



# **Bicycle/Pedestrian Advisory Committee Meeting**

**July 11, 2017  
9:00 a.m.**

# Agenda



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## Killeen-Temple Metropolitan Planning Organization Bicycle/Pedestrian Advisory Committee (BPAC)

Tuesday, July 11, 2017  
Central Texas Council of Governments Building  
2180 North Main Street, Belton, Texas 76513

Regular Meeting: 9:00 A.M.  
AGENDA

1. Call to Order.
2. Opportunity for Public Comment. (1)
3. Staff Update: Fitness Friendly Business Program; Air Quality.
4. **Action Item:** Regarding approval of minutes from March 14, 2017 and May 9, 2017 meetings.
5. **Discussion and Action Item:** Discuss and take appropriate action on the following:
  - a. Project tour update and presentation of bike/pedestrian route priority;
  - b. Public input received to date in FY17;
  - c. Plan for end of fiscal year project tour.
6. **Discussion Item:** Grant funding opportunities and administrative services.
7. **Discussion and possible action item:** Recommend cost saving strategies for bicycle and pedestrian infrastructure.
8. Member Comments.
9. Discuss date, time and agenda items for next BPAC meeting.
10. Adjourn.

(1) The Killeen-Temple Metropolitan Planning Organization is committed to compliance with the Americans with Disabilities Act (ADA). Reasonable accommodations and equal opportunity for effective communications will be provided upon request. Please contact the KTMO office at 254-770-2200 24 hours in advance if accommodation is needed. (1) Citizens who desire to address the Committee on any matter may sign up to do so prior to this meeting. Public comments will be received during this portion of the meeting. Comments are limited to 3 minutes maximum. No discussion or final action will be taken by the Committee.



**Item #4:**

## **Approval of Meeting Minutes**





**KILLEEN TEMPLE METROPOLITAN PLANNING ORGANIZATION (KTMPO)  
Bicycle and Pedestrian Advisory Committee (BPAC)**

Tuesday March 14, 2017  
9:00 AM

Central Texas Council of Governments (CTCOG)  
2180 North Main Street  
Belton, TX 76513

**Voting Members Present**

Vice Chair Reese Davis—City of Killeen	Jeremy Allamon for Matt Bates—City of Belton
Joe Brown—City of Copperas Cove	Robert Ator—Hill Country Transit District (HCTD)
Brian Chandler—City of Temple	Lindsey Anderson—Team RWB
Leo Mantey—City of Harker Heights	Mike Anderson for Chad Welch—Tri-City Bikes
Crystal Briggs for Chair Kara Escajeda—City of Nolanville	Doug Edwards—Central Texas College

**Others Present**

Donald Herzer—Member of Public	Kendra Coufal—KTMPO
Jennifer Lawyer—CTCOG	Jason Deckman—KTMPO
Cheryl Maxwell—KTMPO	John Weber—KTMPO

**Meeting Minutes**

**1. Call to Order:** Vice Chair Reese Davis called the meeting to order at 9:04 a.m.

**2. Public Comment:** No comments were made from the public.

**3. Staff Update:**

--For air quality, February's ozone readings were 61 parts per billion (ppb) at the Temple station and 62 ppb at the Killeen station. The 2014-2016 Design Value is 67 ppb at both stations.

**4. Action Item:** Regarding approval of minutes from January 10, 2017 BPAC meeting.

**Brian Chandler made a motion to approve January 10, 2017 meeting minutes, second by Doug Edwards; the motion passed unanimously.**

**5. Action Item:** Discuss and take appropriate action to appoint additional BPAC voting members.

**No action was taken on this item.**

**6. Discussion and Action Item:** Recommend approval of Resolution for May 2017 as National Bike Month.

**Robert Ator made a motion to recommend approval of Resolution for May 2017 as National Bike Month; seconded by Brian Chandler; the motion passed unanimously.**

**7. Discussion and Action Item:** Recommend bike and pedestrian corridors in the KTMPO Planning Region.

John Weber provided BPAC with routes from previous BPAC meetings, bike/pedestrian web map, local school districts as well as the Salado Smokin' Spokes Bike Race routes and a possible connection between roadway projects listed in the 2040 MTP. The floor opened for discussion. BPAC members suggested getting together before the next meeting and visit routes that have been previously identified. KTMPO will coordinate with BPAC members for a possible date to conduct this. BPAC members also discussed contacting school districts again for recommendations on bike/pedestrian infrastructure, coordinating with the HOP on bike/ped enhancements at bus stop and using Strava to locate ridership information.

**No action was taken on this item.**

**8. Discussion and Possible Action Item:** Recommend adoption of Fitness Friendly Business Program.

John Weber provided BPAC an update on the Fitness Friendly Business Program guidelines, application, and decals. The floor opened for discussion. As an incentive for businesses to sign up for the program, BPAC asked if it would be possible to provide interested businesses with bike racks purchased through the CTCOG Rider 7 air quality program (Central Texas Air & Information Research Committee—CTAIR). Staff will consult with CTAIR and report back to the BPAC. BPAC members also preferred the green and yellow colored logo as the Fitness Friendly Business Program decal.

**Brian Chandler made a motion to recommend adoption of Fitness Friendly Business Program, seconded by Lindsey Anderson; the motion passed unanimously.**

**9. Discussion Item:** Discuss upcoming local bicycle events.

- a. Salado Smokin Spokes
- b. 2017 Stampede along the Chisholm Trail
- c. Ride of Silence.

John Weber reminded BPAC members that the Salado Smokin' Spokes bike race is held on March 25, 2017. Mr. Weber also stated that the 2017 Stampede along the Chisholm Trail and the Ride of Silence will be held on May 6 and May 17 respectively. BPAC members also discussed other local bicycle and pedestrian events.

**10. Discussion Item:** Discuss statewide bicycle and pedestrian initiatives.

John Weber provided BPAC with initiatives that other MPO's in Texas are doing and asked for initiatives that BPAC may want to consider moving forward. Joe Brown stated that BPAC should look again at the Vulnerable Road User Ordinance and research non-verbal signage to protect vulnerable road users. BPAC stated that they would like to bring this item back up for discussion at the May meeting.

**11. Member Comments:** No comments were made by the BPAC.



**12. Discuss date, time and agenda items for next meeting.**

The next BPAC meeting will be held on May 9 at 9:00 a.m.

**13. Adjourn:** The meeting adjourned at 10:19 a.m.

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Kara Escajeda, BPAC Chair

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Cheryl Maxwell, KTMPO Director



**KILLEEN TEMPLE METROPOLITAN PLANNING ORGANIZATION (KTMPO)  
Bicycle and Pedestrian Advisory Committee (BPAC)**

Tuesday May 9, 2017  
9:00 AM

Central Texas Council of Governments (CTCOG)  
2180 North Main Street  
Belton, TX 76513

**Voting Members Present**

Chair Kara Escajeda—City of Nolanville  
Vice Chair Reese Davis—City of Killeen

Leo Mantey—City of Harker Heights  
Robert Ator—Hill Country Transit District (HCTD)

**Others Present**

Cheryl Maxwell—KTMPO  
Kendra Coufal—KTMPO

Jason Deckman—KTMPO  
John Weber—KTMPO

**Meeting Minutes**

**1. Call to Order:** Chair Kara Escajeda called the meeting to order at 9:11 a.m. Ms. Escajeda stated that a quorum was not present.

**2. Public Comment:** No comment was made from the public.

**3. Staff Update.**

--John Weber presented a list of projects that were selected for funding for FY18-20.

--Ozone readings for the month of April were 71 parts per billion (ppb) at the Killeen station and 69 ppb at the Temple station.

**4. Action Item:** Regarding approval of minutes from May 9, 2017 BPAC meeting.

**No action was taken on this item since a quorum was not present.**

**5. Discussion and Possible Action Item:** Recommend bike and pedestrian corridors in the KTMPO Planning Region.



Mr. Weber discussed options for conducting the bus tour of recommend bike and pedestrians routes that have been previously discussed. BPAC members discussed other options such as a bike tour of recommended routes or have BPAC members go out on their own and report back at a future meeting.

**6. Discussion and Possible Action Item: Fitness Friendly Business Program**

- a. Approve Fitness Friendly Businesses
- b. Approve modifications to Fitness Friendly Business Program.

A) John Weber presented BPAC members with the Barrow's Brewery application. The members concurred that staff has the approval authority so no action was needed.

B) John Weber presented BPAC with two additional criteria that could be added to the Fitness Friendly Business Program. These two criteria were businesses provide a loaner bike lock and provide incentives for employees who walk or bike to work. BPAC members present did not wish to pursue these two additional criteria. BPAC also discussed reaching out to interested businesses to be part of this program.

**No action was taken on this item.**

**7. Discussion Item: Bike/Pedestrian Enhancements at Transit Stops.**

John Weber discussed issues with installation of bike racks at transit stops. HCTD received 14 bike racks to be distributed near transit stops, however, issues have occurred in installing the bike racks. These issues include lack of funding and issues regarding ADA standards. Robert Ator presented BPAC with a list of seven HOP stops where bike racks could potentially be installed. Based off of the list, KTMPO will reach out to entities to have cities coordinate with the HOP to install bike racks near HCTD.

**8. Discussion Item: Community Outreach Events.**

John Weber discussed the National Bike Month resolutions, the Ride of Silence and local bicycle and pedestrian races.

**9. Discussion Item: Statewide MPO Bicycle/Pedestrian Initiatives.**

John Weber presented BPAC members with a list of initiatives that other MPO's are pursuing. A possible initiative include physical barriers to protect vulnerable road users.

**10. Discussion Item: Feedback on Vulnerable Road User Ordinance.**

**This agenda item was tabled and would be discussed at a future meeting.**

**11. Discussion Item: Feedback on KTMPO Bike/Pedestrian Web Mapping Tool.**

**This agenda item was tabled and will be discussed at a future meeting.**

**12. Member Comments:** No comments were made.

**13. Discuss date, time and agenda items for next meeting:** The next meeting will be on July 11, 2017 at 9:00 a.m.

**14. Adjourn:** The meeting adjourned at 10:26 a.m.

**14. Adjourn:** The meeting adjourned at 10:26 a.m.

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Kara Escajeda, BPAC Chair

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Cheryl Maxwell, KTMPO Director



**Item #5: Recommend bike and  
pedestrian corridors in the  
KTMPO Planning Region**



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**Discuss and Take Appropriate Action on the Following Items:**

**A) Project Tour Update and Presentation of Bike/Pedestrian Route Priority:**

**Summary:**

KTMP is in the process of compiling a list of areas where bike and pedestrian infrastructure are lacking. These areas can be used to develop possible projects. We will also include projects provided to KTMP through the bike/pedestrian web map or from other sources. Staff plans to present this information to the KTMP Technical Advisory Committee for their feedback, recommendation, and follow up action.

At past BPAC meetings, members recommended corridors and/or potential projects lacking bike and pedestrian infrastructure. KTMP contacted local school districts for Safe Routes to School.

On June 9, 2017 KTMP conducted a project tour to view the routes that KTMP received. BPAC members were asked to score each route with "A" being most important, "B" being somewhat important and "C" being least important. The scores were then assigned numerical values of 3 points for "A," 2 points for "B," and 1 point for "C." Total weighted scores were calculated and roadways were prioritized highest to lowest. The list of prioritized bike and pedestrian corridors is attached to this packet.

KTMP is requesting feedback and to make a recommendation on the list of bike and pedestrian routes from the June 9 project tour. KTMP plans to present the prioritized list to TAC at the August meeting.

**Discussion and Action Item:** Recommend bike and pedestrian corridors in the KTMP Planning Region as presented.

**B) Public input received to date in FY17:**

KTMP has been collecting public comments received online, via emails, public hearings, meetings, social media accounts, web maps and other forms of communication. We propose to bring these to the BPAC on a regular basis to ensure BPAC is aware of public concerns and has the opportunity to respond accordingly. Public input received to date in FY17 is included in meeting packet.

**Discussion Item:** Public input received to date in FY17.



**C) Plans for End of Fiscal Year Project Tour:**

KTMP O proposes doing an end of the fiscal year project tour for public input that was received after the June 9 project tour to the end of the fiscal year. Below is a tentative schedule for the end of the fiscal year project tour.

**Tentative Schedule:**

- June 9, 2017 – BPAC project tour #1 of recommended routes;
- **July 11, 2017—Recommend bike and pedestrian corridors in the KTMP O Planning Region as presented from project tour #1;**
- September 12, 2017—BPAC Meeting;
- September 30, 2017 – End of fiscal year and end of collection of recommended routes for project tour #2;
- October 16-20, 2017—Potential dates for end of fiscal year project tour #2;
- November 14, 2017—Recommend bike and pedestrian corridors in the KTMP O Planning Region as presented from project tour #2.

