



INFRASTRUCTURE REPORT CITY COUNCIL DISTRICT 6

austin
MOTION
2016 MOBILITY BOND



ACKNOWLEDGMENTS

December 2019

This report is made possible through the Austin 2016 Mobility Bond. For more information, please contact:

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The consultant team was led by Toole Design Group with support from Asakura Robinson, Dunaway|UDG, GGE Consulting, and Adisa Communications.

Information contained in this document is for planning purposes and should not be used for final design of any project. All results, recommendations, concept drawings, cost opinions, and commentary contained herein are based on limited data and information and on existing conditions that are subject to change. Further analysis and engineering design are necessary prior to implementing any of the recommendations contained herein.

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ABOUT THIS PROJECT

PURPOSE / BACKGROUND

In November 2016, Austin voters approved the 2016 Mobility Bond which provided \$27.5 million for Safe Routes to School improvements. The funding will be equally allocated for school access-related projects in Austin's ten City Council districts.

To identify projects, the City of Austin hired consultants to evaluate and prioritize improvements to streets, trails, intersections and sidewalks around 137 elementary and middle schools in the City. The City also conducted a robust public engagement effort to inform recommendations, as described later in this report. The project is taking place over two years and was divided into phases based on the school calendar, with two to three council districts in each phase.

- **Phase 1: Fall 2017** – Council Districts 1 and 10, 28 schools
- **Phase 2: Spring 2018** – Council Districts 2, 8 and 9, 40 schools
- **Phase 3: Fall 2018** – Council Districts 3, 5 and 7, 36 schools
- **Phase 4: Spring 2019** – Council Districts 4 and 6, 33 schools

This report explains the process used to develop the recommendations for schools in City Council District 6, and presents a prioritized list of projects. It also presents a map and matrix showing all the recommendations made for each school. Recommended improvements aim to address identified safety or access issues for students walking and biking to school. **Ideas presented in this document are planning-level concepts: many projects will require further feasibility study and engineering evaluation before they can be implemented. In some locations, alternate approaches to address the issue may prove more feasible or more cost effective. Specific infrastructure treatments are defined and explained in the Austin SRTS Engineering Toolkit (Appendix A).**

SCHOOL AUDITS

School audits in District 6 took place the weeks of March 25 and April 1, 2019. Audit teams were led by a team of transportation planners and designers, as well as City of Austin staff from the Departments of Public Works and Transportation, and school representatives. School representatives typically included the principal or a designee and 1-2 parent representatives.

Most audits took place in the early morning, with a brief introductory meeting followed by an observation of school arrival. After the school bell rang, the team reconvened to



Walk Audit at Spicewood Elementary School



Walk Audit at Live Oak Elementary School

debrief and discuss next steps. Following the summary meeting, the consultants and City staff completed the assessment of walking and biking infrastructure around the school, focusing on a half-mile radius for pedestrian facility recommendations and up to a two-mile radius for bicycle facilities. The recommendations were reviewed by City staff for consistency with other planning efforts prior to prioritization.

PUBLIC ENGAGEMENT

In addition to participating in the school audits, members of the public were invited to provide input via an online map and at “pop-up” meetings at community events. Flyers explaining the project and promoting these opportunities were developed in English and Spanish, distributed to school contacts, and published on the City’s website and social media channels.

ONLINE INTERACTIVE MAP

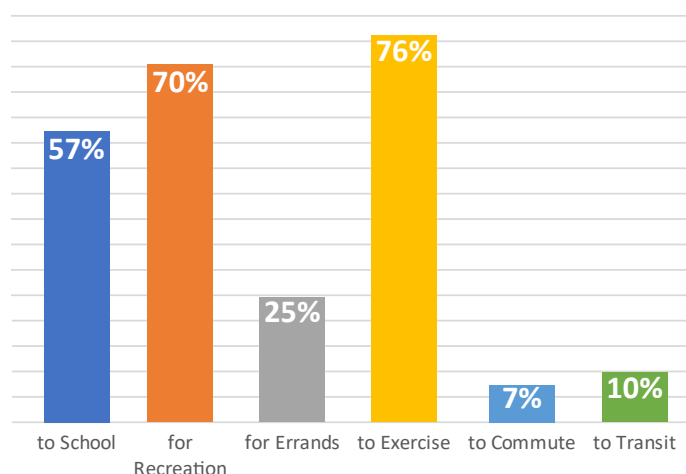
The project team used an online interactive map to gather input from the community on the barriers to walking and biking to school. English and Spanish language versions of the online map went live in February 2019. Users could access the maps via links on the City’s Safe Routes to School website. Using lines and points, map users were

asked to identify barriers, routes their family currently bikes or walks, and difficult routes for biking and walking.

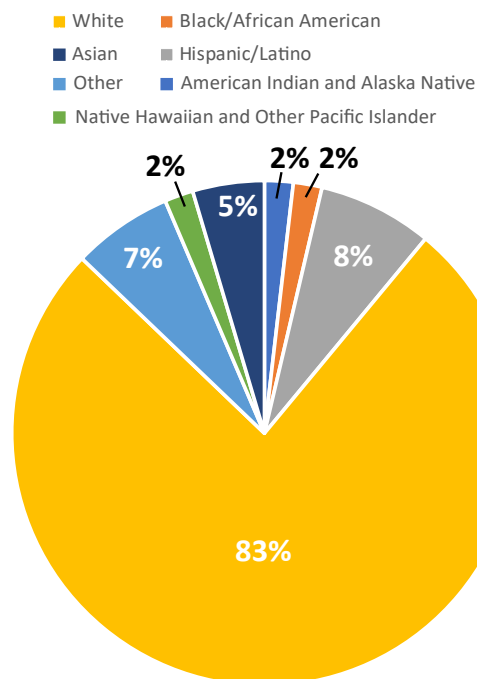
Summary of Responses

Before adding their comments to the map, users were asked to complete a short survey to help understand their background, walking and bicycling habits, and place of residence. The following is a summary of demographic characteristics from respondents from District 6, as well as a map that shows the concentrations of comments made on the map.

Walking Habits



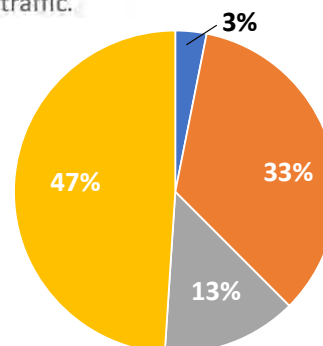
Demographics



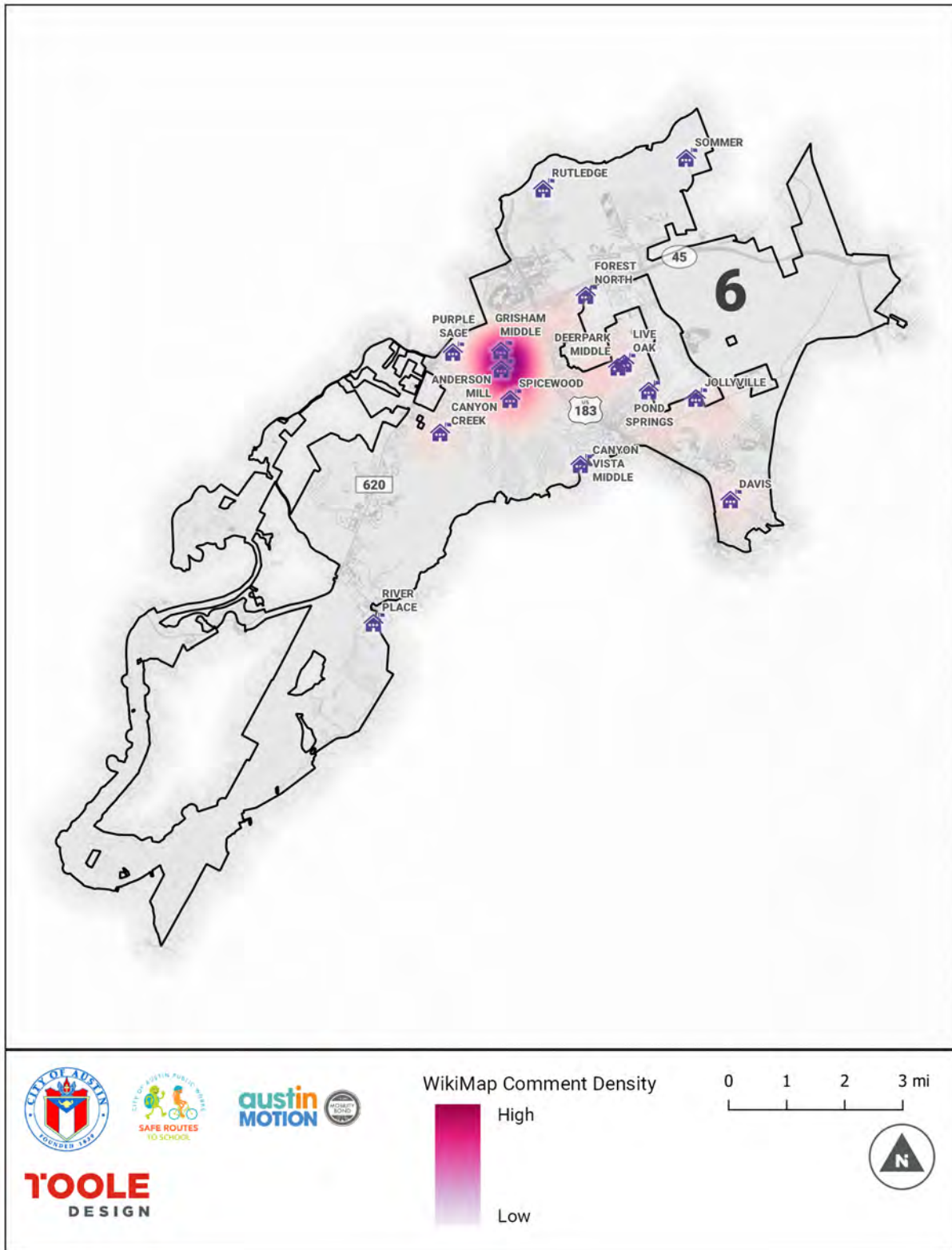
Demographics of Online Map Respondents, District 6

Bicycle Habits

- We are willing to ride in mixed traffic with automobiles on almost any type of street.
- We are willing to ride in traffic, but prefer dedicated bicycle lanes and routes.
- We do not ride bicycles and are unlikely to ever do so.
- We would like to bicycle more, but prefer not to ride in traffic.



Survey Responses from Online Map Respondents, District 6



“POP UP” MEETINGS

In fall 2018, the project team switched the approach to public outreach from project-specific Open Houses to “pop-up” meetings. For each “pop-up” meeting, members of the project team set up tables at school festivals, public libraries, and recreation centers with both electronic and paper maps for participants to provide their feedback. Comments received on the paper maps were added to the wikimap and incorporated into the infrastructure recommendations. Between March 5, 2019 and April 13, 2019, a total of 23 “pop-up” meetings were held with a total of 162 wikimap comments received.

PRIORITIZATION

Information from the school audits, online map and open houses was combined to create a list of recommended projects around each school. Then, the projects were scored using a three-step process to create a prioritized list for each council district.

Step 1: Prioritize recommendations based on potential benefit.

To calculate the potential benefit, each project was evaluated on four factors: Stakeholder Input, Safety, Demand and Equity. Using available data, the following scoring system was used to calculate a Benefit Score for each proposed project.

$$\begin{aligned}
 &35\%: \text{Demand} \\
 &(\text{Schools within } \frac{1}{4} \text{ mile, Potential students served}) \\
 &+ \\
 &30\%: \text{Safety} \\
 &(\text{Crash data, Street type, Engineering judgment}) \\
 &+ \\
 &20\%: \text{Equity} \\
 &(\text{Free \& reduced lunch rate, Poverty rate}) \\
 &+ \\
 &15\%: \text{Stakeholder Input} \\
 &(\text{Public comments from Open Houses and WikiMap}) \\
 &= \\
 &100\%: \text{Final Benefit Score}
 \end{aligned}$$

Step 2: Adjust for existing conditions.

To further prioritize projects that would create new facilities and close gaps in the existing bicycle and pedestrian networks, the Benefit Score was divided in half for recommendations that improve existing facilities (as opposed to creating new connections/facilities).

Step 3: Calculate cost benefit score.

Planning-level cost estimates for each project were developed based on bid tabulations maintained by the City of Austin. The benefit score was divided by the estimated project cost, and results were sorted into five categories to represent Cost:Benefit - very high, high, med, low, very low.

Costs opinions are order-of-magnitude, planning-level estimates based on local bid tabulations for similar project



La Hacienda Market



Northwest YMCA Youth Soccer Games

types. Planning-level cost estimates do not take into consideration localized specifics of each project such as right-of-way acquisition, significant utility relocation, etc. They are useful for aggregate-level budget planning, but individual project cost estimates will change as projects advance through further study and design.

After further feasibility study and engineering evaluation, final project cost estimates will change before they can be implemented. In some locations, alternate approaches to address the issue may prove more feasible or more cost effective.

PRIORITIZATION SUMMARY

There are a total of 520 recommended projects in City Council District 6 with a total estimated cost of \$52.1 million. (Costs for projects located outside the City are not included in this figure.) The combined costs for all projects in each Overall Benefit category are shown in the table below.

Costs are planning-level estimates that will be refined as projects advance through further study and design. They can be used to evaluate the order-of-magnitude of needs at an aggregate level.

| Overall Benefit Category | Combined Project Costs |
|--------------------------|------------------------|
| 1 - Very High | \$7,700,000 |
| 2 - High | \$12,500,000 |
| 3 - Medium | \$11,500,000 |
| 4 - Low | \$15,000,000 |
| 5 - Very Low | \$5,400,000 |
| District 6 Total | \$52,100,000 |

NEXT STEPS

Both Overall Benefit and Estimated Cost:Benefit will be used to prioritize improvements. However, to use the Safe Routes to School's limited resources most effectively, the program is also considering other factors to determine which projects will move forward as well as project implementation order. These factors include final cost estimates, feasibility, leveraging / cost-sharing opportunities, and more.

Generally, projects will be selected for implementation using the following guiding principles:

- 1) Implement Projects that have a High/Very High Overall Benefit or a High/Very High Estimated Cost:Benefit,
- 2) Make meaningful improvements for walking and bicycling near as many schools as possible,
- 3) For 2016 bond funding, per council direction, balance funding equally per council district,
- 4) Other available sources of funding will be leveraged to implement additional projects.

The City of Austin has already started examining the feasibility of recommendations and, in some cases, has initiated design/construction for certain projects. Go to AustinTexas.gov/SafeRoutes to learn more and get updates about upcoming Safe Routes to School projects in each City Council District.



CITY COUNCIL DISTRICT 6 RECOMMENDED SAFE ROUTES TO SCHOOL PROJECTS

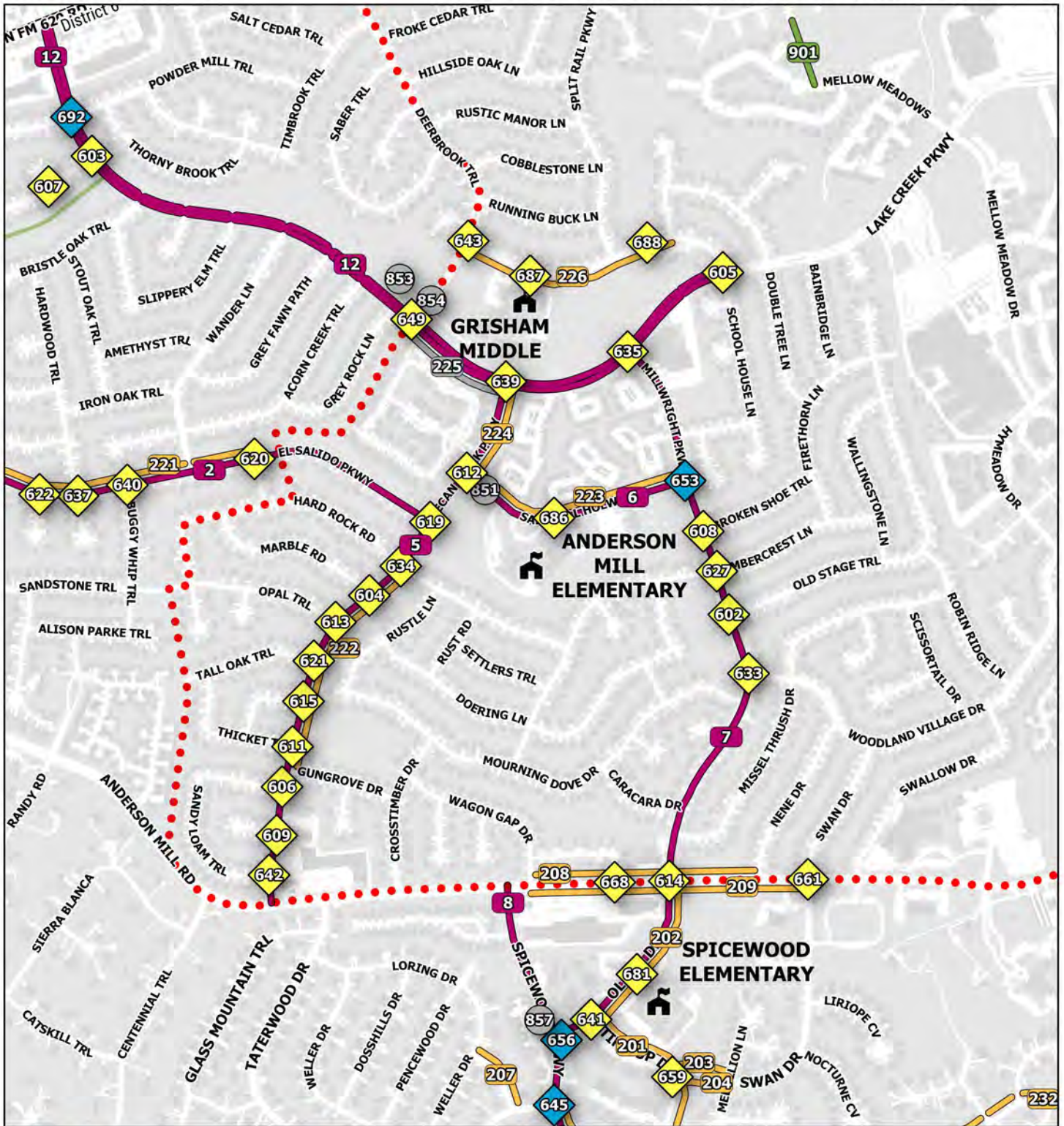
The following pages present maps of all recommendations, followed by detailed tables that include the Benefit and Cost: Benefit category for each project. Each recommendation has a unique identification number, which can be cross-referenced between the maps and the tables. The unique project ID is a combination of the school group code (e.g., 1C) and the project number shown on the map (e.g., 001).

Please note: Maps may include project recommendations located in nearby City Council Districts. However, tables within this report only list recommended projects for this district. Go to AustinTexas.gov/SafeRoutesProjects to learn more about citywide project recommendations.

Ideas presented in this document are planning-level concepts: many projects will require further feasibility study and engineering evaluation before they can be implemented. In some locations, alternate approaches to address the issue may prove more feasible or more cost effective.

SCHOOL GROUP 4D

ANDERSON MILL ELEMENTARY (ROUND ROCK ISD)



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TOOLE
DESIGN

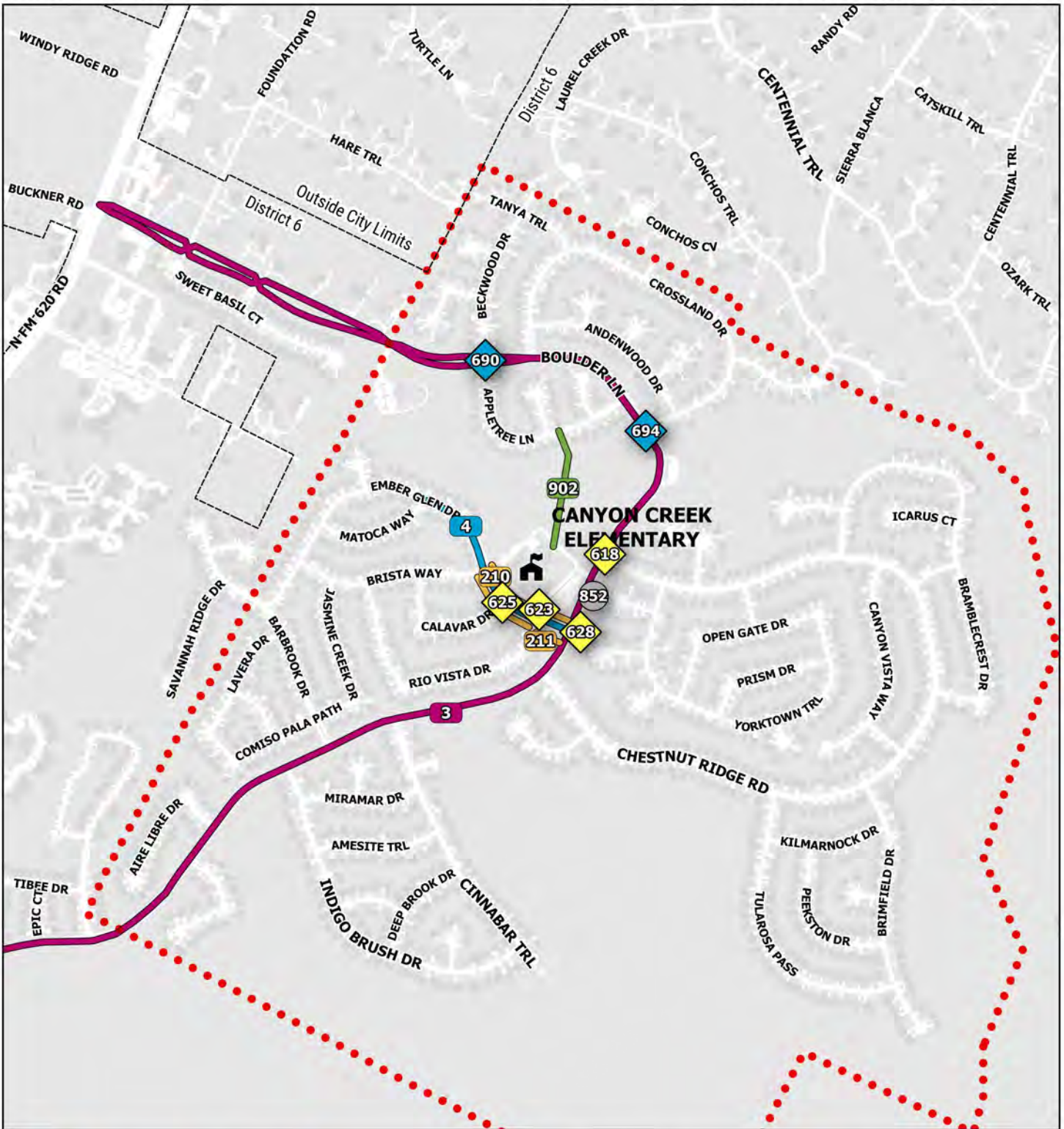


0 800 1600 2400 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidewalk
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation
- Traffic Control / Intersection Reconfiguration
- Ramp / Curb Extension / Crosswalk
- Over / Underpass
- Other Spot Recommendation
- Existing Trail
- School Boundary
- Council District Boundary

SCHOOL GROUP 4D

CANYON CREEK ELEMENTARY (ROUND ROCK ISD)



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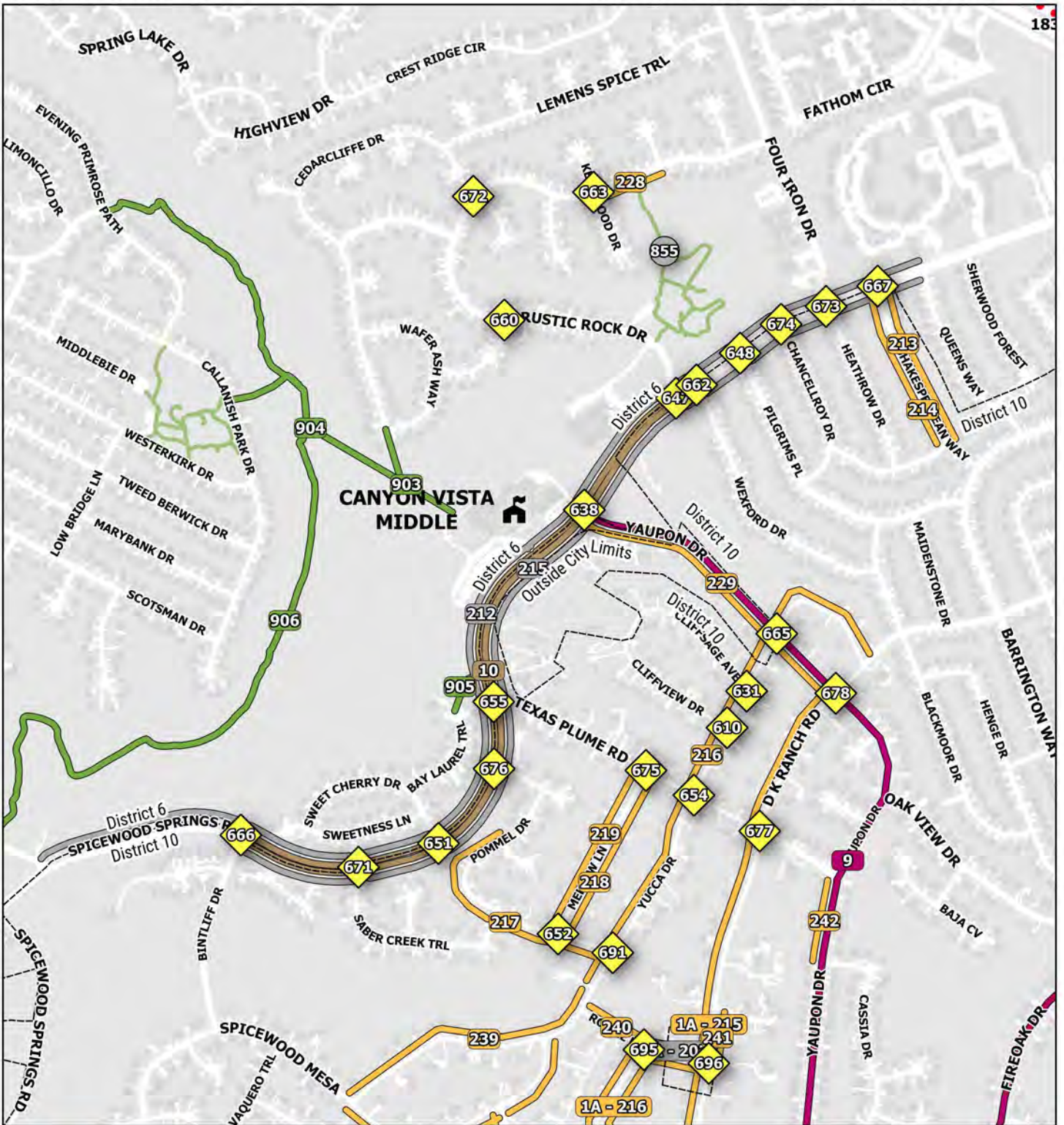
TOOLE
DESIGN



0 800 1600 2400 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidepath
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation

- ◆ Traffic Control / Intersection Reconfiguration
- ◆ Ramp / Curb Extension / Crosswalk
- Over / Underpass
- Other Spot Recommendation
- Existing Trail
- School Boundary
- Council District Boundary



