AMENDED

TULSA METROPOLITAN AREA PLANNING COMMISSION

Meeting No. 2752

August 16, 2017, 1:30 PM
175 East 2nd Street, 2nd Level, One Technology Center
Tulsa City Council Chamber

CONSIDER, DISCUSS AND/OR TAKE ACTION ON:

Call to Order:

REPORTS:

Chairman's Report:

Work Session Report:

Director's Report:

1. Minutes of August 2, 2017 Meeting No. 2751

CONSENT AGENDA:

All matters under "Consent" are considered by the Planning Commission to be routine and will be enacted by one motion. Any Planning Commission member may, however, remove an item by request.

2. **LS-21031** (Lot-Split) (County) – Location: South of the southwest corner of South 43rd East Avenue and East 193rd Place

3. **LS-21034** (Lot-Split) (CD-1) – Location: East of the southeast corner of North Lewis Avenue and East 49th Street North

4. **LC-925** (Lot-Combination) (CD 8) – Location: West of the southwest corner of South Yale Avenue and East 111th Street South (Related to LS-21036)

5. **LS-21036** (Lot-Split) (CD 8) – Location: West of the southwest corner of South Yale Avenue and East 111th Street South (Related to LC-925)

6. **<u>LC-927</u>** (Lot-Combination) (CD 4) – Location: Northwest corner of East 3rd Street South and South Trenton Avenue

7. **<u>LC-928</u>** (Lot-Combination) (CD 1) – Location: Northwest corner of North Elwood Avenue and West 63rd Place North

8. **<u>PUD-493-4 M. Scott Pohlenz</u>** (CD 9) Location: North of the northeast corner of South Yorktown Place and East 41st Street South requesting a **PUD Minor Amendment** to decrease rear yard setback

8.a **<u>LS-21037</u>** (Lot-Split) (County) – Location: East of the southeast corner of West 31st Street South and South 54th West Avenue

8.b **<u>Airpark Distribution Center</u>** (CD 3) Change of Access, Location: Northeast corner of East Apache Street and North Garnett Road

8.c **<u>Lansing Industrial Park II</u>** (CD 1) Change of Access, Location: West of the southwest corner of East Pine Street and North Peoria Avenue

CONSIDERATION OF ITEMS REMOVED FROM THE CONSENT AGENDA:

PUBLIC HEARINGS:

9. **<u>QTD/K Addition</u>** (CD 3) Request authorization for an accelerated release of a building permit, Location: East of North Garnett Road between East 36th Street North and East 46th Street North

10. **<u>QuikTrip No. 0083</u>** (CD 7) Preliminary Plat, Location: Northwest corner of East 61st Street South and South Garnett Road

11. **<u>CZ-461 GCC&R, LLC/Aleen McLain</u>** (County) Location: Northwest corner of North Yale Avenue and East 106th Street North requesting rezoning from **AG** to **CG**

12. **<u>Z-7403 Alisha Bennett</u>** (CD 4) Location: Southeast corner of South Lewis Avenue and East 17th Place South requesting rezoning from **RS-3** to **OL with optional development plan**

13. **<u>Z-7404 AAB Engineering, LLC/Alan Betchan</u>** (CD 9) Location: East of Riverside Drive between East 37th Place and East 38th Place South requesting rezoning from **RS-3** to **RM-2 (Applicant requests continuance to September 6, 2017)**

14. **CPA-54 -** Consider adoption of the GO Plan (Bicycle and Pedestrian Master Plan) as an amendment to the Tulsa Comprehensive Plan

15. Consider adoption of **2017 Housekeeping Amendments** to the Tulsa Comprehensive Plan:

    CPA-64 - Amend designation on Land Use Map from "New Neighborhood" to "Existing Neighborhood" and a designation on the Areas of Stability and Growth Map from "Area of Growth" to "Area of Stability" on approximately 1.78 acres located east of the NE corner of East 32nd Street South and South Yale Avenue; and

    CPA-65 - Amend designation on Land Use Map from "Existing Neighborhood" to "Mixed-Use Corridor" and a designation on the Areas of Stability and Growth Map from "Area of Stability" to "Area of Growth" on approximately 1.59 acres located north of the NE corner of South Lewis Avenue and East Skelly Drive; and

    CPA-66 - Amend designation on Land Use Map from "Existing Neighborhood" to "Main Street" and a designation on the Areas of Stability and Growth Map from "Area of Stability" to "Area of Growth" on approximately 0.9 acres located south of the SE corner of East 67th Street South and South Peoria Avenue; and

    CPA-67 - Amend designation on Land Use Map from "Arkansas River Corridor" to "Park and Open Space" and a designation on the Areas of Stability and Growth Map from "Area of Growth" to "Area of Stability" on approximately 25 acres located 1,242 south of the SW corner of South Riverside Drive and East 71st Street South; and

    CPA-68 - Amend designation on Land Use Map from "Arkansas River Corridor" to "Employment" on approximately 42 acres located on West side of the River and South of West 71st Street South, between levee and railroad tracks.

OTHER BUSINESS

16. **Commissioners' Comments**

ADJOURN

CD = Council District

NOTE: If you require special accommodation pursuant to the Americans with Disabilities Act, please notify INCOG (918) 584-7526. Exhibits, Petitions, Pictures, etc., presented to the Planning Commission may be received and deposited in case files to be maintained at Land Development Services, INCOG.

Ringing/sound on all cell phones and pagers must be turned off during the Planning Commission.

Visit our website at www.tmapc.org email address: esubmit@incog.org

TMAPC Mission Statement: The Mission of the Tulsa Metropolitan Area Planning Commission (TMAPC) is to provide unbiased advice to the City Council and the County Commissioners on development and zoning matters, to provide a public forum that fosters public participation and transparency in land development and planning, to adopt and maintain a comprehensive plan for the metropolitan area, and to provide other planning, zoning and land division services that promote the harmonious development of the Tulsa Metropolitan Area and enhance and preserve the quality of life for the region's current and future residents.

TMAPC
Tulsa Metropolitan Area
Planning Commission

Case Number: **PUD-493-4**
Minor Amendment

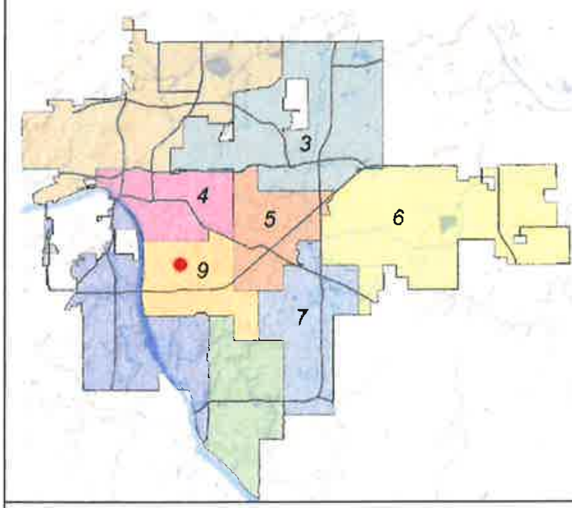
Hearing Date: **August 16, 2017**

Case Report Prepared by:
Jay Hoyt

Owner and Applicant Information:
Applicant: M. Scott Pohlenz

Property Owner: Steve & Maria Bradshaw

Location Map:
(shown with City Council Districts)



Applicant Proposal:

Concept summary: PUD minor amendment to decrease rear yard setback

Gross Land Area: 0.76 acres

Location: North of NE/c South Yorktown Pl and East 41st St South

Lot 4, Block 1 Royal Oaks Addition

4011 South Yorktown Pl

Zoning:
Existing Zoning: RS-1/PUD-493
Proposed Zoning: No Change

Comprehensive Plan:
Land Use Map: Existing Neighborhood
Growth and Stability Map: Stability

Staff Recommendation:
Staff recommends **approval**.

Staff Data:
TRS: 9319
CZM: 47 Atlas: 247

City Council District: **9**
Councilor Name: Ben Kimbro

County Commission District: **2**
Commissioner Name: Karen Keith

8.1

August 16, 2017

SECTION I: PUD-493-4 Minor Amendment

STAFF RECOMMENDATION

Amendment Request: Modify the PUD Development Standards to reduce the rear yard setback from 25 ft to 9 ft.

The applicant is requesting the revised setback due to the addition of a covered patio. The design for the patio encroaches 16 ft into the current 25 ft rear yard setback.

Staff Comment: This request can be considered a Minor Amendment as outlined by Section 30.010.I.2.c(9) of the City of Tulsa Zoning Code.

> *"Changes in structure heights, building setbacks, yards, open spaces, building coverage and lot widths or frontages, provided the approved PUD development plan, the approved standards and the character of the development are not substantially altered."*

Staff has reviewed the request and determined:

1) The requested amendment does not represent a significant departure from the approved development standards in the PUD.

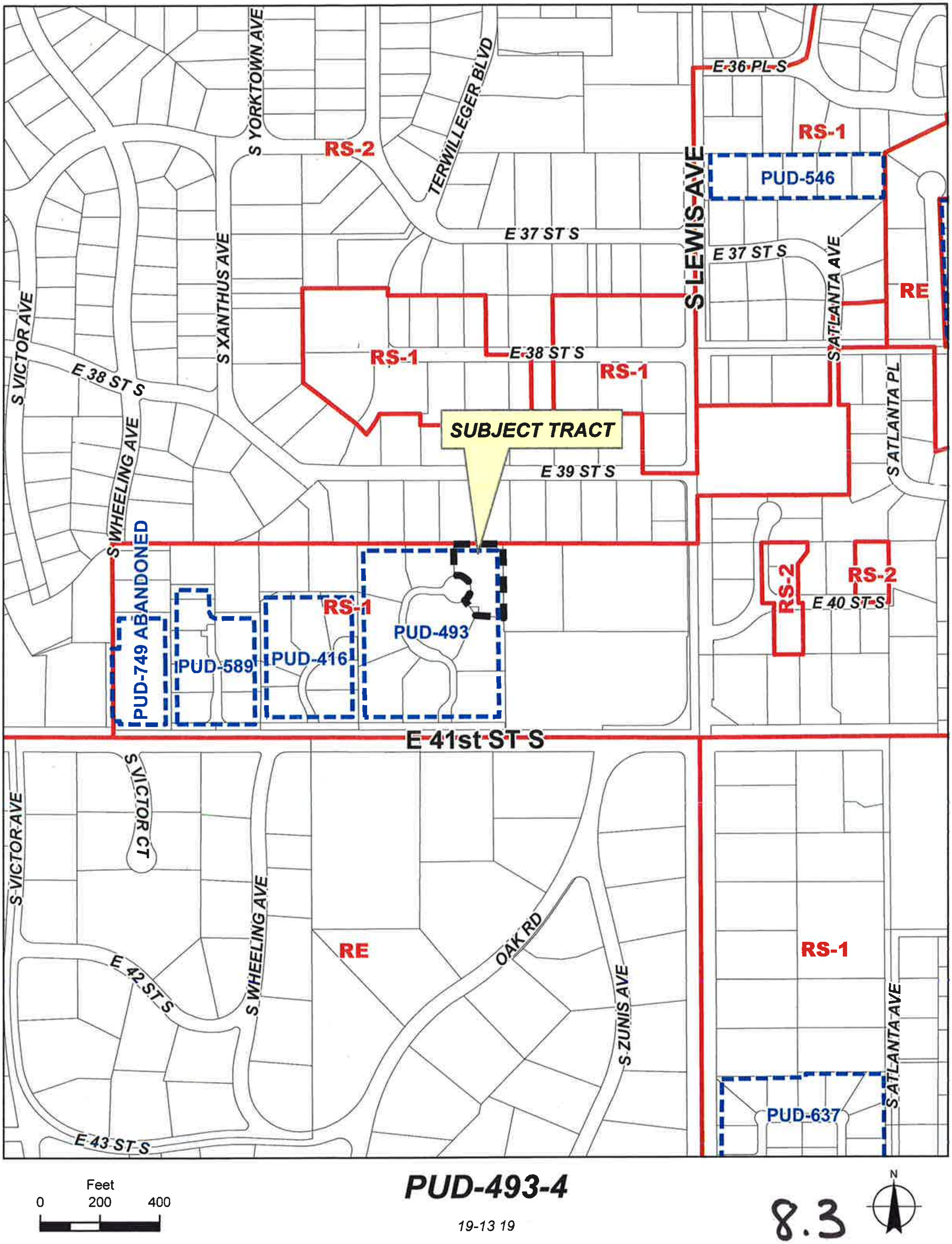
2) All remaining development standards defined in PUD-493 and subsequent minor amendments shall remain in effect.

Exhibits included with staff recommendation:

INCOG zoning case map
INCOG aerial photo
INCOG aerial photo enlarged
Applicant Site Plan
Applicant Renderings

With considerations listed above, staff recommends **approval** of the minor amendment request to decrease the rear yard setback from 25 ft to 9 ft.

8.2



PUD-493-4

19-13 19

8.3

Feet
0 200 400

Subject Tract

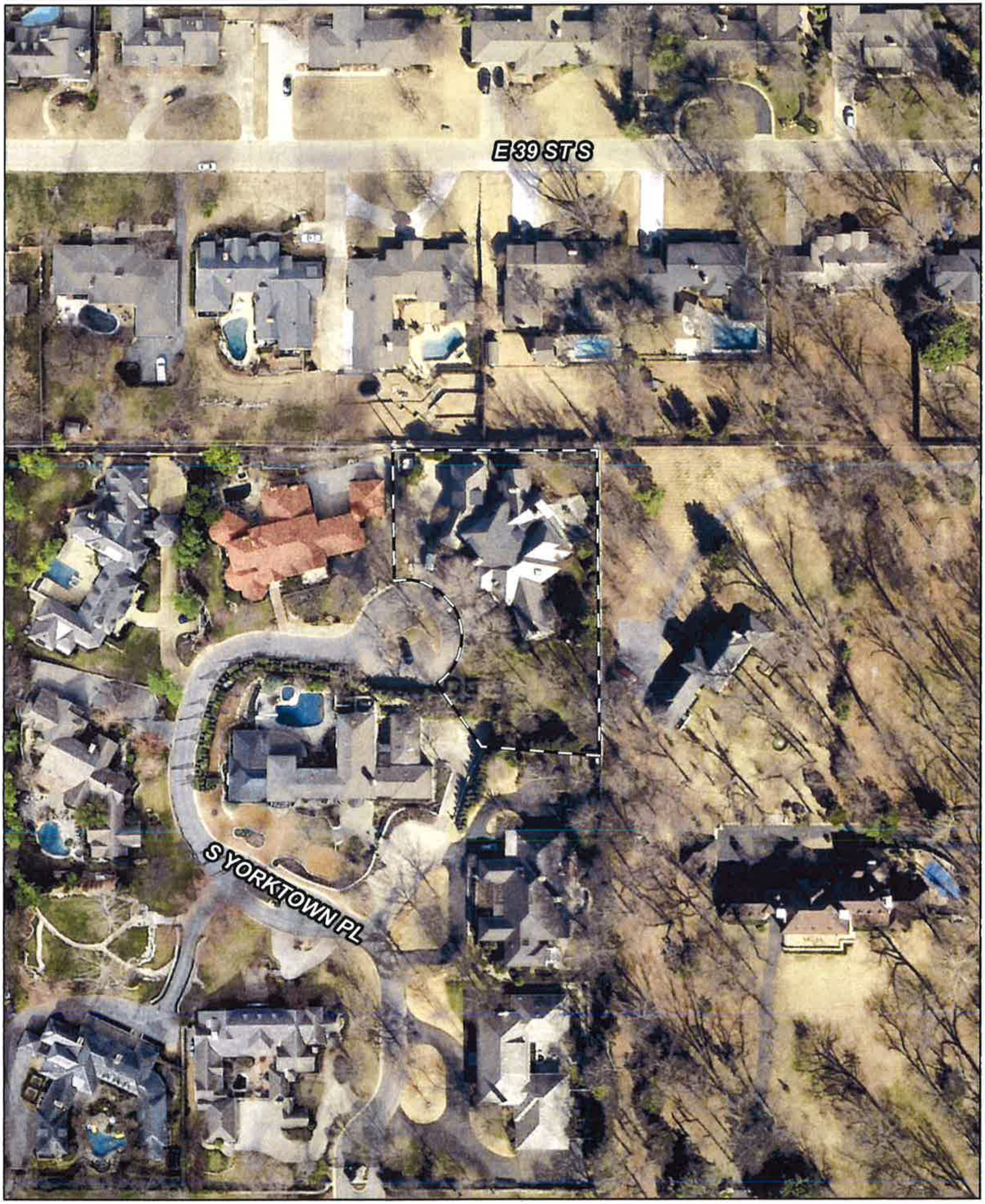
PUD-493-4

19-13 19

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

8.4



Feet

0 50 100

Subject Tract

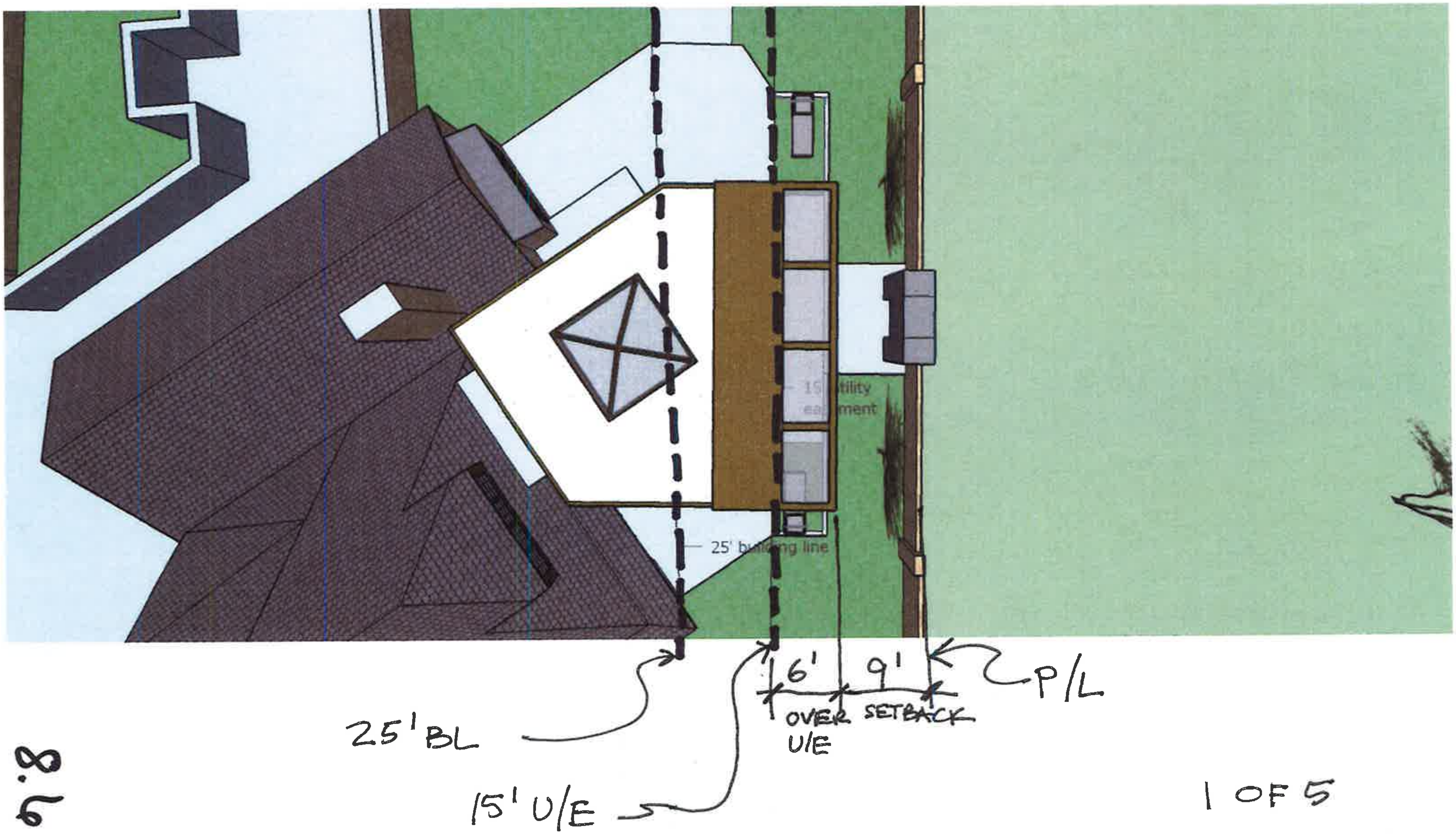
PUD-493-4

19-13 19

Note: Graphic overlays may not precisely align with physical features on the ground.

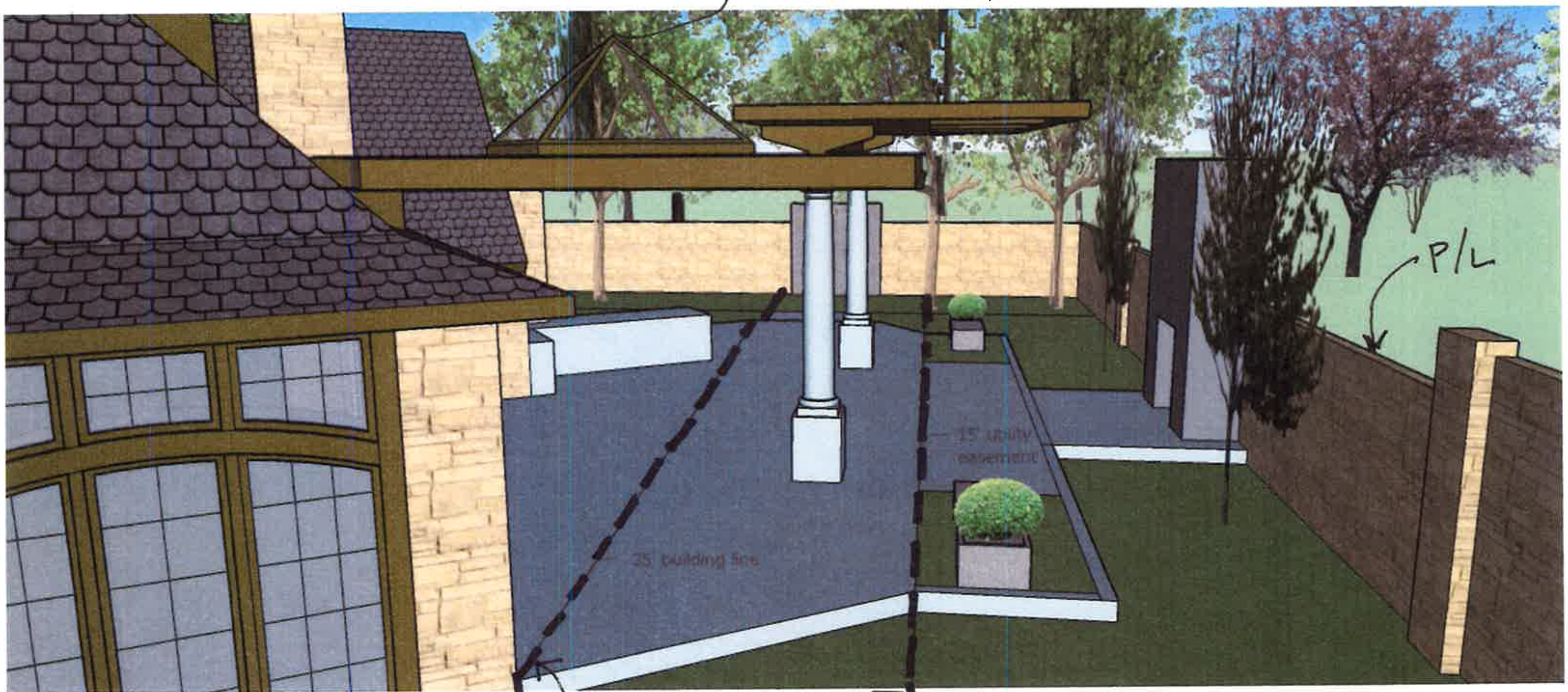
Aerial Photo Date: February 2016

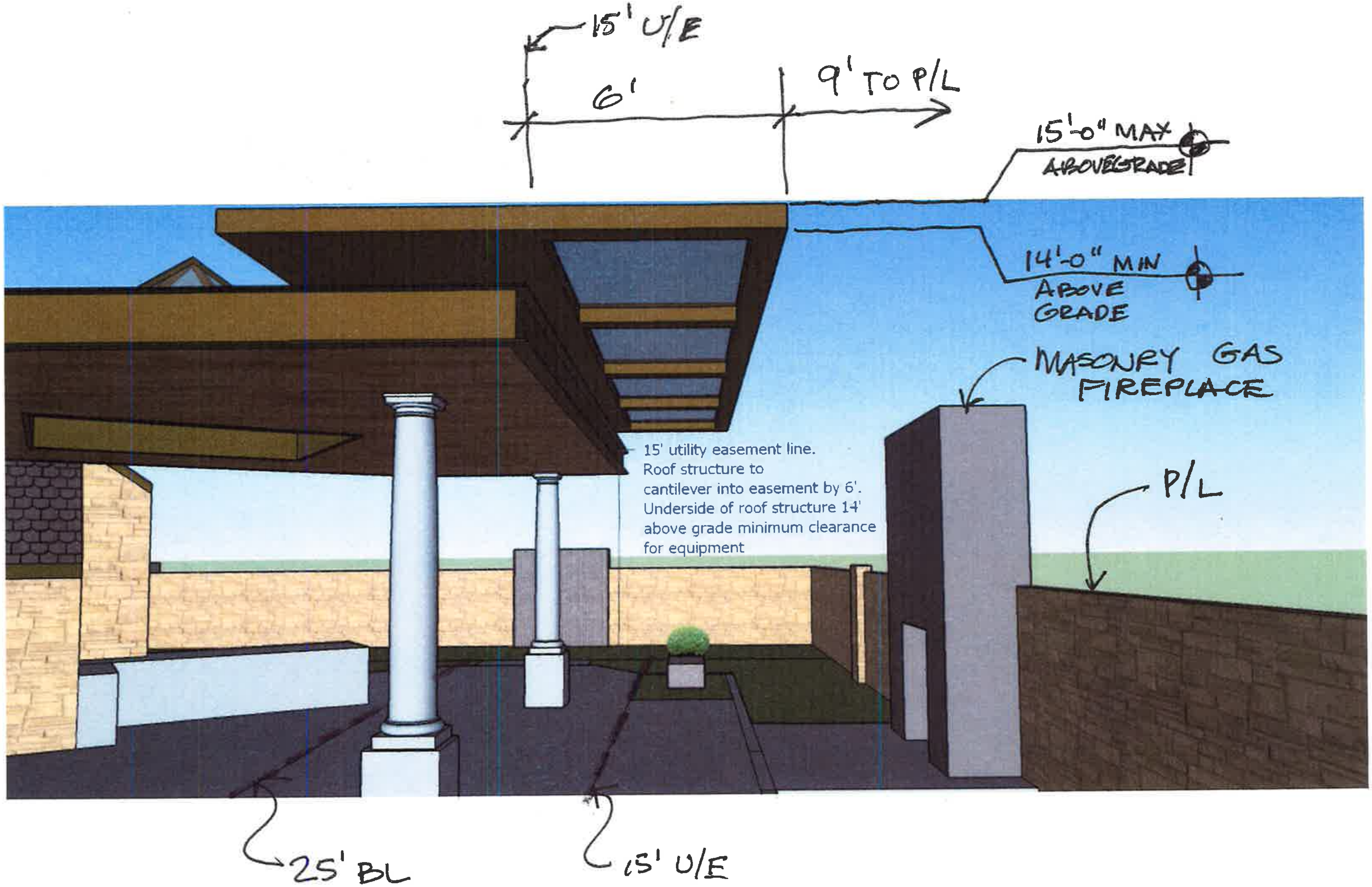
8.5


15' utility easement
25' building line
6'
9'
OVER U/E
SETBACK
P/L
25' BL
15' U/E

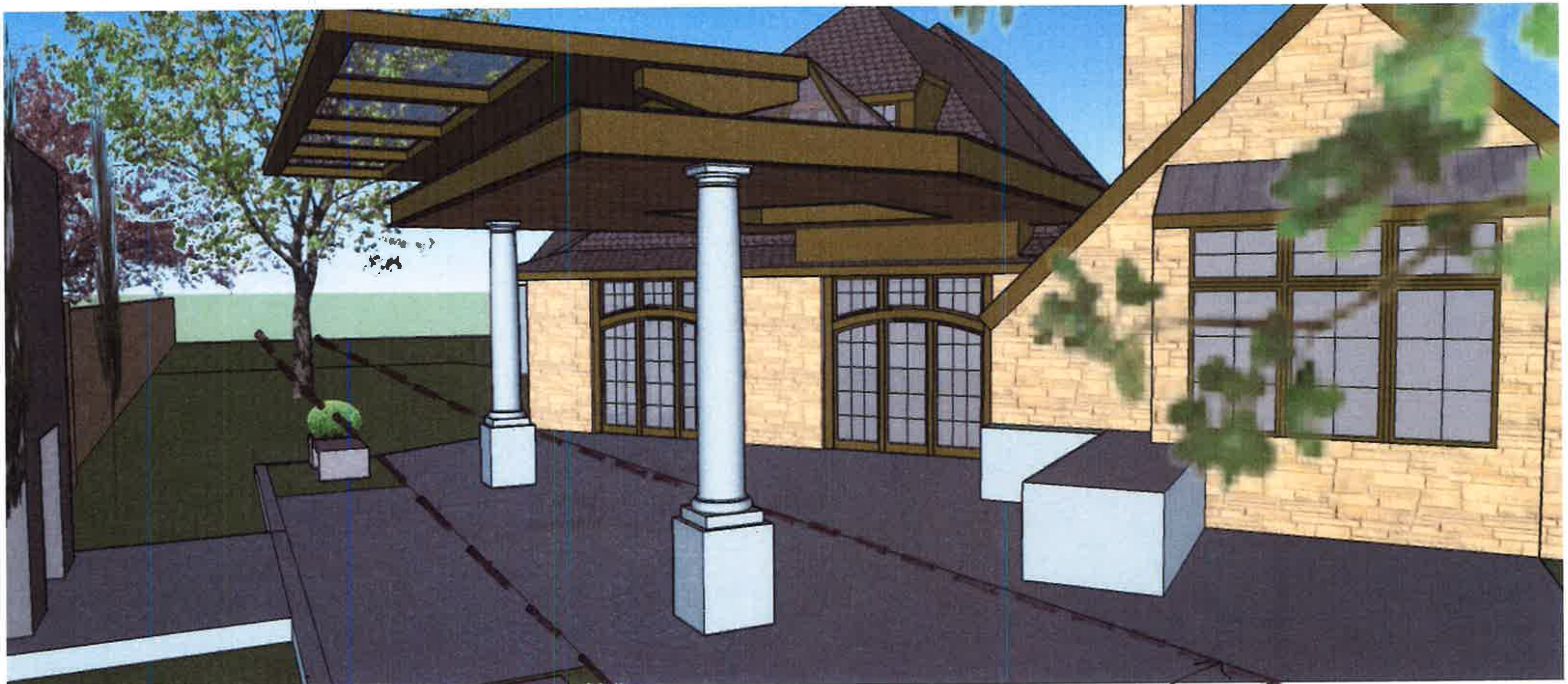
1 OF 5

8.6


TOP OF SKYLIGHT
20' ABOVE GRADE
MAX
P/L
15' utility easement
25' building line
25' BL
15' U/E


15' U/E
6'
9' TO P/L
15'-0" MAX ABOVE GRADE
14'-0" MIN ABOVE GRADE
MASONRY GAS FIREPLACE
15' utility easement line.
Roof structure to
cantilever into easement by 6'.
Underside of roof structure 14'
above grade minimum clearance
for equipment
P/L
25' BL
15' U/E

8.8

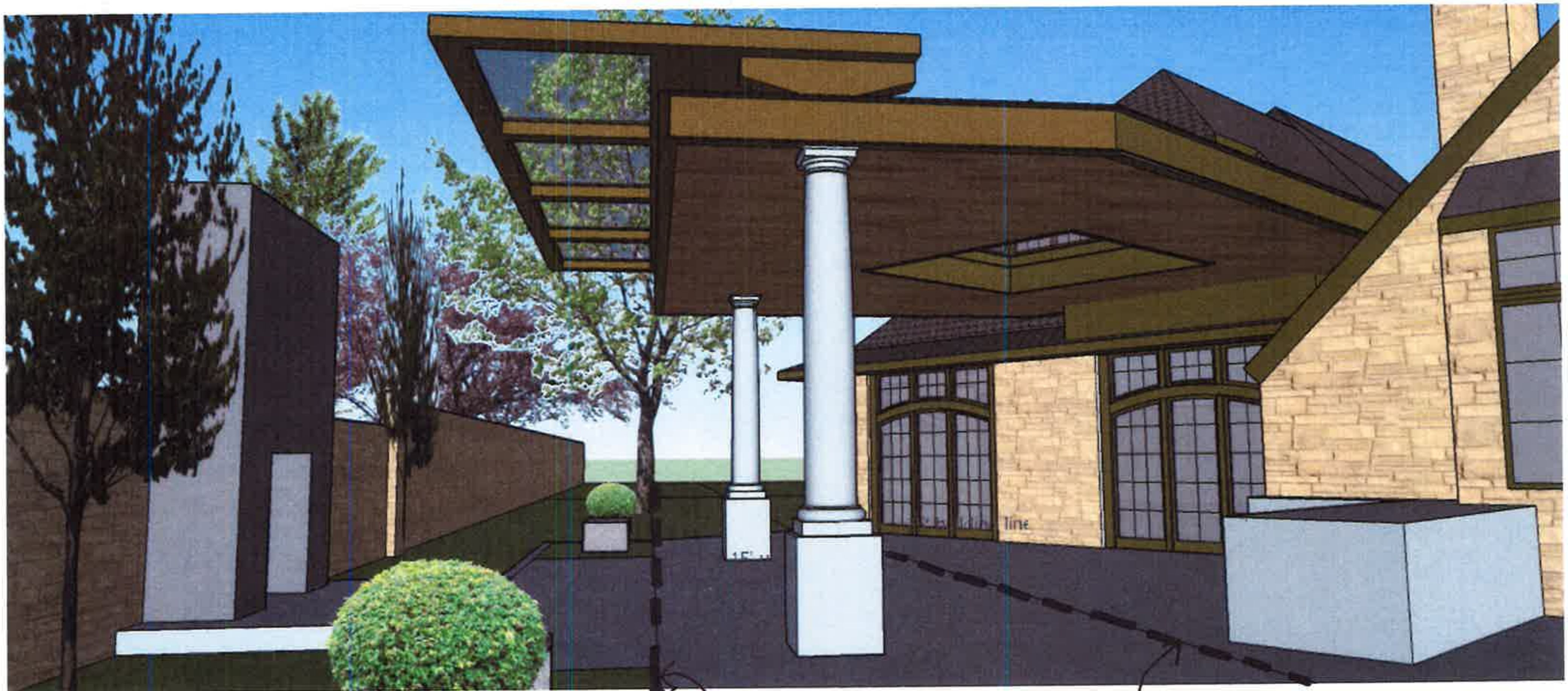


15' U/E

25' BL

PROPOSED 9' FROM REAR P/L (OVERHANG)

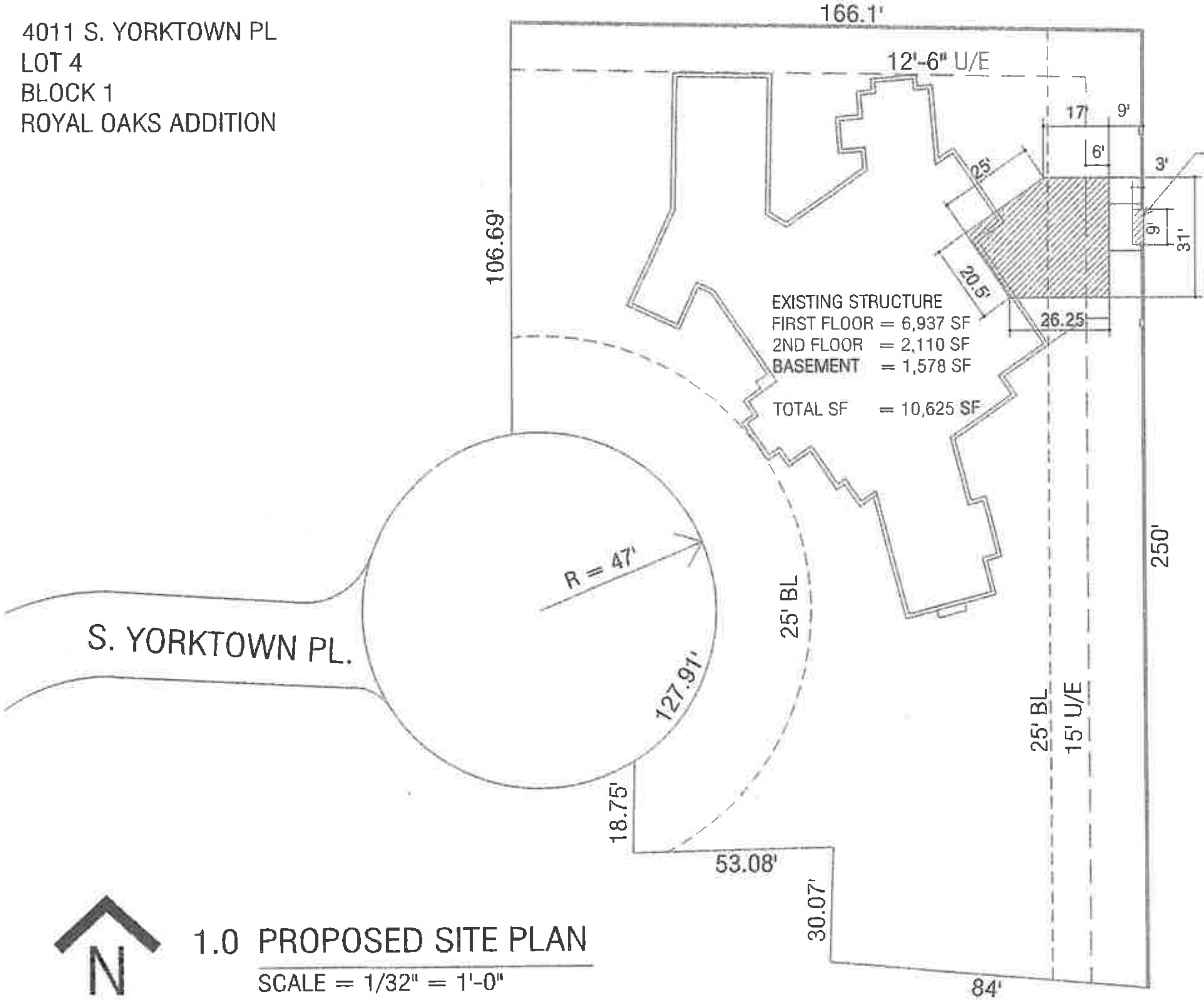
8.9



15' U/E

25' BL

4011 S. YORKTOWN PL
LOT 4
BLOCK 1
ROYAL OAKS ADDITION



PROPOSED MASONRY GAS BURNING FIREPLACE

PROPOSED COVERED PATIO (HATCHED) EXTENDS OVER BUILDING LINE BY 16'-0". NO STRUCTURE AT GROUND IN UTILITY EASEMENT, BUT PROPOSED ROOF OVERHANGS INTO UTILITY EASEMENT BY 6'-0". PROPOSING TO ENGAGE EXISTING ROOF LINE.

