

Maverick Bike Audit

March 2022

Presented by:
Walkable Arlington
and
Women's Transportation
Seminar UTA Chapter



WALKABLEARLINGTON

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Background

Maverick Bike Audit

The Maverick bike audit was conducted in March 2022, organized by the grassroots organization Walkable Arlington in collaboration with the Women's Transportation Seminar UTA student chapter and with the participation of student organization leaders of EcoReps and UTA staff from various departments, and with the generous bike donations from the Bike Gangs of Fort Worth.. The bike audit explored off-campus connections to UTA including key destinations such as grocery stores, restaurants, apartments, entertainment.. The audit was split into three groups of 3-5 participants: (1) Kroger route (S.Bowen Rd.), (2) Mitchell Street route, and the (3) Downtown Arlington route. Each group observed bike infrastructure, safety, and levels of comfort during the ride. After the audit, the teams got together to discuss possible solutions for improved routes. The following report details the findings of the bike audit, presenting action items and solutions for a safer and well connected bike network, better services and bike facilities for a bike friendly Arlington.



Walkable Arlington

Walkable Arlington is a grassroots organization advocating for safe and complete streets and a denser city of Arlington. Focused on pedestrian and bike spaces, Walkable Arlington has participated in various audit projects and presented recommendations for a safer, healthier, thriving, and prosperous Arlington.

Women's Transportation Seminar

The student chapter of Women's Transportation Seminar at the University of Texas at Arlington (UTA) is a professional organization for students, both male and female and from a diverse range of fields, who are interested in transportation and other related fields.

Eco-Reps

The UTA Office of Sustainability's Eco-Reps program consists of student leaders that engage in peer-to-peer sustainability education and promote a stronger culture of sustainability on campus. This includes environmental, social, and economic sustainability.

UTA staff members

UTA staff members from the UTA Libraries and Office of Sustainability participated in the bike audit. Participating staff members are also members of the UTA Bicycle Coordinating Committee.

Bike Gangs of Fort Worth

The Bike Gangs of Fort Worth organize community bike rides, provide free repairs for bikes and provide those in need with bikes. The Bike Gangs of Fort Worth generously repaired and donated bikes to various audit participants.

Summary of Observations

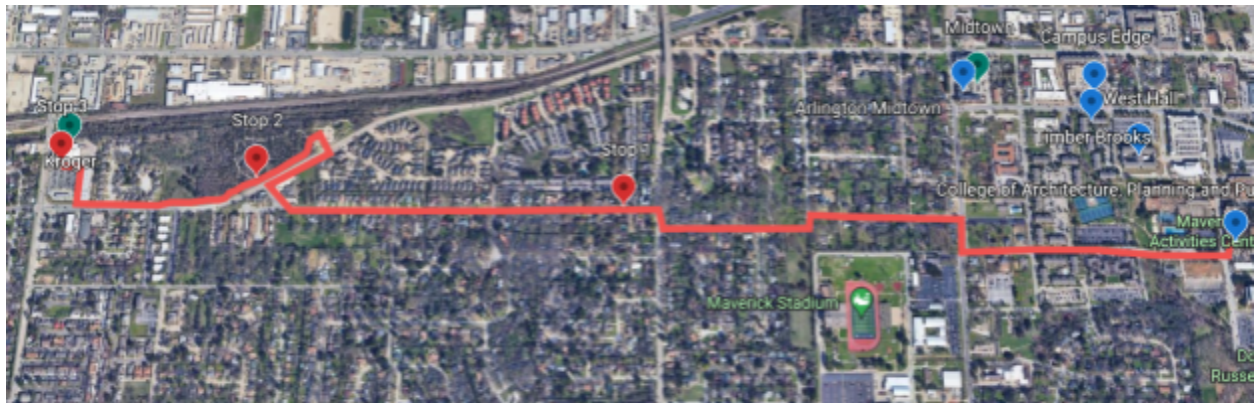


Figure 1: Map of Kroger Route

Kroger Route

The Kroger on S. Bowen road is a 12-minute bike ride away from the UTA campus, allowing for fast, affordable, and sustainable transportation for students to get groceries near campus. The Kroger route started in the CAPP building on the UTA campus spanning to the Kroger on S. Bowen Rd. Streets covered in the audit route included Greek Row Dr, S. Davis Dr, W. Second St, crossing S. Fielder St, Norwood Ln, and along W. Abram St. The audit participants on this route were experienced cyclists; however, beginner and intermediate cyclists would feel very uncomfortable entering Davis Drive and turning into W. Second street.

The greatest barrier the audit team faced was crossing S. Fielder from W. Second to Norwood Ln (see Figure 2). There are no bike lanes or sidewalks present where a cyclist can safely cross Fielder, meaning that the only legal way to cross the street is to turn right onto Fielder into the far left lane, then continue to Norwood Ln and turn left without a dedicated left-turn lane. Because of the traffic volumes on Fielder Rd, it is effectively impossible to time this such that one gets a protected left turn westbound, and no protected left is provided at all westbound. Slowing down or stopping in traffic to turn left is especially dangerous for cyclists, as it makes them especially vulnerable to being rear-ended.