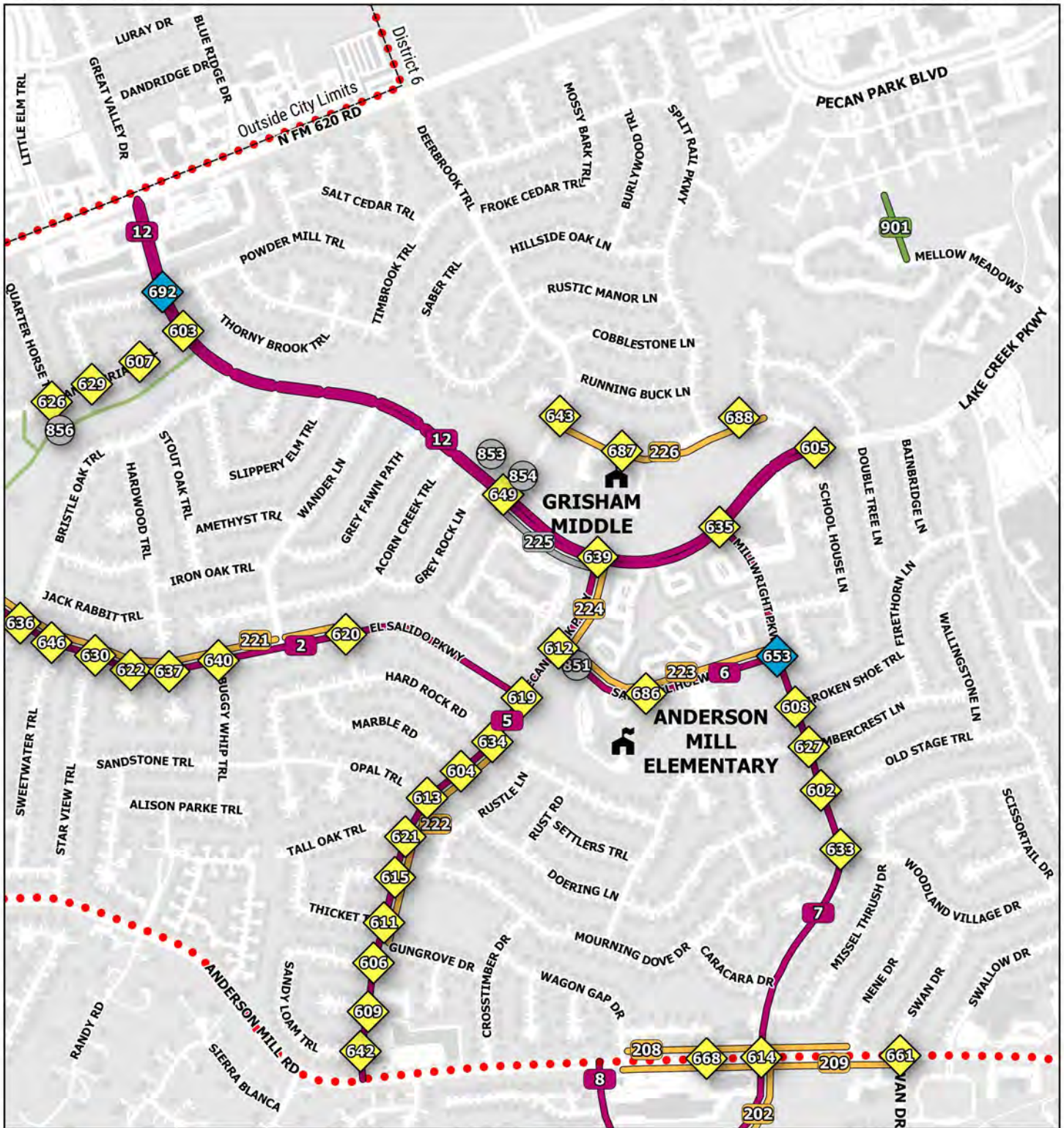
CITY OF AUSTIN
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MOTION
2016 MOBILITY BOND

TOOLE
DESIGN



0 800 1600 2400 ft

- Off-Street Trail
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- Sidepath
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CITY OF AUSTIN
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MOTION
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TOOLE
DESIGN



0 800 1600 2400 ft

- Off-Street Trail
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- Sidepath
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation
- ◆ Traffic Control / Intersection Reconfiguration
- ◆ Ramp / Curb Extension / Crosswalk
- Over / Underpass
- Other Spot Recommendation
- Existing Trail
- School Boundary
- Council District Boundary

PURPLE SAGE ELEMENTARY (ROUND ROCK ISD)



SCHOOL GROUP 4D

SPICEWOOD ELEMENTARY (ROUND ROCK ISD)



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2016 MOBILITY BOND

TOOLE
DESIGN



0 800 1600 2400 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidepath
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation
- Traffic Control / Intersection Reconfiguration
- Ramp / Curb Extension / Crosswalk
- Over / Underpass
- Other Spot Recommendation
- Existing Trail
- School Boundary
- Council District Boundary



| Project ID | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|------------|--|------------------|--|---|--------------------------|---------------------------------|
| 4D - 001 | PURPLE SAGE | TANGLEBRIAR TRL | Excessive vehicle speeds | Add speed cushions - TANGLEBRIAR TRL from EL SALIDO PKWY to QUARTER HORSE TRL | 3 - Medium | 1 - Very High |
| 4D - 002 | GRISHAM, PURPLE SAGE, ANDERSON MILL | EL SALIDO PKWY | Desired bike route, Excessive vehicle speeds, No bike facility, Wide ROW | Add School pavement markings - EL SALIDO PKWY from TANGLEBRIAR TRL to BIRCHBARK TRL, Add Dynamic Speed Display Device - EL SALIDO PKWY from TANGLEBRIAR TRL to BIRCHBARK TRL, Lane diet (changing lane widths) - EL SALIDO PKWY from TANGLEBRIAR TRL to BIRCHBARK TRL, Add speed cushions - EL SALIDO PKWY from TANGLEBRIAR TRL to BIRCHBARK TRL, Add protected bike lane - EL SALIDO PKWY from N FM 620 RD to PECAN CREEK PKWY | 1 - Very High | 4 - Low |
| 4D - 003 | GRANDVIEW HILLS, CANYON CREEK | BOULDER LN | Excessive vehicle speeds, No bike facility | Add buffered bike lane - BOULDER LN from FM 620 to FM 620 , Add speed cushions - BOULDER LN from CHESTNUT RIDGE RD to CROSSLAND DR | 1 - Very High | 5 - Very Low |
| 4D - 004 | CANYON CREEK | EMBER GLEN DR | Excessive vehicle speeds | Add speed cushions - EMBER GLEN DR from MATOCA WAY to BOULDER LN | 2 - High | 1 - Very High |
| 4D - 005 | GRISHAM, ANDERSON MILL | PECAN CREEK PKWY | Excessive vehicle speeds, No bike facility | Add speed cushions - PECAN CREEK PKWY from LAKE CREEK PKWY to ANDERSON MILL RD , Add protected bike lane - PECAN CREEK PKWY from LAKE CREEK PKWY to ANDERSON MILL RD | 1 - Very High | 3 - Medium |

* Indicates projects located outside or partially outside of the City of Austin limits and may not be eligible for Safe Routes to School funding.

Cost:Benefit rankings are preliminary, high-level estimates to identify cost-effective options to address safety concerns. Preliminary rankings are developed using planning-level costs for projects of this nature. Individual cost estimates will change as projects advance. See pages 4-5 of this report for more information.



INFRASTRUCTURE PLAN

| Project ID | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|------------|--|-------------------|--|---|--------------------------|---------------------------------|
| 4D - 006 | GRISHAM, ANDERSON MILL | SALT MILL HOLW | Excessive vehicle speeds, No bike facility, Wide ROW | Add speed cushions - SALT MILL HOLW from MILLWRIGHT PKWY to PECAN CREEK PKWY , Add protected bike lane - SALT MILL HOLW from MILLWRIGHT PKWY to PECAN CREEK PKWY + | 2 - High | 3 - Medium |
| 4D - 007 | CANYON VISTA, GRISHAM, ANDERSON MILL, SPICEWOOD | MILLWRIGHT PKWY | Desired bike route, Excessive vehicle speeds, Wide ROW | Add protected bike lane - OLSON DR from SPICEWOOD PKWY to ANDERSON MILL RD , Add speed cushions - OLSON DR from SPICEWOOD PKWY to ANDERSON MILL RD , Add speed cushions - MILLWRIGHT PKWY from LAKE CREEK PKWY to OLSON DR , Add protected bike lane - MILLWRIGHT PKWY from WENDTS WAY to OLSON DR | 1 - Very High | 4 - Low |
| 4D - 008 | CANYON VISTA, SPICEWOOD | SPICEWOOD PKWY | Excessive vehicle speeds, No bike facility, Wide ROW | Add protected bike lane - SPICEWOOD PKWY from ANDERSON MILL RD to Near 11608 SPICEWOOD PKWY , Add chicanes - SPICEWOOD PKWY from CEDAR CREST DR to ANDERSON MILL RD , Add protected bike lane - SPICEWOOD PKWY from OLSON DR to TOPRIDGE DR + | 2 - High | 5 - Very Low |
| 4D - 011 | CANYON VISTA, SPICEWOOD | SPICEWOOD CLUB DR | No bike facility | Add protected bike lane - SPICEWOOD CLUB DR from SPICEWOOD PKWY to SPICEWOOD PKWY | 3 - Medium | 5 - Very Low |
| 4D - 012 | ANDERSON MILL, PURPLE SAGE, GRISHAM | LAKE CREEK PKWY | Desired bike route | Add protected bike lane - LAKE CREEK PKWY from N FM 620 RD to SCHOOL HOUSE LN + | 1 - Very High | 5 - Very Low |
| 4D - 201 | SPICEWOOD | TIN CUP DR | Missing sidewalk | Construct new sidewalk - TIN CUP DR from OLSON DR to SPICEWOOD PKWY | 3 - Medium | 4 - Low |

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|------------|--|----------------------|--|---|--------------------------|---------------------------------|
| 4D - 202 | SPICEWOOD | OLSON DR | Missing sidewalk | Construct new sidewalk - OLSON DR from TIN CUP DR to ANDERSON MILL RD | 3 - Medium | 3 - Medium |
| 4D - 203 | SPICEWOOD | SWAN DR | Missing sidewalk | Construct new sidewalk - SWAN DR from MEDALLION LN to TIN CUP DR | 3 - Medium | 2 - High |
| 4D - 204 | SPICEWOOD | SWAN DR | Missing sidewalk | Construct new sidewalk - SWAN DR from MEDALLION LN to TIN CUP DR | 3 - Medium | 2 - High |
| 4D - 205 | SPICEWOOD | SPICEWOOD PKWY | Missing sidewalk | Construct new sidewalk - SPICEWOOD PKWY from SPICEWOOD CLUB DR to BALCONES WAY | 2 - High | 4 - Low |
| 4D - 206 | SPICEWOOD | SPICEWOOD PKWY | Missing sidewalk | Construct new sidewalk - SPICEWOOD PKWY from PICKFAIR DR to BALCONES WAY | 2 - High | 4 - Low |
| 4D - 207 | SPICEWOOD | COSTAKES DR | Missing sidewalk | Construct new sidewalk - COSTAKES DR from PICKFAIR DR to WELLER DR | 4 - Low | 4 - Low |
| 4D - 208 | ANDERSON MILL | ANDERSON MILL RD | Missing sidewalk, Narrow sidewalk, Permanent obstruction (ex. pole/tree), Poor condition | Construct new sidewalk - ANDERSON MILL RD from OLSON DR to WAGON GAP DR , Repair existing sidewalk - ANDERSON MILL RD from NENE DR to OLSON DR , Widen existing sidewalk - ANDERSON MILL RD from NENE DR to OLSON DR , Fix sidewalk obstructions - ANDERSON MILL RD from NENE DR to OLSON DR | 2 - High | 4 - Low |
| 4D - 209 | SPICEWOOD | ANDERSON MILL RD | Missing sidewalk | Construct new sidewalk - ANDERSON MILL RD from WAGON GAP DR to SWAN DR | 3 - Medium | 4 - Low |
| 4D - 210 | CANYON CREEK | EMBER GLEN DR | Poor condition | Repair existing sidewalk - EMBER GLEN DR from BOULDER LN to BRISTA WAY | 5 - Very Low | 5 - Very Low |
| 4D - 211 | CANYON CREEK | EMBER GLEN DR | Poor condition | Repair existing sidewalk - EMBER GLEN DR from BOULDER LN to BRISTA WAY | 5 - Very Low | 5 - Very Low |
| 4D - 212 | CANYON VISTA | SPICEWOOD SPRINGS RD | No lighting | Add lighting - SPICEWOOD SPRINGS RD from QUEENS WAY to SCOTLAND WELL DR | 5 - Very Low | 4 - Low |

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INFRASTRUCTURE PLAN

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|-------------------|--|-------------------|---|---|--------------------------|---------------------------------|
| 4D - 221 | GRISHAM, PURPLE SAGE | EL SALIDO PKWY | Missing sidewalk | Construct new sidewalk - EL SALIDO PKWY from GEODE DR to FENCE POST TRL | 3 - Medium | 5 - Very Low |
| 4D - 222 | GRISHAM, ANDERSON MILL | PECAN CREEK PKWY | Missing sidewalk | Construct new sidewalk - PECAN CREEK PKWY from GUNGROVE DR to HARD ROCK RD | 3 - Medium | 4 - Low |
| 4D - 223 | GRISHAM, ANDERSON MILL | SALT MILL HOLW | Poor condition, Steep buffer grade | Repair existing sidewalk - SALT MILL HOLW from MILLWRIGHT PKWY to PECAN CREEK PKWY | 5 - Very Low | 5 - Very Low |
| 4D - 224 | GRISHAM, ANDERSON MILL | PECAN CREEK PKWY | Missing sidewalk | Construct new sidewalk - PECAN CREEK PKWY from LAKE CREEK PKWY to SALT MILL HOLW | 3 - Medium | 2 - High |
| 4D - 225 | GRISHAM, ANDERSON MILL | LAKE CREEK PKWY | Permanent obstruction (ex. pole/tree) | Fix sidewalk obstructions - LAKE CREEK PKWY from PECAN CREEK PKWY to DEERBROOK TRL | 5 - Very Low | 3 - Medium |
| 4D - 226 | GRISHAM, ANDERSON MILL | SCHOOL HOUSE LN | Driveway crossings not accessible, Poor condition | Repair existing sidewalk - SCHOOL HOUSE LN from WIPPLE TREE CV to DEERBROOK TRL | 5 - Very Low | 5 - Very Low |
| 4D - 228 | CANYON VISTA | RUSTIC ROCK DR | Missing sidewalk | Construct new sidewalk - RUSTIC ROCK DR from CASTLE ROCK CT to KEMPWOOD DR | 5 - Very Low | 4 - Low |
| 4D - 232 | SPICEWOOD | CEDAR CREST DR | Missing sidewalk | Construct new sidewalk - CEDAR CREST DR from BALCONES CLUB DR to SPICEWOOD PKWY | 5 - Very Low | 5 - Very Low |
| 4D - 233 | SPICEWOOD | SPICEWOOD CLUB DR | Missing sidewalk | Construct new sidewalk - SPICEWOOD CLUB DR from MANDEVILLE CIR to SPICEWOOD PKWY | 5 - Very Low | 5 - Very Low |

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|------------|--|------------------------------------|---|--|--------------------------|---------------------------------|
| 4D - 601 | PURPLE SAGE | EL SALIDO PKWY / MORNING GLORY TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 602 | ANDERSON MILL, GRISHAM | MILLWRIGHT PKWY / OLD STAGE TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 603 | PURPLE SAGE | LAKE CREEK PKWY / TANGLEBRIAR TRL | Long crossing distance, Missing curb ramps, Non-compliant curb ramps, No pedestrian signals | Add new curb ramp [1] , Install Rapid Flashing Beacon , Replace existing curb ramp [2] | 2 - High | 1 - Very High |
| 4D - 604 | GRISHAM, ANDERSON MILL | MARBLE RD / PECAN CREEK PKWY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 605 | ANDERSON MILL, GRISHAM | LAKE CREEK PKWY / SCHOOL HOUSE LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 4 - Low | 3 - Medium |

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INFRASTRUCTURE PLAN

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|------------|--|-----------------------------------|--|---|--------------------------|---------------------------------|
| 4D - 606 | ANDERSON MILL | PECAN CREEK PKWY / SANDY LOAM TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 607 | PURPLE SAGE | TANGLEBRIAR CV / TANGLEBRIAR TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 608 | GRISHAM, ANDERSON MILL | BROKEN SHOE TRL / MILLWRIGHT PKWY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4D - 609 | ANDERSON MILL | ONYX CV / PECAN CREEK PKWY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 611 | ANDERSON MILL | PECAN CREEK PKWY / THICKET TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 612 | GRISHAM, ANDERSON MILL | PECAN CREEK PKWY / SALT MILL HOLW | High speed crossing, No pedestrian signals | Add curb extensions [2] on Pecan Creek , Install Rapid Flashing Beacon | 2 - High | 2 - High |

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|------------|--|---|---|---|--------------------------|---------------------------------|
| 4D - 613 | ANDERSON MILL, GRISHAM | OPAL TRL / PECAN CREEK PKWY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 614 | ANDERSON MILL | ANDERSON MILL RD / MILLWRIGHT PKWY / OLSON DR | Faded crosswalk markings, High speed crossing, Long crossing distance | Install high visibility crosswalk [4] across Millwright Pkwy & Anderson Mill Rd | 3 - Medium | 1 - Very High |
| 4D - 615 | ANDERSON MILL | CALCITE TRL / PECAN CREEK PKWY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 616 | PURPLE SAGE | EL SALIDO PKWY / TANGLEBRIAR TRL | Faded crosswalk markings, Non-compliant curb ramps | Add lighting , Repaint crosswalk markings [4] across El salido & tanglebriar , Replace existing curb ramp [4] | 3 - Medium | 2 - High |
| 4D - 617 | PURPLE SAGE | EL SALIDO PKWY / FENCE POST TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |

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|------------|--|-----------------------------------|--|--|--------------------------|---------------------------------|
| 4D - 618 | CANYON CREEK | BOULDER LN / CHESTNUT RIDGE RD | Faded crosswalk markings, High speed crossing, Long crossing distance, No lighting, Non-compliant curb ramps, No pedestrian signals, Poor sightlines | Add lighting , Repaint crosswalk markings [2] across Chestnut Ridge and Boulder , Replace existing curb ramp [2] | 2 - High | 1 - Very High |
| 4D - 619 | ANDERSON MILL, GRISHAM | EL SALIDO PKWY / PECAN CREEK PKWY | High speed crossing, Missing curb ramps, No pedestrian signals | Install Rapid Flashing Beacon , Replace existing curb ramp [1] | 3 - Medium | 2 - High |
| 4D - 620 | GRISHAM | EL SALIDO PKWY / GEODE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 621 | ANDERSON MILL, GRISHAM | PECAN CREEK PKWY / TALL OAK TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 622 | PURPLE SAGE | EL SALIDO PKWY / WIND SONG CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |

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| 4D - 623 | CANYON CREEK | EMBER GLEN DR / RIO VISTA DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 624 | PURPLE SAGE | BOBCAT TRL / TANGLEBRIA R TRL | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 5 - Very Low |
| 4D - 625 | CANYON CREEK | CALAVAR DR / EMBER GLEN DR | Faded crosswalk markings, Non-compliant curb ramps, Wide curb radii | Add curb extensions [2] on Ember Glen Dr , Repaint crosswalk markings [1] across Ember glen , Replace existing curb ramp [2] , Tighten curb radii | 3 - Medium | 3 - Medium |
| 4D - 626 | PURPLE SAGE | QUARTER HORSE TRL / TANGLEBRIA R TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 627 | ANDERSON MILL, GRISHAM | MILLWRIGHT PKWY / TIMBERCREST LN | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 4 - Low |
| 4D - 628 | CANYON CREEK | BOULDER LN / EMBER GLEN DR | Faded crosswalk markings, Non-compliant curb ramps | Install high visibility crosswalk & Repaint crosswalk markings [2] across Ember Glen and Boulder , Replace existing curb ramp [2] | 2 - High | 1 - Very High |

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|------------|--|---------------------------------------|---|---|--------------------------|---------------------------------|
| 4D - 629 | PURPLE SAGE | POWDER MILL TRL / TANGLEBRIAR TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 630 | PURPLE SAGE | EL SALIDO PKWY / STAR VIEW TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 632 | PURPLE SAGE | QUARTER HORSE TRL / TANGLEBRIAR TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 633 | ANDERSON MILL | MILLWRIGHT PKWY / WOODLAND VILLAGE DR | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 3 - Medium |
| 4D - 634 | ANDERSON MILL, GRISHAM | HARD ROCK RD / PECAN CREEK PKWY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 635 | ANDERSON MILL, GRISHAM | LAKE CREEK PKWY / MILLWRIGHT PKWY | Faded crosswalk markings, Poor sightlines | Add curb extensions [2] on , Install Rapid Flashing Beacon , Repaint crosswalk markings [1] across Millbright | 1 - Very High | 2 - High |

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|-------------------|--|------------------------------------|--|---|--------------------------|---------------------------------|
| 4D - 636 | PURPLE SAGE | BRISTLE OAK TRL / EL SALIDO PKWY | Non-compliant curb ramps, Other | Add curb extensions [2] on Bristle Oak Trl , Replace existing curb ramp [4] | 4 - Low | 3 - Medium |
| 4D - 637 | PURPLE SAGE | EL SALIDO PKWY / HARDWOOD TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 638 | CANYON VISTA | SPICEWOOD SPRINGS RD / YAUPON DR | Difficult crossing | Install high visibility crosswalk [2] across Yaupon & Spicewood Springs | 2 - High | 1 - Very High |
| 4D - 639 | ANDERSON MILL, GRISHAM | LAKE CREEK PKWY / PECAN CREEK PKWY | Missing curb ramps | Add new curb ramp [1] | 1 - Very High | 1 - Very High |
| 4D - 640 | PURPLE SAGE | BUGGY WHIP TRL / EL SALIDO PKWY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4D - 641 | SPICEWOOD | OLSON DR / TIN CUP DR | Faded crosswalk markings, High speed crossing, No lighting | Add lighting , Install high visibility crosswalk [1] across Tin cup | 3 - Medium | 2 - High |

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|------------|--|-----------------------------------|--|---|--------------------------|---------------------------------|
| 4D - 642 | ANDERSON MILL | PECAN CREEK PKWY / SANDY LOAM TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4D - 643 | ANDERSON MILL, GRISHAM | DEERBROOK TRL / SCHOOL HOUSE LN | Faded crosswalk markings, Long crossing distance, Missing curb ramps, Non-compliant curb ramps | Add curb extensions [2] on Deerbrook , Add new curb ramp [1] , Replace existing curb ramp [2] | 1 - Very High | 1 - Very High |
| 4D - 644 | SPICEWOOD | SPICEWOOD PKWY / TIN CUP DR | Faded crosswalk markings, High speed crossing, Long crossing distance, Wide curb radii | Add curb extensions [2] on Spicewood , Add new curb ramp [2] , Install raised crosswalk [1] across Spicewood , Install Rapid Flashing Beacon [1] , Tighten curb radii ~ | 4 - Low | 4 - Low |
| 4D - 645 | SPICEWOOD | PICKFAIR DR / SPICEWOOD PKWY | Faded crosswalk markings, High speed crossing, Poor sightlines | Add lighting , Add median refuge island on Spicewood , Install raised crosswalk [1] across Spicewood | 4 - Low | 3 - Medium |
| 4D - 646 | PURPLE SAGE | EL SALIDO PKWY / SWEETWATER TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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|------------|--|------------------------------------|---|---|--------------------------|---------------------------------|
| 4D - 648 | CANYON VISTA | PILGRIMS PL / SPICEWOOD SPRINGS RD | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [1] across Pilgrims Pl , Replace existing curb ramp [2] | 2 - High | 1 - Very High |
| 4D - 649 | ANDERSON MILL, GRISHAM | DEERBROOK TRL / LAKE CREEK PKWY | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 2 - High | 1 - Very High |
| 4D - 650 | PURPLE SAGE | BIRCHBARK TRL / EL SALIDO PKWY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4D - 653 | GRISHAM, ANDERSON MILL | MILLWRIGHT PKWY / SALT MILL HOLW | Difficult crossing, High speed crossing, Non-compliant curb ramps | Add median refuge island on Millwright Pkwy , Install high visibility crosswalk [1] across Salt Mill Hollow , Replace existing curb ramp [2] | 3 - Medium | 2 - High |
| 4D - 656 | SPICEWOOD | OLSON DR / SPICEWOOD PKWY | Difficult crossing, High speed crossing, No lighting | Add lighting , Add median refuge island on Both legs of Spicewood Pkwy , Install high visibility crosswalk [3] across Olson Dr & Spicewood Pkwy | 3 - Medium | 2 - High |
| 4D - 659 | SPICEWOOD | SWAN DR / TIN CUP DR | Difficult crossing, Missing curb ramps, Wide curb radii | Add new curb ramp [2] , Install high visibility crosswalk [1] across Swan , Tighten curb radii | 3 - Medium | 2 - High |

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| 4D - 660 | CANYON VISTA | CHESSINGT ON DR / RUSTIC ROCK DR | Difficult crossing, Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Install high visibility crosswalk [2] across Rustic Rock Dr. & Chessington Dr. , Replace existing curb ramp [2] | 2 - High | 1 - Very High |
| 4D - 661 | SPICEWOOD | ANDERSON MILL RD / SWAN DR | Difficult crossing, Missing curb ramps | Add new curb ramp [2] , Install high visibility crosswalk [1] across Swan | 4 - Low | 2 - High |
| 4D - 662 | CANYON VISTA | SPICEWOOD SPRINGS RD / WEXFORD DR | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [1] across Wexford Dr. , Replace existing curb ramp [2] | 2 - High | 1 - Very High |
| 4D - 663 | CANYON VISTA | KEMPWOOD DR / RUSTIC ROCK DR | Difficult crossing, Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Install high visibility crosswalk [2] across Kempwood Dr & Rustic Rock Dr. , Replace existing curb ramp [3] | 4 - Low | 3 - Medium |
| 4D - 665* | CANYON VISTA | YAUPON DR / YUCCA DR | Difficult crossing, Missing curb ramps | Add new curb ramp [3] , Install high visibility crosswalk [4] across Yaupon Dr. & Yucca Dr. | 3 - Medium | 2 - High |
| 4D - 666 | CANYON VISTA | BINTLIFF DR / SPICEWOOD SPRINGS RD | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [1] across Bintliff Dr. , Replace existing curb ramp [2] | 2 - High | 1 - Very High |

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| 4D - 667 | CANYON VISTA | SHAKESPEAREAN WAY / SPICEWOOD SPRINGS RD | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [1] across Shakespearean Way , Replace existing curb ramp [2] | 4 - Low | 2 - High |
| 4D - 668 | ANDERSON MILL | ANDERSON MILL RD / BURMASTER LN | Difficult crossing, Missing curb ramps | Add new curb ramp [2] , Install high visibility crosswalk [1] across Burrmaster | 2 - High | 1 - Very High |
| 4D - 672 | CANYON VISTA | CEDARCLIFFE DR / RUSTIC ROCK DR | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [2] across Cedarcliffe Dr & Rustic Rock Dr. , Replace existing curb ramp [2] | 4 - Low | 2 - High |
| 4D - 674 | CANYON VISTA | CHANCELLROY DR / SPICEWOOD SPRINGS RD | Difficult crossing, Non-compliant curb ramps | Add new curb ramp [2] , Install high visibility crosswalk [1] across Chancellroy Dr. | 2 - High | 1 - Very High |
| 4D - 676 | CANYON VISTA | SPICEWOOD SPRINGS CV / SPICEWOOD SPRINGS RD | Difficult crossing, Non-compliant curb ramps | Add new curb ramp [2] , Install high visibility crosswalk [1] across 1 | 4 - Low | 2 - High |

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| 4D - 681 | SPICEWOOD | OLSON DR | Faded crosswalk markings, High speed crossing, Long crossing distance, No lighting, No pedestrian signals | Add curb extensions [2] on Olsen , Add lighting , Install raised crosswalk [1] across Olsen , Install Rapid Flashing Beacon | 2 - High | 2 - High |
| 4D - 683 | PURPLE SAGE | TANGLEBRIAR TRL | Faded crosswalk markings, Missing curb ramps, Non-compliant curb ramps, No pedestrian signals, Poor sightlines | Add curb extensions [2] on Tanglebriar Trl , Add lighting , Add new curb ramp [1] , Install Rapid Flashing Beacon , Repaint crosswalk markings [1] across Tanglebriar , Replace existing curb ramp [1] | 3 - Medium | 3 - Medium |
| 4D - 686 | ANDERSON MILL, GRISHAM | SALT MILL HOLW | Difficult crossing, Long crossing distance, Missing curb ramps, Missing signs, No lighting, Poor sightlines | Add curb extensions [2] on Salt Mill Hollow , Add lighting , Add new curb ramp [2] , Install raised crosswalk [1] across Salt Mill Hollow + | 1 - Very High | 2 - High |
| 4D - 687 | GRISHAM, ANDERSON MILL | SCHOOL HOUSE LN | Difficult crossing | Add curb extensions [2] on School House Ln , Install high visibility crosswalk [1] across School House Ln | 3 - Medium | 2 - High |

