Sherman Phoenix (35th St. to 36th St.); North Shopping Center (54th St. to 56th St.)*

¹⁴ Swift, S. (May 2023). "Pedestrian Level of Traffic Stress." *Independent Study at University of Wisconsin-Milwaukee*.

¹⁵ See West Fond du Lac Avenue PLTS Calculations in Appendix B.

¹⁶ Tanzilo, B. (17 Feb 2020). "City gets \$23.3 million from WisDOT to completely reconstruct National Ave." *OnMilwaukee*. <https://onmilwaukee.com/articles/national-avenue-reconstruction>.

¹⁷ Wisconsin Department of Transportation. (n.d.). "National Avenue (WIS 59) Project – Milwaukee County." <https://wisconsin.dot.gov/Pages/projects/by-region/se/wis59-national-avenue/default.aspx>.

Rationale: It is critical that residents near West Fond Du Lac Avenue support the preferred alternative. To predict resident support, our team looked at materials from neighborhood groups¹⁸ that touch West Fond Du Lac Avenue.

Alternative 1: Use Policy and Education to Address Driver Speed

A major concern of residents of neighborhoods surrounding West Fond Du Lac Avenue is the danger of the roadway caused by traffic speed. Traffic speeds are a leading cause of traffic crashes and have a severe effect on the perception of a roadway¹⁹. This alternative seeks to change driver behavior by lowering the speed limit, creating safer turning movements, and educational campaigns. Instead of expansive construction solutions, this will see WisDOT and the City of Milwaukee apply regulations and simple infrastructure solutions to slow down traffic and reduce dangerous behaviors. By creating a safer environment along Fond Du Lac, this will lead to growth in economic development and more comfort for pedestrians. A WisDOT evaluation found that over 15% of walking trips along this street are to use transit²⁰, so pedestrian safety is vital to improvement for transit users as well.

The posted speed limit along West Fond Du Lac Avenue is 30mph. However, a result of a speed study from the Milwaukee Department of Public Works²¹ suggests actual speeds are much higher. The median speed was 34 mph; however, the 85th percentile speed was 42mph. This alternative will change the posted speed limit to 25mph. While there is no guarantee that excessive speeding won't still occur, the network will slow down as a whole. With slower speeds, the result will be fewer crashes and fatalities²². A person is 70% more likely to die if they are struck by a vehicle moving at 30mph, compared to 25mph²³. This change will require signage updates as well as an educational campaign to inform traffic and residents.

Secondly, turning movements and pedestrian visibility will be controlled at traffic signals. Prohibiting right turns on red is a simple, low-cost measure to increase pedestrian safety and decrease crashes²⁴. Additionally, any light equipped with left

¹⁸ Including Midtown Neighborhood Alliance, Northwest Side Community Development Corporation, Sherman Park Community Association, Amani United, Metcalfe Park Community Bridges, and Walnut Way Conservation Corporation.

¹⁹ Ju, U., & Wallraven, C. (2023). "Dynamic measurements of speed and risk perception during driving: Evidence of speed misestimation from continuous ratings and video analysis." <https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0291043>.

²⁰ Email communication from Andrew Levy, WisDOT Systems Planning Supervisor. (30 Nov 2023)

²¹ Received through email from Milwaukee DPW MultiModal Unit (1 Dec 2023)

²² National Highway Traffic Safety Administration. (n.d.). "Lower Speed Limits." <https://www.nhtsa.gov/book/countermeasures-that-work/speeding-and-speed-management/countermeasures/legislation-and-licensing/lower-speed-limits>.

²³ District Department of Transportation Press Release (Sep 2022). <https://ddot.dc.gov/release/ddot-advances-vision-zero-lowering-speed-limit-25-mph-key-dc-corridors>.

²⁴ Federal Highway Administration. (n.d.). "Signs and Signals." <https://safety.fhwa.dot.gov/saferjourney1/library/countermeasures/44.htm>.

turn signals will allow for left turns on the green turn arrow only. These types of turns allow drivers to proceed at higher speeds, creating danger for other users at the intersection. Transit users and pedestrians in general will then be able use crosswalks with fewer vehicles crossing the space.

Finally, educational campaigns and citizen action will help slow down traffic speeds. Creative solutions like the MKE Pace Car Program can help educate drivers on proper roadway speeds²⁵, or the California Office of Traffic Safety launched a “Slow the Fast Down” campaign on digital platforms²⁶. 1,000 Friends of Wisconsin will work with neighborhood groups and residents to create a similar campaign regarding West Fond Du Lac Avenue. Paired with the reduction in speed limit, community efforts to increase awareness will have a positive effect on the corridor improving conditions for all roadway users.

Alternative 2: BRT and Bike Lanes

This alternative creates a bus rapid transit (BRT) route on West Fond Du Lac Avenue for the five-mile stretch between West Hampton Avenue and West Walnut Street. The BRT will only span the five-mile study area and will operate in tandem with the Blue Line service, which will be reduced to half frequency. While estimates for this alternative only look at the five-mile study area, if a BRT line were implemented on West Fond Du Lac Avenue, it is likely that the BRT would replace the Blue Line and run the full route. Placing a BRT route on Fond Du Lac Avenue will provide a diagonal BRT route, providing access to parts of the county that existing and planned BRT routes do not provide. In an area with low car ownership, the Blue Line connects residents to job centers, grocery stores, social services, and other important amenities – all of which residents will have easier access to with the implementation of BRT²⁷. The West Fond Du Lac Avenue BRT line will connect to the BRT planned along the 27th Street corridor, increasing convenient transportation access to jobs and other amenities²⁸. Since other BRT projects are currently under consideration, the West Fond Du Lac Avenue BRT would not be implemented until approximately 2035-2040²⁹.

The West Fond Du Lac BRT line will increase bus throughput using a dedicated center lane design. Dedicated bus lanes improve travel speeds and reduce delays

²⁵ Coalition for Safe Driving MKE. (n.d.). <https://www.cfsdmke.org/take-the-car-pledge>.

²⁶ California Office of Traffic Safety (Nov 2020). Press Release. <https://www.ots.ca.gov/2020/11/17/the-ots-launches-new-anti-speeding-campaign-encouraging-drivers-to-slow-the-fast-down/>.

²⁷ Blue Line Map, MCTS, <https://www.ridemcts.com/RideMcts/Media/Files/RoutePDFs/LivePDFs/BlueLine.pdf>.

²⁸ MKE North South. “ENHANCING TRANSIT ALONG 27TH STREET.” <https://www.mkenorthsouth.com/>

²⁹ MCTS. (5 Dec 2023). UWM Public Policy Analysis Class.

on congested roads and highways³⁰. Dedicated center lanes are the recommended lane dedication for BRT because it allows buses to avoid right-turning vehicles and pedestrians³⁰. Average bus stop placement will be every 0.5 miles with stops always located at intersections with transfers to other routes. Queue jump lanes with designated signals will be used at intersections with center lanes. Left turns will only be allowed at intersections with traffic lights. Bike lanes will also be added as a part of the redesign, increasing bike throughput capacity on the road. Twelve-foot travel lanes will allow semi-trucks to utilize the street as a freight route, making the project feasible for WisDOT.

The estimated cost for the five-mile BRT route is \$74.6 million, which includes capital costs for street redesign, bus costs, and 1 year of operational costs. WisDOT is responsible for the capital cost and MCTS is responsible for the bus and operational costs. Approximately 3.6 miles of the five-mile route will have a dedicated center lane, which will qualify the project for an FTA Capital Investment Grant that will cover up to 80% of costs with a local 20% match³¹. Milwaukee County would be responsible for the local match.

The BRT redesign will help create safer conditions for all users of the road. Increased access to convenient transit and protected bike lanes supports multimodal uses of the road. Where there is space for dedicated bus lanes, the roadway will have two transit shelters on either side of the center lane, which will make accessing transit easier and serve as pedestrian crossing islands. Left turns will only be allowed at controlled intersections. Through-traffic will be slowed by traffic turning right, decreasing speeds. The redesign will also close slip lanes, improving safety. While this alternative still scores high in the evaluation of PLTS due to the multi-lane design, it is still expected that the redesign will improve perception of safety.

There are also opportunities for Transit-Oriented Development (TOD) along this corridor where systematic disinvestment has led to high vacancies. Increased bus ridership and perceptions of road safety can increase foot traffic to local businesses. TOD plans will incentivize public involvement and seek input from community organizations early in the planning process. TOD opportunities should include strategies to discourage displacement and bring needed resources into the community. TOD opportunities should consider promoting local businesses, bringing in more jobs, and increasing access to services.

Intersection and road segment sketches can be found in Appendix C.

³⁰ Wisconsin Policy Forum. (March 2015). "Picking up the Pace"
<https://wispolicyforum.org/research/picking-up-the-pace/>.

³¹ Carrie Cooper. (30 Nov 2023). UWM Public Policy Analysis Class.

Alternative 3: Enhance Intersections and Current Bus Stops

This alternative focuses on enhancing intersections along the five-mile stretch of West Fond Du Lac Avenue, including the bus stops at these intersections. These enhancements will make West Fond Du Lac Avenue a safer and more pleasurable experience for pedestrians, bicyclists, transit riders, and drivers. The intersections that our team chose to focus on are West Hampton Avenue, West Capitol Drive, West Burleigh Street, West Locust Street, West Center Street, and West Walnut Street, as these intersections were flagged by WisDOT due to their high crash rates³².

The intersection enhancements are as follows:

West Fond Du Lac Avenue and West Hampton Avenue: This alternative removes the slip lane, adds 4 crosswalk murals, and adds 2 bus islands. This alternative also adds two bus shelters with murals at the line 11 bus stops.

West Fond Du Lac Avenue and West Capitol Drive: This alternative removes the slip lane, adds 4 bus islands, extends medians into crosswalks, and adds 4 crosswalk murals. This alternative also adds one bus shelter for the lines 34/Red bus stop, as well as murals on the now four bus shelters.

West Fond Du Lac Avenue and West Burleigh Street: This alternative removes the slip lane, adds 6 bus islands, 2 extended medians, and 6 crosswalk murals. This alternative also adds two shelters with murals for the line 35 bus stops, one shelter with a mural for the line 66 bus stop, and a mural to a shelter for the line 23/Blue bus stop.

West Fond Du Lac Avenue and West Locust Street: This alternative removes the slip lane, adds 2 curb bump-outs, and adds 4 crosswalk murals. There are no bus stops at this intersection.

West Fond Du Lac Avenue and West Center Street: This alternative adds 2 curb bump-outs, 2 bus islands, and 4 crosswalk murals. This alternative also adds two shelters with murals for the line 22 bus stops.