The width of bike lanes on Norwood Ln extends between the asphalt and the gutter pan at a different slope, reducing the safe riding space for the cyclists. The sides of the bike lanes are lined with leaves, taking up the right side of the bike lanes. Gravel was found scattered throughout the Norwood bike lanes. At the westside of Norwood Ln, cars drive over the double solid yellow line, defeating the purpose of existing bulb-outs for traffic calming.



Figure 2: S. Fielder St. crossing from Norwood Ln

The bike lanes on Norwood Ln end without signage at the intersection of Norwood Ln and W. Abram St. A separate trail runs parallel to W. Abram St; however, there is no direct crossing available for cyclists leaving Norwood Ln (see Figure 3). To cross the road safely, cyclists have to ride Northeast parallel to W. Abram street on the sidewalk and cross the road at the playground O.S. Gray Natural Area park, approximately 570 ft away from Norwood Ln. to get on the bike trail. At the entrance to the O.S. Gray Natural area, no crosswalk is provided.



Figure 4: No direct crossing available on Norwood Ln W. Abram St intersection

The team noted the poor illumination in the evening when the bike audit took place, primarily in the O.S. Gray Natural Area, where the recreational trails are entirely unlit (see Figure 5 in the Appendix). There were also a number of large gaps between street lights along Norwood Lane and W. 2nd Street. The intersections between W. 2nd St and Elliot St as well as W. 2nd St and S. Davis Dr were not sufficiently lit. The sidewalk widths get narrower exiting the OS Gray Natural area, not leaving enough room for cyclists and pedestrians to share the space. It is important to note that the other side of the street, after W. Abrams St turns into Norwood Ln, does not have any sidewalks available.

There is a large bump present close to the Kroger entrance which over time damages bike wheels. To safely reach the Kroger's entrance, cyclists have to walk their bike over 500 ft. The available bike parking in Kroger includes one grid bike rack. The bike parking was deemed unsafe as none of the audit participants were able to fit their bike through the grid to lock them up (see Figure 6 in the Appendix).



Figure 8: Entrance to 848 Mitchell, showing the lack of bike lanes.

Overall the audit route holds a lot of potential to become a popular bike route for UTA students and residents to get groceries as bike facilities and a pedestrian/bike trail already exists. However, significant bike infrastructure improvements, especially in intersection design must be implemented to keep cyclists, pedestrians, and drivers safe.

Mitchell Route

The Mitchell route was primarily focused on roads and crossings through UTA and adjacent to the University. This route was chosen for the bike audit due its proximity to some important destinations on and near campus, while also providing a clearer picture of what biking on campus looks like. The route passed by the Maverick Activities Center, which is used by UTA students, faculty/staff, alumni, and community members. 848 Mitchell, located on W. Mitchell St,