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|------------|--|---|---|---|--------------------------|---------------------------------|
| 4D - 688 | ANDERSON MILL, GRISHAM | SCHOOL HOUSE LN | Difficult crossing | Add curb extensions [2] on School House Ln , Add new curb ramp [2] , Install high visibility crosswalk [1] across School House Ln | 1 - Very High | 1 - Very High |
| 4D - 689 | PURPLE SAGE | TANGLEBRIAR TRL | Difficult crossing, Missing curb ramps, No pedestrian signals | Add lighting , Add new curb ramp [2], Install Rectangular Rapid Flashing Beacon | 2 - High | 1 - Very High |
| 4D - 690 | CANYON CREEK | APPLETREE LN / BECKWOOD DR / BOULDER LN | Difficult crossing | Add median refuge island on Boulder Ln , Install Rapid Flashing Beacon [1] | 4 - Low | 3 - Medium |
| 4D - 692 | PURPLE SAGE | LAKE CREEK PKWY / POWDER MILL TRL | Difficult crossing | Add median refuge island on Lake Creek Pkwy , Install high visibility crosswalk [1] across south leg of Lake Creek Pkwy , Install Rapid Flashing Beacon [1] | 2 - High | 2 - High |
| 4D - 693 | SPICEWOOD | SPICEWOOD CLUB DR / SPICEWOOD PKWY | Difficult crossing | Install high visibility crosswalk [2] across Spicewood Club & Spicewood Pkwy (upgrade existing) | 4 - Low | 2 - High |
| 4D - 694 | CANYON CREEK | BOULDER LN / CROSSLAND DR | Long crossing distance | Add median refuge island on Boulder Ln , Install high visibility crosswalk [1] across Crossland Dr , Remove crosswalk on south leg | 2 - High | 1 - Very High |

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| 4D - 851 | GRISHAM, ANDERSON MILL | Near 2054 VERBENA DR | End School Zone signage and school zone signage limits confusing | Evaluate signage location of end school zone sign as school zone ends shortly before reaching another street with a school zone which causes confusion | 5 - Very Low | 4 - Low |
| 4D - 852 | CANYON CREEK | Near 10908 PEALE CT | End School Zone signage and school zone signage limits confusing | Evaluate signage location of end school zone sign as school zone ends shortly before reaching another street with a school zone which causes confusion | 5 - Very Low | 4 - Low |
| 4D - 853 | GRISHAM | Near 10901 LAKE CREEK PKWY | End School Zone signage and school zone signage limits confusing | Evaluate signage location of end school zone sign as school zone ends shortly before reaching another street with a school zone which causes confusion | 5 - Very Low | 5 - Very Low |
| 4D - 854 | GRISHAM | Near 10901 LAKE CREEK PKWY | in the east end of the bridge (north & south) there is no protection into drainage channel | install rail along sidewalk at east end of the bridge for fall protection | 5 - Very Low | 3 - Medium |
| 4D - 855 | CANYON VISTA | Near 11503 KEMPWOOD DR | No lighting | Add lighting to existing trail through Tanglewood Park | 5 - Very Low | 5 - Very Low |
| 4D - 856 | PURPLE SAGE | Near 12011 TANGLEBRIA R TRL | No lighting | Add lighting to trail between Lake Creek Pkwy and school | 5 - Very Low | 4 - Low |

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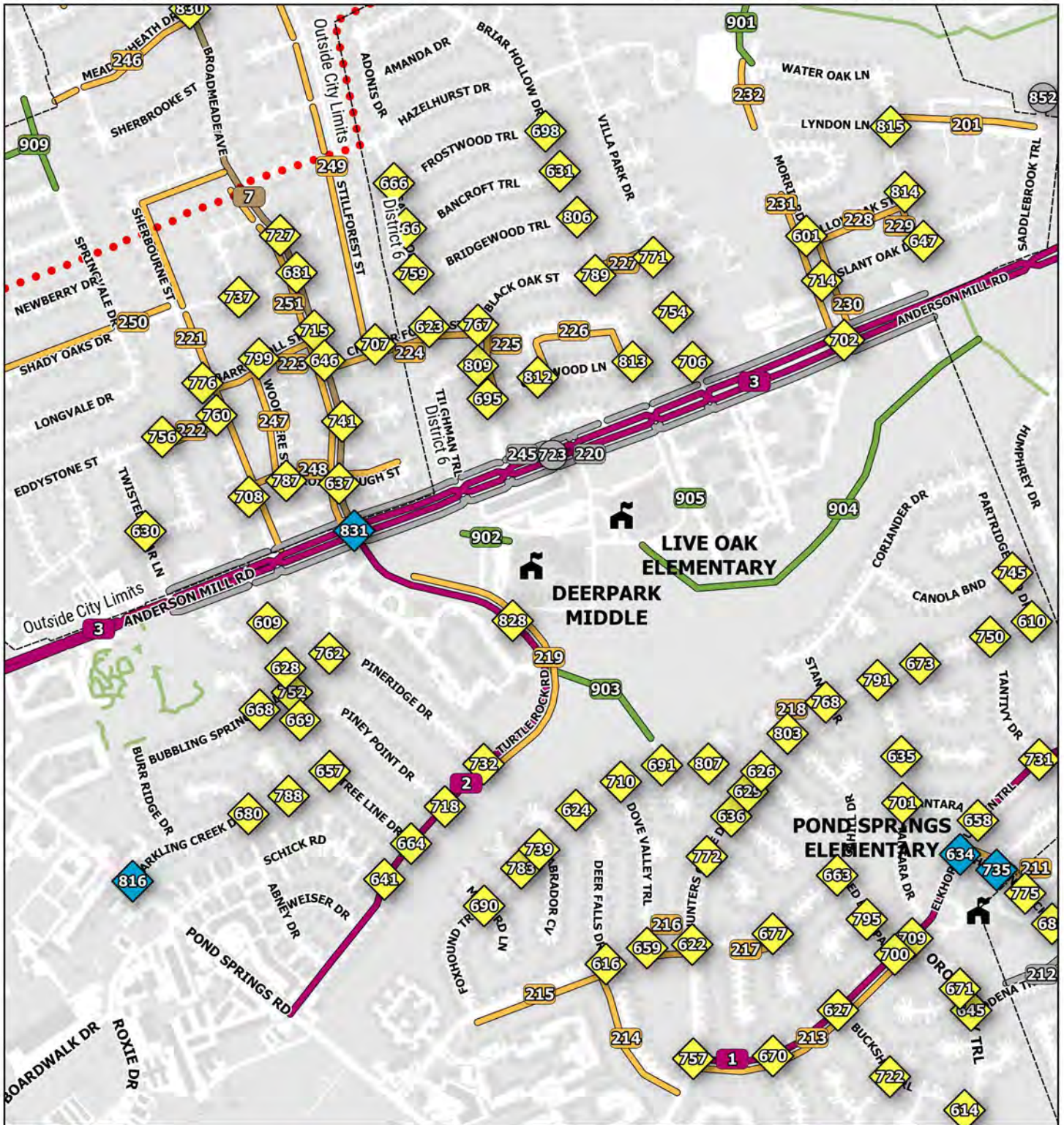
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| 4D - 857 | SPICEWOOD | Near 11558 SPICEWOOD PKWY | Vegetation blocking school zone sign | Trim vegetation | 5 - Very Low | 5 - Very Low |
| 4D - 901 | GRISHAM, ANDERSON MILL | Near 12501 KATE LN | No trail connection | Construct new shared use path | 4 - Low | 4 - Low |
| 4D - 902 | GRISHAM, CANYON CREEK | Near 11115 APPLETREE LN | No trail connection | Construct new shared use path | 3 - Medium | 5 - Very Low |
| 4D - 903 | CANYON VISTA | Near 8761 WAFER ASH WAY | No trail connection | Construct new shared use path | 3 - Medium | 5 - Very Low |
| 4D - 904 | CANYON VISTA | Near 11103 CALLANISH PARK DR | No trail connection | Construct new shared use path | 4 - Low | 5 - Very Low |
| 4D - 905 | CANYON VISTA, LAUREL MOUNTAIN | Near 8431 SPICEWOOD SPRINGS RD | No trail connection | Construct new shared use path | 2 - High | 3 - Medium |
| 4D - 906 | CANYON VISTA | Near 9104 EVENING PRIMROSE PATH | No trail connection | Add lighting , Construct new shared use path | 3 - Medium | 5 - Very Low |
| 4D - 907 | PURPLE SAGE, GRISHAM | Near 11801 TANGLEBRIA R TRL | No trail connection | Construct new shared use path | 3 - Medium | 4 - Low |

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SCHOOL GROUP 4E

DEERPARK MIDDLE (ROUND ROCK ISD)



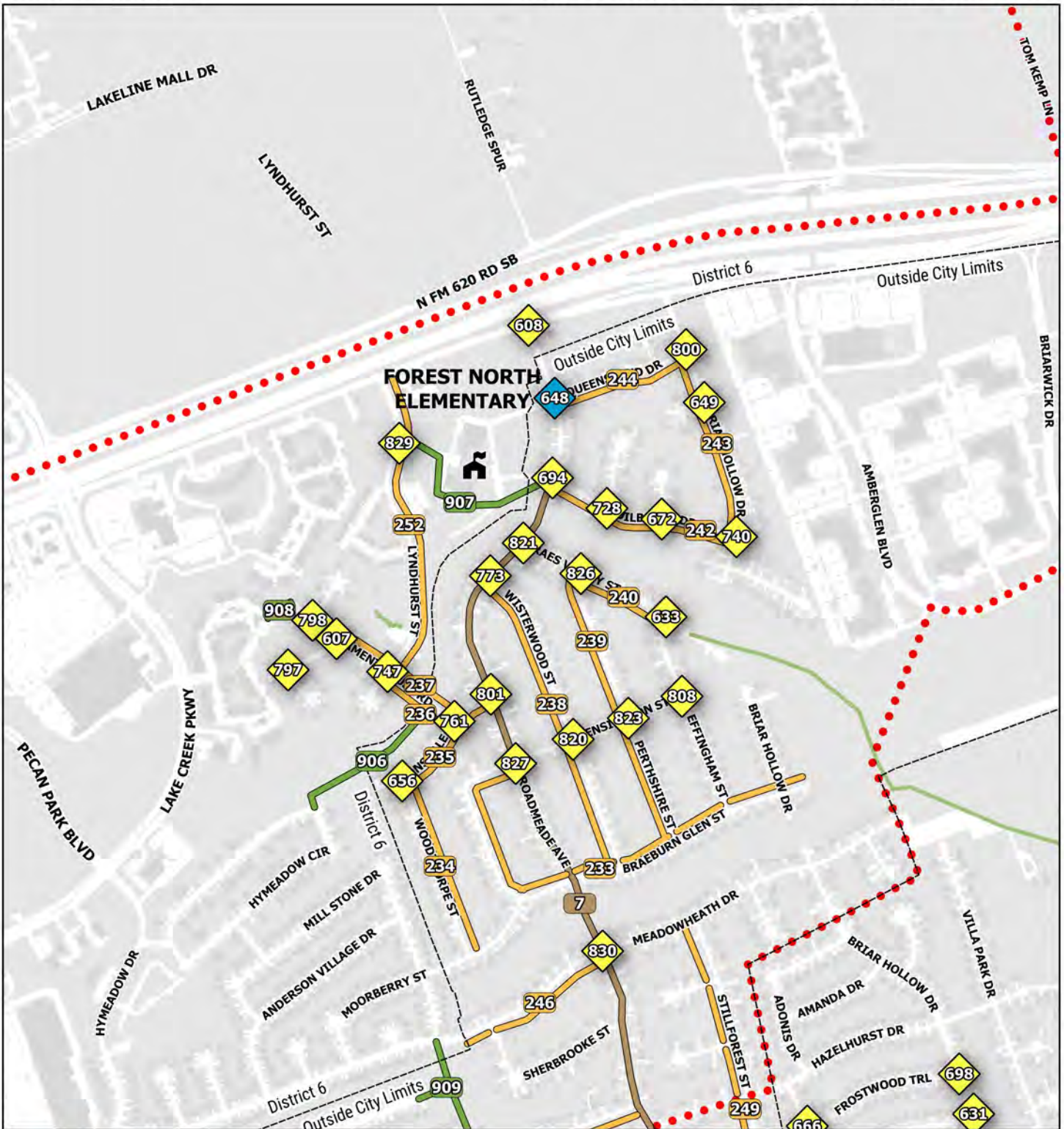
CITY OF AUSTIN
austin
MOTION
2016 MOBILITY BOND

TOOLE
DESIGN



0 800 1600 2400 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidepath
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation
- Traffic Control / Intersection Reconfiguration
- Ramp / Curb Extension / Crosswalk
- Over / Underpass
- Other Spot Recommendation
- Existing Trail
- School Boundary
- Council District Boundary



CITY OF AUSTIN
austin
MOTION
2016 MOBILITY BOND

TOOLE
DESIGN

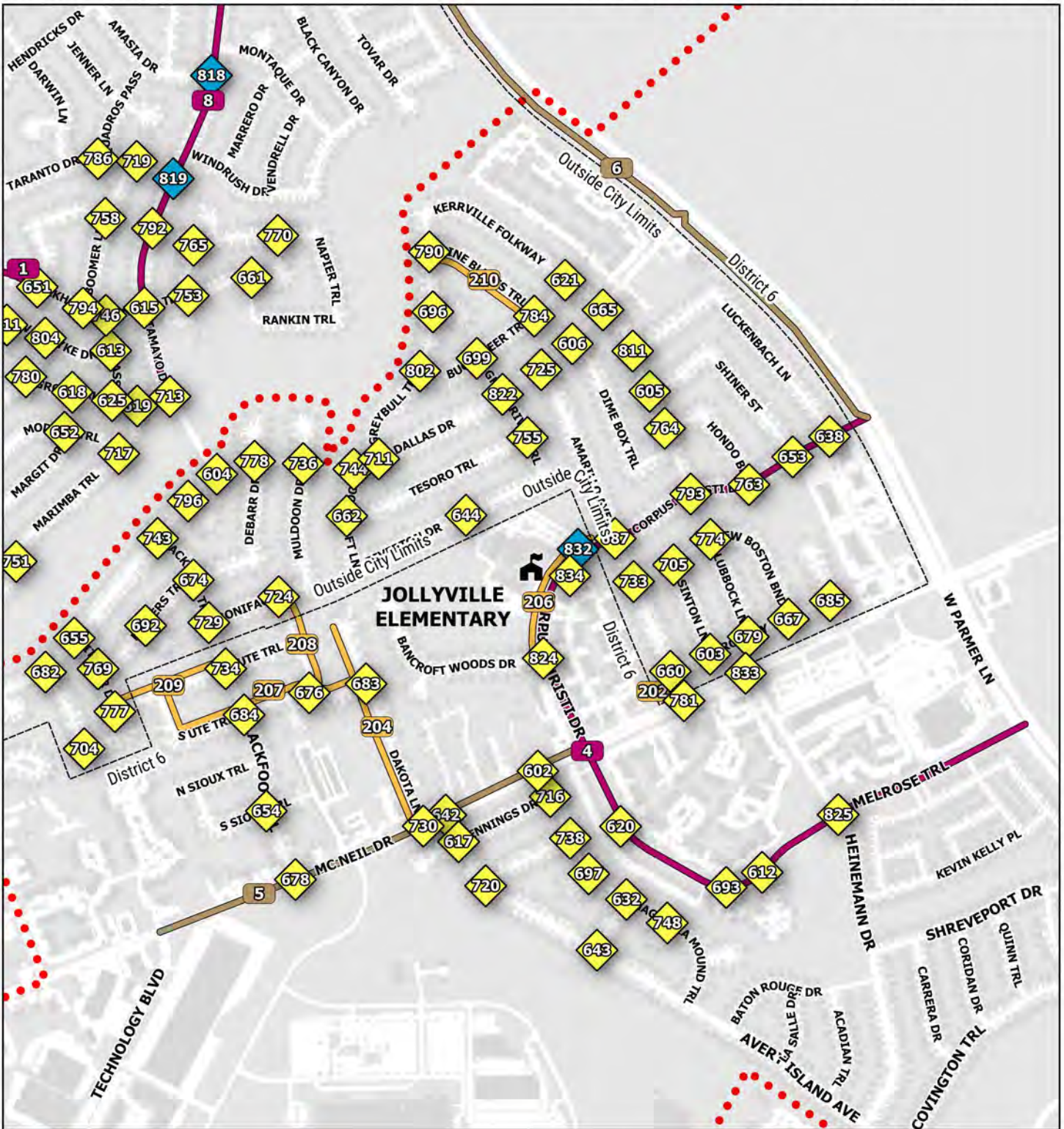


0 800 1600 2400 ft

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SCHOOL GROUP 4E

JOLLYVILLE ELEMENTARY (ROUND ROCK ISD)



CITY OF AUSTIN
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2016 MOBILITY BOND

TOOLE
DESIGN

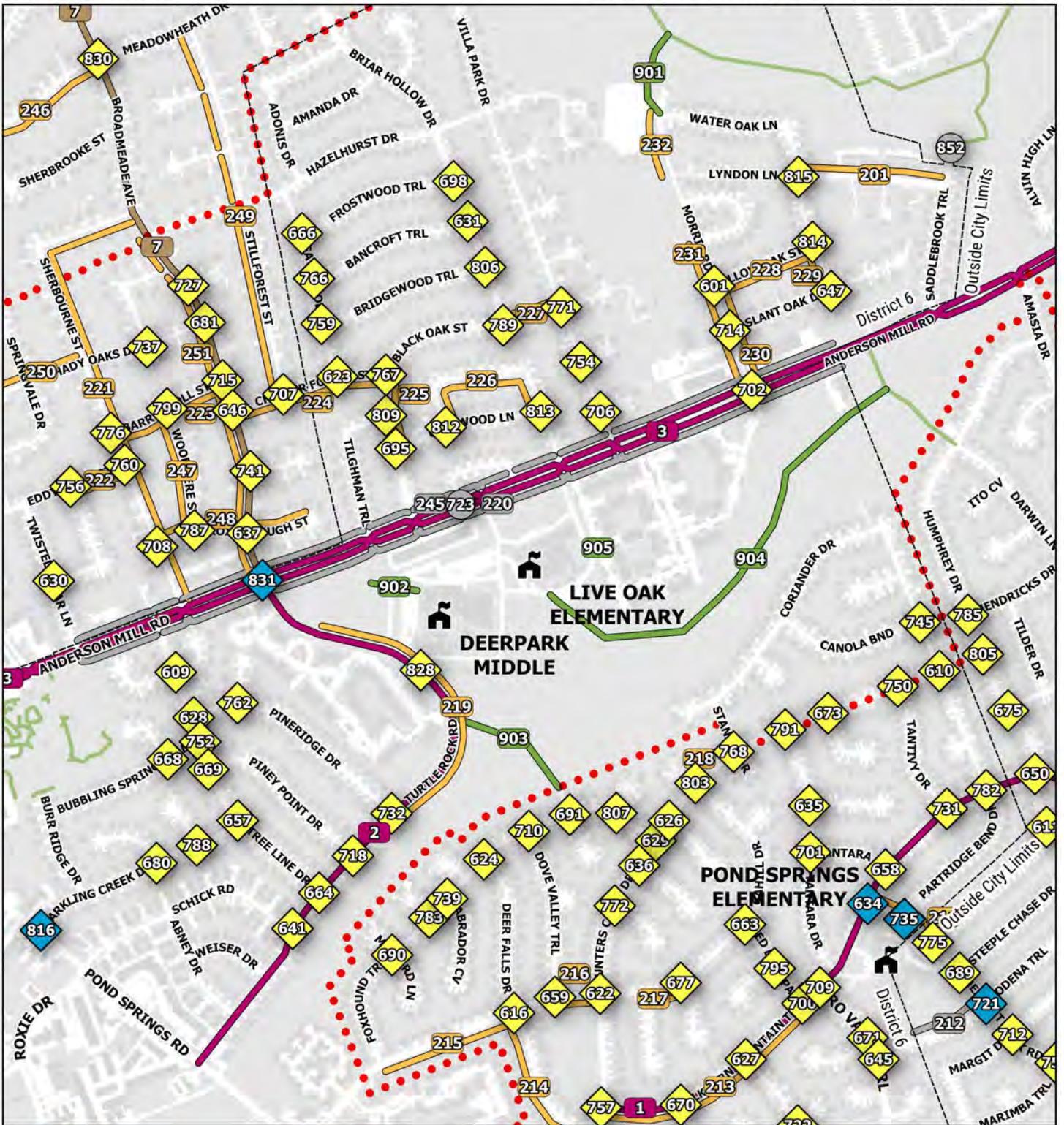


0 800 1600 2400 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidepath
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation
- ◆ Traffic Control / Intersection Reconfiguration
- ◆ Ramp / Curb Extension / Crosswalk
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- Council District Boundary

SCHOOL GROUP 4E

LIVE OAK ELEMENTARY (ROUND ROCK ISD)



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2016 MOBILITY BOND

TOOLE
DESIGN

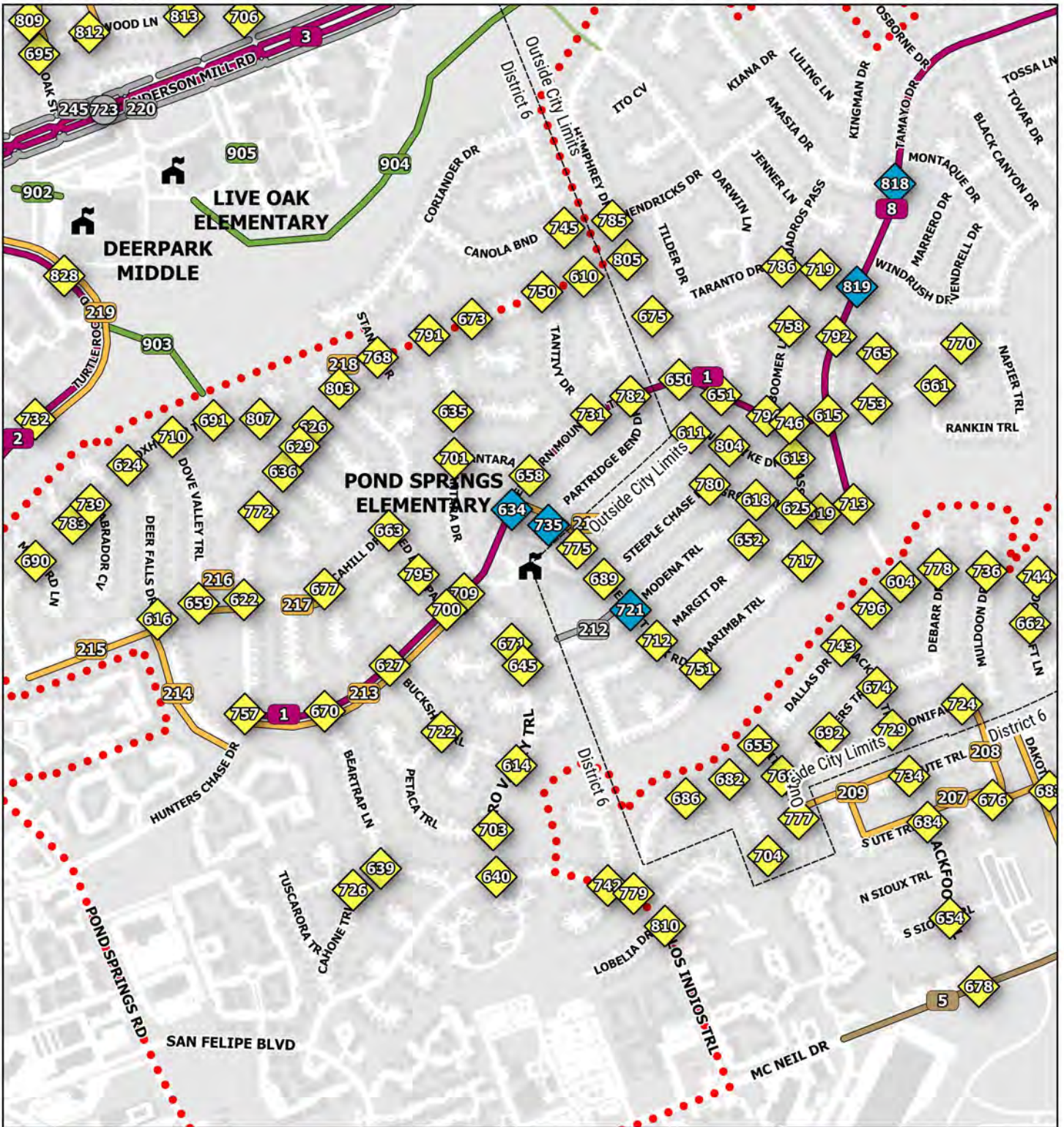


0 800 1600 2400 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidepath
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- New / Improved Sidewalk
- Other linear recommendation
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SCHOOL GROUP 4E

POND SPRINGS ELEMENTARY (ROUND ROCK ISD)



CITY OF AUSTIN
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MOTION
2016 MOBILITY BOND

TOOLE
DESIGN



0 800 1600 2400 ft

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- New / Improved Sidewalk
- Other linear recommendation
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|------------|--|----------------------|--|--|--------------------------|---------------------------------|
| 4E - 001* | POND SPRINGS, DEERPARK | ELKHORN MOUNTAIN TRL | Desired bike route, Excessive vehicle speeds, Wide ROW | Add speed cushions - ELKHORN MOUNTAIN TRL from BUCKSHOT TRL to BEARTRAP LN , Add protected bike lane - ELKHORN MOUNTAIN TRL from HUNTERS CHASE DR to TAMAYO DR | 1 - Very High | 4 - Low |
| 4E - 002* | LIVE OAK, DEERPARK | TURTLE ROCK RD | Excessive vehicle speeds, Wide ROW | Add bike lane - TURTLE ROCK RD from POND SPRINGS RD to ANDERSON MILL RD , Lane diet (changing lane widths) - TURTLE ROCK RD from POND SPRINGS RD to ANDERSON MILL RD + | 2 - High | 3 - Medium |
| 4E - 003* | LIVE OAK, DEERPARK | ANDERSON MILL RD | Excessive vehicle speeds, No bike facility | Add vertical element to existing buffer - ANDERSON MILL RD from POND SPRINGS RD to SADDLEBROOK TRL , Add protected bike lane - ANDERSON MILL RD from W PARMER LN to SADDLEBROOK TRL | 1 - Very High | 4 - Low |
| 4E - 004* | DEERPARK, JOLLYVILLE | CORPUS CHRISTI DR | Excessive vehicle speeds, No bike facility | Add protected bike lane - CORPUS CHRISTI DR from W PARMER LN to MELROSE TRL , Add protected bike lane - MELROSE TRL from W PARMER LN to CORPUS CHRISTI DR + | 1 - Very High | 4 - Low |
| 4E - 005 | JOLLYVILLE | MC NEIL DR | No bike facility | Add sidepath - MC NEIL DR from TECHNOLOGY BLVD to MELROSE TRL | 2 - High | 5 - Very Low |
| 4E - 006* | JOLLYVILLE, DEERPARK, POND SPRINGS | W PARMER LN | No bike facility | Add sidepath - W PARMER LN from CORPUS CHRISTI DR to TAMAYO DR | 4 - Low | 5 - Very Low |
| 4E - 007* | LIVE OAK, FOREST NORTH, DEERPARK | BROADMEADE AVE | No bike facility | Add sidepath - BROADMEADE AVE from TURTLE ROCK RD to QUILBERRY DR | 2 - High | 5 - Very Low |
| 4E - 008* | POND SPRINGS, DEERPARK | TAMAYO DR | No bike facility | Add protected bike lane - TAMAYO DR from GROVEDALE TRL to W PARMER LN | 3 - Medium | 4 - Low |
| 4E - 201* | None (nearest school: Deerpark/Live Oak) | LYNDON LN | Missing sidewalk | Construct new sidewalk - LYNDON LN from WATER OAK LN to SADDLEBROOK TRL | 5 - Very Low | 5 - Very Low |