**Discussion Item:** Plan for end of fiscal year project tour.



# **Prioritized List of Project Tour Routes**



## Bus Tour Routes With Scores

Map ID	Roadway	Extents	Entity	Current Condition	Proposed Facilities	Description	2040 MTP Project	Source	Notes	Participant 1 Score	Participant 2 Score	Participant 3 Score	Participant 4 Score	Total
17	Thomas Arnold Rd	IH 35 to W Creek Dr	Salado	No sidewalk	Bike/Ped Infrastructure	Bike/Ped facilities to connect to Salado Intermediate School	None Listed	Salado ISD	Nearby businesses, schools and residential subdivision	3	3	3	3	12
18	Salado Schools Road	Thomas Arnold Rd to W Village Rd	Salado	No bike/ped facility	Bike/Ped Infrastructure	Bike/Ped facilities to connect to Salado Intermediate School	None Listed	Salado ISD	Nearby schools and residential subdivision	3	3	3	3	12
3	Prairie View Rd	Westfield Blvd to SH 317	Temple	No bike/ped facility	Bike/Ped Infrastructure	Sidewalks to connect to BISD Schools	T35-24-Project includes sidewalks and shared-use path	BISD	Good for connecting existing sidewalks	3	2	3	3	11
2	Hogan Rd	SH 317 to S Pea Ridge	Temple	No bike/ped facility	Bike/Ped Infrastructure	Sidewalks to connect to BISD Schools	T40-04: Project includes sidewalk and trail.	BISD	Good for connecting existing sidewalks	3	2	2	3	10
15	FM 437/Alvin Alley	Depot Ave to Ater Ave	Rogers	No bike/ped facility	Sidewalk	Sidewalk to include railing and crosswalk to connect to Rogers Schools	None Listed	Rogers ISD	High Density, School Present	2	3	3	2	10
19	West Village Road	Thomas Arnold Rd to IH 35	Salado	No sidewalk	Bike/Ped Infrastructure	Bike/Ped facilities to connect to Salado Intermediate School	S40-02: includes bike/ped enhancements with roadway project	Salado ISD		3	2	2	3	10
23	W 2nd St./FM 93	Main SUSH 317 to Loop 121	Belton	No bike/ped facility	Bike/Ped Infrastructure	Sidewalk to connect to BISD Schools	W30-17: Does include 5' wide sidewalks and bike lane	Belton ISD		3	1	3	3	10
6	Arapahoe Dr	Apache Dr to Western Hills Elementary	Temple	No sidewalk for students	Sidewalk	Provide safety for students who walk to school.	None Listed	Web Map Public Input	Dense, Nearby School. School does not have Bike Racks	3	2	3	1	9
21	FM 2484	IH 35 to Williams Rd	Salado	No bike/ped facility	Bike/Ped Infrastructure	Bike/Ped facilities to connect to Salado High School	W30-18 Does not include bike/ped facilities	Salado ISD		3	2	2	2	9
25	Stillhouse Lake Road (FM 3481)	FM 2410 to Newash Dr	Harker Heights	No sidewalk for students	Sidewalk	Sidewalk on West Side of FM 3481	H30-07	Killeen ISD	Residential neighborhoods and businesses	2	1	3	3	9
1	Poison Oak Rd	SH 317 to Carnegie House Dr	Temple	No Sidewalk	Sidewalk	Sidewalk to connect to new elementary school	None Listed	BISD	Needs to be widened first, Poison Oak too narrow, not safe	3	3	1	1	8
5	Apache Dr	From FM 2305 to Arapahoe Dr	Temple	No sidewalk for students	Sidewalk	Provide safety for students who walk to school.	None Listed	Web Map Public Input	Dense, Nearby School	3	1	3	1	8
11	FM 93	E. of IH 35 to US 190	Belton/Temple	Narrow Shoulder, No Bike/Ped Facility	Widen Roadway Shoulders	Provide safety for cyclists and pedestrians	W35-08 and W35-09-Doesn't include bike/ped facilities	Park Trails		3	2	1	2	8
14	Old Belton R.R.	Temple City Limits to Nolan Creek in Belton	Belton	No trail to connect Temple to Belton	10' Wide Hike/Bike Trail	Create a connection between projects T40-13 (Georgetown R.R. Trail) to S40-06 (Belton Hike & Bike Trail Extension North)	None Listed	Park Trails		3	1	3	1	8
26	Stillhouse Lake Road (FM 3481)	FM 2410 to Cedar Knob Rd	Harker Heights	No sidewalk for students	Sidewalk	Sidewalk on East Side of FM 3481	H30-07	Killeen ISD	Residential neighborhoods and businesses	2	1	3	2	8
29	Bunny Trail	Willkey Dr and Stan Schuster LP (FM 3470)	Killeen	No sidewalk for students	Sidewalk	Sidewalk on east side between Willkey Drive and Stan Schuster LP (FM 3470)	None Listed	Killeen ISD	Residential, Schools	2	2	3	1	8
34	Big Divide Rd	US 190 to FM 1113	Coppens Cove	No bike/ped facility	Shared-Use Path	Shared-use path to accommodate cyclists	C25-03-Unscored Project, does not include bike/ped	Web Map Public Input	Residential neighborhoods present	2	2	3	1	8
12	Shallow Ford Rd	Taylor's Valley Rd to Lions Park Rd	Temple	No bike/ped facility	Bike Route	Provide a bike connection to Temple's Lion Park	None Listed	Web Map Public Input		2	1	2	2	7
16	FM 436	Lamar St to SH 95	Little River-Academy	No Bike/ped facility on south side of FM 436	Shared-Use Path	Bike/Ped facilities to connect to LR-A Academy ISD	None Listed	Little River-Academy ISD	High Density, School Present	1	1	3	2	7
20	Williams Road	IH 35 to FM 2484	Salado	No bike/ped facility	Bike/Ped Infrastructure	Bike/Ped facilities to connect to Salado High School	None Listed	Salado ISD	Potential for future development	3	1	1	2	7
32	Clear Creek Rd (SH 203)	Elms Rd to Mohawk Dr	Killeen	No sidewalk	Sidewalk	Sidewalk on west side from Elms Rd to Mohawk Dr	None Listed	Killeen ISD	Not safe for pedestrians, sidewalk should be on both sides	2	2	1	2	7
4	N. Pea Ridge	W Adams Ave/FM 2305 to Prairie View Rd	Temple	No bike/ped facility	Bike/ped Infrastructure	Sidewalk to connect to BISD Schools	None Listed	BISD	Potential for development in future, may not be a priority now	3	1	1	1	6

Route may be partially or fully closed in 2040 MTP

Route identified in KTMPS Regional Thoroughfare/Backstop Plan



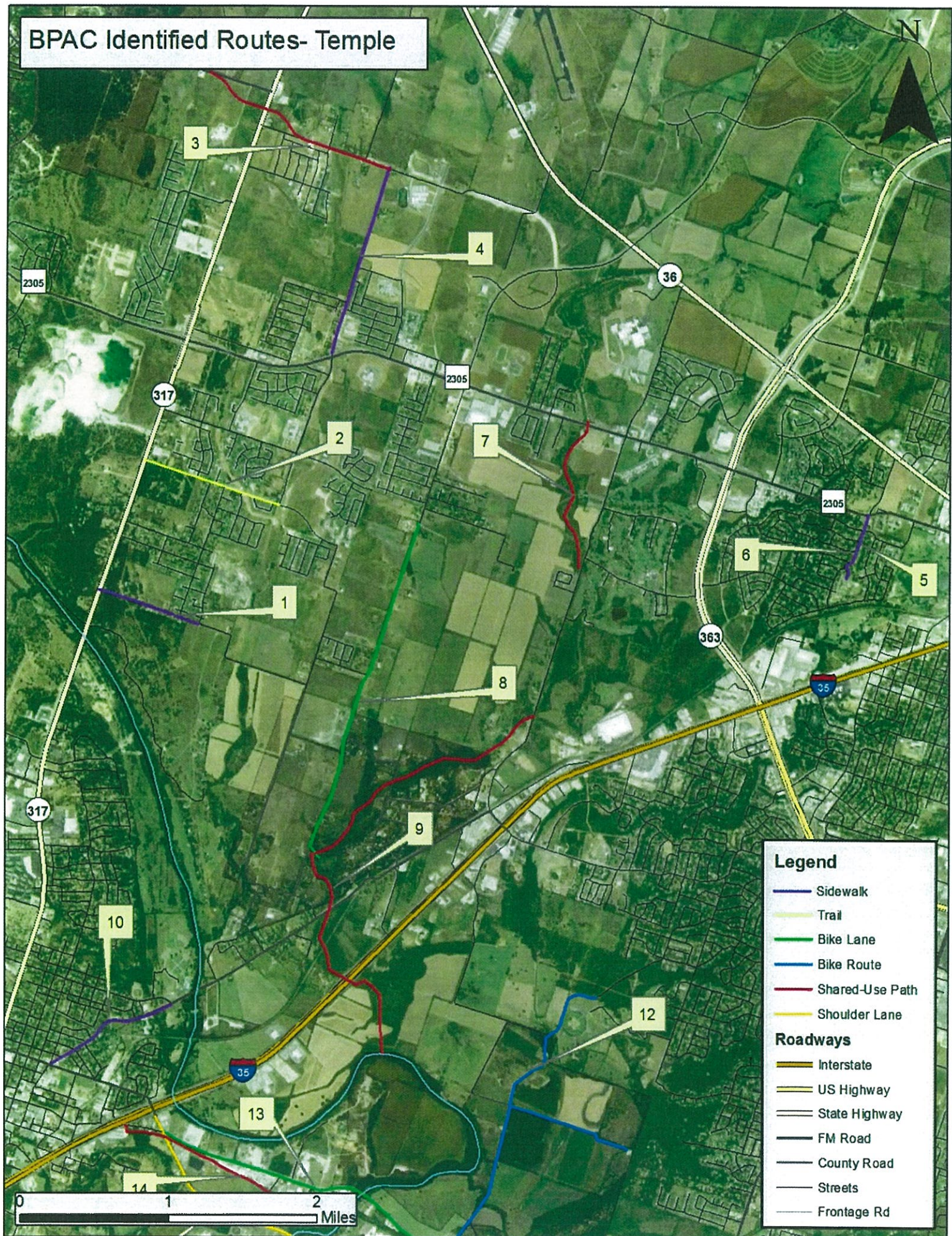
10	Waco Rd	E 13th Ave to 6th Ave/FM 93	Belton	No bike/ped facility	Bike/Ped Infrastructure	Sidewalk to connect to BISD Schools	None Listed		BISD	The need is there but there are physical obstructions which can may construction difficult	2	1	2	1	6
13	Taylor Valley Rd	FM 93 to Shallow Ford Rd	Belton	No bike/ped facility	Bike Lane	Bike lane to create an additional connection between Temple and Belton	None Listed		Web Map Public Input		2	1	1	2	6
22	S. Pearl St	W Ave A to US 190 Service Rd	Belton	No bike/ped facility	Bike/Ped Infrastructure	Sidewalk to connect to BISD Schools	None Listed		Belton ISD	Residential density, connect to existing sidewalks	1	1	2	2	6
27	West Trimmer	Stan Schlueter to Stagecoach Rd	Killeen	No sidewalk for students	Sidewalk	Sidewalk on east side from Stan Schlueter to Stagecoach Rd	None Listed		Killeen ISD	Existing sidewalk on other side	2	1	2	1	6
8	Old Waco Rd	W Adams Ave to S. Pea Ridge	Temple	No bike/ped facility	Bike/Ped Infrastructure	Sidewalks to connect to BISD Schools	T40-09: Project includes 10' sidewalks and bike lanes		BISD	Great potential for future development, work should begin on north side.	2	1	1	1	5
30	Tiffany Circle	SH 201 to Tiffany Circle to Mohawk Dr	Killeen	No Sidewalk	Sidewalk	Sidewalk around Tiffany Circle with a connection to Mohawk Dr	None Listed		Killeen ISD	High residential density	1	1	2	1	5
31	Lance Loop	SH 201 to Lance Loop to Mohawk Dr	Killeen	No sidewalk	Sidewalk	Sidewalk around lance Loop with a connection to Mohawk Dr	None Listed		Killeen ISD	High residential density	1	1	2	1	5
33	US 190	Copperas Cove to Killeen	Copperas Cove/Killeen	Six Lane Divided Highway with no Bike/Ped Facility.	A Bike/Pedestrian Path to connect Copperas Cove to Killeen	Create a regional connection to connect Cove to Killeen. Provide alternate means of transportation for students traveling to and from Cove to CTC.	None Listed		Park Trails	Not safe, Interstate Highway	2	1	1	1	5
7	Kegley Road Path	Kegley Rd to Pepper Creek Trail	Temple	No bike/ped facility	Shared-Use Path	Shared-use path to connect to Pepper Creek Trail	Project identified in KTMO Thoroughfare and Pedestrian/Bicycle Plan		KTMO Ped/Bike Plan	Potential for future development	1	1	1	1	4
9	Kegley Road Path	Kegley Rd to Leon River	Temple	No bike/ped facility	Shared-Use Path	Shared-use path to connect to Pepper Creek Trail	Project identified in KTMO Thoroughfare and Pedestrian/Bicycle Plan		Other Input	Potential for development in future, may not be a priority now	1	1	1	1	4
28	Stan Schlueter Loop (FM 3470)	Recess Creek ES at Stan Schlueter/FM 3470	Killeen	Crossing Issue	Walkway	Walkway over Stan Schlueter for residents in Doloris Drive neighborhood.	None Listed		Killeen ISD		1	1	1	1	4
24	Old Nolanville Rd	Nolanville ES to Bluebonnet Rd	Nolanville	No Sidewalk, Worn Path	Sidewalk	Sidewalk east of Nolanville ES to Bella Charca entrance (Wilderness Basin) and on to Pecan Valley MHP (Bluebonnet Rd)	N40-02-Funded with FY 13-16 Statewide Cat 9/TAP Funds		Killeen ISD	Project has funding	-	-	-	-	-