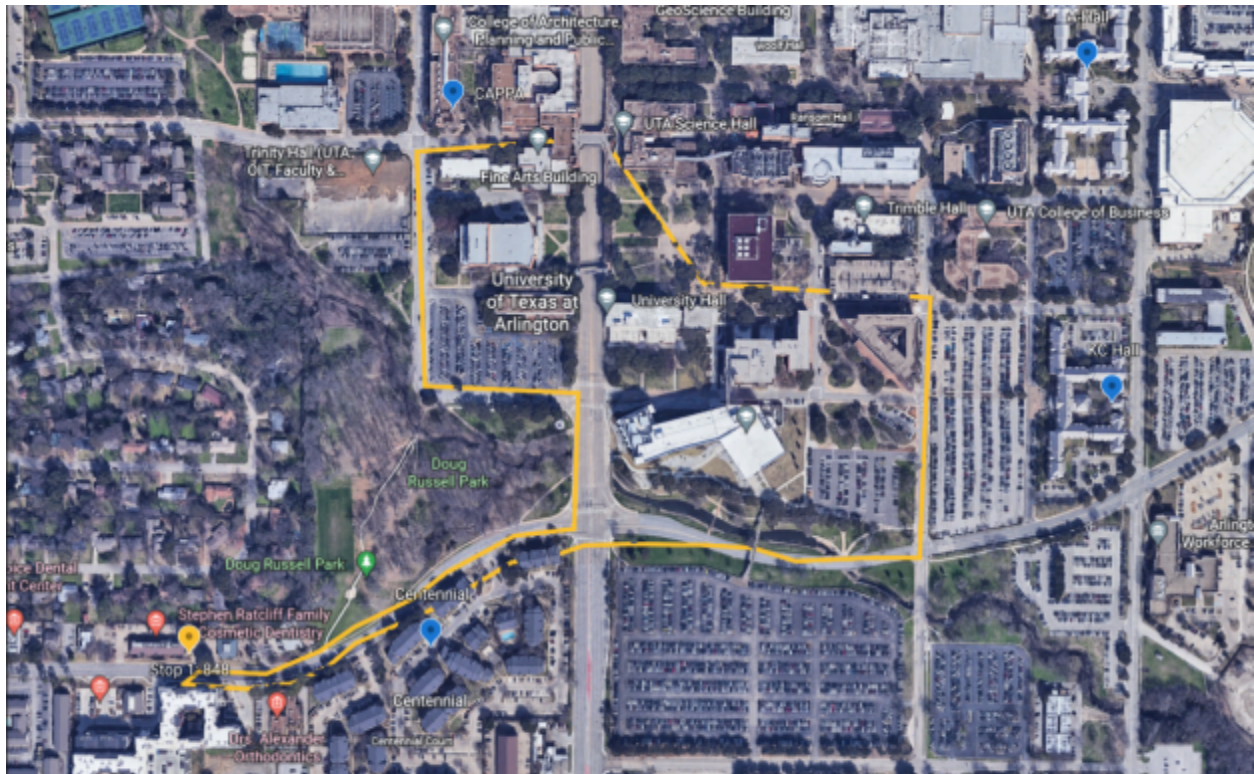


Figure 7: Map of Mitchell Route

is another key destination on the route for two reasons: the closeness to campus and that students who want to walk/bike to campus will most likely need to cross S. Cooper St. to get to the University. The route also passed through campus, in front of Pickard Hall on S. West St, before crossing the large bridge above Cooper St. that connects East and West Campus.

The audit team encountered a few issues on W. Mitchell St. First, there was no designated space for cyclists to cycle through (see Figure 8). This street is also curved when trying to turn into 848 Mitchell. This meant drivers behind cyclists were unable to see that the cyclists were waiting to turn, a concern that multiple people shared would stop them from cycling along the road. W. Mitchell also had an uneven riding surface that was cracked and broken, making it difficult to maintain balance at times.

Crossing S. Cooper at the W. Mitchell St. and S. Cooper intersection made those conducting this bike audit feel unsafe. In fact, an individual noted that crossing with vehicles made them feel safer than if they had to cross without them. Moreover, this intersection had heavy and fast moving traffic that would concern cyclists and pedestrians alike (see Figure 9).



Figure 9: Intersection on W. Mitchell St and S. Cooper St

The route through campus could be described as pleasant. The updates to Saxe Circle were welcome, as it provides more places for cyclists to go through campus. However, there were two primary concerns on the bridge that connects East and West campus. The pedestrian bridge ramp itself does not have any biking infrastructure, and instead cyclists have to share the ramp with pedestrians. The ramp has sharp corners, has a narrow width, barely room for both a cyclist and a pedestrian to be on at the same time (see Figure 10 in the Appendix). The concern here is that especially during peak hours, the time between classes, of collisions between individuals.

Downtown Arlington Route

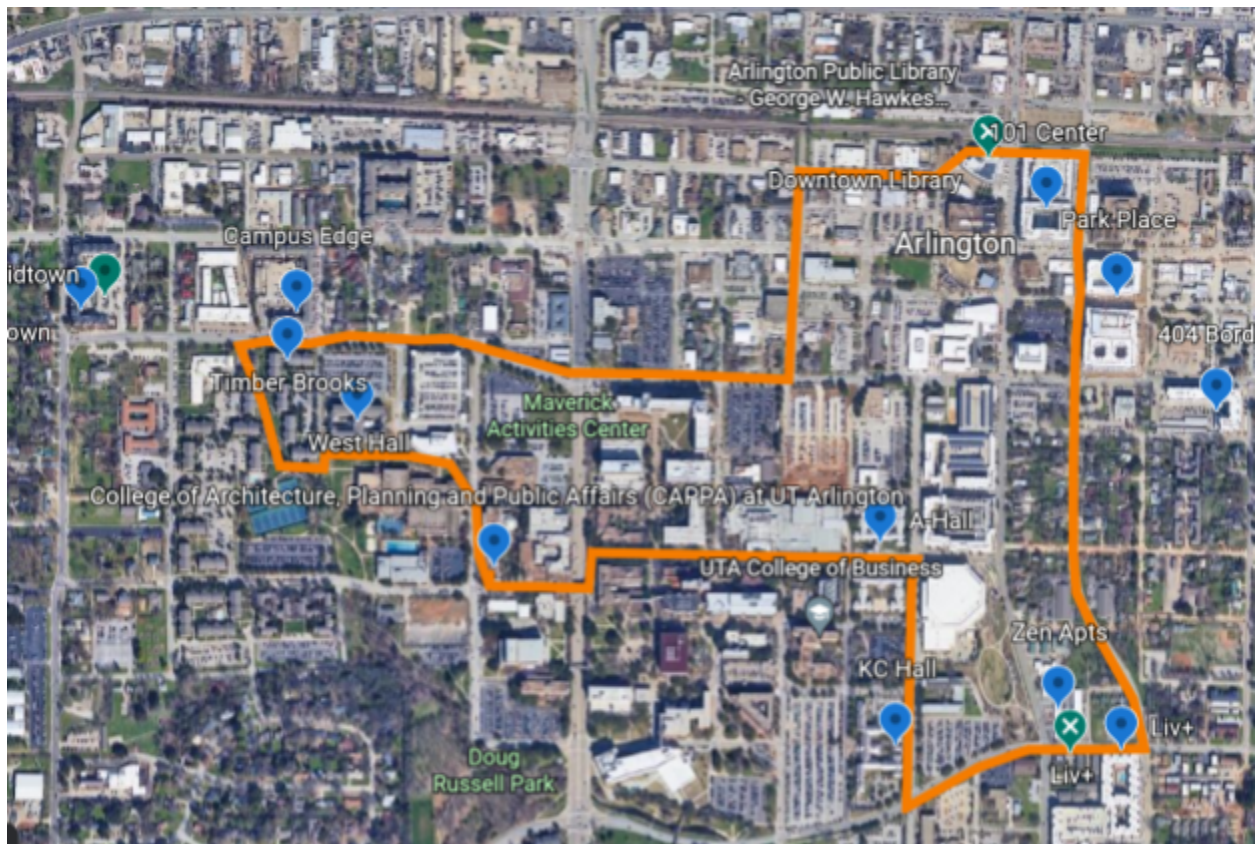


Figure 11: Map of Downtown Arlington Route

The Downtown Arlington route explores the connectivity between Downtown Arlington apartments and common destinations and the UTA campus itself through major streets such as Mitchell St, Mesquite St, and UTA Blvd.