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INFRASTRUCTURE PLAN

| Project ID | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|------------|--|----------------------|---|--|--------------------------|---------------------------------|
| 4E - 202* | JOLLYVILLE | AMARILLO AVE | Missing sidewalk | Construct new sidewalk - AMARILLO AVE from MC NEIL DR to CROWLEY TRL | 4 - Low | 2 - High |
| 4E - 204 | JOLLYVILLE | DAKOTA LN | Missing sidewalk | Construct new sidewalk - DAKOTA LN from MC NEIL DR to Near 12902 DAKOTA LN | 4 - Low | 4 - Low |
| 4E - 206 | JOLLYVILLE | CORPUS CHRISTI DR | Driveway crossings not accessible, Poor condition | Repair existing sidewalk - CORPUS CHRISTI DR from BANCROFT WOODS DR to Near 6707 CORPUS CHRISTI DR | 5 - Very Low | 5 - Very Low |
| 4E - 207 | JOLLYVILLE | S UTE TRL | Missing sidewalk | Construct new sidewalk - S UTE TRL from DAKOTA LN to N UTE TRL | 4 - Low | 4 - Low |
| 4E - 208* | JOLLYVILLE | ARROWHEAD PASS | Missing sidewalk | Construct new sidewalk - ARROWHEAD PASS from BONIFACE LN to S UTE TRL | 5 - Very Low | 4 - Low |
| 4E - 209* | JOLLYVILLE | N UTE TRL | Missing sidewalk | Construct new sidewalk - N UTE TRL from WITTMER DR to BLACKFOOT TRL | 4 - Low | 4 - Low |
| 4E - 210* | JOLLYVILLE | PINE BLUFFS TRL | Missing sidewalk | Construct new sidewalk - PINE BLUFFS TRL from BUCCANEER TRL to GREYBULL TRL | 5 - Very Low | 5 - Very Low |
| 4E - 211* | POND SPRINGS | PHEASANT ROCK RD | Missing sidewalk | Construct new sidewalk - PHEASANT ROCK RD from ELKHORN MOUNTAIN TRL to HUMPHREY DR | 3 - Medium | 2 - High |
| 4E - 212* | POND SPRINGS | MODENA TRL | Temporary obstruction (ex. vegetation) | Trim vegetation - MODENA TRL from school property line to PHEASANT ROCK RD | 5 - Very Low | 5 - Very Low |
| 4E - 213* | POND SPRINGS | ELKHORN MOUNTAIN TRL | Missing sidewalk | Construct new sidewalk - ELKHORN MOUNTAIN TRL from RED DEER PASS to HUNTERS CHASE DR | 3 - Medium | 4 - Low |
| 4E - 214* | DEERPARK, POND SPRINGS | DEER FALLS DR | Missing sidewalk | Construct new sidewalk - DEER FALLS DR from CAHILL DR to HUNTERS CHASE DR | 4 - Low | 4 - Low |
| 4E - 215* | DEERPARK, POND SPRINGS | CAHILL DR | Missing sidewalk | Construct new sidewalk - CAHILL DR from DEER FALLS DR to FOXHOUND TRL | 4 - Low | 4 - Low |

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| 4E - 216* | DEERPARK, POND SPRINGS | CAHILL DR | Missing sidewalk | Construct new sidewalk - CAHILL DR from HUNTERS CHASE DR to DOVE VALLEY TRL | 3 - Medium | 2 - High |
| 4E - 217* | POND SPRINGS | CAHILL DR | Missing sidewalk | Construct new sidewalk - CAHILL DR from TURKEY RIDGE CT to FOX HOLLOW CT | 4 - Low | 3 - Medium |
| 4E - 218* | POND SPRINGS, DEERPARK | HUNTERS CHASE DR | Poor condition | Repair existing sidewalk - HUNTERS CHASE DR from CAHILL DR to STANZEL DR | 5 - Very Low | 4 - Low |
| 4E - 219* | DEERPARK, LIVE OAK | TURTLE ROCK RD | Missing sidewalk | Construct new sidewalk - TURTLE ROCK RD from SHELL ST to PINERIDGE DR | 1 - Very High | 3 - Medium |
| 4E - 220* | DEERPARK, LIVE OAK | ANDERSON MILL RD | No lighting | Add lighting - ANDERSON MILL RD from TWISTED BRIAR LN to 8425 ANDERSON MILL RD | 4 - Low | 3 - Medium |
| 4E - 221* | DEERPARK, LIVE OAK | SHERBOURN E ST | Missing sidewalk | Construct new sidewalk - SHERBOURN ST from ANDERSON MILL RD to BROADMEADE AVE | 4 - Low | 5 - Very Low |
| 4E - 222* | DEERPARK, LIVE OAK | EDDYSTONE ST | Missing sidewalk | Construct new sidewalk - EDDYSTONE ST from MACHETE TRL to SHERBOURN ST | 5 - Very Low | 4 - Low |
| 4E - 223* | DEERPARK, LIVE OAK | BARRYKNOLL ST | Missing sidewalk | Construct new sidewalk - BARRYKNOLL ST from BROADMEADE AVE to SHERBOURN ST | 5 - Very Low | 5 - Very Low |
| 4E - 224* | DEERPARK, LIVE OAK | CHESTER FOREST ST | Missing sidewalk | Construct new sidewalk - CHESTER FOREST ST from GATEWOOD TRL to BROADMEADE AVE | 4 - Low | 3 - Medium |
| 4E - 225* | DEERPARK, LIVE OAK | BLACK OAK ST | Missing sidewalk | Construct new sidewalk - BLACK OAK ST from CHESTER FOREST ST to CAINWOOD LN | 4 - Low | 4 - Low |
| 4E - 226* | DEERPARK, LIVE OAK | CLEARBROOK TRL | Missing sidewalk | Construct new sidewalk - CLEARBROOK TRL from CAINWOOD LN to Near 8813 CLEARBROOK TRL | 5 - Very Low | 5 - Very Low |
| 4E - 227* | DEERPARK, LIVE OAK | BLACK OAK ST | Missing sidewalk | Construct new sidewalk - BLACK OAK ST from VILLA PARK DR to BRIAR HOLLOW DR | 4 - Low | 3 - Medium |
| 4E - 228* | LIVE OAK | YELLOW OAK ST | Missing sidewalk | Construct new sidewalk - YELLOW OAK ST from WATER OAK LN to MORRIS RD | 5 - Very Low | 5 - Very Low |

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| 4E - 229* | LIVE OAK | WATER OAK LN | Missing sidewalk | Construct new sidewalk - WATER OAK LN from YELLOW OAK ST to SLANT OAK DR | 5 - Very Low | 4 - Low |
| 4E - 230* | DEERPARK, LIVE OAK | MORRIS RD | Missing sidewalk, Temporary obstruction (ex. vegetation) | Trim vegetation - MORRIS RD from YELLOW OAK ST to SLANT OAK DR , Construct new sidewalk - MORRIS RD from SLANT OAK DR to ANDERSON MILL RD | 5 - Very Low | 4 - Low |
| 4E - 231* | LIVE OAK, DEERPARK | MORRIS RD | Missing sidewalk, Temporary obstruction (ex. vegetation) | Construct new sidewalk - MORRIS RD from YELLOW OAK ST to TALYNE CHAISE CIR , Trim vegetation - MORRIS RD from YELLOW OAK ST to SLANT OAK DR , Construct new sidewalk - MORRIS RD from ANDERSON MILL RD to SLANT OAK DR | 4 - Low | 4 - Low |
| 4E - 232* | LIVE OAK | MORRIS RD | Missing sidewalk | Construct new sidewalk - MORRIS RD from LYNDON LN to WATER OAK LN | 5 - Very Low | 5 - Very Low |
| 4E - 233* | FOREST NORTH | BRAEBURN GLEN ST | Missing sidewalk | Construct new sidewalk - BRAEBURN GLEN ST from Near 13311 BRIAR HOLLOW DR to Near 9624 BRAEBURN GLEN ST | 4 - Low | 5 - Very Low |
| 4E - 234* | FOREST NORTH | WOODTHORPE ST | Missing sidewalk | Construct new sidewalk - WOODTHORPE ST from LONSDALE DR to MOORBERRY ST | 2 - High | 3 - Medium |
| 4E - 235* | FOREST NORTH | LONSDALE DR | Missing sidewalk | Construct new sidewalk - LONSDALE DR from WOODTHORPE ST to BROADMEADE AVE | 3 - Medium | 3 - Medium |
| 4E - 236* | FOREST NORTH | PARLIAMENT HOUSE RD | Missing sidewalk | Construct new sidewalk - PARLIAMENT HOUSE RD from LONSDALE DR to LYNDHURST ST | 4 - Low | 3 - Medium |
| 4E - 237* | FOREST NORTH | PARLIAMENT HOUSE RD | Missing sidewalk | Construct new sidewalk - PARLIAMENT HOUSE RD from LONSDALE DR to COWDRAY PARK | 4 - Low | 4 - Low |

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| 4E - 238* | FOREST NORTH | WISTERWOOD ST | Missing sidewalk | Construct new sidewalk - WISTERWOOD ST from BRAEBURN GLEN ST to BROADMEADE AVE | 4 - Low | 5 - Very Low |
| 4E - 239* | FOREST NORTH | PERTSHIRE ST | Missing sidewalk | Construct new sidewalk - PERTSHIRE ST from BRAEBURN GLEN ST to BRAES VALLEY ST | 4 - Low | 5 - Very Low |
| 4E - 240* | FOREST NORTH | BRAES VALLEY ST | Missing sidewalk | Construct new sidewalk - BRAES VALLEY ST from PERTSHIRE ST to EFFINGHAM ST | 5 - Very Low | 4 - Low |
| 4E - 242* | FOREST NORTH | QUILBERRY DR | Missing sidewalk | Construct new sidewalk - QUILBERRY DR from BRIAR HOLLOW DR to BROADMEADE AVE | 4 - Low | 4 - Low |
| 4E - 243* | FOREST NORTH | BRIAR HOLLOW DR | Missing sidewalk | Construct new sidewalk - BRIAR HOLLOW DR from QUEENSLAND DR to QUILBERRY DR | 5 - Very Low | 5 - Very Low |
| 4E - 244* | FOREST NORTH | QUEENSLAND DR | Missing sidewalk | Construct new sidewalk - QUEENSLAND DR from BROADMEADE AVE to BRIAR HOLLOW DR | 4 - Low | 4 - Low |
| 4E - 245* | LIVE OAK, DEERPARK | ANDERSON MILL RD | No lighting | Add lighting - ANDERSON MILL RD from Near 8410 ANDERSON MILL RD to TWISTED BRIAR LN | 4 - Low | 3 - Medium |
| 4E - 246* | None (nearest school: Forest North) | MEADOWHEATH DR | Missing sidewalk | Construct new sidewalk - MEADOWHEATH DR from BROADMEADE AVE to Near 9521 MEADOWHEATH DR | 5 - Very Low | 5 - Very Low |
| 4E - 247* | DEERPARK, LIVE OAK | WOODMERE ST | Missing sidewalk | Construct new sidewalk - WOODMERE ST from ROXBOROUGH ST to BARRYKNOLL ST | 5 - Very Low | 5 - Very Low |
| 4E - 248* | DEERPARK, LIVE OAK | ROXBOROUGH ST | Missing sidewalk | Construct new sidewalk - ROXBOROUGH ST from Near 8902 ROXBOROUGH ST to SHERBOURNE ST | 4 - Low | 4 - Low |
| 4E - 249* | DEERPARK, LIVE OAK | STILLFOREST ST | Missing sidewalk | Construct new sidewalk - STILLFOREST ST from CHESTER FOREST ST to MEADOWHEATH DR | 5 - Very Low | 5 - Very Low |
| 4E - 250* | None (nearest school: Deerpark/Live Oak) | SHADY OAKS DR | Missing sidewalk | Construct new sidewalk - SHADY OAKS DR from SHERBOURNE ST to POND SPRINGS RD | 4 - Low | 5 - Very Low |

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| 4E - 251* | DEERPARK, LIVE OAK | BROADMEADE AVE | Missing sidewalk | Construct new sidewalk - BROADMEADE AVE from ANDERSON MILL RD to HAZELHURST DR | 4 - Low | 5 - Very Low |
| 4E - 252 | FOREST NORTH | LYNDHURST ST | Missing sidewalk | Construct new sidewalk - LYNDHURST ST from N FM 620 RD NB to PARLIAMENT HOUSE RD | 3 - Medium | 4 - Low |
| 4E - 601* | LIVE OAK | MORRIS RD / YELLOW OAK ST | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 602 | JOLLYVILLE | MAGNOLIA MOUND TRL / MC NEIL DR | Missing curb ramps | Add new curb ramp [2] | 3 - Medium | 1 - Very High |
| 4E - 603* | JOLLYVILLE | CROWLEY TRL / SINTON LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 604* | JOLLYVILLE | DALLAS DR / TAMAYO DR | Non-compliant curb ramps | Replace existing curb ramp [3] | 5 - Very Low | 4 - Low |
| 4E - 605* | JOLLYVILLE | KERRVILLE FOLKWAY / SHINER ST | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 606* | JOLLYVILLE | DALLAS DR / DIME BOX TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 607 | FOREST NORTH | COWDRAY PARK / PARLIAMENT HOUSE RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 608 | FOREST NORTH | BROADMEADE AVE / N FM 620 RD NB | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 609* | LIVE OAK, DEERPARK | SAWTOOTH LN / TREE LINE DR | Non-compliant curb ramps | Replace existing curb ramp [3] | 5 - Very Low | 4 - Low |
| 4E - 610* | None (nearest school: Pond Springs) | HUNTERS CHASE DR / PARTRIDGE BEND DR | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 4 - Low |
| 4E - 611* | POND SPRINGS | HUMPHREY DR / VAN DYKE DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 4 - Low | 2 - High |
| 4E - 612 | JOLLYVILLE | MELROSE TRL / NEW IBERIA CT | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 613* | POND SPRINGS | IRBY PASS / VAN DYKE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 614 | POND SPRINGS | BUCKSHOT TRL / ORO VALLEY TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 615* | POND SPRINGS | ELKHORN MOUNTAIN TRL / TAMAYO DR | High speed crossing, Non-compliant curb ramps | Add curb extensions [4] on Tamayo Dr & Elkhorn Mountain Trl , Install high visibility crosswalk [4] across Elkhorn Mountain Trl & Tamayo Dr , Replace existing curb ramp [4] | 3 - Medium | 3 - Medium |

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| 4E - 616* | POND SPRINGS, DEERPARK | CAHILL DR / DEER FALLS DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [3] | 3 - Medium | 2 - High |
| 4E - 617 | JOLLYVILLE | AVERY ISLAND AVE / JENNINGS DR | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 5 - Very Low |
| 4E - 618* | POND SPRINGS | GROVEDALE TRL / MARGIT DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 5 - Very Low | 3 - Medium |
| 4E - 619* | POND SPRINGS | GROVEDALE TRL / MARIMBA TRL | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 5 - Very Low | 3 - Medium |
| 4E - 620 | JOLLYVILLE | CORPUS CHRISTI DR / MC NEIL DR / MELROSE TRL | Faded crosswalk markings, No lighting | Add lighting , Install high visibility crosswalk [4] across McNeil and Corpus Christi | 3 - Medium | 2 - High |
| 4E - 621* | JOLLYVILLE | BUCCANEER TRL / KERRVILLE FOLKWAY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |

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|------------|--|-------------------------------------|--------------------------|---|--------------------------|---------------------------------|
| 4E - 622* | DEERPARK, POND SPRINGS | CAHILL DR / HUNTERS CHASE DR | Non-compliant curb ramps | Replace existing curb ramp [3] | 5 - Very Low | 3 - Medium |
| 4E - 623* | DEERPARK, LIVE OAK | CHESTER FOREST ST / GATEWOOD TRL | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 2 - High |
| 4E - 624* | DEERPARK, POND SPRINGS | DEER FALLS DR / FOXHOUND TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 625* | POND SPRINGS | GROVEDALE TRL / IRBY PASS | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 626* | DEERPARK, POND SPRINGS | CHAINFIRE CV / HUNTERS CHASE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 627* | POND SPRINGS | BUCKSHOT TRL / ELKHORN MOUNTAIN TRL | Missing curb ramps | Add new curb ramp [2] | 3 - Medium | 2 - High |
| 4E - 628* | DEERPARK, LIVE OAK | PINERIDGE DR / TREE LINE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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|-------------------|--|---|--------------------------|--|--------------------------|---------------------------------|
| 4E - 629* | DEERPARK, POND SPRINGS | FOXHOUND TRL / HUNTERS CHASE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 630* | DEERPARK | MACHETE TRL / TWISTED BRIAR LN | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 631* | DEERPARK, LIVE OAK | BANCROFT TRL / BRIAR HOLLOW DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 632 | JOLLYVILLE | MAGNOLIA MOUND TRL / THERIOT TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 633* | FOREST NORTH | BRAES VALLEY ST / EFFINGHAM ST | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 5 - Very Low |
| 4E - 634* | POND SPRINGS | ELKHORN MOUNTAIN TRL / PHEASANT ROCK RD | Non-compliant curb ramps | Add curb extensions [4] on Pheasant Rock Rd & Elkhorn Mountain Trl , Add median refuge island on Elkhorn Mountain Trl , Replace existing curb ramp [2] | 3 - Medium | 3 - Medium |

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|------------|--|-----------------------------------|--|---|--------------------------|---------------------------------|
| 4E - 635* | DEERPARK, POND SPRINGS | TALLYHO TRL / TANTARA DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 3 - Medium | 1 - Very High |
| 4E - 636* | DEERPARK, POND SPRINGS | HUNTERS CHASE DR / MATCHLOCK CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 637* | DEERPARK, LIVE OAK | BROADMEADE AVE / ROXBOROUGH ST | Missing curb ramps | Add new curb ramp [4] | 4 - Low | 2 - High |
| 4E - 638* | JOLLYVILLE | CORPUS CHRISTI DR / LUCKENBACH LN | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 5 - Very Low |
| 4E - 639 | POND SPRINGS | BEARTRAP LN / CAHONE TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 640 | POND SPRINGS | LOS INDIOS TRL / ORO VALLEY TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 641* | DEERPARK | SCHICK RD / TURTLE ROCK RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 642 | JOLLYVILLE | AVERY ISLAND AVE / MC NEIL DR | Missing curb ramps | Add new curb ramp [4] | 3 - Medium | 2 - High |
| 4E - 643 | JOLLYVILLE | AVERY ISLAND AVE / THERIOT TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 644* | JOLLYVILLE | LANDER PASS / RIVERTON DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 645 | POND SPRINGS | MODENA TRL / ORO VALLEY TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 646* | DEERPARK, LIVE OAK | BROADMEADE AVE / CHESTER FOREST ST | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 2 - High |
| 4E - 647* | LIVE OAK | SLANT OAK DR / WATER OAK LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 648* | FOREST NORTH | BROADMEADE AVE / QUEENSLAND DR | Non-compliant curb ramps, difficult crossing | Add new curb ramp [3] , Install high visibility crosswalk [2] across east leg of Queensland Dr & north leg of Broadmeade | 4 - Low | 2 - High |

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| 4E - 649* | FOREST NORTH | BEAUCHAM P SQ / BRIAR HOLLOW DR | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 650* | POND SPRINGS | ELKHORN MOUNTAIN TRL / HUMPHREY DR | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 4 - Low |
| 4E - 651* | POND SPRINGS | BIDWELL DR / ELKHORN MOUNTAIN TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 652* | POND SPRINGS | MARGIT DR / MODENA TRL | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [2] , Replace existing curb ramp [2] | 4 - Low | 3 - Medium |
| 4E - 653* | JOLLYVILLE | CORPUS CHRISTI DR / SHINER ST | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 654 | JOLLYVILLE | BLACKFOOT TRL / S SIOUX TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 655* | None (nearest school: Jollyville) | DALLAS DR / WITTMER DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 656* | FOREST NORTH | LONSDALE DR / WOODTHORPE ST | Missing curb ramps | Add new curb ramp [1] | 3 - Medium | 1 - Very High |
| 4E - 657* | DEERPARK, LIVE OAK | SPARKLING CREEK DR / TREE LINE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 658* | POND SPRINGS | ELKHORN MOUNTAIN TRL / TANTARA CT | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 659* | DEERPARK, POND SPRINGS | CAHILL DR / DOVE VALLEY TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 660* | JOLLYVILLE | AMARILLO AVE / CROWLEY TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 661* | None (nearest school: Jollyville) | ELKHORN MOUNTAIN TRL / RANKIN TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 662* | JOLLYVILLE | MOORCROFT LN / TESORO TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |

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| 4E - 663* | POND SPRINGS | CAHILL DR / RED DEER PASS | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 3 - Medium | 2 - High |
| 4E - 664* | DEERPARK, LIVE OAK | TREE LINE DR / TURTLE ROCK RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 665* | JOLLYVILLE | DALLAS DR / KERRVILLE FOLKWAY | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 4 - Low |
| 4E - 666* | DEERPARK, LIVE OAK | FROSTWOOD TRL / GATEWOOD TRL | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 667* | JOLLYVILLE | CROWLEY TRL / NEW BOSTON BND | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 668* | DEERPARK, LIVE OAK | BUBBLING SPRINGS TRL / PREECE DR | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 4 - Low |
| 4E - 669* | DEERPARK, LIVE OAK | PINEY POINT DR / TREE LINE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 670* | POND SPRINGS | BEARTRAP LN / ELKHORN MOUNTAIN TRL | Missing curb ramps | Add new curb ramp [2] | 3 -Medium | 2 - High |
| 4E - 671 | POND SPRINGS | ORO VALLEY TRL / VELARDE CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 672* | FOREST NORTH | BAYSWATER GARDEN / QUILBERRY DR | Missing curb ramps | Add new curb ramp [1] | 4 -Low | 2 - High |
| 4E - 673* | DEERPARK, LIVE OAK | HUNTERS CHASE DR / HUNTWOOD CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 674* | JOLLYVILLE | BLACKFOOT TRL / POTTERS TRL | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 5 - Very Low |
| 4E - 675* | POND SPRINGS | HUMPHREY DR / TARANTO DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 676 | JOLLYVILLE | ARROWHEAD PASS / S UTE TRL | Missing curb ramps | Add new curb ramp [2] | 4 -Low | 3 - Medium |

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| 4E - 677* | POND SPRINGS | CAHILL DR / FOX HOLLOW CT | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 4 - Low | 3 - Medium |
| 4E - 678 | JOLLYVILLE | BLACKFOOT TRL / MC NEIL DR | Missing curb ramps | Add new curb ramp [1] | 3 - Medium | 1 - Very High |
| 4E - 679* | JOLLYVILLE | CROWLEY TRL / LUBBOCK LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 680* | DEERPARK | SPARKLING CREEK CIR / SPARKLING CREEK DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 681* | DEERPARK, LIVE OAK | BROADMEADE AVE / SHADY OAKS DR | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 2 - High |
| 4E - 682* | None (nearest school: Jollyville) | DALLAS DR / DRINGENBERG DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 683 | JOLLYVILLE | DAKOTA LN / S UTE TRL | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 2 - High |

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| 4E - 684 | JOLLYVILLE | BLACKFOOT TRL / S UTE TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 685* | JOLLYVILLE | CROWLEY TRL / MARBLE FALLS CV | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 4 - Low |
| 4E - 686* | None (nearest school: Jollyville) | DALLAS DR / LANGHOFF CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 687* | JOLLYVILLE | AMARILLO AVE / CORPUS CHRISTI DR | Difficult crossing, Non-compliant curb ramps | Add curb extensions [4] on All legs , Replace existing curb ramp [4] , Study for all-way stop | 2 - High | 2 - High |
| 4E - 689* | POND SPRINGS | PHEASANT ROCK RD / STEEPLE CHASE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 690* | DEERPARK | FOXHOUND TRL / MALLARD LN | Non-compliant curb ramps | Replace existing curb ramp [3] | 5 - Very Low | 4 - Low |
| 4E - 691* | DEERPARK, POND SPRINGS | FOXHOUND TRL / POSSUM HOLLOW DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [3] | 2 - High | 1 - Very High |

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| 4E - 692* | JOLLYVILLE | POTTERS TRL / SHEMYA CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 693 | JOLLYVILLE | MELROSE CV / MELROSE TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 694* | FOREST NORTH | BROADMEADE AVE / QUILBERRY DR | Faded crosswalk markings, No lighting | Add lighting , Repaint crosswalk markings [3] across Broadmeade and Quilberry | 1 - Very High | 1 - Very High |
| 4E - 695* | DEERPARK, LIVE OAK | BLACK OAK ST / CAINWOOD LN | Missing curb ramps | Add new curb ramp [3] | 4 - Low | 3 - Medium |
| 4E - 696* | JOLLYVILLE | GREYBULL TRL / ROCK SPRINGS CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 697 | JOLLYVILLE | MAGNOLIA MOUND TRL / WEEKS CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 698* | LIVE OAK | BRIAR HOLLOW DR / FROSTWOOD TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |

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| 4E - 699* | JOLLYVILLE | BUCCANEER TRL / GREEN RIVER TRL | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 5 - Very Low |
| 4E - 700* | POND SPRINGS | ELKHORN MOUNTAIN TRL / RED DEER PASS | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 701* | POND SPRINGS | TANTARA CT / TANTARA DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 702* | DEERPARK, LIVE OAK | ANDERSON MILL RD / MORRIS RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 703 | POND SPRINGS | ORO VALLEY TRL / PETACA TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 704* | None (nearest school: Jollyville) | DRINGENBERG DR / SARALEE TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 705* | JOLLYVILLE | NEW BOSTON BND / SINTON LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 706* | DEERPARK, LIVE OAK | SNOWDEN CV / VILLA PARK DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 707* | DEERPARK, LIVE OAK | CHESTER FOREST ST / STILLFOREST ST | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 2 - High |
| 4E - 708* | DEERPARK, LIVE OAK | ROXBOROUGH ST / SHERBOURNE ST | Missing curb ramps | Add new curb ramp [4] | 5 - Very Low | 3 - Medium |
| 4E - 709* | POND SPRINGS | ELKHORN MOUNTAIN TRL / ORO VALLEY TRL | Wide curb radii | Add curb extensions [2] on Oro Valley | 2 - High | 1 - Very High |
| 4E - 710* | DEERPARK, POND SPRINGS | DOVE VALLEY TRL / FOXHOUND TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 711* | JOLLYVILLE | DALLAS DR / GREYBULL TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 712* | POND SPRINGS | MARGIT DR / PHEASANT ROCK RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 713* | POND SPRINGS | GROVEDALE TRL / TAMAYO DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 714* | DEERPARK, LIVE OAK | MORRIS RD / SLANT OAK DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 715* | DEERPARK, LIVE OAK | BARRYKNOLL ST / BROADMEADE AVE | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 2 - High |
| 4E - 716 | JOLLYVILLE | JENNINGS DR / MAGNOLIA MOUND TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 717* | POND SPRINGS | MARIMBA TRL / MODENA TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 718* | DEERPARK, LIVE OAK | PINEY POINT DR / TURTLE ROCK RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 719* | POND SPRINGS | BOOMER LN / TARANTO DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 4 - Low | 2 - High |

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| 4E - 720 | JOLLYVILLE | AVERY ISLAND AVE / EVANGELINE TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 721* | POND SPRINGS | MODENA TRL / PHEASANT ROCK RD | Non-compliant curb ramps | Add median refuge island on Pheasant Rock Rd , Install high visibility crosswalk [2] across Pheasant Rock Rd & Modena Trl , Replace existing curb ramp [4] | 3 - Medium | 2 - High |
| 4E - 722 | POND SPRINGS | BUCKSHOT TRL / PETACA CV / PETACA TRL | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [2] , Replace existing curb ramp [2] | 4 - Low | 2 - High |
| 4E - 723* | DEERPARK, LIVE OAK | ANDERSON MILL RD / SPRINGMAIL CIR | High speed crossing | Move westbound stop bar closer to crosswalk; install rumble strips or textured paving on both approaches to PHB | 4 - Low | 2 - High |
| 4E - 724* | JOLLYVILLE | ARROWHEAD PASS / BONIFACE LN | Missing curb ramps | Add new curb ramp [1] | 5 - Very Low | 3 - Medium |
| 4E - 725* | JOLLYVILLE | AMARILLO AVE / DALLAS DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |

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|------------|--|-----------------------------------|--------------------------|---|--------------------------|---------------------------------|
| 4E - 726 | POND SPRINGS | BONETA TRL / CAHONE TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 727* | DEERPARK | BROADMEADE AVE / NORCHESTER CT | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 728* | FOREST NORTH | PADDINGTON CIR / QUILBERRY DR | Missing curb ramps | Add new curb ramp [1] | 4 - Low | 2 - High |
| 4E - 729* | JOLLYVILLE | BLACKFOOT TRL / BONIFACE LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 730 | JOLLYVILLE | DAKOTA LN / MC NEIL DR | Missing curb ramps | Add new curb ramp [1] | 3 - Medium | 2 - High |
| 4E - 731* | POND SPRINGS | ELKHORN MOUNTAIN TRL / TANTIVY DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 732* | DEERPARK, LIVE OAK | PINERIDGE DR / TURTLE ROCK RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |

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INFRASTRUCTURE PLAN

| Project ID | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|------------|--|--------------------------------------|--|---|--------------------------|---------------------------------|
| 4E - 733* | JOLLYVILLE | AMARILLO AVE / NEW BOSTON BND | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 734 | JOLLYVILLE | BLACKFOOT TRL / N UTE TRL | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [2] , Replace existing curb ramp [1] | 4 - Low | 2 - High |
| 4E - 735* | POND SPRINGS | PARTRIDGE BEND DR / PHEASANT ROCK RD | Non-compliant curb ramps | Add curb extensions [2] on Pheasant Rock Rd , Add median refuge island on Pheasant Rock Rd , Replace existing curb ramp [4] | 3 - Medium | 3 - Medium |
| 4E - 736* | JOLLYVILLE | DALLAS DR / MULDOON DR | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 4 - Low |
| 4E - 737* | DEERPARK | CEDARHURST CIR / SHADY OAKS DR | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 3 - Medium |
| 4E - 738 | JOLLYVILLE | EVANGELINE TRL / MAGNOLIA MOUND TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 739* | DEERPARK | FOXHOUND TRL / LABRADOR CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 740* | FOREST NORTH | BRIAR HOLLOW DR / QUILBERRY DR | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 741* | DEERPARK, LIVE OAK | BROADMEADE AVE / CHARNWOOD CT | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 3 - Medium |
| 4E - 742 | POND SPRINGS | LOS INDIOS TRL / SIR CHRISTOPHERS CV / SUMMERSW EET CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 743* | JOLLYVILLE | BLACKFOOT TRL / DALLAS DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [2] | 4 - Low | 2 - High |
| 4E - 744* | JOLLYVILLE | DALLAS DR / MOORCROFT LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 745* | LIVE OAK | CANOLA BND / PARTRIDGE BEND DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |

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| 4E - 746* | POND SPRINGS | ELKHORN MOUNTAIN TRL / IRBY PASS | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 747 | FOREST NORTH | LYNDHURST ST / PARLIAMENT HOUSE RD | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [2] | 3 - Medium | 2 - High |
| 4E - 748 | JOLLYVILLE | MAGNOLIA MOUND TRL / SLIDELL CT | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 750* | LIVE OAK | HUNTERS CHASE DR / TANTIVY DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 751* | POND SPRINGS | MARIMBA TRL / PHEASANT ROCK RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 752* | DEERPARK, LIVE OAK | BUBBLING SPRINGS TRL / TREE LINE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 753* | POND SPRINGS | ELKHORN MOUNTAIN TRL / OVERTON PASS | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 754* | DEERPARK, LIVE OAK | SPARTA LN / VILLA PARK DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 755* | JOLLYVILLE | GREEN RIVER TRL / TESORO TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 756* | DEERPARK | EDDYSTONE ST / MACHETE TRL | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 757* | POND SPRINGS | ELKHORN MOUNTAIN TRL / HUNTERS CHASE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 758* | POND SPRINGS | BIDWELL DR / BOOMER LN | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Replace existing curb ramp [1] | 5 - Very Low | 3 - Medium |
| 4E - 759* | DEERPARK, LIVE OAK | BRIDGEWOOD TRL / GATEWOOD TRL | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 3 - Medium |

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| 4E - 760* | DEERPARK, LIVE OAK | EDDYSTONE ST / SHERBOURNE ST | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 761* | FOREST NORTH | LONSDALE DR / PARLIAMENT HOUSE RD | Missing curb ramps | Add new curb ramp [2] | 3 - Medium | 1 - Very High |
| 4E - 762* | DEERPARK, LIVE OAK | PINERIDGE DR / TEAGUE TRL | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 4 - Low |
| 4E - 763* | JOLLYVILLE | CORPUS CHRISTI DR / HONDO BND | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 764* | JOLLYVILLE | HONDO BND / KERRVILLE FOLKWAY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 765* | POND SPRINGS | NAPIER TRL / OVERTON PASS | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 766* | DEERPARK, LIVE OAK | BANCROFT TRL / GATEWOOD TRL | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 3 - Medium |

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| 4E - 767* | DEERPARK, LIVE OAK | BLACK OAK ST / CHESTER FOREST ST | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 768* | DEERPARK, POND SPRINGS | HUNTERS CHASE DR / STANZEL DR | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 3 - Medium |
| 4E - 769* | None (nearest school: Jollyville) | POTTERS TRL / WITTMER DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 770* | None (nearest school: Jollyville) | NAPIER TRL / TORTOSA PATH | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 771* | DEERPARK, LIVE OAK | BLACK OAK ST / VILLA PARK DR | Missing curb ramps | Add new curb ramp [4] | 4 - Low | 2 - High |
| 4E - 772* | DEERPARK, POND SPRINGS | FLASHPAN CV / HUNTERS CHASE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 773* | FOREST NORTH | BROADMEADE AVE / WISTERWOOD ST | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |

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| 4E - 774* | JOLLYVILLE | LUBBOCK LN / NEW BOSTON BND | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 775* | POND SPRINGS | HUMPHREY DR / PHEASANT ROCK RD | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 776* | DEERPARK | BARRYKNOLL ST / SHERBOURNE ST | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 777* | None (nearest school: Jollyville) | N UTE TRL / WITTMER DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 778* | JOLLYVILLE | DALLAS DR / DEBARR DR | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 4 - Low |
| 4E - 779 | None (nearest school: Pond Springs) | DALLAS DR / LOS INDIOS TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 780* | POND SPRINGS | GROVEDALE TRL / STEEPLE CHASE DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1], Replace existing curb ramp [1] | 4 - Low | 2 - High |
| 4E - 781 | JOLLYVILLE | AMARILLO AVE / MC NEIL DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |

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| 4E - 782* | POND SPRINGS | ELKHORN MOUNTAIN TRL / PARTRIDGE BEND DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 783* | DEERPARK | FOXHOUND TRL / PINTAIL CV | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 4 - Low |
| 4E - 784* | JOLLYVILLE | BUCCANEER TRL / PINE BLUFFS TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 785* | POND SPRINGS | HENDRICKS DR / HUMPHREY DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 786* | POND SPRINGS | QUADROS PASS / TARANTO DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 787* | DEERPARK, LIVE OAK | ROXBOROUGH ST / WOODMERE ST | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 788* | DEERPARK | SPARKLING CREEK DR / WISTFUL CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |

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| 4E - 789* | DEERPARK, LIVE OAK | BLACK OAK ST / BRIAR HOLLOW DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 790* | JOLLYVILLE | GREYBULL TRL / PINE BLUFFS TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 791* | DEERPARK, LIVE OAK | HUNTERS CHASE DR / TANTARA DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 792* | POND SPRINGS | NAPIER TRL / TAMAYO DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 793* | JOLLYVILLE | CORPUS CHRISTI DR / KERRVILLE FOLKWAY | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 794* | POND SPRINGS | BOOMER LN / ELKHORN MOUNTAIN TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 795* | POND SPRINGS | RED DEER PASS / WOLF JAW CV | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 796* | JOLLYVILLE | ADAK CV / DALLAS DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 797 | FOREST NORTH | COWDRAY PARK / SAXBY CT | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 798 | FOREST NORTH | PARLIAMENT HOUSE RD / WAVERLY CT | Non-compliant curb ramps | Replace existing curb ramp [1] | 5 - Very Low | 5 - Very Low |
| 4E - 799* | DEERPARK, LIVE OAK | BARRYKNOLL ST / WOODMERE ST | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 800* | FOREST NORTH | BRIAR HOLLOW DR / QUEENSLAND DR | Missing curb ramps | Add new curb ramp [1] | 5 - Very Low | 3 - Medium |
| 4E - 801* | FOREST NORTH | BROADMEADE AVE / LONSDALE DR | Missing curb ramps | Add new curb ramp [1] | 3 - Medium | 1 - Very High |
| 4E - 802* | JOLLYVILLE | BUCCANEER TRAIL / GREYBULL TRAIL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |

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| 4E - 803* | DEERPARK, POND SPRINGS | CAHILL DR / HUNTERS CHASE DR | Non-compliant curb ramps | Replace existing curb ramp [4] | 5 - Very Low | 3 - Medium |
| 4E - 804* | POND SPRINGS | STEEPLE CHASE DR / VAN DYKE DR | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 3 - Medium |
| 4E - 805* | POND SPRINGS | HUMPHREY DR / HUNTERS CHASE DR | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 806* | DEERPARK, LIVE OAK | BRIAR HOLLOW DR / BRIDGEWOOD TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 807* | DEERPARK, POND SPRINGS | FOXHOUND CV / FOXHOUND TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4E - 808* | FOREST NORTH | EFFINGHAM ST / KENSINGTON ST | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 809* | DEERPARK, LIVE OAK | BLACK OAK ST / TILGHMAN TRL | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |

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| 4E - 810 | None (nearest school: Pond Springs) | LOBELIA DR / LOS INDIOS TRL | Non-compliant curb ramps | Replace existing curb ramp [3] | 5 - Very Low | 4 - Low |
| 4E - 811* | JOLLYVILLE | KERRVILLE FOLKWAY / LUCKENBACH LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 812* | DEERPARK, LIVE OAK | CAINWOOD LN / CLEARBROOK TRL | Missing curb ramps | Add new curb ramp [2] | 4 - Low | 3 - Medium |
| 4E - 813* | DEERPARK, LIVE OAK | CAINWOOD LN | Non-compliant curb ramps | Replace existing curb ramp [2] | 5 - Very Low | 5 - Very Low |
| 4E - 814* | None (nearest school: Live Oak) | WATER OAK LN | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 4 - Low |
| 4E - 815* | None (nearest school: Live Oak) | LYNDON LN | Missing curb ramps | Add new curb ramp [3] | 5 - Very Low | 3 - Medium |
| 4E - 816 | None (nearest school: Deerpark) | SPARKLING CREEK DR | High speed crossing | Install Rapid Flashing Beacon | 4 - Low | 3 - Medium |
| 4E - 817 | None (nearest school: Deerpark) | ANDERSON MILL RD / POND SPRINGS RD | High speed crossing | Install high visibility crosswalk [2] across Pond Springs | 4 - Low | 2 - High |
| 4E - 818* | None (nearest school: Pond Springs) | AMASIA DR | High speed crossing | Add median refuge island on Tamayo Dr , Install high visibility crosswalk [1] across Tamayo Dr | 4 - Low | 3 - Medium |

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| 4E - 819* | None (nearest school: Pond Springs) | TAMAYO DR / TARANTO DR | High speed crossing | Add median refuge island on Tamayo Dr , Install high visibility crosswalk [1] across Tamayo Dr | 4 - Low | 3 - Medium |
| 4E - 820* | FOREST NORTH | KENSINGTON ST / WISTERWOOD ST | Difficult crossing | Install high visibility crosswalk [1] across Kensington | 5 - Very Low | 3 - Medium |
| 4E - 821* | FOREST NORTH | BRAES VALLEY ST / BROADMEADE AVE | Difficult crossing | Install high visibility crosswalk [1] across Braes Valley , Replace existing curb ramp [2] | 2 - High | 1 - Very High |
| 4E - 822* | JOLLYVILLE | DALLAS DR / GREEN RIVER TRL | Difficult crossing | Repaint crosswalk markings [1] across Dallas | 5 - Very Low | 3 - Medium |
| 4E - 823* | FOREST NORTH | KENSINGTON ST / PERTSHIRE ST | Difficult crossing | Install high visibility crosswalk [1] across Kensington | 5 - Very Low | 3 - Medium |
| 4E - 824 | JOLLYVILLE | BANCROFT WOODS DR / CORPUS CHRISTI DR | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [1] across Bancroft Woods , Replace existing curb ramp [2] | 2 - High | 1 - Very High |
| 4E - 825 | JOLLYVILLE | HEINEMANN DR / MELROSE TRL | Difficult crossing, Non-compliant curb ramps | Add curb extensions [4] on All legs , Install high visibility crosswalk [4] across Melrose Trail , Replace existing curb ramp [3] , Study for all-way stop | 3 - Medium | 3 - Medium |

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|-------------------|--|--|---------------------|--|--------------------------|---------------------------------|
| 4E - 826* | FOREST NORTH | BRAES VALLEY ST / PERTSHIRE ST | Difficult crossing | Install high visibility crosswalk [1] across Braes Valley | 4 - Low | 2 - High |
| 4E - 827* | FOREST NORTH | BRAEBURN GLEN ST / BROADMEADE AVE / KENSINGTON ST | Difficult crossing | Install high visibility crosswalk [1] across Broadmeade | 4 - Low | 2 - High |
| 4E - 828* | DEERPARK, LIVE OAK | Midblock - TURTLE ROCK RD | High speed crossing | Add curb extensions [1] on Turtle Rock | 1 - Very High | 1 - Very High |
| 4E - 829 | FOREST NORTH | Midblock - LYNTHURST ST | Difficult crossing | Add new curb ramp [3] , Install high visibility crosswalk [1] across Lyndhurst | 3 - Medium | 1 - Very High |
| 4E - 830* | None (nearest school: Forest North) | BROADMEADE AVE / MEADOWHEATH DR | Difficult crossing | Add lighting , Add new curb ramp [2] , Install high visibility crosswalk [1] across Broadmeade Ave | 3 - Medium | 2 - High |
| 4E - 831* | DEERPARK, LIVE OAK | ANDERSON MILL RD / BROADMEADE AVE / TURTLE ROCK RD | Difficult crossing | Increase pedestrian crossing time | 5 - Very Low | 3 - Medium |

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INFRASTRUCTURE PLAN

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| 4E - 832 | JOLLYVILLE | CORPUS CHRISTI DR | Difficult crossing | Add curb extensions [2] on Corpus Christi , Add median refuge island on Corpus Christi , Install high visibility crosswalk [1] across Corpus Christi | 2 - High | 2 - High |
| 4E - 833 | JOLLYVILLE | HEINEMANN DR / MC NEIL DR | Difficult crossing | Install high visibility crosswalk [3] across Heinemann Dr & McNeil Dr | 3 - Medium | 2 - High |
| 4E - 834 | JOLLYVILLE | Midblock - CORPUS CHRISTI DR | Difficult crossing | Install high visibility crosswalk [1] across Sendera Trails Townhomes driveway | 3 - Medium | 1 - Very High |
| 4E - 852* | None (nearest school: Live Oak) | Near 13409 SADDLEBRO OK TRL | No wayfinding, Other | Add wayfinding and lighting | 5 - Very Low | 5 - Very Low |
| 4E - 901* | LIVE OAK, DEERPARK | Near 13324 MORRIS RD | No trail connection | Construct new shared use path ~ | 4 -Low | 5 - Very Low |
| 4E - 902* | DEERPARK, LIVE OAK | Near 8849 ANDERSON MILL RD | No trail connection | Construct new shared use path ~ | 2 - High | 3 - Medium |
| 4E - 903* | DEERPARK, LIVE OAK | Near 8204 FOXHOUND TRL | No trail connection | Construct new shared use path ~ | 1 - Very High | 4 - Low |
| 4E - 904* | DEERPARK, LIVE OAK | Near 8425 ANDERSON MILL RD | No trail connection | Construct new shared use path | 1 - Very High | 5 - Very Low |
| 4E - 905* | DEERPARK, LIVE OAK | Near 8607 ANDERSON MILL RD | No trail connection | Add gate , Construct new shared use path | 1 - Very High | 1 - Very High |

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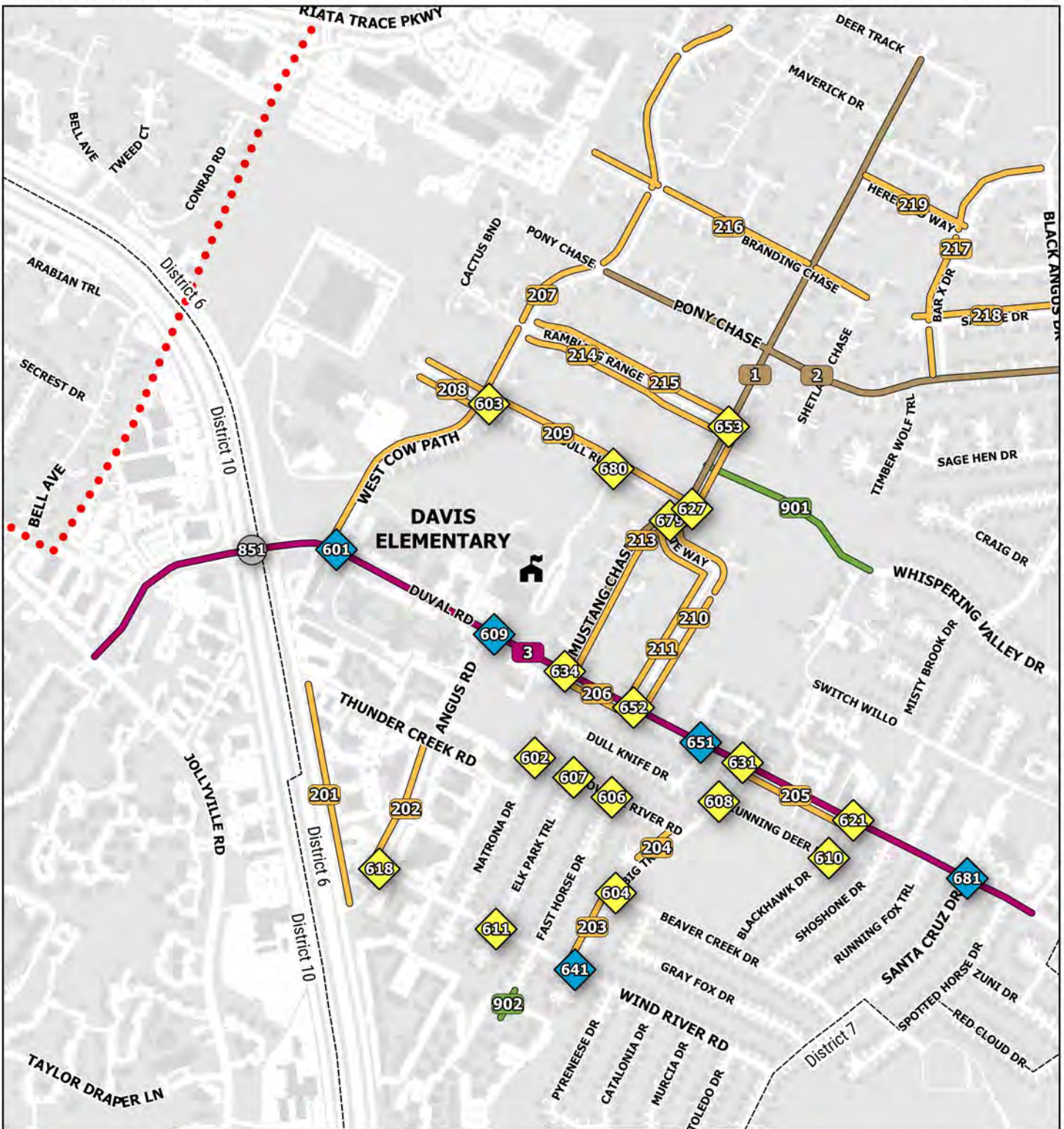
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| 4E - 906* | FOREST NORTH | Near 13302 HYMEADOW CIR | No trail connection | Construct new shared use path | 4 - Low | 5 - Very Low |
| 4E - 907* | FOREST NORTH | Near 13412 BROADMEADE AVE | No trail connection | Construct new shared use path | 2 - High | 5 - Very Low |
| 4E - 908 | FOREST NORTH | Near 10008 PARLIAMEN T HOUSE RD | No trail connection | Add gate , Construct new shared use path | 4 -Low | 4 - Low |
| 4E - 909* | FOREST NORTH | Near 9523 MEADOWHEATH DR | No trail connection | Construct new shared use path | 4 - Low | 5 - Very Low |

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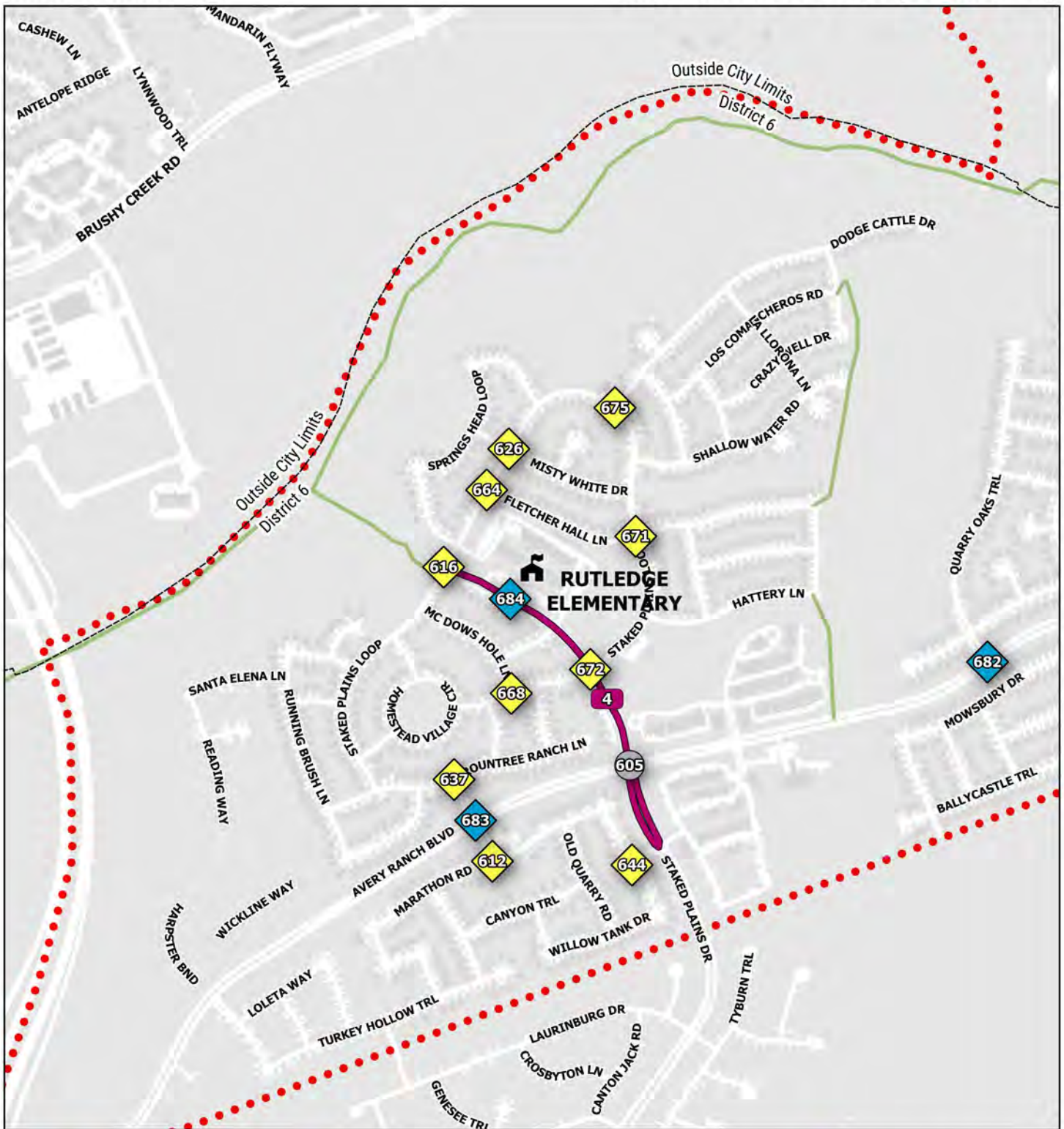
CITY OF AUSTIN
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MOTION
2016 MOBILITY BOND

TOOLE
DESIGN



0 800 1600 2400 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidepath
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation
- Traffic Control / Intersection Reconfiguration
- Ramp / Curb Extension / Crosswalk
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| 4F - 001 | DAVIS | MUSTANG CHASE | No bike facility | Add sidepath - MUSTANG CHASE from DEER TRACK to DUVAL RD | 2 - High | 5 - Very Low |
| 4F - 002 | DAVIS | PONY CHASE | No bike facility | Add sidepath - PONY CHASE from WEST COW PATH to BLACK ANGUS DR | 4 - Low | 5 - Very Low |
| 4F - 003 | DAVIS | DUVAL RD | No bike facility | Add protected bike lane - DUVAL RD from WHISPERING VALLEY DR to JOLLYVILLE RD , Lane reconfiguration (changing number of lanes) - DUVAL RD from WHISPERING VALLEY DR to JOLLYVILLE RD | 1 - Very High | 5 - Very Low |
| 4F - 004 | RUTLEDGE | STAKED PLAINS DR | No bike facility | Add protected bike lane - STAKED PLAINS DR from STAKED PLAINS LOOP to POST TRL | 3 - Medium | 4 - Low |
| 4F - 201 | DAVIS | RESEARCH BLVD SVRD NB | Missing sidewalk | Construct new sidewalk - RESEARCH BLVD SVRD NB from ANGUS RD to THUNDER CREEK RD | 4 - Low | 5 - Very Low |
| 4F - 202 | DAVIS | ANGUS RD | Missing sidewalk | Construct new sidewalk - ANGUS RD from WIND RIVER RD to THUNDER CREEK RD | 4 - Low | 4 - Low |
| 4F - 203 | DAVIS | BIG TRL | Poor condition | Construct new sidewalk - BIG TRL from WIND RIVER RD to BEAVER CREEK DR | 4 - Low | 3 - Medium |
| 4F - 204 | DAVIS | BIG TRL | Permanent obstruction (ex. pole/tree) | Construct new sidewalk - BIG TRL from POWDER RIVER RD to BIG TRAIL CIR | 4 - Low | 3 - Medium |
| 4F - 205 | DAVIS | DUVAL RD | Poor condition | Repair existing sidewalk - DUVAL RD from BIG TRL to BLACKHAWK DR | 5 - Very Low | 5 - Very Low |
| 4F - 206 | DAVIS | DUVAL RD | Poor condition | Repair existing sidewalk - DUVAL RD from MUSTANG CHASE to GATE WAY | 5 - Very Low | 4 - Low |
| 4F - 207 | DAVIS | WEST COW PATH | Missing sidewalk | Construct new sidewalk - WEST COW PATH from DUVAL RD to MAVERICK DR | 4 - Low | 5 - Very Low |
| 4F - 208 | DAVIS | BULL RUN CIR | Missing sidewalk | Construct new sidewalk - BULL RUN CIR from Near 5407 BULL RUN CIR to WEST COW PATH | 5 - Very Low | 4 - Low |