West Fond Du Lac Avenue and West Walnut Street: This alternative removes the slip lanes, adds 1 curb bump-out, and adds 4 crosswalk murals. There are no bus stops at this intersection.

The crosswalk murals and bus shelter murals will be created in collaboration with nearby neighborhood groups, ensuring that residents have proper input and neighborhood representation in public art. Moreover, all shelters will include a green roof element which will be maintained by Business Improvement Districts, Neighborhood Improvement Districts, and neighborhood groups. To see possible bus shelter green roof caretakers, see Appendix D.

³² Andrew Wheeler. (28 Nov 2023). UWM Planning Policy Analysis Class.

Intersections sketches can be found in Appendix D.

Alternative 4: Dedicated Bus Lane and Protected Bike Lanes

This alternative will reconstruct and refigure a significant portion of the street. It will create a dedicated bus lane and protected bike lanes on each side throughout the entire stretch of West Fond Du Lac Avenue, add curb bump-outs at all intersections, add in-lane bus stops atop the bump-outs, and create a landscaped median along the entire segment, enabling space for pedestrian refuge islands and left turn lanes when needed.

Adding a bus lane will significantly increase the efficiency of the existing bus routes running along West Fond Du Lac Avenue³³. Painting the bus lanes red, a trend begun in other U.S. cities, will provide a clear delineation for where auto drivers are not permitted to be. A study in San Francisco found that painted transit lanes resulted in fewer transit delays, a 25% improvement in transit reliability, a 16% decrease in collisions, and a 24% drop in injury collisions³⁴.

Adding a protected bike lane will not only provide protection and a sense of security for cyclists, but the buffer it makes between the auto lanes and sidewalk will also increase the level of protection and sense of security for pedestrians. A protected bikeway can accommodate up to 7,500 cyclists per hour and it is possible for up to 9,000 pedestrians to use the sidewalks per hour³⁵; however, it will take time for cyclists and pedestrians to get used to feeling safe along West Fond Du Lac Avenue, so there will be a ramp up period before the redesign meets its full potential for traffic volume.

Parking lanes on the narrowest stretch, between West North Avenue and West Burleigh Avenue, will be removed. On the other sections parking lanes will be preserved, but curb bump-outs will be installed at all intersections to promote pedestrian safety and visibility and provide in-lane bus stops where needed. Implementing in-lane bus stops in Portland was associated with a 12% decrease in paratransit use by residents with disabilities, suggesting that this method of boarding is more accessible³⁶.

Adding a median along the entire stretch will allow for left turn lanes when needed. This ensures efficient traffic flow and prevents other driver frustration. Many of the

³³ Arhin, S. et. al. (June 2022). "Impact of Dedicated Bus Lanes on Intersection Operations and Travel Time Model Development." *Mineta Transportation Institute*. https://transweb.sjsu.edu/sites/default/files/2040-Arhin-Impacts-Bus-Lane_0.pdf.

³⁴ German, L. (27 Jun 2022). "Here's why Broad Street is being painted that bright red color." *Richmond Times-Dispatch*. https://richmond.com/news/local/heres-why-broad-street-is-being-painted-that-bright-red-color/article_4e374b58-f665-11ec-8b39-236bc45dca6e.html.

³⁵ National Association of City Transportation Officials. (14 April 2016). "Transit Street Design Guide." <https://nacto.org/publication/transit-street-design-guide/>.

³⁶ Thatcher, et. al. (2013). "Strategy Guide to Enable and Promote the Use of Fixed-Route Transit by People with Disabilities." *Transportation Research Board*. https://nacto.org/wp-content/uploads/2016/05/2-9_Thatcher-et-al-Strategy-Guide-to-Enable-and-Promote-the-Use-of-Fixed-Route-Transit-by-People-with-Disabilities-TCRP-Report-163_2013.pdf.

existing medians will be kept, saving on costs and preserving existing median landscaping and mature trees.

The estimated cost of this alternative is approximately \$59.4 million. Sketches for all studied intersections and road segments can be found in Appendix E.

Evaluation

Alternative 1: Use Policy and Education to Address Driver Speed³⁷

Effectiveness: *Fail*. This alternative does not add infrastructure that increases traveler throughput capacity.

Equity: *Fail*. While this alternative decreases pedestrian level of traffic stress at some roadway segment due to reducing speeds, the lack of addressing buffer width results in insignificant PLTS scores to pass the criteria, even if we can assume it would make pedestrians more comfortable.

Efficiency: *Pass*. This alternative will largely require administrative costs, which results in the total cost being well below \$60 million.

Political Feasibility: *Pass*. This alternative will receive support from the identified neighborhood groups.

Alternative 2: BRT and Bike Lanes:³⁸

Effectiveness: *Pass*. This alternative adds bike lanes and dedicated bus lanes that increases traveler throughput capacity to 21,000 to 26,000 travelers per hour.

Equity: *Fail*. This alternative does not decrease pedestrian level of traffic stress along segments or intersection along West Fond Du Lac Avenue.

Efficiency: *Fail*. This alternative is estimated to cost \$74.6 million for capital costs and one year of BRT operation.

Political Feasibility: *Fail*. Because this alternative eliminates parking along West Fond Du Lac Avenue, identified neighborhood groups may not be in support because of the potential impact on local businesses.

Alternative 3: Enhance Intersections and Current Bus Stops³⁹

Effectiveness: *Fail*. This alternative does not add infrastructure that increases traveler throughput capacity.

Equity: *Fail*. While this alternative decreases the pedestrian level of traffic stress at the intersections that are addressed, this alternative does not decrease pedestrian level of traffic stress along segments of West Fond Du Lac Avenue.

³⁷ Details for evaluation can be found in Appendix F.

³⁸ Details for evaluation can be found in Appendix G.

³⁹ Details for evaluation can be found in Appendix H.

Efficiency: *Pass*. This alternative is estimated to cost \$1.2 million.

Political Feasibility: *Pass*. This alternative will receive support from the identified neighborhood groups.

Alternative 4: Dedicated Bus Lane and Protected Bike Lanes⁴⁰

Effectiveness: *Pass*. This alternative will add dedicated bus lanes and protected bike lanes, increasing the potential traveler throughput to 21,000 to 26,000 travelers per hour.

Equity: *Pass*. This alternative yields a PLTS of 1 at three of the studied intersections, and a 2 at the remaining one. It yields a PLTS of 1 at two of the studied segments and 2 at the other two.

Efficiency: *Pass*. The total project costs will be \$59.4 million.

Political Feasibility: *Pass*. All identified neighborhood groups have expressed support for increased traffic safety measures, the likes of which this alternative consists of.

	Effectiveness: Increased Traveler Throughput	Equity: Pedestrian Level of Traffic Stress 1 or 2	Efficiency: Cannot Exceed \$60M; Needs 80% Federal Contribution	Political Feasibility: Neighborhood Groups Approval
Alternative 1: Policy Change & Education	FAIL Does not change throughput capacity	FAIL Traffic speeds benefit, but do not improve scores enough	PASS Only requires administrative costs	PASS Receives support from identified groups
Alternative 2: BRT & Bike Lanes	PASS Up to 21,000 to 26,000 travelers per hour	FAIL PLTS of 3 and 4 at all studied intersections and segments	FAIL Estimated cost of \$74.6 million	FAIL The loss of all on-street parking will be concerning to resident groups
Alternative 3: Enhance Intersections & Bus Stops	FAIL Does not change throughput capacity	FAIL Does not address street segments	PASS Estimated cost of \$1.2 million	PASS Receives support from identified groups
Alternative	PASS	PASS	PASS	PASS

⁴⁰ Details for evaluation can be found in Appendix I.

4: Complete Street	Up to 21,000 to 26,000 travelers per hour	PLTS of 1 and 2 at all studied intersections and segments	Estimated cost of \$59.4 million	Receives support from identified groups
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Recommendation

After evaluation of all four alternatives, we recommend Alternative 4: Dedicated Bus Lane and Protected Bike Lanes. The recommended alternative is a complete street redesign that will improve public transit service, enhance pedestrian safety, promote cycling, and maintain traffic flow. The redesign allows for an increase in capacity for person throughput and a more comfortable environment for pedestrians, while costing in the range of similar projects. Freight and vehicle travel are still maintained on the roadway, allowing the corridor to continue its function as an urban arterial street connecting downtown Milwaukee to the northwest side. Most importantly, we feel confident the design will be supported by residents and neighborhood groups. Finally, the recommended alternative supports Milwaukee's efforts for an increase in protected bike networks and is reinforced by City's Complete Street policy.⁴¹ Overall, our recommended alternative will create a more sustainable, equitable, and livable West Fond Du Lac Avenue for all roadway users.

Monitoring

The construction of a complete street requires continued monitoring and evaluation. Some conditions to be monitored are traffic speeds, crash analysis, and mode volumes. After construction, a traffic study should be conducted to see if there are positive benefits from the project. Crash data should be checked every year to ensure a decline in both vehicle crashes as well as pedestrian and cycling crashes. This trend will ideally align with citywide goals to reach Vision Zero. Additionally, all mode volumes should be recounted. Pedestrian, Bicycling, and Transit counts will indicate that the redesign is growing each. With vehicle volumes in particular, surrounding roadways should have an updated Annual Average Daily Traffic calculated. It is vital to ensure that other networks are not seeing problematic growth in vehicle volume as cars possibly redirect their travel off West Fond Du Lac

⁴¹ Milwaukee Department of Public Works. (2018). "Complete Streets."
<https://city.milwaukee.gov/dpw/infrastructure/multimodal/Complete-Streets>

Avenue. Surveys should also be conducted after construction to continue the community involvement effort and if any additional improvements are required.

Appendix A: Pedestrian Level of Traffic Stress Tables

The tables below only represent the needed analysis for this study. More tables exist for roadway segments with lower traffic volumes.