Scoring Chart

3	Most Important
2	Somewhat Important
1	Least Important

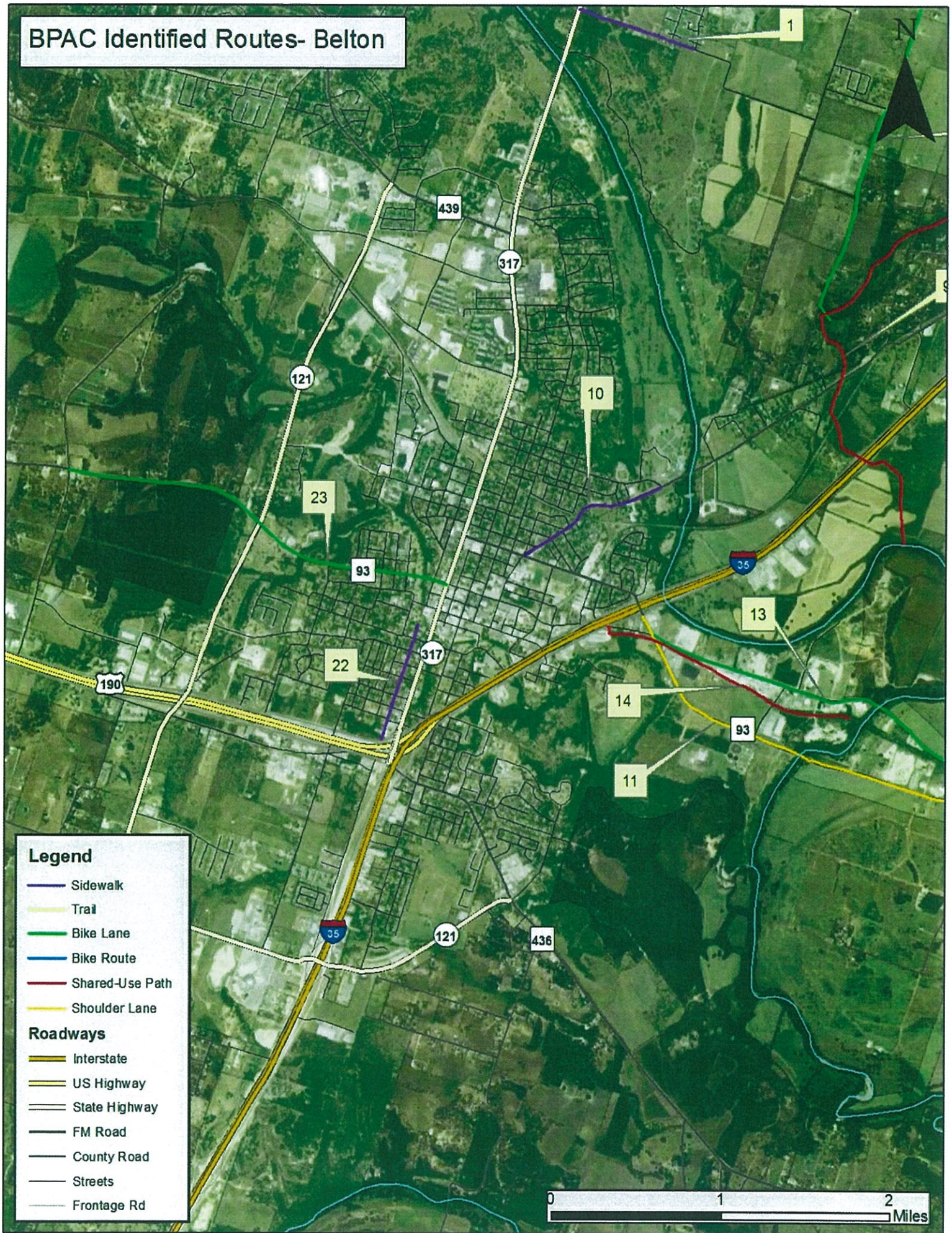


# BPAC Identified Routes- Temple





# BPAC Identified Routes- Belton



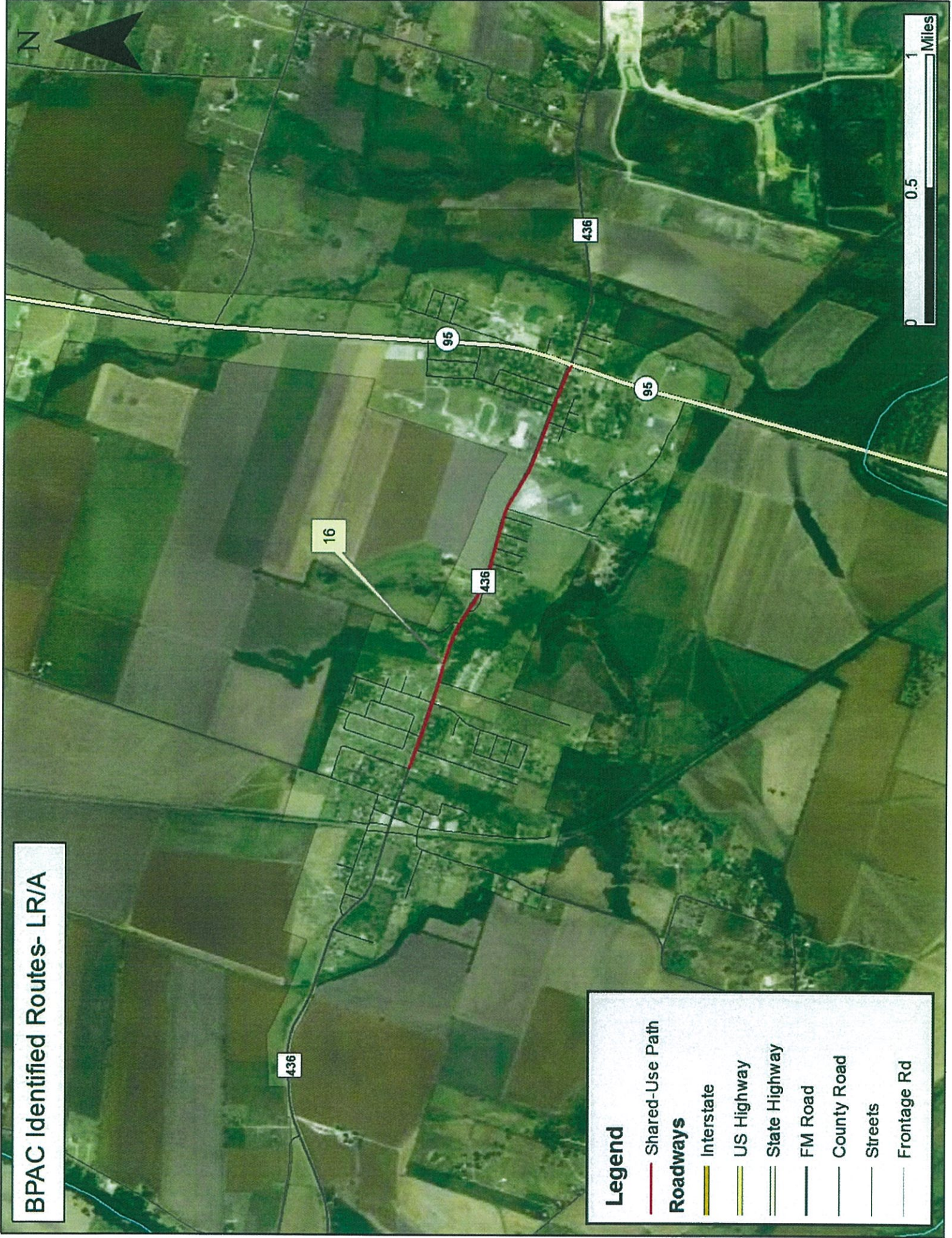


# BPAC Identified Routes- Rogers





BPAC Identified Routes- LR/A



Legend

Shared-Use Path

Roadways

Interstate

US Highway

State Highway

FM Road

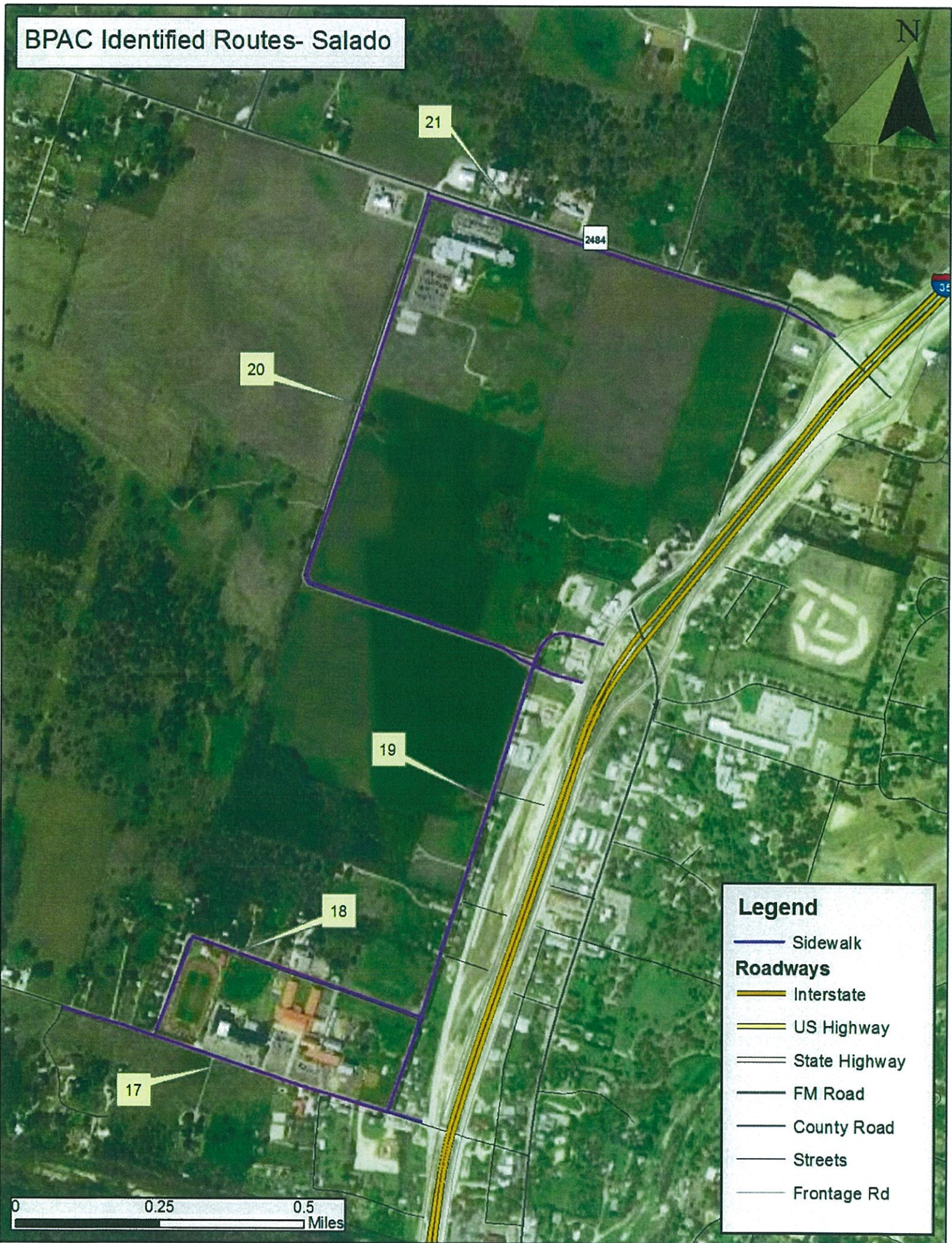
County Road

Streets

Frontage Rd

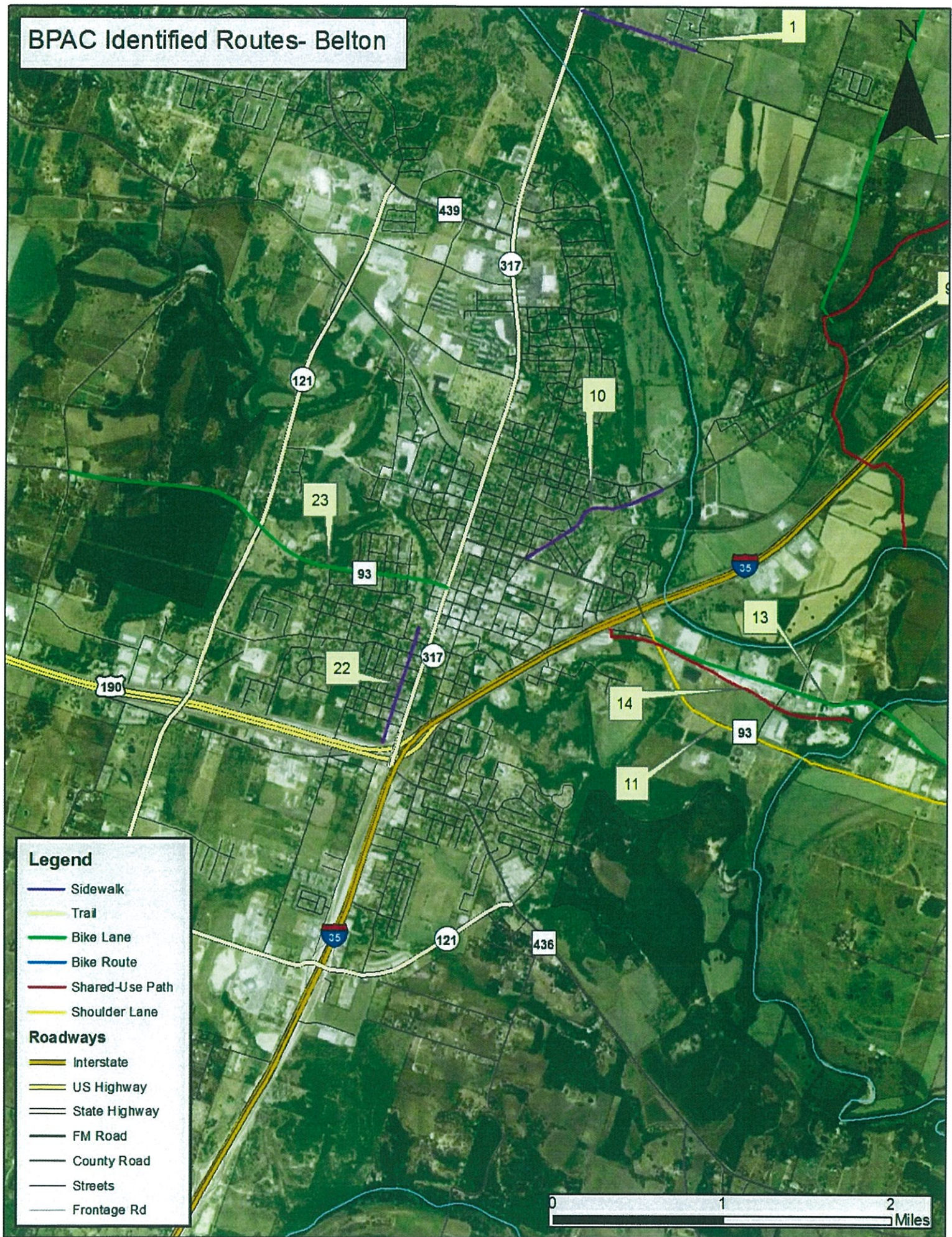


# BPAC Identified Routes- Salado





# BPAC Identified Routes- Belton





BPAC Identified Routes-Nolanville



**Legend**

--- Funded Sidewalk Project

**Roadway**

Interstate

US Highway

State Highway

FM Road

County Road

Streets

Frontage Road

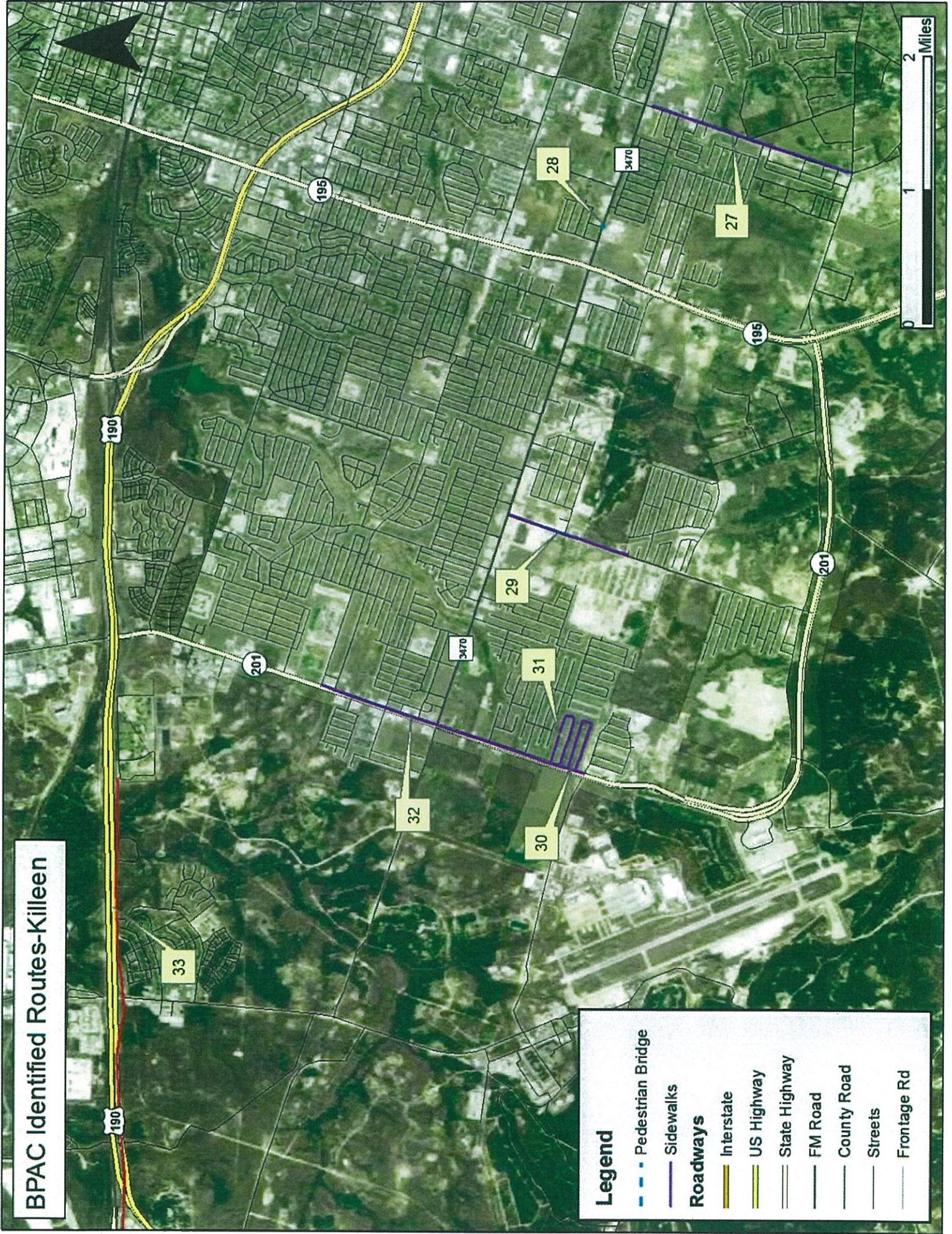


# BPAC Identified Routes-Harker Heights





# BPAC Identified Routes-Killeen





# BPAC Identified Routes-Copperas Cove





# **Public Input Received in FY17**





## KTMP Public Comments

FY17

Date	Name	Means of Public Comment	Public Comment	Date of Responding to Public Comment	Date Comment Was Presented to TAC	Area of Concern
11/29/2016	Tim Fleischer	Public Hearing	Concerns of the Salado Salamander, golf carts driving illegally on the trail	11/29/2016	1/4/2017	Bike/Ped
12/14/2016	Pamela Mathews	Email to website	Increase access to points of interest and recreational areas.	12/15/2016	2/1/2017	Bike/Ped
1/2/2017	Pamela Mathews	Direct email	Benefits for using old railway systems for trails.	1/2/2016	2/1/2017	Bike/Ped
1/3/2016	Ramon Alvarez	Facebook Comment	Comments favoring widening FM 2410 in Harker Heights	1/3/2016	2/1/2017	Roadway
1/3/2016	Bobby Whitson	Facebook Comment	Comments favoring widening FM 2410 in Harker Heights	1/3/2016	2/1/2017	Roadway
1/4/2017	Dr John Schuchmann	Email to website, attended BPAC and spoke	Interconnectivity issues with trails and cities.	1/4/2017	2/1/2017	Bike/Ped
1/23/2017	Ramon Alvarez	Facebook Comment	Supports public transportation. Having area communities support and endorse the Texas Bullet Train. More alternative transportation modes are needed in the region.	1/24/2017	2/1/2017	General
No comments received from February through April						
5/31/2017	Jennifer	Email to website	Concerned neighbors would like to know if there is a plan to make a sidewalk on Connell St. in Belton. Traffic along Connell St has increased over the year.	6/7/2017	6/7/2017	Bike/Ped
6/20/2017	Mary Armstrong-Wilgonoski	Fieldwork	More shoulder on FM 439 for Bikes and Pedestrians	6/20/2017	7/5/2017	General
6/20/2017	Sofi Knutson	Fieldwork	Shoulder needs to be paved along Main St. in Salado	6/20/2017	7/5/2017	Roadway
6/20/2017	Dolores Marshall	Fieldwork	Lights and signs are needed for businesses located on Royal St in Salado	6/20/2017	7/5/2017	Roadway
6/27/2017	Gerry Harrow & Sara Harrow	Public Hearing	Interested in interconnectivity of trails. Big need to have access to nature as well as exercise trails. Also a need to for refuge & retreat in nature. Bike & Hiking trails are needed. Trails need to have amenities such as lights, emergency phones. Possible development of Trimmer Creek for a source of recreation (kayaking/tubing ability). Concerned about the timing of the construction along Trimmer Rd.	6/27/2017	7/5/2017	Bike/Ped
6/27/2017	Charles McVey	Public Hearing		6/27/2017	7/5/2017	General
Public Input by the School Districts						
1/26/2017	KISD	Email	Sidewalk along Bunny Trail from Willacy Dr to Stan Schlueter Lp	6/9/2017	7/5/2017	Bike/Ped
1/26/2017	KISD	Email	Sidewalk along FM 3481 from FM 2410 to Neveah Dr	6/9/2017	7/5/2017	Bike/Ped
1/26/2017	KISD	Email	Sidewalk along FM 3481 from FM 2410 to Cedar Knob	6/9/2017	7/5/2017	Bike/Ped