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| 4F - 209 | DAVIS | BULL RUN | Missing sidewalk | Construct new sidewalk - BULL RUN CIR from Near 5404 BULL RUN CIR to WEST COW PATH , Construct new sidewalk - BULL RUN from MUSTANG CHASE to WEST COW PATH | 3 - Medium | 5 - Very Low |
| 4F - 210 | DAVIS | GATE WAY | Missing sidewalk | Construct new sidewalk - GATE WAY from DUVAL RD to MUSTANG CHASE | 5 - Very Low | 5 - Very Low |
| 4F - 211 | DAVIS | GATE WAY | Missing sidewalk | Construct new sidewalk - GATE WAY from DUVAL RD to MUSTANG CHASE | 5 - Very Low | 5 - Very Low |
| 4F - 213 | DAVIS | MUSTANG CHASE | Missing sidewalk | Construct new sidewalk - MUSTANG CHASE from DUVAL RD to BULL RUN , Construct new sidewalk - MUSTANG CHASE from RAMBLING RANGE to BULL RUN | 3 - Medium | 4 - Low |
| 4F - 214 | DAVIS | RAMBLING RANGE | Missing sidewalk | Construct new sidewalk - RAMBLING RANGE from MUSTANG CHASE to WEST COW PATH | 5 - Very Low | 5 - Very Low |
| 4F - 215 | DAVIS | RAMBLING RANGE | Missing sidewalk | Construct new sidewalk - RAMBLING RANGE from MUSTANG CHASE to WEST COW PATH | 5 - Very Low | 5 - Very Low |
| 4F - 216 | DAVIS | BRANDING CHASE | Missing sidewalk | Construct new sidewalk - BRANDING CHASE from end to SHETLAND CHASE | 5 - Very Low | 5 - Very Low |
| 4F - 217 | None (nearest school: Davis) | BAR X DR | Missing sidewalk | Construct new sidewalk - BAR X DR from PONY CHASE to BLACK ANGUS DR | 5 - Very Low | 5 - Very Low |
| 4F - 218 | None (nearest school: Davis) | SADDLE CIR | Missing sidewalk | Construct new sidewalk - SADDLE CIR from Near 5102 SADDLE CIR to SADDLE DR , Construct new sidewalk - SADDLE DR from SADDLE CIR to BLACK ANGUS DR | 5 - Very Low | 5 - Very Low |
| 4F - 219 | None (nearest school: Davis) | HEREFORD WAY | Missing sidewalk | Construct new sidewalk - HEREFORD WAY from BAR X DR to MUSTANG CHASE | 5 - Very Low | 5 - Very Low |
| 4F - 601 | DAVIS | DUVAL RD / WEST COW PATH | Non-compliant curb ramps, Wide curb radii | Add new curb ramp [2] , Intersection reconfiguration | 2 - High | 3 - Medium |

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| 4F - 602 | DAVIS | NATRONA DR / POWDER RIVER RD | Missing curb ramps | Add new curb ramp [4] | 5 - Very Low | 3 - Medium |
| 4F - 603 | DAVIS | BULL RUN / BULL RUN CIR / WEST COW PATH | Missing curb ramps | Add new curb ramp [2] , Install high visibility crosswalk [1] across West Cow Path | 4 - Low | 2 - High |
| 4F - 604 | DAVIS | BEAVER CREEK DR / BIG TRL | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [2] , Replace existing curb ramp [1] | 4 - Low | 2 - High |
| 4F - 605 | RUTLEDGE | AVERY RANCH BLVD / STAKED PLAINS DR | Lighting in underground pedestrian tunnel is non-functional | Fix lighting in underground pedestrian tunnel | 5 - Very Low | 4 - Low |
| 4F - 606 | DAVIS | FAST HORSE DR / POWDER RIVER RD | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 4 - Low |
| 4F - 607 | DAVIS | ELK PARK TRL / POWDER RIVER RD | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4F - 608 | DAVIS | BIG TRL / RUNNING DEER DR | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [2] , Replace existing curb ramp [1] ~ | 4 - Low | 2 - High |

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| 4F - 609 | DAVIS | ANGUS RD / DUVAL RD | High speed crossing | Add median refuge island on Duval Rd , Install Rapid Flashing Beacon , Replace existing curb ramp [4] | 2 - High | 2 - High |
| 4F - 610 | DAVIS | BLACKHAWK DR / RUNNING DEER DR | Missing curb ramps | Add new curb ramp [2] | 5 - Very Low | 3 - Medium |
| 4F - 611 | DAVIS | ELK PARK CIR / ELK PARK TRL / WIND RIVER RD | Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [2] , Replace existing curb ramp [2] | 3 - Medium | 2 - High |
| 4F - 612 | RUTLEDGE | MARATHON RD / NEARABOUT RD | Difficult crossing | Install high visibility crosswalk [2] across Marathon Rd & Nearabout Rd | 5 - Very Low | 3 - Medium |
| 4F - 616 | RUTLEDGE | STAKED PLAINS DR / STAKED PLAINS LOOP | Difficult crossing | Install high visibility crosswalk [2] across Staked Plains Dr & Staked Plaines Loop | 3 - Medium | 2 - High |
| 4F - 618 | DAVIS | ANGUS RD / WIND RIVER RD | Difficult crossing, Missing curb ramps, Non-compliant curb ramps | Add new curb ramp [1] , Install high visibility crosswalk [1] across Angus , Replace existing curb ramp [1] | 3 - Medium | 2 - High |
| 4F - 621 | DAVIS | BLACKHAWK DR / DUVAL RD | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [1] across Blackhawk , Replace existing curb ramp [2] | 3 - Medium | 2 - High |

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| 4F - 622 | SOMMER | ALONG CREEK CV / PALMBROOK DR | Difficult crossing | Install high visibility crosswalk [2] across Palmbrook Dr. & Along Creek Cove | 5 - Very Low | 4 - Low |
| 4F - 626 | RUTLEDGE | MISTY WHITE DR / STAKED PLAINS LOOP | Difficult crossing | Install high visibility crosswalk [4] across Misty White Dr. & Staked Plains Loop | 4 - Low | 3 - Medium |
| 4F - 627 | DAVIS | BULL RUN / MUSTANG CHASE | Difficult crossing, Missing curb ramps | Add new curb ramp [2] , Install high visibility crosswalk [1] across Mustang Chase & Bull Run | 3 - Medium | 2 - High |
| 4F - 631 | DAVIS | BIG TRL / DUVAL RD | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [1] across Big Trail , Replace existing curb ramp [2] | 3 - Medium | 1 - Very High |
| 4F - 634 | DAVIS | DUVAL RD / MUSTANG CHASE | Difficult crossing, Non-compliant curb ramps | Add new curb ramp [2] , Install high visibility crosswalk [1] across Mustang Chase | 2 - High | 1 - Very High |
| 4F - 635 | SOMMER | AVERY RANCH BLVD / MEYRICK PARK TRL | Difficult crossing | Install high visibility crosswalk [2] across Avery ranch & Meyrick Park Trail , Install Pedestrian Hybrid Beacon [1] | 5 - Very Low | 5 - Very Low |
| 4F - 637 | RUTLEDGE | NEARABOUT RD / ROUNTREE RANCH LN | Difficult crossing | Install high visibility crosswalk [2] across Roundtree Ranch Ln & Nearabout Rd | 4 - Low | 3 - Medium |

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| 4F - 641 | DAVIS | BIG TRAIL CV / BIG TRL / WIND RIVER RD | Difficult crossing, Missing curb ramps, Non-compliant curb ramps | Add median refuge island on Wind River Rd , Add new curb ramp [2] , Install high visibility crosswalk [2] across Wind River & big trail , Replace existing curb ramp [2] | 3 -Medium | 2 - High |
| 4F - 643 | SOMMER | PALMBROOK DR / WYNSTONE LN | Difficult crossing | Install high visibility crosswalk [2] across Palmbrook Dr. & Wynstone Ln | 5 - Very Low | 4 - Low |
| 4F - 644 | RUTLEDGE | PERSIMMON GAP DR / POST TRL | Difficult crossing | Install high visibility crosswalk [2] across Persimmon Gap Dr & Post Trail | 5 - Very Low | 3 - Medium |
| 4F - 647 | SOMMER | INDINA HILLS CV / INDINA HILLS DR | Difficult crossing | Install high visibility crosswalk [2] across Indina Hills Cove & Indina Hills Dr. | 5 - Very Low | 4 - Low |
| 4F - 649 | SOMMER | INDINA HILLS DR / LISI ANNE DR | Difficult crossing | Install high visibility crosswalk [2] across Indina Hills Dr & Lisi Anne Dr. | 3 - Medium | 1 - Very High |
| 4F - 651 | DAVIS | DULL KNIFE DR / DUVAL RD | Difficult crossing, Non-compliant curb ramps | Add median refuge island on Duval Rd , Install high visibility crosswalk [1] across Duval , Install Rapid Flashing Beacon [1] , Replace existing curb ramp [2] | 3 -Medium | 2 - High |
| 4F - 652 | DAVIS | DUVAL RD / GATE WAY | Difficult crossing, Non-compliant curb ramps | Install high visibility crosswalk [1] across Gateway , Replace existing curb ramp [2] | 3 -Medium | 1 - Very High |

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| 4F - 653 | DAVIS | MUSTANG CHASE / RAMBLING RANGE | Difficult crossing, Missing curb ramps | Add new curb ramp [4] | 4 - Low | 2 - High |
| 4F - 662 | SOMMER | LISI ANNE DR / WYNSTONE LN | Difficult crossing | Install high visibility crosswalk [2] across Lisi Anne Dr. & Wynstone Ln | 5 - Very Low | 3 - Medium |
| 4F - 664 | RUTLEDGE | FLETCHER HALL LN / STAKED PLAINS LOOP | Difficult crossing | Install high visibility crosswalk [1] across Fletcher Hall Ln | 3 - Medium | 1 - Very High |
| 4F - 668 | RUTLEDGE | MC DOWS HOLE LN / STAKED PLAINS LOOP | Difficult crossing | Install high visibility crosswalk [2] across STaked Plains Loop & McDows Hole | 4 - Low | 2 - High |
| 4F - 671 | RUTLEDGE | FLETCHER HALL LN / STAKED PLAINS LOOP | Difficult crossing | Install high visibility crosswalk [2] across Fletcher Hall | 3 - Medium | 1 - Very High |
| 4F - 672 | RUTLEDGE | STAKED PLAINS DR / STAKED PLAINS LOOP | Difficult crossing | Repaint crosswalk markings [1] across Staked Plains Dr | 5 - Very Low | 4 - Low |

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| 4F - 675 | RUTLEDGE | DODGE CATTLE DR / STAKED PLAINS LOOP | Difficult crossing | Install high visibility crosswalk [2] across Dodge Cattle Dr & Staked Plains Loop | 4 - Low | 2 - High |
| 4F - 678 | None (nearest school: Sommer) | AVERY RANCH BLVD / PEARSON RANCH RD | Faded crosswalk markings, High speed crossing, U-turn conflict | Install Pedestrian Hybrid Beacon [1] , Tighten curb radii [2] | 4 - Low | 4 - Low |
| 4F - 679 | DAVIS | GATE WAY / MUSTANG CHASE | Wide curb radii | Tighten curb radii [2] | 3 - Medium | 2 - High |
| 4F - 680 | DAVIS | BULL RUN | Difficult crossing | Add new curb ramp [2] , Add signage , Install high visibility crosswalk [1] across Bull Run | 4 - Low | 2 - High |
| 4F - 681 | None (nearest school: Davis) | DUVAL RD / SANTA CRUZ DR | Difficult crossing | Add median refuge island on Duval Rd , Install high visibility crosswalk [1] across Duval Rd | 3 - Medium | 2 - High |
| 4F - 682 | None (nearest school: Rutledge) | AVERY RANCH BLVD / QUARRY OAKS TRL | Difficult crossing | Install high visibility crosswalk [1] across Avery Ranch Blvd , Install Pedestrian Hybrid Beacon [1] | 3 - Medium | 3 - Medium |

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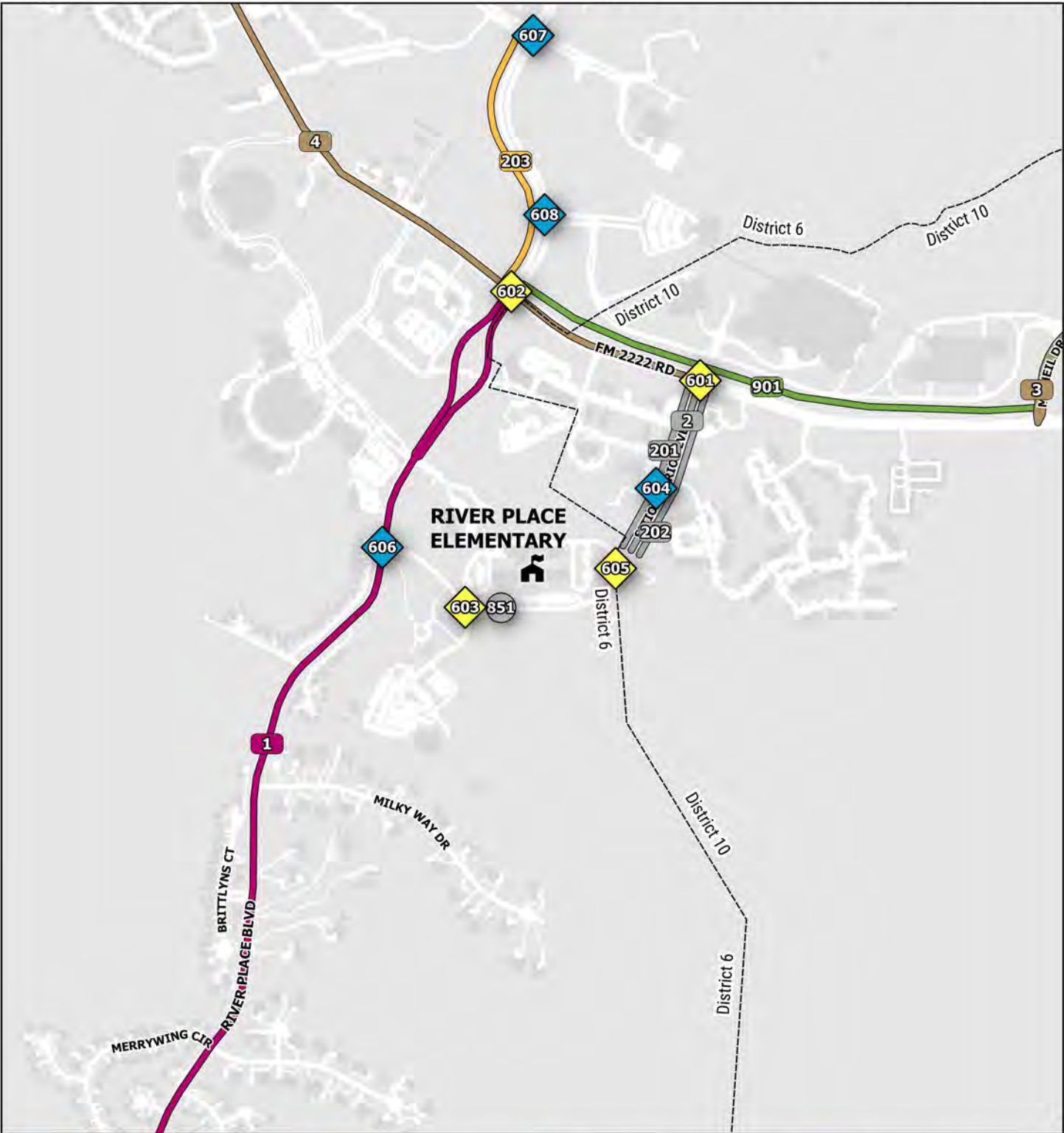


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| 4F - 683 | RUTLEDGE | AVERY RANCH BLVD / NEARABOUT RD | Difficult crossing | Install high visibility crosswalk [1] across Avery Ranch Blvd , Install Pedestrian Hybrid Beacon [1] | 5 - Very Low | 5 - Very Low |
| 4F - 684 | RUTLEDGE | STAKED PLAINS DR | Long crossing distance | Add curb extensions [2] on Staked Plains Dr , Add median refuge island on Staked Plains Dr | 3 - Medium | 3 - Medium |
| 4F - 685 | SOMMER | INDINA HILLS DR / PALMBROOK DR | Long crossing distance | Add median refuge island on Indina Hills Dr | 4 - Low | 2 - High |
| 4F - 686 | None (nearest school: Rutledge) | AVERY RANCH BLVD / W PARMER LN | Difficult crossing | Add curb extensions [2] on Parmer Ln , Add Leading Pedestrian Interval (LPI) , Add median refuge island on Parmer Ln | 2 - High | 2 - High |
| 4F - 901 | DAVIS | Near 12003 MUSTANG CHASE | No trail connection | Construct new shared use path | 4 - Low | 5 - Very Low |
| 4F - 902 | DAVIS | Near 11511 FAST HORSE DR | No trail connection | Add gate , Construct new shared use path | 4 - Low | 4 - Low |
| 4F - 903 | SOMMER | Near 9513 LISI ANNE DR | No trail connection | Construct new shared use path | 4 - Low | 5 - Very Low |

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|------------|--|-------------------------------|---|--|--------------------------|---------------------------------|
| 4G - 001* | RIVER PLACE | RIVER PLACE BLVD | Excessive vehicle speeds, No bike facility, Wide ROW | Add protected bike lane - RIVER PLACE BLVD from BONAVENTURE DR to TREASURE ISLAND DR , Add sidepath - RIVER PLACE BLVD from BONAVENTURE DR to FM 2222 RD | 2 - High | 5 - Very Low |
| 4G - 004 | RIVER PLACE | FM 2222 RD | No bike facility | Add sidepath - FM 2222 RD from N FM 620 RD to SITIO DEL RIO BLVD | 4 - Low | 5 - Very Low |
| 4G - 203 | RIVER PLACE | RIVER PLACE BLVD | Missing sidewalk | Construct new sidewalk - RIVER PLACE BLVD from FOUR POINTS DR to FM 2222 RD | 1 - Very High | 3 - Medium |
| 4G - 602 | RIVER PLACE | FM 2222 RD / RIVER PLACE BLVD | Difficult crossing, High speed crossing, Long crossing distance, Missing curb ramps, Missing sidewalk | Add new curb ramp [3] , Construct new sidewalk; enlarge pork chop island to slow turns and create refuge , Install high visibility crosswalk [2] across FM 2222; River Pl Blvd (north leg) | 1 - Very High | 1 - Very High |
| 4G - 603 | RIVER PLACE | Midblock - RIVER PLACE BLVD | Faded crosswalk markings | Install high visibility crosswalk [1] across Sitio del Rio | 2 - High | 1 - Very High |
| 4G - 606 | RIVER PLACE | RIVER PLACE BLVD | Faded crosswalk markings, High speed crossing, Long crossing distance | Add median refuge island on River Pl Blvd , Install high visibility crosswalk [2] across River Pl Blvd; Sitio del Rio , Install Rapid Flashing Beacon , Tighten curb radii | 1 - Very High | 2 - High |

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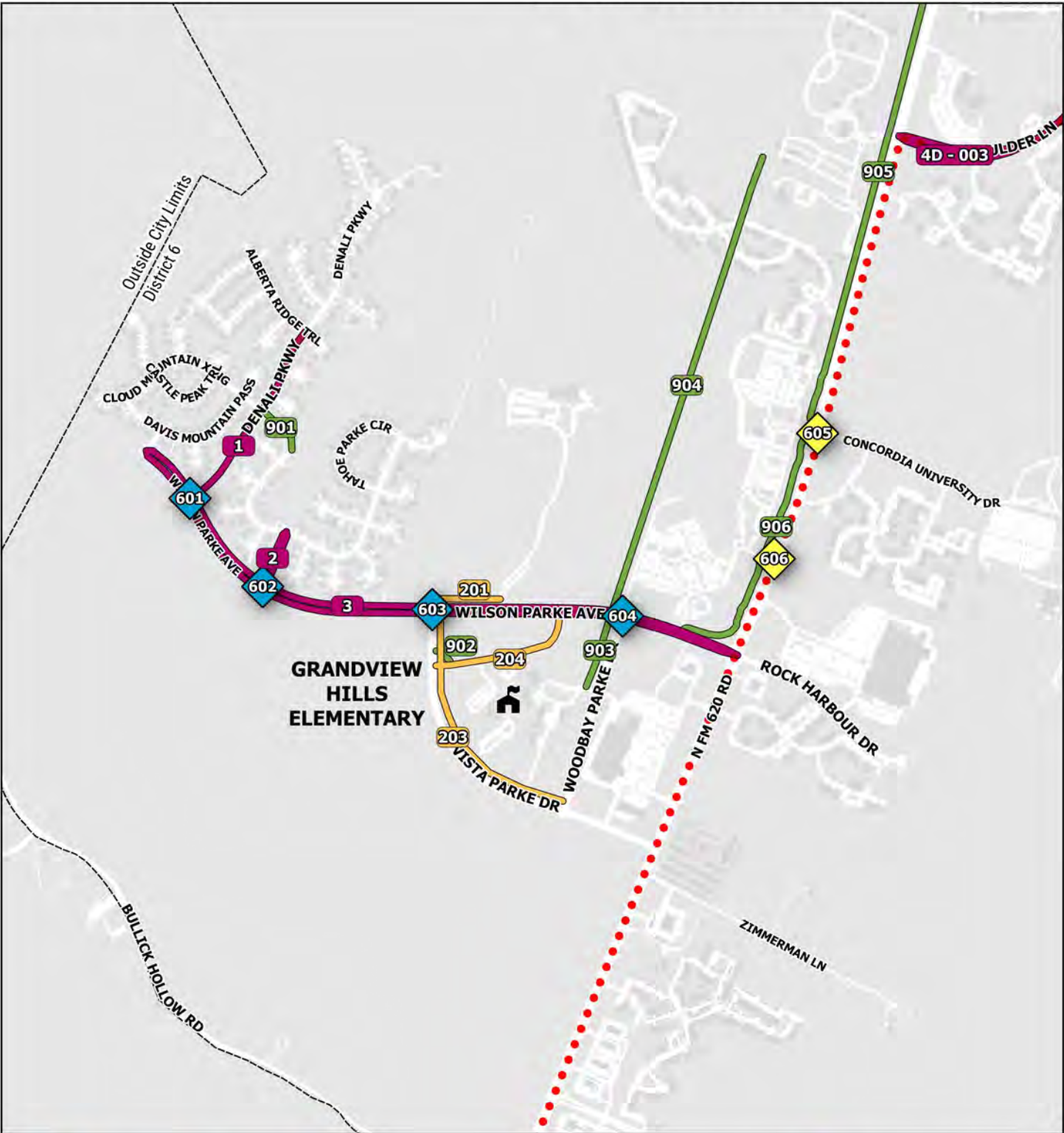


INFRASTRUCTURE PLAN

| <i>Project ID</i> | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|-------------------|--|----------------------------|--|---|--------------------------|---------------------------------|
| 4G - 607 | None (nearest school: River Place) | RIVER PLACE BLVD | Faded crosswalk markings, Long crossing distance, Non-compliant curb ramps | Eliminate slip lane [1] , Install high visibility crosswalk [4] across 4 Points Dr & River Pl Blvd & Tech Tr , Replace existing curb ramp [3] , Study a Roundabout | 3 - Medium | 4 - Low |
| 4G - 608 | RIVER PLACE | RIVER PLACE BLVD | Long crossing distance, Non-compliant curb ramps, Wide curb radii | Eliminate slip lane [2] , Install high visibility crosswalk [1] across 3M Drive , Intersection reconfiguration , Replace existing curb ramp [2] | 2 - High | 4 - Low |
| 4G - 851 | RIVER PLACE | Near 6401 RIVER PLACE BLVD | Missing sidewalk | Construct new sidewalk ~ | 3 - Medium | 2 - High |

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TOOLE
DESIGN



0 1000 2000 3000 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidepath
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation
- Traffic Control / Intersection Reconfiguration
- Ramp / Curb Extension / Crosswalk
- Over / Underpass
- Other Spot Recommendation
- Existing Trail
- School Boundary
- Council District Boundary



| Project ID | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|------------|--|--|--|---|--------------------------|---------------------------------|
| 4H - 001 | GRANDVIEW HILLS | DENALI PKWY | No bike facility | Add buffered bike lane - DENALI PKWY from ALBERTA RIDGE TRL to WILSON PARKE AVE | 4 - Low | 5 - Very Low |
| 4H - 002 | GRANDVIEW HILLS | FOREST PARKE DR | No bike facility | Add buffered bike lane - FOREST PARKE DR from WILSON PARKE AVE to WATERTON PARKE CIR | 5 - Very Low | 4 - Low |
| 4H - 003 | GRANDVIEW HILLS | WILSON PARKE AVE | Desired bike route, Excessive vehicle speeds | Add protected bike lane - WILSON PARKE AVE from WOODBAY PARKE DR to MUIR PARKE PASS , Conduct speed study to determine whether speed limit can be lowered - WILSON PARKE AVE from N FM 620 RD to MUIR PARKE PASS | 2 - High | 5 - Very Low |
| 4H - 201 | GRANDVIEW HILLS | WILSON PARKE AVE | Missing sidewalk | Construct new sidewalk - WILSON PARKE AVE from SAS driveway to VISTA PARKE DR | 4 - Low | 4 - Low |
| 4H - 203 | GRANDVIEW HILLS | VISTA PARKE DR | Missing sidewalk, Narrow sidewalk, No lighting | Add lighting - VISTA PARKE DR from WILSON PARKE AVE to WOODBAY PARKE DR , Widen existing sidewalk - VISTA PARKE DR from WILSON PARKE AVE to school service drive, Construct new sidewalk - VISTA PARKE DR from school service drive to WOODBAY PARKE DR | 3 - Medium | 5 - Very Low |
| 4H - 204 | GRANDVIEW HILLS | School driveway, Vista Parke, Wilson Parke | Missing sidewalk, Narrow sidewalk | Widen existing sidewalk - school service drive from Vista Parke to school entrance , Construct new sidewalk - school service drive from school entrance to Wilson Parke Ave | 4 - Low | 4 - Low |

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INFRASTRUCTURE PLAN

| Project ID | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|------------|--|---------------------------------------|--------------------|--|--------------------------|---------------------------------|
| 4H - 601 | None (nearest school: Grandview Hills) | DENALI PKWY / WILSON PARKE AVE | Difficult crossing | Add median refuge island , Add signage for bike crossing | 4 - Low | 3 - Medium |
| 4H - 602 | GRANDVIEW HILLS | FOREST PARKE DR / WILSON PARKE AVE | Difficult crossing | Add median refuge island , Add signage for bike crossing | 3 - Medium | 2 - High |
| 4H - 603 | GRANDVIEW HILLS | VISTA PARKE DR / WILSON PARKE AVE | Difficult crossing | Add median refuge island on Wilson Parke Ave and Vista Parke Dr , Intersection reconfiguration , Make protected intersection | 2 - High | 5 - Very Low |
| 4H - 604 | GRANDVIEW HILLS | WILSON PARKE AVE / WOODBAY PARKE DR | Difficult crossing | Install Pedestrian Hybrid Beacon [1] | 3 - Medium | 3 - Medium |
| 4H - 605 | None (nearest school: Grandview Hills) | CONCORDIA UNIVERSITY DR / N FM 620 RD | Difficult crossing | Install high visibility crosswalk [1] across FM 620, Install raised crossing on driveway for trail crossing | 4 - Low | 4 - Low |
| 4H - 606 | GRANDVIEW HILLS | Midblock - N FM 620 RD | Difficult crossing | Install raised visibility crosswalk [1] across driveway for trail users | 4 - Low | 3 - Medium |
| 4H - 901 | GRANDVIEW HILLS | Near 8045 DENALI PKWY | Poor conditions | Install curb ramp to connect sidewalk to street. Conduct trail maintenance. | 4 - Low | 3 - Medium |

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INFRASTRUCTURE PLAN

| <i>Project ID</i> | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|-------------------|--|-----------------------------|---------------------------------------|---|--------------------------|---------------------------------|
| 4H - 902 | GRANDVIEW HILLS | Near 12108 WILSON PARKE AVE | No lighting on trail | Add lighting to trail | 3 - Medium | 2 - High |
| 4H - 903 | GRANDVIEW HILLS | Near 11720 WILSON PARKE AVE | No trail connection | Construct new shared use path | 3 - Medium | 5 - Very Low |
| 4H - 904 | GRANDVIEW HILLS | Near 12024 TERRAZA CIR | No trail connection | Construct new shared use path | 4 - Low | 5 - Very Low |
| 4H - 905 | GRANDVIEW HILLS | Near 8612 620 RD | No trail connection | Add lighting, Construct new shared use path | 3 - Medium | 5 - Very Low |
| 4H - 906 | GRANDVIEW HILLS | Near 8300 620 RD | lack of lighting, Poor maintenance | Improve trail surface / conduct maintenance, add lighting | 3 - Medium | 5 - Very Low |

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SCHOOL GROUP 5A ELSA ENGLAND ELEMENTARY / PEARSON RANCH MIDDLE (ROUND ROCK ISD)



CITY OF AUSTIN
austin
MOTION
2016 MOBILITY BOND

TOOLE
DESIGN



0 800 1600 2400 ft

- Off-Street Trail
- Bike Lane / Buffered Bike Lane / Protected Bike Lane
- Sidewalk
- Neighborhood Bikeway / Traffic Calming
- New / Improved Sidewalk
- Other linear recommendation
- Traffic Control / Intersection Reconfiguration
- Ramp / Curb Extension / Crosswalk
- Over / Underpass
- Other Spot Recommendation
- Existing Trail
- School Boundary
- Council District Boundary

Note: Although these schools fall outside of the City of Austin, they were included because a significant portion of the student population lives within city limits. Bond funds will only be spent on projects within the City of Austin.



| Project ID | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|------------|--|--------------------------------|--|---|--------------------------|---------------------------------|
| 5A - 001* | ELSA ENGLAND/PEARSON RANCH | NEENAH AVE | Desired bike route | Add protected bike lane - NEENAH AVE from PEARSON RANCH RD to W PARMER LN | 1 - Very High | 5 - Very Low |
| 5A - 002* | ELSA ENGLAND/PEARSON RANCH | PEARSON RANCH RD | Desired bike route | Add protected bike lane - PEARSON RANCH RD from NEENAH AVE to AVERY RANCH BLVD , Lane diet (changing lane widths) - PEARSON RANCH RD from NEENAH AVE to AVERY RANCH BLVD | 3 - Medium | 5 - Very Low |
| 5A - 003* | ELSA ENGLAND/PEARSON RANCH | PEARSON RANCH RD | Unclear school zone extents | Evaluate combined school zone for Elsa England/Pearson Ranch - PEARSON RANCH RD from south of Neenah Ave to north of Samuel Trl | 5 - Very Low | 4 - Low |
| 5A - 601* | ELSA ENGLAND/PEARSON RANCH | NEENAH AVE / PEARSON RANCH RD | Long crossing distance | Add median refuge island on Pearson Ranch Rd and Neenah Ave , Increase pedestrian crossing time | 3 - Medium | 2 - High |
| 5A - 602* | ELSA ENGLAND/PEARSON RANCH | IVEANS WAY / PEARSON RANCH RD | High speed crossing, Long crossing distance, No pedestrian signals | Install Rapid Flashing Beacon | 3 - Medium | 2 - High |
| 5A - 603* | ELSA ENGLAND/PEARSON RANCH | PEARSON RANCH RD / PICKAXE TRL | Difficult crossing, High speed crossing, Long crossing distance, Missing curb ramps, No pedestrian signals | Add median refuge island on Pearson Ranch , Add new curb ramp [2] , Install high visibility crosswalk [1] across Pearson Ranch , Install Pedestrian Hybrid Beacon | 3 - Medium | 3 - Medium |

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INFRASTRUCTURE PLAN

| <i>Project ID</i> | Project w/in 1/2 mi (ped) or 2 mi (bike) and attendance boundary of: | Location | Issue | Recommendation + = parking removal required ~ = private property acquisition required | Overall Benefit Category | Estimated Cost:Benefit Category |
|-------------------|--|---|---|---|--------------------------|---------------------------------|
| 5A - 604* | ELSA ENGLAND/PEARSON RANCH | PEARSON RANCH RD / SAMUEL TRL | High speed crossing, Long crossing distance | Install Rapid Flashing Beacon | 4 - Low | 3 - Medium |
| 5A - 606 | ELSA ENGLAND/PEARSON RANCH | IVALENES HOPE DR / MC COY LOOP / NEENAH AVE | Difficult crossing | Install Pedestrian Hybrid Beacon [1] | 5 - Very Low | 4 - Low |

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APPENDIX A: ENGINEERING TOOLKIT



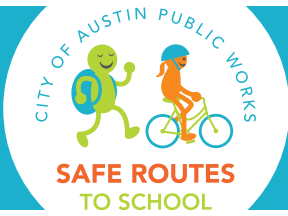
ENGINEERING TOOLKIT

INTRODUCTION

This Toolkit was developed in support of the City of Austin Safe Routes to School (SRTS). It presents the most common engineering treatments used to improve pedestrian and bicyclist safety, with a focus on supporting healthy, safe, and active travel to school. The Toolkit can be used by consultants, City staff, and the public in ongoing discussions about traffic safety and school access.