Table 2c. ROADWAY SEGMENTS: High Traffic Volume (> 7500 AADT)					
Speed	Sidewalk Width	Buffer Width			
		> 10ft	5ft to 9ft	1ft to 4ft	None
≤ 20 mph	> 10ft	1	1	2	2
	8ft to 10ft	1	2	2	3
	5ft to 7ft	2	2	3	4
	< 5ft	3	3	4	4
21-25mph	> 10ft	1	1	2	2
	8ft to 10ft	1	2	3	3
	5ft to 7ft	2	3	3	4
	< 5ft	3	4	4	4
26-30mph	> 10ft	1	1	2	3
	8ft to 10ft	1	2	2	3
	5ft to 7ft	2	3	3	4
	< 5ft	3	4	4	4
31-35mph	> 10ft	1	2	3	3
	8ft to 10ft	2	3	3	4
	5ft to 7ft	3	3	4	4
	< 5ft	4	4	4	4
> 35mph	> 10ft	2	2	3	3
	8ft to 10ft	2	3	3	4
	5ft to 7ft	3	4	4	4
	< 5ft	4	4	4	4

Table 3c. CROSSINGS: High Traffic Volume (>7500 AADT)					
Traffic Control	Crossing Width	Crossing Treatments			
		Raised Refuge Island AND Curb Extension(s)	Raised Refuge Island only	Curb Extension only	None
Traffic Signal	1-2 lanes	1	1	2	2
	3 lanes	1	2	2	2
	4 lanes	2	3	3	3
	5+ lanes	3	3	4	4
Stop Sign	1-2 lanes	1	1	2	2
	3 lanes	2	2	3	3
	4+ lanes	2	3	4	4
Pedestrian Hybrid Beacon	1-2 lanes	1	2	2	2
	3 lanes	2	3	3	3
	4+ lanes	3	3	4	4

Swift, S. (May 2023). "Pedestrian Level of Traffic Stress." *Independent Study at University of Wisconsin-Milwaukee.*

Appendix B: West Fond Du Lac Avenue PLTS Evaluation

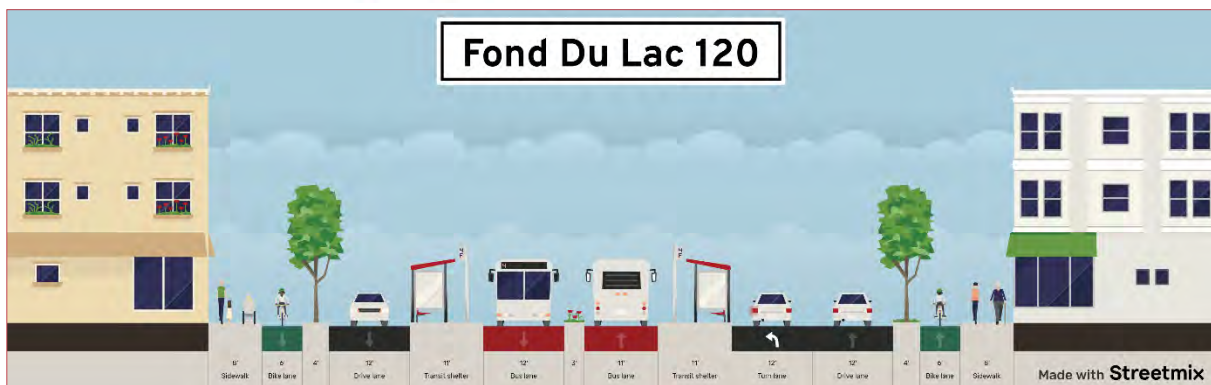
This outlines the PLTS scores for West Fond Du Lac Avenue as it currently exists. A traffic speed of 31-35 was chosen to represent Median Speed of the segment for a Department of Public Works speed study⁴².

Intersections	AADT	Traffic Control	Crossing Width	Crossing Treatment	PLTS Score
W. Walnut St.	>7500	Traffic Signal	6 lanes	Refuge Islands	3
W. Center St.	>7500	Traffic Signal	4 lanes	None	3
W. Capitol Dr.	>7500	Traffic Signal	6 lanes	Refuge Islands	3
W. Hampton Ave.	>7500	Traffic Signal	6 lanes	Refuge Island	3
Segments	AADT	Sidewalk Width	Traffic Speed	Buffer Width	PLTS Score
Johnson Park (from 18 th St. to 19 th St.)	>7500	6	31-35	8	3
Fondy's Farmers Market (21 st St. to Meinecke Ave.)	>7500	6	31-35	0	4
Sherman Phoenix (35 th St. to 36 th St.)	>7500	6	31-35	8	3
North Shopping Center (54 th St. to 56 th St.)	>7500	6	31-35	8	3

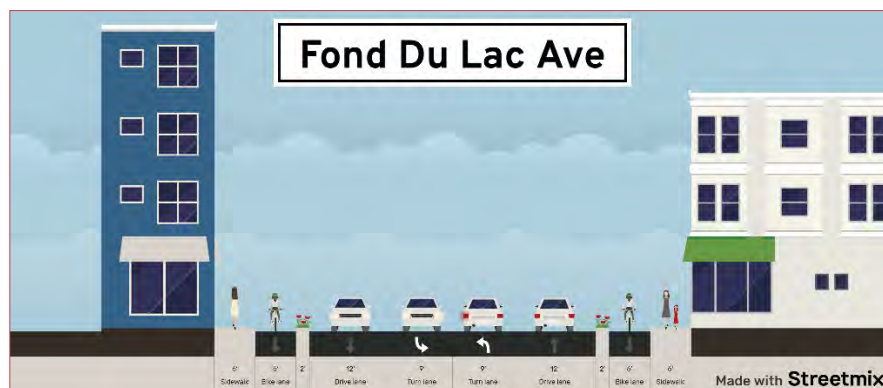
⁴² Received through email from Milwaukee DPW MultiModal Unit (1 Dec 2023).

Appendix C: Alternative 2

BRT for Fond Du Lac Ave









West Fond Du Lac Avenue Section - 120 ft wide



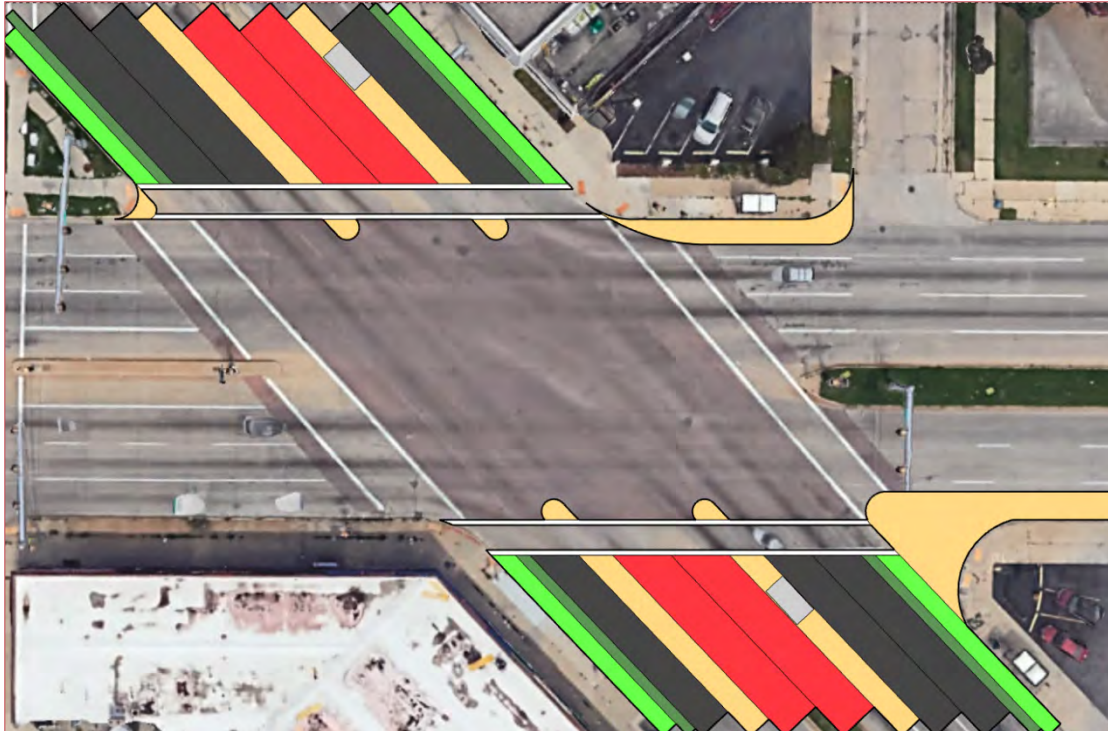
West Fond Du Lac Avenue Section - 70 ft wide

Color Key

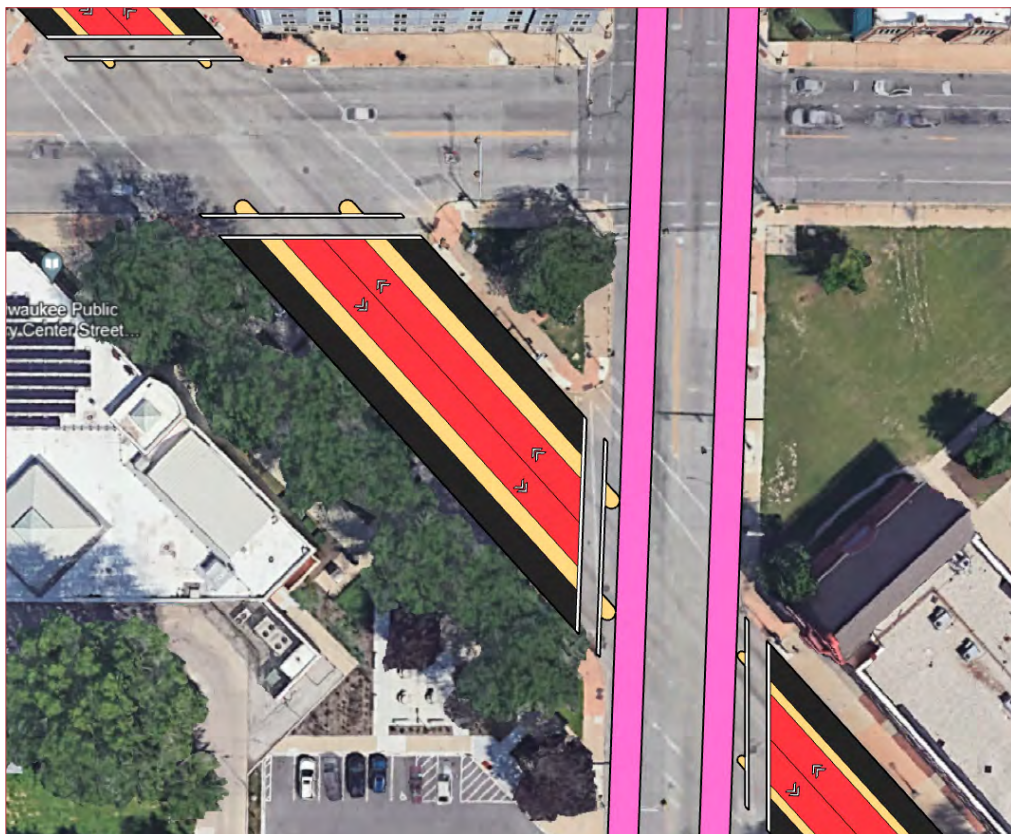
	Bus Infrastructure (Lanes and/or Stops)
	New Sidewalk/ Concrete
	Bike Lane
	Landscaped Area
	Auto Lane
	Mixed-Traffic Lane



Hampton & West Fond Du Lac Avenue



West Capitol Drive & West Fond Du Lac Avenue



West Center Street, North 27th Street, & West Fond Du Lac Avenue (With Connection to Future BRT on North 27th Street)



West Walnut Street & West Fond Du Lac Avenue



North Shopping Center (54th St. to 56th St.)