The bike team observed that on part of the route, there were some dedicated bike lanes on Spaniolo Dr, Pecan St, and UTA Blvd. These bike lanes were helpful in guiding the team through the route, however, the team recognized that these bike lanes were inadequate in width. The bike lanes were constructed with the inclusion of the concrete gutter pan, and unfortunately, because the bike lanes and the rest of the street are asphalt, there is a significant offset between the two surfaces. Because the concrete gutter pan is primarily used for

stormwater drainage, there are only around 2.5 feet to 3 feet left for cyclists to use. In contrast, the standard for an effective bike lane is 5 feet for city streets according to the HBSMP.

biking on the route, such as the amount of shade on Spaniolo Dr and Mesquite St. The team also had the opportunity to use the trail by Timber Brook student apartments and remarked that it was a very good route for those traveling from apartment communities on West campus towards UTA. However, there still remain some areas that can use better landscaping and shade during the hot summer days on Main Street and UTA Boulevard.

While the routes themselves were manageable to navigate, the team found the intersections hard to do so. The team had to do a lot of left turns while biking on the bike lanes so for the beginners' cyclists on the team, it was initially confusing to do so. One was specifically confused as to whether to get out of the bike lane and use the left turning lanes or whether to turn immediately from the bike lane (see Figure 12).

Finally, the most challenging part of cycling on this route was on Mesquite St. The beginners found it incredibly difficult to bike on sharrow. The team also observed that there was nice landscaping that could enhance lanes because of the speedy traffic driving behind us. Upon reflection, participants agreed that they would instead prefer to bike on the sidewalks instead which can cause some conflicts with pedestrians using the facility.



Figure 12: An illustration at Pecan/Mitchell intersection, showing the routes that the team thought they were supposed to take

Action Requested

Short Term Priorities

Kroger Route

Leaf and Debris Removal

The team encountered some gravel in the bicycle lane on Norwood Ln, which is a major slipping hazard, especially given that the bicycle lanes are narrow and no buffer is provided between bicycle and car traffic. Regular sweeping of the bike route can be done with a machine as specified in the Hike and Bike System Master Plan (HBSMP) (City of Arlington, 2011).

Mitchell Route

At the start of the bike audit, one of the coordinators spoke to the group about how to signal turns. As such, one of the cyclists from the Mitchell group commented on “biking directions”. The addition of infographics related to cycling, above the bike racks on campus, could provide cyclists with valuable information.

Additionally, there were a few spots on campus where lighting was low or missing entirely. We recommend that facilities utilize the annual Night Walk planned by Student Government to ensure places on campus have ample lighting to provide visibility for pedestrians and cyclists alike.

Downtown Arlington

The team reported seeing many piles of leaves on the bike lanes which could inhibit biking safety due to slipping. We recommend conducting regular street sweeping to enhance safety.

Midterm Priorities

Kroger Route

Enhancing bicycle parking at key destinations:

As stated in the HBSMP, the City of Arlington should consider procuring “high-quality, placement, and function of bike parking to ensure practical, safe, and functional use” (City of Arlington, 2011) in locations such as key shopping centers and key places of employment. As further stated by the HBSMP, bike parking should follow recommendations from the Association of Pedestrian and Bicycle Professionals (APBP) Guide on Bicycle Parking. This includes replacing comb (like the Kroger bike parking) or wave designs with Inverted “U” or “A” bike

parking to provide safe parking options at key destinations (for further bike parking guidelines please visit apbp.org).

Interim Bike Facilities Facilities in Davis Dr.

In order to mitigate passing conflicts between car and bicycle traffic, bicycle lanes should be added to Davis Dr between Mitchell St and UTA Blvd. As a mid term action, a low-cost interim bike project could be installed using markers such as flexible bollards, planters, and paint (see Figure 13 for local example of pop-up bike network). Davis Dr is wide enough for 6' bicycle lanes on either side of the roadway, and is defined as a bicycle route in the HBSMP (City of Arlington, 2011). The intersection of Davis Dr and Park Row Dr does not have enough space for bicycle lanes, so this should be considered a short-term solution with later reconfiguration of this intersection as a priority.



Figure 13: Greenville Avenue, Richardson, Texas Pop-Up bike network turned into permanent facilities (City of Richardson, 2019)

Minor Interventions on Norwood Lane

The chicanes on Norwood Ln are ineffective at slowing car traffic because cars are able to enter the left-turn lane before the chicane in order to avoid the curb bulb-outs at a much higher speed than intended. In order to slow car traffic and provide a better experience for cyclists, the city should add some sort of physical or visual element in the center of the street near the bulb-outs in order to encourage drivers to slow down for the chicane. Finding an appropriate and aesthetically pleasing solution may be difficult, because it would be best to avoid blocking access to driveways, but small, bolt-on speed bumps may be appropriate, as they are visually unobtrusive and discourage high speeds while still allowing left turns into and out of nearby driveways.