While this Toolkit represents common engineering solutions that can be used, it is not an exhaustive list of every design solution that may be applicable in a school environment. Solutions to specific local challenges must be evaluated by City staff through field work and, when appropriate, engineering studies and/or public engagement. All projects will be designed using applicable City, State and Federal design manuals and guidelines.





ENGINEERING TOOLKIT

The Toolkit is organized into four sections: Crossing Treatments, Street Treatments, Traffic Calming and Other. The page number for each treatment in the Toolkit is shown below.

CROSSING TREATMENTS

4 Refuge Islands



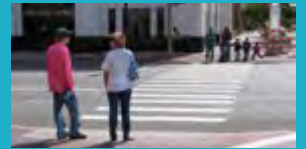
5 Curb Extensions



6 Curb Ramps



7 Marked Crosswalks



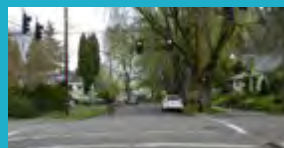
9 Rectangular Rapid Flashing Beacons



10 Pedestrian Hybrid Beacons



11 Traffic Signals

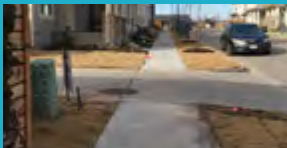


13 Stop Signs



STREET TREATMENTS

14 Sidewalks



15 Lighting



16 Bike Facilities



21 School Zones



22 Dynamic Speed Display Devices



23 Lane Reconfiguration

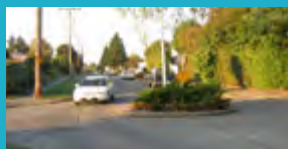


TRAFFIC CALMING

25 Speed Cushions



26 Traffic Circles



OTHER

27 Urban Trails



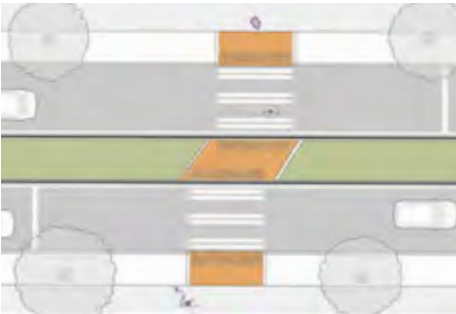
28 Bicycle Parking



REFUGE ISLANDS



Refuge islands (also called pedestrian refuges or center islands) are delineated or raised areas in the middle of the street at intersections or mid-block crossings that provide a designated place for people walking and biking to wait for an opportunity to cross the other half of the street.



Typical crossing island



Landscaping beautifies the refuge island



Refuge islands also help people on bicycles cross the street

What is the purpose of a refuge island?

- Makes the crossing more visible to people driving.
- Allows people to cross the street in two stages, making it easier to find gaps in traffic by only having to cross one direction of travel at a time.
- Reduces the amount of time a person crossing the street is exposed to traffic by providing a designated place to wait in the middle of the crossing.
- Makes the street easier to cross for kids, older adults, people with disabilities, and others who may need more time to cross or have more difficulty judging gaps in traffic.
- Reduces speeding as drivers approach the crossing through visual narrowing of the travel lane.

How does COA decide where to install a refuge island?

- Refuge islands may be an effective crossing treatment in situations where it is difficult to cross the street due to long crossing distances or few gaps in traffic.
- There must be adequate width (6-ft minimum) in the middle of the road to install the refuge island. Generally, streets with a two-way center turn lane or few or no left turns by people driving provide opportunities to install a refuge island.
- We also consider including additional safety improvements like crossing beacons along with the refuge island to make the crossing even more visible to people driving. Any added vegetation should be low-lying as to not affect sight distance.
- At crossings frequently used by people on bikes, such as Neighborhood Bikeway crossings, we consider creating individual crossings that separate people biking and people walking.

How much does a refuge island cost?

\$\$-\$\$\$: A small asphalt or concrete refuge island can be fairly inexpensive, typically in the range of \$10K to \$20K to install. Lower cost materials such as flexible posts can also be used to delineate the refuge island in certain situations. Larger projects that include landscaping and drainage structures can increase construction and maintenance costs.

How long does it take to install a refuge island?

1-2 years or less: A simple project can be designed in six months and constructed easily by City crews. More time is required to design larger refuge islands or refuge islands at busy intersections. COA may use contractors to install these types of projects instead of City crews, which can add more time.

References and Resources

Pedestrian Crossing Guidelines for Texas
Pedestrian Safety Guide and Countermeasure Selection System (PEDSAFE): Refuge islands
NACTO Urban Bikeway Design Guide: Median Refuge Island
FHWA Proven Safety Countermeasures: Medians and Pedestrian Refuge islands

Example in Austin

Mueller Boulevard and Aldrich Street

CURB EXTENSIONS



Curb extensions are created by extending the curb line into the roadway at a corner or mid-block. They shorten the distance for people walking across the street and improve visibility between people walking and driving. By visually and physically narrowing the roadway, curb extensions also help reduce speeding.



Mid-block curb extension



Easy-to-install materials such as paint, turtle bumps, and flex posts may be used to create curb extensions



Curb extensions may provide space for landscaping

What is the purpose of a curb extension?

- Improves safety by reducing the distance and time required to cross the street.
- Improves visibility between people driving and people walking across the street.
- Provides additional space in constrained locations for installing curb ramps.
- Improves safety at corners by slowing turning motorists through a tighter turning radius.
- Prevents people from parking too close to a crosswalk or from blocking a curb ramp or crosswalk.
- Provides space for seating, public art, bike racks, rain gardens or other public amenities.

How does COA decide where to install a curb extension?

- We consider installing curb extensions at locations that would benefit from improved visibility between people walking and driving, such as at school crosswalks.
- Curb extensions can be installed:
 - at most locations with a legal crosswalk, whether marked or unmarked, provided there is adequate width,
 - on streets with all day on-street parking, and
 - at locations where they do not extend into travel lanes or bike lanes. Before considering installing a curb extension, we check the Austin Bicycle Master Plan to make sure that a new curb extension would not prevent installation of a bike lane in the future.

How much does a curb extension cost?

\$\$-\$\$\$\$: Curb extensions typically involve roadway and sidewalk removal and may require replacement / relocation of stormwater drainage inlets. Installing curb extensions as part of larger capital projects such as street repaving, or when using low cost materials such as paint and pre-fabricated platforms (a.k.a. turtle bumps), costs can be reduced.

How long does it take to install a curb extension?

1-2 years: Typically design is completed in 6-12 months and construction is completed by a contractor the following year.

References and Resources

Austin Street Design Guide (DRAFT)

Pedestrian Crossing Guidelines for Texas

Pedestrian Safety Guide and Countermeasure Selection System: Curb Extensions

NACTO Urban Street Design Guide: Curb Extensions

AASHTO Guide for the Planning, Design and Operation of Pedestrian Facilities, 2015

Examples in Austin

Aldrich Street and McBee Street

6th Street and Waller Street

CURB RAMPS



Curb ramps are sloped areas located at intersection corners and crossings that connect the street to the sidewalk. They create a barrier-free environment for everyone when crossing streets that have curbs and sidewalks.



Curbs limit universal accessibility and are barriers for transitioning from the sidewalk to the street



A sidewalk retrofitted with a curb ramp and a tactile warning strip



Each corner should have two curb ramps, one for each crossing

What is the purpose of a curb ramp?

- Provides a comfortable transition from the street to the sidewalk for all people, including people with disabilities, kids on bikes, and caretakers pushing strollers.

How does COA decide where to install a new curb ramp?

- To the extent that resources are available, new curb ramp installations are coordinated with sidewalk rehabilitation and applicable street alterations. In addition to street maintenance resurfacing projects performed by Public Works, many other City Departments resurface the streets, which also requires coordinated curb ramp installations.
- We use the City's Sidewalk Master Plan and ADA Transition Plan to select and prioritize curb ramp retrofits. Schools are included as a major component in the Sidewalk Master Plan prioritization model.
- Residents can request curb ramps through the city's 3-1-1 system.

How much does a new curb ramp cost?

\$\$-\$\$\$ The Federal Americans with Disabilities Act (ADA) lays out very specific requirements for how curb ramps must be constructed, including level landings and gentle grades. Curb ramps built by COA are built per City Standards, which comply with ADA. When standards are not applicable, curb ramps are field-engineered to follow ADA requirements.

How long does it take to install a curb ramp?

Varies: If a curb ramp is a small scale, stand-alone project, it can be completed within several months. If it is part of a larger resurfacing or reconstruction project, it can take a year or more.

Additional information

The City of Austin has a curb ramp program that routinely installs or upgrades curb ramps throughout the city. Residents can request curb ramps through the city's 3-1-1 system.

References and Resources

2016 Sidewalk Master Plan & ADA Transition Plan
United States Access Board Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)

MARKED CROSSWALKS



Crosswalks exist at every intersection, whether marked or unmarked. Marked crosswalks are used to raise driver awareness of people crossing the street and to direct people who are walking to the best place to cross the street.



Marked crosswalk at an intersection



Raised crosswalks slow down people driving



Advanced stop bars increase visibility of people crossing the street

Raised Crosswalks

Benefits:

- Raised crosswalks keep the crosswalk at the same height as the sidewalk.
- They act as a speed table and slow people driving as they approach the crosswalk.
- They also make people walking more visible to people driving.

Design Considerations:

- Raised crosswalks may require modifications to stormwater drainage structures in the street, increasing construction costs.
- COA ensures that emergency vehicles and buses aren't affected by a raised crosswalk.

Example in Austin

Simond Avenue and Aldrich Street

Raised Intersections

- Raised intersections slow people driving and encourage them to yield to people walking across the street.
- Raised intersections can be installed in neighborhood intersections to make the public space more comfortable and inviting for people to walk and bike.

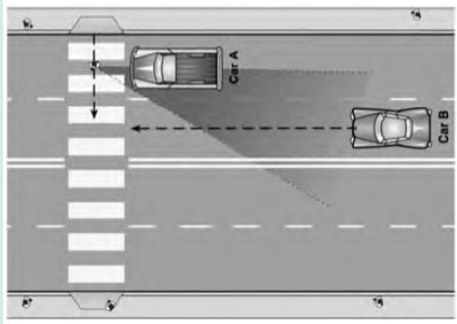
What is the purpose of a marked crosswalk?

- Direct school kids who are walking to the best place to cross the street.
- Indicate the walking route to school.
- People driving are made more aware of where to expect school kids to cross the street.

How does COA decide where to mark a crosswalk?

- Crosswalks will always be marked at signals or PHBs, and at intersections in the Central Business District.
- Crosswalks will typically be marked at stop-controlled locations if there is high vehicular volume, and will be marked if feasible at uncontrolled locations if they satisfy the criteria outlined on this page.
- We consider the following factors when deciding whether to mark a crosswalk at uncontrolled locations:
 - Average hourly traffic over 300 vehicles per hour in any hour
 - Adequate stopping or sight distance
 - More than 20 pedestrian crossings in any one hour of the day, or more than 10 children or elderly persons in any one hour
 - There is no existing marked crosswalk within 300-ft of the location in question
 - The crosswalk is located on a trail, shared-use path, designated safe route to school, or provides direct access to a transit stop, or other pedestrian destinations
 - The crosswalk is located on a High or Very High score on the Pedestrian Safety Priority Network, as determined by the Pedestrian Safety Action Plan
 - Presence of curb ramps
 - Presence of lighting

MARKED CROSSWALKS



Multiple Threat

A multiple threat is a situation where a driver in one lane (car A) stops for a person crossing the street, but the driver in the next lane (car B) doesn't see the person and doesn't stop. If we mark a crosswalk on streets with multiple traffic lanes or high traffic volumes, we consider installing additional safety improvements like crossing beacons, pedestrian signals, refuge islands, curb extensions, or advanced stop lines to minimize the multiple threat.

- Other things we consider include:
 - The total distance a person walking would have to cross. If there is more than one lane of traffic in each direction, then we consider adding additional features to supplement the crosswalk and minimize the potential multiple threat. These treatments could include elements like crossing beacons, pedestrian signals, refuge islands, curb extensions, or advanced stop lines.
 - Volume and speed of people driving. If the street is very busy and speeds are high, then we consider adding additional features to supplement the marked crosswalk.
- If we mark a new crosswalk, we may also install crosswalk signs. If it's a crosswalk mostly used by kids, then we make it a school crosswalk with school crosswalk signs. Otherwise, we use regular crosswalk signs. Flexible in-street bollards may also be used to draw additional attention to the crossing.
- We use a very durable, reflective material to mark crosswalks. Over time, the crosswalk markings may need to be refreshed. We prioritize crosswalk maintenance based on the condition of all the crosswalks in the city. If you're concerned about the condition of a crosswalk, submit a 3-1-1 request.

How long does it take to install a marked crosswalk?

Varies. In some cases, it can take 1-2 months or less to install a new marked crosswalk. If we need to install new curb ramps or other safety improvements in addition to the marked crosswalk, then it can take 1-2 years or longer to complete the work.

How much does a new marked crosswalk cost?

\$: If a potential new marked crosswalk location does not require any additional safety treatments, then marking the crosswalk is relatively inexpensive and straightforward.

\$\$: If we need to install other safety improvements, the cost can be higher.

References and Resources

Pedestrian Crossing Guidelines for Texas

Pedestrian Safety Guide and Countermeasure Selection System: Marked Crosswalks and Enhancements

Pedestrian Safety Guide and Countermeasure Selection System: Raised Pedestrian Crossings

City of Austin Crossing Guidelines and Crossing Decision Tree

RECTANGULAR RAPID FLASHING BEACONS



Rectangular Rapid Flashing Beacons (RRFB) are pedestrian-activated flashing lights on the side of the street that make a crosswalk more visible to people driving and alert them to the presence of a person trying to cross the street.



RRFB with passive detection



RRFB with push button at a school crosswalk



RRFB at a neighborhood bikeway crossing

What is the purpose of a RRFB?

- Makes the presence of a person trying to cross the street known to people driving, since they only flash when someone pushes the button or activates an automatic sensor.
- Studies have shown that people driving are more likely to stop for people trying to cross the street when they activate a rectangular rapid flashing beacon. The highly visible flash of RRFBs is very eye-catching to motorists.

When would COA install a RRFB?

- The Federal Highway Administration (FHWA) provides warrants and guidance for the installation of RRFBs. For more information, see https://mutcd.fhwa.dot.gov/resources/interim_approval/ialistreq.htm#ia11
- COA considers the volume and speed of traffic on the street as well as the total distance a person walking or biking has to cross.

- RRFBs can be installed at crosswalks that have other safety improvements, like a crossing island.

How much does a RRFB cost?

\$\$: RRFBs are a relatively inexpensive way to improve safety for people crossing the street. The cost to install RRFBs can increase if the crossing doesn't already have a marked crosswalk with curb ramps that meet Federal Americans with Disabilities Act requirements.

How long does it take to install a RRFB?

Varies. If the existing crossing already has marked crosswalks and curb ramps that meet ADA requirements, RRFB can be installed in a few months. If other improvements are needed at the location, it may take 1-2 years.

References and Resources

Interim Approval for Optional Use of RRFBs (FHWA)

Pedestrian Safety Guide and Countermeasure Selection System:
RRFB

FHWA Intersection Safety Technologies

PEDESTRIAN HYBRID BEACONS



Pedestrian Hybrid Beacons (PHB) are pedestrian-activated traffic control devices which help pedestrians safely cross major roadways where there is no traffic signal. PHBs are also known as High Intensity Activated Crosswalks, or HAWK signals.



Pedestrian hybrid beacon



Pedestrian hybrid beacon on a divided roadway



Pedestrian hybrid beacon on a downtown street

What is the purpose of a PHB?

- Makes the presence of a person trying to cross the street known to people driving, since the beacon is only activated when someone pushes the button.
- The beacon consists of two red lights above a single yellow light. The beacon head is “dark,” or unilluminated, until a pedestrian activates the device. The pedestrian pushes a button that activates the beacon. After displaying brief flashing and then steady yellow intervals, the device displays a steady red indication to drivers and a “WALK” indication to pedestrians, allowing them to cross while traffic is stopped.
- The solid red signal face on a PHB has the same meaning as and should be treated like a traffic signal showing a red light. Once the red light starts flashing it should be treated like a stop sign, where the driver is to stop and make sure it is clear before proceeding.

When does COA install a PHB?

- The City follows the Texas Manual on Uniform Traffic Control Devices guidelines and warrants when studying a location for a PHB.

- We use data to understand the volume and speed of people driving on the street as well as the number of traffic lanes a person has to cross.
- We consider the safety history of the crossing in addition to environmental and community issues at a given location.
- PHB must be located more than 300-ft from existing signals.
- PHB should be reserved for roads with at least three travel lanes.
- PHB can be installed at crosswalks that have other safety improvements, like a crossing island.

How much does a PHB cost?

\$\$\$\$: Relatively expensive due to electrical components that often require temporarily removing sidewalk to access underground electrical lines and the reconstruction of any sidewalk removed during construction. The cost can range from \$75,000 to \$150,000.

How long does it take to install a PHB?

1-2 years: Traffic studies and signal design must be completed before installation can begin

References and Resources

[City of Austin: Pedestrian Hybrid Beacons](#)

Pedestrian Safety Guide and Countermeasure Selection System: Pedestrian Hybrid Beacon

FHWA Intersection Safety Technologies

Texas Manual on Uniform Traffic Control Devices: Chapter 4

Examples in Austin

[Guadalupe Street and 31st Street](#)

[Mairo Street and S 1st Street](#)

TRAFFIC SIGNALS



Traffic signals coordinate the flow of traffic at intersections, including people driving, walking, and biking.

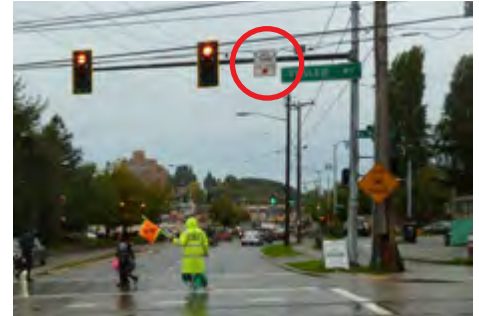


Gary Kavanaugh via Flickr

Bicycle signal detection



Reflective back plate makes the signal more visible



"No Turn on Red" sign

What is the purpose of a traffic signal?

- Controls the flow of traffic and provides coordinated movement of people driving, walking, and biking.
- Provides a safer, more comfortable environment for people walking and biking to cross the street or streets with high traffic volumes or speeds. People driving have to completely stop at red signals when it's the pedestrian's or bicyclist's turn to cross the street.
- When there is a steady stream of traffic, it can be difficult for people walking or biking to find a gap in traffic to cross the street. Traffic signals create gaps in traffic that allow people biking or walking to cross the street.

How does COA decide where to install a traffic signal?

- We use the Texas Manual on Uniform Traffic Control Devices (TMUTCD) to determine if the safety and traffic flow at an intersection would be improved by installing a new traffic signal. The TMUTCD outlines minimum thresholds for vehicle and pedestrian traffic and collisions that should be considered before installing a traffic signal.
- We conduct a traffic engineering study to determine if a location meets the TMUTCD thresholds, further analyze traffic patterns, and conclude whether a new signal would improve safety or the flow of traffic.
- At some intersections near schools, we can adjust the signal timing and flashing pattern during school arrival and dismissal hours to create fewer conflicts between people walking and people driving.

- Providing a dedicated phase for people to cross the street followed by a separate phase for left turning vehicles reduces potential conflicts between pedestrians and motorists. By prohibiting left turns during the WALK phase, pedestrians in the crosswalk do not have to worry about turning motorists yielding to them.
- At some intersections, including some locations in downtown, people driving aren't allowed to make a right turn when the traffic signal is red. This design makes it safer for people walking across the street by reducing the number of potential conflicts with people turning right on red.
- Traffic signals are more convenient for people walking when the WALK sign is displayed automatically when it's their turn to cross the street, a strategy referred to as automatic recall. Signals in areas of Austin with high pedestrian volumes are programmed to show the walk signal automatically. In situations with very low pedestrian volumes, this design may not be appropriate, so many traffic signals have push buttons for people to activate the WALK phase.
- At intersections that are frequently used by people on bikes, COA has installed equipment to detect when a bicyclist is present. This equipment tells the signal to give the bicyclist a green light. This detection can be in the pavement or on the signal pole/arm. COA has recently installed bike signals at 12 intersections throughout the city.

TRAFFIC SIGNALS



How much does a traffic signal cost?

\$\$\$\$: Installing a new traffic signal is a very costly safety improvement. When possible, we try to find more cost-effective safety improvements that achieve the same safety objectives so that we achieve more with limited city resources.

How long does it take to install a traffic signal?

2-4 years: We construct a limited number of new signals per year because they are so costly. They take a long time to design and construct because they are complex systems.

4+ years: If the new signal is on a state route, then the City coordinates with the Texas Department of Transportation, which adds time to the process.

Pedestrian Countdown Signals and Leading Pedestrian Intervals (LPI)

A pedestrian countdown signal shows the number of seconds remaining before the WALK phase is over. This feature helps people walking know how much time they have remaining to cross the street and can help reduce the number of people in the crosswalk near the end of the WALK phase. It's safest for people walking to be out of the crosswalk when the signal turns green for people driving in the opposite direction.

A Leading Pedestrian Interval (LPI) gives people walking the WALK indication 3-5 seconds before people driving in the same direction get a green signal. Because people walking are already in the crosswalk when people driving begin to turn left or right, people driving are more likely to yield to people walking.

What is the purpose of an LPI?

- The LPI signal timing technique allows pedestrians to establish themselves in the intersection in front of turning vehicles, increasing visibility between all modes.

How does COA decide where to implement an LPI?

- The LPI can be used at intersections with high volumes of pedestrians and conflicting turning vehicles and at locations with a large population of elderly or school children who tend to walk more slowly.
- The LPI should be at least three seconds to allow pedestrians to cross at least one lane of traffic to establish their position ahead of turning traffic.

How much do LPIs cost?

\$: An LPI is typically added where there is already a signal, so the cost is minimal.

How long does it take to install an LPI?

A few months. An LPI is typically added where there is already a signal, so this reflects the time to redesign the signal cycle and time for a technician to adjust it at the control center or in the field.



With a Leading Pedestrian Interval, motorists have a red signal for the first 3-5 seconds of the WALK phase.

References and Resources

City of Austin: Traffic Signals

Texas Manual on Uniform Traffic Control Devices, Part 4

Pedestrian Safety Guide and Countermeasure Selection System: Traffic Signals

Federal Highway Administration Proven Safety Countermeasures

Bike Signal Examples in Austin

4th Street and Red River Street

Rio Grande Street and W 24th Street

North Lamar Boulevard and Morrow Street

STOP SIGNS



Stop signs are a traffic control device used at intersections with three or more approaches, and where application of the normal right-of-way rule would not be expected to provide reasonable compliance with the law.



Stop sign with stop line at an all-way stop



Stop sign oriented to traffic crossing a neighborhood bikeway



Stop sign at intersection between a neighborhood street and a busier street

What is the purpose of a stop sign?

- Controls traffic movements between people driving, walking, and biking by assigning right of way at an intersection.
- May be used to control one direction of traffic while allowing the other direction to flow freely or can be used to control all directions of traffic.

How does COA decide where to install a stop sign?

- We use the Texas Manual on Uniform Traffic Control Devices (TMUTCD) to determine if the safety of an intersection would be improved by controlling one or more directions of traffic with a stop sign. The TMUTCD outlines certain minimum thresholds of motorist, pedestrian, and bicyclist traffic and collisions that should be considered before installing a stop sign.
- If the volumes of people driving, walking, and biking at each direction of the intersection are approximately equal and meet the minimum thresholds, we will consider installing stop signs for all directions of travel.
- If the volumes of people driving, walking, and biking from each direction are unequal, the street with the lower volume of people traveling should be stop-controlled unless there are reasons to provide an advantage to one direction of travel (e.g. neighborhood bikeways).

- Other things we consider include:
 - direction of school walking routes,
 - visibility and sight distance on different sides of the intersection, and
 - providing advantage to one direction of travel over another, e.g. neighborhood bikeway or major trail connection.
- Stop signs may be accompanied by stop lines, which indicate to people driving where to stop their car before the intersection.