1/26/2017	KISD	Email	Sidewalk on east side of Trimmer Rd from Stan Schlueter to Stagecoach Rd	6/9/2017	7/5/2017	Bike/Ped
1/26/2017	KISD	Email	Walkway over Stan Schlueter at Reeces Creek Elementary School	6/9/2017	7/5/2017	Bike/Ped



1/26/2017	KISD	Email	Sidewalk on west side of Clear Creek from Elms Rd to Mohawk Dr	6/9/2017	7/5/2017	Bike/Ped
1/26/2017	KISD	Email	Sidewalk around Lance Loop and Tiffany Cricle	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	BISD	Email	Sidewalk on Poison Oak from SH 317 to Carriage House Dr	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	BISD	Email	Sidewalk on Old Waco Rd from W Adams Ave to S. Pea Ridge	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	BISD	Email	Sidewalk on N. Pea Ridge from W Adams Ave to Prairie View Rd	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	BISD	Email	Sidewalk on Prairie View Rd from Westfield Blvd to SH 317	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	BISD	Email	Sidewalk along Hogan Rd from SH 317 to S. Pea Ridge	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	BISD	Email	Sidewalk along S. Pearl St from West Ave A to US 190 Service Rd	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	BISD	Email	Sidewalk along FM 93 from Main St. to Loop 121	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	BISD	Email	Sidewalk along Waco Rd from 13th Ave to 6th Ave	6/9/2017	7/5/2017	Bike/Ped
3/15/2017	Salado ISD	Email	Multi-use trail on Thomas Arnold from IH 35 to W Creek Dr	6/9/2017	7/5/2017	Bike/Ped
3/15/2017	Salado ISD	Email	Multi-use trail on West Village Rd from Thomas Arnold Rd to IH 35	6/9/2017	7/5/2017	Bike/Ped
3/15/2017	Salado ISD	Email	Multi-use trail on Salado Schools Rd from Thomas Rnold Rd to W Village Rd	6/9/2017	7/5/2017	Bike/Ped
3/11/2017	Salado ISD	Email	Multi-use trail on Williams Rd from IH 35 to FM 2484	6/9/2017	7/5/2017	Bike/Ped
3/11/2017	Salado ISD	Email	Multi-use trail on FM 2484 from IH 35 to Williams Rd	6/9/2017	7/5/2017	Bike/Ped
3/11/2017	Academy ISD	Email	Shared-use path on FM 436 from SH 95 to Lamar St	6/9/2017	7/5/2017	Bike/Ped
3/21/2017	Rogers ISD	Email	Sidewalk to include railing and crosswalks on FM 437 from Depot Ave to Ater Ave	6/9/2017	7/5/2017	Bike/Ped
5/17/2017	Freight Advisory Committee	FAC Meeting	Bottleneck at North and South Loop 363 at I-35 in Temple	5/17/2017	7/5/2017	Freight
5/17/2017	Freight Advisory Committee	FAC Meeting	Bottleneck at 6th Ave at I-35 in Belton	5/17/2017	7/5/2017	Freight
5/17/2017	Freight Advisory Committee	FAC Meeting	Turning radii and safety issues with trucks turning around at new construction project on SH 317	5/17/2017	7/5/2017	Freight
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Bike lane along Rose Lane from Salado Park Rd to IH 35 Service Rd	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Bike lane on IH 35 Service Rd to FM 2268 (Main St.)	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Shared-use lane on FM 2268 (Main St) from IH 35 Service Rd to College Hill Dr	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Shared-use lane on Pace Park Rd from FM 2268 (Main St) at N. Pace Park Rd to FM 2268	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Bike/Ped Bridge over Salado Creek to connect Royal St to Pace Park	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Creek side trail along Salado Creek	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Shared-use path on Art Fair Rd from Pace Park Rd to Pace Park Rd	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Shared-use path on College Hill Dr from FM 2268 (Main St) to FM 2268 (Main St.)	6/7/2017	6/7/2017	Bike/Ped