The mini-roundabout on Norwood Ln feels somewhat unsafe for cyclists, as the bicycle lanes end shortly before the roundabout, forcing cyclists to merge in with car traffic. If there is enough space, the city should consider placing flex-posts into the corners of the roundabout in order to reserve some space for cyclists through the roundabout. This could be accompanied by paint to increase the visibility and separation of cyclists through the roundabout.

Lighting in O.S. Gray Natural Area

Lighting plays an important role in making cyclists and pedestrians feel safe and improve visibility. The trail gets completely dark at night, especially in winter evenings (see Figure 5 in the Appendix), so it is recommended to install lighting down the route path. As the trail to the Kroger route goes through a natural area, it is important that lighting disturbs wildlife as little as

possible. Installing dynamic cycle path lighting would allow the nature trail to be lit by LED lights once it detects movement of pedestrians and cyclists, and switches back off when it stops detecting the movement. Dynamic lighting is already used in countries such as the Netherlands, Finland, and Germany to light cycle routes while reducing energy consumption, emissions, and light pollution (Stockmar, 2019).

Mitchell Route

There are currently no bike lanes throughout the Mitchell Route. However, “Separated in-roadway” bike facilities are already planned within the HBSMP, which would be implemented through a road diet, starting from S. Davis Dr. to S. Center Street (see Figure 14). One step further than the HBSMP, the audit recommendations request the implementation of a protected bike facility through Mitchell instead of a conventional bike lane to provide sufficient safety and comfort for cyclists.

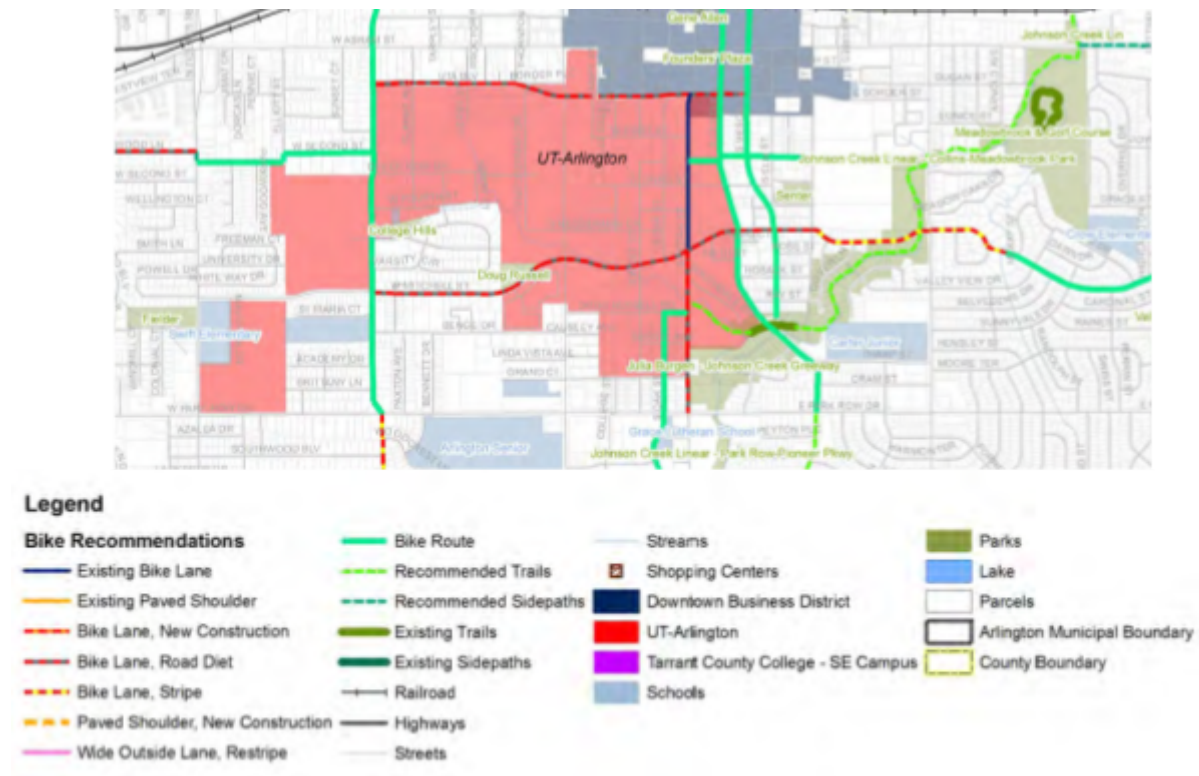


Figure 14: Map from HBSM outlining the road diet for separated bike lanes on W. Mitchell Street (from S. Davis Dr. to S. Center St.) (City of Arlington, 2011)

Downtown Arlington

Intersection Design

One of the challenges the team faced was navigating signalized intersections and attempting to get ahead of cars for visibility. Another challenge was navigating a left turn from a right side bike lane. One intersection treatment the City of Arlington can do is applying a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists with a safe and visible way to get ahead of queuing traffic during the red signal phase. A study conducted in Austin concludes that after adding bicycle boxes on high volume routes, “bicyclists’ behavior tended to become more predictable, resulting in safer interactions at the intersection” (Loskorn et al., 2010). The same study also noted that while applying color to the box increases costs rather substantially, “the bicycle box markings alone have proven to be an effective method of improving safety of bicyclists and motorists at a much lower cost.” (Loskorn et al., 2010. While we understand that most of the routes we biked on do not see a high bicycling traffic, we believe that adding these will help with increasing safety which will attract more people to bike in the city.