Sherman Phoenix (35th St. to 36th St.)



Fondy's Farmers Market (21st St. to Meinecke Ave)



Johnson Park (from 18th St. to 19th St.)

Appendix D: Alternative 3

Intersection	Possible Caretaker ^{43, 44}
W Fond Du Lac Ave and W Hampton Ave	Silver Spring Neighborhood Association
W Fond Du Lac Ave and W Capitol Dr	Capitol Heights Neighborhood Association
W Fond Du Lac Ave and W Burleigh St	30 th Street Industrial Corridor BID
W Fond Du Lac Ave and W Locust St	30 th Street Industrial Corridor BID
W Fond Du Lac Ave and W Center St	Amani United
W Fond Du Lac Ave and W Walnut St	Lindsay Heights NID

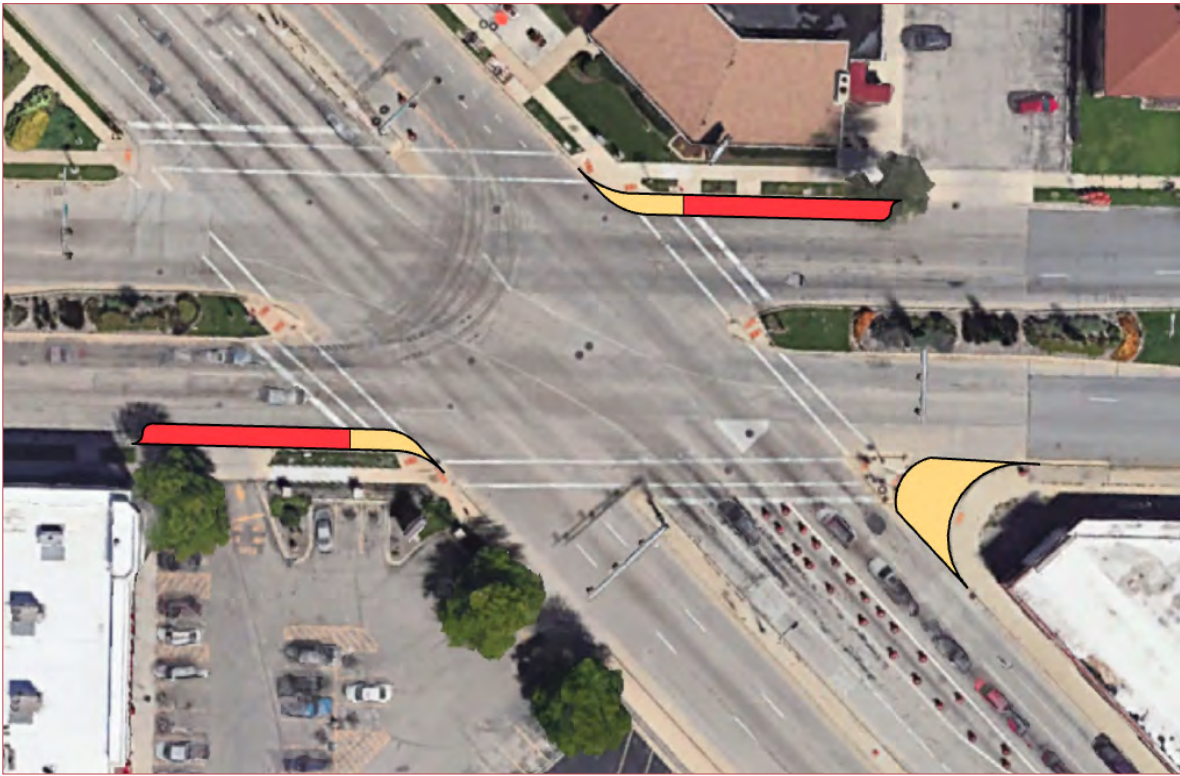


⁴³ City of Milwaukee Department of City Development. (2023). Business Improvement and Neighborhood Improvement Districts.

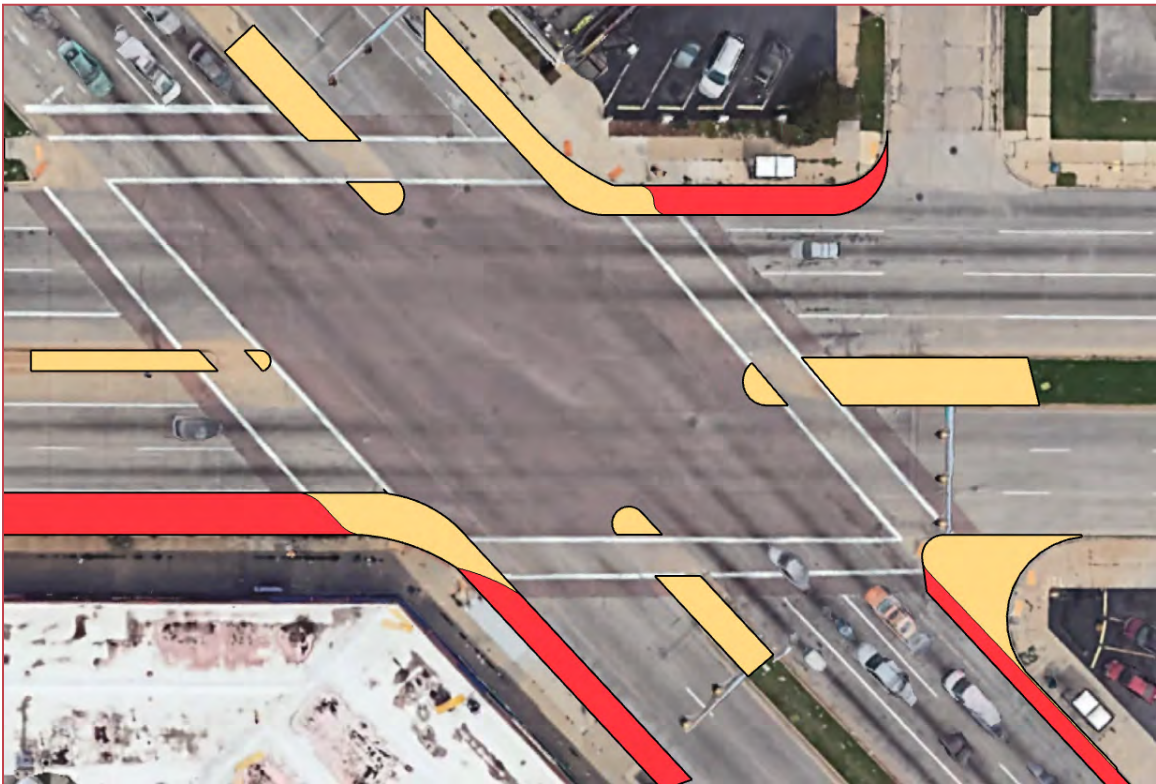
<https://city.milwaukee.gov/DCD/BusinessToolbox/bids>.

⁴⁴ City of Milwaukee Strong Neighborhoods. (2023). Milwaukee Neighborhood Living.

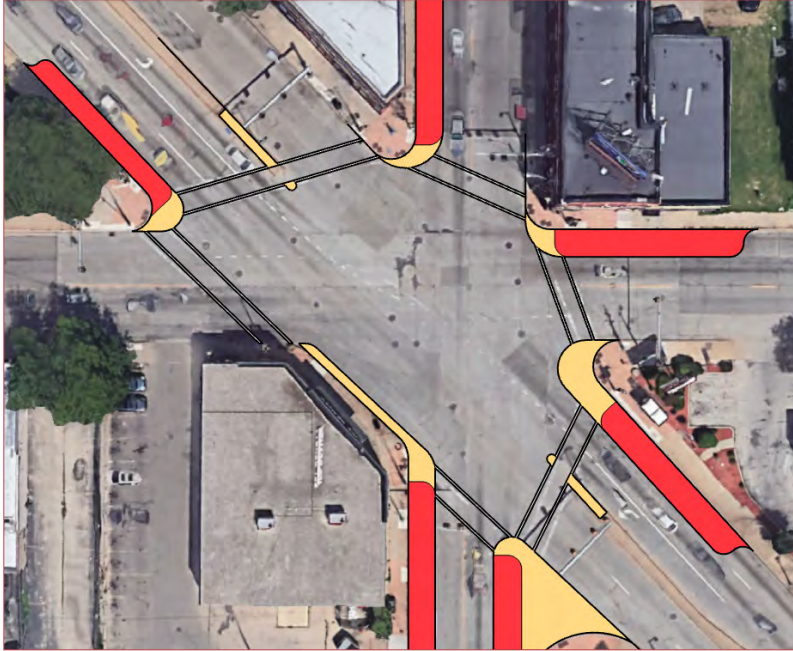
<https://city.milwaukee.gov/Strong/Neighborhoods>.