5/31/2017	Bobby Whitson	Bike/Ped Web Map	Shared-use path on Center Circle from Royal St to Royal St	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Shared-use path on Van Bibber Rd from FM 2268 (Main St) to Salado Plaza Dr	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Shared-use path on Salado Plaza Dr from Van Bibber Rd to FM 2268 (Main St)	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Bike lane on MLK Dr from FM 3470 to Business 190	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Bike lane on Twin Creek Dr from Bus 190 to FM 439	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Bike lane on FM 3481 from FM 2410 to Stillhouse Hollow Lake	6/7/2017	6/7/2017	Bike/Ped
5/31/2017	Bobby Whitson	Bike/Ped Web Map	Bike lane on FM 2410 from FM 3470 to Simmons Rd	6/7/2017	6/7/2017	Bike/Ped



## PUBLIC COMMENT FORM



**Instructions:** Your personal information is not required, but may allow planning officials to contact you in the future. Your comments will be recorded and presented to our Transportation Policy Board before voting on project selection or funding decisions.

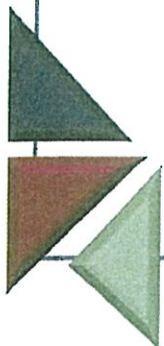
Name: Mary Armstrong-Wilgowski  
Title: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: 13403 FM 439  
Phone: (254) 247-2772  
Email: Maryogarmstrong@gmail.com

Comments:  
(MORE ROOM ON BACK)

I live in Nolanville

\* More shoulder on FM 439 for Bikes/Ped

What do  
you want  
to say?





## PUBLIC COMMENT FORM



**Instructions:** Your personal information is not required, but may allow planning officials to contact you in the future. Your comments will be recorded and presented to our Transportation Policy Board before voting on project selection or funding decisions.

Name:

MARGARET KNUTSSON

Title:

owner

Company:

Sofi's

Address:

401 S MAIN (POB 729)

Phone:

254-947-4336

Email:

Sofi-S@icloud.com

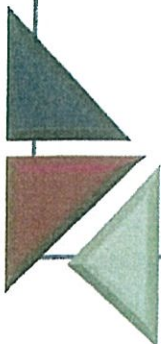
Comments:

(MORE ROOM ON BACK)

Shoulder paved.

Bicycle Rack in back.

What do  
you want  
to say?





## PUBLIC COMMENT FORM



**Instructions:** Your personal information is not required, but may allow planning officials to contact you in the future. Your comments will be recorded and presented to our Transportation Policy Board before voting on project selection or funding decisions.

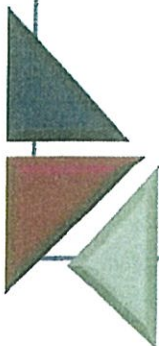
Name: DOLORES MARSHALL  
Title: OWNER-BUSINESS  
Company: SPRINGHOUSE  
Address: 120 ROYAL ST  
SALADO TX. 76571  
Phone: 254-947-0747  
Email: SPRINGHOUSE120@EMBARQMAIL.COM

### Comments:

(MORE ROOM ON BACK)

LIGHTS & A WAYFINDER  
SIGN WOULD BE NICE

What do  
you want  
to say?





## PUBLIC COMMENT FORM



**Instructions:** Your personal information is not required, but may allow planning officials to contact you in the future. Your comments will be recorded and presented to our Transportation Policy Board before voting on project selection or funding decisions.

Name: Gerry Harrow & Sara Harrow  
Title: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: 7702 Pyrite Dr  
Phone: 970-405-6691  
Email: gwharrow@gmail.com

### Comments:

(MORE ROOM ON BACK)

What do  
you want  
to say?

Would like to see map of  
Heritage oaks trail

Very interested in interconnectedness  
of trails and areas. Big need to  
have access to nature, creeks, etc.  
as well as good exercise trails (Bike,  
walk, etc.) Also need for refuge &  
retreat in quiet areas like the  
areas being developed. I look  
forward to riding my bike more on a  
'safe trail'. Trail maps for  
the area would be greatly  
appreciated



## PUBLIC COMMENT FORM



**Instructions:** Your personal information is not required, but may allow planning officials to contact you in the future. Your comments will be recorded and presented to our Transportation Policy Board before voting on project selection or funding decisions.

Name: Charles McVey  
Title: Mr.  
Company: \_\_\_\_\_  
Address: 2906 Lawndale St.  
Killeen, Texas 76549  
Phone: (254) 813-5157  
Email: clarksun1974@gmail.com

### Comments:

(MORE ROOM ON BACK)

Biking & Hiking trails are needed,  
Well like one's at that the more the merrier  
However as a city can we please focus on  
one project at a time. All of us in Killeen  
are still waiting for the work on Trimmier Rd  
to be completed after 4yrs. Also another  
idea Renovate Trimmier Creek and turn into  
somplace people can Tube and Kayak on  
safely. Also I would like recormmed bike  
Share program and Emergence Phories.

What do  
you want  
to say?



# **Item #6: Grant Funding Opportunities and Administrative Services**



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### **Grant Funding Opportunities and Administrative Services**

KTMP O has included opportunities for grant funding which are attached to this packet. KTMP O is seeking feedback on the included grant opportunities as well as other grant opportunities that BPAC would like KTMP O to pursue. KTMP O is proposing to help local entities with the grant process such as grant writing and/or grant administration to help out our regional partners.

**Discussion Item:** Grant funding opportunities and administrative services.



## HOW OUR GRANTS ARE FUNDED

# GRANT GUIDELINES



The PeopleForBikes Community Grant Program supports bicycle infrastructure projects and targeted advocacy initiatives that make it easier and safer for people of all ages and abilities to ride. Please review the following information carefully before submitting a grant application. Proposals that are incomplete or do not fall within our funding priority areas will not be considered. Visit our Grants Awarded database for examples of funded projects.

## Who Can Apply

PeopleForBikes accepts grant applications from non-profit organizations with a focus on bicycling, active transportation, or community development, from city or county agencies or departments, and from state or federal agencies working locally. PeopleForBikes only funds projects in the United States. Requests must support a specific project or program; we do not grant funds for general operating costs.

## What We Fund

PeopleForBikes focuses most grant funds on bicycle infrastructure projects such as:

- Bike paths, lanes, trails, and bridges
- Mountain bike facilities
- Bike parks and pump tracks
- BMX facilities



- End-of-trip facilities such as bike racks, bike parking, bike repair stations and bike storage

We also fund some advocacy projects, such as:

- Programs that transform city streets, such as Ciclovías or Open Streets Days
- Initiatives designed to increase ridership or the investment in bicycle infrastructure

PeopleForBikes will fund engineering and design work, construction costs including materials, labor, and equipment rental, and reasonable volunteer support costs. For advocacy projects, we will fund staffing that is directly related to accomplishing the goals of the initiative.

PeopleForBikes accepts requests for funding of up to \$10,000. We **SHARE** do not require a specific percentage match, but we do look at leverage and funding partnerships very carefully. We will not consider grant requests in which our funding would amount to 50% or more of the project budget.

PeopleForBikes **DOES NOT FUND**:

- Feasibility studies, master plans, policy documents, or litigation
- Signs, maps, and travel
- Trailheads, information kiosks, benches, and restroom facilities
- Parking lots for motorized vehicles
- Bicycles, helmets, tools, and other accessories or equipment
- Events, races, clinics/classes, or bicycle rodeos
- Bike recycling, repair, or earn-a-bike programs
- Education programs
- General operating costs
- Staff salaries, except where used to support a specific advocacy initiative
- Rides and event sponsorships
- Planning and retreats
- Projects in which PeopleForBikes is the sole or primary funder
- Projects outside the U.S.

## Schedules and Deadlines



PeopleForBikes generally holds 1-2 open grant cycles every year. In an effort to green our grants process, we have moved to an online grant application system. Please see the [Apply Now](http://www.peopleforbikes.org/pages/apply-now) (<http://www.peopleforbikes.org/pages/apply-now>) page for more information on the application process.

#### Spring 2017 Grant Cycle

Online application opens:	December 16, 2016
Online Letter of Interest due:	January 20, 2017
Notification of LOI status:	February 24, 2017
Full Application due:	April 7, 2017
Grant award notifications:	by May 26, 2017

#### Fall 2017 Grant Cycle

SHARE	Online application opens:	June 12, 2017
	Online Letter of Interest due:	July 21, 2017
	Notification of LOI status:	September 1, 2017
	Full Applications due:	October 13, 2017
	Grant award notifications:	by December 1, 2017

## Evaluation Process

All Letter of Interest and Full Application submissions will receive a confirmation email acknowledging receipt. If you have not received a confirmation email within two business days of submitting your application, please contact the Director of Grants and Partnerships.

The PeopleForBike (PFB) Community Grant Program application has two parts:

1. Letter of Interest: Interested applicants should submit an online letter of interest (LOI) through the PFB website. LOIs will include basic information about the applying organization and contact person, as well as an overview of the project proposed for funding.
2. Full Application: PFB will request a full project application from a short list of qualified applicants. Invited organizations will receive access to the online application.

Please note that the PeopleForBikes application and review process is fairly competitive and we are only able to fund 10-15% of the proposals we receive.

The Grant Committee will evaluate each application based on the following criteria:



- Project quality - project scope, applicant's ability to complete project successfully, resources available, alignment between community need and project response, thoughtfulness in location and purpose
- Benefits to the community - population(s) reached, reason and methods for picking this project at this time, potential to increase ridership
- Measurement and evaluation - measurement methodology, applicant's ability to conduct measurement
- Community support and partnerships - reasons for project prioritization, capacity to make the project a success, community, business, and leadership engagement
- Role of PeopleForBikes funding - ability of our funds to make a difference, match or leverage of PFB funds

**SHARE**

- Diversity - geographic, project type, size of community

## Reporting Requirements

PeopleForBikes requests that all grant recipients keep us updated on the progress of their projects. Articles, photos, or other information is always welcome; additionally, we would like a brief letter or email every six months that includes:

- An update on the current status of your project
- An overview of upcoming project components or efforts
- A list of partners or supporters participating in your project

A final report upon completion of your project is required. The final report should be three pages or less and include the following:

- Outcome: what did your project build, improve, develop or accomplish?
- Who participated: identify volunteers, supporters, businesses, other groups who helped make your project a reality, including any political support received
- Benefits to the community, including economic impact if information is available
- Impact on ridership
- Keys to success and lessons learned: help us help others with what worked and what did not
- Summary of media coverage
- How PeopleForBikes support was recognized



Please attach:

- Project income and expense report reflecting all funding sources for the whole project
- Copies of or links to press clippings
- Two or three photos - we love pictures of people on bikes!

Submit reports via email to: [grants@peopleforbikes.org](mailto:grants@peopleforbikes.org)  
(<mailto:grants@bikesbelong.org>)

## Reapplying for support

If your proposal is denied, it is not likely to be funded in a future cycle. **Please do not resubmit a rejected proposal unless asked to do so.**

PeopleForBikes does not consider additional funding requests from grantees for at least three years from the time of the original grant.