Figure 15: A one-way protected bike lane using planters and parking (NACTO)



Figure 16: A bike box in Austin (NACTO)

Protected bike lanes on Center and Mesquite Street

Another challenge specifically on Center and Mesquite St was navigating along with 30 mph+ motor vehicles. We noted that because of the shared lanes, this lowers safety and perceived safety from other cyclists which deters more people from cycling in the city. To keep the target motor vehicle speed of 30 mph and maintain a high traffic count, we recommend adding a protected bicycle lane on these streets, either with a simple buffer, lane delineators, or planters to add visual appeal. Existing bike lanes should also have some level of protection to eliminate



Figure 17: A buffered bike lane separated by painted chevrons (City of Richardson)

risk and fear of collisions with over-taking vehicles. These lanes, unlike shared lanes, dedicate and protect space for bicyclists to improve comfort and safety. As a mid-term priority, we recommend completing a pilot project utilizing available grant funds to test whether implementing protected bike lanes on several arteries like Center and Mesquite Streets will be effective.

Preliminary bike counting numbers collected on Center and Mesquite Streets by Walkable Arlington have shown that there are cyclists biking opposite to the traffic. While some cyclists think that by doing so increases visibility or for convenience, it is however incredibly dangerous as this defies the usual drivers' expectation on driving the street and gives less time for drivers to react. A collision from the opposite direction is 9 times harder than otherwise. Because of this, we propose a bidirectional cycleway on one or both of Center or Mesquite streets to provide a safe way for cyclists to bike in both directions of traffic. A Heart of Arlington Neighborhood Association white paper agrees with other possibilities for the third lane of Center and Mesquite, one of which can be dedicated to "bicycles/scooters."

Long Term Priorities

Kroger Route

Ultimately, many of the most significant issues of the Kroger route cannot be solved without significant reconfiguration of existing streets and intersections. From East to West along the route, significant segments include: Greek Row Dr, east of Kerby St; The intersection of Davis St and Greek Row Dr; The intersection of Fielder Rd and Norwood Ln; Norwood Ln; and the intersection of Abram St and Norwood Ln.

Greek Row Drive

East of Kerby St, Greek Row Dr is significantly wider than is necessary, and should be narrowed to encourage slow traffic speeds. There are likely three viable options for this: expanding the sidewalks, extending the median east of Kerby street, or reconstructing the entirety of Greek Row Dr with a bidirectional cycle track separated from car traffic. However, given the low speed and volume of automobile traffic, dedicated bicycle facilities are not required along Greek Row Dr if sufficient traffic-calming measures are adopted.

Greek Row Drive & Davis Drive

Here, the intersection should be reconfigured by removing the left-turn lane on Davis Dr and adding buffered bicycle lanes and corner safety islands on Davis Dr at the intersection. In order to better facilitate east-west traffic between Greek Row Dr and W 2nd St, a jug-handle could be added onto Davis Dr northbound at W 2nd St, or the bicycle route could be rerouted through UTA property north of Maverick Stadium between Davis Dr and Elliot St. The latter solution is preferable, as it is more direct for cyclists. Much of the length of Davis Dr is only wide enough to accommodate 1.8-2m (6'-6'8") unprotected bicycle lanes, but these should be added as they are

a low-cost investment, lower traffic speeds by narrowing the street, and likely adequate on Davis due to its low traffic volumes.

Norwood Lane & S. Fielder Road

In this stretch, protected bicycle facilities must be added to allow cyclists to travel along S. Fielder Rd between W 2nd St and Norwood Ln. This should be a bi-directional off-street sidepath on the east side of S. Fielder Rd between W Second St and Norwood Ln, as recommended by the HBSMP (see Figure 18 in Appendix for HBSMP map) (See Figure 19 for example of sidepath). A more holistic approach would be to add a protected bicycle facility along the whole length of S. Fielder Rd as well. The exact configuration of this bicycle facility would depend on whether a dedicated left-turn lane on Fielder Rd is considered necessary, as well as the extent to which road widenings are feasible.

Norwood Lane (Between S. Fielder Road and Abram Street)

The present Traffic-calming measures along Norwood Ln are inadequate and poorly implemented. If the city considers reconfiguring the street again, there are two major options — to reallocate the space currently used for the bidirectional left-turn lane to add buffers and protection to the bicycle facilities, or Norwood Ln into a local street and add a diagonal diverter at the intersection or Norwood Ln and Westview Terrace in order to prevent through-traffic and create a bicycle boulevard. In either case, the city should take steps to ensure that the design of Norwood Lane is better in line with its function for car traffic as either a street which accommodates through traffic or a street which is primarily meant for local access, while providing a safe and comfortable route for bicycle traffic.