How much does a stop sign cost?

\$: Stop signs are a relatively low-cost and effective way of controlling traffic at intersections.

How long does it take to install a stop sign?

<1 year: If we determine that an intersection should have one or more new stop signs, they can be installed relatively quickly.

References and Resources

Texas Manual on Uniform Traffic Control Devices
AASHTO Guide for the Development of Bicycle Facilities

SIDEWALKS



Sidewalks are the building blocks of the pedestrian network. There are currently more than 2,400 miles of sidewalks in Austin, yet many areas in the city do not have sidewalks at all. Sidewalks provide the greatest benefit to people when they are wide enough for two people to walk side-by-side, maintained in good condition with few bumps or cracks, kept clear of debris and overgrowing plants, and built with curbs.



Severe cracking creates uneven and hazardous walking surfaces



New sidewalk remains level across driveway



Alternative sidewalk design

What is the purpose of a sidewalk?

- Improves safety and comfort of people walking by separating pedestrians from people moving faster on bikes or in cars.
- Provides a dedicated space away from car traffic for children to walk, play, and learn to ride a bike.

How does COA decide where to build a new sidewalk?

- The City's Sidewalk Master Plan and ADA Transition Plan Update provides an objective mechanism for prioritizing new sidewalk construction and existing sidewalk repair and rehabilitation projects.
- Developers often have to build new sidewalks or repair existing sidewalks with new development.
- Sidewalk prioritization is determined by the following criteria:
 - Where people need and want to walk, not only today but in the future
 - Equity factors, like where people with lower incomes or low-car households live
 - Whether adjacent streets provide comfortable, continuous sidewalks
 - The number of students served

- We prioritize providing a sidewalk on at least one side of residential streets. School routes may be locations where sidewalks should be installed on both sides of residential streets to provide for direct access from homes to school, as well as to areas used for off-site drop-off and pick-up.
- Along existing sidewalks, we look for opportunities to remove barriers such as light poles or other obstructions, aiming to maintain a 4-ft clear zone. We also look for opportunities to limit or narrow driveways (a.k.a. curb cuts), which can create conflicts between people walking and people driving.

How much does a new sidewalk cost?

\$\$-\$\$\$\$: Building new sidewalks can be an expensive and challenging engineering project. We often must coordinate with nearby property owners. In addition, driveways connecting to private property may need to be redesigned and rebuilt, encroachments of private property onto public property removed, and new stormwater infrastructure constructed.

How long does it take to get a new sidewalk installed?

1-2 Years: Design and outreach must be completed before construction can begin.

Additional Information

When building conventional sidewalks is not feasible, other strategies may be considered for creating safer walking routes to school, such as Shared Streets, reallocating road space to create dedicated walking space, and alternative surfacing materials.

References and Resources

2016 Sidewalk Master Plan & ADA Transition Plan Update
United States Access Board Proposed Guidelines for Pedestrian Facilities in the Public Right-of-Way (PROWAG)

LIGHTING



Lighting is an essential element in street design. It is used to increase visibility and safety for people walking, biking, and driving at night and during dawn/twilight hours. Guidelines for placement, size, and wattage of lighting is a key element of creating pedestrian-friendly streets.



Well-lit crossing at night



Pedestrian scale lighting along a shared use path



Cobra style lights illuminate the street, but not the pedestrian realm

What is the purpose of lighting?

- Increases visibility and feelings of safety on a street, at an intersection/crosswalk, in a neighborhood, or along a trail.
- Creates a welcoming public realm and promotes active transportation options at nighttime and winter when daylight hours are shorter.
- Highlights certain locations and elements in a neighborhood as focal points or landmarks which provides wayfinding support.
- Can have a traffic calming effect when pedestrian scale lighting is used.

How does COA decide where to install a lighting element?

- COA follows lighting recommendations included in the Illuminating Engineering Society Of North America, Roadway Lighting. Any applications are to meet or exceed these recommendations.
- We aim to create uniformity of lighting on the street by using lower fixture heights and greater fixture density.

- We place lighting fixtures in a way that minimizes clutter and takes other streetscape elements into consideration. To achieve these goals COA has identified the following guidelines:
 - Pedestrian lighting is placed at a 12-ft mounting height
 - Placed at 88-ft on center from each other
 - We use subject lighting, which is directional and can be aimed at important crossings (such as primary school crossings)
- In addition to these guidelines, lighting should be studied on a case by case basis starting with a photometric analysis, and designed to match the character of the surrounding area.

How much does lighting cost?

\$\$: Lighting costs can vary depending on the type of fixtures and poles. COA specifies the types of fixtures to be used along public streets and bike paths.

How long does it take to install lighting?

Few months to 1 year: This can vary depending on whether the installation is part of a larger streetscape project.

BIKE FACILITIES



Bike facilities are routes or road design features made for people on bikes. On-street bike facilities include bike lanes, buffered bike lanes, protected bike lanes, and intersection treatments such as protected intersection designs or green pavement markings.



Protected two-way bike lane



Bike markings



Bike box

What is the purpose of a bike facility?

- Encourages more people to feel comfortable riding a bike to different locations, including to school.
- Provides safety and predictability by separating people biking from people driving.
- Makes biking a viable transportation option with many benefits including avoiding traffic congestion, reducing parking costs, decreasing the time spent commuting, and helping reduce emissions that contribute to climate change.
- Providing safe and comfortable ways for children to bicycle to school is important because it extends the distance that a child can realistically arrive to school using active transportation. While a typical walk-shed is only 1/2 mile around a school, a bike-shed can be up to 2 miles or more, depending on the student's age.

How does COA decide where to install a bike facility?

- The Austin Bicycle Master Plan and implementation planning prioritizes the locations where bikeways are built every year. Current funding levels, traffic and safety data, and leveraging opportunities are all considered to decide when and where bike facilities are built.
- The Austin Bicycle Master Plan's main network recommendations are based on a street's speed, volume, and connectivity. The bicycle plan also recommends bicycle facility connections to local destinations, including schools, that are outside of the main network but important due to both the traffic intensity during pick-up and drop-off and safety needs of kids.

- Bike lanes that are more separated from car traffic, like protected bike lanes with additional intersection treatments, are more appropriate and comfortable for kids biking to school.

How much does a bike facility cost?

\$-\$\$\$\$: The cost of a bike facility depends on the type. Simpler projects cost much less than protected bike lanes.

How long does it take to install a bike facility?

Varies: Installing a bike facility depends significantly on the length of the route and scope of the project. Timelines typically range from eight months to a year for the planning, design, and construction phases, but can take longer, especially if there are changes to parking and a public process must be initiated. In addition, many projects include a data collection period up to one year after installation to evaluate the performance of the facility.

Examples in Austin

Berkman Drive

4th Street and Red River Street

References and Resources

City of Austin Bicycle Master Plan

NACTO Urban Bikeway Design Guide

AASHTO Guide for the Development of Bicycle Facilities, 2012

BIKESAFE Bicycle Countermeasure Selection System

NCHRP Guidelines for Analysis of Investments in Bicycle Facilities

BIKE LANES

A bike lane is defined as a portion of the roadway that has been designated by striping, signage, and pavement markings for exclusive use by bicyclists.



What is the purpose of a bike lane?

- Enable bicyclists to ride at their preferred speed without interference from traffic.
- Facilitate more predictable behavior and interactions between bicyclists and motorists.

How does COA decide where to install a bike lane?

- The installation of a bike lane requires an analysis of traffic volumes and speeds, as well as motorist behaviors.
- Bike lanes are typically found on both sides of a two-way street and one side of a one-way street.
- Bike lanes typically run in the same direction as traffic; sometimes they are installed in a “contra-flow” direction on low-traffic one-way corridors when it is necessary to maintain bicycle connectivity.
- Bike lanes should facilitate access to schools, public transportation, shopping centers, parks, and residential areas.

- Bike lanes are best suited for roadways with:
 - Speeds less than 30 mph and traffic volumes of 3,000 – 9,999 vehicles per day, or
 - Speeds of 31-40 mph and traffic volumes less than 3,000 vehicles per day. At higher speeds and volumes, protected bicycle lanes are preferred.
- On streets with constrained street widths or right-of-ways bicycle lanes may be installed outside of these recommendations
- In Austin, the minimum bike lane width is 5-ft. The preferred bike lane width is wider and can be 6-ft to 8-ft. If there is space to provide a bicycle lane greater than 7-ft, consider a buffered bicycle lane or a protected bicycle lane.
- Other factors affecting the placement of a bike lane include on-street parking, parking frequency, delivery activity, multiple travel lanes, transit service, and route continuity such as completing gaps in off-street urban trails.
- We also consider buffered bike lanes in locations where greater separation is desired between people driving and biking. Buffers consist of diagonal pavement markings that are at least 2-ft wide, located between the travel lane and bike lane.

How much do bike lanes cost?

\$: Implementation of bike lanes can take place as part of roadway restriping projects. Roadway repaving is typically not required unless current conditions do not allow for easy bicycling.

How long do they take to install?

>1 year: Installation of bike lanes requires analysis of existing traffic conditions and identification of how the bike lane will augment and improve the existing or future bicycle network. Design of bike lanes typically takes 6 months to a year, followed by implementation.

PROTECTED BIKE LANES

A protected bike lane is an exclusive bicycle facility that provides a greater level of separation and comfort for bike riders, compared to a conventional bike lane. A protected bike lane includes physical, vertical separation from motor vehicle traffic. This physical separation may be in the form of a flex post, bollard, or curb. In situations where on-street parking is allowed, separated bike lanes are sometimes located on the curb side of parking.



What is the purpose of a protected bike lane?

- Provide a higher level of comfort and safety for users due to the physical separation.
- Attract users of all ages and abilities.
- Data from surveys suggest that if the City of Austin were able to implement an all ages and abilities bicycle network with facilities such as separated bike lanes, then 55 to 60% of the population say they would feel safe enough to bicycle on the roadways.

How does COA decide where to implement a protected bike lane?

- Protected bike lanes require more on-street right-of-way width than conventional bike lanes
- Protected bike lanes are generally recommended for roadways with:
 - Average daily traffic volumes of 10,000+
 - 41-50 mph and average daily traffic volumes of 3,000-9,999+
 - Over 50 mph and average daily traffic volumes of less than 3,000
- Protected bike lanes may be considered below these threshold levels as a treatment along bicycle routes to school since young children may need more separation than adults to feel comfortable bicycling on the street.
- Other factors affecting the placement of a protected bike lane include curbside activity, on-street double parking, parking frequency, delivery activity, multiple travel lanes, transit service, and route continuity such as completing gaps in off-street urban trails.
- Generally, the preferred clear width of a one-way protected bike lane is 7-ft, not including the width of physical separation. For a two-way facility, the typical clear width is 10-ft.

How much does a protected bike lane cost?

\$\$-\$\$\$\$: Costs can vary. Protected bike lanes can be implemented as part of routine resurfacing projects using low-cost materials, or as part of reconstruction projects using curbing and grade separation.

How long does a protected bike lane take to install?

1-3 years. Like conventional bike lanes, separated bike lanes require traffic analysis and identification of any spatial constraints. Depending on the separation type and material chosen, design of separated bike lanes can take 6 to 18 months, followed by implementation.

NEIGHBORHOOD BIKEWAYS

Neighborhood Bikeways are streets that have slow speeds and low volumes of people driving, in order for people of all ages and abilities to feel comfortable biking on the street.



Residential streets are great for Neighborhood Bikeways



Neighborhood Bikeway



Intersection design is an important consideration at arterial street crossings

What is the purpose of a Neighborhood Bikeway?

- Encourages more people to walk and bike by keeping car volumes and speeds low and by providing high quality crossing treatments at busy streets.
- Provides safer, more comfortable routes to school for kids on foot or on bikes.
- Provides better connections for all ages and abilities to bike to other places in their neighborhood, like parks, libraries, and community centers.

How does COA decide where to install a Neighborhood Bikeway?

- The Austin Bicycle Master Plan prioritizes the general location where Neighborhood Bikeways are built. Current funding levels, traffic and safety data, and leveraging opportunities are all considered when deciding where Neighborhood Bikeways are implemented.
- Some elements we consider when selecting a specific route include:
 - Residential streets that connect people to neighborhood destinations such as schools, parks, shops and restaurants, among others,
 - Streets with low volumes of people driving and slow speeds. An ideal street for a Neighborhood Bikeway has fewer than 1,500 cars per day and speeds close to 20 MPH,
 - Relatively flat streets that are comfortable for people to walk or bike,
 - How to make the most of existing infrastructure to help people cross busy streets, such as traffic signals at busy intersections, and
 - New safety improvements at intersections of busy streets, such as refuge islands and crossing beacons.
- Typical elements of a Neighborhood Bikeway may include:
 - Speed limit of 20 MPH,
 - Signs and pavement markings to help people find their way,
 - Some combination of curb extensions, crossing beacons, crosswalks, refuge islands, or traffic signals at busy intersections,
 - Traffic diversion or channelization,
 - Right of way priority.

NEIGHBORHOOD BIKEWAYS



Refuge islands help Neighborhood Bikeway users cross busier streets



Signage and pavement markings help direct Neighborhood Bikeway users to destinations

How much does a Neighborhood Bikeway cost?

\$-\$\$\$: The cost to build a new Neighborhood Bikeway can vary based on how much work needs to be done to make crossings of busy streets safer.

How long does it take to install a Neighborhood Bikeway?

>1 year: Once a new Neighborhood Bikeway project has been funded, it can take one to two years to install. During the early phases of a Neighborhood Bikeway project, we collect and analyze traffic data to understand existing conditions. We gather public feedback through community outreach, which helps us select the most promising route. Once a route is chosen, the design phase and some pre-construction work may occur. Every Neighborhood Bikeway design is unique depending on local characteristics.

References and Resources

Austin Bicycle Master Plan
Local Area Traffic Management Program
NACTO Urban Bikeway Design Guide

SCHOOL ZONES

School Zones are designated on the immediate blocks around a school with reduced speed limits and pedestrian crossing signage to facilitate safer crossings for children walking and biking to school.



Trained crossing guards improve school zone safety



School crossing sign



In road signage reinforces pedestrian priority at school crossings

What is the purpose of a school zone?

- The best way to achieve a safe and low-stress school zone is through the uniform application of policies, practices, and standards developed through engineering judgement or studies.

What treatments define a school zone?

- Flashing school zone signs are used to reduce speed limits during school arrival and dismissal hours.
- School crossing signs should be used on key crossings located within the school zone. Other enhanced crossing treatments may be appropriate, depending on the volumes of pedestrian and motor vehicle traffic.
- Signs may include School Crossing, Speed Limit, School Bus Stop.
- Beacons may be used to supplement signage.

What other treatments should also be considered to improve safety in a school zone?

- Adequate sidewalks and crosswalk markings.
- Crossing guards with proper equipment and training.
- Traffic control devices including pedestrian activated signals.

How does COA decide where to implement a school zone?

- The beginning point of a reduced school speed limit zone should be at least 200-ft in advance of the school grounds, a school crossing, or other school related activities; however, this 200-ft distance should be increased if the reduced school speed limit is 30 mph or higher.
- Signage and pavement markings are not frequently used on neighborhood streets, though we consider the speed of traffic and anticipated number of students walking along the route. This also applies if the approach is a state highway or major arterial.
- Additional information on school zone signage and markings can be found in Part 7 of the TMUTCD.

How much do school zone improvements cost?

\$: Pavement markings and signage are relatively inexpensive. Costs increase if sidewalk construction, road alterations, and traffic signals are also needed.

References and Resources

Texas MUTCD Traffic Control for School Areas
New Jersey School Zone Design Guide
Arizona Traffic Safety for School Zones Manual

DYNAMIC SPEED DISPLAY DEVICES



Dynamic Speed Display Devices (DSDD), also known as speed feedback signs, use radar to detect and display the speed of people driving. These signs help slow down people driving by reminding them of their speed compared to the posted speed limit.



Speed feedback sign displays a driver's speed compared to the speed limit



Solar-powered speed radar sign



Speed feedback signs may also flash a "slow down" message

What is the purpose of a dynamic speed display device?

- Raises awareness of the speed a person is driving and encourages them to slow down if they are driving above the speed limit.

How does COA decide where to install a dynamic speed display device?

- The city uses the following criteria when installing a DSDD:
 - The street must be owned and maintained by the City of Austin,
 - The street must provide access to abutting residential properties and/or places of community interest such as parks, libraries, community centers, educational institutions, etc.
 - The street must be a residential street or a minor collector street with no more than one moving lane of traffic in each direction,
 - The street must have a speed limit of 35 miles per hour or less, and
 - The DSDD cannot be installed in a school zone.

How much does a dynamic speed display device sign cost?

\$-\$\$: Both portable and fixed-location DSDD units are available. Portable units are typically placed at a location on a roadway for a relatively short time period and then relocated to a different location. Fixed-location units are used for the long-term display of vehicle speeds at a given location.

How long does it take to install a dynamic speed display device?

The Austin Transportation Department has a Rotating DSDD Pilot Program with six portable DSDD units. Each DSDD unit is left in place for four weeks at a time, during which it collects real-time data on vehicular speeds and volumes. The locations for DSDD are determined on a first-come, first-serve basis based on citizen requests.

References and Resources

[ATD Rotating DSDD Pilot Program](#)

Example in Austin

[Guadalupe Street and 23rd Street](#)

LANE RECONFIGURATION



On multi-lane streets, a lane reconfiguration can improve safety for all roadway users. Modification of on-street parking can also give flexibility to constrained streets. Depending on the needs of the street, which are determined by careful analysis and a strong public process, general purpose lanes, parking or turn lanes may be repurposed for other uses such as wider sidewalks, street trees, bike lanes, or more efficient transit.



Street before lane reconfiguration



Street after lane reconfiguration



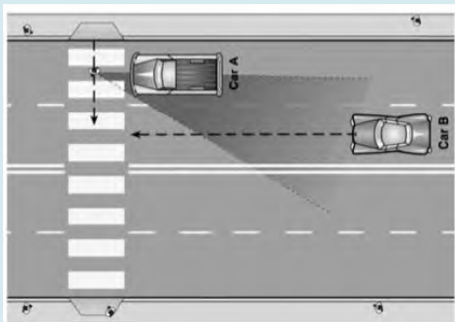
Street after lane reconfiguration

What is the purpose of a lane reconfiguration?

- Makes it easier and safer for people to cross busy streets by reducing the number of traffic lanes a person has to cross. When people cross streets with more than one lane in each direction they encounter a 'multiple threat.'
- Reallocate space on the street to widen sidewalks, plant street trees, add curb extensions, or install protected bike lanes.
- Slows people driving, which makes the street safer for everyone. When there's one lane in each direction, a person driving can only go as fast as the person in front of them.
- Makes it safer for people driving to make a left turn when a center turn lane is added, and a single lane of traffic helps manage drivers cutting in and out of lanes, which helps reduce collisions.
- Narrowing the width of travel lanes can also slow people driving and create space on the street to make it safer and more comfortable for people walking and biking.

How does COA decide where to do a lane reconfiguration?

- When a street is being resurfaced or reconstructed, there is an opportunity to change the configuration of lanes on the street. COA evaluates traffic conditions and crash records to identify whether a road or lane diet is needed and if parking can be modified.
- Streets that are good candidates for lane reconfigurations typically have lower volumes than would be expected for a street with the existing configuration. A lane reconfiguration may be considered for streets with under 25,000 vehicles per day.
- For all lane reconfiguration projects, the flow of traffic is carefully analyzed to make sure a lane reduction wouldn't cause back-ups at traffic signals, and public process is conducted to discuss tradeoffs with the public.
- For parking lane reconfigurations, parking use and supply is carefully studied and inform the proposed designs that are vetted through a public process before moving forward.



Multiple Threat

A multiple threat is a situation where a driver in one lane (car A) stops for a person crossing the street, but the driver in the next lane (car B) doesn't see the person and doesn't stop. If we mark a crosswalk across more than two lanes of traffic, we consider installing additional safety improvements like crossing beacons, pedestrian signals, refuge islands, curb extensions, or advanced stop lines to minimize the multiple threat.

LANE RECONFIGURATION



A three-lane to two-lane reconfiguration



Lane reconfiguration



Center turn lane narrowed to provide space for bike lanes

How much does a lane reconfiguration cost?

\$\$\$\$\$: The cost of a lane reconfiguration is highly variable; it may involve removing the lane lines from the street and repainting new lane lines, which is often done at night or on weekends to minimize traffic disruptions. When a lane reduction is done as part of a larger project to resurface or reconstruct a street, it can be accomplished for relatively low costs.

How long does it take to do a lane reduction?

>1 year: We generally host one or two open houses to gather community input and influence design decisions in the first year, and construction typically follows the year after.

References and Resources

Austin Street Design Guide (DRAFT)

Redesigning the Street: A Report on Right Sizing Projects in Austin, TX 1999-2014

Pedestrian Safety Guide and Countermeasure Selection System: Lane Reduction (Road Diet)

FHWA Proven Safety Countermeasures: Road Diet (Roadway Reconfiguration)

Examples in Austin

Duval Road from West Cow Path to Aspendale

Shoal Creek Blvd from Steck to 183

51st Street from Berkman to Manor

SPEED CUSHIONS

Speed cushions are traffic calming features that encourage people driving to slow down. Speed cushions are raised areas that extend across the street with wheel cutouts to allow large vehicles, like buses or emergency vehicles, to pass through unaffected.



Speed cushion



Speed cushions allow for larger vehicles such as fire trucks to pass through unimpeded



Speed cushions installed on hills may include a cut for downhill bicyclists

What is the purpose of speed cushions?

- Slow people driving to make streets safer and more comfortable for people walking and biking.
- Speed cushions are usually installed on neighborhood streets.

How does COA decide where to install speed cushions?

- Any request for speed cushions has to go through the Local Area Traffic Management (LATM) program which is a request-based program that installs speed mitigating devices, such as speed cushions, on neighborhood streets.
- ATD ranks requests based on speed data, neighborhood support, and geometric and environmental factors.
- Once accepted into the program, the request competes for funding with all other LATM requests.
- Speed cushions may also be funded through SRTS if identified in the SRTS Infrastructure Plan.

How much does a speed cushion cost?

\$: Speed humps and cushions are a low-cost way to slow people driving.

How long does it take to install a speed cushion?

1-2 years: Priority streets with high speeds are usually identified one year and construction happens the next year.

References and Resources

Local Area Traffic Management Program

Examples can be found throughout Austin

TRAFFIC CIRCLES



Traffic circles guide motor vehicles through an intersection in one direction around a central island. They are usually installed at intersections of neighborhood streets. Traffic circles are very effective at slowing people driving and reducing collisions. When installed in a series along a corridor, they are even more effective at reducing motor vehicle speeds along the length of the corridor.



The horizontal deflection of chicanes and traffic circles force drivers to slow down



Traffic circles create more comfortable conditions for people walking and biking



Traffic circle at a school crossing

What is the purpose of a traffic circle?

- Slows people driving and reduces the likelihood of collisions to make neighborhood streets safer and more comfortable for people walking, biking, and driving.
- Provides an opportunity to beautify a neighborhood street by adding trees, plants, and flowers.

How does COA decide where to install a traffic circle?

- COA is currently working with the Austin Fire Department to address their concerns about neighborhood traffic circles. The use of this treatment will be carefully reviewed.
- COA uses data to understand the volume and speeds of people driving on a street and how many collisions have happened at that location in recent years.
- We may consider installing a traffic circle at intersections that have had five or more collisions in the past three years.
- Before we design and construct a traffic circle, we identify neighbors who will volunteer to maintain the plants in the traffic circle.

How much does a traffic circle cost?

\$\$-\$\$\$: Traffic circles are lower in cost to install if no other curblane changes in the intersection are needed. If curbs must be adjusted, and there are changes to drainage structures and curb ramps, the cost will be higher.

How long does it take to install a traffic circle?

1-2 years: Priority intersections are usually identified one year and construction happens the next year.

References and Resources

Local Area Traffic Management Program

Examples can be found throughout Austin

Rio Grande Street and 8th Street
Rainey Street and River Street

URBAN TRAILS



Urban trails, also known as a shared or multi-use paths, create active transportation corridors that provide expanded travel choices. Urban trails can be built independent from the road network or alongside a roadway where traffic volumes and speeds are too high, or where there is not sufficient space for bicycle lanes in the existing street space.



Urban trail in Alexandria, VA



Urban trail in San Antonio, TX



Lance Armstrong Bikeway, Austin, TX

What is the purpose of an urban trail?

- Serves both transportation and recreation users,
- Can accommodate two-way pedestrian and bicycle use,
- May include connections to the on-street bicycle and sidewalk network
- Should be aesthetically appealing and feel safe to use, and
- May provide opportunities for economic development along the trail corridor.

How does COA decide where to install an urban trail?

- Prioritization criteria based on proximity to destinations, residential populations, connectivity, and community support all contribute to the trail-siting process.
- We look for potential integration of trails in proposed development projects, as well as outreach and education opportunities for local bicycle, pedestrian, and environmental advocacy groups.
- We recommend a 12 ft-wide hard surface path, but may need to narrow the trail under constrained circumstances. In areas where a higher volume of both pedestrians and bicyclists are anticipated, we consider providing separate facilities or a wider path (up to 18-ft) with designated space for each mode.
- **Sometimes, we will work with private property owners to install a new gate between a neighborhood/apartment complex and a public street, particularly if that connection would shorten the route for people walking to school or similar destinations. This new connection eliminates a barrier and serves as a type of urban trail, linking homes with public streets, sidewalks, and local destinations.**

How much does an urban trail cost?

\$\$\$: Costs for urban trails vary, but are typically among the most expensive types of bicycle and pedestrian facilities. Components of urban trail design and construction include:

- | | |
|--------------------|---------------------|
| • Right-of-way | • Pavement markings |
| • Surface material | • Fencing/rails |
| • Lighting | • Multi-use bridges |
| • Landscaping | • Maps and signage |
| • Terrain grading | • Trail furniture |
| • Retaining walls | |

How long does it take to install an urban trail?

Varies. Planning, public input, design, engineering, and construction are all components of the installation process. Many urban trails will take 5 to 10 years to be fully implemented. However, shorter segments that close gaps in the network or eliminate barriers can often be installed in a shorter timeframe.

References and Resources

City of Austin Bicycle Master Plan
Austin Urban Trails Master Plan
NACTO Urban Bikeway Design Guide

BICYCLE PARKING



Bicycle parking can be a single rack or a group of racks and can be installed on school grounds, on the sidewalk, or in the street.



Bike racks on the sidewalk



Bike corral



Covered bike parking

What is the purpose of bicycle parking near schools?

- Gives students and school staff a place to secure their bike during the day while they're at school.
- Encourages students and school staff to ride their bikes to school.
- When located near the main entrance, bike parking makes it inviting for people who get to school by bike.
- Sends the message that the school encourages bicycling.

How does COA decide where to install bike parking?

- We want to make sure that every school has enough bike parking to meet the day-to-day needs of students and staff.
- When deciding where to install bike racks, COA considers locations where the racks are:
 - noticeable immediately when arriving at school,
 - visible from nearby windows and the street to make sure bikes are secure,
 - sheltered from the elements, and
 - publicly accessible.
- We install bike racks that allow one or both wheels to be locked to prevent bikes from falling down and that can fit different types and sizes of bicycles, like small children's bikes or long family bikes.

How much does bike parking cost?

\$: Bike parking is relatively inexpensive.

Bike corrals

Sometimes the best place to install bike parking is on the street. A bike corral can be installed in place of on-street parking and can provide parking for 6 to 12 bikes in place of one car.

A corral can also be placed in locations where parking isn't allowed, like 30 feet from an intersection or marked crosswalk. This helps make the crosswalk safer by ensuring no one parks their car illegally and blocks visibility of the crosswalk or intersection, while also adding parking spaces for people on bikes.

How long does it take to install bike parking?

< 1 year: We can generally install new bike parking at a school in less than one year.

Examples in Austin

Highland Park Elementary School

Adam L Chapa Sr Street at E Cesar Chavez Street

References and Resources

Austin Bicycle Master Plan

Safe Routes to School National Partnership

Association of Pedestrian and Bicycle Professionals: Bicycle Parking Guidelines



SAFE ROUTES
TO SCHOOL

austintexas.gov/saferoutes