**SHARE** This policy is designed to promote geographic and project diversity among our grant recipients.

## Questions?

Please contact Zoe Kircos, Director of Grants and Partnerships, at 303-449-4893 x106 or [zoe@peopleforbikes.org](mailto:zoe@peopleforbikes.org)





[Parks](#)

[Hunting](#)

[Fishing](#)

[Boating](#)

[Game Warden](#)

[Activities](#)

[Wildlife](#)

[More...](#)

[Recreation Grants](#) > [Recreational Trails Grants](#)

# Recreational Trails Grants



[Apply / Manage](#)

[Grant Deadlines](#)

[Contact Us](#)



# News / Media

TPWD administers the National Recreational Trails Fund in Texas under the approval of the Federal Highway Administration (FHWA). This federally funded program receives its funding from a portion of federal gas taxes paid on fuel used in non-highway recreational vehicles. The reimbursable grants can be up to 80% of project cost with a maximum of \$200,000 for non-motorized trail grants and a maximum award of \$400,000 for motorized (off-highway vehicle) trail grants (call 512-538-4427 for more information regarding potential motorized trail grants). Funds can be spent on both motorized and non-motorized recreational trail projects such as the construction of new recreational trails, to improve existing trails, to develop trailheads or trailside facilities, and to acquire trail corridors.

## About TPWD

- General Information
- Office Locations
- Compact with Texans
- TPW Commission
- Jobs & Careers
- Volunteer for TPWD
- FAQs

## Doing Business with TPWD

- Agency Forms
- Permits
- Grants & Assistance
- Bids & Vendor Opportunities
- Surplus Property

## Resources

- Publications
- Privacy & Security
- Accessibility Policy
- Linking Policy
- Site Policies
- Intranet

## Statewide Info

## Connect with TPWD



[Recreation Grants](#) › Grant Deadlines

## Grant Deadlines

Grant Program	Grant Ceiling	Annual Deadline
Local Parks Urban Outdoor Recreation [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants">http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants</a> ]	\$1 Million	October
Local Parks Non-Urban Outdoor Recreation [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants">http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants</a> ]	\$500,000	October
Local Parks Small Community Recreation [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants">http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants</a> ]	\$75,000	October
Local Parks Urban Indoor Recreation [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants">http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants</a> ]	\$1 Million	October 1
Local Parks Non-Urban Indoor Recreation [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants">http://tpwd.texas.gov/business/grants/recreation-grants/about-local-parks-grants</a> ]	\$750,000	October
Community Outdoor Outreach Program [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/community-outdoor-outreach-program-co-op-grants">http://tpwd.texas.gov/business/grants/recreation-grants/community-outdoor-outreach-program-co-op-grants</a> ]	\$50,000	February
Recreational Trails [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/recreational-trails-grants">http://tpwd.texas.gov/business/grants/recreation-grants/recreational-trails-grants</a> ]	\$200,000	February
Boating Access [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/boating-access">http://tpwd.texas.gov/business/grants/recreation-grants/boating-access</a> ]	\$500,000	October
Boating Infrastructure	Competitive	Anytime
Boat Sewage Pumpout [ <a href="http://tpwd.texas.gov/business/grants/recreation-grants/boat-sewage-pumpout">http://tpwd.texas.gov/business/grants/recreation-grants/boat-sewage-pumpout</a> ]	Competitive	Anytime





# **Item #7: Cost Saving Strategies**



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**Recommend Cost Saving Strategies for Bicycle and Pedestrian Infrastructure**

Included in this packet are cost saving strategies for bicycle and pedestrian infrastructure. KTMPO is asking BPAC for their preferences on each bike/pedestrian strategy and a recommendation to provide to TAC.

**Discuss and Possible Action Item:** Recommend cost saving strategies for bicycles and pedestrian infrastructure.



# Bicycle Infrastructure



# 14 WAYS TO MAKE BIKE LANES BETTER (THE INFOGRAPHIC)

May 15, 2014

*Michael Andersen, Green Lane Project staff writer*

Modern bike lanes call for modern reference guides.

With so many different methods being used to physically separate bike and auto traffic, the tradeoffs can seem countless. That's where **SHARE** this infographic comes in. One part inspiration and two parts catalog, it's intended for anyone who wants to quickly get up to speed on the most popular tricks being used by cities around the world to improve bike lanes.





SHARE

## TURTLE BUMPS

1.5 ft. additional width; \$15k-\$30k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	👁️	👁️	👁️	👁️	👁️
AESTHETICS	👁️	👁️	👁️	👁️	👁️

## LARGE BUMPS

1.5 ft. additional width; \$15k-\$30k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	👁️	👁️	👁️	👁️	👁️
AESTHETICS	👁️	👁️	👁️	👁️	👁️

## OBLONG LOW BUMPS

1.5 ft. additional width; \$10k-\$20k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	👁️	👁️	👁️	👁️	👁️
AESTHETICS	👁️	👁️	👁️	👁️	👁️

## PARKING STOPS

6 in. additional width; \$20k-\$40k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	👁️	👁️	👁️	👁️	👁️
AESTHETICS	👁️	👁️	👁️	👁️	👁️

## LINEAR BARRIERS

6 in. additional width; \$25k-\$75k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	👁️	👁️	👁️	👁️	👁️
AESTHETICS	👁️	👁️	👁️	👁️	👁️

## PARKED CARS

11 ft. for parking + buffer; \$8k-\$16k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
INSTALLATION COST	\$	\$	\$	\$	\$
DURABILITY	👁️	👁️	👁️	👁️	👁️
AESTHETICS	👁️	👁️	👁️	👁️	👁️

## JERSEY BARRIERS

2 ft. additional width; \$80k-\$160k per lane-mile

PROTECTION LEVEL	+	+	+	+	+
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Feel free to share or republish this image in any way you'd like.



It's based primarily on research by Austin engineer Nathan Wilkes, whose work on this issue we [published in March](http://www.peopleforbikes.org/blog/entry/wonktastic-chart-rates-15-different-ways-to-protect-bike-lanes) (<http://www.peopleforbikes.org/blog/entry/wonktastic-chart-rates-15-different-ways-to-protect-bike-lanes>) in the form of a [less web-friendly](https://drive.google.com/open?id=0B8tOk7_upXv5WW83T2ZFYXR4bVU) (but much more detailed) spreadsheet ([https://drive.google.com/open?id=0B8tOk7\\_upXv5WW83T2ZFYXR4bVU](https://drive.google.com/open?id=0B8tOk7_upXv5WW83T2ZFYXR4bVU)).

Some details to keep in mind: first, there's judgment wiggle room in a lot of these ratings, especially the one for aesthetics. Your mileage may vary, in large part based on what a street looks like. Also, the cost figures include various assumptions. You can learn more about each by downloading Wilkes's full spreadsheet and clicking the "cost estimates" tab. You can also download a [print-quality PDF of this infographic](http://b.3cdn.net/bikes/36b7b6a4d74ea75d23_d6m6voly5.pdf) ([http://b.3cdn.net/bikes/36b7b6a4d74ea75d23\\_d6m6voly5.pdf](http://b.3cdn.net/bikes/36b7b6a4d74ea75d23_d6m6voly5.pdf))

**SHARE** and hang it to your cubicle wall. As cities everywhere prepare to install more of these, would there be any better way to proclaim the nature of your infrastructural nerdiness? We submit to you that there is not.

***PlacesForBikes** (<http://peopleforbikes.org/placesforbikes>) helps U.S. communities build better biking, faster. You can follow us on [Twitter](http://twitter.com/PlacesForBikes) (<http://twitter.com/PlacesForBikes>) or [Facebook](http://facebook.com/PlacesForBikes) (<http://facebook.com/PlacesForBikes>) or sign up for our [weekly news digest](http://www.peopleforbikes.org/pages/placesforbikes-weekly-news-digest) (<http://www.peopleforbikes.org/pages/placesforbikes-weekly-news-digest>) about building all-ages biking networks. Story tip? Write [michael@peopleforbikes.org](mailto:michael@peopleforbikes.org).*

**SHARE ON FACEBOOK** >

(<https://www.facebook.com/sharer/sharer.php?u=http://www.peopleforbikes.org/blog/entry/14-ways-to-make-bike-lanes-better-the-infographic>)

**SHARE ON TWITTER** >

([https://twitter.com/home?status=14%20ways%20to%20make%20bike%20lanes%20better%20\(the%20infographic\)%20http://t.co/77ybRUEcZN%20http://t.co/ZPMpbiAr4d](https://twitter.com/home?status=14%20ways%20to%20make%20bike%20lanes%20better%20(the%20infographic)%20http://t.co/77ybRUEcZN%20http://t.co/ZPMpbiAr4d))

[See all Protected Bike Lanes blog entries \(/blog/category/protected-bike-lanes\)](/blog/category/protected-bike-lanes)



# **Pedestrian Infrastructure**



## Pedestrian Accommodations

Pedestrian accommodation treatment costs are presented in this section. In this case, pedestrian accommodation refers to infrastructure provided to enhance the pedestrian environment that may include improving pedestrian safety, mobility and/or access. In many cases, treatment costs in this section will be presented as lump sums, though in some instances, the cost information may be provided in linear feet or square feet.

### Bollard

Traffic bollards are posts embedded in the ground, which are used to keep pedestrians safer, by slowing vehicle speeds and separating pedestrian from motor vehicle traffic, and/or limiting vehicle access either temporarily or permanently (see Figure 13). There are multiple types of bollards available for use (fixed, rising, security, removable, breakaway, decorative, flexible, etc.). The cost below combines these various types into one set of costs, and thus the costs will vary depending on the specific bollard type and material used.



Figure 13: Bollards

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources
Bollard	Bollard	\$650	\$730	\$62	\$4,130	Each	28 (42)

Table 11: Bollard Cost

### Curb Ramp

Curb ramps provide access between the sidewalk and roadway for people using wheelchairs, strollers, walkers, crutches, handcars, bicycles, or who have mobility impairments that make it difficult to step up and down the curbs (see Figure 14). While curb ramps are needed for use on all types of streets, priority locations are streets in downtown areas and near transit stops, schools, parks, medical facilities, shopping areas, and residences with people who use wheelchairs. Truncated domes/ detectable warning surfaces provide a distinctive surface pattern that is detectable underfoot as a warning to those who are visually impaired of an approaching street and are required at all intersections with sidewalks in compliance with the Americans with Disabilities Act (ADA) of 1990.



Figure 14: Curb Ramp

As many cities include truncated domes/detectable warnings as part of their curb ramp installations, combining the cost per square foot for detectable warnings and the wheelchair ramps in accordance with local design standards and multiplying by eight will provide a per intersection cost for providing ADA-compliant curb ramps.



Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Curb Ramp	Truncated Dome/ Detectable Warning	\$37	\$42	\$6.18	\$260	Square Foot	9 (15)
Curb Ramp	Wheelchair Ramp	\$740	\$810	\$89	\$3,600	Each	16 (31)
Curb Ramp	Wheelchair Ramp	\$12	\$12	\$3.37	\$76	Square Foot	10 (43)

**Table 12: Curb Ramp Cost**

### Fence/Gate

Fencing and gating can help separate pedestrians and cyclists from roadways and railroad tracks, and can also be used in the construction of pedestrian/bicyclist paths, bridges, and overpasses (see Figure 15). The cost of pedestrian fencing and gates will vary depending on the location, type, design, material, height, etc. used. For instance, fencing may include chain link, ornamental or other fence types. The median and average costs provided below provide a range of estimates of what fencing is likely to cost.



**Figure 15: Fencing**

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Fence/Gate	Fence	\$120	\$130	\$17	\$370	Linear Foot	7 (7)
Fence/Gate	Gate	\$510	\$910	\$330	\$1,710	Each	5 (5)

**Table 13: Fence/ Gate Cost**

### Gateway

A gateway is a physical or geometric landmark that indicates a change in environment from a higher speed arterial or collector road to a lower speed residential, mixed-use, or commercial district (see Figure 16). They often place a higher emphasis on aesthetics and are frequently used to identify neighborhood and commercial areas within a larger urban setting. Sign costs below reflect a variety of materials, including plastic (\$500), metal (approximately \$200), and wood (approximately \$530).



**Figure 16: Gateway Treatment**

The cost of gateway structures can range greatly depending on the specific type of items chosen. The costs below combine a variety of gateway structure treatments, such as: monument signs (approximately \$19,000), street spanning arches supported by metal posts within bulb-outs (approximately \$64,000), and gateway columns (\$10,000).



Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Gateway	Gateway Sign	\$350	\$340	\$130	\$520	Each	3 (4)
Gateway	Structure	\$15,350	\$22,750	\$5,000	\$64,330	Each	5 (6)

Table 14: Gateway Cost

## Lighting

Adequate roadway lighting enhances the safety of all roadway users, while pedestrian-scale lighting improves nighttime security and enhances commercial districts (see Figure 17). These costs can vary depending on the fixture type and service agreement with local utility, as well as if other improvements are made to the streetscape at the same time. Also, though not included below, average approximate underpass lighting costs can range from \$350 to \$3,400 each, and crosswalk lighting can range from approximately \$10,750 to \$42,000 per crosswalk.

The cost range for in-pavement lights is very broad, based on manufacturer differences, roadway widths, and project-specific factors. Usually, in-pavement lights are installed as a system, which is the reason the total cost of installing lights at a location is included here, as opposed to an individual light cost.