1.0 PROPOSED SITE PLAN

SCALE = 1/32" = 1'-0"

M SCOTT POHLENZ, AIA, NCARB
3402 S. PEORIA AVE
TULSA, OK. 74105
918 845 0575

BRADSHAW PATIO
4011 S YORKTOWN PL
TULSA, OK, 74105

TMAPC
PUD 493 MINOR AMENDMENT

DATE: 7/ 24/ 2017

SP 1

8.11

TMAPC
Tulsa Metropolitan Area
Planning Commission

Case: Change of Access –
Airpark Distribution Center

Hearing Date: August 16, 2017

Case Report Prepared by:

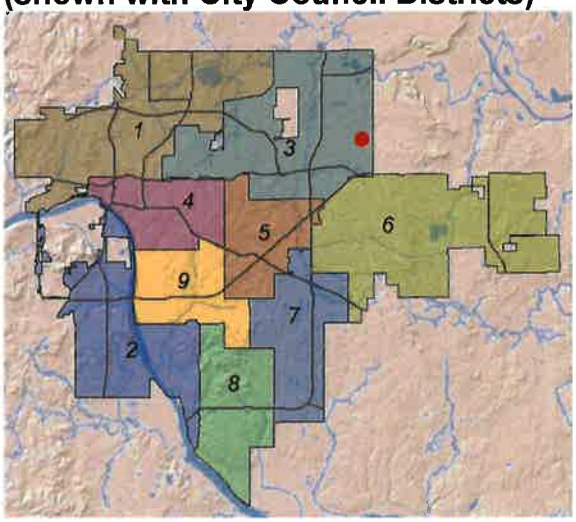
Nathan Foster

Owner and Applicant Information:

Applicant: Greg Weisz

Owner: Kansas City Life Ins. Co

Location Map:
(shown with City Council Districts)



Applicant Proposal:

Change of Access

Location: Northeast corner of East Apache Street North and North Garnett Road

Zoning:

IM (Industrial – Moderate)

Staff Recommendation:

Staff recommends **approval** of the Change of Access request.

City Council District: 3

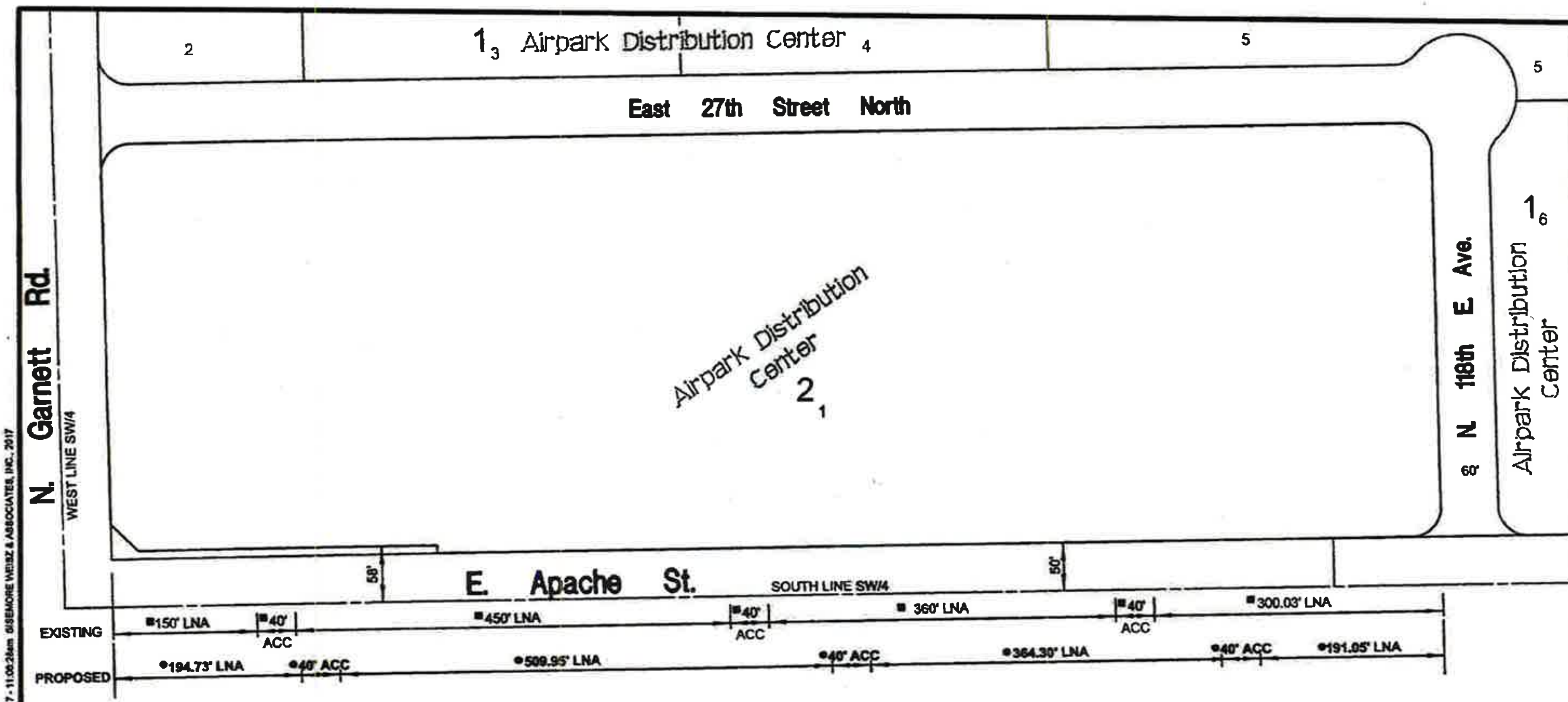
Councilor Name: David Patrick

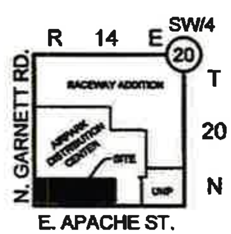
County Commission District: 1

Commissioner Name: John Smaligo

EXHIBITS:

Proposed new access & limits of access





Location Map

SCALE: 1"=2000'

0 50 100 150

SCALE: 1"=100'

Legend

- ■ LNA = EXISTING LIMITS OF NO ACCESS
- ■ ACC = EXISTING LIMITS OF ACCESS
- ● ACC = PROPOSED LIMITS OF ACCESS
- ● LNA = PROPOSED LIMITS OF NO ACCESS

Change of Access Exhibit of Lot 1, Block 2

Airpark Distribution Center

City of Tulsa, Tulsa County, State of Oklahoma

Exhibit "A"

Kurt W. Koff 8-10-17

Sisemore Weisz & Associates, Inc.

FILE:	2014.2030	SURVEY BY:		DATE:	7/20/17
ORDER:	17863	DRAWN BY:	LAD	SCALE:	1"=100'
BOOK:		CHECKED BY:	GTW	SHEET	1 OF 1

K:\17863\EXHIBITS\ACCESS-EXHIBIT.dwg SHEET 1 Jul 20, 2017 - 11:05:26am SISEMORE WEISZ & ASSOCIATES, INC. 2017

CHANGE OF AND CONSENT TO
AREAS OF ACCESS AS SHOWN ON RECORDED PLAT

WHEREAS, Kansas City Life Insurance Company are the owners of Lot 1, Block 2, Airpark Distribution Center in the city and/or county of Tulsa, Oklahoma, according to the recorded plat thereof; and

WHEREAS, said owners desire to change the access points from E. Apache Street to the above described property and,

WHEREAS, such change requires approval of the Tulsa Metropolitan Area Planning Commission; and

WHEREAS, the Tulsa Metropolitan Area Planning Commission may approve such change of access with a favorable recommendation by the designated Engineer of the City of Tulsa or Tulsa County, Oklahoma.

NOW THEREFORE, the undersigned owners of the above named property in the City (and/or) County of Tulsa, Oklahoma according to the recorded plat thereof, does hereby change the access point(s) from its (their) present location as shown on the above named plat as recorded in the office of the County Clerk of Tulsa County, Oklahoma, as plat number 5727 to the location(s) as shown on the attached Exhibit A, which is incorporated herein by reference and made a part hereof for all purposes.

The Tulsa Metropolitan Area Planning Commission by the affixing of its approval to this instrument does hereby stipulate and agree to such change and, that from and after the date of this consent, ingress and egress shall be permitted over, through and across the areas of access as shown on attached Exhibit A, which is incorporated herein by reference. The area of "access" as previously shown are hereby revoked and access to the property prohibited across said area. The area of limits of no access previously existing along the area of access now permitted by this change and consent is hereby expressly vacated, annulled and held for naught.

IN WITNESS WHEREOF, the parties have hereunto set their hands and affixed their seals this 20th day of JULY, 2017.

KANSAS CITY LIFE INSURANCE CO
[signature]
Owner
DIRECTOR - REAL ESTATE

Owner

APPROVED:
[signature]
City/County Engineer

TMAPC

STATE OF Missouri)
) SS INDIVIDUAL *ACKNOWLEDGEMENT*
COUNTY OF __________)

Before me, the undersigned, a Notary Public in and for said County and State, on this ______ day of ______________, 20______, personally appeared ______________________ __________________________, to me known to be the identical person(s) who executed the foregoing instrument and acknowledged to me that _____ executed the same as _____ free and voluntary act and deed for the purposes therein set forth.

GIVEN under my hand and seal the day and year last above written.

My Commission Expires: ________________

____
Notary Public

STATE OF MISSOURI)
) SS *CORPORATE ACKNOWLEDGEMENT*
COUNTY OF JACKSON)

Before me, the undersigned, a Notary Public in and for said County and State, on this 20th day of JULY, 20 17, personally appeared KURT A. SCHOEB __________________________, to me known to be the identical person(s) who subscribed the name of the maker thereof to the foregoing instrument as its DIRECTOR OF REAL ESTATE and acknowledged to me that he executed the same as his free and voluntary act and deed of such corporation, for the purposes therein set forth.

GIVEN under my hand and seal the day and year last above written.

My Commission Expires: 8/26/17

Kimberly A Rose
Notary Public

KIMBERLEY A. ROSE
MY COMMISSION EXPIRES AUG. 26, 2017
NOTARY PUBLIC NOTARY SEAL
13520010
JACKSON COUNTY
STATE OF MISSOURI

TMAPC
Tulsa Metropolitan Area Planning Commission

Case: **Change of Access –**
Lansing Industrial Park II

Hearing Date: **August 16, 2017**

Case Report Prepared by:

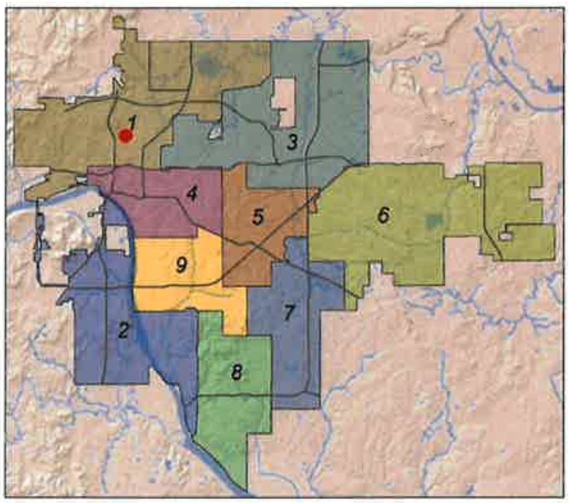
Nathan Foster

Owner and Applicant Information:

Applicant: AAB Engineering, Alan Betchan

Owner: Tulsa Development Authority

Location Map:
(shown with City Council Districts)



Applicant Proposal:

Change of Access

Location: West of the southwest corner of East Pine Street North and North Lansing Avenue

Zoning:

CS (Commercial – Shopping)

Staff Recommendation:

Staff recommends **approval** of the Change of Access request.

City Council District: **1**

Councilor Name: Vanessa Hall-Harper

County Commission District: **1**

Commissioner Name: John Smaligo

EXHIBITS:

Proposed new access & limits of access

CHANGE OF AND CONSENT TO
AREAS OF ACCESS AS SHOWN ON RECORDED PLAT

WHEREAS, Tulsa Development Authority are

the owners of Lot 1 Block 1 Lansing Industrial Park II, in the city and/or county of Tulsa, Oklahoma, according to the recorded plat thereof; and

WHEREAS, said owners desire to change the access points from Pine Street to the above described property and,

WHEREAS, such change requires approval of the Tulsa Metropolitan Area Planning Commission; and

WHEREAS, the Tulsa Metropolitan Area Planning Commission may approve such change of access with a favorable recommendation by the designated Engineer of the City of Tulsa or Tulsa County, Oklahoma.

NOW THEREFORE, the undersigned owners of the above named property in the City (and/or) County of Tulsa, Oklahoma according to the recorded plat thereof, does hereby change the access point(s) from its (their) present location as shown on the above named plat as recorded in the office of the County Clerk of Tulsa County, Oklahoma, as plat number 4672 to the location(s) as shown on the attached Exhibit A, which is incorporated herein by reference and made a part hereof for all purposes.

The Tulsa Metropolitan Area Planning Commission by the affixing of its approval to this instrument does hereby stipulate and agree to such change and, that from and after the date of this consent, ingress and egress shall be permitted over, through and across the areas of access as shown on attached Exhibit A, which is incorporated herein by reference. The area of "access" as previously shown are hereby revoked and access to the property prohibited across said area. The area of limits of no access previously existing along the area of access now permitted by this change and consent is hereby expressly vacated, annulled and held for naught.

IN WITNESS WHEREOF, the parties have hereunto set their hands and affixed their seals this 24 day of July, 2017.

OCWalker Owner Executive Director TDA

N/A
Owner

APPROVED:

City/County Engineer

TMAPC

STATE OF ____________)
) SS INDIVIDUAL *ACKNOWLEDGEMENT*
COUNTY OF __________)

Before me, the undersigned, a Notary Public in and for said County and State, on this ______ day of ________________, 20______, personally appeared ______________________________, to me known to be the identical person(s) who executed the foregoing instrument and acknowledged to me that _____ executed the same as _____ free and voluntary act and deed for the purposes therein set forth.

GIVEN under my hand and seal the day and year last above written.

My Commission Expires: ____________________

____
Notary Public

STATE OF ____________)
) SS *CORPORATE ACKNOWLEDGEMENT*
COUNTY OF __________)

Before me, the undersigned, a Notary Public in and for said County and State, on this 24 day of July, 20 17, personally appeared O.C. Walker of Tulsa Development Authority to me known to be the identical person(s) who subscribed the name of the maker thereof to the foregoing instrument as its Executive Director and acknowledged to me that he executed the same as his free and voluntary act and deed of such corporation, for the purposes therein set forth.

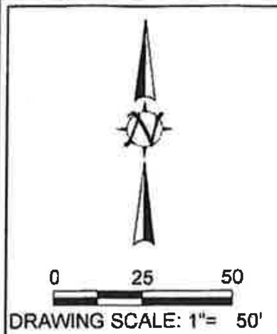
GIVEN under my hand and seal the day and year last above written.

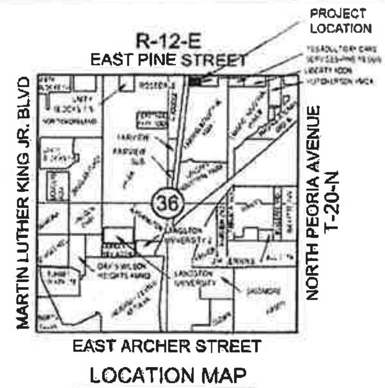
My Commission Expires: 25 April 2018

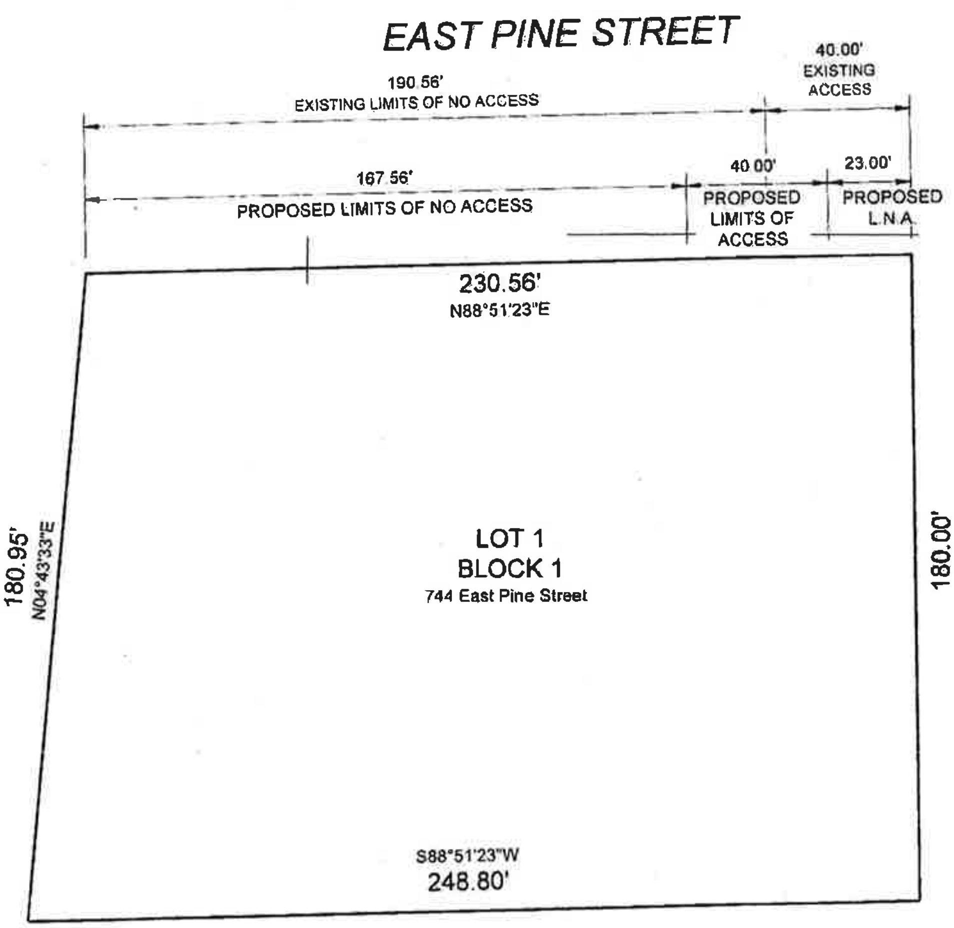
NATASHA Y BUNCH
Notary Public, State of Oklahoma
Commission # 14003793
My Commission Expires April 25, 2018

Natasha Bunch
Notary Public

Exhibit A







Approved by Traffic Engineer

Signature Kurt W. Kraft

Date 8-11-17

FILE: P:\2012\36-DG PINE ST\DG PINE - BASE

PLOT DATE: Fri, 21 Jul 2017

LIMITS OF ACCESS MODIFICATION	LOT 1, BLOCK 1 LANSING INDUSTRIAL PARK II	AAB Engineering•Surveying•Land Planning
T-20 R-12 S-36 July 20, 2017	TULSA COUNTY, STATE OF OKLAHOMA	

TMAPC

Tulsa Metropolitan Area Planning Commission

Case : QTD/K Addition

Hearing Date: August 16, 2017

Case Report Prepared by:

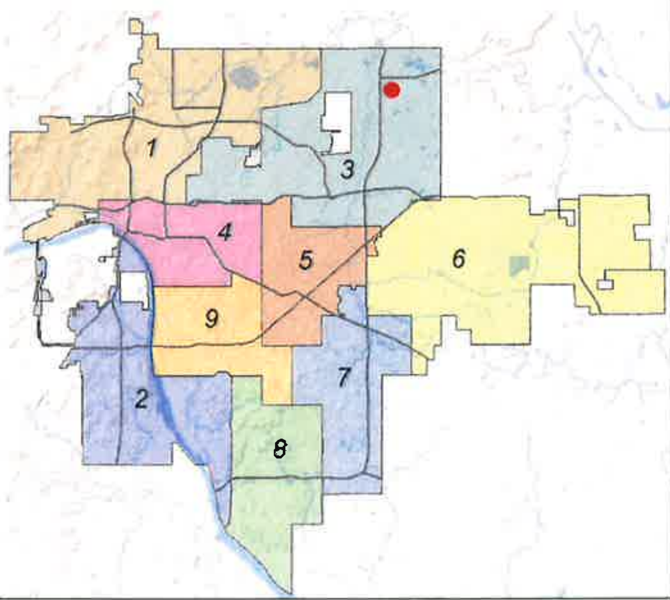
Nathan Foster

Owner and Applicant Information:

Applicant: Carly Goodnight

Owner: O.L.T. - Greenhill Investment Co.

Location Map:
(shown with City Council Districts)



Applicant Proposal:

Requests authorization from TMAPC for the accelerated release of a building permit

Location: East of North Garnett Road between East 36th Street North and East 46th Street North

Zoning: IM (Industrial – Moderate)
IH (Industrial – Heavy)

Staff Recommendation:

Staff recommends **approval** of the Accelerated Release of a Building Permit

City Council District: 3

Councilor Name: David Patrick

County Commission District: 1

Commissioner Name: John Smaligo

EXHIBITS: Site Map, Aerial, Land Use, Growth & Stability, Draft Final Plat 7.21.17

ACCELERATED RELEASE OF BUILDING PERMIT

QTD/K Addition - (CD 3)
East of North Garnett Road between East 36th Street North and East 46th Street North

The applicant has requested that the Planning Commission authorize the City of Tulsa to issue building permits prior to the filing of a final plat. A preliminary plat for the project was approved on March 1, 2017. Infrastructure Development Plans (IDP) have been approved by the City of Tulsa and a second draft of the final plat was submitted on July 21, 2017.

The Technical Advisory Committee (TAC) met on August 3, 2017 and provided the following information:

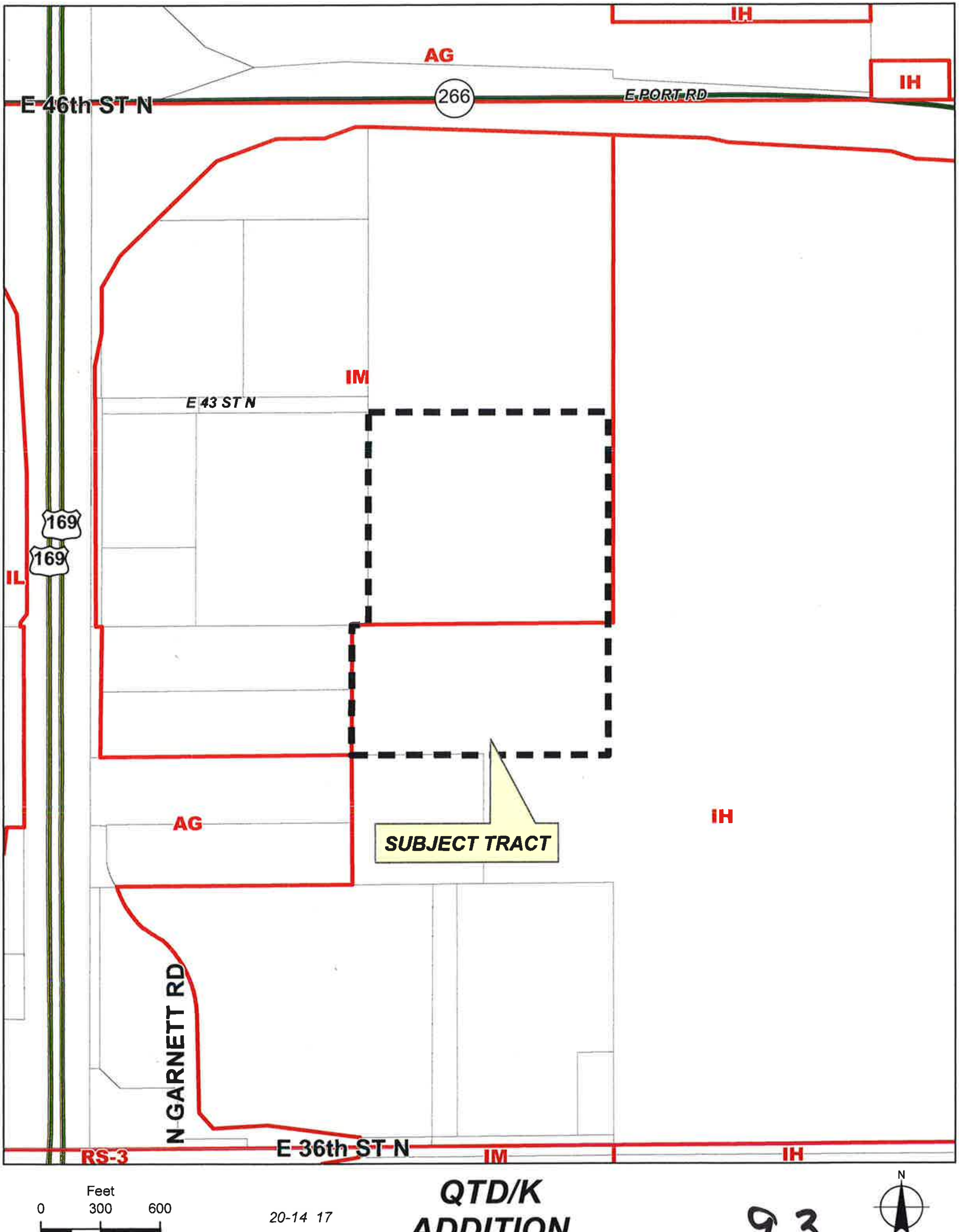
- Right-of-way dedications must be made prior to the issuance of building permits to ensure adequate frontage and access to the site
- Tulsa Fire Department will require all weather access and fire hydrants prior to any combustible construction
- The subject property is partially located within the City of Tulsa Regulatory Floodplain and may be subject to flooding from Mingo Creek. Proposed new development is all shown to be outside of the floodplain. Floodplain boundary will be required to be shown on final plat.

No objections were raised to the authorization of an accelerated release of a building permit.

Staff recommends **approval** of the accelerated release of a building permit with the following conditions:

1. Right-of-way dedications must be made prior to the issuance of building permits.
2. No certificates of occupancy will be issued until the filing of the final plat.

9.2



20-14 17

QTD/K ADDITION

9.3

Feet
0 300 600

Subject Tract

20-14 17

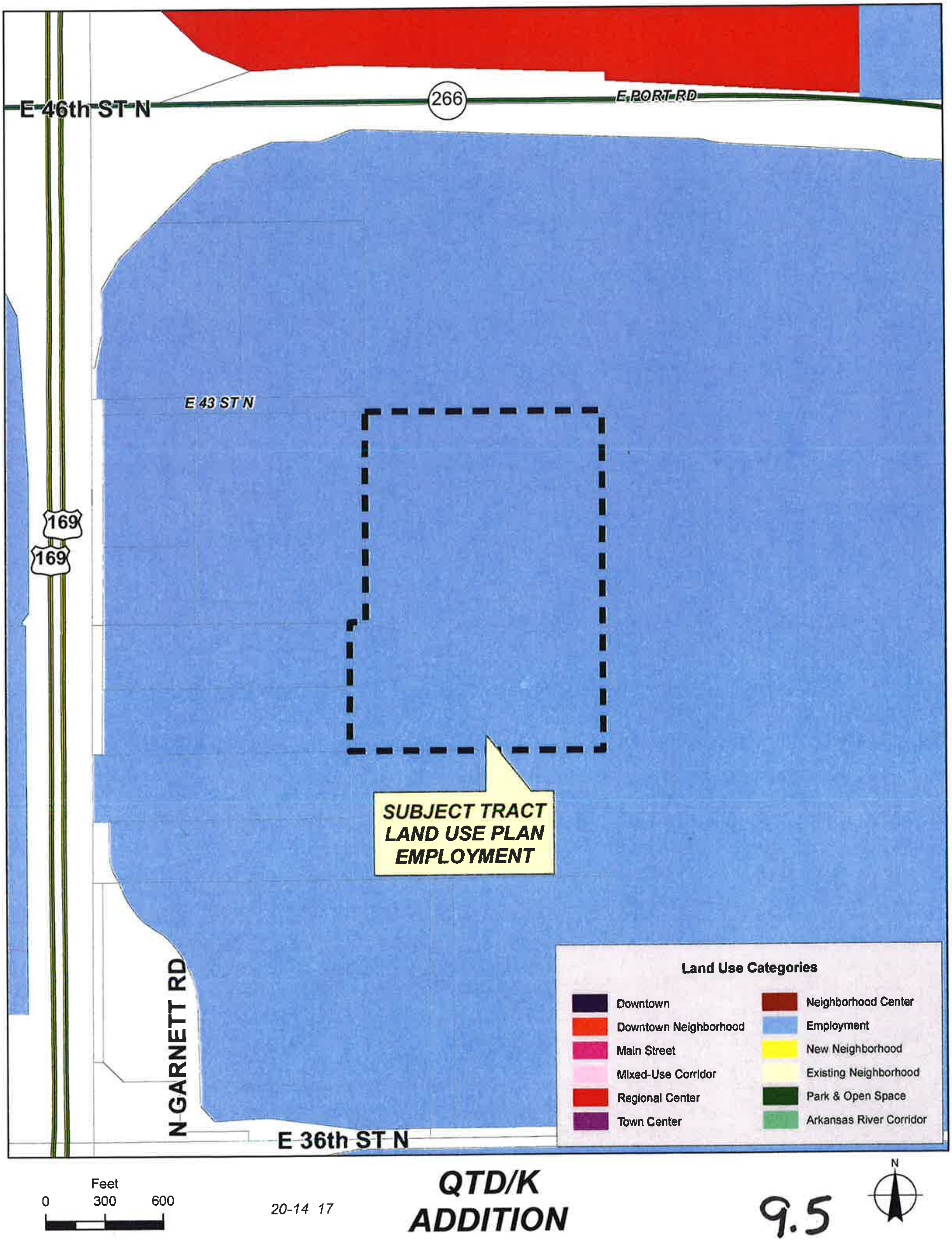
QTD/K ADDITION

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

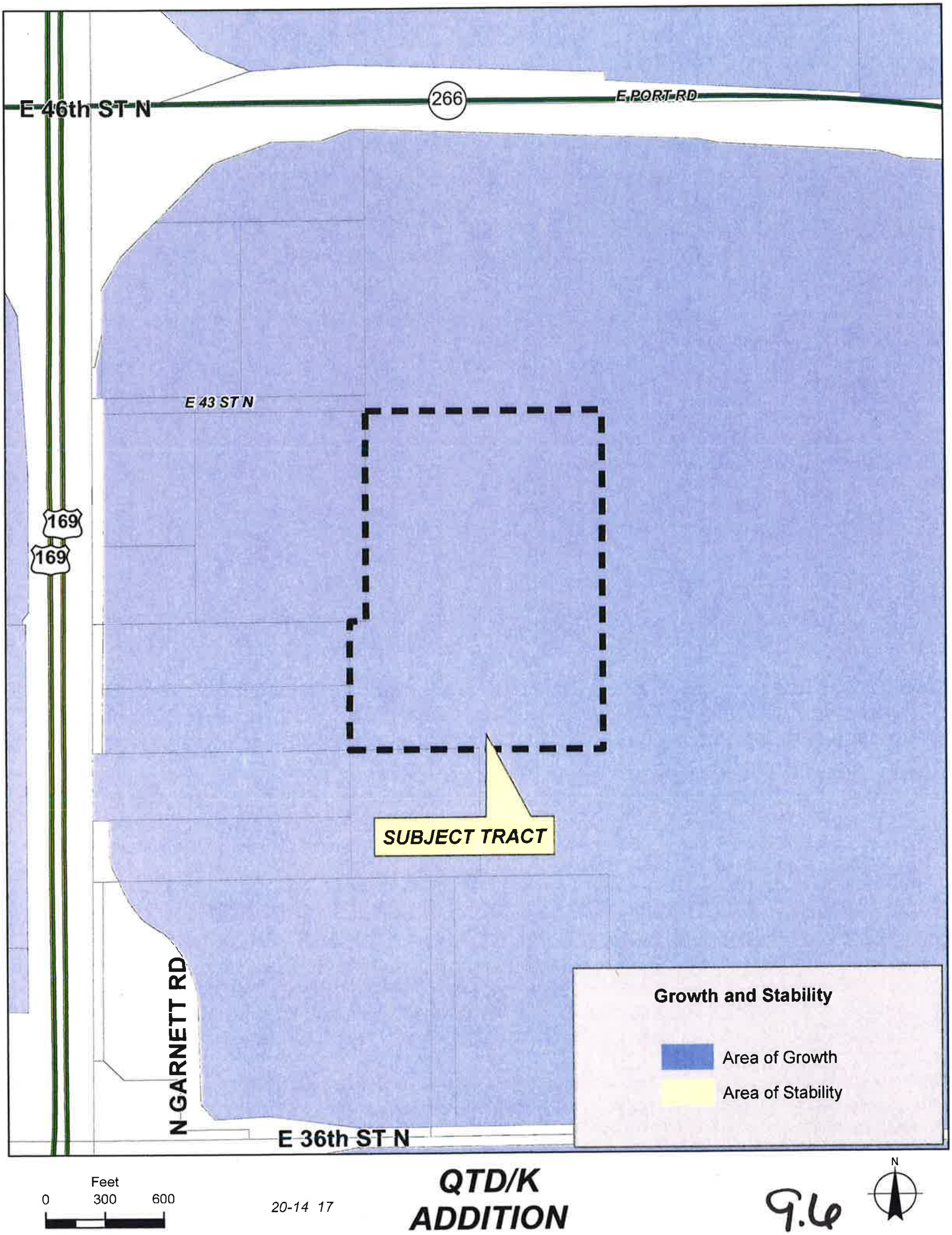
9.4



20-14 17

QTD/K ADDITION

9.5



QTD/K
ADDITION

9.6

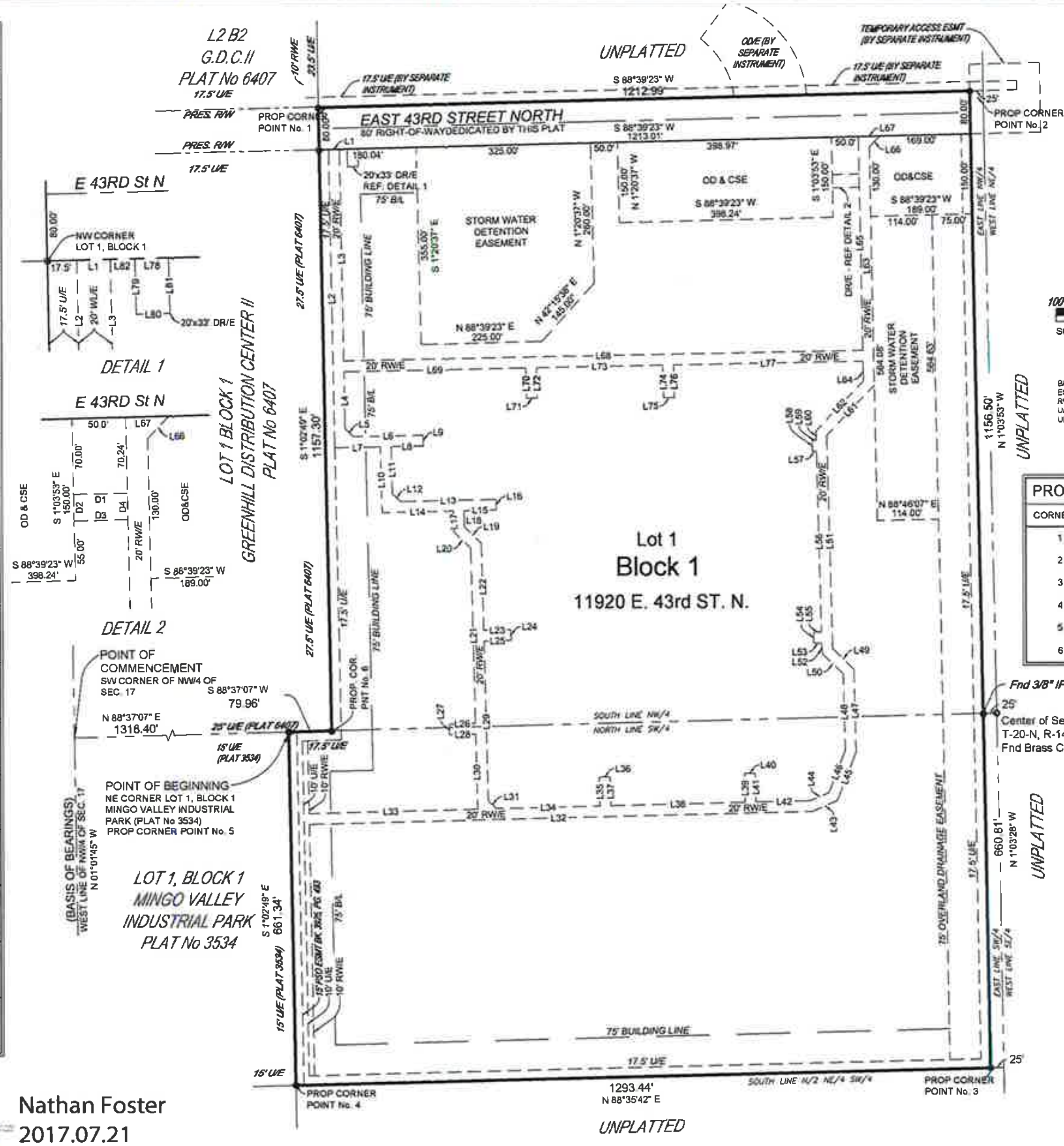
Draft Final Plat

A MINOR SUBDIVISION PLAT

QTD/K ADDITION

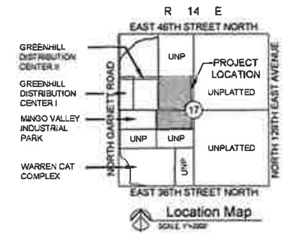
A SUBDIVISION OF THE NORTHWEST QUARTER (NW/4), AND THE NORTH HALF OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER (N/2 NE/4 SW/4) OF SECTION SEVENTEEN (17), TOWNSHIP TWENTY (20) NORTH, RANGE FOURTEEN (14) EAST, OF THE I. B. & M., CITY OF TULSA, TULSA COUNTY, STATE OF OKLAHOMA.