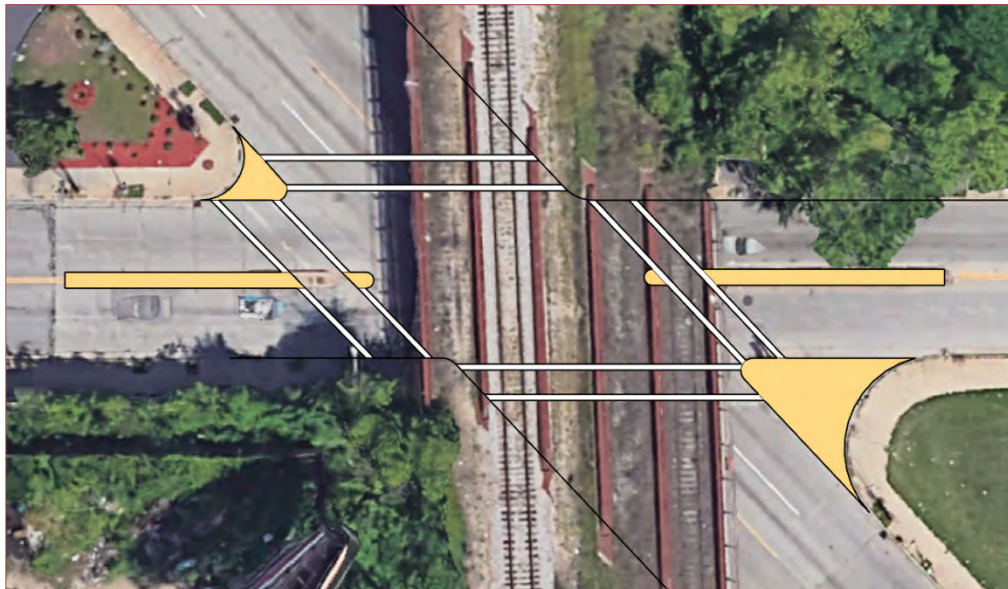
West Hampton Avenue & West Fond Du Lac Avenue



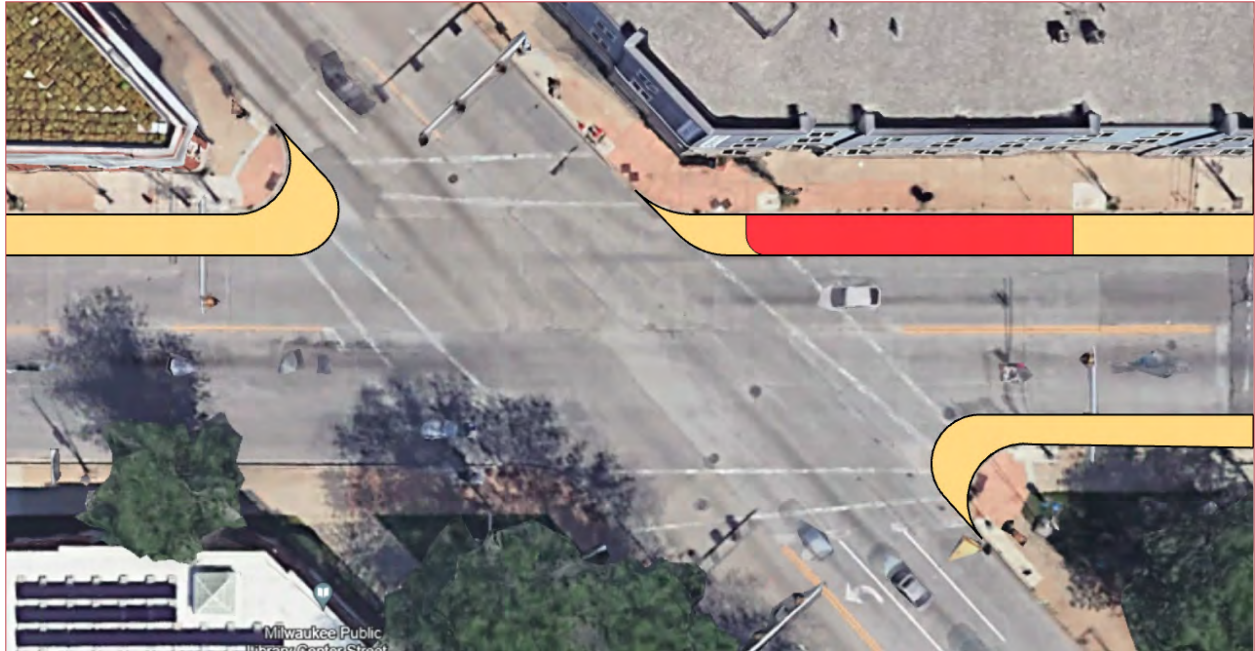
West Capitol Drive & West Fond Du Lac Avenue