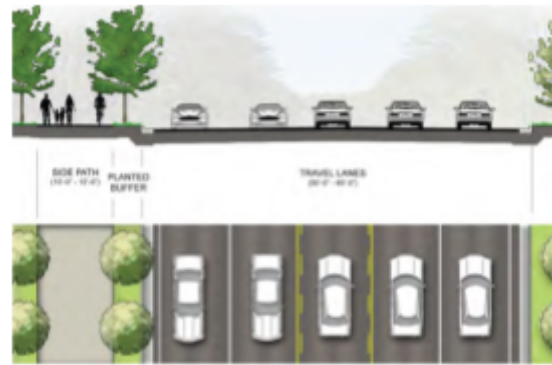


Figure 19: Example of a sidepath as illustrated in the HBSM (City of Arlington, 2011)

Norwood Lane & Abram Street

At this intersection, a connection should be made between the intersection itself and the nearby recreational trail in the O.S. Gray Natural Area. The city should also add some form of protected bicycle facility to Abram St — the HBSM recommends a sidepath west of this intersection (see Figure 19 in the Appendix), though these plans should be extended to provide bicycle facilities east of this intersection, as well.

Mitchell Route

Currently, cyclists and pedestrians on the UTA's campus use the same routes to cross campus. One of the primary issues here is that there are certain pathways, such as the ramp near the Fine Arts Building, that prove to be more hazardous than others. The addition of bike specific pathways would help to ensure safety for pedestrians and cyclists alike. Moreover, the University could add designated secondary bicycle routes and dismount zones throughout campus to decrease the possibility of collisions.

In order to move forward with reducing the negative impact of Cooper St on bicycle and pedestrian traffic, the City of Arlington should request that TxDOT remove the FM-157 designation from Cooper St between SH 180 (Division St) and SH 303 (Pioneer Pkwy), and extend the FM-157 designation along Collins St from SH 180 (Division St) to SH 303 (Pioneer Pkwy). This would allow the city much more freedom in reconfiguring, reconstructing, or removing Cooper St through the UTA campus.

W. Nedderman Dr serves as a primary north-south main street for UTA's West Campus, providing access to a number of major centers of student activity. The University should consider pedestrianizing a portion of Nedderman Drive in order to provide space for pedestrian and bicycle traffic to comfortably coexist, as well as to reduce traffic along Nedderman Drive.

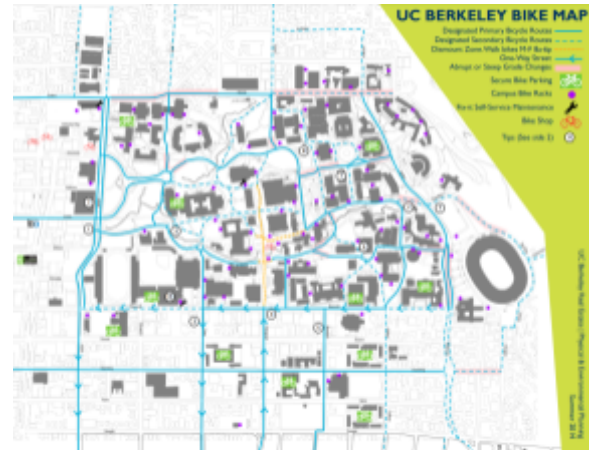


Figure 20: A map of the bike pathways at the University of California at Berkeley (UC Berkeley Real Estate, 2014)

Downtown Arlington

One of the things that were done well on most of the route was landscaping and shading which would help in a hot summer day for many. However there were several segments such as Main Street and Oak Street that can use more shading and landscaping to cool the environment. We understand that this will be a long-term priority as trees take time to mature, so we encourage efforts in increasing tree canopies across the city.

Another long-term priority is to implement a permanent bike network within Downtown to increase connectivity between campus, apartments, and many other businesses. While current numbers show a low bike count in the area, studies have shown that this is due to the public's perception of safety and comfort due to the current increased risk of traffic collisions. We request the City of Arlington to fully implement the Hike and Bike Plan within the next five years, including the creation of a Hike and Bike Advisory Committee, to improve traffic safety and perceived safety and create a more welcoming environment to bike.

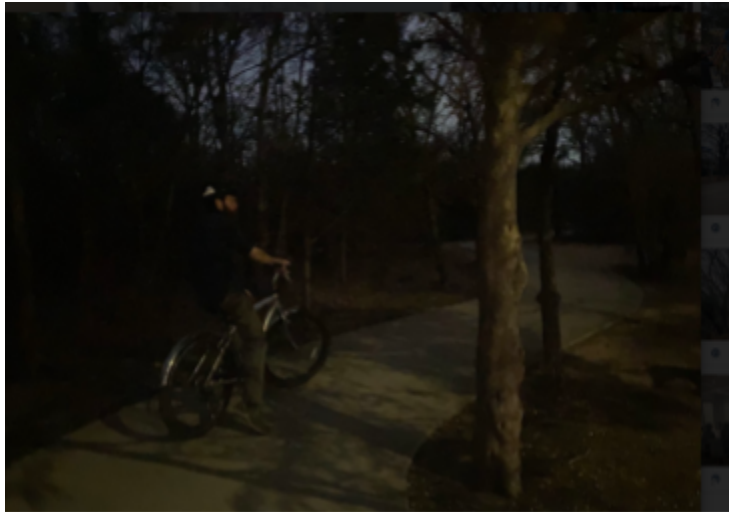
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Appendix

Summary of Observations

Kroger Route



*Figure 5:
Very little light available in the evening biking
through O.S. Gray Natural Area*



*Figure 6:
Inadequate bike parking at Kroger on S. Bowen Rd.*

Mitchell Route



Figure 10: Image of pedestrian bridge ramp connecting East and West Campus with sharp corners.