RESTRICTED WATER LINE EASEMENT		
Line #	Length	Direction
L1	20.00'	S88°39'23"W
L2	552.52'	S01°02'49"E
L3	391.76'	S01°02'49"E
L4	105.87'	S01°02'49"E
L5	21.21'	S46°02'49"E
L6	129.50'	N88°57'11"E
L7	84.59'	N88°57'11"E
L8	59.88	N88°57'11"E
L9	20.00'	S01°02'49"E
L10	122.53'	S01°20'37"E
L11	87.48'	S01°20'37"E
L12	21.24'	S46°15'35"E
L13	177.43'	N88°49'27"E
L14	132.31'	N88°49'27"E
L15	60.05'	N88°49'27"E
L16	20.00'	S01°10'33"E
L17	39.16'	S01°10'33"E
L18	30.82'	S01°10'33"E
L19	42.97'	S46°20'37"E
L20	42.97'	S46°20'37"E
L21	325.35'	S01°20'37"E
L22	161.29'	S01°20'37"E
L23	50.30'	N88°39'23"E
L24	20.00'	S01°20'37"E
L25	50.30'	N88°39'23"E
L26	49.00'	S88°39'23"W
L27	20.00'	S01°20'37"E
L28	49.00'	S88°39'23"W
L29	298.81'	S01°20'37"E
L30	141.47'	S01°20'37"E
L31	21.21'	S46°20'37"E
L32	937.10'	N88°39'23"E
L33	313.29'	N88°39'23"E
L34	192.90'	N88°39'23"E
L35	55.00'	N01°20'37"W
L36	20.00'	N88°39'23"E
L37	55.00'	N01°20'37"W
L38	250.45'	N88°39'23"E
L39	55.00'	N01°20'37"W
L40	20.00'	N88°39'23"E
L41	55.00'	N01°20'37"W
L42	101.37'	N88°39'23"E
L43	37.58'	N66°09'23"E
L44	49.84'	N66°09'23"E
L45	97.98'	N21°09'23"E
L46	85.72'	N21°09'23"E
L47	154.81'	N01°20'37"W
L48	142.55'	N01°20'37"W
L49	54.87'	N46°20'37"W
L50	54.87'	N46°20'37"W
L51	396.16'	N01°20'37"W
L52	18.69'	N01°20'37"W
L53	15.00'	N88°39'23"E
L54	20.00'	N01°20'37"W
L55	15.00'	N88°39'23"E
L56	336.64'	N01°20'37"W
L57	7.50'	N88°39'23"E
L58	20.00'	N01°20'37"W
L59	7.50'	N88°39'23"E
L60	17.40'	N01°20'37"W
L61	128.94'	N43°39'23"E
L62	129.00'	N43°39'23"E
L63	441.61'	N01°03'53"W
L64	36.82'	N01°03'53"W
L65	396.46'	N01°03'53"W
L66	28.35'	N43°47'45"E
L67	40.00'	S88°39'23"W
L68	996.62'	S88°56'07"W
L69	338.23'	S88°56'07"W
L70	57.00'	N01°03'53"W
L71	20.00'	S88°56'07"W
L72	57.00'	N01°03'53"W
L73	235.45'	S88°56'07"W
L74	61.00'	N01°03'53"W
L75	20.00'	S88°56'07"W
L76	61.00'	N01°03'53"W
L77	352.84'	S88°56'07"W
L78	20.00'	S88°39'23"W
L79	33.00'	S01°20'37"E
L80	20.00'	N88°39'23"E
L81	33.00'	N01°20'37"W
L82	14.54'	S88°39'23"W



SCALE: 1" = 100'

BL = BUILDING LINE
ESMT = EASEMENT
RWIE = RESTRICTED WATERLINE EASEMENT
UE = UTILITY EASEMENT
UNP = UNPLATTED



Location Map

PROPERTY CORNER POINT TABLE			
CORNER ID	NORTHING	EASTING	DESCRIPTION
1	449792.63	2603742.38	NORTHWEST CORNER 3/8" IRON PIN FOUND
2	449621.07	2604955.06	3/8" IRON PIN FOUND
3	448084.06	2604987.26	3/8" IRON PIN FOUND
4	448051.91	2603693.72	SOUTHWEST CORNER 1" IRON PIN FOUND
5	448713.47	2603682.59	SOUTHEAST CORNER 3/8" IRON PIN FOUND
6	448715.88	2603761.86	NORTHEAST CORNER 3/8" IRON PIN FOUND

OWNER:
Quik-N-Tasty Corporation
AN OKLAHOMA CORPORATION
4705 S. 129TH E AVE.
TULSA, OKLAHOMA 74134
PHONE: (918) 615-7137
CONTACT: CARLY GOODNIGHT

SUBDIVISION STATISTICS

SUBDIVISION CONTAINS:
ONE (1) LOT IN ONE (1) BLOCK

GROSS SUBDIVISION AREA:
51.85 ACRES

ENGINEER:
Benham Design, LLC
AN OKLAHOMA LIMITED LIABILITY CORPORATION
C. A. NO. 7569 EXP. DATE 6-30-18
ONE WEST THIRD STREET, SUITE 200
TULSA, OK 74103
PHONE: (918) 492-1600
CONTACT: JOHN BEAN, PE
EMAIL: JOHN.BEAN@BENHAM.COM

SITE DATA

BENCHMARK
CHISELED SQUARE ON CONCRETE CURB NORTH SIDE EAST 43RD STREET NORTH, 980 FEET EAST OF INTERSECTION WITH GARNETT ROAD.
ELEVATION 615.45.

ELEVATIONS SHOWN HEREON ARE BASED ON THE 1988 NAVD DATUM.

BASIS OF BEARINGS
THE BEARING BASE FOR THIS SURVEY IS GRID BEARINGS BASED ON THE OKLAHOMA STATE PLANE COORDINATE SYSTEM, WITH THE WEST LINE OF NW/4 OF SECTION 17 AS NORTH 01°01'45" WEST.

ADDRESSES
ADDRESSES SHOWN ON THIS PLAT WERE ACCURATE AT THE TIME THIS PLAT WAS FILED. ADDRESSES ARE SUBJECT TO CHANGE AND SHOULD NEVER BE RELIED ON IN PLACE OF LEGAL DESCRIPTION.

SURVEYOR:
Isaacs Surveying Service, LLC
AN OKLAHOMA LIMITED LIABILITY CORPORATION
C. A. NO. 7767 EXP. DATE 6-30-19
5 WEST 42ND STREET
SAND SPRINGS, OKLAHOMA 74063
PHONE: (918) 245-0456
CONTACT: JOSH ISAACS
EMAIL: JOSH@ISAACSSURVEYING.COM

TMAPC
Nathan Foster
2017.07.21
10:17:31 -05'00'

QTD/K ADDITION
PRELIMINARY PLAT, DATE OF PREPARATION: JANUARY 19, 2017
SHEET 1 OF 2

9.7

Draft Final Plat

A MINOR SUBDIVISION PLAT

QTD/K ADDITION

A SUBDIVISION OF THE NORTHWEST QUARTER (NW/4), AND ALL OF THE NORTH HALF OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER (N/2 NE/4 SW/4) OF SECTION SEVENTEEN (17), TOWNSHIP TWENTY (20) NORTH, RANGE FOURTEEN (14) EAST

DEED OF DEDICATION
QTD/K ADDITION

KNOW ALL MEN BY THESE PRESENTS:

QTD/K, AN OKLAHOMA CORPORATION, HEREINAFTER REFERRED TO AS THE "DEVELOPER" IS THE OWNER OF THE FOLLOWING DESCRIBED LAND IN THE CITY OF TULSA, TULSA COUNTY, STATE OF OKLAHOMA:

A TRACT OF LAND THAT IS PART OF THE SOUTHEAST QUARTER (SE/4) OF THE NORTHWEST QUARTER (NW/4), AND A PART OF THE NORTH HALF OF THE NORTHEAST QUARTER OF THE SOUTHWEST QUARTER (N/2 NE/4 SW/4) OF SECTION SEVENTEEN (17), TOWNSHIP TWENTY (20) NORTH, RANGE FOURTEEN (14) EAST OF THE INDIAN BASE AND MERIDIAN, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE U.S. GOVERNMENT SURVEY THEREOF, SAID TRACT OF LAND BEING DESCRIBED AS FOLLOWS: COMMENCING AT A POINT THAT IS THE SOUTHWEST CORNER OF THE NORTHWEST QUARTER OF SAID SECTION 17; THENCE NORTH 88° 37' 07" EAST ALONG THE SOUTH LINE OF SAID NORTHWEST QUARTER FOR 1318.40 FEET TO THE NORTHEAST CORNER OF LOT ONE (1), BLOCK ONE (1), MINGO VALLEY INDUSTRIAL PARK, A SUBDIVISION TO THE CITY OF TULSA, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE RECORDED PLAT THEREOF, SAID POINT ALSO BEING THE POINT OF BEGINNING; THENCE SOUTH 01° 02' 49" EAST ALONG THE EASTERLY LINE OF SAID LOT 1 FOR 661.34 FEET TO THE SOUTHEAST CORNER OF SAID LOT 1; THENCE NORTH 88° 35' 42" EAST ALONG THE SOUTHERLY LINE OF THE N/2 NE/4 SW/4 FOR 1293.44 FEET TO A POINT 25 FEET WEST OF THE SOUTHEAST CORNER OF THE N/2 NE/4 SW/4; THENCE NORTH 01° 03' 28" WEST ALONG A LINE 25.00 FEET WESTERLY OF AND PARALLEL TO THE EASTERLY LINE OF SAID N/2 NE/4 SW/4 FOR 660.81 FEET TO A POINT ON THE NORTHERLY LINE OF THE SOUTHWEST QUARTER; THENCE NORTH 01° 03' 53" WEST ALONG A LINE 25.00 FEET WESTERLY OF AND PARALLEL TO THE EASTERLY LINE OF THE NW/4 FOR 1156.50 FEET; THENCE SOUTH 88° 39' 23" WEST ALONG THE EASTERLY EXTENSION OF THE SOUTHERLY LINE OF LOT TWO (2), BLOCK TWO (2), GREENHILL DISTRIBUTION CENTER II, A SUBDIVISION TO THE CITY OF TULSA, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE RECORDED PLAT THEREOF FOR 1212.99 FEET TO THE SOUTHEAST CORNER OF SAID LOT 2, BLOCK 2, GREENHILL DISTRIBUTION CENTER II, THENCE SOUTH 01° 02' 49" EAST ALONG THE EASTERLY LINE OF SAID LOT 1, BLOCK 1, GREENHILL DISTRIBUTION CENTER II, FOR 1157.30 FEET TO THE SOUTHEAST CORNER OF SAID LOT 1; THENCE SOUTH 88° 37' 07" WEST ALONG THE SOUTHERLY LINE OF SAID LOT 1 FOR 79.96 FEET TO THE POINT OF BEGINNING OF SAID TRACT OF LAND. SAID TRACT OF LAND CONTAINS 2,258,495.19 SQUARE FEET, OR 51.85 ACRES, MORE OR LESS.

THE DEVELOPER HAS CAUSED THE SUBDIVISION PARCEL TO BE SURVEYED, STAKED, PLATTED AND SUBDIVIDED INTO LOT, BLOCK, RESERVE AREAS, IN CONFORMITY WITH THE ACCOMPANTING PLAT, AND HAS DESIGNATED THE SUBDIVISION AS "QTD/K ADDITION", A SUBDIVISION IN THE CITY OF TULSA, TULSA COUNTY, OKLAHOMA.

SECTION I – UTILITY EASEMENTS

THE OWNER DEDICATES TO THE PUBLIC THE UTILITY EASEMENTS DESIGNATED AS "U/E OR UTILITY EASEMENT" FOR THE SEVERAL PURPOSES OF CONSTRUCTING, MAINTAINING, OPERATING, REPAIRING, REPLACING, AND/OR REMOVING ANY AND ALL PUBLIC UTILITIES, INCLUDING STORM SEWERS, SANITARY SEWERS, TELEPHONE AND COMMUNICATION LINES, ELECTRIC POWER LINES AND TRANSFORMERS, GAS LINES, WATER LINES AND CABLE TELEVISION LINES, TOGETHER WITH ALL FITTINGS, INCLUDING THE POLES, WIRES, CONDUITS, PIPES, VALVES, METERS, MANHOLES AND EQUIPMENT FOR EACH OF SUCH FACILITIES AND ANY OTHER APPURTENANCES THERETO, WITH THE RIGHTS OF INGRESS AND EGRESS TO AND UPON THE UTILITY EASEMENTS FOR THE USES AND PURPOSES STATED, PROVIDED THE OWNER RESERVES THE RIGHT TO CONSTRUCT, MAINTAIN, OPERATE, LAY AND REPAIR OR REPLACE WATER LINES AND SEWER LINES, TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS FOR SUCH CONSTRUCTION, MAINTENANCE, OPERATION, LAYING, REPAIRING AND RE-LAYING OVER, ACROSS AND ALONG ALL OF THE UTILITY EASEMENTS DEPICTED ON THE PLAT, FOR THE PURPOSE OF FURNISHING WATER AND/OR SEWER SERVICES TO AREAS DEPICTED ON THE PLAT. THE OWNER HEREIN IMPOSES A RESTRICTIVE COVENANT, WHICH COVENANT SHALL BE BINDING ON EACH LOT OWNER AND SHALL BE ENFORCEABLE BY THE CITY OF TULSA, OKLAHOMA, AND BY THE SUPPLIER OF ANY AFFECTED UTILITY SERVICE, THAT WITHIN THE UTILITY EASEMENTS DEPICTED ON THE ACCOMPANY PLAT NO BUILDING, STRUCTURE OR OTHER ABOVE OR BELOW GROUND OBSTRUCTION THAT INTERFERES WITH STATED USES AND PURPOSES OF THE UTILITY EASEMENTS SHALL BE PLACED, ERECTED, INSTALLED OR MAINTAINED, PROVIDED NOTHING HEREIN SHALL BE DEEMED TO PROHIBIT DRIVES, PARKING AREAS, CURBING, LANDSCAPING AND CUSTOMARY SCREENING FENCES WHICH DO NOT CONSTITUTE AN OBSTRUCTION.

WATER, SANITARY SEWER, AND STORM SEWER SERVICE

1. THE OWNER OF ANY LOT SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PUBLIC WATER MAINS, SANITARY SEWER MAINS, AND STORM SEWERS LOCATED ON THE OWNER'S LOT.
2. WITHIN UTILITY EASEMENTS, RESTRICTED WATERLINE, SANITARY SEWER, STORM SEWER AND DRAINAGE EASEMENTS DEPICTED ON THE ACCOMPANYING PLAT, THE ALTERATION OF GRADE FROM THE CONTOURS EXISTING UPON THE COMPLETION OF THE INSTALLATION OF A PUBLIC WATER MAIN, SANITARY SEWER MAIN, OR STORM SEWER OR ANY CONSTRUCTION ACTIVITY WHICH, IN THE JUDGMENT OF THE CITY OF TULSA, WOULD INTERFERE WITH PUBLIC WATER MAINS, SANITARY SEWER MAINS, AND STORM SEWERS SHALL BE PROHIBITED.
3. THE CITY OF TULSA, OKLAHOMA, OR ITS SUCCESSORS, SHALL BE RESPONSIBLE FOR ORDINARY MAINTENANCE OF PUBLIC WATER SYSTEMS, SANITARY SEWER MAINS, AND STORM SEWERS BUT THE OWNER SHALL PAY FOR DAMAGE OR RELOCATION OF SUCH FACILITIES CAUSED OR NECESSITATED BY ACTS OF THE OWNER, OR THE OWNER'S AGENTS AND/OR CONTRACTORS.

CERTIFICATE OF OCCUPANCY RESTRICTIONS

NO CERTIFICATE OF OCCUPANCY SHALL BE ISSUED BY THE CITY UNTIL COMPLETION OF THE ENTIRE DEVELOPMENT AND ITS FORMAL ACCEPTANCE BY THE CITY. ANY AND ALL CONSTRUCTION PURSUANT TO ANY BUILDING PERMIT BUT PRIOR TO THE CITY'S FORMAL ACCEPTANCE OF THE ENTIRE DEVELOPMENT SHALL BE AT THE OWNER'S, DEVELOPER'S, CONTRACTOR'S/BUILDER'S OR INVESTOR'S OWN RISK.

EASEMENT DEDICATIONS

THE DEDICATION OF UTILITY EASEMENTS, OTHER EASEMENTS TO THE PUBLIC, CONTAINED IN THIS SECTION I, SHALL NOT TAKE EFFECT UNTIL A SEPARATE INSTRUMENT TITLED "FORMAL ACCEPTANCE" OR A SIMILAR INSTRUMENT, FORMALLY ACCEPTING THE DEDICATIONS AND INFRASTRUCTURE IS RECORDED BY THE CITY OF TULSA ON BEHALF OF PUBLIC IN THE LAND RECORDS OF THE TULSA COUNTY CLERK'S OFFICE. HOWEVER, THE RIGHTS AND USES OUTLINED HEREIN, NECESSARY FOR THE INSTALLATION BY PRIVATE UTILITIES OF THEIR FACILITIES, I.E. ELECTRIC, GAS, TELEPHONE AND COMMUNICATION, ETC., EXCLUSIVE OF THOSE DEDICATED TO THE CITY OF TULSA OR THE PUBLIC, SHALL BE IN EFFECT TO ALLOW ACCESS FOR SURVEYING, EXCAVATING, CONSTRUCTION, OPERATING, AND MAINTAINING SUCH FACILITIES UNTIL THE CITY FILES ITS FORMAL ACCEPTANCE AND THESE RIGHTS AND USES ARE SUBSUMED BY DEDICATION TO THE PUBLIC AND ACCEPTANCE BY THE CITY.

UTILITY SERVICE

1. OVERHEAD LINES FOR THE SUPPLY OF ELECTRIC, TELEPHONE AND CABLE TELEVISION SERVICES MAY BE LOCATED WITHIN THE PERIMETER EASEMENTS OF THE SUBDIVISION. STREET LIGHT POLES OR STANDARDS MAY BE SERVED BY OVERHEAD LINE OR UNDERGROUND CABLE, AND ELSEWHERE THROUGHOUT THE SUBDIVISION. ALL SUPPLY LINES INCLUDING ELECTRIC, TELEPHONE, CABLE TELEVISION AND GAS LINES SHALL BE LOCATED UNDERGROUND IN EASEMENTS DEDICATED FOR GENERAL UTILITY SERVICES AND IN THE RIGHTS-OF-WAY OF THE PUBLIC STREETS AS DEPICTED ON THE ACCOMPANYING PLAT. SERVICE PEDESTALS AND TRANSFORMERS, AS SOURCES OF SUPPLY AT SECONDARY VOLTAGES, MAY ALSO BE LOCATED IN GENERAL UTILITY EASEMENTS.
2. UNDERGROUND SERVICE CABLES AND GAS SERVICE LINES TO ALL STRUCTURES WITHIN THE SUBDIVISION MAY BE EXTENDED FROM THE NEAREST GAS MAIN, SERVICE PEDESTAL OR TRANSFORMER TO THE POINT OF USAGE DETERMINED BY THE LOCATION AND CONSTRUCTION OF SUCH STRUCTURE UPON THE LOT, PROVIDED UPON INSTALLATION OF A SERVICE CABLE OR GAS SERVICE LINE TO A PARTICULAR STRUCTURE, THE SUPPLIER OF SERVICE SHALL THEREAFTER BE DEEMED TO HAVE A DEFINITIVE, PERMANENT, EFFECTIVE AND NON-EXCLUSIVE EASEMENT ON THE LOT, COVERING A 5 FOOT STRIP EXTENDING 2.5 FEET ON EACH SIDE OF THE SERVICE CABLE OR LINE EXTENDING FROM THE GAS MAIN, SERVICE PEDESTAL OR TRANSFORMER TO THE SERVICE ENTRANCE ON THE STRUCTURE.
3. THE SUPPLIER OF ELECTRIC, TELEPHONE, CABLE TELEVISION AND GAS SERVICE, THROUGH ITS AGENTS AND EMPLOYEES, SHALL AT ALL TIMES HAVE THE RIGHT OF ACCESS TO ALL UTILITY EASEMENTS SHOWN ON THE PLAT OR OTHERWISE PROVIDED FOR IN THIS DEED OF DEDICATION FOR THE PURPOSE OF INSTALLING, MAINTAINING, REMOVING OR REPLACING ANY PORTION OF THE UNDERGROUND ELECTRIC, TELEPHONE, CABLE INSTALLED BY THE SUPPLIER OF THE UTILITY SERVICE. TELEVISION OR GAS FACILITIES.
4. THE OWNER OF ANY LOT SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE UNDERGROUND SERVICE FACILITIES LOCATED ON THE OWNER'S LOT AND SHALL PREVENT THE ALTERATION OF GRADE OR ANY CONSTRUCTION ACTIVITY WHICH WOULD INTERFERE FACILITIES. EACH SUPPLIER WITH THE ELECTRIC, TELEPHONE, CABLE TELEVISION OR GAS OF THESE SERVICES SHALL BE RESPONSIBLE FOR ORDINARY MAINTENANCE OF UNDERGROUND FACILITIES, BUT THE OWNER SHALL PAY FOR DAMAGE OR RELOCATION OF SUCH FACILITIES CAUSED OR NECESSITATED BY ACTS OF THE OWNER OR THE OWNER'S AGENTS OR CONTRACTORS.
5. THE COVENANTS SET FORTH IN THIS SUBSECTION SHALL BE ENFORCEABLE BY EACH SUPPLIER OF THE ELECTRIC, TELEPHONE, CABLE TELEVISION OR GAS SERVICE AND THE OWNER OF ANY LOT AGREES TO BE BOUND BY THESE COVENANTS.

GAS SERVICE

1. THE SUPPLIER OF GAS SERVICE THROUGH ITS AGENTS AND EMPLOYEES SHALL AT ALL TIMES HAVE THE RIGHT OF ACCESS TO ALL SUCH UTILITY EASEMENTS SHOWN ON THE PLAT OR AS OTHERWISE PROVIDED FOR IN THIS DEED OF DEDICATION FOR THE PURPOSE OF INSTALLING, REMOVING, REPAIRING, OR REPLACING ANY PORTION OF THE FACILITIES INSTALLED BY THE SUPPLIER OF GAS SERVICE.
2. THE OWNER OF ANY LOT SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE UNDERGROUND GAS FACILITIES LOCATED WITHIN THE LOT AND SHALL PREVENT THE ALTERATION OF GRADE OR ANY OTHER CONSTRUCTION ACTIVITY WHICH WOULD INTERFERE WITH GAS SERVICE. THE SUPPLIER OF GAS SERVICE SHALL BE RESPONSIBLE FOR THE ORDINARY MAINTENANCE OF ITS FACILITIES, BUT THE OWNER SHALL PAY FOR DAMAGE OR RELOCATION OF FACILITIES CAUSED OR NECESSITATED BY ACTS OF THE OWNER, OR THE OWNER'S AGENTS OR CONTRACTORS.
3. THE COVENANTS SET FORTH IN THIS SUBSECTION SHALL BE ENFORCEABLE BY THE SUPPLIER OF THE GAS SERVICE AND THE OWNER OF THE LOT AGREES TO BE BOUND BY THESE COVENANTS.

DRAINAGE EASEMENTS

1. THE OWNER DOES HEREBY DEDICATE TO THE PUBLIC PERPETUAL EASEMENTS ON, OVER, AND ACROSS THOSE AREAS DEPICTED ON THE ACCOMPANYING PLAT AS 'DRAINAGE EASEMENT' FOR THE PURPOSES OF PERMITTING THE OVERLAND FLOW, CONVEYANCE, AND DISCHARGE OF STORM WATER RUNOFF FROM WITHIN THE SUBDIVISION AND FROM PROPERTIES OUTSIDE THE SUBDIVISION AND FOR THE PURPOSES OF CONSTRUCTING, MAINTAINING, REPAIRING, REMOVING AND REPLACING STORM SEWERS, AND ANY APPURTENANCES THERETO, WITH THE RIGHTS OF INGRESS AND EGRESS TO AND UPON THE DRAINAGE EASEMENTS FOR THE USES AND PURPOSES STATED.
2. DRAINAGE FACILITIES LOCATED WITHIN DRAINAGE EASEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS APPROVED BY THE CITY OF TULSA, OKLAHOMA, OR ITS SUCCESSORS.
3. NO FENCE, WALL, BUILDING OR OTHER OBSTRUCTION SHALL BE PLACED OR MAINTAINED IN DRAINAGE EASEMENTS NOR SHALL THERE BY ANY ALTERATION OF GRADE IN THE EASEMENT AREAS UNLESS APPROVED BY THE DEPARTMENT OF PUBLIC WORKS OF THE CITY OF TULSA, OKLAHOMA, PROVIDED THE PLANTING OF TURF SHALL NOT REQUIRE THE APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS.

OVERLAND DRAINAGE EASEMENTS

1. THE OWNER DOES HEREBY DEDICATE TO THE PUBLIC PERPETUAL EASEMENTS ON, OVER, AND ACROSS THOSE AREAS DESIGNATED ON THE ACCOMPANYING PLAT AS 'OVERLAND DRAINAGE EASEMENT' FOR THE PURPOSE OF PERMITTING THE OVERLAND FLOW, CONVEYANCE, AND DISCHARGE OF STORM WATER RUNOFF FROM VARIOUS LOTS WITHIN THE SUBDIVISION AND FROM PROPERTIES OUTSIDE THE SUBDIVISION.
2. DRAINAGE FACILITIES LOCATED WITHIN OVERLAND DRAINAGE EASEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH THE ADOPTED STANDARDS OF THE CITY OF TULSA, OKLAHOMA, AND PLANS AND SPECIFICATIONS APPROVED BY THE DEPARTMENT OF PUBLIC WORKS OF THE CITY OF TULSA, OKLAHOMA.
3. NO FENCE, WALL, BUILDING OR OTHER OBSTRUCTION SHALL BE PLACED OR MAINTAINED WITHIN AN OVERLAND DRAINAGE EASEMENT NOR SHALL THERE BY ANY ALTERATION OF THE GRADE IN THE EASEMENTS UNLESS APPROVED BY THE DEPARTMENT OF PUBLIC WORKS OF THE CITY OF TULSA, OKLAHOMA, PROVIDED THAT THE PLANTING OF TURF SHALL NOT REQUIRE THE APPROVAL OF THE DEPARTMENT OF PUBLIC WORKS OF THE CITY OF TULSA, OKLAHOMA.

COMPENSATORY STORAGE EASEMENTS

1. THE OWNER DEDICATES TO THE PUBLIC PERPETUAL EASEMENTS ON, OVER, AND ACROSS THE AREA DEPICTED ON THE ACCOMPANYING PLAT AS 'COMPENSATORY STORAGE EASEMENT' FOR THE PURPOSES OF PERMITTING THE STORAGE OF STORM WATER.
2. DRAINAGE FACILITIES LOCATED WITHIN THE COMPENSATORY STORAGE EASEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS APPROVED BY THE CITY OF TULSA, OKLAHOMA.
3. THE GRADES WITHIN COMPENSATORY STORAGE EASEMENTS SHALL NOT BE ALTERED AFTER COMPLETION OF THE FINISH GRADING REQUIRED FOR COMPENSATORY STORAGE. COMPENSATORY STORAGE EASEMENTS SHALL BE RE-VEGETATED WITH SLAB SOD ONLY AND NO TREES OR SHRUBS OR OTHER ABOVE GRADE VEGETATION SHALL BE PLANTED OR MAINTAINED WITHIN COMPENSATORY STORAGE EASEMENTS.
4. NO CONSTRUCTION OR INSTALLATION OF ANY STRUCTURE OR OTHER IMPROVEMENT, NO GRADING, FILLING OR OTHER EARTH-CHANGE, AND NO ACTIVITY CAUSING A REDUCTION OF FLOOD STORAGE VOLUME SHALL OCCUR OR BE PERMITTED, WITHOUT PRIOR WRITTEN APPROVAL FROM THE PUBLIC WORKS DEPARTMENT OF THE CITY OF TULSA, OKLAHOMA, OR ITS SUCCESSORS. COMPENSATORY STORAGE EASEMENTS SHALL BE MAINTAINED BY THE LOT OWNER AT THE OWNER'S EXPENSE.

STORMWATER DETENTION EASEMENTS

1. THE OWNER DOES HEREBY DEDICATE TO THE PUBLIC PERPETUAL EASEMENTS ON, OVER, AND ACROSS THE PROPERTY DESIGNATED AND SHOWN ON THE ACCOMPANYING PLAT AS "STORM WATER DETENTION EASEMENT" FOR THE PURPOSES OF PERMITTING THE FLOW, CONVEYANCE, RETENTION, DETENTION AND DISCHARGE OF STORM WATER RUNOFF FROM THE SUBDIVISION.
2. DETENTION, RETENTION AND OTHER DRAINAGE FACILITIES LOCATED WITHIN THE STORM WATER DETENTION EASEMENTS SHALL BE CONSTRUCTED IN ACCORDANCE WITH STANDARDS AND SPECIFICATIONS APPROVED BY THE CITY OF TULSA, OKLAHOMA.
3. NO FENCE, WALL, BUILDING, OR OTHER OBSTRUCTION MAY BE PLACED OR MAINTAINED IN STORM WATER DETENTION EASEMENTS NOR SHALL THERE BY ANY ALTERATION OF GRADE IN SAID EASEMENTS UNLESS APPROVED BY THE DEPARTMENT OF PUBLIC WORKS OF THE CITY OF TULSA, OKLAHOMA.

SIDEWALKS

SIDEWALKS SHALL BE CONSTRUCTED AND MAINTAINED ALONG STREETS DESIGNATED BY AND IN ACCORDANCE WITH THE SUBDIVISION REGULATIONS OF THE CITY OF TULSA, OKLAHOMA. SIDEWALKS SHALL BE CONSTRUCTED IN CONFORMANCE WITH THE STANDARDS OF THE DEPARTMENT OF PUBLIC WORKS OF THE CITY OF TULSA, OKLAHOMA. THE OWNER SHALL BE REQUIRED TO CONSTRUCT SIDEWALKS WITHIN RESERVE AREAS, COMMON AREAS AND ALONG ARTERIAL STREET FRONTAGES OF ABUTTING LOTS HAVING ACCESS ONTO MINOR STREETS. WHERE SIDEWALKS ARE NOT CONSTRUCTED BY THE OWNER, THE DEVELOPER OR BUILDER ON EACH LOT SHALL CONSTRUCT THE REQUIRED SIDEWALK.

SECTION II ENFORCEMENT, DURATION, AMENDMENT AND SERVICEABILITY

ENFORCEMENT

THE RESTRICTIONS HEREIN SET FORTH ARE COVENANTS TO RUN WITH THE LAND AND SHALL BE BINDING UPON THE OWNERS, THEIR RESPECTIVE SUCCESSORS AND ASSIGNS, WITHIN THE PROVISIONS OF SECTION I. UTILITIES ARE SET FORTH CERTAIN COVENANTS AND THE ENFORCEMENT RIGHTS PERTAINING THERETO AND WHETHER OR NOT THEREIN SO STATED, THE COVENANTS WITHIN SECTION I SHALL INURE TO THE BENEFIT OF, AND BE ENFORCEABLE BY, THE CITY OF TULSA OKLAHOMA.

DURATION

THESE RESTRICTIONS SHALL REMAIN IN FULL FORCE AND EFFECT FOR 25 YEARS AND SHALL AUTOMATICALLY BE CONTINUED THEREAFTER FOR SUCCESSIVE PERIODS OF 10 YEARS EACH, UNLESS TERMINATED OR AMENDED AS HEREINAFTER PROVIDED.

AMENDMENT

THE COVENANTS CONTAINED WITHIN SECTION I UTILITIES, MAY BE AMENDED OR TERMINATED AT ANY TIME BY WRITTEN INSTRUMENTS SIGNED AND ACKNOWLEDGED BY THE OWNER OF THE LOT TO WHICH THE AMENDMENT OR TERMINATION IS TO BE APPLICABLE AND APPROVED BY THE TULSA METROPOLITAN AREA PLANNING COMMISSION, OR ITS SUCCESSORS, AND THE CITY OF TULSA, OKLAHOMA.

SEVERABILITY

INVALIDATION OF ANY RESTRICTON SET FORTH HEREIN, OR ANY PART THEREOF, BY AN ORDER, JUDGMENT, OR DECREE OF ANY COURT, OR OTHERWISE, SHALL NOT INVALIDATE OR AFFECT ANY OF THE RESTRICTIONS OF ANY PART THEREOF AS SET FORTH HEREIN, WHICH SHALL REMAIN IN FULL FORCE AND EFFECT.

IN WITNESS WHEREOF, QUIK-N-TASTY CORPORATION, AN OKLAHOMA CORPORATION BEING THE SOLE OWNER OF THE SUBDIVISION, HEREBY APPROVES THE FOREGOING DECLARATION OF COVENANTS, CONDITIONS AND RESTRICTIONS ON THIS _____, DAY OF____________, 2017.

QUIK-N-TASTY CORPORATION,
AN OKLAHOMA CORPOATION

BY: KEVIN M. GLEASON

STATE OF OKLAHOMA)
)
COUNTY OF TULSA)

BEFORE ME, THE UNDERSIGN NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS_____DAY OF___________, 2017 PERSONALLY APPEARED QUIK-N-TASTY CORPORATION, TO ME KNOWN TO BE THE IDENTICAL PERSON WHO SUBSCRIBED THE NAME OF THE MAKER THEREOF TO THE FOREGOING INSTRUMENT AS ITS PRESIDENT ANO ACKNOWLEDGEDTO ME THAT HE EXECUTED THE SAME AS HIS FREE AND VOLUNTARY ACT AND DEED AND AS THE FREE AND VOLUNTARY ACT AND DEED OF SUCH CORPORATION, FOR THE USES AND PURPOSES HEREIN SET FORTH.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THE DAY AND YEAR LAST ABOVE WRITTEN.

MY COMMISSION EXPIRES: PUBLIC NOTARY

CERTIFICATE OF SURVEY

I,____________________, A REGISTERED PROFESSIONAL LAND SURVEYOR, IN THE STATE OF OKLAHOMA, DO HEREBY CERTIFY THAT I HAVE FULLY COMPLIED WITH REQUIREMENTS OF THESE SUBDIVISION REGULATIONS AND THE SUBDIVISION LAWS OF THE STATE OF OKLAHOMA GOVERNING SURVEYING, DIVIDING AND MAPPING OF THE LAND; THAT THE PLAT IS A CORRECT REPRESENTATION OF ALL THE EXTERIOR BOUNDARIES OF THE LAND SURVEYED AND THE SUBDIVISION OF IT; AND, THAT THE PLAT REPRESENTS A SURVEY MADE BY ME AND IS A TRUE REPRESENTATION OF THE SURVEY MADE ON THE GROUND USING GENERALLY ACCEPTED PRACTICES AND MEETS OR EXCEEDS THE OKLAHOMA MINIMUM STANDARDS FOR THE PRACTICE OF LAND SURVEYING AS ADOPTED.

WITNESS MY HAND AND SEAL THIS _____ DAY OF _________, 2017.

BY: ____________________

STATE OF OKLAHOMA)
)
COUNTY OF TULSA)

BEFORE ME, THE UNDERSIGN NOTARY PUBLIC IN AND FOR SAID COUNTY AND STATE, ON THIS_____DAY OF___________, 2017 PERSONALLY APPEARED ,____________________TO ME KNOWN TO BE THE IDENTICAL PERSON WHO SUBSCRIBED THE NAME OF THE MAKER THEREOF TO THE FOREGOING INSTRUMENT AS ITS PRESIDENT ANO ACKNOWLEDGEDTO ME THAT HE EXECUTED THE SAME AS HIS FREE AND VOLUNTARY ACT AND DEED AND AS THE FREE AND VOLUNTARY ACT AND DEED OF SUCH CORPORATION, FOR THE USES AND PURPOSES HEREIN SET FORTH.

GIVEN UNDER MY HAND AND SEAL OF OFFICE THE DAY AND YEAR LAST ABOVE WRITTEN.