West Burleigh Street & West Fond Du Lac Avenue



West Locust Street & West Fond Du Lac Avenue

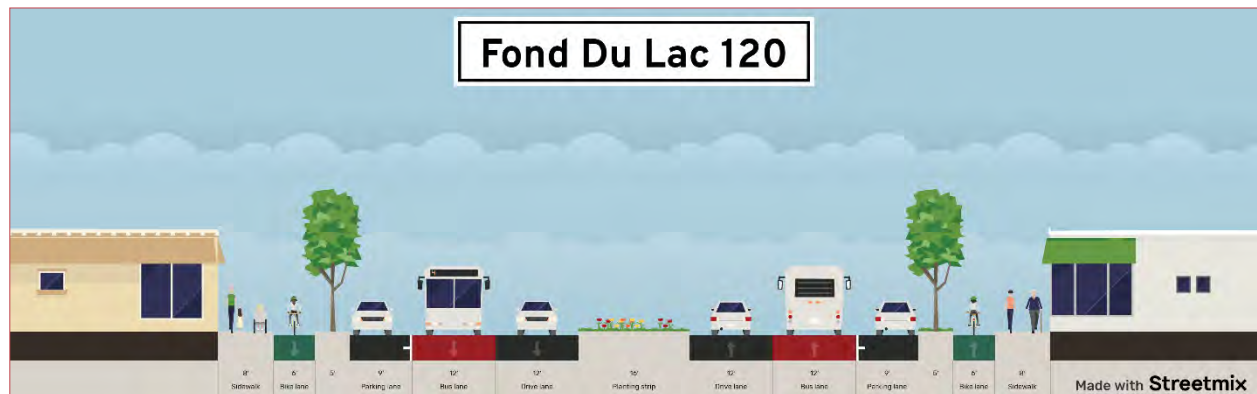


West Center Street & West Fond Du Lac Avenue

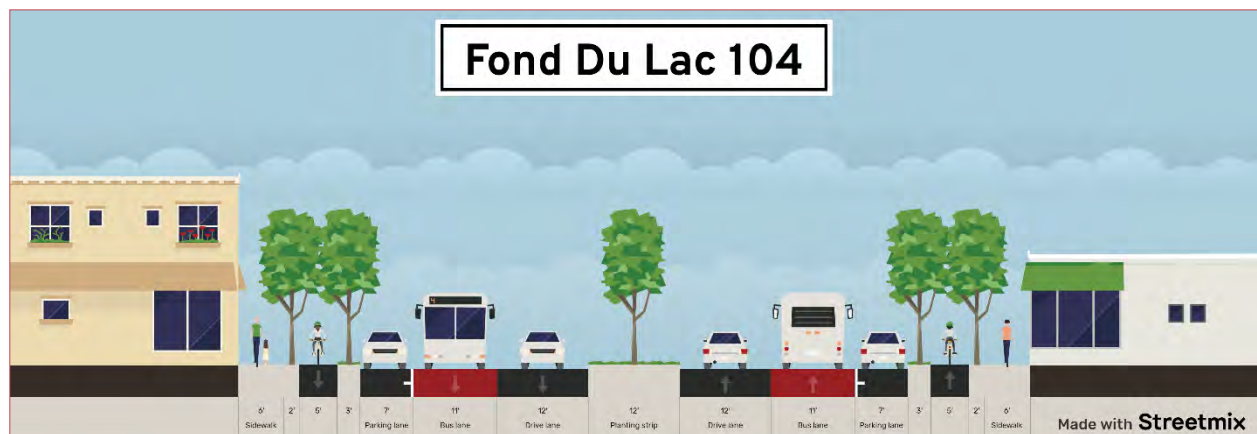


West Walnut Street & West Fond Du Lac Avenue

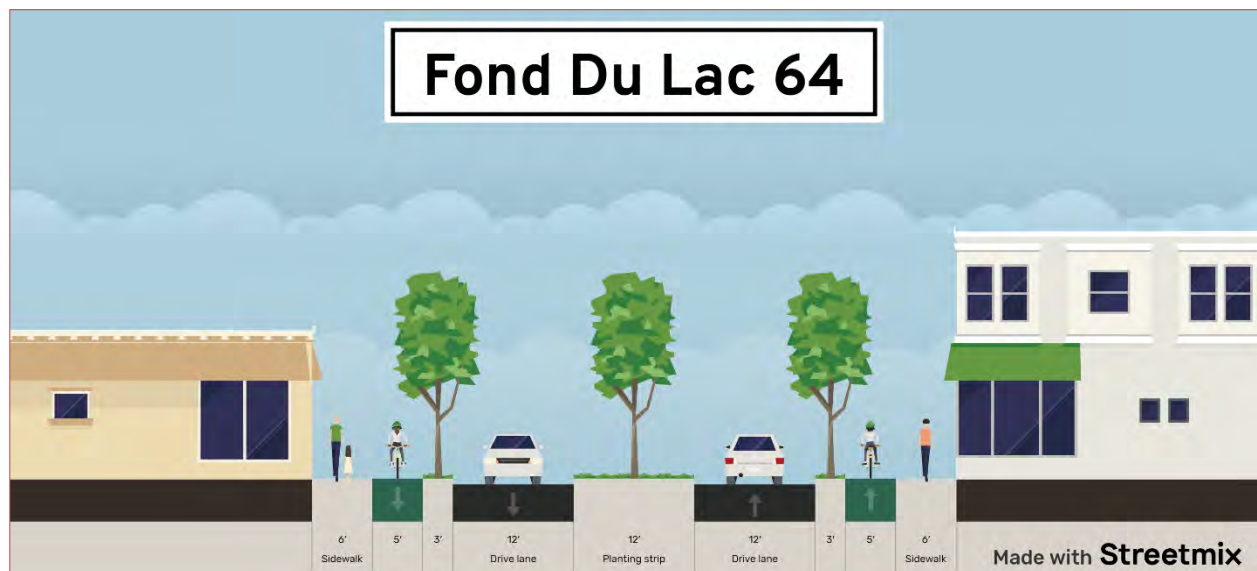
Appendix E: Alternative 4



West Fond Du Lac Avenue Section – 120 Feet Wide









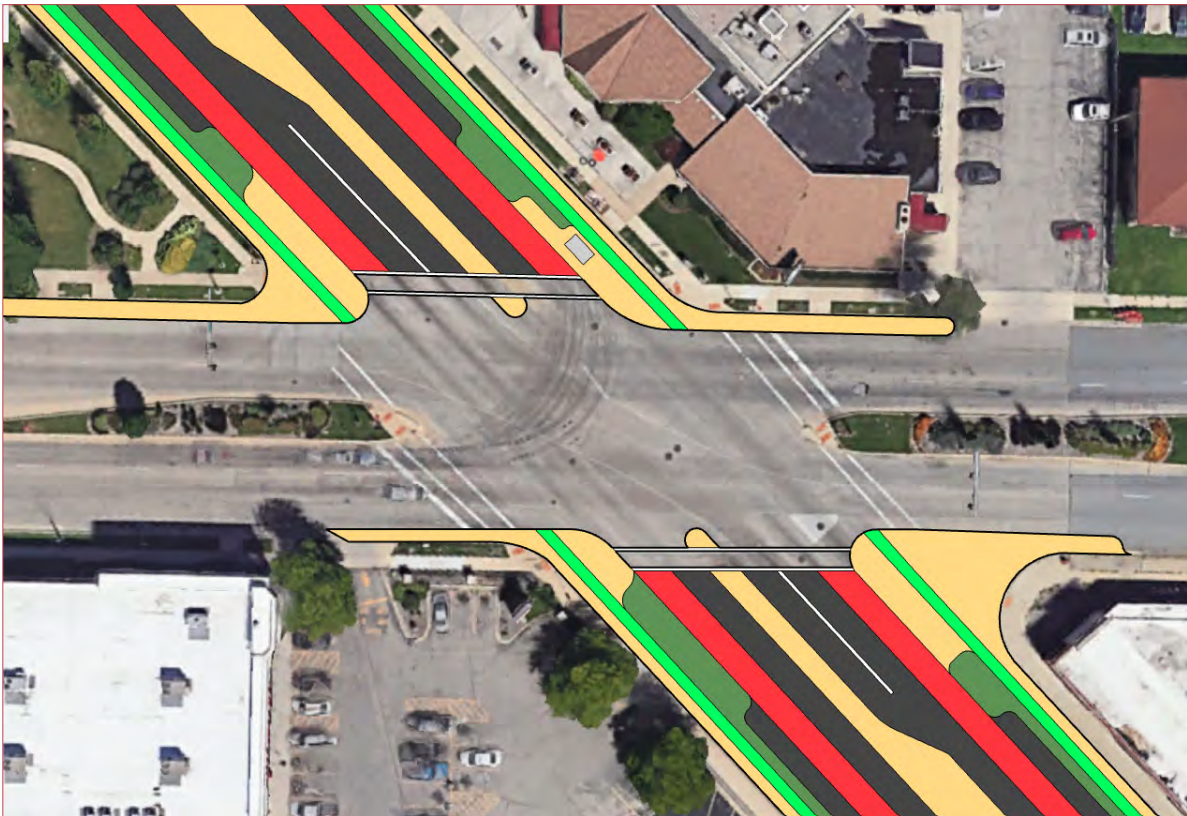
West Fond Du Lac Avenue Section – 104 Feet Wide



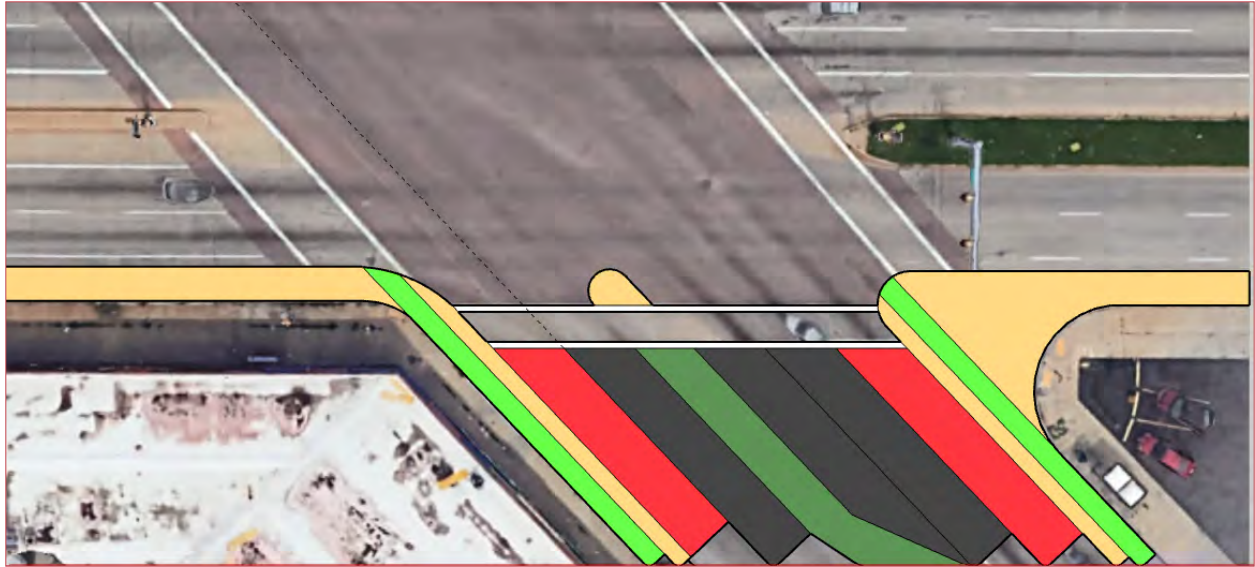
West Fond Du Lac Avenue Section – 64 Feet Wide

Color Key

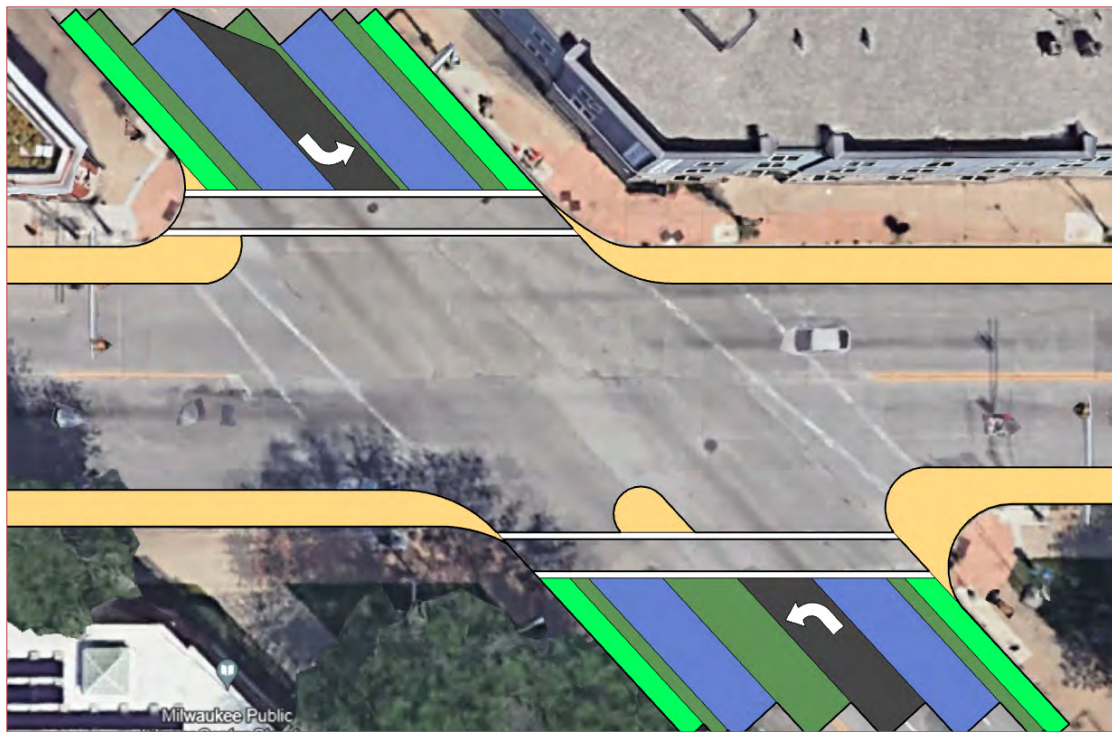
-  Bus Infrastructure (Lanes and/or Stops)
-  New Sidewalk/ Concrete
-  Bike Lane
-  Landscaped Area
-  Auto Lane
-  Mixed-Traffic Lane



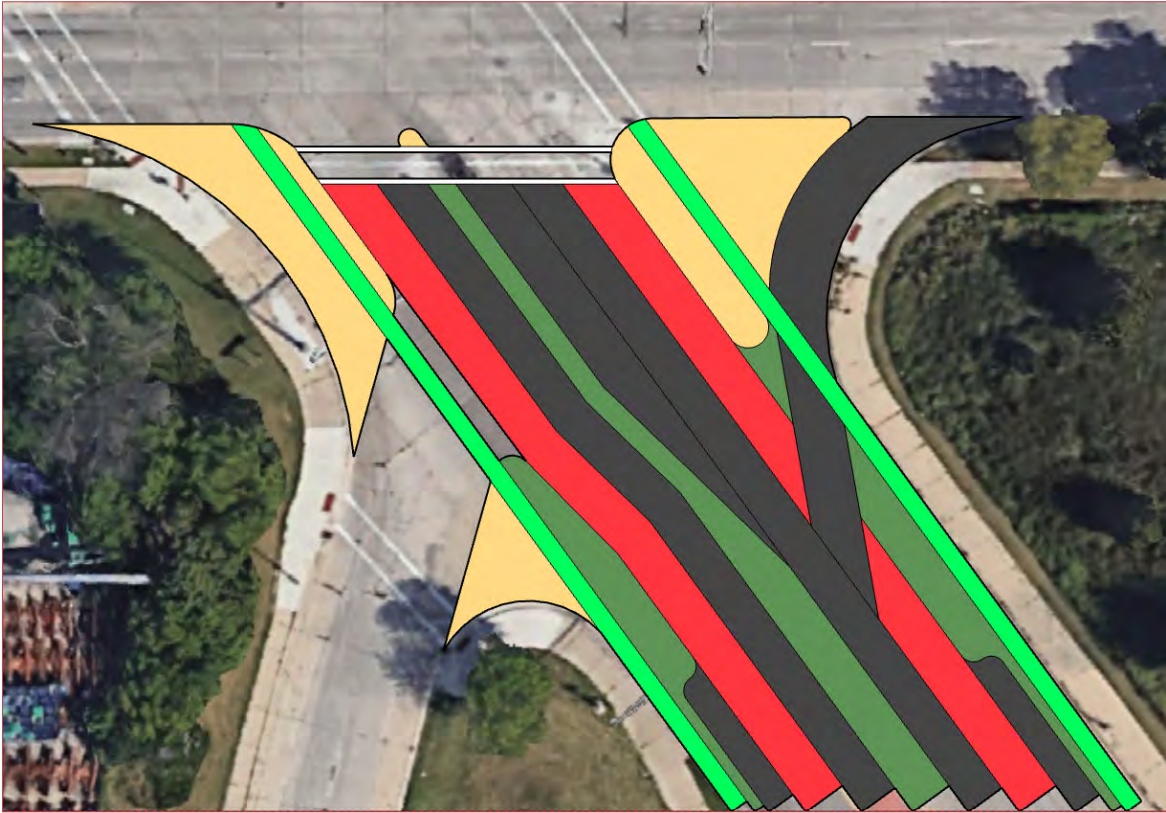
West Hampton Avenue & West Fond Du Lac Avenue



West Capitol Drive & West Fond Du Lac Avenue



West Center Street & West Fond Du Lac Avenue



West Walnut Street & West Fond Du Lac Avenue



North Shopping Center (54th St. to 56th St.) (with mid-block crossing example)



Sherman Phoenix (35th St. to 36th St.)