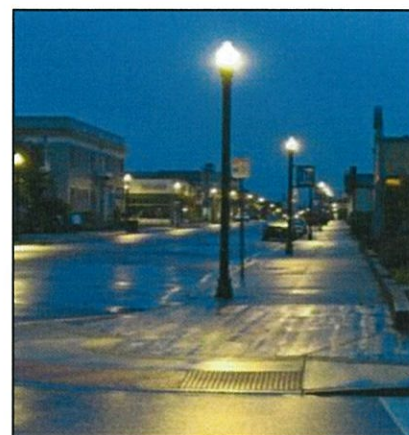


Figure 17: Lighting

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Lighting	In-pavement Lighting	\$18,250	\$17,620	\$6,480	\$40,000	Total	4 (4)
Lighting	Streetlight	\$3,600	\$4,880	\$310	\$13,900	Each	12 (17)

Table 15: Lighting Cost

## Overpass/Underpass

Pedestrian Overpasses and Underpasses completely separate pedestrians from vehicular traffic and provide safe pedestrian accommodation over often impassable barriers, such as highways, railways, and natural barriers such as rivers (see Figures 18 and 19). Over- and Underpasses consist of different types of structures, including bridges, and are generally very expensive, though some cost savings can be realized depending on the materials used. Cost information is typically provided as a lump sum cost, but can also be presented as a cost per square foot.

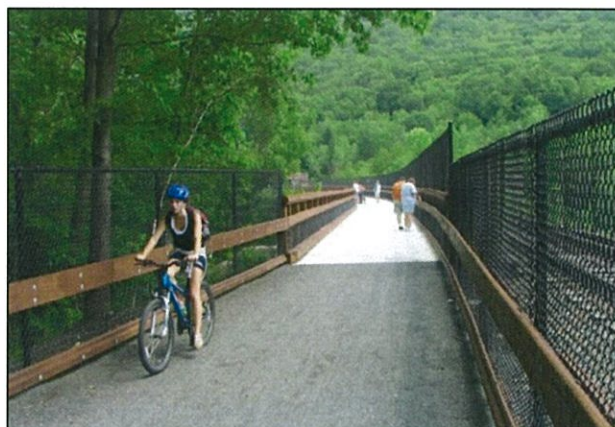


Figure 18: Pedestrian Overpass



Underpasses (excluding bridges) range from slightly less than \$1,609,000 to \$10,733,000 in total or around \$120 per square foot. Overpasses (excluding bridges) have a range from \$150 to \$250 per square foot or \$1,073,000 to \$5,366,000 per complete installation, depending on site conditions.

The cost for specific types of bridges can vary substantially, based on the specific situation, materials, and other factors, as demonstrated in the table below for wooden and pre-fab steel bridges.



Figure 19: Pedestrian Underpass

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Overpass/Underpass	Wooden Bridge	\$122,610	\$124,670	\$91,010	\$165,710	Each	1 (8)
Overpass/Underpass	Pre-Fab Steel Bridge	\$191,400	\$206,290	\$41,850	\$653,840	Each	5 (5)

Table 16: Overpass/ Underpass Cost

### Railing

Pedestrian railings provide an important safety benefit on walkways, and are required for ADA compliance on ramps with steep inclines and along stairways.<sup>iii</sup> They also buffer the pedestrian path from vehicular traffic. Pedestrian railing materials range from aluminum and steel to wood and chain link fence. All of these costs are aggregated in the table below.

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Railing	Pedestrian Rail	\$95	\$100	\$7.20	\$690	Linear Foot	29 (83)

Table 17: Railing Cost

### Street Furniture

Street furniture often serves as a buffer between the sidewalk and the roadway, providing an important safety benefit to pedestrians. Including trees, benches, bus shelters, newspaper racks, kiosks, and other pedestrian amenities, street furniture also serves to create a more pleasant and attractive environment for pedestrians.

The cost of street furniture will vary depending on the design, style, and manufacturer for benches, bus shelters, and other street furniture, while trees will also vary in cost based on the type and size of tree

<sup>iii</sup> Handrails are required for ADA accessibility on both sides of paths with rise greater than 6 inches or a horizontal projection greater than 72 inches, as well as all stairways.



(see Figure 20). The costs that follow and provided in the table below assume to include installation, which can vary based on the number of items installed at one time.

More substantial structures tend to be more expensive, with gazebos averaging at nearly \$53,000, with a range of \$36,600 to \$71,600; information kiosks averaging at slightly less than \$16,000; and shade shelters averaging at \$30,000, with a range of \$29,290 to \$41,850.

Historical markers average at \$3,498 with a range of \$1,230 to \$4,700, while newspaper racks typically cost slightly less than \$6,500. Picnic tables cost around \$1,683 on average with a range of \$530 to \$4,180 based on materials and manufacturer. Lastly, tree grates cost an average of \$1,340 or between \$1,400 and \$3,500 (not including the tree), while shrubs cost between \$55 and \$80. Street furniture removal costs are also available. Bench removal costs around \$910 with a range of costs from \$80 to \$3,140, while bus shelter removal averages at \$3,690 with a range of as low as \$720 to \$10,460. Costs for removing trash cans (\$320 average, \$130 to \$520 range) and tree grates (\$250 average, \$52 to \$890 range) are also available.



Figure 20: Bench

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Street Furniture	Street Trees	\$460	\$430	\$54	\$940	Each	7(7)
Street Furniture	Bench	\$1,660	\$1,550	\$220	\$5,750	Each	15 (17)
Street Furniture	Bus Shelter	\$11,490	\$11,560	\$5,230	\$41,850	Each	4 (4)
Street Furniture	Trash/ Recycling Receptacle	\$1,330	\$1,420	\$310	\$3,220	Each	12 (13)

Table 18: Street Furniture Cost

## Street Closures

Full and partial (half) street closures are the ultimate way of discouraging automobile through traffic, while still allowing pedestrian and bicycle traffic. Typically, full street closures close the street entirely to vehicles, while partial street closures restrict turning movements onto streets, without having to create one-way streets. Depending on the street closure strategy, which could use bollards, islands, or other measures, the costs are likely to vary substantially. Full street closures can cost from less than \$500 to \$120,000, while partial street closures usually cost around \$37,500, but can cost as low as \$10,290 or as high as \$41,170.



Figure 21: Full Street Closure



The wide ranges in price for full and partial street closures are related to the strategies used to complete the street closure. For instance, a full street closure (see Figure 21) can be accomplished by only adding a few bollards, but under a different strategy might involve altering roadway design by installing new concrete islands, restriping, and adding channelizer cones and signage. Depending on the site conditions, either strategy might be appropriate. More information about exact street closure costs can be found in the full database.

**Pedestrian Crossings and Paths**

This section provides information about the cost of facilities for pedestrians and includes information about sidewalks, crosswalks, and paths. Treatment information for sidewalks is presented in miles or square feet, while crosswalks are included as a cost per unit. Path costs are presented in either miles or linear feet. For some infrastructure treatments, such as paths, cost information was presented using a variety of different units. Assuming that a standard multi-use path is eight feet wide, the authors converted cost information for paths to linear feet and miles.



Figure 22: Crosswalk

**Crosswalks**

Striped crosswalks indicate a legal and preferred crossing for pedestrians, and may be installed at intersections or midblock locations. Motorists often fail to yield to pedestrians at these crossing points so marked crosswalks (see Figure 22) are often installed to warn motorists to expect pedestrians crossings ahead and also to indicate a preferred crossing location to pedestrians. A wide variety of crosswalk marking patterns exist, including parallel lines (standard crosswalk marking) and high visibility types, which include ladder, transverse lines, and zebra among others (see Figure 23).

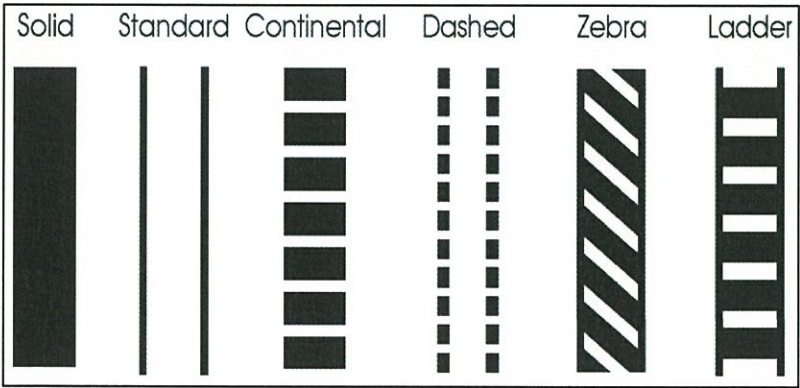


Figure 23: Optional Crosswalk Marking Patterns



Cost information for striped crosswalks of all varieties as well as for high visibility crosswalks is given in the table above. However, some of the bid prices for striped crosswalks may include some high visibility crosswalks, though it was not specified.

For other crosswalk types, costs tend to vary by a large amount. For instance, for crosswalks using other materials such as brick or pavement scoring, costs range from \$7.25 to \$15 per square foot, or approximately \$2,500 to \$5,000 each. Ladder crosswalks cost range from \$350 to \$1,000 each and patterned concrete crosswalks cost \$3,470 each or \$9.68 per square foot on average.

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Crosswalk	High Visibility Crosswalk	\$3,070	\$2,540	\$600	\$5,710	Each	4 (4)
Crosswalk	Striped Crosswalk	\$340	\$770	\$110	\$2,090	Each	8 (8)
Crosswalk	Striped Crosswalk	\$5.87	\$8.51	\$1.03	\$26	Linear Foot	12 (48)
Crosswalk	Striped Crosswalk	\$6.32	\$7.38	\$1.06	\$31	Square Foot	5 (15)

Table 19: Crosswalk Cost

Since street widths vary a large amount depending on the situation, it is difficult to estimate the cost to provide crosswalks at every intersection. However, if a high visibility crosswalk costs approximately \$3,000 per crossing, the cost for the entire intersection would be \$12,000 (\$3,000 X 4).

## Sidewalks

Sidewalks are the most basic pedestrian facility and provide an area within the public right-of-way for pedestrian travel (see Figure 24). Sidewalk materials can vary substantially, including concrete, asphalt, brick, or other materials. In some cases, sidewalk costs are presented as a combination of both sidewalks and curbs, though it is important to note that the costs presented in the table below represent the cost of the sidewalk “in the ground” and may or may not include curb and gutter. All sidewalk costs are presented either by linear foot or by square foot with all unit conversion assuming that sidewalks are five feet in width. Sidewalk costs without sufficient details to include in the table are included in the following paragraphs.



Figure 24: Sidewalk

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Sidewalk	Asphalt Paved Shoulder	\$5.81	\$5.56	\$2.96	\$7.65	Square Foot	1 (4)
Sidewalk	Asphalt Sidewalk	\$16	\$35	\$6.02	\$150	Linear Foot	7 (11)



Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Sidewalk	Brick Sidewalk	\$60	\$60	\$12	\$160	Linear Foot	9 (9)
Sidewalk	Concrete Paved Shoulder	\$6.10	\$6.64	\$2.79	\$58	Square Foot	1 (11)
Sidewalk	Concrete Sidewalk	\$27	\$32	\$2.09	\$410	Linear Foot	46 (164)
Sidewalk	Concrete Sidewalk - Patterned	\$38	\$36	\$11	\$170	Linear Foot	4 (5)
Sidewalk	Concrete Sidewalk - Stamped	\$45	\$45	\$4.66	\$160	Linear Foot	12 (17)
Sidewalk	Concrete Sidewalk + Curb	\$170	\$150	\$23	\$230	Linear Foot	4 (7)
Sidewalk	Sidewalk Unspecified	\$34	\$45	\$14	\$150	Linear Foot	17 (24)
Sidewalk	Sidewalk Pavers	\$70	\$80	\$54	\$200	Linear Foot	3 (4)

Table 20: Sidewalk Cost

## Paths

Multi-use paths are the safest facilities for pedestrians and bicyclists, providing mobility options away from the roadway. Often accommodating both pedestrians and bikes, multi-use paths are usually at least eight feet in width, can be both paved and unpaved, and are used for both recreation and transportation purposes. Costs will vary substantially for multi-use paths, based on the materials used, right-of-way costs, and other factors.

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Path	Boardwalk	\$1,957,040	\$2,219,470	\$789,390	\$4,288,520	Mile	5 (5)
Path	Multi-Use Trail - Paved	\$261,000	\$481,140	\$64,710	\$4,288,520	Mile	11 (42)
Path	Multi-Use Trail - Unpaved	\$83,870	\$121,390	\$29,520	\$412,720	Mile	3 (7)

Table 21: Path Cost

## Mid-Block Crossings

Mid-block crossings can be necessary on major roads with few intersections or in areas with documented pedestrian crash problems. Often installed in conjunction with other safety and traffic calming features, particularly advance yield lines, in-pavement yield/stop signs, raised pedestrian crossings, or Rectangular Rapid Flash Beacons or High Intensity Activated Crosswalk (HAWK) signals, mid-block crossings can make substantial improvements in pedestrian safety, while also having traffic calming effects. Mid-block crossings are striped crosswalks away from intersections and are very helpful in the vicinity of transit stops or in other areas where pedestrians are likely to cross the road often.