MY COMMISSION EXPIRES: PUBLIC NOTARY

QTD/K ADDITION
PRELIM. PLAT, DATE OF PREP: JANUARY 19, 2017
SHEET 2 OF 2

9.8

TMAPC
Tulsa Metropolitan Area
Planning Commission

Case : QuikTrip No. 0083

Hearing Date: August 16, 2017

Case Report Prepared by:

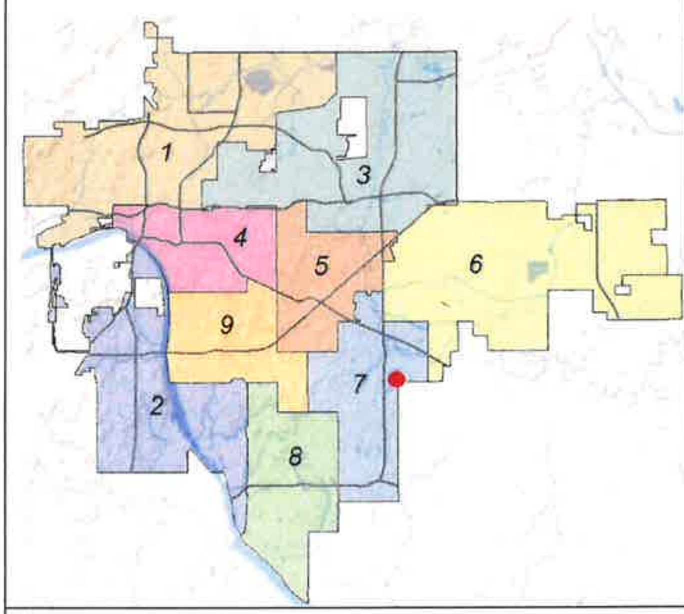
Nathan Foster

Owner and Applicant Information:

Applicant: AAB Engineering, LLC

Owner: QuikTrip Corporation

Location Map:
(shown with City Council Districts)



Applicant Proposal:

Preliminary Plat

1 lot, 1 block, 2.47± acres

Location: Northwest corner of East 61st Street South and South Garnett Road

Zoning: CS (Commercial – Shopping)

Staff Recommendation:

Staff recommends **approval** of the preliminary plat

City Council District: 7

Councilor Name: Anna America

County Commission District: 1

Commissioner Name: John Smaligo

EXHIBITS: Site Map, Aerial, Land Use, Growth & Stability, Preliminary Plat, Conceptual Improvements Plan

10.1

PRELIMINARY SUBDIVISION PLAT

QuikTrip No. 0083 - (CD 7)
Northwest corner of East 61st Street South and South Garnett Road

This plat consists of 1 lot, 1 block on 2.47± acres.

The Technical Advisory Committee (TAC) met on August 3, 2017 and provided the following conditions:

1. **Zoning:** The property is currently zoned CS (Commercial – Shopping). The proposed subdivision conforms to the lot regulations of the zoning district.

2. **Addressing:** Assigned address is 6020 South Garnett Road, include address on final plat.

3. **Transportation & Traffic:** Eliminate proposed access shown 37.12' from the intersection of East 61st Street and South Garnett Road and include within limits of no access.

4. **Sewer:** Provide 17.5' utility easement for the entire perimeter of the subdivision.

5. **Water:** Water connections will not be permitted off of the existing 48 inch water main line. Water service connections must be made on the existing 12 inch water main on the south side of East 61st Street.

6. **Engineering Services:** Submit a subdivision control data sheet with final plat. Remove contour lines from final plat. Provide addresses for individual lots. Spell out "Indian Base & Meridian" in the plat subtitle. On the location map, include Highway 169 and identify/label all platted subdivisions. All other property should be labeled as "unplatted". Coordinate closure and vacation of any easement proposed for removal.

7. **Fire:** No comments.

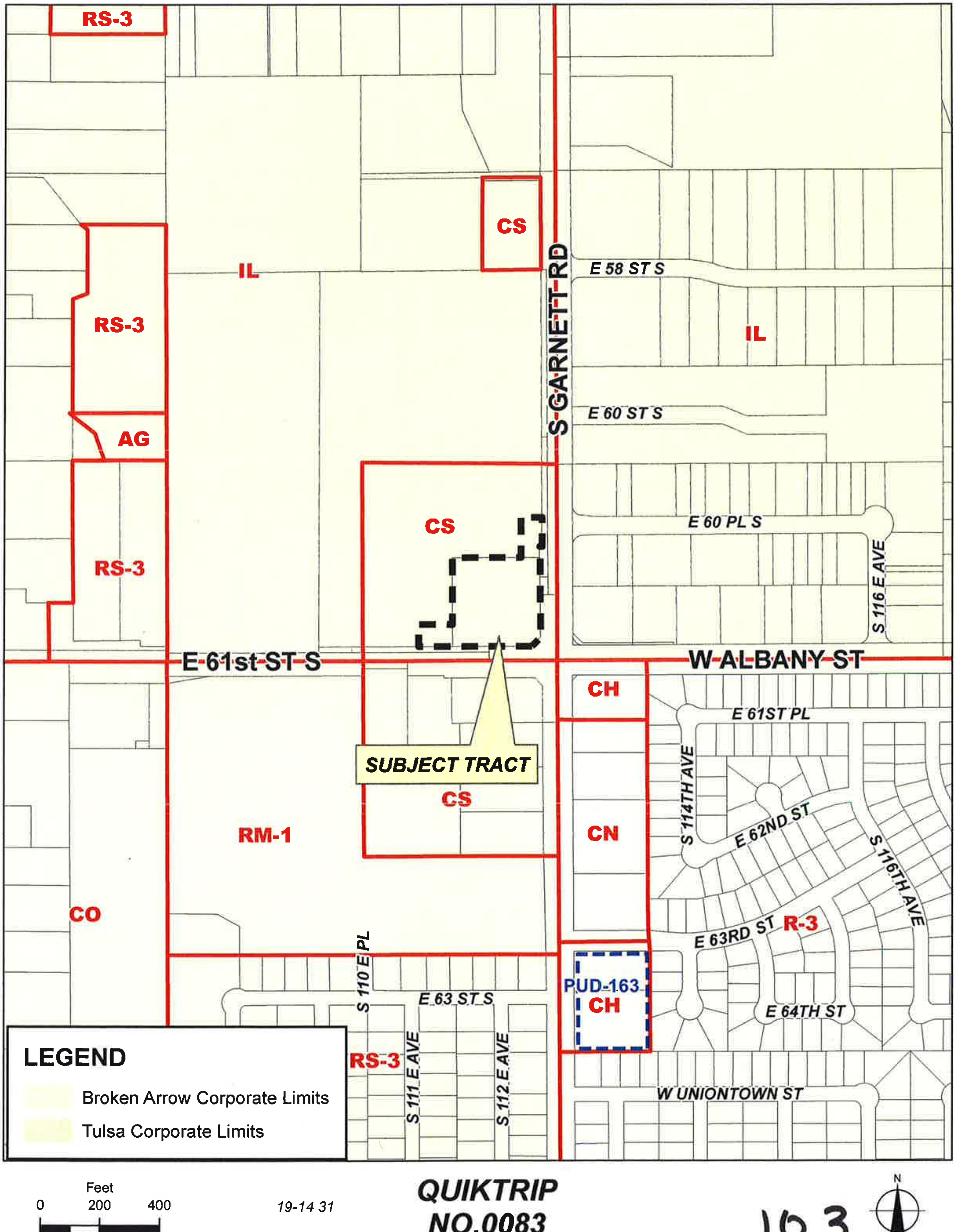
8. **Stormwater, Drainage, & Floodplain:** No comments.

9. **Utilities: Telephone, Electric, Gas, Cable, Pipeline, Others:** All utilities indicated to serve the site must provide a release prior to final plat approval. Provide a Certificate of Records Search from the Oklahoma Corporation Commission to verify no oil & gas activity on the site.

Waivers of Subdivision Regulations:

1. None Requested

Staff recommends **APPROVAL** of the preliminary subdivision plat subject to the conditions provided by TAC and the requirements of the Subdivisions Regulations.



19-14 31

QUIKTRIP NO.0083

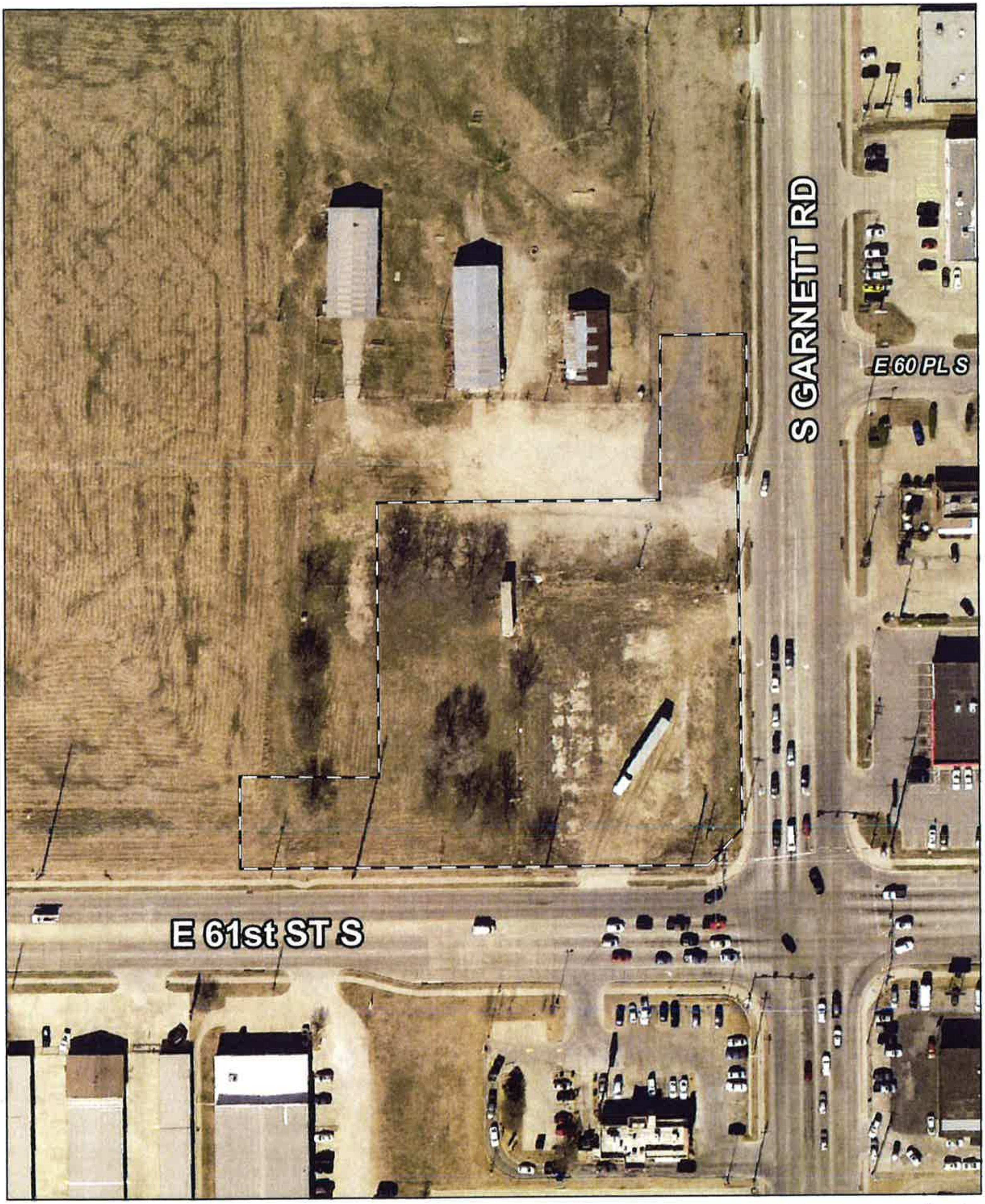
10.3

QUIKTRIP NO.0083

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

10.4



Feet
0 50 100

Subject Tract

19-14 31

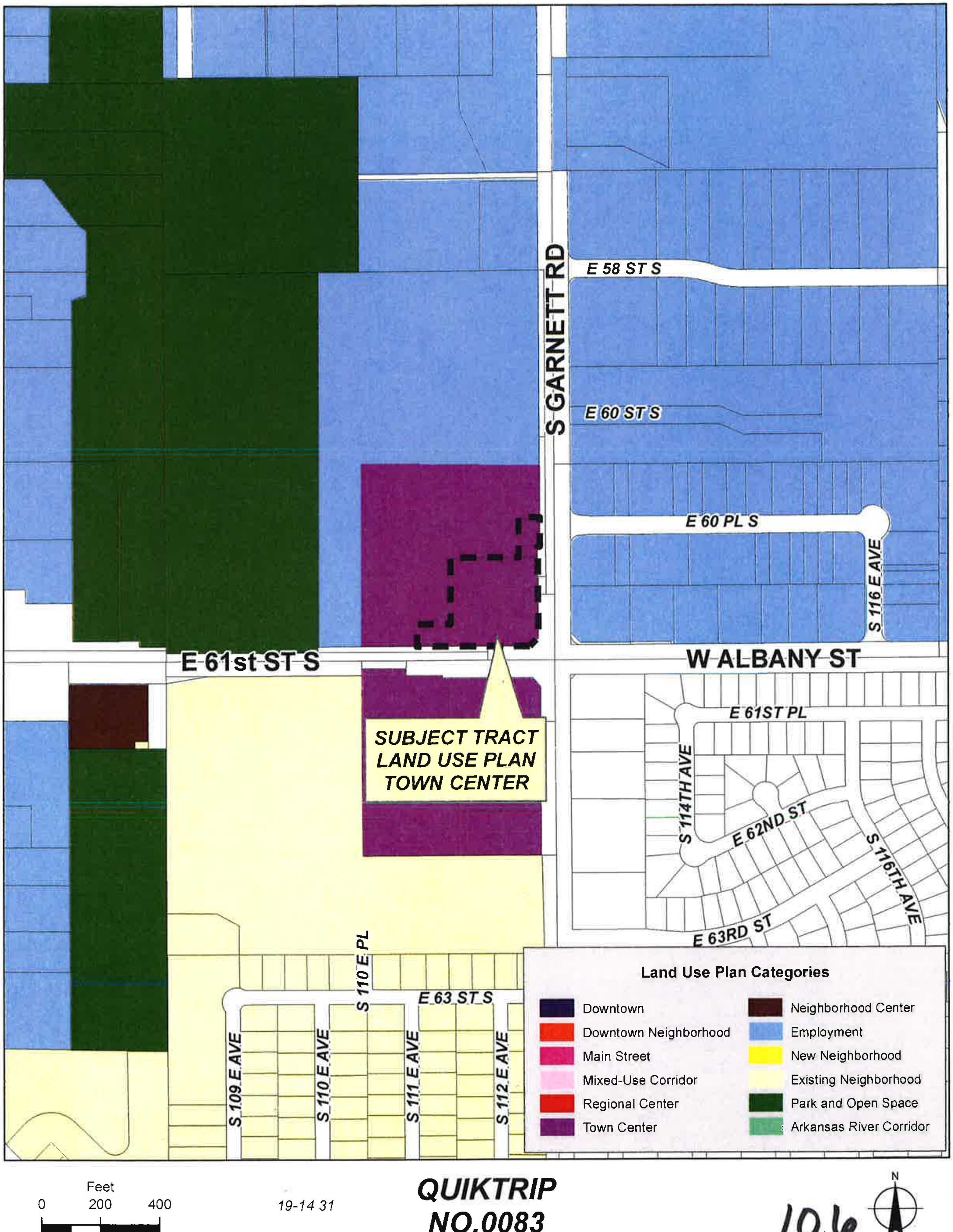
QUIKTRIP NO.0083

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

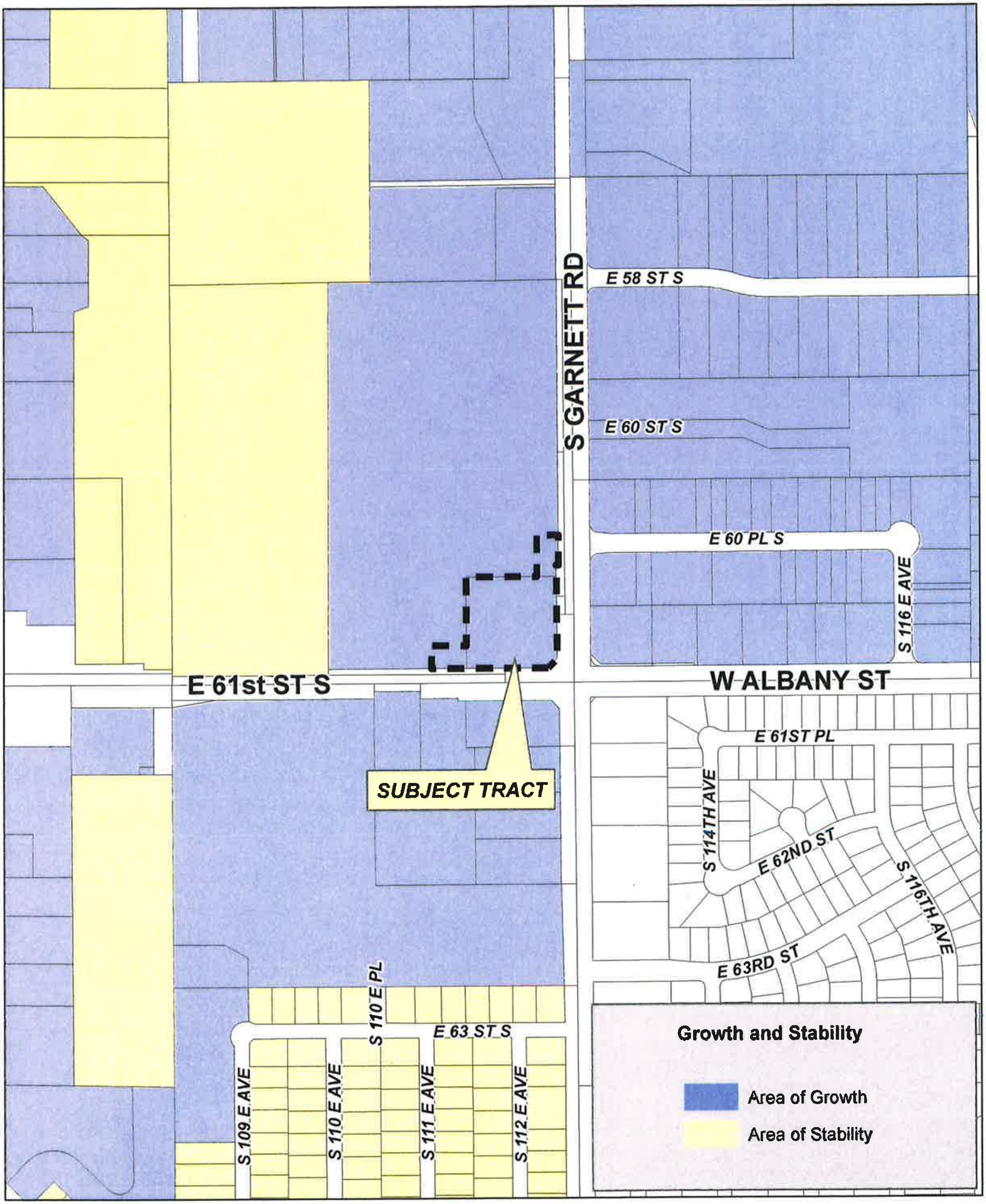
10.5



19-14 31

QUIKTRIP NO.0083

10.6



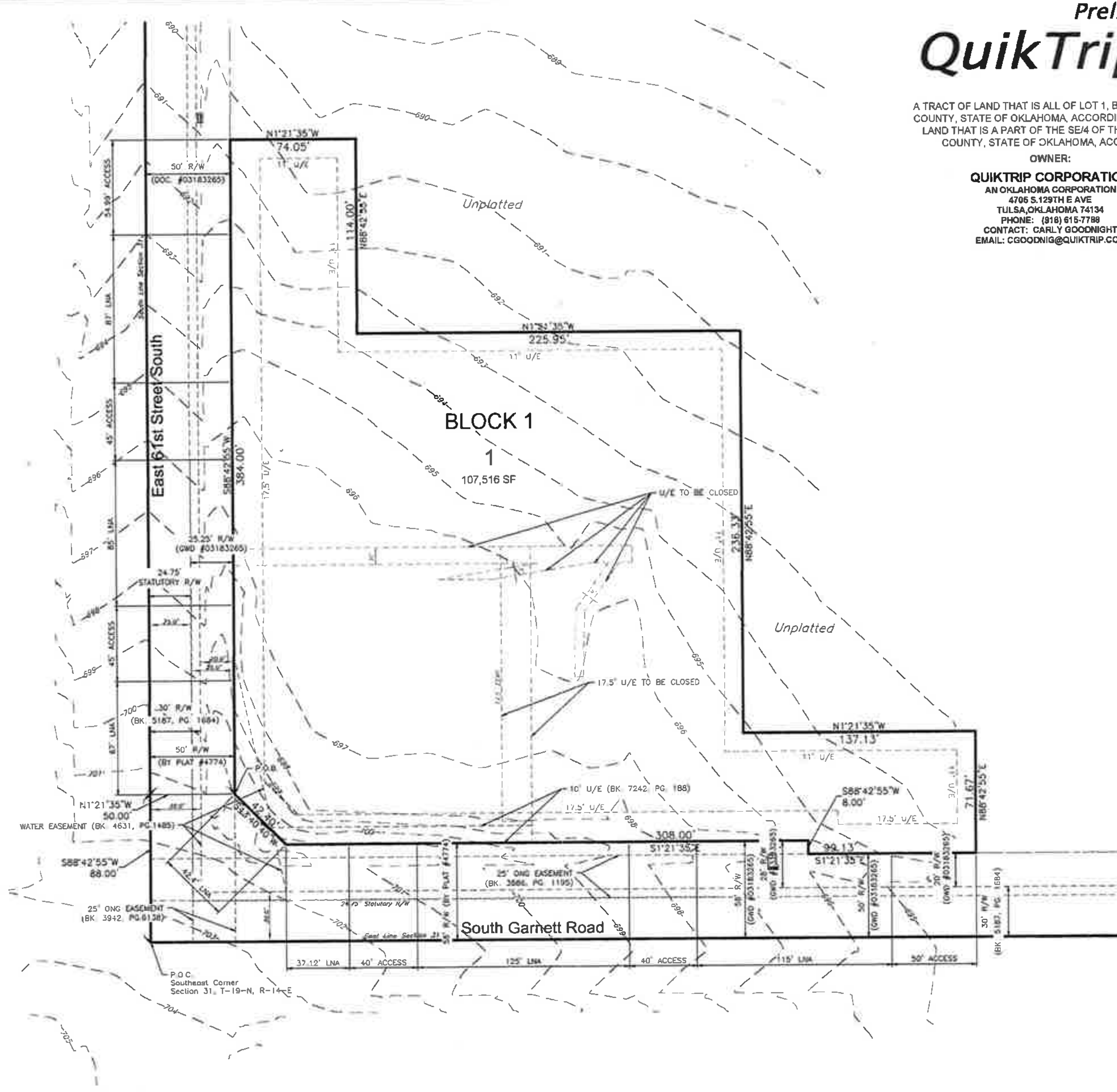
Feet
0 200 400

19-14 31

QUIKTRIP NO.0083

10.7

N



Preliminary Plat

QuikTrip No. 0083

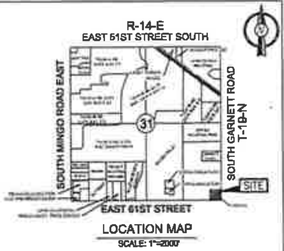
A TRACT OF LAND THAT IS ALL OF LOT 1, BLOCK 1, KAYO II, AN ADDITION TO THE CITY OF TULSA, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE RECORDED PLAT NO. 4774 AND ALSO A TRACT OF LAND THAT IS A PART OF THE SE/4 OF THE SE/4 OF SECTION 31, T-19-N, R-14-E OF THE I.B.M., TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE U.S. GOVERNMENT SURVEY THEREOF

OWNER:

QUIKTRIP CORPORATION
AN OKLAHOMA CORPORATION
4705 S.129TH E AVE
TULSA,OKLAHOMA 74134
PHONE: (918) 615-7798
CONTACT: CARLY GOODNIGHT
EMAIL: CGOODNIG@QUIKTRIP.COM

ENGINEER/SURVEYOR:

AAB ENGINEERING, LLC
CERTIFICATE OF AUTHORIZATION NO. 6318, EXP. JUNE 30, 2018
P.O. BOX 2136
SAND SPRINGS, OKLAHOMA 74063
PHONE: (918) 514-4283
EMAIL: ALAN@AABENG.COM
CONTACT: ALAN BETCHAN



LOCATION MAP
SCALE: 1"=2000'

LEGEND

B/L	BUILDING LINE
LNA	LIMITS OF NO ACCESS
U/E	UTILITY EASEMENT
M.A.E.	MUTUAL ACCESS EASEMENT
P.O.C.	POINT OF COMMENCEMENT
P.O.B.	POINT OF BEGINNING
SWC	SOUTHWEST CORNER
SEC	SOUTH EAST CORNER
IPF	IRON PIN FOUND
IPS	IRON PIN SET WITH CAP 6318
R/W	RIGHT OF WAY
GWD	GENERAL WARRANTY DEED

FLOODPLAIN

THE ENTIRE PROPERTY IS NOT LOCATED WITHIN ANY FEDERALLY DESIGNATED FEMA FLOODPLAIN PER FIRM PANEL NO. 40143C0378L DATED OCTOBER 16, 2012 WHICH INDICATES ZONE UNSHADED X

THE ENTIRE PROPERTY IS NOT LOCATED WITHIN THE REGULATORY FLOODPLAIN PER CITY OF TULSA REGULATORY FLOODPLAIN MAP ATLAS PANEL 49

SITE DATA

BENCHMARK
CHISELED SQUARE IN CONCRETE BASE OF TRAFFIC SIGNAL
ELEVATION=704.64' (NAVD 88)

BASIS OF BEARINGS
THE BEARING BASE FOR THE SURVEY IS BASED ON GRID BEARINGS AND THE OKLAHOMA STATE PLANE COORDINATE SYSTEM, WITH THE SOUTH LINE OF SECTION 31 AS S 88°42'55" W AND THE EAST LINE OF SECTION 31 AS N 01°21'35" W.

LAND AREA
107,516 SF± / 2.47 ACRES±

ADDRESSES
ADDRESSES SHOWN ON THIS PLAT WERE ACCURATE AT THE TIME THIS PLAT WAS FILED. ADDRESSES ARE SUBJECT TO CHANGE AND SHOULD NEVER BE RELIED ON IN PLACE OF LEGAL DESCRIPTION

SUBDIVISION STATISTICS

SUBDIVISION CONTAINS 1 LOT IN 1 BLOCK
BLOCK 1 AREA: 2.47 ACRES (107,516 SF)

CONTACTS

MUNICIPAL AUTHORITY

CITY OF TULSA
175 EAST 2ND STREET, SUITE 690
TULSA, OK 74103

UTILITY CONTACTS

OKLAHOMA NATURAL GAS COMPANY
2319 W. EDISON ST
TULSA, OK 74127
918-834-8000

PUBLIC SERVICE COMPANY OF OKLAHOMA
212 E. 6TH ST
TULSA, OK 74119
1-888-216-3523

AT&T
5303 E. 71ST STREET
TULSA OK 74136
918-596-8422

COX COMMUNICATIONS
11811 EAST 51ST STREET
TULSA OK 74145
918-286-4666

FINAL PLAT ENDORSEMENT OF APPROVAL

Tulsa Metropolitan Area Planning Commission

Approval Date:____________________

____________________ TMAPC/INCOG

____________________ CITY ENGINEER

Council of the City of Tulsa, Oklahoma

Approval Date:____________________

____________________ CHAIRMAN

____________________ MAYOR

____________________ ATTEST: CITY CLERK

____________________ CITY ATTORNEY

The approval of this Final Plat will expire one year from the date of City Council approval if not filed in the Office of the County Clerk before that date.

30 15 0 30 60

QuikTrip No. 0083
PREPARED: JULY 20, 2017
Sheet 1 of 2

10.8

Preliminary Plat

QuikTrip No. 0083

A TRACT OF LAND THAT IS ALL OF LOT 1, BLOCK 1, KAYO II, AN ADDITION TO THE CITY OF TULSA, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE RECORDED PLAT NO. 4774 AND ALSO A TRACT OF LAND THAT IS A PART OF THE SE/4 OF THE SE/4 OF SECTION 31, T-19-N, R-14-E OF THE I.B.M., TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE U.S. GOVERNMENT SURVEY THEREOF

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ENGINEER/SURVEYOR:

AAB ENGINEERING, LLC
CERTIFICATE OF AUTHORIZATION NO. 6318, EXP. JUNE 30, 2018
P.O. BOX 2136
SAND SPRINGS, OKLAHOMA 74063
PHONE: (918) 514-4283
EMAIL: ALAN@AABENG.COM
CONTACT: ALAN BETCHAN

Deed of Dedication

QuikTrip NO. 0083

KNOW ALL BY THESE PRESENTS:

QUIKTRIP CORPORATION, AN OKLAHOMA CORPORATION, IS THE OWNER OF THE PROPERTY AS DEPICTED ON THE ATTACHED PLAT AND IS HEREINAFTER REFERRED TO AS THE "OWNER", SAID PROPERTY BEING MORE COMPLETELY DESCRIBED AS FOLLOWS, TO-WIT:

A TRACT OF LAND THAT IS ALL OF LOT ONE (1), BLOCK ONE (1), KAYO II, AN ADDITION TO THE CITY OF TULSA, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE RECORDED PLAT NO. 4774 AND ALSO A TRACT OF LAND THAT IS A PART OF THE SOUTHEAST QUARTER (SE/4) OF THE SOUTHEAST QUARTER (SE/4) OF SECTION THIRTY-ONE (31), TOWNSHIP NINETEEN (19) NORTH, RANGE FOURTEEN (14) EAST OF THE INDIAN BASE AND MERIDIAN, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE U.S. GOVERNMENT SURVEY THEREOF, BEING MORE PARTICULARLY DESCRIBED AS FOLLOWS:

COMMENCING AT THE SOUTHEAST CORNER OF SAID SECTION THIRTY-ONE (31); THENCE SOUTH 88°42'55" WEST ALONG THE SOUTH LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 88.00 FEET; THENCE NORTH 01°21'35" WEST AND PARALLEL TO THE EAST LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 50.00 TO THE POINT OF BEGINNING, SAID POINT BEING THE NORTHERLY RIGHT-OF-WAY LINE OF EAST 61ST STREET SOUTH; THENCE SOUTH 88°42'55" WEST AND PARALLEL TO THE SOUTH LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 384.00 FEET; THENCE NORTH 01°21'35" WEST AND PARALLEL TO THE EAST LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 74.05 FEET; THENCE NORTH 88°42'55" EAST AND PARALLEL TO THE SOUTH LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 114.00 FEET; THENCE NORTH 01°21'35" WEST AND PARALLEL TO THE EAST LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 225.55 FEET; THENCE NORTH 88°42'55" EAST AND PARALLEL TO THE SOUTH LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 236.33 FEET; THENCE NORTH 01°21'35" WEST AND PARALLEL TO THE EAST LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 137.13 FEET; THENCE NORTH 88°42'55" EAST AND PARALLEL TO THE SOUTH LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 71.67 FEET TO A POINT ON THE WESTERLY RIGHT-OF-WAY LINE OF SOUTH GARNETT ROAD; THENCE SOUTH 01°21'35" EAST ALONG SAID RIGHT-OF-WAY LINE AND PARALLEL TO THE EAST LINE OF SAID SECTION THIRTY-ONE (31) FOR A DISTANCE OF 99.13 FEET; THENCE SOUTH 88°42'55" WEST AND PARALLEL TO THE SOUTH LINE OF SAID SECTION THIRTY-ONE (31) AND ALONG SAID RIGHT-OF-WAY FOR A DISTANCE OF 8.00 FEET; THENCE SOUTH 01°21'35" EAST AND PARALLEL TO THE EAST LINE OF SAID SECTION THIRTY-ONE (31) AND ALONG SAID RIGHT-OF-WAY FOR A DISTANCE OF 308.00 FEET; THENCE SOUTH 43°40'40" WEST ALONG SAID RIGHT-OF-WAY FOR A DISTANCE OF 42.40 FEET TO THE POINT OF BEGINNING.

SAID TRACT OF LAND CONTAINS 107,515.73 SQUARE FEET / 2.47 ACRES MORE OR LESS.

THE OWNER HAS CAUSED THE ABOVE DESCRIBED TRACT OF LAND TO BE SURVEYED, STAKED, PLATTED AND COMBINED INTO ONE (1) LOT, ONE (1) BLOCK, IN CONFORMITY WITH THE ACCOMPANYING PLAT, AND HAS DESIGNATED THE SUBDIVISION AS "QUIKTRIP NO. 0083", A SUBDIVISION IN THE CITY OF TULSA, TULSA COUNTY, OKLAHOMA (HEREINAFTER REFERRED TO AS "QUIKTRIP NO. 0083" OR THE "SUBDIVISION").

SECTION I. PUBLIC STREETS AND UTILITIES

A. UTILITY EASEMENTS

1. THE OWNER HEREBY DEDICATES TO THE PUBLIC THE UTILITY EASEMENTS DESIGNATED AS "U/E" OR "UTILITY EASEMENT" FOR THE SEVERAL PURPOSES OF CONSTRUCTING, MAINTAINING, OPERATING, REPAIRING, REPLACING, AND/OR REMOVING ANY AND ALL PUBLIC UTILITIES, INCLUDING STORM SEWERS, SANITARY SEWERS, TELEPHONE AND COMMUNICATION LINES, ELECTRIC POWER LINES AND TRANSFORMERS, GAS LINES, WATER LINES AND CABLE TELEVISION LINES, TOGETHER WITH ALL FITTINGS, INCLUDING THE POLES, WIRES, CONDUITS, PIPES, VALVES, METERS, MANHOLES AND EQUIPMENT FOR EACH OF SUCH FACILITIES AND ANY OTHER APPURTENANCES THERETO, WITH THE RIGHTS OF INGRESS AND EGRESS TO AND UPON THE UTILITY EASEMENTS FOR THE USES AND PURPOSES STATED, PROVIDED THE OWNER RESERVES THE RIGHT TO CONSTRUCT, MAINTAIN, OPERATE, LAY AND REPAIR OR REPLACE WATER LINES AND SEWER LINES, TOGETHER WITH THE RIGHT OF INGRESS AND EGRESS FOR SUCH CONSTRUCTION, MAINTENANCE, OPERATION, LAYING, REPAIRING AND RE-LAYING OVER, ACROSS AND ALONG ALL OF THE UTILITY EASEMENTS DEPICTED ON THE PLAT FOR THE PURPOSE OF FURNISHING WATER AND/OR SEWER SERVICES TO AREAS DEPICTED ON THE PLAT. THE OWNER HEREIN IMPOSES A RESTRICTIVE COVENANT, WHICH COVENANT SHALL BE BINDING ON EACH LOT OWNER AND SHALL BE ENFORCEABLE BY THE CITY OF TULSA, OKLAHOMA, AND BY THE SUPPLIER OF ANY AFFECTED UTILITY SERVICE, THAT WITHIN THE UTILITY EASEMENTS DEPICTED ON THE ACCOMPANYING PLAT NO BUILDING, STRUCTURE OR OTHER ABOVE OR BELOW GROUND OBSTRUCTION THAT INTERFERES WITH STATED USES AND PURPOSES OF THE UTILITY EASEMENTS SHALL BE PLACED, ERECTED, INSTALLED OR MAINTAINED, PROVIDED NOTHING HEREIN SHALL BE DEEMED TO PROHIBIT DRIVES, PARKING AREAS, CURBING, LANDSCAPING AND CUSTOMARY SCREENING FENCES WHICH DO NOT CONSTITUTE AN OBSTRUCTION.

B. WATER, SANITARY SEWER, AND STORM SEWER SERVICE

1. THE OWNER OF ANY LOT SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE PUBLIC WATER MAINS, SANITARY SEWER MAINS, AND STORM SEWERS LOCATED ON THE OWNER'S LOT.
2. WITHIN UTILITY EASEMENTS, DEPICTED ON THE ACCOMPANYING PLAT, THE ALTERATION OF GRADE FROM THE CONTOURS EXISTING UPON THE COMPLETION OF THE INSTALLATION OF A PUBLIC WATER MAIN, SANITARY SEWER MAIN, OR STORM SEWER OR ANY CONSTRUCTION ACTIVITY WHICH, IN THE JUDGMENT OF THE CITY OF TULSA, WOULD INTERFERE WITH PUBLIC WATER MAINS, SANITARY SEWER MAINS, AND STORM SEWERS SHALL BE PROHIBITED.
3. THE CITY OF TULSA, OKLAHOMA, OR ITS SUCCESSORS, SHALL BE RESPONSIBLE FOR ORDINARY MAINTENANCE OF PUBLIC WATER SYSTEMS, SANITARY SEWER MAINS, AND STORM SEWERS BUT THE OWNER SHALL PAY FOR DAMAGE OR RELOCATION OF SUCH FACILITIES CAUSED OR NECESSITATED BY ACTS OF THE OWNER, OR THE OWNER'S AGENTS AND/OR CONTRACTORS.
4. THE CITY OF TULSA, OKLAHOMA, OR ITS SUCCESSORS, SHALL AT ALL TIMES HAVE RIGHT OF ACCESS TO ALL UTILITY EASEMENTS, DEPICTED ON THE ACCOMPANYING PLAT, OR OTHERWISE PROVIDED FOR IN THIS DEED OF DEDICATION, FOR THE PURPOSE OF INSTALLING, MAINTAINING, REMOVING OR REPLACING ANY PORTION OF UNDERGROUND WATER, SANITARY SEWER, OR STORM SEWER FACILITIES.
5. THE COVENANTS SET FORTH IN THIS SUBSECTION SHALL BE ENFORCEABLE BY THE CITY OF TULSA, OKLAHOMA, OR ITS SUCCESSORS, AND THE OWNER OF EACH LOT AGREES TO BE BOUND BY THESE COVENANTS.

C. PAVING AND LANDSCAPING WITHIN EASEMENTS

THE OWNER OF ANY LOT DEPICTED ON THE ACCOMPANYING PLAT SHALL BE RESPONSIBLE FOR THE REPAIR OF DAMAGE TO LANDSCAPING AND PAVING OCCASIONED BY INSTALLATION OR NECESSARY MAINTENANCE OF UNDERGROUND WATER, SANITARY SEWER, STORM SEWER, NATURAL GAS, COMMUNICATION, CABLE TELEVISION OR ELECTRIC FACILITIES WITHIN THE EASEMENT AREAS DEPICTED UPON THE ACCOMPANYING PLAT, PROVIDED THE CITY OF TULSA, OKLAHOMA, OR ITS SUCCESSORS, OR THE SUPPLIER OF THE UTILITY SERVICE SHALL USE REASONABLE CARE IN THE PERFORMANCE OF SUCH ACTIVITIES.