Action Requested



Figure 18: Planned off-street bidirectional shared-use path on Norwood Ln from Norwood intersection to S. Bowen Rd. (NCTCOG)

Bike Tile 8



Legend

Bike Recommendations	— Bike Route	— Streams	■ Parks
— Existing Bike Lane	— Recommended Trails	■ Shopping Centers	— Lake
— Existing Paved Shoulder	— Recommended Sidepaths	■ Downtown Business District	— Facade
— Bike Lane, New Construction	— Existing Trails	■ UT-Arlington	— Arlington Municipal Boundary
— Bike Lane, Road Diet	— Existing Sidepaths	■ Tarrant County College - SE Campus	— County Boundary
— Bike Lane, Stripe	— Railroad	■ Schools	
— Paved Shoulder, New Construction	— Highways		
— Wide Outside Lane, Restripe	— Streets		

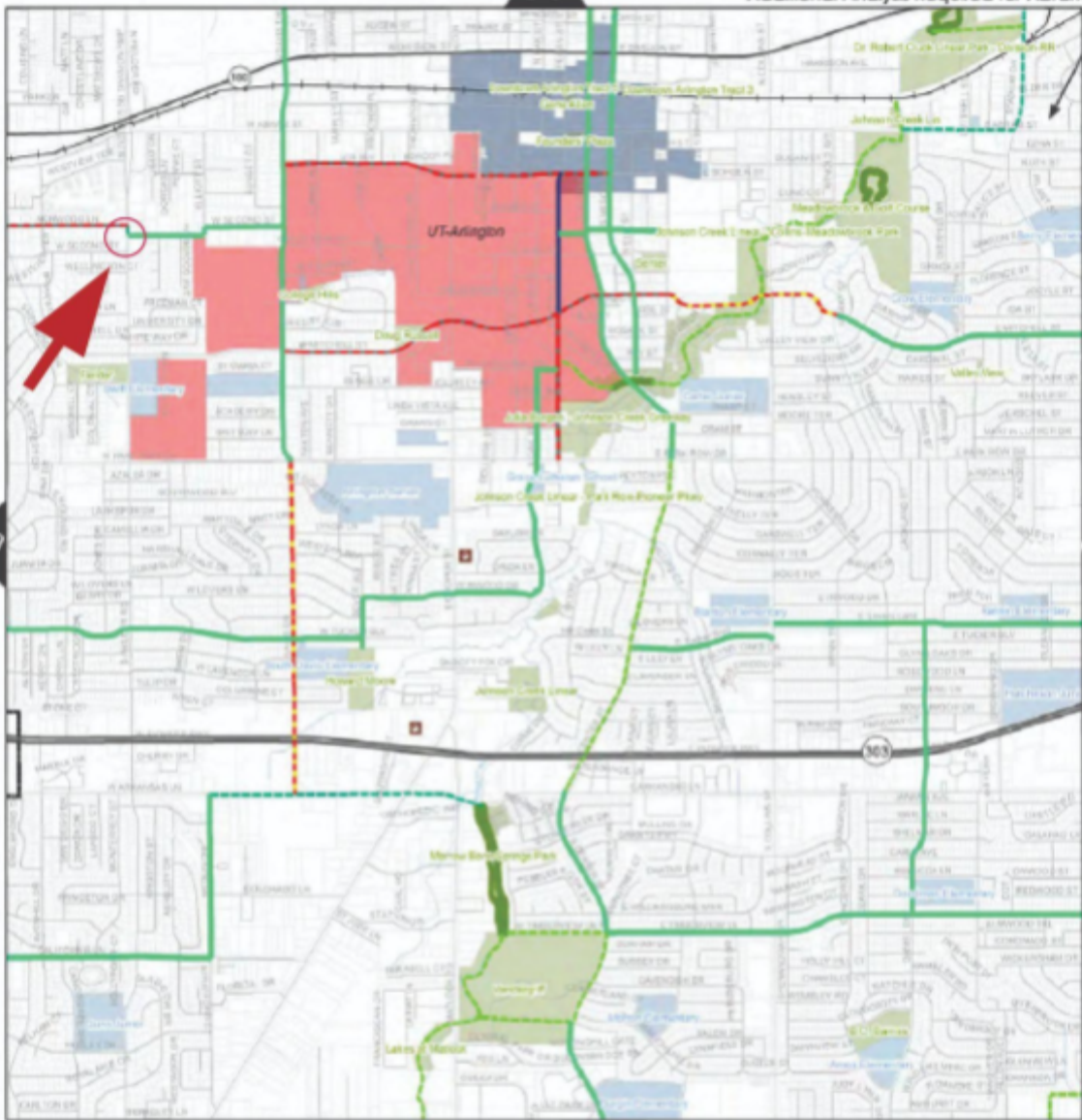


Figure 19: S. Fielder Rd between W. Second St and Norwood Ln, recommended sidepath (City of Arlington, 2011)