Fondy's Farmers Market (21st St. to Meinecke Ave)



Johnson Park (from 18th St. to 19th St.)

Appendix F: Alternative 1 Evaluation

Effectiveness:

	Potential throughput per hour
2 lanes of Mixed Traffic with Frequent Buses	1000 to 2,800 x 2 = 2,000 to 5,600
Sidewalk	9,000
Total	11,000 to 14,600
<i>From NACTO Transit Street Design Guide</i>	

Equity:

Intersections	AADT	Traffic Control	Crossing Width	Crossing Treatment	PLTS Score
W. Hampton Ave.	>7500	Traffic Signal	6 lanes	Refuge Island	3
W. Capitol Dr.	>7500	Traffic Signal	6 lanes	Refuge Islands	3
W. Walnut St.	>7500	Traffic Signal	6 lanes	Refuge Islands	3
Segments	AADT	Sidewalk Width	Traffic Speed	Buffer Width	PLTS Score
North Shopping Center (54 th St. to 56 th St.)	>7500	6	25	8	3
Sherman Phoenix (35 th St. to 36 th St.)	>7500	6	25	8	3
Fondy's Farmers Market (21 st St. to Meinecke Ave.)	>7500	6	25	0	4
Johnson Park (from 18 th St. to 19 th St.)	>7500	6	25	8	3

Political Feasibility:

Neighborhood Group	Evidence of Support
Midtown Neighborhood Alliance	Midtown Neighborhood Alliance has previously posted on their Facebook page about street safety improvement projects. They have also hosted neighborhood walks focused on neighborhood improvements with residents and partners in local government. ⁴⁵
Northwest Side Community Development Corporation	"NWSCDC is also working with partners to advocate for streets that are safe for people to use, whether by walking, biking, taking the bus, or driving." ⁴⁶
Sherman Park Community Association	Sherman Park has an active Reckless Driving Task Force. ⁴⁷
Amani United	"For an hour, we sat between 24th to 27th and Locust up to Fond Du Lac. The speed limit is 25 miles per hour, and we clocked people going as fast as 61 miles per hour. We just can't accept that," ⁴⁸
Metcalfe Park Community Bridges	"We actively work with residents to create and communicate requests for stop signs, speed bumps, and protected bike lanes in these areas to reduce the number of accidents and injuries resulting from traffic and speeding." ⁴⁹
Walnut Way Conservation Corporation	Walnut Way was a partner in the Fond Du Lac and North Area Plan that addresses speeding. ⁵⁰

⁴⁵ Midtown Neighborhood Alliance MKE. (2022). Posts.

<https://www.facebook.com/MidtownMilwaukee/>.

⁴⁶ Northwest Side Community Development Corporation. (n.d.). Safe Streets & Trail Planning.

<https://www.nwscdc.org/planning-streets-trails>.

⁴⁷ Sherman Park Community Association. (2023). Meeting Notice.

<https://shermanpark.org/event/sherman-park-reckless-driving-meeting-2/2023-06-22/>.

⁴⁸ Hall, Tajma. CBS58. (28 Oct 2023). *Amani neighborhood to get traffic calming circle amid safety concerns*. <https://www.cbs58.com/news/amani-neighborhood-to-get-traffic-calming-circle-amid-safety-concerns>.

⁴⁹ Metcalfe Park Community Bridges. (n.d). Safety and Placemaking.

<https://metcalfeparkbridges.org/safety-and-placemaking-2/>.

⁵⁰ City of Milwaukee. (2020). Fond du Lac and North Area Plan Update.

https://city.milwaukee.gov/ImageLibrary/Groups/cityDCD/planning/plans/Fon-du-Lac-and-North/update/TransportationFGPresentation_Reduced.pdf.

Appendix G: Alternative 2 Evaluation

Effectiveness:

	Potential throughput per hour
Private motor vehicles	600 - 1,600
Two-way protected bikeway	7,500
Sidewalk	9,000
Dedicated Transit Lane	4,000 - 8,000
Total	21,200 - 26,100
<i>From NACTO Transit Street Design Guide</i>	

Equity:

Intersections	AADT	Traffic Control	Crossing Width	Crossing Treatment	PLTS Score
W. Hampton Ave.	>7500	Traffic Signal	6 lanes	Refuge Island	3
W. Capitol Dr.	>7500	Traffic Signal	6 lanes	Refuge Islands	3
W. Center St.	>7500	Traffic Signal	4 lanes	None	3
W. Walnut St.	>7500	Traffic Signal	6 lanes	Refuge Islands	3
Segments	AADT	Sidewalk Width	Traffic Speed	Buffer Width	PLTS Score
North Shopping Center (54 th St. to 56 th St.)	>7500	6	31-35	8	3
Sherman Phoenix (35 th St. to 36 th St.)	>7500	6	31-35	8	3
Fondy's Farmers Market (21 st St. to Meinecke Ave.)	>7500	6	31-35	0	4
Johnson Park (from 18 th St. to 19 th St.)	>7500	6	31-35	8	3

Efficiency:

Item	Cost
Buses	\$9 million

Operating	\$4.1 million per year
Capital	\$60 million
Bike Lanes	\$1.5 million
Total	\$74.6 million

Cost estimates for the BRT are only for the five-mile study area. Cost estimates assume that the underlying blue line service will be kept with reduced frequency to run the full route and BRT will be in addition to the blue line service. While cost estimates only look at the five-mile study area, if a BRT line were implemented on West Fond Du Lac Avenue, it is likely that the BRT would replace the blue line and run the full blue line route.

Buses will need to travel in a ten-mile loop. The estimated travel time is 20mph. To come every 10 minutes, five buses will be needed. Six electric buses will be purchased at \$1.5 million per bus to have a backup bus. Total bus cost is \$9 million.

The BRT will run 21 hours a day. For five buses, that is 105 bus hours. Estimate costs are \$107 per bus hour, meaning total operating costs are \$11,235 per day, costing \$4.1 million a year.

The City of Madison estimates that their center lane BRT will cost \$12 million per mile, including stations, medians, and signaling. Using this estimate, capital costs are \$60 million.

Bike lanes are estimated to cost \$28.87 per foot for one side of the street. The five-mile study area is 26,400 feet. For bike lanes on both sides of the street, the cost is estimated to be \$1.5 million.

Political Feasibility:

Neighborhood Group	Evidence of Support
Midtown Neighborhood Alliance	Midtown Neighborhood Alliance has previously posted on their Facebook page about street safety improvement projects. They have also hosted neighborhood walks focused on neighborhood improvements with residents and partners in local government. ⁵¹
Northwest Side Community Development Corporation	This alternative expands bus and biking options. "NWSCDC is also working with partners to advocate for streets that are safe for people to use, whether by walking, biking, taking the bus, or driving." ⁵²

⁵¹ Midtown Neighborhood Alliance MKE. (2022). Posts. <https://www.facebook.com/MidtownMilwaukee/>.

⁵² Northwest Side Community Development Corporation. (n.d.). Safe Streets & Trail Planning. <https://www.nwscdc.org/planning-streets-trails>.

Sherman Park Community Association	<p>This group has a Public Safety Committee, which “organizes neighbors in their efforts to preserve Sherman Park as a safe place for all families.”⁵³</p> <p>This group also supported traffic calming infrastructure in the neighborhood.⁵⁴</p> <p>TOD opportunities could provide new opportunities for business in the area.</p> <p>However, the removal of parking spaces may be a concern for business owners who have costumers that want easy access to Sherman Pheonix.⁵⁵</p>
Amani United	TOD opportunities could support already occurring reinvestment strategies in the Amini Neighborhood. ⁵⁶
Metcalf Park Community Bridges	TOD opportunities will help bring investment back into the community that has been impacted by disinvestment and systematic racism. “We work with residents and partners to ensure resident safety that promotes and addresses public green space creation and access, traffic safety, environmental justice, and the effects of systemic racism.”
Walnut Way Conservation Corporation	TOD opportunities focused on spaces for local businesses, medical and social services, and senior housing are aligned with Walnut Way’s priorities. “Walnut Way prioritizes wellness-focused activities and initiatives...creating safe and healthy neighborhoods. By addressing physical, mental, and emotional well-being, we contribute to a holistic approach to community transformation.” ²³

⁵³ Sherman Park Community Association. (n.d.). Committees.

<https://shermanpark.org/about/committees/>.

⁵⁴ Shelbourne, T. (11 Dec 2021). “‘Total disregard’: Sherman Park residents are fed up with reckless driving. Here’s how one resident is trying to stop it.”

<https://www.jsonline.com/story/news/local/milwaukee/2021/12/11/milwaukee-sherman-park-resident-fights-reckless-driving-tactical-urbanism-traffic-circle/6475723001/>.