D. UTILITY SERVICE

1. OVERHEAD LINES FOR THE SUPPLY OF ELECTRIC, TELEPHONE AND CABLE TELEVISION SERVICES MAY BE LOCATED WITHIN THE EASEMENTS ABUTTING STREET RIGHT-OF-WAY. STREET LIGHT POLES OR STANDARDS MAY BE SERVED BY OVERHEAD LINE OR UNDERGROUND CABLE, AND ELSEWHERE THROUGHOUT THE SUBDIVISION, ALL SUPPLY LINES INCLUDING ELECTRIC, TELEPHONE, CABLE TELEVISION AND GAS LINES SHALL BE LOCATED UNDERGROUND IN EASEMENTS DEDICATED FOR GENERAL UTILITY SERVICES AND IN THE RIGHTS-OF-WAY OF THE PUBLIC STREETS AS DEPICTED ON THE ACCOMPANTING PLAT. SERVICE PEDESTALS AND TRANSFORMERS, AS SOURCES OF SUPPLY AT SECONDARY VOLTAGES, MAY ALSO BE LOCATED IN GENERAL UTILITY EASEMENTS.
2. UNDERGROUND SERVICE CABLES AND GAS SERVICE LINES TO ALL STRUCTURES WITHIN THE SUBDIVISION MAY BE EXTENDED FROM THE NEAREST GAS MAIN, SERVICE PEDESTAL OR TRANSFORMER TO THE POINT OF USAGE DETERMINED BY THE LOCATION AND CONSTRUCTION OF SUCH STRUCTURE UPON THE LOT, PROVIDED UPON INSTALLATION OF A SERVICE CABLE OR GAS SERVICE LINE TO A PARTICULAR STRUCTURE, THE SUPPLIER OF SERVICE SHALL THEREAFTER BE DEEMED TO HAVE A DEFINITIVE, PERMANENT, EFFECTIVE AND NON-EXCLUSIVE EASEMENT ON THE LOT, COVERING A 5 FOOT STRIP EXTENDING 2.5 FEET ON EACH SIDE OF THE SERVICE CABLE OR LINE EXTENDING FROM THE GAS MAIN, SERVICE PEDESTAL OR TRANSFORMER TO THE SERVICE ENTRANCE ON THE STRUCTURE.
3. THE SUPPLIER OF ELECTRIC, TELEPHONE, CABLE TELEVISION AND GAS SERVICE, THROUGH ITS AGENTS AND EMPLOYEES, SHALL AT ALL TIMES HAVE THE RIGHT OF ACCESS TO ALL UTILITY EASEMENTS SHOWN ON THE PLAT OR OTHERWISE PROVIDED FOR IN THIS DEED OF DEDICATION FOR THE PURPOSE OF INSTALLING, MAINTAINING, REMOVING OR REPLACING ANY PORTION OF THE UNDERGROUND ELECTRIC, TELEPHONE, CABLE TELEVISION OR GAS FACILITIES INSTALLED BY THE SUPPLIER OF THE UTILITY SERVICE.
4. THE OWNER OF ANY LOT SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE UNDERGROUND SERVICE FACILITIES LOCATED ON THE OWNER'S LOT AND SHALL PREVENT THE ALTERATION OF GRADE OR ANY CONSTRUCTION ACTIVITY WHICH WOULD INTERFERE WITH THE ELECTRIC, TELEPHONE, CABLE TELEVISION OR GAS FACILITIES. EACH SUPPLIER OF THESE SERVICES SHALL BE RESPONSIBLE FOR ORDINARY MAINTENANCE OF UNDERGROUND FACILITIES, BUT THE OWNER SHALL PAY FOR DAMAGE OR RELOCATION OF SUCH FACILITIES CAUSED OR NECESSITATED BY ACTS OF THE OWNER OR THE OWNER'S AGENTS OR CONTRACTORS.
5. THE COVENANTS SET FORTH IN THIS SUBSECTION SHALL BE ENFORCEABLE BY EACH SUPPLIER OF THE ELECTRIC, TELEPHONE, CABLE TELEVISION OR GAS SERVICE AND THE OWNER OF ANY LOT AGREES TO BE BOUND BY THESE COVENANTS.

E. GAS SERVICE

1. THE SUPPLIER OF GAS SERVICE THROUGH ITS AGENTS AND EMPLOYEES SHALL AT ALL TIMES HAVE THE RIGHT OF ACCESS TO ALL UTILITY EASEMENTS SHOWN ON THE PLAT OR AS OTHERWISE PROVIDED FOR IN THIS DEED OF DEDICATION FOR THE PURPOSE OF INSTALLING, REMOVING, REPAIRING, OR REPLACING ANY PORTION OF THE FACILITIES INSTALLED BY THE SUPPLIER OF GAS SERVICE.
2. THE OWNER OF ANY LOT SHALL BE RESPONSIBLE FOR THE PROTECTION OF THE UNDERGROUND GAS FACILITIES LOCATED WITHIN THE LOT AND SHALL PREVENT THE ALTERATION OF GRADE OR ANY OTHER CONSTRUCTION ACTIVITY WHICH WOULD INTERFERE WITH GAS SERVICE. THE SUPPLIER OF GAS SERVICE SHALL BE RESPONSIBLE FOR THE ORDINARY MAINTENANCE OF ITS FACILITIES, BUT THE OWNER SHALL PAY FOR DAMAGE OR RELOCATION OF FACILITIES CAUSED OR NECESSITATED BY ACTS OF THE OWNER, OR THE OWNER'S AGENTS OR CONTRACTORS.
3. THE COVENANTS SET FORTH IN THIS SUBSECTION SHALL BE ENFORCEABLE BY THE SUPPLIER OF THE GAS SERVICE AND THE OWNER OF THE LOT AGREES TO BE BOUND BY THESE COVENANTS.

F. LIMITS OF NO ACCESS

THE OWNER HEREBY RELINQUISH RIGHTS OF VEHICULAR INGRESS OR EGRESS FROM ANY PORTION OF THE PROPERTY ADJACENT TO EAST 61ST STREET AND SOUTH GARNETT ROAD WITHIN THE BOUNDS DESIGNATED AS "LIMITS OF NO ACCESS" OR "L.N.A." ON THE ACCOMPANYING PLAT, WHICH LIMITS OF NO ACCESS MAY BE AMENDED OR RELEASED BY THE TULSA PLANNING COMMISSION, OR ITS SUCCESSOR, WITH THE APPROVAL OF THE CITY OF TULSA, OKLAHOMA, OR AS OTHERWISE PROVIDED BY THE STATUTES AND LAWS OF THE STATE OF OKLAHOMA PERTAINING THERETO, AND THE LIMITS OF NO ACCESS ESTABLISHED ABOVE SHALL BE ENFORCEABLE BY THE CITY OF TULSA, OKLAHOMA.

G. SURFACE DRAINAGE

EACH LOT WITHIN THE SUBDIVISION SHALL RECEIVE AND DRAIN, IN AN UNOBSTRUCTED MANNER, THE STORM AND SURFACE WATERS FROM LOTS AND DRAINAGE AREAS OF HIGHER ELEVATION. NO LOT OWNER SHALL CONSTRUCT OR PERMIT TO BE CONSTRUCTED ANY FENCING OR OTHER OBSTRUCTIONS WHICH WOULD IMPAIR THE DRAINAGE OF STORM AND SURFACE WATERS OVER AND ACROSS THE OWNER'S LOT. THE FOREGOING COVENANTS SET FORTH IN THIS PARAGRAPH SHALL BE ENFORCEABLE BY ANY AFFECTED LOT OWNER AND BY THE CITY OF TULSA, OKLAHOMA.

H. SIDEWALKS

SIDEWALKS SHALL BE CONSTRUCTED AND MAINTAINED ALONG STREETS DESIGNATED BY AND IN ACCORDANCE WITH THE SUBDIVISION REGULATIONS OF THE CITY OF TULSA, OKLAHOMA, AND ALL SUCH SIDEWALKS SHALL BE CONSTRUCTED BY THE OWNER PRIOR TO THE ISSUANCE OF THE OCCUPANCY PERMIT FOR ANY BUILDING WITHIN THE SUBDIVISION. THE OWNER SHALL CONSTRUCT SIDEWALKS IN CONFORMANCE WITH THE STANDARDS OF THE CITY OF TULSA ENGINEERING DESIGN STANDARDS.

I. CERTIFICATE OF OCCUPANCY RESTRICTIONS

NO CERTIFICATE OF OCCUPANCY FOR A BUILDING WITHIN THE SUBDIVISION SHALL BE ISSUED BY THE CITY OF TULSA, OKLAHOMA UNTIL CONSTRUCTION OF THE REQUIRED INFRASTRUCTURE (STREETS, WATER, SANITARY SEWER, STORM SEWER SYSTEMS AND SIDEWALKS) SERVING THE ENTIRE SUBDIVISION HAS BEEN COMPLETED AND ACCEPTED BY THE CITY OF TULSA, OKLAHOMA. NOTWITHSTANDING THE FOREGOING, THE CITY MAY AUTHORIZE THE ISSUANCE OF A TEMPORARY CERTIFICATE OF OCCUPANCY IF, IN THE CITY'S SOLE DISCRETION, THE CIRCUMSTANCES SUPPORT THE ISSUANCE. FURTHER NOTWITHSTANDING THE FOREGOING, THE CITY MAY AUTHORIZE THE PHASING OF THE CONSTRUCTION OF INFRASTRUCTURE WITHIN THE SUBDIVISION, AND IF PHASING IS AUTHORIZED, A CERTIFICATE OF OCCUPANCY FOR A BUILDING WITHIN AN AUTHORIZED PHASE MAY ISSUE UPON THE COMPLETION AND ACCEPTANCE OF THE INFRASTRUCTURE SERVING THE PARTICULAR PHASE. BUILDING CONSTRUCTION OCCURRING PRIOR TO THE CITY'S ACCEPTANCE OF THE INFRASTRUCTURE SHALL BE AT THE RISK OF THE OWNER OF THE LOT, NOTWITHSTANDING THE ISSUANCE OF A BUILDING PERMIT OR OF A TEMPORARY CERTIFICATE OF OCCUPANCY.

SECTION II. ENFORCEMENT, DURATION, AMENDMENT, AND SEVERABILITY

A. ENFORCEMENT

THE RESTRICTIONS HEREIN SET FORTH ARE COVENANTS TO RUN WITH THE LAND AND SHALL BE BINDING UPON THE OWNER, ITS SUCCESSORS AND ASSIGNS. WITHIN THE PROVISIONS OF SECTION I. UTILITIES, ARE SET FORTH CERTAIN COVENANTS AND THE ENFORCEMENT RIGHTS PERTAINING THERETO AND WHETHER OR NOT THEREIN SO STATED, THE COVENANTS WITHIN SECTION I SHALL INURE TO THE BENEFIT OF, AND BE ENFORCEABLE BY, THE CITY OF TULSA, OKLAHOMA. IF ANY JUDICIAL ACTION IS BROUGHT TO ENFORCE THE COVENANTS ESTABLISHED IN THIS DEED OF DEDICATION THE DEFENSE THAT THE PARTY INITIATING THE EQUITABLE PROCEEDING HAS AN ADEQUATE REMEDY AT LAW IS HEREBY WAIVED.

B. DURATION

THESE RESTRICTIONS SHALL REMAIN IN FULL FORCE AND EFFECT FOR 25 YEARS AND SHALL AUTOMATICALLY BE CONTINUED THEREAFTER FOR SUCCESSIVE PERIODS OF 10 YEARS EACH, UNLESS TERMINATED OR AMENDED AS HEREINAFTER PROVIDED.

C. AMENDMENT

THE COVENANTS CONTAINED WITHIN SECTION I. PUBLIC STREETS AND UTILITIES, MAY BE AMENDED OR TERMINATED AT ANY TIME WHETHER BEFORE OR AFTER THE PERIOD(S) SPECIFIED IN SUBSECTION B., BY A WRITTEN INSTRUMENT SIGNED AND ACKNOWLEDGED BY THE OWNER OF THE LOT TO WHICH THE AMENDMENT OR TERMINATION IS TO BE APPLICABLE AND APPROVED BY THE TULSA PLANNING COMMISSION, OR ITS SUCCESSORS AND THE CITY OF TULSA, OKLAHOMA.

D. SEVERABILITY

INVALIDATION OF ANY RESTRICTION SET FORTH HEREIN, OR ANY PART THEREOF, BY AN ORDER, JUDGMENT, OR DECREE OF ANY COURT, OR OTHERWISE, SHALL NOT INVALIDATE OR AFFECT ANY OF THE OTHER RESTRICTIONS OF ANY PART THEREOF AS SET FORTH HEREIN, WHICH SHALL REMAIN IN FULL FORCE AND EFFECT.

IN WITNESS WHEREOF: "THE OWNER" HAS EXECUTED THIS INSTRUMENT THIS ____ DAY OF ________, 2017.

QUIKTRIP CORPORATION, AN OKLAHOMA CORPORATION

BY: ______________________________

CHAD STANFORD
VICE PRESIDENT OF REAL ESTATE

STATE OF OKLAHOMA)
) SS
COUNTY OF TULSA)

THIS INSTRUMENT WAS ACKNOWLEDGED BEFORE ME ON THIS ____ DAY OF ________, 2017, BY QUIKTRIP CORPORATION, AN OKLAHOMA CORPORATION.

____
NOTARY PUBLIC
COMMISSION NUMBER: ____________
EXPIRES: ______________________

CERTIFICATE OF SURVEY

I, ERIC ROLLSTON, A PROFESSIONAL LAND SURVEYOR IN THE STATE OF OKLAHOMA, HEREBY CERTIFY THAT I HAVE SURVEYED, SUBDIVIDED, AND PLATTED THE ABOVE TRACT DESIGNATED AS "QUIKTRIP NO. 0083", A SUBDIVISION IN THE CITY OF TULSA, TULSA COUNTY, STATE OF OKLAHOMA. THE ABOVE PLAT IS AN ACCURATE REPRESENTATION OF SAID SURVEY.

REGISTERED PROFESSIONAL LAND SURVEYOR ERIC ROLLSTON 1761 OKLAHOMA

____
ERIC ROLLSTON
REGISTERED PROFESSIONAL LAND SURVEYOR
OKLAHOMA NO. 1761

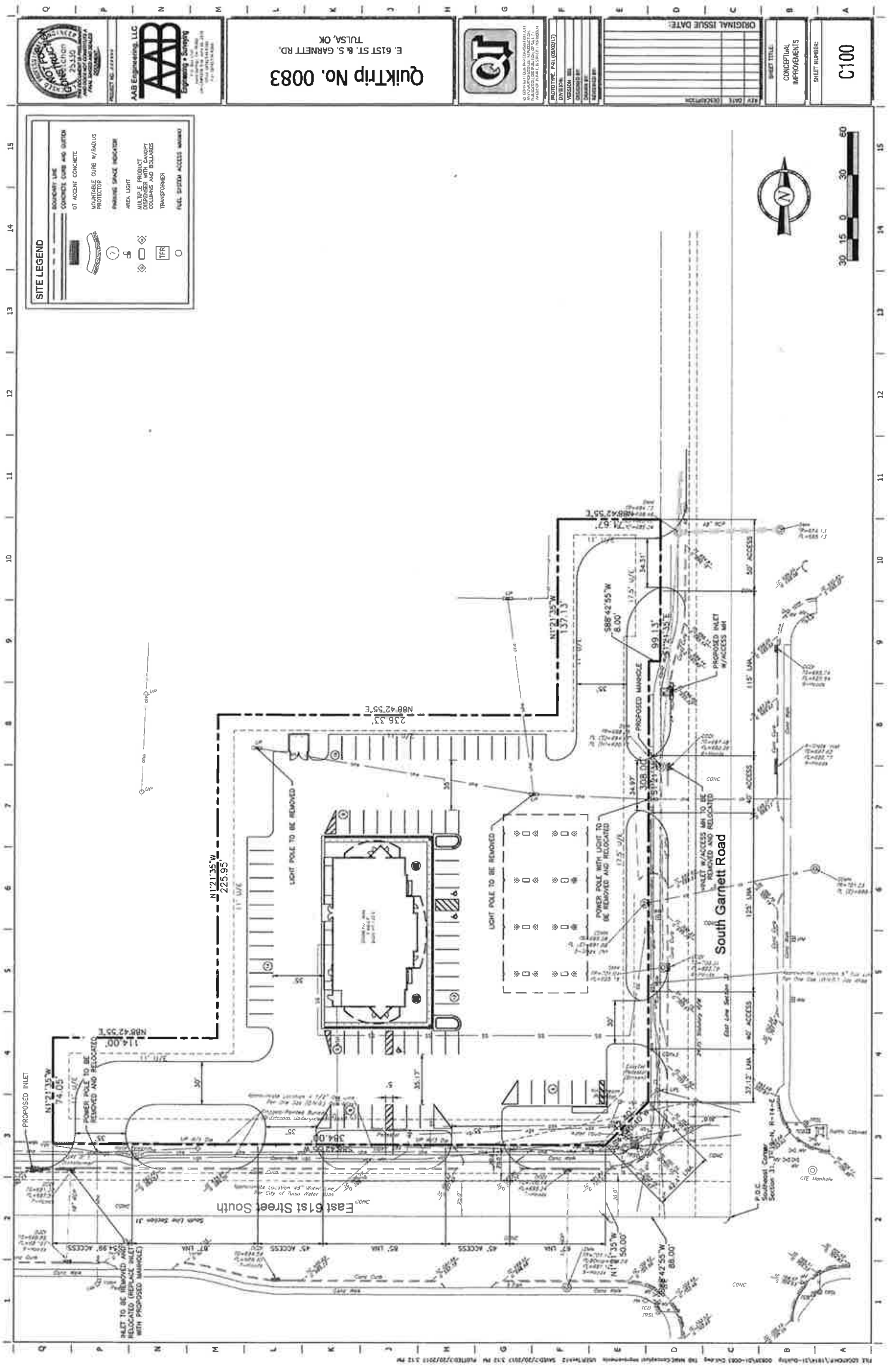
STATE OF OKLAHOMA)
) SS
COUNTY OF TULSA)

BEFORE ME, A NOTARY PUBLIC IN AND FOR SAID STATE AND COUNTY, ON THIS ____ DAY OF ________, 2017, PERSONALLY APPEARED ERIC ROLLSTON, TO ME KNOWN TO BE THE IDENTICAL PERSON WHO SUBSCRIBED HIS NAME TO THE FOREGOING INSTRUMENT, AND ACKNOWLEDGED TO ME THAT HE EXECUTED THE SAME AS HIS FREE AND VOLUNTARY ACT AND DEED, FOR THE USES AND PURPOSE THEREIN SET FORTH.

ALAN BETCHAN NOTARY PUBLIC STATE OF OKLAHOMA

____
NOTARY PUBLIC
COMMISSION NUMBER: 11010522
EXPIRES: 11-20-2019

10.9


QuikTrip No. 0083
E. 61ST ST. & S. GARNETT RD.
TULSA, OK
AAB Engineering, LLC
ORIGINAL ISSUE DATE:
SHEET TITLE:
CONCEPTUAL IMPROVEMENTS
SHEET NUMBER:
C100
SITE LEGEND
BOUNDARY LINE
CONCRETE CURB AND GUTTER
QT ACCENT CONCRETE
MOUNTABLE CURB W/RADIUS PROTECTOR
PARKING SPACE INDICATOR
AREA LIGHT
TRANSFORMER
South Garnett Road
East 61st Street South
N88°42'55"E
236.33'
N1°21'35"W
225.95'
N1°21'35"W
137.13'
N88°42'55"E
114.00'
N1°21'35"W
74.05'
LIGHT POLE TO BE REMOVED
PROPOSED MANHOLE
PROPOSED INLET
POWER POLE WITH LIGHT TO BE REMOVED AND RELOCATED
POWER POLE TO BE REMOVED AND RELOCATED
384.00'
308.00'
99.13'

10.10

TMAPC
Tulsa Metropolitan Area Planning Commission

Case Number: CZ-461

Hearing Date: August 16, 2017

Case Report Prepared by:

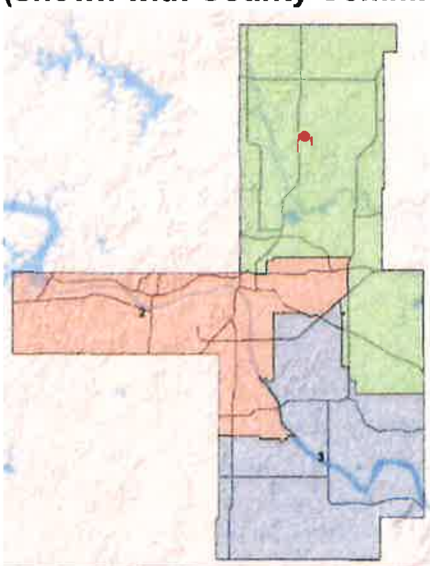
Jay Hoyt

Owner and Applicant Information:

Applicant: GCC&R, LLC

Property Owner: James K. Fayard

Location Map:
(shown with County Commission Districts)



Applicant Proposal:

Present Use: Vacant

Proposed Use: RV Resort

Concept summary: Rezone from AG to CG to permit an RV Resort

Tract Size: 43.8 ± acres

Location: Northwest corner of N. Yale Ave. and E.106th St. N.

Zoning:

Existing Zoning: AG

Proposed Zoning: CG

Comprehensive Plan:

Land Use Map: N/A

Stability and Growth Map: N/A

Staff Recommendation:

Staff recommends approval of CG on the portion of the subject tract south of the northern edge of the powerline easement and denial of CG on the remainder.

Staff Data:

TRS: 1309
CZM: 10 Atlas: 0

County Commission District: 1

Commissioner Name: John Smaligo

11.1

SECTION I: CZ-461

DEVELOPMENT CONCEPT: The applicant has requested to rezone from AG to CG to permit an RV Resort. The conceptual sketch, provided by the applicant, illustrates the proposed layout. The sketch shows approximately 90 spaces for RV parking. The request for CG zoning covers the entire subject lots 43.8 acres. The site plan sketch provided by the applicant shows an initial conceptual layout lying south of the powerline easement which runs from SW to NE. The applicant states that future expansion to the north is intended at some time, however, the amount of CG that would be put in place without a specific development plan would be excessive. Staff recommends the CG zoning be limited to the portion of the lot south of the northern edge of the powerline easement.

EXHIBITS:

- INCOG Case map
- INCOG Aerial
- Applicant Exhibits:
  - Mortgage Inspection Plat
  - Sketch of Resort Layout

DETAILED STAFF RECOMMENDATION:

CG zoning be limited to the portion of the subject tract south of the north edge of the powerline easement;

CG zoning on the southern portion is non-injurious to the existing proximate properties and;

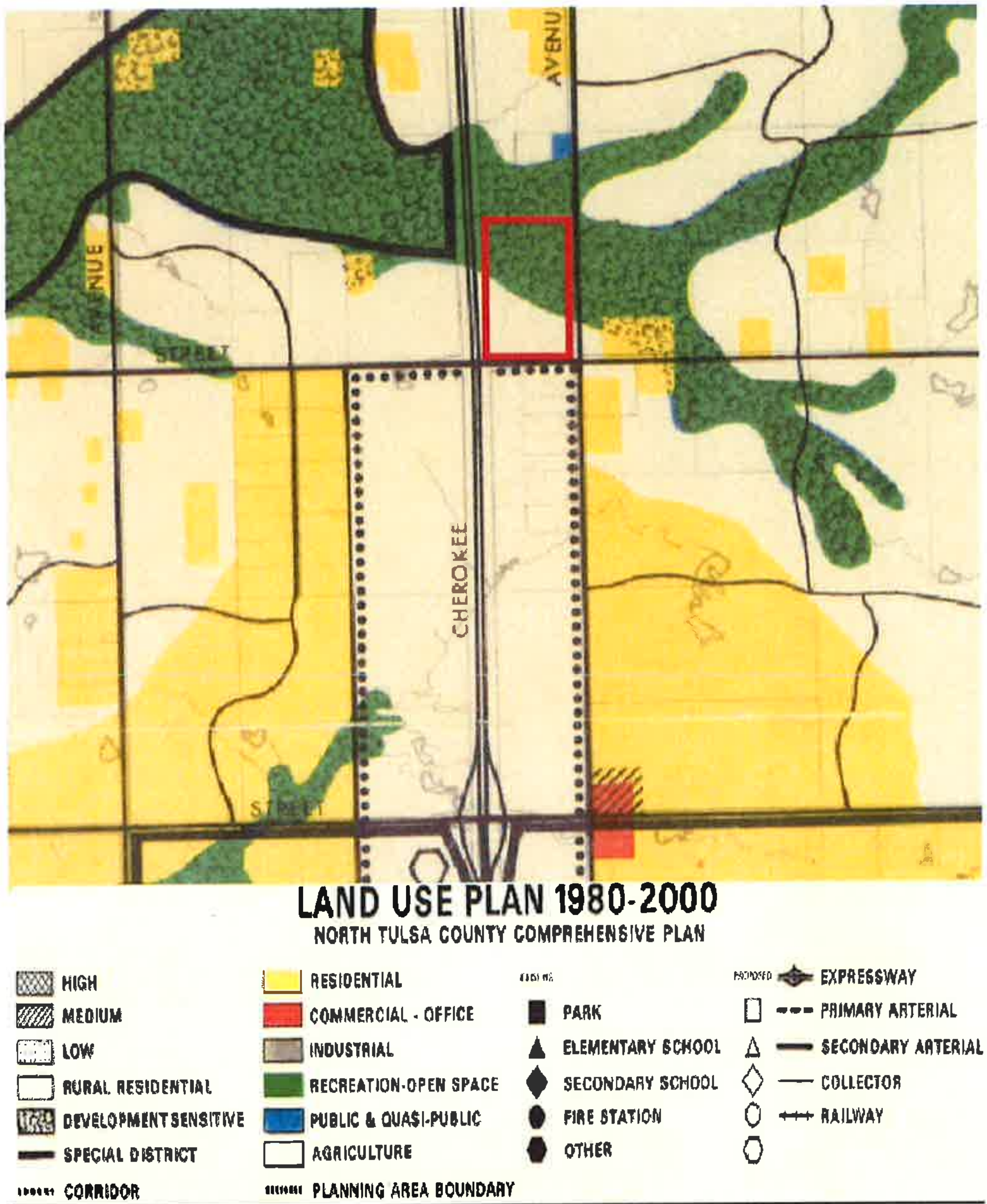
CG zoning on the southern portion is consistent with the anticipated future development pattern of the surrounding property therefore;

Staff recommends Approval of CZ-461 to rezone property from AG to CG on the portion of the subject tract south of the northern edge of the powerline easement and denial of CG on the remainder.

SECTION II: Supporting Documentation

RELATIONSHIP TO THE COMPREHENSIVE PLAN:

Staff Summary: No current comprehensive plan contains a designation for CZ-461 however it is designated as Agriculture and Recreation-Open Space in the North Tulsa County Comprehensive Plan 1980-2000.



<u>Land Use Vision:</u>

Land Use Plan map designation: N/A

Areas of Stability and Growth designation: N/A

<u>Transportation Vision:</u>

Major Street and Highway Plan: North Yale Avenue and East 106th Street North are both designated as Secondary Arterials.

Trail System Master Plan Considerations: None

Small Area Plan: None

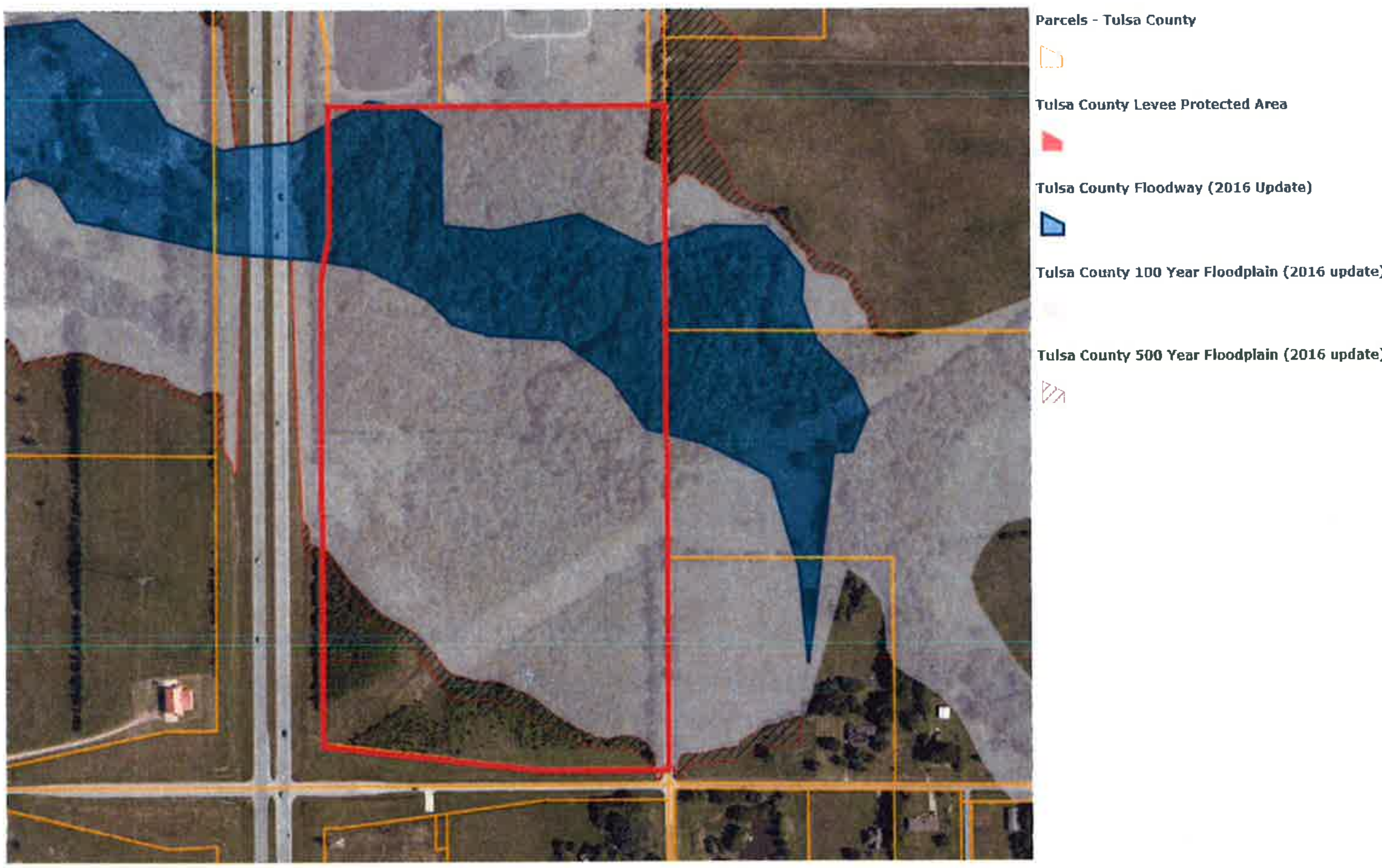
Special District Considerations: None

Historic Preservation Overlay: None

DESCRIPTION OF EXISTING CONDITIONS:

Staff Summary: The site is currently vacant forested land. GRDA power lines cross the southern half of the subject lot.

Environmental Considerations: The site currently contains 100 year and 500 year Floodplain as well as Floodway. The applicant will need to work with Tulsa County to mitigate any floodplain issues that may be required before development of the proposed facility.



Streets:

Exist. Access	MSHP Design	MSHP R/W	Exist. # Lanes
North Yale Avenue	Secondary Arterial	100 feet	2
East 106th Street North	Secondary Arterial	100 feet	2

Utilities:

The subject tract has municipal water available. The applicant is currently working on solutions for sewer, but stated that a septic system would be used if sewer service was not feasible.

Surrounding Properties:

Location	Existing Zoning	Existing Land Use Designation	Area of Stability or Growth	Existing Use
North	AG	N/A	N/A	Cemetery
South	AG/CS	N/A	N/A	Single-Family/Agriculture
East	AG	N/A	N/A	Single-Family/Agriculture
West	AG	N/A	N/A	Single-Family/Agriculture / Hwy 75

SECTION III: Relevant Zoning History

ZONING ORDINANCE: Ordinance number 98254 dated September 15, 1980, established zoning for the subject property.

Subject Property:

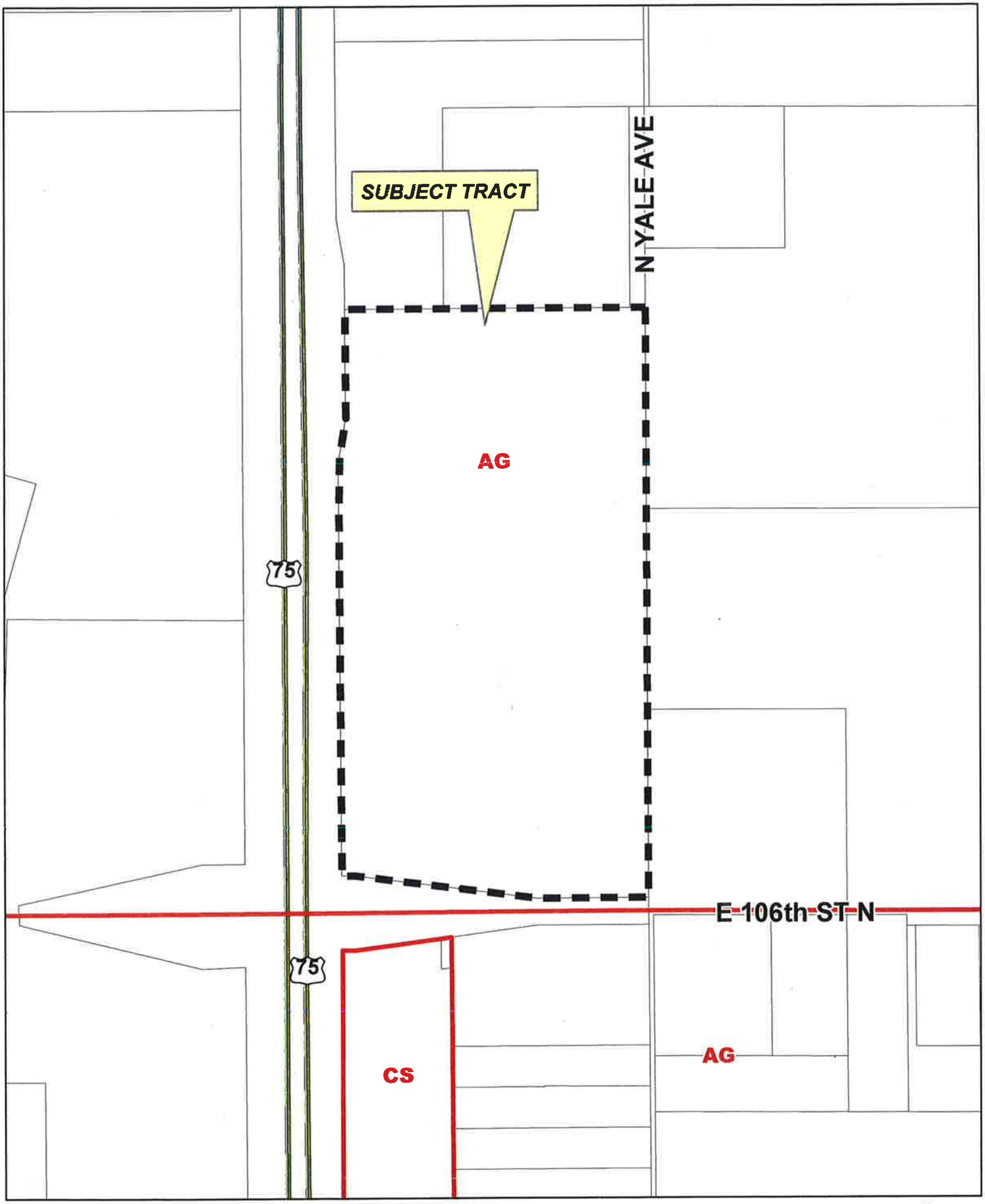
No relevant history.

Surrounding Property:

CZ-173 July 1989: All concurred in denial of a request for rezoning a 12± acre tract of land from AG to CG and approval of CS zoning, for commercial use, on property located on the southeast corner of E. 106th St. N. and Highway 75, and south of subject property across E. 106th St.

8/16/2017 1:30 PM

11.5



CZ-461

21-13 09

11.6

Feet
0 200 400

Subject Tract

CZ-461

21-13 09

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

11.7

N

MORTGAGE INSPECTION PLAT

PROJECT NO: 173888-757
MORTGAGOR: James K. Fayard
CLIENT: Titan Title & Closing, LLC
File No.: 17-0504

LEGAL DESCRIPTION AS PROVIDED:

A TRACT OF LAND THAT IS PART OF THE SOUTHEAST QUARTER (SE/4) OF SECTION NINE (9), TOWNSHIP TWENTY-ONE (21) NORTH, RANGE THIRTEEN (13) EAST OF THE INDIAN BASE AND MERIDIAN, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE U.S. GOVERNMENT SURVEY THEREOF, MORE PARTICULARLY DESCRIBED AS FOLLOWS, TO-WIT: BEGINNING AT A POINT ON THE EAST LINE OF SAID SE/4, 45.00 FEET NORTH OF THE SOUTHEAST CORNER THEREOF, SAID POINT BEING ON THE PRESENT RIGHT OF WAY OF U.S. HIGHWAY 75 (FILED IN BOOK 3871 AT PAGE 1285); THENCE SOUTH 88°31'00" WEST ALONG SAID RIGHT OF WAY FOR 362.50 FEET; THENCE NORTH 83°54'00" WEST ALONG SAID RIGHT OF WAY FOR 605.30 FEET; THENCE SOUTH 88°31'00" WEST ALONG SAID RIGHT OF WAY FOR 40.20 FEET; THENCE NORTH 1°26'00" WEST ALONG SAID RIGHT OF WAY FOR 1352.30 FEET; THENCE NORTH 8°02'00" EAST ALONG SAID RIGHT OF WAY FOR 152.10 FEET; THENCE NORTH 1°26'00" WEST ALONG SAID RIGHT OF WAY FOR 352.39 FEET TO A POINT ON THE NORTH LINE OF THE S/2 OF THE NE/4 OF SAID SE/4; THENCE NORTH 88°35'20" EAST ALONG SAID NORTH LINE FOR 984.05 FEET TO THE NORTHEAST CORNER OF SAID S/2 OF THE NE/4 OF THE SE/4; THENCE SOUTH 1°14'49" EAST ALONG SAID EAST LINE OF SE/4 FOR 1933.36 FEET TO THE POINT OF BEGINNING.