Mid-block crossings are typically much more expensive than standard crosswalk treatments, with costs ranging from approximately \$2,700 to more than \$71,000 if bulb-outs, trees, landscaping, crosswalks, etc. are included. It is a good idea to consider the context of the situation in order to apply a tailored solution, usually a combination of infrastructure treatments, to ensure that pedestrians are accommodated in the safest possible way.



## Signals

Signals for both pedestrians and bicyclists are included in this section. Pedestrian and bicycle detectors and speed trailers are included in this section as well. New signal types have become more prevalent in the last ten years, including the Rectangular Rapid Flash Beacon and the Pedestrian Hybrid Beacon, formerly known as a High Intensity Activated Crosswalk (HAWK) signal. These are included here. Efforts will be made to include any new signals as they become more prevalent.

### Flashing Beacon

Flashing beacons are typically used in conjunction with pedestrian crossings to provide an enhanced warning for vehicles to yield to pedestrians. Rectangular rapid flashing beacons (RRFBs) differ from regular flashing beacons in that RRFBs have a rapid strobe-like warning flash, are brighter, and can be specifically aimed (see Figure 25). As a relatively new treatment, RRFBs have not been implemented extensively throughout this country, but are now becoming more prevalent in certain states and cities. The cost to furnish and install a flashing beacon can vary widely, depending on site conditions and the type of device used. The costs shown in the table include the complete system installation with labor and materials.



Figure 25: Rapid Flash Beacon

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Flashing Beacon	Flashing Beacon	\$5,170	\$10,010	\$360	\$59,100	Each	16 (25)
Flashing Beacon	RRFB	\$14,160	\$22,250	\$4,520	\$52,310	Each	3 (4)

Table 22: Flashing Beacon Cost

### Pedestrian Hybrid Beacon

The Pedestrian Hybrid Beacon, otherwise known as the High Intensity Activated Crosswalk (HAWK) signal, is a special type of beacon to warn and control vehicles to allow pedestrians to safely cross a road or highway at a marked midblock crossing location (see Figure 26). Developed by the City of Tucson, Arizona in the 1990s, the pedestrian hybrid beacon is comprised of three signal sections, overhead pedestrian crosswalk signs, pedestrian detectors, and countdown pedestrian signal heads. According to a FHWA study, pedestrian hybrid beacons have a large impact on vehicle yielding rates.<sup>13</sup> As with RRFBs, pedestrian hybrid beacons are typically more expensive to implement and maintain than some devices, but less expensive than full traffic signals.



Figure 26: Pedestrian Hybrid Beacon



Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Pedestrian Hybrid Beacon	Pedestrian Hybrid Beacon	\$51,460	\$57,680	\$21,440	\$128,660	Each	9 (9)

**Table 23: Pedestrian Hybrid Beacon Cost**

### Pedestrian and Bicycle Detection

Pedestrian and bicycle detection devices are used to determine if a pedestrian or bicyclist is waiting for the signal. There are many different ways that these devices detect pedestrians and bicyclists. For instance, bicycle detectors (\$1,920 on average, \$1,070 to \$2,680 range) are usually loop detectors embedded in the pavement, while pedestrian detectors use video and other strategies to detect the presence of pedestrians waiting to cross.

Actuated pedestrian detectors provide dynamic recognition of pedestrians and signal to motorists to stop once a pedestrian approaches a crosswalk. The cost to retrofit a signal with a pushbutton at an existing pedestrian signal averages around \$350. The cost to remove a pushbutton installation is slightly more than \$45 on average, with a range of \$21 to \$92.

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Pedestrian/Bike Detection	Furnish and Install Pedestrian Detector	\$180	\$390	\$68	\$1,330	Each	7 (14)
Pedestrian/Bike Detection	Push Button	\$230	\$350	\$61	\$2,510	Each	22 (34)

**Table 24: Pedestrian/ Bike Detection Cost**

### Signals for Drivers and Pedestrians

Signals serve the important function of guiding and regulating traffic and help reduce conflicts between different road users. Many of the costs in the table below are representative of various components of a signal and are not representative of the complete cost of a signal. Some information about signals is not included in the table, namely bicycle signals, which have an average cost of \$12,800. In the table, "Signal Face" refers to the cost of a signal's front display visible to pedestrians, while "Signal Head" refers to the entire unit. The adjacent image displays a pedestrian countdown timer signal (see Figure 27).



**Figure 277: Pedestrian Signal**

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Signal	Audible Pedestrian Signal	\$810	\$800	\$550	\$990	Each	4 (4)
Signal	Countdown Timer Module	\$600	\$740	\$190	\$1,930	Each	14 (18)



Signal	Pedestrian Signal	\$980	\$1,480	\$130	\$10,000	Each	22 (33)
Signal	Signal Face	\$490	\$430	\$130	\$800	Each	3 (6)
Signal	Signal Head	\$570	\$550	\$100	\$1,450	Each	12 (26)
Signal	Signal Pedestal	\$640	\$800	\$490	\$1,160	Each	3 (5)

Table 25: Signal Cost

### Speed Trailer

Speeding in neighborhoods can create dangerous situations for pedestrians, particularly children. Speed trailers, which display the motorist speed and provide a warning if the speed limit is exceeded, as well as signs and reader boards can help education and awareness efforts and can be especially effective when coupled with enforcement efforts.

Speed trailers are sign boards that display the speed or passing vehicles and typically range in cost from \$7,000 to \$12,410 with an average cost of \$9,510 (see Figure 28). Speed reader boards are similar to speed trailers, but are typically permanently installed.



Figure 28: Speed Trailer

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Speed Trailer	Speed Trailer	\$9,480	\$9,510	\$7,000	\$12,410	Each	6 (6)

Table 26: Speed Trailer Cost

### Signs

Signs can provide important information that can improve road safety. By letting people know what to expect, there is a greater chance that they will react and behave appropriately. Regulatory signs, such as STOP (see Figure 29), YIELD, or turn restriction signs such as NO TURN ON RED require compliant driver actions and can be enforced. Sign use and movement should be done judiciously, as overuse may breed noncompliance and disrespect.

Signs not included in the table but pertinent to pedestrian and bicyclists include (all costs are approximated and per unit): bike route signage (\$160), "no turn on red" signage (\$220 for a metal sign or \$3,200 for an electronic sign), in-pavement yield paddles (\$240), trail regulation sign (\$160), and trail wayfinding/information sign (range from \$530 to \$2,150).



Figure 29: Stop Sign

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Sign	Stop/Yield Signs	\$220	\$300	\$210	\$560	Each	4 (4)

Table 27: Sign Cost



## Striping

Striping costs, in this case, include bicycle and pedestrian symbols, textured pavement, yield/stop lines, and painted island/curb/sidewalks. For symbols, cost information is provided per unit, while striping and painted surfaces are given as linear and square feet, respectively.

## Pavement Marking

Pavement markings cover a variety of pedestrian and bicycle treatment costs. Advance stop/yield lines (see Figure 30) improve the visibility of pedestrians to motorists and prevent multiple-threat crashes.<sup>iv</sup> They also encourage drivers to stop back far enough so a pedestrian can see if a second motor vehicle is not stopping and be able to take evasive action.



Figure 30: Advance Stop/Yield Lines

The advance stop or yield line should be supplemented with "Stop Here For Pedestrians" signs to alert drivers where to stop to let a pedestrian cross. The price will range depending on the material used and the type of line selected. Having island markings and painted curbs/sidewalks can alert pedestrians, bicyclists, and drivers of the presence of these items, and also help restrict parking. Painting a "bicycle box" (see Figure 31) will cost approximately \$11.50 per square foot. "Striping" combines a number of related costs, such as: contraflow lanes, broken/solid white or yellow stripe, bicycle lanes, and bikeway centerlines. It also combines the wide assortment of widths and materials used for striping.



Figure 31: Bicycle Box

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Pavement Marking	Advance Stop/Yield Line	\$380	\$320	\$77	\$570	Each	3 (5)
Pavement Marking	Advance Stop/Yield Line	\$10	\$10	\$4.46	\$100	Square Foot	1 (4)
Pavement Marking	Island Marking	\$1.49	\$1.94	\$0.41	\$11	Square Foot	1 (4)
Pavement Marking	Painted Curb/Sidewalk	\$1.21	\$3.40	\$0.44	\$12	Square Foot	4 (5)
Pavement Marking	Painted Curb/Sidewalk	\$2.57	\$3.06	\$1.05	\$10	Linear Foot	2 (5)

Table 28: Pavement Marking Cost

<sup>iv</sup> A multiple-threat crash involves a driver stopping in one lane of a multilane road to permit pedestrians to cross, blocking the view of oncoming vehicles travelling in the same direction and causing a collision between the motorist and pedestrian.



### Pavement Marking Symbols

Pavement marking symbol costs have been separated by the type of symbol. "Pedestrian Crossing" symbols notify pedestrians and/or motorists of places where pedestrians cross the street. "Shared Lane/Bicycle" symbols identify bicycle lanes and/or shared-lanes (see Figure 32). School crossing symbols highlight areas where motorists should be aware of children and increased pedestrian activity.

Costs will vary due to the type of paint used and the size of the symbol, as well as whether the symbol is added at the same time as other road treatments.



Figure 32: Shared Lane Marking

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Pavement Marking Symbol	Pedestrian Crossing	\$310	\$360	\$240	\$1,240	Each	4 (6)
Pavement Marking Symbol	Shared Lane/Bicycle Marking	\$160	\$180	\$22	\$600	Each	15 (39)
Pavement Marking Symbol	School Crossing	\$520	\$470	\$100	\$1,150	Each	4 (18)

Table 29: Pavement Marking Symbol Cost

### Curb and Gutter

Curb and Gutters are used in conjunction with a number of other bicycle and pedestrian facility improvements, such as: sidewalks, bikeways, medians, islands, paths, curb extensions, bikeways, diverters, chicanes, and bulb-outs, among others. The cost can vary widely based on the scale of the project and whether the curb and/or gutter installation is in conjunction with other road treatments.

Infrastructure	Description	Median	Average	Minimum	Maximum	Cost Unit	Number of Sources (Observations)
Curb/Gutter	Curb	\$18	\$21	\$1.05	\$110	Linear Foot	16 (68)
Curb/Gutter	Curb and Gutter	\$20	\$21	\$1.05	\$120	Linear Foot	16 (108)
Curb/Gutter	Gutter	\$23	\$23	\$10	\$78	Linear Foot	4 (4)

Table 30: Curb/ Gutter Cost



# KTMPO Contacts, Acronyms, and Terms





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## Commonly Used Transportation Related Acronyms and Terms

Organizations	Terms
<b>KTMPPO</b>	<b>TMA</b>
Killeen – Temple Metropolitan Planning Organization	Transportation Management Area
<b>TPPB (KTMPPO)</b>	<b>MAP - 21</b>
Transportation Planning Policy Board	Moving Ahead for Progress in the 21 <sup>st</sup> Century (legislation replaced SAFETEA-LU in July 2012)
<b>TAC (KTMPPO)</b>	<b>SAFETEA – LU</b>
Technical Advisory Committee	Safe, Accountable, Flexible, Efficient Transportation Equity Act
<b>FHWA</b>	<b>MPO</b>
U.S. Department of Transportation Federal Highway Administration	Metropolitan Planning Organization
<b>FTA</b>	<b>UPWP</b>
U.S. Department of Transportation Federal Transit Administration	Unified Planning Work Program
<b>TxDOT</b>	<b>MTP</b>
Texas Department of Transportation	Metropolitan Transportation Plan
<b>TCEQ</b>	<b>TIP</b>
Texas Commission on Environmental Quality	Transportation Improvement Program
<b>TTI</b>	<b>STIP</b>
Texas A&M Transportation Institute	Statewide Transportation Improvement Program
<b>CTCOG</b>	<b>STP-MM</b>
Central Texas Council of Governments	Surface Transportation Program – Metropolitan Mobility
<b>HCTD or “The HOP”</b>	<b>TAP</b>
Hill Country Transit District	Transportation Alternatives Program
<b>CTRTAG</b>	<b>UTP</b>
Central Texas Regional Transportation Advisory Group	Unified Transportation Program
<b>BPAC</b>	<b>CMAQ</b>
Bicycle and Pedestrian Advisory Committee	Congestion Mitigation and Air Quality Improvement Program
	<b>UA or UZA</b>
	Urbanized Area
	<b>EJ or “Title VI”</b>
	Environmental Justice
	<b>CMP</b>
	Congestion Management Process
	<b>ITS</b>
	Intelligent Transportation Systems
	<b>NAAQS</b>
	National Ambient Air Quality Standards

A comprehensive listing with definitions is available under Transportation Planning Resources at [www.ktmpo.org](http://www.ktmpo.org). Pages 61-65 of the publication “The Transportation Planning Process... is a great resource for commonly used Transportation terms.

End of Packet