⁵⁵ Stacia Thompson (28 Nov 2023) UWM Public Policy Analysis Class

⁵⁶ Wisconsin Policy Forum (Dec 2021) Block by Block https://wispolicyforum.org/wp-content/uploads/2021/12/BlockByBlock_Summary.pdf

Appendix H: Alternative 3 Evaluation

Effectiveness:

	Potential throughput per hour
2 lanes of Mixed Traffic with Frequent Buses	1000 to 2,800 x 2 = 2,000 to 5,600
Sidewalk	9,000
Total	11,000 to 14,600
<i>From NACTO Transit Street Design Guide</i>	

Equity:

Intersections	AADT	Traffic Control	Crossing Width	Crossing Treatment	PLTS Score
W. Hampton Ave.	>7500	Traffic Signal	5 lanes	Raised Refuge Island and Curb Extensions	3
W. Capitol Dr.	>7500	Traffic Signal	5 lanes	Raised Refuge Island and Curb Extensions	3
W. Center St.	>7500	Traffic Signal	4 lanes	Curb Extensions	3
W. Walnut St.	>7500	Traffic Signal	4 lanes	Raised Refuge Island and Curb Extensions	2
Segments	AADT	Sidewalk Width	Traffic Speed	Buffer Width	PLTS Score
North Shopping Center (54 th St. to 56 th St.)	>7500	6	31-35	8	3
Sherman Phoenix (35 th St. to 36 th St.)	>7500	6	31-35	8	3
Fondy's Farmers Market (21 st St. to Meinecke Ave)	>7500	6	31-35	0	4
Johnson Park (from 18 th St. to 19 th St.)	>7500	6	31-35	8	3

Efficiency:

Item	Cost
Remove Slip Lanes (5) ⁵⁷	\$5,796 * 5 = \$28,980
Crosswalk Murals (26) ⁵⁸	\$1,500 * 26 = \$39,000
Bus Islands (14) ⁵⁹	\$70,000 * 14 = \$980,000
Extended Medians (6)	\$20,000 * 6 = \$120,000
Curb Bump-Outs (5)	\$10,000 * 5 = \$50,000
Bus Shelters (8) ⁶⁰	\$1,000 * 8 = \$8,000
Bus Shelter Murals (13) ⁶¹	\$750 * 13 = \$9,750
Bus Shelter Green Roofs (13) ⁶²	\$186 * 13 = \$2,418
TOTAL	\$1,238,148

*Possible Grant Funding from Federal Government: [Safe Streets and Roads for All Grant Program](#)

Political Feasibility:

Neighborhood Group	Evidence of Support
Midtown Neighborhood Alliance	This alternative focuses on street safety improvements. Midtown Neighborhood Alliance has previously posted on their Facebook page about street safety improvement projects. They have also hosted neighborhood walks focused on neighborhood improvements with residents and partners in local government. ⁶³
Northwest Side Community	This alternative focuses on creating a safer experience for all on West Fond Du Lac Avenue. "NWSCDC is also working with partners to advocate for streets that are

⁵⁷ Concrete Questions. (2023). Concrete Pricing Guide: All the Facts and Figure.

<https://concretequestions.com/concrete-pricing-guide-all-the-facts-and-figures/>.

⁵⁸ Schneider, R.J. (Spring 2022). Cost Estimates Spreadsheet, UW-Milwaukee Pedestrian & Bicycle Transportation Course.

⁵⁹ U.S. Department of Transportation. (n.d.). Pedestrian Safety Guide and Countermeasure Selection System.

http://www.pedbikesafe.org/pedsafe/countermeasures_detail.cfm?CM_NUM=16.

⁶⁰ Natalie Marshall. (5 Dec 2023). UWM Public Policy Analysis Class.

⁶¹ Milwaukee County Transit System. (n.d.). Bus Shelter Art Project.

<https://www.ridemcts.com/getattachment/Programs/Bus-Shelter-Art-Project/MCTS-Bus-Shelter-Art-Project-Handout.pdf?lang=en-US>.

⁶² Water New Zealand. (n.d.). Going Green: Costs and Benefits of Living Roofs on Bus Shelters in Auckland.

https://www.waternz.org.nz/Attachment?Action=Download&Attachment_id=5688.

⁶³ Midtown Neighborhood Alliance MKE. (2022). Posts.

<https://www.facebook.com/MidtownMilwaukee/>.

Development Corporation	safe for people to use, whether by walking, biking, taking the bus, or driving.” ⁶⁴
Sherman Park Community Association	This alternative is focused on implementing traffic calming infrastructure. This group also supported traffic calming infrastructure in the neighborhood. ⁶⁵
Amani United	This alternative is focused on implementing traffic calming infrastructure. Amani United has shown support for traffic calming infrastructure. The group partnered with AARP Wisconsin and the Wisconsin Bike Federation to host a pedestrian dignity walk in 2022. This walk showed partners that, “this is not a safe street to be crossing.” Thus, a traffic calming circle was installed in 2023. ⁶⁶
Metcalfe Park Community Bridges	This alternative is focused on implementing traffic calming infrastructure. “We actively work with residents to create and communicate requests for stop signs, speed bumps, and protected bike lanes in these areas to reduce the number of accidents and injuries resulting from traffic and speeding.” ⁶⁷
Walnut Way Conservation Corporation	This alternative focuses on creating a safer experience for all on West Fond Du Lac Avenue. “Walnut Way prioritizes wellness-focused activities and initiatives...creating safe and healthy neighborhoods. By addressing physical, mental, and emotional well-being, we contribute to a holistic approach to community transformation.” ⁶⁸

⁶⁴ Northwest Side Community Development Corporation. (n.d.). Safe Streets & Trail Planning. <https://www.nwscdc.org/planning-streets-trails>.

⁶⁵ Shelbourne, T. (11 Dec 2021). ‘Total disregard’: Sherman Park residents are fed up with reckless driving. Here’s how one resident is trying to stop it. <https://www.jsonline.com/story/news/local/milwaukee/2021/12/11/milwaukee-sherman-park-resident-fights-reckless-driving-tactical-urbanism-traffic-circle/6475723001/>.

⁶⁶ Milwaukee Journal Sentinel. (1 Nov 2023). AARP Wisconsin helps Amani neighborhood. <https://www.jsonline.com/story/news/local/milwaukee/2023/11/01/aarp-wisconsin-helps-amani-neighborhood-get-traffic-calming-circle/71373817007/>.

⁶⁷ Metcalfe Park Community Bridges. (n.d). Safety and Placemaking. <https://metcalfeparkbridges.org/safety-and-placemaking-2/>.

⁶⁸ Walnut Way. (2001). Sustaining Transformation. <https://www.walnutway.org/about>.

Appendix I: Alternative 4 Evaluation

Effectiveness:

	Potential Throughput Per Hour
Private motor vehicles	600 – 1,600
Two-way protected bikeway	7,500
Sidewalk	9,000
Dedicated Transit Lane	4,000 – 8,000
Total	21,200 – 26,100
<i>From NACTO Transit Street Design Guide</i>	

Equity:

We anticipate the redesign to slow automobile speeds to be within the posted speed limit, similar to previous Milwaukee findings on the impacts of Complete Streets.⁶⁹

Intersections	AADT	Traffic Control	Crossing Width	Crossing Treatment	PLTS Score
Hampton	>7500	Traffic Signal	4 lanes*	Raised Refuge Island & Curb Extension	2
Capitol	>7500	Traffic Signal	3 lanes*	Raised Refuge Island & Curb Extension	1
Center	>7500	Traffic Signal	3 lanes*	Raised Refuge Island & Curb Extension	1
Walnut	>7500	Traffic Signal	3 lanes*	Raised Refuge Island & Curb Extension	1
Segments	AADT	Sidewalk Width	Traffic Speed	Buffer Width	PLTS Score
North Shopping Center (54 th St. to 56 th St.)	>7500	8 ft	26-30 mph	>10 ft	1
Sherman Phoenix (35 th St. to 36 th St.)	>7500	>10 ft	26-30 mph	5 ft – 9 ft	1
Fondy's Farmers Market (21 st St. to Meinecke Ave.)	>7500	8 ft	26-30 mph	5 ft – 9 ft	2

⁶⁹ City of Milwaukee. (2020) Health and Equity Report 2020.
<https://city.milwaukee.gov/ImageLibrary/Groups/cityBikePed/2021-Images/CompleteStreets/2020MilwaukeeCompleteStreetsHealthandEquityReport.pdf>

Johnson Park (from 18 th St. to 19 th St.)	>7500	6 ft	26-30 mph	>10 ft	2
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*Not considering the bus-only transit lanes, as the traffic there will be minimal.

Efficiency:

A similar project in Salt Lake City, UT, cost \$11.0 million per mile⁷⁰. Accounting for inflation, the total costs for the redesign applied along West Fond Du Lac Avenue's 5-mile segment will be \$57.0 million. The project in Salt Lake City did not involve adding a landscaped median; the cost for a 1.4 mile stretch of median along the narrowest section of West Fond Du Lac Avenue will be approximately \$2.4 million⁷¹. The total project cost will be **\$59.4 million**.

Potential Public Grant Sources:

Federal Transit Administration. (March 2022). "Urbanized Area Formula Grants – 5307." <https://www.transit.dot.gov/funding/grants/urbanized-area-formula-grants-5307>.

Federal Transit Administration. (9 Dec 2021). "Fact Sheet: Buses and Bus Facilities Program." <https://www.transit.dot.gov/funding/grants/fact-sheet-buses-and-bus-facilities-program>.

Federal Transit Administration. (12 Jan 2023). "Capital Investment Grants Program." <https://www.transit.dot.gov/CIG>.

⁷⁰ Federal Highway Administration. (2023). "Complete Streets Construction Cost Case Study: 300 West Street Reconstruction Project, Salt Lake City, UT." <https://doi.org/10.21949/1522005>.

⁷¹ Schneider, R.J. (Spring 2022). Cost Estimates Spreadsheet, UW-Milwaukee Pedestrian & Bicycle Transportation Course.

Political Feasibility:

Neighborhood Group	Evidence of Support
Midtown Neighborhood Alliance	Midtown Neighborhood Alliance has previously posted on their Facebook page about street safety improvement projects. They have also hosted neighborhood walks focused on neighborhood improvements with residents and partners in local government. ⁷²
Northwest Side Community Development Corporation	This alternative will expand bus efficiency, cyclist safety, and pedestrian comfort. “NWSCDC is also working with partners to advocate for streets that are safe for people to use, whether by walking, biking, taking the bus, or driving.” ⁷³
Sherman Park Community Association	This group has a Public Safety Committee, which has expressed support for traffic calming infrastructure in the neighborhood. ⁷⁴
Amani United	Amani United has shown support for traffic calming infrastructure. The group partnered with AARP Wisconsin and the Wisconsin Bike Federation to host a pedestrian dignity walk in 2022. ⁷⁵
Metcalfe Park Community Bridges	“We actively work with residents to create and communicate requests for ... protected bike lanes in these areas to reduce the number of accidents and injuries resulting from traffic and speeding.” ⁷⁶
Walnut Way Conservation Corporation	This alternative will promote cyclist safety and pedestrian comfort. “Walnut Way prioritizes wellness-focused activities and initiatives...creating safe and healthy neighborhoods.” ⁷⁷

⁷² Midtown Neighborhood Alliance MKE. (2022). Posts.

<https://www.facebook.com/MidtownMilwaukee/>.

⁷³ Northwest Side Community Development Corporation. (n.d.). Safe Streets & Trail Planning.

<https://www.nwscdc.org/planning-streets-trails>.

⁷⁴ Shelbourne, T. (11 Dec 2021). ‘Total disregard’: Sherman Park residents are fed up with reckless driving. Here’s how one resident is trying to stop it.

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