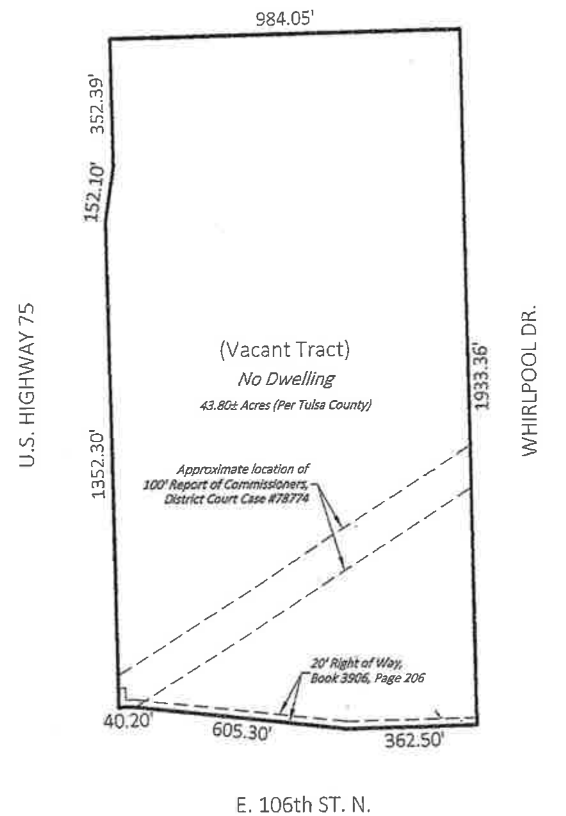
This property is located in flood zones "AE", "X-SHADED" & "X-UNSHADED" as per FIRM Community Panel No.'s 400462 0110L & 0120L, as last revised October 16, 2012.

Right of Way,
Book 492, Page 347, does not affect this property.

Property is included within the lands described in Right of Way, Book 592, Page 197.

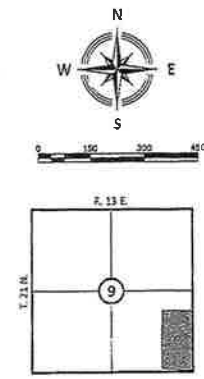
Property is included within the lands described in Right of Way, Book 3087, Page 450, with Assignment, Book 3740, Page 545, with Partial Release, Book 5859, Page 1691.

Journal Entry of Judgement, Book 3919, Page 605, does not affect this property.



LEGEND

B/E	BURIED ELECTRIC SERVICE CABLE ESMT (APPROX LOCATION)
B/L	BUILDING LINE
D/E	DRAINAGE EASEMENT
U/E	UTILITY EASEMENT
EM	ELECTRIC METER



LOCATION MAP

SURVEYOR'S STATEMENT

Harden & Associates, Surveying and Mapping, PC, an Oklahoma corporation, and the undersigned Registered Professional Land Surveyor, under Certificate of Authorization No. CA4655 renewal date: June 30, 2015, do hereby state that in our professional opinion the above Inspection Plat shows the dwelling as located on the premises described, that it is entirely within the described tract boundaries, and there are no encroachments thereon by visible permanent improvements, except as indicated; that the above Inspection Plat shows all Recorded Plat easements and other such easements which have been disclosed by a current Title Opinion or by Commitment for Title Insurance and copies thereof provided to us; that this Inspection Plat was prepared for identification purposes only for the mortgagee and is not a Land or Boundary Line Survey; that no property corners were set, and is not to be used or relied upon for the establishment of fence, building or other improvements; that underground or above ground utilities were not field located and therefore are not shown on this Inspection Plat unless specifically requested by the client; that this Inspection Plat is prepared solely for the client listed hereon as of this date and may not be used for any subsequent loan closing, refinance, or other transaction and that no responsibility or liability is assumed herein or hereby to the present or future land owner or occupant.

WITNESS MY HAND AND SEAL

REGISTERED PROFESSIONAL LAND SURVEYOR
STATE OF OKLAHOMA

REGISTERED PROFESSIONAL LAND SURVEYOR JAMES EDWARD HARDEN L.S. 1233 STATE OF OKLAHOMA

48 HOURS BEFORE YOU DIG...CALL OKIE
1-800-522-6543
Oklahoma One-Call System, Inc.

HARDEN & ASSOCIATES
SURVEYING AND MAPPING, PC
2001 South 114th East Avenue
Tulsa, Oklahoma 74128
(918) 234-4859 Office
(918) 437-5551 Fax

REVISIONS	BY	DATE	Certificate of Authorization No. 4655	Expires June 30, 2017
Added Title Work	ACO	05/09/17	MORTGAGE INSPECTION PLAT	
			Drawn By: ACO / Checked By: JEH	Proj. No.: 173888
			Date: 04/27/2017 / Scale: 1"=300'	Sheet 1 of 1

11.8

N
EXIT ONLY
FENCED DOG RUN
PLAY AREA
Covered tables
OFFICE
Check-in
ENTER ONLY
362.5'
621.5'
U/E 10'
U/E 20'
DO NOT BLOCK INTERSECTION

11.9

TMAPC
Tulsa Metropolitan Area Planning Commission

Case Number: **Z-7403**
with an optional development plan

Hearing Date: August 16, 2017

Case Report Prepared by:

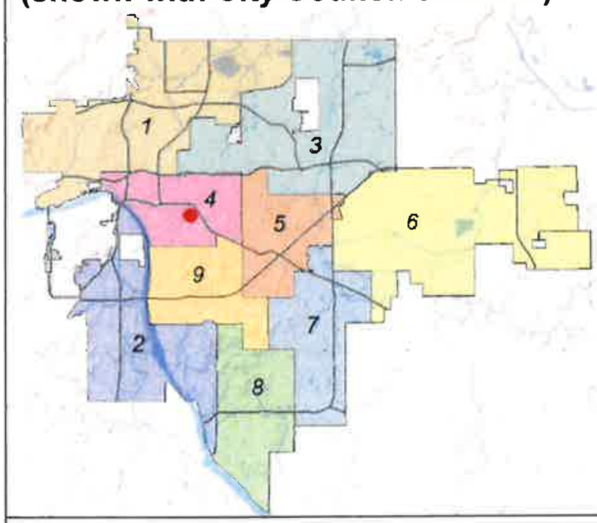
Dwayne Wilkerson

Owner and Applicant Information:

Applicant: Alisha Bennett

Property Owner: STANTON, MISTY S

Location Map:
(shown with City Council Districts)



Applicant Proposal:

Present Use: Residential

Proposed Use: Office

Concept summary:

Tract Size: 0.25 ± acres

Location: Southeast corner of S. Lewis Ave. and E. 17th Pl. S.

Zoning:

Existing Zoning: RS-3

Proposed Zoning: OL with an optional development plan

Comprehensive Plan:

Land Use Map: Mixed-Use Corridor

Stability and Growth Map: Area of Growth

Staff Recommendation:

Staff recommends approval of OL zoning but only with an optional development plan standards as outlined in Section II of the staff report.

Staff Data:

TRS: 9308
CZM: 37 Atlas: 31

City Council District: 4

Councilor Name: Blake Ewing

County Commission District: 2

Commissioner Name: Karen Keith

12.1

REVISED 8/10/2017

SECTION I: Z-7403

DEVELOPMENT CONCEPT:

EXHIBITS:

INCOG Case map
INCOG Aerial (small scale)
INCOG Aerial (large scale)
Tulsa Comprehensive Plan Land Use Map
Tulsa Comprehensive Plan Areas of Stability and Growth Map
Applicant Exhibits:
 Mortgage Inspection Report

SECTION II: OPTIONAL DEVELOPMENT PLAN STANDARDS

Z-7403 with the optional development plan standards will confirm to the provisions of the Tulsa Zoning Code for development in an OL zoning district and its supplemental regulations except as further refined below.

A. Permitted Uses:
   a. Residential Use Category limited to the subcategories and specific uses defined below and uses that are customarily accessory to the permitted uses.
      i. Single household
   b. Office
      i. Business or professional office
      ii. Medical, dental or health practitioner

B. Hours of Operation: Offices may not be open for business except as follows:
   a. Monday through Friday 7:30am to 6:00pm
   b. Saturday 7:30am through 1:00pm

C. Building and lot Preservation:
   a. Demolition and/or reconstruction of the existing buildings is prohibited except as permitted through the amendment process defined in the Tulsa Zoning Code for Development Plans. Demolition and or Reconstruction of the existing building for any reason will require approval through the Minor Amendment process defined in Section 70.040.I of the Tulsa Zoning Code.
   b. Sidewalk, or vehicular driveway / parking rehabilitation, bicycle parking areas and landscaping, would not be considered demolition or construction for the purposes of this Development Plan. Cosmetic improvements are allowed including but not limited to general maintenance items such as painting, window and door repair or replacement and roofing replacement.
   c. Prior to occupancy for any office use the driveway access to South Lewis shall be removed. The sidewalk and curb shall be repaired as required.
   d. The detached garage must be used for car, motorcycle or bicycle parking, conversion for business or residential occupancy is prohibited.

D. Signage:

a. One monument style ground sign with a maximum display surface area of 16 square feet and a maximum height of 5 feet may be placed in the street yard abutting South Lewis Avenue.
b. Two wall signs will be allowed on the existing structure. One sign is allowed facing west and one wall sign facing north. Each sign is limited to a maximum display surface area of 6 square feet.
c. No banners or temporary signage related to the property's business shall be permitted.
d. Internally illuminated signs and digital signage of any kind shall be prohibited.

E. Lighting:
   a. Pole lights are prohibited.
   b. All lighting shall be pointed down. The light emitting element shall be shielded from view from any abutting property or street right of way.

F. Trash Disposal
   a. Dumpsters will not be allowed. Residential style trash bins as provided by the City of Tulsa shall used and, except on the day of trash pickup, the bins shall be stored so they are not visible from a public street.

DETAILED STAFF RECOMMENDATION:

Z-7403 requesting OL zoning with the Optional Development Plan standards identified in Section II is consistent with the Lewis Study approved in 2007 and,

Z-7403 is consistent with the Mixed Use Corridor land use designation in the Tulsa Comprehensive Plan and,

OL zoning with the optional development plan is found to be non-injurious to the abutting property and,

The optional development plan standards are consistent with the provisions for Development Plans in the Tulsa Zoning Code therefore,

Staff recommends Approval of Z-7403 with the optional development plan as outlined in Section II above.

SECTION III: Supporting Documentation

RELATIONSHIP TO THE COMPREHENSIVE PLAN:

Staff Summary: The subject lot is located within the Mixed-Use Corridor designation as well as an Area of Growth.

Land Use Vision:

Land Use Plan map designation: Mixed-Use Corridor

Mixed-Use Corridors are Tulsa's modern thoroughfares that pair high capacity transportation facilities with housing, commercial, and employment uses. Off the main travel route, land uses include multifamily housing, small lot, and townhouse developments, which step down intensities to integrate with single family neighborhoods. Mixed-Use Corridors usually have four or more travel lanes, and sometimes additional lanes dedicated for transit and bicycle use. The pedestrian realm includes sidewalks separated from traffic by street trees, medians, and parallel parking strips. Pedestrian crossings are designed so they are highly visible and make use of the shortest path across a street. Buildings along Mixed-Use Corridors include windows and storefronts along the sidewalk, with automobile parking generally located on the side or behind.

Areas of Stability and Growth designation: Area of Growth

The purpose of Areas of Growth is to direct the allocation of resources and channel growth to where it will be beneficial and can best improve access to jobs, housing, and services with fewer and shorter auto trips. Areas of Growth are parts of the city where general agreement exists that development or redevelopment is beneficial. As steps are taken to plan for, and, in some cases, develop or redevelop these areas, ensuring that existing residents will not be displaced is a high priority. A major goal is to increase economic activity in the area to benefit existing residents and businesses, and where necessary, provide the stimulus to redevelop.

Areas of Growth are found throughout Tulsa. These areas have many different characteristics but some of the more common traits are close proximity to or abutting an arterial street, major employment and industrial areas, or areas of the city with an abundance of vacant land. Also, several of the Areas of Growth are in or near downtown. Areas of Growth provide Tulsa with the opportunity to focus growth in a way that benefits the City as a whole. Development in these areas will provide housing choice and excellent access to efficient forms of transportation including walking, biking, transit, and the automobile.

<u>Transportation Vision:</u>

Major Street and Highway Plan: South Lewis Avenue is designated as an Urban Arterial/Multi-Modal Corridor. East 17^{th} Place South is designated as a Residential Collector.

Trail System Master Plan Considerations: None

<u>Small Area Plan</u>: The subject lot was included in the Lewis Study, approved in 2007. The study states that light office uses shall be permitted on lots fronting Lewis, such as the subject lot. The study also states that existing residential structures shall be utilized.

<u>Special District Considerations</u>: Lewis Study
The Lewis Study recommended OL zoning only when accompanied by a PUD or when appropriate special zoning district – the preferred method – is adopted. The Lewis Study supported the conversion of existing homes to office uses as long as the existing structures remain relatively untouched to retain the residential character of the neighborhood.

<u>Historic Preservation Overlay</u>: None

<u>DESCRIPTION OF EXISTING CONDITIONS:</u>

<u>Staff Summary:</u> The site currently contains a single-family residence with a detached garage.

<u>See street view image below from northwest corner of lot looking southeast:</u>

Environmental Considerations: None

Streets:

Exist. Access	MSHP Design	MSHP R/W	Exist. # Lanes
South Lewis Avenue	Urban Arterial	70 feet	4
East 17th Place South	Residential Collector	60 feet	2

Utilities:

The subject tract has municipal water and sewer available.

Surrounding Properties:

Location	Existing Zoning	Existing Land Use Designation	Area of Stability or Growth	Existing Use
North	RS-3	Mixed-Use Corridor	Growth	Single-Family
South	RS-3	Mixed-Use Corridor	Growth	Single-Family
East	RS-3	Existing Neighborhood	Stability	Single-Family
West	RS-3	Existing Neighborhood	Stability	Single-Family

SECTION IV: Relevant Zoning History

ZONING ORDINANCE: Ordinance number 11815 dated June 26, 1970, established zoning for the subject property.

Subject Property:

Z-6934 February 2004: An application to rezone a lot located on the southeast corner of East 17th Place and South Lewis from RS-3 to OL was withdrawn by the applicant prior to TMAPC hearing.

Surrounding Property:

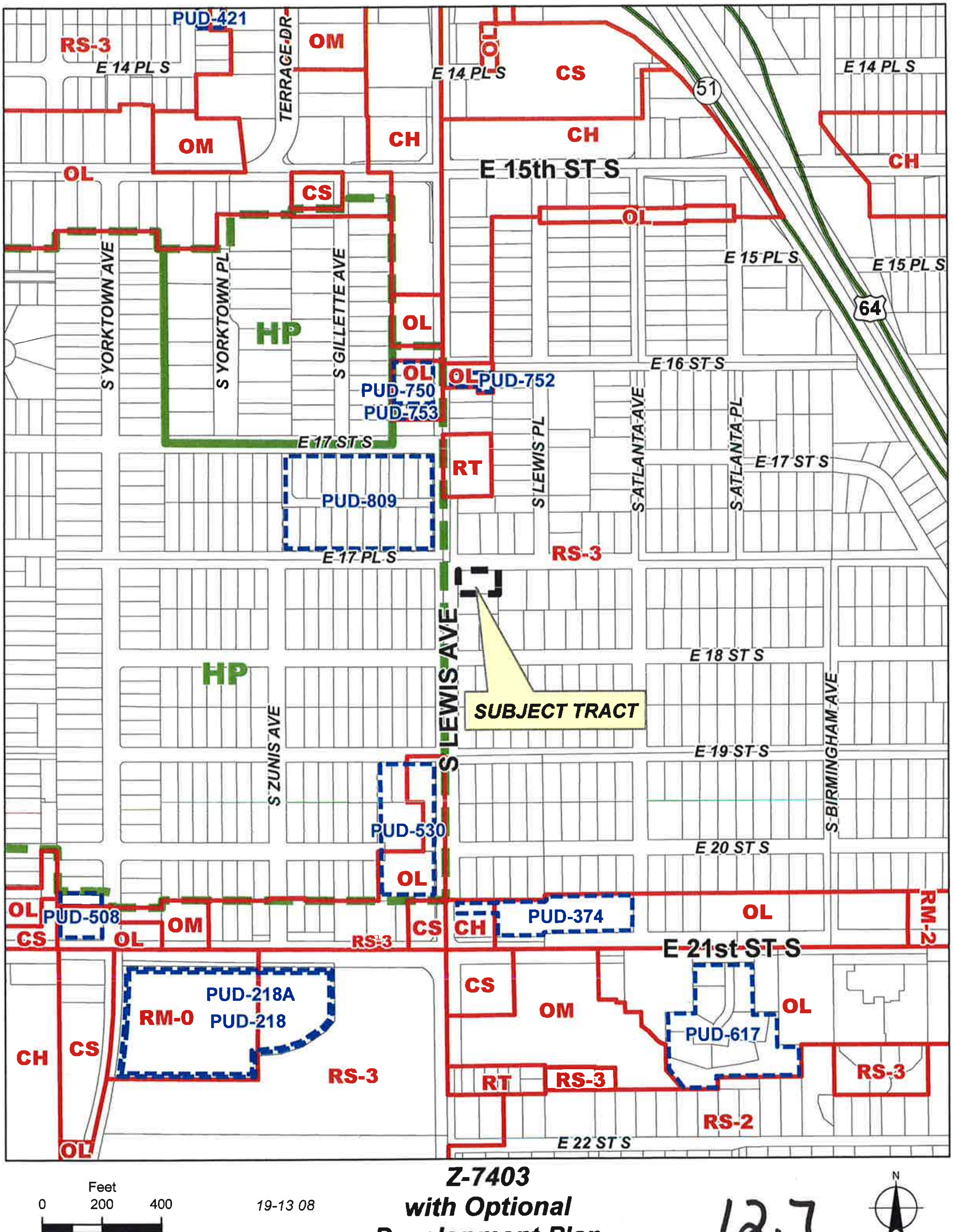
Z-7095/ PUD-752 June 2008: All concurred in approval of a request for rezoning on a .2± acre tract of land from RS-3 to OL, and a proposed Planned Unit Development for office use, were the existing structures will be utilized for office and residential uses, on property located southeast corner E.16th St. and S. Lewis Ave. and north of subject property.

Z-6985 January 2008: All concurred in denial of a request for rezoning a .19± acre tract of land from RS-3 to OL on property located on the southeast corner of East 16th Street and South Lewis Avenue. Case is to be resubmitted with accompanying PUD, per TMAPC recommendation.

Z-5509 May 1981: All concurred in approval of a request for rezoning a tract of land from RS-3 to RT, for a townhouse development, on property located north of the northeast corner of S. Lewis Ave. and E. 17th Pl.

Z-4357 April 1973: All concurred in denial of a request for rezoning a 1.5± acre tract of land from RS-3 to OL for office use, on property located east of S. Lewis Ave., between E. 17th Pl. and E. 16th St.

8/16/2017 1:30 PM



19-13 08

Z-7403
with Optional
Development Plan

12.7

Feet
0 200 400

Subject Tract

19-13 08

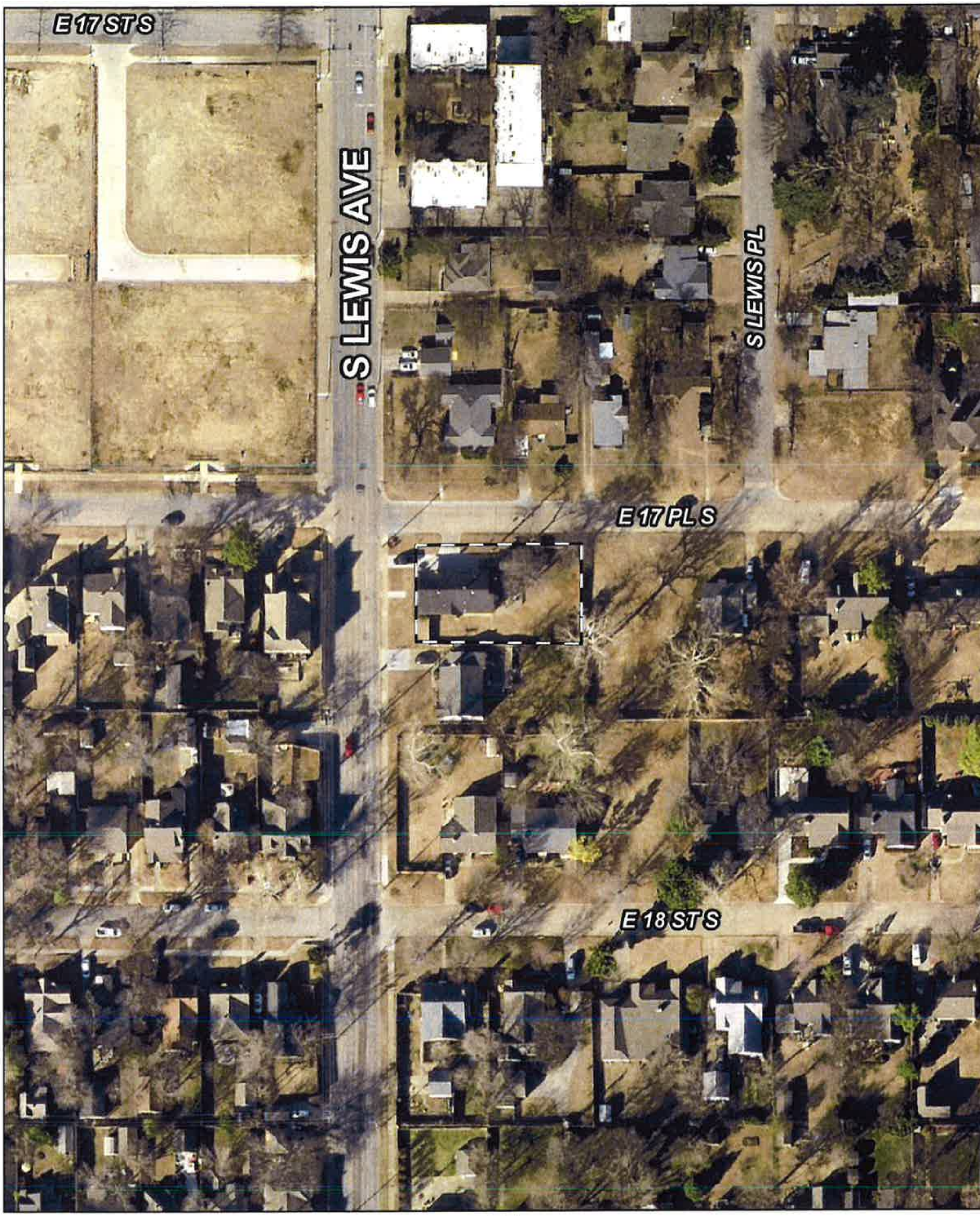
Z-7403 with Optional Development Plan

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

12.8



Feet
0 50 100

Subject Tract

19-13 08

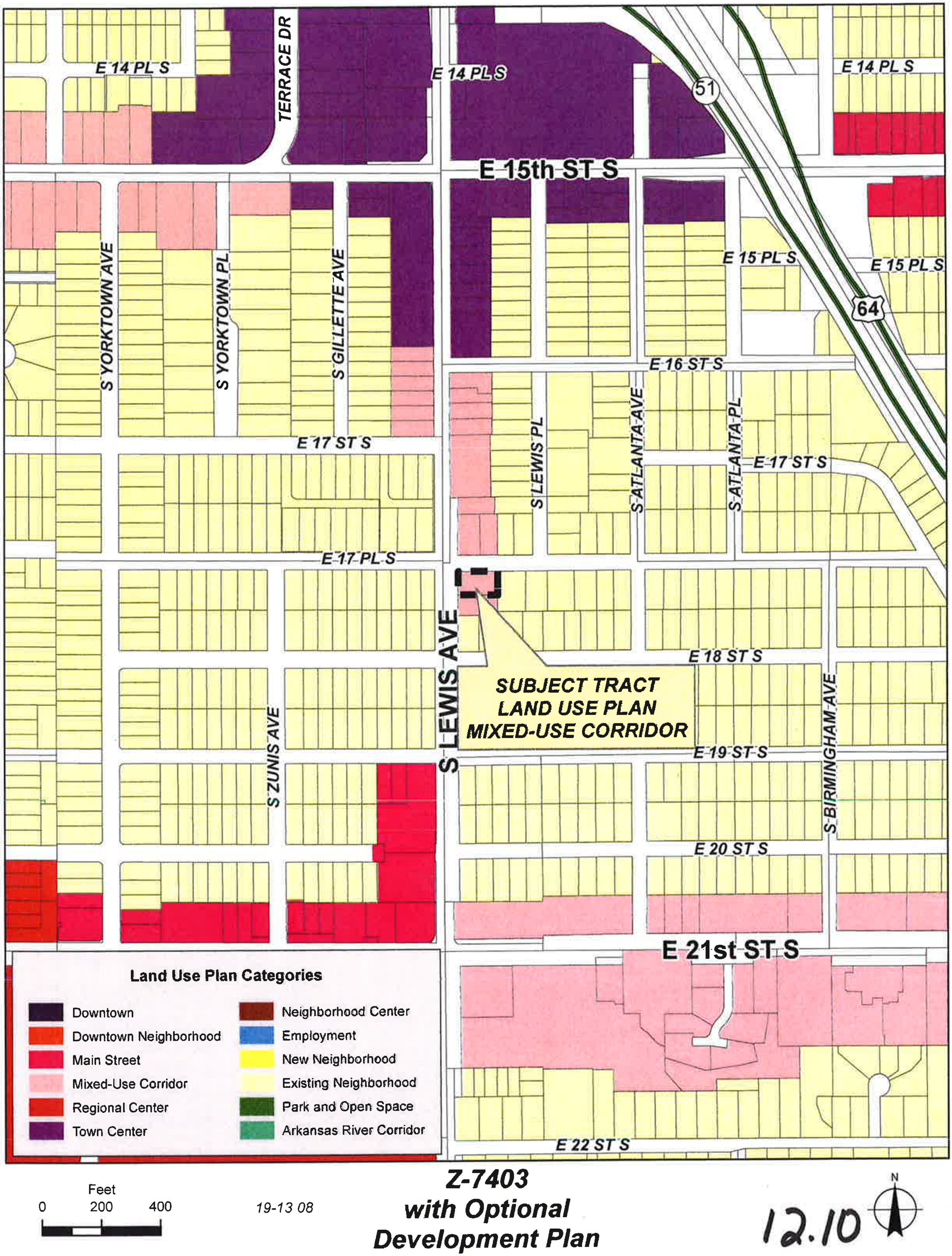
Z-7403 with Optional Development Plan

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

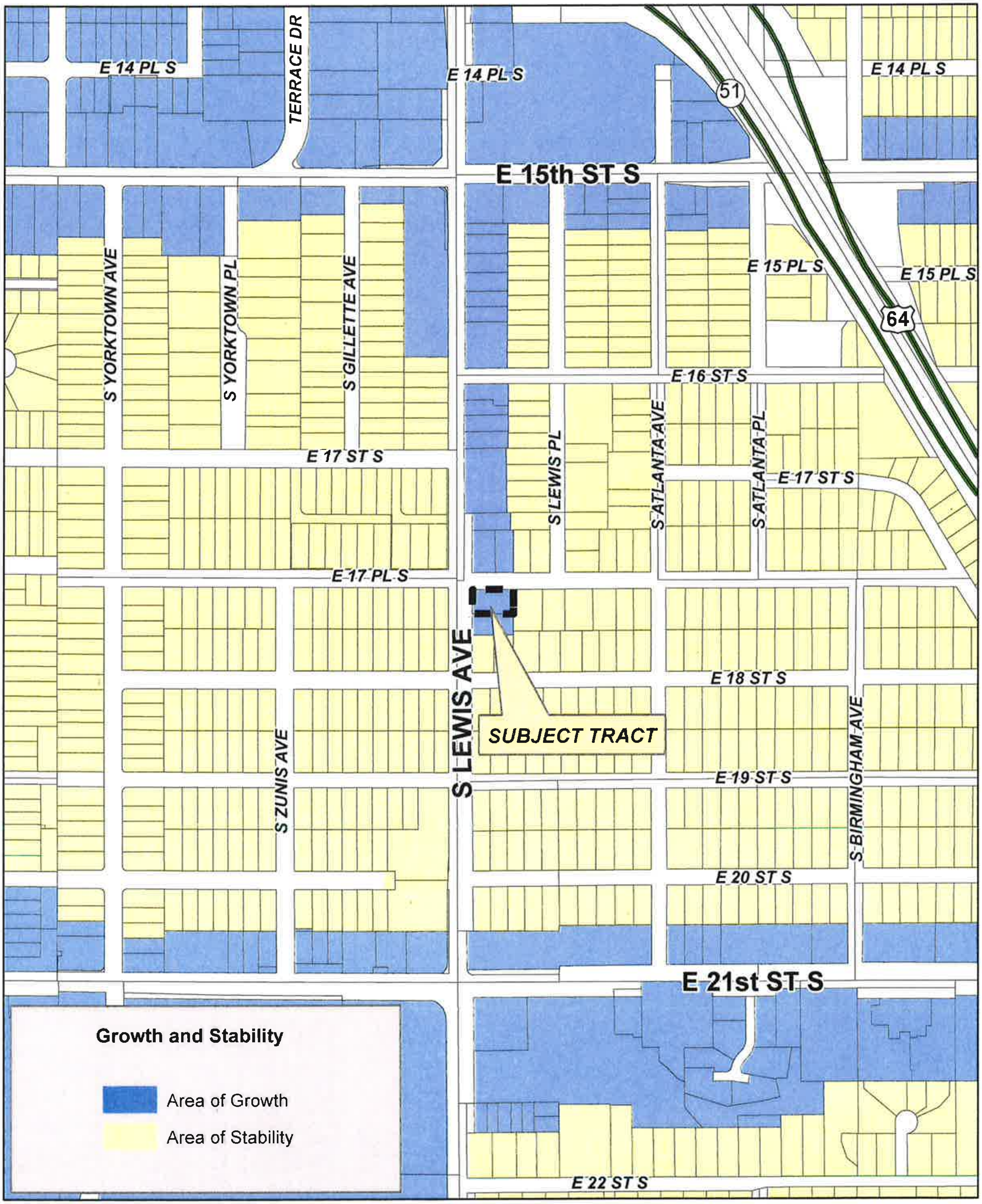
N

12.9



Z-7403
with Optional
Development Plan

12.10



Feet
0 200 400

19-13 08

Z-7403
with Optional
Development Plan

12.11

N

WHITE SURVEYING COMPANY

9936 EAST 55TH PLACE TULSA, OKLAHOMA 74146 • (918) 663-6924

MORTGAGE INSPECTION REPORT

1"=30'

INVOICE NO.: GA 15-76282
MORTGAGOR: STANTON, MISTY S.

CLIENT: GUARANTY ABSTRACT
BOKF, NA DBA BANK OF OKLAHOMA
246285

LEGEND

- —×— FENCE
- U/E UTILITY EASEMENT
- D/E DRAINAGE EASEMENT
- M/P METERING POINT
- B/E BURIED ELECTRIC & TELEPHONE CABLE EASEMENT (APPROXIMATE LOCATION)
- B.L. BUILDING LINE
- O.B.L. OUTBUILDING LINE

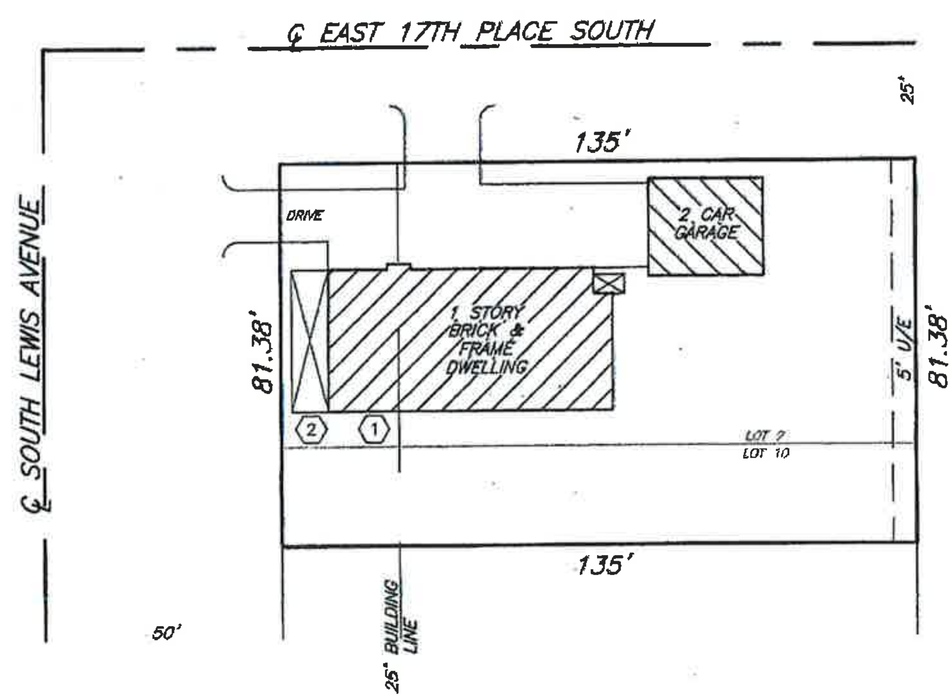
BEFORE YOU DIG, CALL OKIE 1-800-522-6543

THIS PROPERTY LIES IN ZONE "X-UNSHADED" FLOOD HAZARD AREA PER F.I.R.M. NUMBER 40143C0240L, AS LAST REVISED 10/16/12.

LEGEND:

(1) – DWELLING IS 14.9' OVER BUILDING LINE.

(2) – PORCH IS OVER BUILDING LINE.



PLAT NO. 1091

LEGAL DESCRIPTION AS PROVIDED:

LOT NINE (9) AND THE NORTH TWENTY-ONE (21) FEET OF LOT TEN (10), BLOCK FOUR (4), LEWISTON GARDENS, TULSA COUNTY, STATE OF OKLAHOMA, ACCORDING TO THE RECORDED PLAT THEREOF, AND KNOWN AS 1733 SOUTH LEWIS AVENUE.

SURVEYOR'S STATEMENT

WHITE SURVEYING COMPANY, AN OKLAHOMA CORPORATION, AND THE UNDERSIGNED LICENSED PROFESSIONAL LAND SURVEYOR, UNDER CERTIFICATE OF AUTHORIZATION #CA1098 (RENEWAL DATE: JUNE 30, 2015), DO HEREBY STATE THAT IN OUR PROFESSIONAL OPINION THE ABOVE INSPECTION PLAT SHOWS THE DWELLING AS LOCATED ON THE PREMISES DESCRIBED, THAT IT IS ENTIRELY WITHIN THE DESCRIBED TRACT BOUNDARIES, AND THERE ARE NO ENCROACHMENTS THEREON BY VISIBLE PERMANENT IMPROVEMENTS, EXCEPT AS INDICATED; THAT THE ABOVE INSPECTION PLAT SHOWS ALL RECORDED PLAT EASEMENTS AND OTHER SUCH EASEMENTS WHICH HAVE BEEN DISCLOSED BY A CURRENT TITLE OPINION OR BY COMMITMENT FOR TITLE INSURANCE AND COPIES THEREOF PROVIDED TO US; THAT THIS INSPECTION PLAT WAS PREPARED FOR IDENTIFICATION PURPOSES ONLY FOR THE MORTGAGEE AND IS NOT A LAND OR BOUNDARY LINE SURVEY; THAT NO PROPERTY CORNERS WERE SET, AND IS NOT TO BE USED OR RELIED UPON FOR THE ESTABLISHMENT OF FENCE, BUILDING OR OTHER IMPROVEMENTS; THAT UNDERGROUND OR ABOVE GROUND UTILITIES WERE NOT FIELD LOCATED AND THEREFORE ARE NOT SHOWN ON THIS INSPECTION PLAT UNLESS SPECIFICALLY REQUESTED BY THE CLIENT; THAT THIS INSPECTION PLAT IS PREPARED SOLELY FOR THE CLIENT LISTED HEREON AS OF THIS DATE AND MAY NOT BE USED FOR ANY SUBSEQUENT LOAN CLOSING, REFINANCE, OR OTHER TRANSACTION; AND THAT NO RESPONSIBILITY OR LIABILITY IS ASSUMED HEREIN OR HEREBY TO THE PRESENT OR FUTURE LAND OWNER OR OCCUPANT.

WITNESS MY HAND AND SEAL THIS DATE: ____________

WARNING! If the seal on this document is not RED, it is an unauthorized copy which may have been altered or modified, and cannot be used for any purpose without the written permission of White Surveying Company. ____________

SAS – S:\01091\B004\L009, 010\76282MI14.dwg 03/04/15

12.12

Sawyer, Kim

From: Wilkerson, Dwayne
Sent: Thursday, August 10, 2017 12:36 PM
To: Alan Betchan
Cc: Sawyer, Kim; Miller, Susan
Subject: RE: Z-7404 Continuance

Thanks Alan,

Kim,

Please forward Mr. Betchans request to the Planning Commission. Staff supports the request to move the public hearing to the September 6th Meeting.

Respectfully,

INCOG
C. Dwayne Wilkerson
Assistant Director Land Development Services

2 West Second Street
Suite 800
Tulsa, OK 74103

918-579-9475
dwilkerson@incog.org

Celebrating 50 Years of Service to the Tulsa Region

From: Alan Betchan [mailto:alan@aabeng.com]
Sent: Thursday, August 10, 2017 12:03 PM
To: Wilkerson, Dwayne
Subject: Z-7404 Continuance

Dwayne,
We would like to request a continuance of our re-zoning application Z-7404 located on the southeast corner of 37th Place & Riverside until the September 6th meeting. We've received a few questions from neighbors and are in the process of setting up a community meeting to discuss their concerns.

Please let me know if you need any additional information.
Thanks,

Alan Betchan, P.E., CFM | President
AAB Engineering, LLC
PO Box 2136
Sand Springs, OK 74063
O: 918-514-4283
F: 918-514-4288

13.1

TMAPC Staff Report
August 16, 2017
CPA-54 *GO Plan* (Bicycle/Pedestrian Master Plan)

A. **Item for consideration:** Adoption of the *GO Plan* (Bicycle/Pedestrian Master Plan) as an amendment to the *Tulsa Comprehensive Plan*.

B. **Related Plans:** Both the *Tulsa Comprehensive Plan* and the *Tulsa Metropolitan Area Trails Master Plan and Map* informed this planning effort. PLANiTULSA, the *Tulsa Comprehensive Plan* adopted in 2010, contains multiple references, priorities, goals and policies encouraging an efficient and connected bicycle and pedestrian network. When TMAPC adopted the *Tulsa Comprehensive Plan* by Resolution 2581:900, language was included that the *Tulsa Metropolitan Area Trails Master Plan and Map* (adopted in 1999) would remain in effect. This plan served as an important resource during development of the GO Plan. The *Go Plan* updates and expands upon the previously adopted Trails Master Plan and Map.

C. **Background/Process:** In December 2013, INCOG engaged Toole Design Group to conduct a two-year study of the INCOG area's bicycle and pedestrian infrastructure. The plan, branded as the *GO Plan* includes an analysis of bicycle level of stress and recommendations for infrastructure improvements based on data about activity centers and existing street parameters. The plan also includes an analysis of missing links in the arterial street sidewalk network. In total, the plan recommends 355 miles of bicycle facilities including signed routes, shared lane markings, bike lanes, cycle tracks, sidepath and trails. The plan also includes a listing of prioritized missing sidewalk links along arterials streets.

An extensive public involvement process informed the plan. Numerous meetings with the public, the Transportation Advisory Board and the city planning and engineering staff informed the projects that were included in the plan. A presentation was made to the TMAPC at a work session on May 20, 2015 and most recently at a TMAPC work session on July 19, 2017.

The *GO Plan* was adopted during the INCOG Transportation Policy Committee on December 2, 2015 and endorsed by the INCOG Board of Directors on December 8, 2015. All plan documents can be found at www.TulsaTRC.org/GOPlan.

The *GO Plan* is a guide to determine street design, but engineering constraints and judgement will be considered as street projects are designed and implemented, with connectivity of the overall network of bicycle and pedestrian facilities as the primary goal. During implementation, the *GO Plan* recommendations will be cross-referenced with the latest version of the Highway Capacity Manual Multimodal Level of Service (MMLOS) to ensure the best levels of service are achieved for all users in the design process, and in choosing appropriate bicycle and pedestrian improvements.

D. Conformance with the Tulsa Comprehensive Plan: The *Go Plan* furthers several priorities, goals and policies in the Transportation Chapter of the Comprehensive Plan, specifically:

Transportation Priority 1 *- Provide a Wide Range of Reliable Transportation Options So Every Tulsan Can Efficiently Get Where They Want To Go*

Goal 2— *Tulsa has a sustainable network of roadways, trails and transit infrastructure that is well maintained and not a burden on future generations to operate. Policies to support this goal include:*

2.1 Adopt a network approach to transportation projects that focuses on connecting people to places — ultimately allowing places to become more intense centers of economic development.

Transportation Priority 4 *- Provide Multiple Transportation Choices to All Tulsans*

Goal 14—

Tulsans safely and efficiently use bicycles to go to work, shop and recreation areas. Policies to support this goal include:

14.1 Develop a Bicycle Master Plan and revise the Trails Master Plan as necessary to focus on connecting neighborhoods with destinations, such as employment, shopping and recreation.

The master plan should include priorities to:

- *Improve integration of on-street bicycle facilities with Tulsa parks and off-street trail system through the use of road diets, traffic calming, signage, bike lanes, and shared lane markings.*
- *Improved circulation into and around downtown. This includes additional on-street pavement markings and exploring a bicycle boulevard concept using a lane of existing traffic.*
- *Continued efforts to expand bicycle advocacy, education, and enforcement.*
- *Adopt a complete streets policy and add coordinate funding and simultaneous construction of bike facilities with street, drainage, and other infrastructure improvements.*
- *Review of private and public development projects to ensure adequate bicycle parking and access.*
- *Amend Tulsa's zoning ordinance to require bicycle parking in new development, based on a review of best practices. The number of bike parking spaces required by the ordinance should be determined based on the total off-street parking spaces required. Specific rules and regulations governing the dimensions and design of bicycle parking should be adopted.*
- *Develop detailed inventory of bicycle facilities (routes, parking, amenities) and bicycle plans as part of the small area planning process.*
- *Establish dedicated funding to implement the Bicycle Master Plan and revised Trails Master Plan.*

E. Staff Comments: The *GO Plan* is in conformance with the direction provided and provides a framework for the implementation of multiple priorities, goals and policies in the Comprehensive Plan. Adoption of the *GO Plan* as an amendment to Tulsa's Comprehensive Plan will ensure that projects identified within the plan may be considered when engineering or development projects occur within the city limits.

The *GO Plan* will also provide a comprehensive plan for pedestrian and bicycle improvements; provide connectivity to the existing regional trail network using on-street treatments; improve pedestrian and bicycle safety; provide a more strategic approach to competing for pedestrian and bicycle funding; and identify barriers, with solutions, for residents to safely access destinations using walking or bicycling modes within the Tulsa region.

The vision of the *GO Plan* is that the Tulsa metropolitan area would be a place where walking and biking are viable and appealing choices for transportation and recreation. Safety, comfort and convenience for users are addressed along roads, at crossings, on multi-use trails and at key destinations. This vision is carried out through the following six goals.

Goal 1: Implement and maintain a connected network of walking and bicycling facilities focusing on linking destinations to neighborhoods.

Goal 2: Improve safety and security for all users of the transportation system by applying strategies that reduce fatal and injury crash rates in the Tulsa metropolitan area.

Goal 3: Establish or increase local bicycle and pedestrian mode share goals across the Tulsa metropolitan area with target milestones for 2017 and 2022.

Goal 4: Develop implementation of public education campaigns and programs that include targeted efforts for law enforcement, students, traditionally underserved populations and other key stakeholders with target outreach goals set for 2017.

Goal 5: Position Tulsa and the surrounding areas as officially recognized Walk and Bicycle Friendly Communities by engaging or continuing efforts to achieve status with the national certification programs applicable to walk and bicycle friendliness.

Goal 6: Pursue funding toward bicycle and pedestrian infrastructure within local transportation funding bond and sales tax packages.

The *GO Plan* contains six elements to help implement the goals. Those elements are a bicycle strategy, pedestrian strategy, project implementation, non-infrastructure strategies, and individual community plans. The TMAPC is asked to consider adopting the *GO Plan* including the Tulsa Community Plan and Appendices.

Based on the information provided above, staff finds that the *GO Plan* is in conformance with the City of Tulsa Comprehensive Plan.

F. **Staff recommendation:** Staff recommends that the Tulsa Metropolitan Area Planning Commission adopt the *GO Plan* (Bicycle/Pedestrian Master Plan) as an amendment to the Comprehensive Plan.

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F. Staff recommendation: Staff recommends that the Tulsa Metropolitan Area Planning Commission adopt the *GO Plan* (Bicycle/Pedestrian Master Plan) as an amendment to the Comprehensive Plan.

THE TULSA REGIONAL

Bicycle and Pedestrian Master Plan

Recommended for adoption by the Transportation Technical Committee: November 18, 2015

Adopted by the Transportation Policy Committee: December 2, 2015

Endorsed by the INCOG Board of Directors: December 8, 2015

ACKNOWLEDGMENTS

MEMBERSHIP LISTING FOR INCOG

Transportation Technical Committee and Technical Policy Committee

	TTC	Liann Alfaro, *Tulsa Transit*
	TTC	Bill Bell, *Federal Aeronautics Association*
TPC		Doug Bonebrake, *City of Owasso - Ward 5*
TPC		Rich Brierre, *INCOG*
TPC		Mike Burdge, *City of Sand Springs Ward 3*
	TTC	Lynn Burrow, *City of Glenpool*
TPC	TTC	Derek Campbell, *City of Sand Springs*
TPC	TTC	J. J. Carr, *Osage Nation*
TPC	TTC	Robert Carr, *City of Jenks*
TPC		Bill Cartwright, *Tulsa Transit*
TPC	TTC	Laura Chaney, *ODOT NPO & Air Quality*
TPC		Gary Corino, *FHWA*
TPC	TTC	Jared Cottle, *City of Bixby*
	TTC	Michal Davis, *City of Skiatook*
TPC	TTC	Tom DeArman, *City of Sapulpa*
	TTC	Ann Domin, *INCOG*
	TTC	Doug Duke, *City of Tulsa*
TPC	TTC	Robert Endicott, *Cherokee Nation*
TPC		Doug Enevoldsen, *City of Bixby*
	TTC	Daryl Golbek, *City of Claremore*
TPC	TTC	Nancy Graham, *INCOG*
	TTC	Tom Hendrix, *City of Broken Arrow*
TPC	TTC	Commissioner Scott Hilton, *Osage County*

TPC	TTC	Commissioner Mike Helm, *Rogers County*
TPC		Commissioner Tim Kelly, *Wagoner County*
TPC		Commissioner Carlisle Mabrey III, *ODOT District I*
TPC		~~Commissioner Pete Regan,~~ *ODOT District VIII*
TPC	TTC	Commissioner Newt Stephens, *Creek County*
TPC	TTC	Commissioner L. Whitehouse, *Creek County*
TPC	TTC	Commissioner Rick Stewart, *Creek County*
TPC	TTC	Rhonda Jeffries, *ODEQ*
TPC	TTC	Richard Jurey, *FHWA*
	TTC	Rick Malone, *City of Glenpool*
TPC	TTC	Jon McGrath, *Railroad - Mcgrath LLC*
	TTC	Matt Meyer, *River Parks Authority*
TPC	TTC	Jeff Mulder, *Tulsa Airport Improvement Trust*
TPC		David Murdock, *Oklahoma Turnpike Authority*
TPC	TTC	Mike Neal, *Metro Chamber of Commerce*
TPC		Justin Neidel, *ODOT Transit Programs*
TPC	TTC	Pamela Polk, *City of Collinsville*
TPC	TTC	Viplava Putta, *INCOG*
	TTC	Tom Rains, *Tulsa County*

	TTC	Jeff Riley, *US EPA - Region 6*
TPC		Joe Robson, *Wagoner County*
	TTC	Elizabeth Romero, *FHWA*
	TTC	Jessica Scott, *ODOT*
TPC	TTC	Vernon Seaman, *INCOG Water Quality*
TPC		John Shivel, *TMAPC*
	TTC	Roger Stevens, *City of Owasso*
	TTC	C. S. Stokes, *City of Catoosa*
	TTC	Brent Stout, *City of Tulsa*
TPC	TTC	Principal Chief George Tiger, *Muscogee (Creek) Nation*
TPC	TTC	Pearlie Tiggs, *Federal Transit Authority*
TPC		David Tillotson, *City of Catoosa*
TPC	TTC	Mike Tinker, *City of Jenks*
	TTC	Troy Travis, *Oklahoma Turnpike Authority*
	TTC	Matt VanAuken, *ODOT*
TPC	TTC	Kenneth White, *Tulsa Airport Authority*
	TTC	Randle White, *ODOT Division VIII*
	TTC	Steven Whitlock, *City of Coweta*
TPC		Dan Yancey, *City of Skiatook*
	TTC	David Yarbrough, *Port Authority*
TPC		Paul Zachary, *City of Tulsa*
TPC		Mark Zishka, *ODOT Division VIII*

STEERING COMMITTEE

Michael Hairston, *Committee Chair, ONEOK Corporation*

Jared Cottle, *City of Bixby*

Scott Esmond, *City of Broken Arrow*

David Tillotson, *City of Catoosa*

Pam Polk, *City of Collinsville*

Greg Collins, *City of Coweta*

Rick Malone, *City of Glenpool*

Robert Carr, *City of Jenks*

Karl Fritschen, *City of Owasso*

Vernon Smith, *City of Sand Springs*

Dan Yancey, *City of Skiatook*

Matt Liechti, *City of Tulsa*

Steve Carr, *City of Tulsa*

Shannon Compton, *Bicycle/Pedestrian Advisory Committee*

Stephen Lassiter, *Bicycle/Pedestrian Advisory Committee*

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1 INTRODUCTION

The Indian Nations Council of Governments (INCOG) and its member jurisdictions are seeking to change the norm for travel in the region by overcoming current challenges to active transportation with smart design and implementation of facilities for pedestrians and bicyclists. As the regional transportation planning body, INCOG provides a vision for transportation, administers funding programs and provides member jurisdictions with resources to plan and implement projects at the local level. This Plan is part of that suite of resources and equips member jurisdictions with:

- Bicycle network recommendations,
- Pedestrian design approaches,
- Policy and funding recommendations, and
- Design guidance.

Each element of this plan will help the 11 cities involved make walking and bicycling safe, comfortable and convenient for its residents and visitors.[1] Taken as a whole, the GO Plan provides a clear path toward achieving this vision for all communities in the region.

1 The 11 communities are: Bixby, Broken Arrow, Catoosa, Collinsville, Coweta, Glenpool, Jenks, Owasso, Sand Springs, Skiatook and Tulsa.

Plan Vision and Goals

The vision:

The Tulsa metropolitan area is a place where walking and biking are viable and appealing choices for transportation and recreation. Safety, comfort and convenience for users are addressed along roads, at crossings, on multi-use trails and at key destinations.

This powerful vision to make the Tulsa area a great place for walking and biking for everyone was conceived by community members and leaders during an 18-month planning process to create the GO Plan, the region's first comprehensive bicycle and pedestrian plan. This vision and the goals stated below were developed early in the planning process in concert with the project steering committee which includes representatives from all 11 participating communities.

The vision for bicycling and walking in the Tulsa region guided development of the plan process and the goals and recommendations included in this report. They achieve the vision through the following strategy:

1. Make bicycling and walking *viable* options through connected networks of facilities
2. Make bicycling and walking *appealing* options through facilities that provide a level of design that makes them safe, comfortable and convenient for the widest possible range of users

The goals:

Goal 1: Implement and maintain a **connected network** of walking and bicycling facilities focusing on linking destinations to neighborhoods.

Goal 2: **Improve safety and security** for all users of the transportation system by applying strategies that reduce fatal and injury crash rates in the Tulsa metropolitan area.

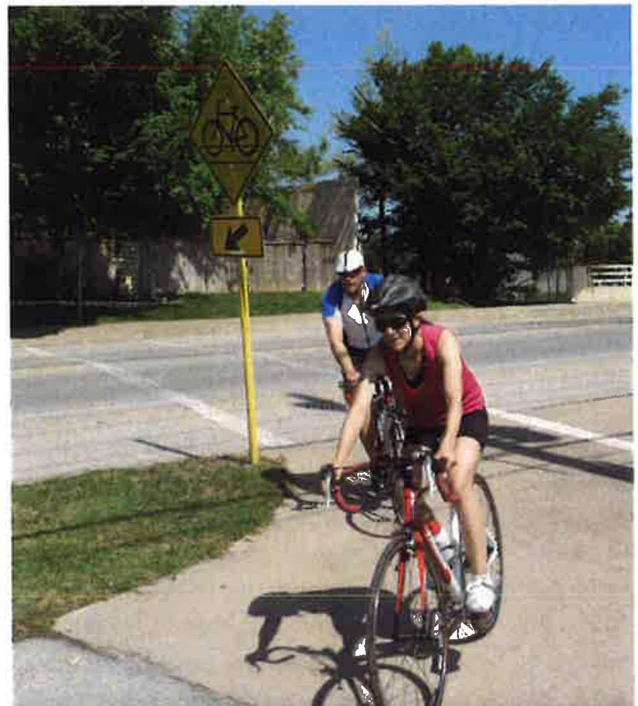
Goal 3: Establish or increase local bicycle and pedestrian **mode share goals** across the Tulsa metropolitan area with target milestones for 2017 and 2022.

Goal 4: Develop implementation of **public education campaigns and programs** that include targeted efforts for law enforcement, students, traditionally underserved populations and other key stakeholders with target outreach goals set for 2017.

Goal 5: Position Tulsa and the surrounding areas as officially **recognized Walk and Bicycle Friendly Communities** by engaging or continuing efforts to achieve status with the national certification programs applicable to walk and bicycle friendliness.

Goal 6: Pursue **funding toward bicycle and pedestrian infrastructure** within local transportation funding bond and sales tax packages.

The Brookside commercial district in Tulsa feautres pedestrian amenities such as curb extensions, street trees and a lower speed limit.



Area residents enjoy access to long-distance trails such as the Creek Turnpike Trail for recreation and transportation.

Plan Purpose and Scope

The GO Plan is a regional pedestrian and bicycle plan. It does not provide the same level of detail that a city-scale plan would, but instead seeks to create a bicycle network that connects major destinations in the region. These destinations include significant employment centers, downtown business districts, schools and universities, and the existing trails system. Although the plan provides a list of bicycle network projects and prioritizes arterial sidewalk gaps, it is not a comprehensive master plan for each community. Pedestrian improvements are addressed through recommendations in a community-chosen focus area in each jurisdiction and through design approaches to typical pedestrian challenges in the region. Implementation of the facility recommendations will be an important start to improving pedestrian and bicycling conditions, but the routine application of the Plan's design guidelines for each mode will have an even greater impact over the long term. The design guidelines are included in Appendix A.

The Benefits of Walking and Biking for the Tulsa Region

Improving walking and bicycling conditions in the Tulsa region can foster economic development, improve health, increase safety and provide additional transportation options for residents.

Cities around the country are recognizing the attractive force of livable places.[2] Communities that are walkable and bikeable for the majority of their residents are seeing rising property values and increases in population.[3] The Tulsa Young Professionals (TYPros) group has seen this national trend and is pushing the city forward by encouraging a focus on creating more pedestrian and bike friendly streets. The 2014 StreetCred event temporarily transformed a street to put the focus on people instead of traffic and showed residents the possibilities when space is reallocated. The City of Broken Arrow has also recognized the importance of creating a better

2 http://www.realtor.org/sites/default/files/reports/2013/2013-community-preference-analysis-slides.pdf

3 http://www.advocacyadvance.org/site_images/content/Final_Econ_Update(small).pdf

walking environment and recently revamped its downtown streetscapes in the Rose District, leading to a more vibrant area that attracts visitors and retains residents. New businesses attracted to the revitalized neighborhood by $3.7 million in streetscape improvements are already contributing to a 120-percent increase in tax revenues in the district.[4] Other communities in the region can look to these examples to see the power of creating streets that not only move people but create a place where they want to spend time.

Existing trails in the region are already immensely popular with thousands of bicyclists and pedestrians using trails weekly, and improving access to them for bicyclists and pedestrians will enable more residents to use them without needing to get in a car. The Master Trails Plan adopted by INCOG in 1999 set a vision for the development of a robust trail system that reaches and connects all communities. The facilities that have been built as a result of that plan are designed to be comfortable for all types of users from families out for a Sunday walk to running groups to bicyclists on a long ride.

Low-Stress Bicycle Facilities

Low-stress bicycle facilities include low-speed and low-volume streets with comfortable crossings, cycle tracks or sidepaths on major roads, and paved trails. These streets and off-street facilities are comfortable for the full range of bicyclists—including children and inexperienced riders—and are more likely to encourage greater numbers of people to bicycle. The Tulsa region has the backbone of a low-stress bicycle network with paved trails such as the KATY Trail and Creek Turnpike Trail. While many low-stress neighborhood streets exist, they are disconnected by busy arterial street barriers.[5]

The regional trail system provides opportunities to improve community health through increased physical activity. This is another reason the Tulsa region wants to make walking and bicycling easier and safer beyond trails. Residents who live in communities with opportunities for physical activity nearby are more active.[6] These opportunities can be as simple as a sidewalk network that connects work to a lunch destination, or a safe, comfortable bike route on local streets that connects home to a local grocery store.

Improving pedestrian and bicyclist safety is also a critical element for improving community health. From 2009 to 2014, there were 815 pedestrian and 363 bicycle crashes reported in the region.[7] Most occurred on the high-speed, high-volume arterial streets that connect major destinations in the region and are also the location of much of the commercial development throughout communities. People do and will want to access these stores on foot and by bicycle, so providing adequate facilities for these modes will improve safety.

Enabling and encouraging travel by foot and bicycle can also help take burdens off the roadway system by decreasing the number of necessary car trips. As the Tulsa region grows, automobile traffic will continue to increase. Further investments in the roadway system to increase automobile capacity can require substantial investment by communities, but these may be reduced or avoided through shifting more trips away from single-occupancy automobiles. The region has already recognized the value of improving its transit system with on-going implementation of Fast Forward, the regional transit system plan adopted by INCOG in 2011. The project team recognized that every transit rider is a pedestrian at both ends of his or her trip. Implementation of the GO Plan recommendations will complement and maximize these improvements by providing better first and last mile access to transit stops.

4 http://www.tulsaworld.com/communities/brokenarrow/news/broken-arrow-s-rose-district-blossoming/article_ca17b50c-9191-53c2-97be-0ccc6055e473.html

5 The Level of Traffic Stress analysis conducted for this plan is detailed in Chapter 3.

6 http://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/physical-activity-environment/

7 Crash data compiled by Oklahoma Department of Transportation from local police department reports.

Support for Walking and Biking in Existing Plans

Numerous plans developed for the Tulsa region and individual communities have called for and supported improved conditions for pedestrians and bicyclists. In particular, the Connections 2035 Regional Transportation Plan, which was completed in 2012, called for the development of a regional bicycle and pedestrian master plan. The Connections 2035 plan touched on a number of elements that have been further developed in the GO Plan:

- Incorporation of pedestrian and bicyclist needs into the land development process through:
  - Acquisition of trail easements
  - Aditional sidewalk connections, and
  - Acommodation at planned transit stops
- Improved connections between regional trails and neighborhoods
- Consistent application of pedestrian and bicycle facility design standards
- Trail improvements including lighting, maintenance and wayfinding
- Use of context sensitive design to improve the pedestrian and bicycling environment

The GO Plan also builds on the bicycle and pedestrian planning effort of the 1999 Trails Master Plan by integrating that Plan's off-street trail recommendations with new on-street bikeway recommendations to make region-wide connections.

Recent comprehensive planning in the City of Tulsa also supports a multimodal vision. PLANiTULSA, the city's comprehensive plan adopted in 2010, calls for a transportation system that provides a wide variety of mode choices. These choices will be supported by changes in land use that direct development toward downtown and new communities that are mixed use, dense and walkable.

Recommendations in PLANiTULSA about the street network itself call for a greater level of connectivity in the construction of new streets. The City will move away from a disjointed network that funnels trips onto arterial streets and toward one that provides greater connectivity. Street design is also addressed through a recommendation for "context sensitive solutions," which respond to the surrounding land uses rather than prioritizing automobile throughput on all streets. All of these changes would benefit bicyclists and pedestrians through creating the ability to take more short trips and through providing facilities such as high-quality sidewalks and bike lanes on more streets.

Planning efforts in other communities in the region are beginning to reflect this move toward a more concentrated mixed-use development pattern rather than the lower-density single use patterns typical today.

GO Plan Development

The GO Plan was developed over the course of 18 months during 2014 and 2015. The process was guided by a steering committee, representatives from participating jurisdictions, and INCOG staff. Their input was sought on critical issues such as the Plan vision and goals, bicycle network recommendations, and the project prioritization process. A mid-point check-in was held with the committee and key stakeholders such as elected officials and advocates in October 2014 to ensure the process was on the right track. This stakeholder retreat was also used to gather input and priorities for policy recommendations included in this report.

Public input was sought through a number of means. A kick-off meeting was held in March 2014 which introduced the region's residents to project goals and the upcoming process to develop the plan. Local residents were engaged through a series of "walkshops," walking workshops that evaluated the pedestrian and bicycle conditions for a set of neighborhoods defined by the communities themselves. Most jurisdictions held one walkshop in or near their downtown, and the City of Tulsa held four separate events focused on East Tulsa, Cherry Street, Northwest Tulsa, and South Tulsa. A final public workshop was held for this planning process in September 2015 to celebrate the release of the plan and seek final public comment.

The public was also engaged through two online means: an interactive WikiMap map and a survey. WikiMap input helped identify priority locations for improvements throughout the region where barriers to walking and biking exist today and locations where residents would like to be able to walk and bike more comfortably and safely. The online survey sought more general information about travel patterns and attitudes about bicycling and walking. Survey results are presented throughout the plan and fully reported in Appendix B.

Importantly, staff from each jurisdiction have also been involved throughout the process. Though INCOG is the coordinating body for this plan, recommendations will be implemented by each of its member jurisdictions, so their involvement in the plan development was essential. Local staff were involved in the following efforts:

Community staff reviewed network recommendations throughout the planning process., including at the October 2014 check-in.

The project team presented on the engagement and data analysis that led to draft recommendations development.

- Development and review of the bicycle network
- Identification of pedestrian focus areas
- Mid-point check-in on plan process and results
- Full-day facilities design training on the 2012 American Association of State Highway and Transportation Officials Guide for the Development of Bicycle Facilities
- Review meetings with INCOG staff for community plans

Regular presentations were also made to update the INCOG Transportation Technical and Policy Committees and Bicycle and Pedestrian Advisory Committee throughout the plan process.

Plan Organization

The GO Plan contains the following elements to help communities implement pedestrian and bicycle projects and policies.

2 Bicycle Strategy

Chapter 2 summarizes the existing state of bicycling in the Tulsa region and outlines the process undertaken to develop the bicycle facility network recommendations of the GO Plan and describes the proposed network.

3 Pedestrian Strategy

Chapter 3 summarizes the existing state of the pedestrian environment in the Tulsa region. It provides general guidance about improvements that will increase safety and comfort and a summary of the selected pedestrian focus areas for each community. Concept designs for five typical locations are also provided that can be used by any community with similar pedestrian design challenges.

4 Project Implementation

Chapter 4 outlines how bicycle and pedestrian projects were prioritized for this plan and how this prioritized list can be used at the local and regional scales. Cost estimates for bicycle facility types are also presented, as well as a review of the current funding process for bicycle and pedestrian projects and recommendations for future funding.

5 Non-Infrastructure Strategies

Recommendations for policy and code changes that will result in an improved bicycling and pedestrian environment are presented in Chapter 5. Brief guidance on education, enforcement and encouragement programs is also provided.

6 Community Plans

Chapter 6 contains a summary of input received for each participating community, maps of network recommendations, a table detailing bicycle network facilities, mileage and costs, and the detailed recommendations for each community's focus area(s). This section is intended as a standalone element for each community to use, along with the bicycle and pedestrian design guidelines, in implementing their pieces of the network.

Appendices:

A. Bicycle and Pedestrian Facility Design Guidelines

B. Public Involvement: Complete summary including all survey results

C. Prioritization: Detail on methodology, scores for all projects

D. Cost Estimate Details

E. Policy Review: Full table; summary of input from retreat

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2 BICYCLE STRATEGY

Bicycling is already part of life for many people in the Tulsa region today. Many residents enjoy the extensive system of trails for recreation. There is a strong and growing bicycle culture in the region for recreational road and mountain bike riding. The Tulsa Hub is a nationally recognized nonprofit that provides bicycles and bicycle education to residents. Tulsa Tough, a weekend of professional and amateur racing, is the city's largest event of the year, attracting tens of thousands of spectators and millions of dollars of revenue. And a growing number of the region's residents use bicycles for transportation either out of necessity or by choice. INCOG wants to help its member jurisdictions build on this strong foundation through the implementation of this plan.

Building a connected network of bicycle facilities will help the Tulsa region achieve all of the goals set forth in this plan: It will increase mode share by making more routes comfortable and accessible by bike, spurring residents to choose to ride more often for transportation and recreation. It will improve safety by providing facilities separated from automobile traffic in high-volume, high-speed locations. It will link neighborhoods to destinations. And it will position communities in the region to be recognized by national organizations, such as the Bicycle Friendly Community designation from the League of American Bicyclists, as exemplary places for bicycling.

This chapter provides an overview of the current conditions for bicycling in the region, including travel patterns, infrastructure and attitudes. It then presents the comprehensive and collaborative process through which the consultant team, INCOG staff and local jurisdictions developed the bicycle facilities network. The resulting network is described at the end of this chapter and in further detail within each jurisdiction's community plan section in Chapter 6.

Facility recommendations should be implemented following the Bicycle Design Guidelines presented in Appendix A. While the network provides a framework for facility location decisions, these guidelines provide more detailed instruction on implementation of facilities and should be consulted throughout the design process.

Existing Bicycle Environment

Bicycle Travel

Bicycling for transportation in the Tulsa region is limited today. American Community Survey (ACS) data show that the City of Tulsa has the highest bicycle commute mode share in the region at 0.3 percent.[1] All other jurisdictions are estimated to have an average commute mode share of less than 0.1 percent. ACS data also indicate that fewer than 15 percent of those bicycle commuting are women. It is perhaps unsurprising that commute mode share is at this level given that most residents travel five miles or more to their jobs.[2] Employment centers are clustered throughout the region in locations that do not have nearby residential land use. The development pattern of the region has separated home and work far enough that most residents choose to drive. Despite the distances, bicycle commuting could be encouraged by improving the connections between neighborhoods and the existing trails system and transit lines.

1 American Community Survey 5-Year Estimate 2009-2013, Table B08006.

2 GO Plan survey results. This is not a statistically valid survey, but it gives an indication of the region's travel patterns.

Work trips, however, only represent 11.6 percent of all trips in the Tulsa region.[3] There are not good data about the percentage of trips for other purposes – shopping, social, school, etc. – taken by bicycle today. Respondents to the GO Plan survey indicated that about 60 percent of trips for errands, entertainment and meals out are three miles or less. This distance is bikeable for most adults within about 20 minutes, but most trips are completed today by car. They could be taken by bicycle if infrastructure were in place to provide safe and comfortable connections.

Infrastructure

The region's large trails system forms the backbone of existing bicycle infrastructure in and around Tulsa. These trails take advantage of rail, highway and natural corridors to provide long-distance, separated connections between cities and towns. They are used both for transportation and for recreation and are an attractive amenity for residents, visitors and prospective residents and businesses.

Most trails are asphalt paved and 10 feet wide. These facilities are shared by bicyclists with people walking, in-line skaters and other human-powered modes. Most street crossings are at grade, with crosswalks and signage provided at unsignalized intersections. Some locations, such as the one pictured below at the Creek Turnpike Trail and Memorial Drive, have little indication that drivers should expect a high volume of pedestrians and bicyclists crossing here. A number of trail users have been struck by cars at this location.

Creek Turnpike Trail at Memorial Dr

3 National Household Travel Survey, 2009.

On-street bicycle facilities are limited. Some of the bikeways identified within the City of Tulsa in the 1999 Plan have had bike route signage added and bike symbols that predated the MUTCD standard. Many of the signed bike routes are on comfortable, low-volume local streets and have been adopted into the network for the GO Plan.

Bike lanes are present on several of Tulsa's streets. Existing bike lanes tend to meet national standards for width, but some are not fully compliant with *design* standards. For example, a segment of 4th Place has bike lanes that are striped with a dashed line rather than a solid one as called for in the American Association of State Highway and Transportation Officials (AASHTO) Guide to the Development of Bicycle Facilities. As another example, bike lanes on Delaware Avenue end abruptly before the intersection with 11th Street without accommodation to the crossing of 11th Street. The recommendations of this Plan offer facility recommendations and design guidance in these situations.

Broken Arrow has recently added shared lane markings to Broadway Avenue as part of a larger streetscape project that narrowed the street to calm traffic. These are the only on-street bicycle facilities today in the region outside of the City of Tulsa.

Because of the lack of on-street bicycle facilities, some riders today use the sidewalk network to travel. This is especially the case on high-volume, high-speed arterial streets where riding in the road would be uncomfortable and unsafe. Conflicts arise with pedestrians in areas with transit stops or more pedestrian traffic generators such as a commercial corridor. Conflicts with automobiles occur at driveways, which are frequent along some arterials, and at intersections. Drivers typically do not anticipate a faster moving vehicle on the sidewalk where they expect only pedestrian traffic. Sidewalk riding is not illegal anywhere in the region, except in downtown Tulsa, but it should not be a primary means of accommodating bicycle travel.


Symbols are painted in all lanes and do not include any accompanying arrow or chevron. It is unclear to the bicyclist and the driver what they indicate.


Sidewalk riding is common on high-speed, high-volume streets where people are not comfortable sharing space with cars.


Dashed lines should indicate areas of a bike lane where automobiles will cross the lane such as at a driveway crossing as pictured above.


Where it is not possible to continue a bike lane to the intersection, shared lane markings should be placed in the right turn lane to help bicyclists center themselves in the lane and avoid conflict with a right-turning automobile.

Attitudes

Residents of the Tulsa region bicycle today for a number of reasons. When asked what they like best about biking in the region, a large majority (88 percent) of survey respondents cited exercise and health benefits. Many also cited the trails system as a major amenity and the opportunity to spend time with family and friends. However, a majority of respondents (55 percent) noted that a lack of comfort with sharing the road with automobiles prevents them from bicycling more. A number also cited the lack of bike friendly roads or trails near their home as a barrier. Respondents said that education and enforcement programs designed to improve driver-bicyclist interaction would increase bicycling in the region. But even when specifically asked about programs that would increase their likelihood of bicycling, many respondents' comments pertained to infrastructure such as bike lanes and trails. The implementation of an on-road and trail network is a clear community priority.

Study Network Development

The goal in developing a network of bicycle facilities for the Tulsa region is to connect major regional destinations to one another and to connect neighborhoods to the existing backbone network of trails. Examples of regional destinations are communities' downtowns, large shopping centers and colleges and universities. In general, the network is intended to serve both transportation and recreation purposes for a wide range of users.

A study network of 250 miles of roadway was created by the project team and INCOG staff, by utilizing a number of inputs: demand analysis, WikiMap input and on-the-ground community comments from Walkshops.

The demand analysis used a set of generators and attractors of bicyclist and pedestrian trips to estimate likely demand for improved facilities. Factors incorporated into this analysis are noted in the tables on the following page. The resulting generators and attractors maps show that demand for facilities is anticipated to be greatest in the downtown cores of each community and along some major corridors in the region. Though the analysis was performed for the entire region, City of Tulsa results were studied separately to better illustrate differing gradations of demand within this high-demand area of the region.

WikiMap input also helped define the study network through users' input regarding destinations and areas that need improvement, both specific barriers to travel and longer roadway corridors. Many of the barriers noted were crossings of major streets and highways, as well as access to trails. Lack of a trail or on-road bike facility was cited as the biggest issue for routes that residents would like to bike but currently do not. Respondents' focus on trails is not surprising given the fact that they comprise the majority of bicycle facilities in the region today.

Though Walkshop input focused mostly on pedestrian issues within each of the areas visited, areas needing bicycle improvements were also identified. For instance, participants in Bixby called out a connection between their city and Glenpool along Highway 67 as a critical, longer distance solution to improve bicycle access.

Use of these three tools resulted in a 690-mile initial study network which was further refined by focusing on streets that provide access to the existing regional trail network. The final 250-mile network was assessed through the means described below.

Study Network Assessment

Fieldwork

Every street in the 250-mile network was visited during a week of fieldwork performed in June 2014. The consultant team documented the study network through photographs and data gathering that included roadway and lane widths, posted speed limits, the presence of curbs, and other general notes about conditions observed along the corridors such as the frequency of driveways, adjacent land uses and intersection configurations where pertinent.

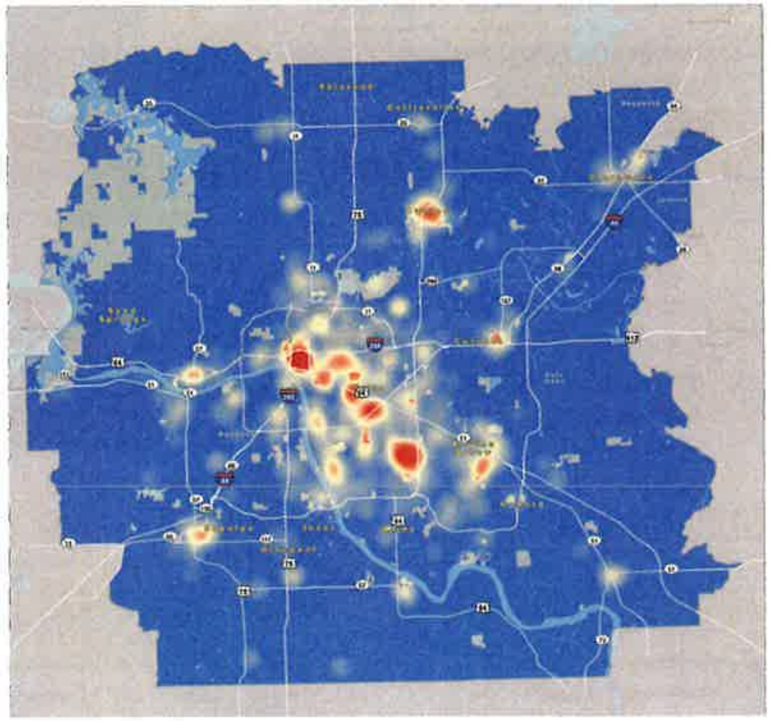
Demand Analysis

Attractors	Weighting
Employment locations	20
Traffic generators (INCOG dataset)	15
Schools	10
Recreation/community centers	5
Parks	5
Libraries	2.5
Industrial employment	-10

Attractors Demand

High

Low

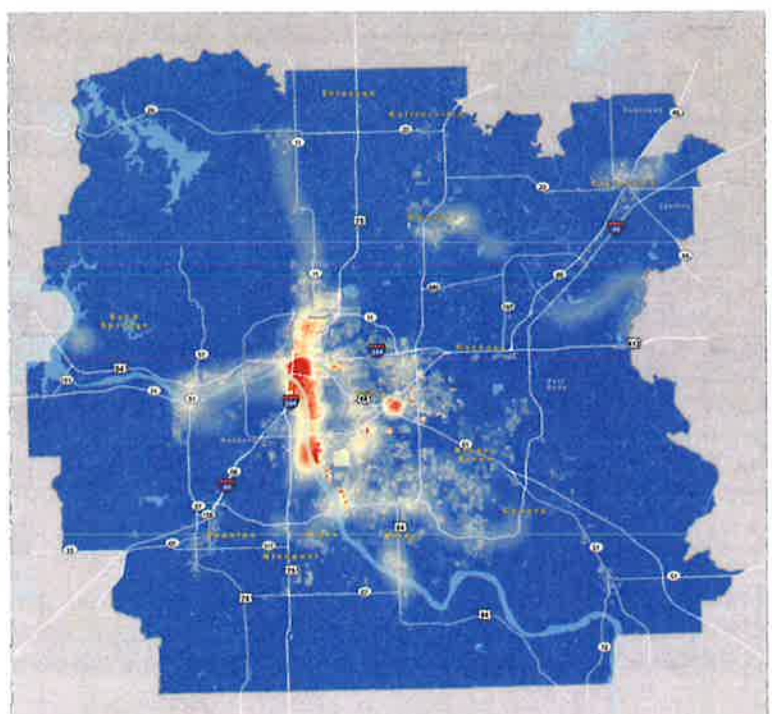


Generators	Weighting
Population density	20
Proximity to existing trail	10
Proximity to transit	10
High percentage of zero car households	2.5
High bicycle mode share	2.5

Generators Demand

High

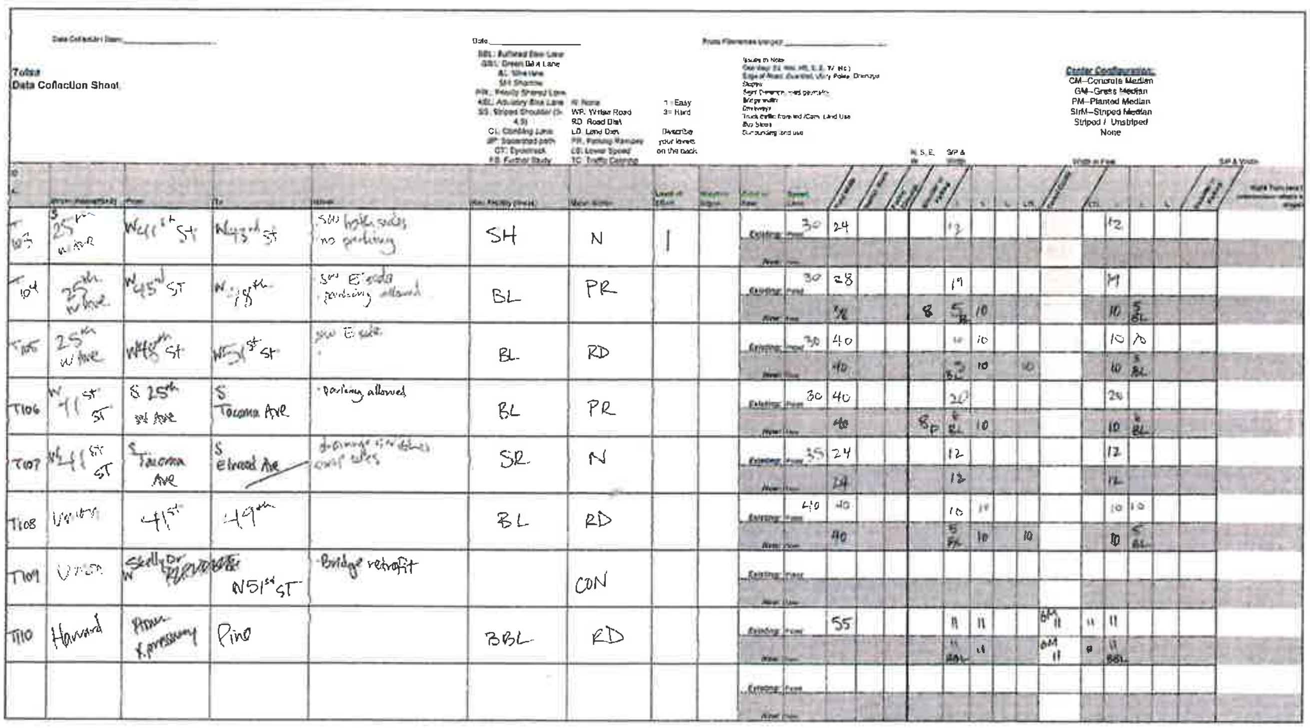
Low



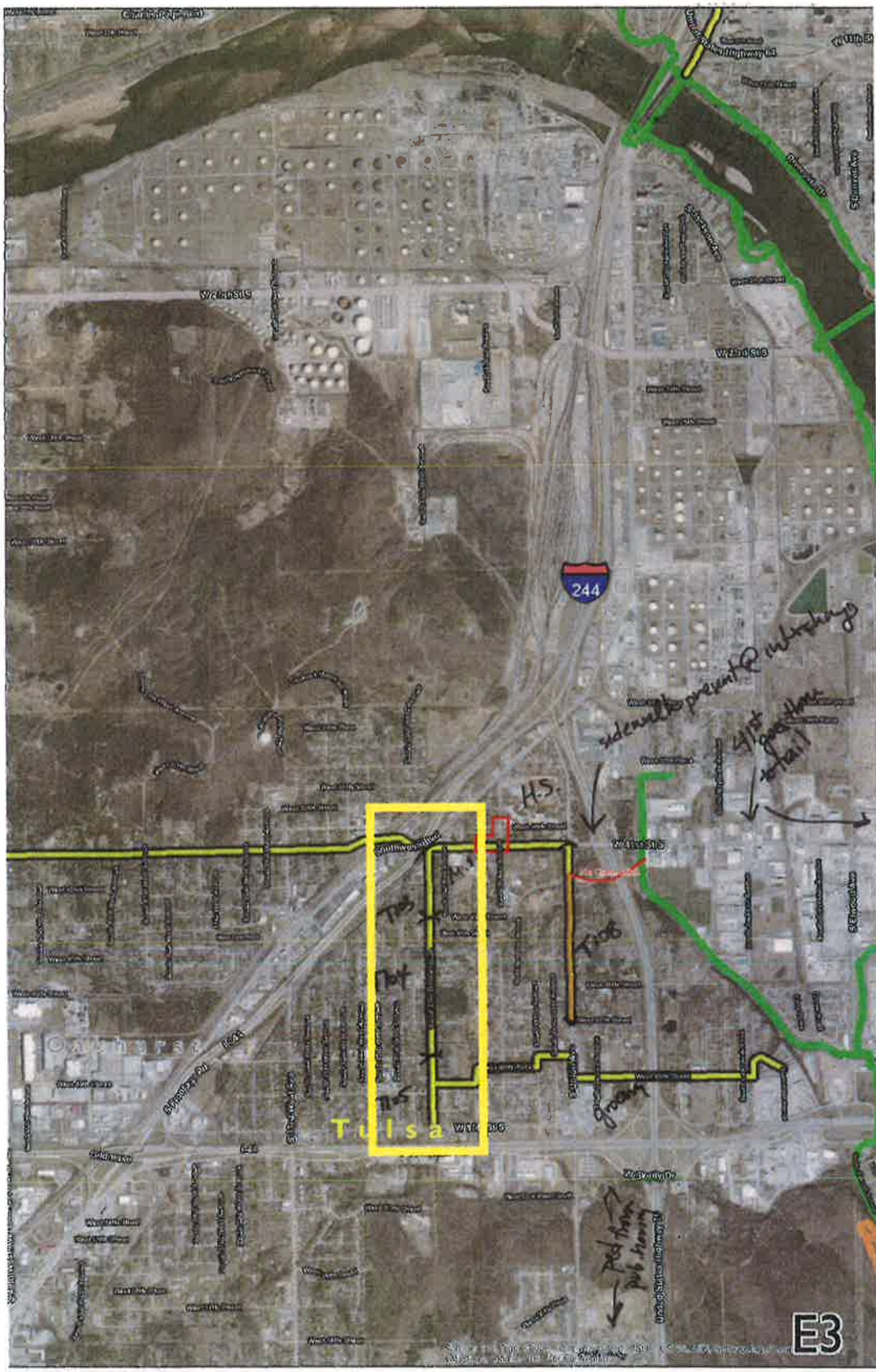
Fieldwork Data Example

South 25th West Avenue in Tulsa, changes character multiple times along the length included in the study network. The street width, parking and lane configurations change twice in the one-mile segment between West 41st Street and 51st Street. Each change was noted and demarcates the start of a new segment in the study network data as can be seen below in each row of the data collection sheet.

Project team members measured street and lane widths as configurations changed along study corridors.



Fieldwork data collection sheet example. First three rows pertain to S 25th West Ave and indicate changing roadway width and lane configurations. Initial recommendations for bicycle facilities were made in the field, e.g., "BL" in the middle column indicates a bike lane recommendations.



Fieldwork maps were marked with the start and end of each roadway segment as can be seen for South 25th West Avenue in the yellow box below. Notes were also made regarding land use, difficult crossings and other elements that would impact bicyclist and pedestrian travel.

Quantitative roadway data were collected for use in determining what bicycle facility type could fit within the existing curb-to-curb dimension and for performing a Level of Traffic Stress assessment discussed in the following section.

Fieldwork also afforded the opportunity to assess how users of different modes travel along the study network today. For instance, many arterial streets on the one-mile grid have high speeds and traffic volumes that cause bicyclists to avoid arterial streets or to ride on the sidewalk. These streets also often had multiple driveway cuts per business, or long stretches of street without curb which allows drivers to turn at any point across the sidewalk to access adjacent businesses. These multiple entrances create more opportunities for conflicts between automobiles and bicyclists riding along the road edge or on the sidewalk. Many highway underpasses were also observed to lack sidewalks and crosswalks. This placed pedestrians in grass or dirt areas for walking and did not make drivers entering and exiting the freeway aware of potential conflicts with pedestrians at ramps.

In more rural areas, the study network included many county roadways, often two-lane roads through low-density land uses. These roads had high posted speed limits (45+ mph) and low traffic volumes. There were few pedestrians or bicyclists observed, but these roads were included for their potential as routes for longer distance recreational bicycle rides. As these rural areas become developed, however, accommodation for pedestrians and bicyclists making short trips will become more important.

Desktop Assessment

After completion of the fieldwork, some streets were reviewed via Google Earth and Street View to check the accuracy of data recorded. This method was also used to help assess network streets from the 1999 Trails Master Plan. INCOG staff requested the inclusion of these streets in the GO Plan to the extent that they improved regional connections for bicycling. Streets deemed worthy for inclusion were reviewed for width and character to determine an appropriate facility type since the 1999 Plan did not indicate facility types or on-street recommendations. All trails from the 1999 Plan were initiall adopted into the GO Plan network.

Level of Traffic Stress Assessment

The Level of Traffic Stress (LTS) assessment analyzes the roads and trails in a bicycle network to identify the amount of comfort a relatively inexperienced bicyclist would likely feel on each road segment. For the purpose of this plan, low-stress streets and bicycle facilities, including paved trails, are those rated with LTS 1 or 2. On-street bicycle facilities in these low-stress categories are those where a bicyclist shares the street with low-volume, low-speed automobile traffic, is adjacent to such traffic in a bike lane of adequate width, or is completely separated from traffic on a sidepath or cycle track.

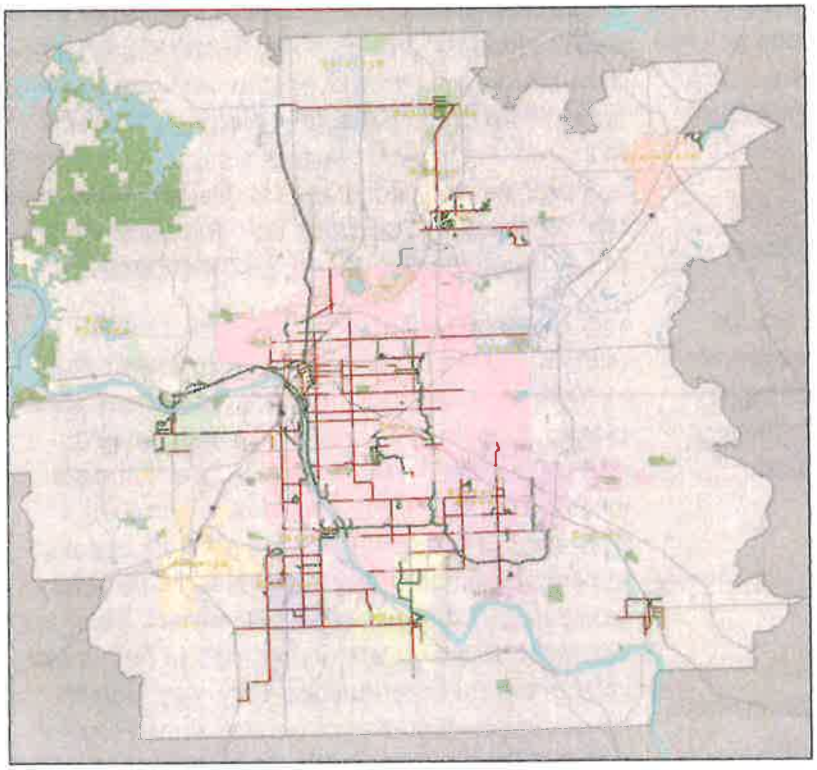
The LTS method uses a number of inputs to evaluate the comfort of a given street segment for bicyclists including:

- Posted speed limit
- Traffic volumes
- Number of automobile travel lanes
- Presence/absence and width of a dedicated bicycle facility

Segments are scored on a least common denominator method whereby the most stressful element assessed overrides the others. For example, a two-lane street with a wide shoulder and low traffic volume would be rated as LTS 4 (most stressful) if the speed limit were over 35 mph. While all of the other characteristics of the street make for a comfortable ride, traffic passing a bicyclist at 35 to 40 mph makes for an uncomfortable ride.[4]

4 It should be noted that the LTS scoring system is geared toward a less experienced bicyclist whose choice to ride a given street is highly impacted by its infrastructure and traffic characteristics. More experienced bicyclists may not be deterred from riding by sharing the road with higher speed or volumes of traffic.

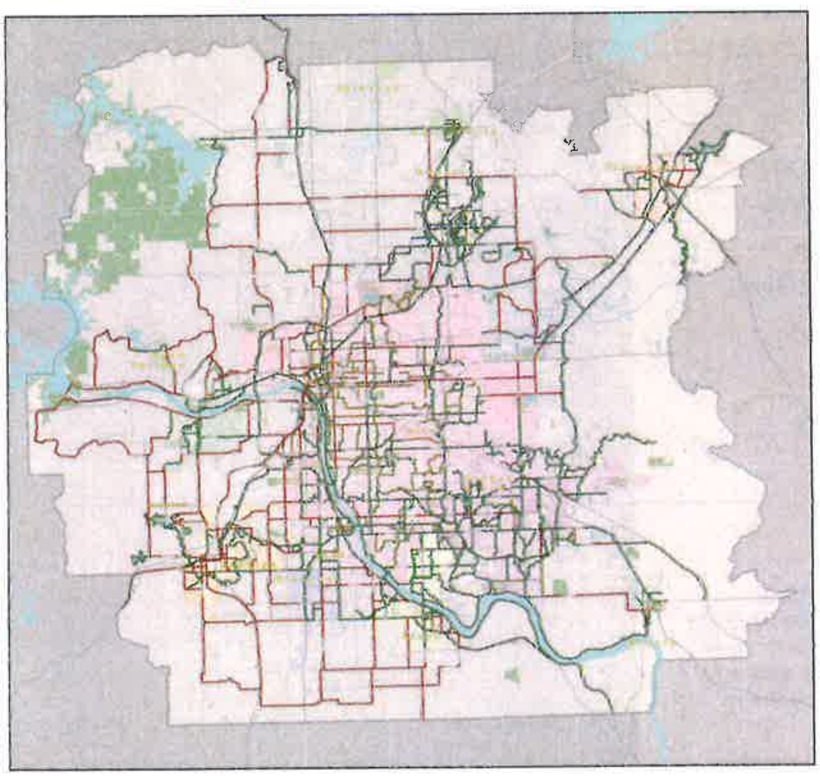
Study Network



Existing LTS	Percent of Total Network
1	13.66%
2	13.44%
3	4.35%
4	68.54%

Many study network streets are marked here in red indicating LTS 4, the highest stress level for bicyclists.

Planned Facilities



Planned LTS	Percent of Total Network
1	30.60%
2	12.89%
3	5.32%
4	51.19%

Arterial streets such as SH-20 between Skiatook and Collinsville drop from LTS 4 to LTS 1 in the planned network with the addition of a sidepath.[1]

1 This assessment only pertains to changes to the original study network since an "before" assessment of added streeets as not performed.

Comfortable crossings of major streets are also necessary to complete a low-stress network. A low-volume neighborhood street presents a comfortable riding environment, but it may cross an arterial with no traffic signal, and that crossing presents a high-stress experience for a bicyclist.[5]

The majority of the study network for bicycling today presents a high-stress riding experience. Because this plan seeks to create regional connections, the network includes many arterial streets which provide those direct connections to primary regional destinations. Nearly all of these streets are rated LTS 4 as a result of their traffic volumes and speeds and lack of a dedicated bicycle facility.

Bicycle Recommendations Development

The team followed a number of principles in developing on-street facility recommendations for the region. The principles are outlined below:

- Facilities fit within the existing pavement width or are off-street construction where there is available right-of-way[6]
- Avoided in-street facilities on high-stress roads: these facilities would remain high-stress owing to traffic volumes and speeds, to the extent possible
- Rural area on-street facilities focus on signed routes for experienced recreational riders
- Urban area on-street facilities focus on sharrows, bike lanes and buffered bike lanes
- Aim for facility types that appeal to and encourage use by casual bike riders
- Continuity of facility is strived for along the length of a studied segment

These principles reflect both best practices in bicycle planning and residents' opinions expressed in the online survey. Respondents were asked through a series of photo questions which types of bicycle facilities they prefer. All answers indicated that a greater level of separation from both automobiles and pedestrians is desired. It was clear that a shared lane situation on a four-lane street is not a desirable place to bike for most people.

While understanding these preferences, this plan strives to be realistic and understands that inclusion of a sidepath on every high-stress street in the network would create an unreasonable and unattainable goal. Therefore, some streets included in the study network were removed from the recommended facility network because making them comfortable and safe for bicycling would require a high level of investment. Because sidepaths and trails are understood to be a major investment for communities, they may wish to pursue implementation of parallel signed routes first that would connect the same destinations. Investment in these routes would require signage on low-volume local streets and improvements at any difficult arterial crossings.

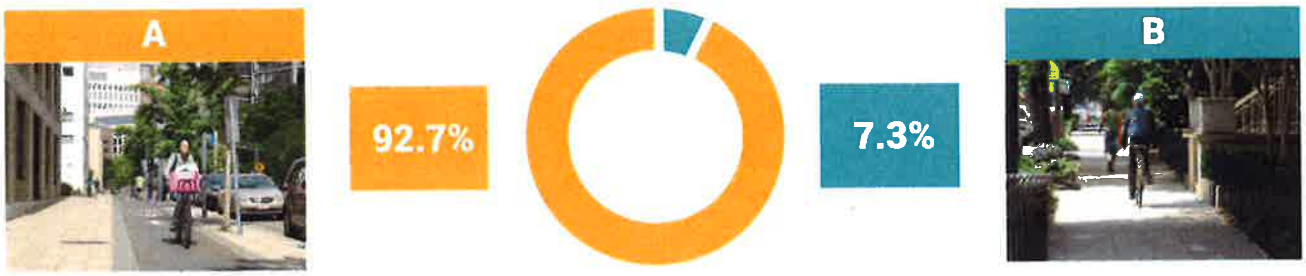
Confident bicyclists feel comfortable taking the lane as seen here in a group ride on Southwest Boulevard in Tulsa.

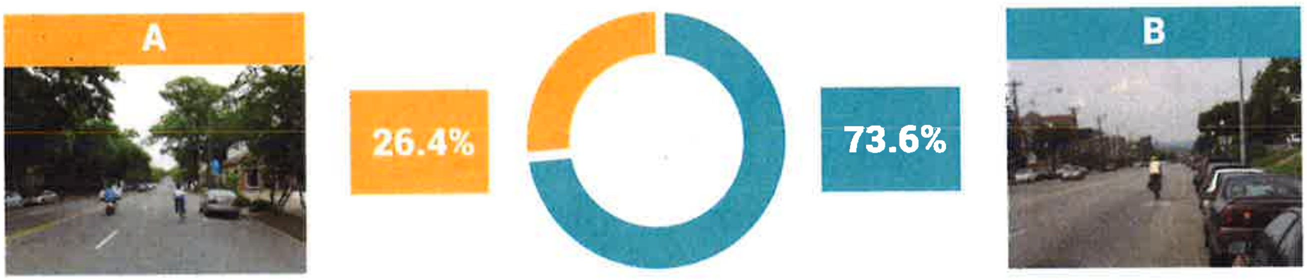
5 For the purposes of this planning effort, the stress of intersections was not evaluated. It can be assumed that any unsignalized arterial crossing is a high-stress intersection where additional infrastructure will be needed to ensure a comfortable bicyclist crossing. These design treatments are presented in Appendix A.

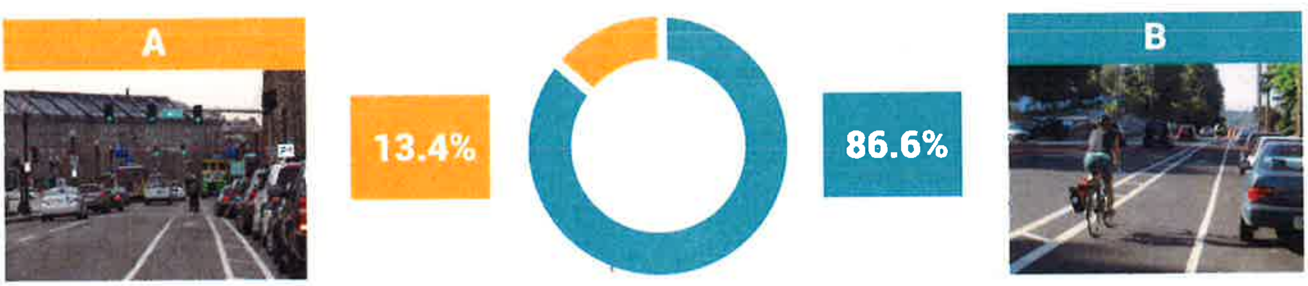
6 Right-of-way assessment was based on visual inspection not measurement.

Facility Preferences

Respondents chose the photo for the facility they'd prefer to ride..







The facility types outlined here cover all of the on-street facilities used in the GO Plan network. More detail on their application and design is provided in the Bicycle Design Guidelines in Appendix A.

Trail

- Path fully separated from a street, shared by bicylists, pedestrians and others
- Typically paved and marked with a center line
- Located along a separate alignment from street right-of-way
- High-volume or high-speed streets

Sidepath

- Path for use by both bicyclists and pedestrians within street right of way
- At curb level to separate from traffic, preferably with buffer between path and street
- Typically marked with a center line
- High-volume or high-speed streets

Cycle Track

- Provides bike-only facility physically separated from automobile travel lane and sidewalk
- Separated from traffic by curb, bollards, parked cars and/or other vertical elements
- Medium- and high-volume streets

Buffered Bike Lane

- Increases riding space and comfort by adding a painted buffer to standard bike lane
- Buffer located either between the bike lane and automobile travel lane, or between bike lane and parking
- Medium- to high-volume streets

Bike Lane

- Marks dedicated space for bicyclists on the street with pavement markings
- Often on the right side of the street, and can be marked on one-way streets
- Medium- or low-volume streets

Priority Shared Lane Marking

- Similar to Shared Lane Markings but underlayed with a bright green box and spaced more frequently
- Used in locations with higher volumes of traffic and/or complex traffic patterns such as those with higher turnover on-street parking
- Medium- or low-volume streets wtih speed limits under 35 mph

Shared-Lane Marking ("Sharrow")

- Shows both bicyclists and drivers where bicyclists should ride on street for safe travel
- Reinforces that bicyclists belong in the lane and drivers must share the road
- Low- and medium-volume streets where bicycle lanes cannot be accommodated

Signed Route

- Directs bicyclists to connecting routes
- Notifies drivers to expect bicyclists on the roadway
- "Share the Road" signs often used
- Low-volume streets in rural or local neighborhood contexts

Recommendations Refinement

Once draft facility recommendations were complete, INCOG shared the network with staff in all local member jurisdictions. Staff consulted ranged from City Managers to planning to transportation staff. This local knowledge helped eliminate some projects from both the GO Plan network and incorporated 1999 Plan recommendations. Some facility types were also adjusted based on the comfort level of local officials with roadway changes such as road diets or the construction of a sidepath. Feedback was also sought from INCOG staff knowledgeable about bicycling in the region, the Bicycle and Pedestrian Advisory Committee, and the GO Plan steering committee.

Additionally, the 1999 Plan on-street recommendations were reviewed to assign an appropriate facility type to those routes that represented important regional connections. Many of these "bikeways" in rural areas were recommended to be signed routes that will primarily serve experienced recreational riders. Urban, local street bikeways were predominantly recommended to be signed routes as well. Though these routes consist of low-volume, low-speed local streets, they may need improvements at arterial intersections to function effectively and safely for bicyclists. In the long term, communities may decide that they want to enhance these neighborhood bikeways with traffic calming measures such as those outlined in the Pedestrian and Bicycle Design Guidelines in Appendix A.

Network Facility Recommendations

The bicycle network for the Tulsa region sets an ambitious vision for connecting major destinations via a 800-mile system of on-street facilities and routes, 165 miles of sidepaths and 408 miles of off-street trails. The full build-out of this network will link communities to one another and important destinations within each community.

Facility Type	Total Regional Mileage
Signed Route	605.7
Shared Lane Markings	33.6
Priority Shared Lane	0.5
Bicycle Corridor	55.5
Bike Lane	89.7
Buffered Bike Lane	5.7
Cycle Track	9.0
Sidepath	165.3
Trail	407.7
TOTAL MILES	1372.8

Overall, the set of facility recommendations provides a lower-stress bicycling experience throughout the region.[7] The 408 miles of recommended trails will provide a family-friendly, off-street riding experience. Sidepaths and cycle tracks on major arterials will allow less experienced riders to access the many commercial destinations located along these corridors. And bike lanes and signed routes on lower volume streets will help bicyclists navigate comfortable routes.

Wayfinding

The bicycle network will only be useful to the region's residents if it is clearly recognizable. Though signed routes are the only facility type indicated to explicitly include signage, INCOG should consider a comprehensive wayfinding system to be implemented as bicycle facilities are added to the network. In order to attract riders, this network must be publicized through a new bike map, and more directly identified through a wayfinding and branding system.

7 The "Bicycle Corridor" facility included in this table is used in the City of Tulsa and indicates a street where a bike lane is the desired facility, but shared lane markings may be necessary in some segments due to roadway constraints.

Wayfinding consists of signs that direct bicyclists along routes, providing clarity about turns and reassuring riders that they are continuing along a designated bicycle route. As new or novice riders see wayfinding signage throughout the region, they may be encouraged to try riding along a new route where they can be assured a low-stress trip. Wayfinding is also helpful to visitors and could help orient newcomers such as University of Tulsa students.

A wayfinding system should indicate distance and destinations. Destinations typically identified by the public as important include: parks, neighborhoods, business districts, schools, and trails. Wayfinding should not be limited to on-street routes. There is no current signage on trails. Wayfinding signs on trails should use the same destinations as the on-street network and should indicate the name of cross streets at access points. Access points can also be marked with directional wayfinding orienting trail users and helping them to make decisions about which way to turn.

Wayfinding signage design guidance is provided in the MUTCD and results in assemblies like the one pictured above.

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3 PEDESTRIAN STRATEGY

Every resident and visitor in the Tulsa region is a pedestrian at some point. People enjoy strolling their city's main streets and walking and running for health. Some of the region's residents also walk for transportation, for their whole trip or as part of a transit trip. However, the vast majority of trips in the region are still taken by private automobile.

This chapter provides an overview of the existing pedestrian environment and how the region's development patterns have influenced pedestrian travel. It also reports on regional attitudes toward walking and existing infrastructure. The chapter then outlines this plan's approach to pedestrian recommendations and concludes with a set of concept designs for typical challenging pedestrian locations.

Existing Pedestrian Environment

The decision to walk for a given trip is influenced by a number of factors outlined below. The GO Plan recommendations seek to address the pedestrian environment as it exists today but acknowledges that some influences on walking, such as land use and the layout of street networks, will not change quickly if at all.

Development Patterns

Today, much of the walking in the Tulsa region is for recreation. Residents indicated on the Plan survey that they view it as great means of exercise, but walking and bicycling for transportation today are limited. Some residents commute or travel for other purposes by these modes because they are inexpensive, because there is no car available, or because they can complete the "last mile" of a transit trip connecting to a destination not directly on a bus line. Others use these modes because their trips are short, easily completed in a short time on foot or bike. And still other residents use these modes because they want to incorporate activity into their daily travel for health or environmental reasons.

Proximity of Destinations

Many trips in the region cannot be completed by foot today. Sprawling development in the suburban and rural communities of the region has resulted in destinations that are far away from one another. Grocery shopping or dining out, for example, often require trips of at least three miles.

Walk Score, an online resource that rates communities and neighborhoods on their walkability, awards points based on walking distance to amenities. Amenities within a five-minute walk (0.25 miles) are given maximum points. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density. In this evaluation system, the vast majority of the Tulsa region is rated in Walk Score as "car dependent." There are limited neighborhoods close to downtown Tulsa that are rated "somewhat walkable" because of mixed land use and a more fine-grained street network.

As noted in the Introduction, the region's planners are hoping to move new development toward mixed-use centers that increase the proximity of destinations and improve walkability.

Suburban Street Networks

The typical street network in suburban development also presents a barrier to making short trips. Outside of downtown and main street core areas, the region's development is framed by a one-mile arterial grid system. The central areas retain a grid system that was developed in a pre-automobile era, whereas subsequent development, especially since World War II, moved toward meandering residential streets and cul-de-sacs. The boom in residential development in the last 10 years in the region's fast-growing communities of Owasso and Broken Arrow has continued in this pattern. This type of street network makes travel through neighborhoods difficult and funnels all modes of traffic onto the arterial grid. Trips are longer than they could be if connections were provided between neighborhoods. Local streets that do not align in a regular intersection across arterial streets also make pedestrian travel difficult, especially when no sidewalk is present on the arterial. Small investments in short connector paths or segments of sidewalk could help overcome these challenges.

Infrastructure

Trips that may be within a walkable distance, such as from a subdivision to a nearby convenience store, are not taken by foot today because pedestrian infrastructure is not reliably available. Sidewalk construction along arterial streets in many communities has been ad hoc as new landowners develop parcels. Even in communities with good sidewalk coverage on arterial streets, there are often gaps approaching intersections where sidewalks dead-end into parking lots for shopping centers, convenience stores or gas stations located on these desirable commercial lots. The resulting fragmented network is substandard and largely inaccessible for physically disabled people or even those pushing a stroller.

Pedestrian Travel

Walking for transportation in the Tulsa region is limited today. American Community Survey (ACS) data shows that the City of Tulsa has the highest walking commute mode share in the region at 1.8 percent which is not surprising given that destinations are in closer proximity than other communities.[1] All other jurisdictions are estimated to have an average walking commute mode

1 American Community Survey 5-Year Estimate 2009-2013, Table B08006.

Sidewalks that do exist in many locations are serviceable but do not provide a pleasant or desirable walking experience.

Street trees would provide shade and a welcome buffer from traffic on this high-speed arterial. Additionally, vertical elements next to the roadway have been shown to help reduce speeding by visually narrowing the roadway for drivers.

The presence of multiple driveway cuts over a short distance creates conflicts between drivers and pedestrians.

To be ADA compliant, curb ramps must meet standards for grade, width and landing area. They must also align directly with crosswalks rather than pointing to the diagonal of an intersection.

Standard crosswalks consisting of two parallel white lines are less visible to drivers than zebra or ladder designs that include wide white stripes perpendicular to the road edge. Stop bars are also needed at intersections to direct drivers to stop at a greater distance from the crosswalk, making it less likely they will block a pedestrian's path of travel.

Long gaps between signalized crossings on a commercial arterial, such as this segment of Admiral Street, can lead to dangerous crossing behavior for pedestrians accessing destinations on the other side of the street.

Walkable Districts in the Tulsa Region

The Tulsa region has a number of examples of areas that are or can become highly walkable. Within the City of Tulsa, the Brady Arts and Blue Dome districts in downtown have many commercial and retail destinations in close proximity, and more residential development is being added every year. Streetscape efforts have been made in other small business districts such as Cherry Street and Brookside on Peoria Avenue to make them attractive to pedestrian travel. This encourages "park once" behavior whereby visitors who drive to the district park and complete trips to multiple destinations within the district on foot. Other areas of the City of Tulsa, such as Kendall-Whittier, are starting to redevelop their strips with historical buildings into vibrant, walkable commercial areas.

The downtowns of other smaller communities in the region also have the good bones of a gridded street network and small, historic commercial properties that will lend themselves to becoming highly walkable districts. Some communities, such as Jenks and Broken Arrow, have redesigned their Main Streets through road diets that provide additional space for pedestrians and calm traffic through narrowing the roadway with curb extensions.

Broken Arrow's Rose District features a pedestrian-friendly streetscape.

share of less than 1.0 percent. The land use and street network patterns described above have contributed to these mode share numbers.

As noted in Chapter 2, work trips account for only 11.6 percent of all trips in the region. According to the GO Plan survey, the most frequently walked-to destination is a restaurant or coffee shop. It is likely that these trips take place during the work day when more respondents are in walkable parts of the region where restaurants are in close proximity to workplaces.

Every community in the region includes some households without access to an automobile. According to the 2013 American Community Survey, Jenks had the lowest percentage of households without a vehicle available (2.1 percent), and Tulsa had the highest (8.4 percent). Residents of households without a vehicle are more likely to walk, bike or take transit trips. Areas with low automobile ownership are priority areas for improvements in this plan.

Attitudes

Similar to bicycling, residents in the region tend to view walking as a good means of exercise and an opportunity to spend time with friends and family. Survey respondents also recognized that many destinations are simply too far to walk to with 58 percent citing distance as a barrier to walking. In written comments, a number of respondents also noted that the current design of facilities does not invite walking. The lack of a buffer between pedestrians and high-speed traffic and a lack of crosswalks were cited as factors that make residents less likely to walk. Similarly, respondents cited the construction of new sidewalks as the improvement that would make them most likely to walk more. Improved street lighting and additional trails were also cited. Comments received on the WikiMap were similar in citing sidewalk gaps and dangerous intersections as the main barriers to walking.

Pedestrian Recommendations Approach

Though it is possible to craft a bicycle network at the regional scale as was presented in Chapter 2, the creation of a comprehensive set of pedestrian recommendations is difficult at this scale. Pedestrians take short trips that are not centered on arterial streets but are much more destination-oriented, focused on locations such as transit stops, parks, schools and shopping centers. Fieldwork conducted for the bicycle strategy enabled the project team to gain a general sense of the infrastructure qualities noted above and to see how pedestrians tend to navigate some of the more typical place types and locations found throughout the region. However, detailed data on the pedestrian infrastructure such as curb ramps, crosswalks, signals and sidewalk gaps was not noted.

The pedestrian recommendations of the GO Plan focus on four elements:

- Prioritization of the existing INCOG sidewalk gap inventory,
- Detailed assessment and recommendations for one or more focus areas per jurisdiction,
- Concept designs for typical challenging pedestrian scenarios, and
- Policy recommendations.

All policy recommendations are presented in Chapter 5, some of which are specific to pedestrian access and improvements, and some of which will benefit pedestrians and bicyclists equally.

Sidewalk Gap Prioritization

Some communities in the region have sidewalk construction policies that have resulted in relatively comprehensive coverage on arterial streets. Gaps in the network do exist, however. INCOG conducted an inventory of arterial sidewalk gaps in 2013 to document segments where there are no sidewalks on either side of the street. Region-wide, gaps were prioritized based on their proximity to schools, parks, transit lines and areas with low automobile ownership. Streets with higher traffic volumes were also ranked higher.

Within the City of Tulsa, gaps were prioritized using the methodology set forth in a 2015 national report from the National Cooperative Highway Research Program (NCHRP). City staff provided input on what variables to incorporate into the analysis, including data from the City's ADA Transition Plan completed in 2011. The tables on the following page presents the factors, variables and weighting included in this scheme.

This approach is further detailed in Appendix C.

While the inventory is helpful for identifying these worst-case locations, installing a sidewalk on only one side of an arterial is not a best practice. Arterial streets in the region often have long distances between signalized crossings where pedestrians can safely access destinations on the other side of the street. Forcing pedestrians to travel on one side of the street will lead to unsafe midblock crossings where facilities that notify drivers to expect pedestrians are not provided.

All of the sidepath and trail recommendations in the bicycle network will also benefit pedestrians. Some sidepath recommendations will close small sidewalk gaps, while others will provide longer distance connections more likely to be used by recreational walkers and runners.

Community Focus Areas

The focus areas identified in each community represent high-priority locations for pedestrian improvements. Many are locations of pedestrian crashes or near misses that have occurred in the last few years. They also often include pedestrian traffic generators such as schools and shopping destinations. These small areas were identified by planners in each jurisdiction and by stakeholders at community Walkshops. They should be considered the highest priority pedestrian projects for each community to complete when implementing this plan.

Regional Pedestrian Prioritization Factors and Variables

Factor	Variables
Safety	
	Roadway average daily traffic (data from INCOG)
Equity	
	Serves area with low automobile ownership
Connectivity	
	Within 10 minute walk of:
	- Schools
	- Parks
	- Transit stops

City Of Tulsa Pedestrian Prioritization Factors and Variables

Factor	Variables
Stakeholder Input	
	Sidewalk Complaint List
Safety	
	Weighted Pedestrian Accessibility Score from ADA Transition Plan
	Roadway average daily traffic
Demand	
	Proximity to planned dense land use (Building Blocks from PLANiTULSA)
Equity	
	Serves area with low automobile ownership
Connectivity	
	Within 10 minute walk of:
	- Schools
	- Parks
	- Daily shopping needs
	- Medical
	- Transit stops

Concept Designs

A subset of the focus areas were identified as typical pedestrian environments that occur throughout the region. A concept-level design was prepared for each of these five areas, and elements of these designs can be applied to similar locations. The five areas included six typical situations:

- School connection across state highway
- At-grade highway intersection
- School access on major arterial
- Commercial main street
- Major arterial intersection
- Grade-separated highway interchange

Assessment and design details of these situations are included in the following pages.

SCHOOL CONNECTION ACROSS STATE HIGHWAY

Lack of sidewalks along S 305th East Ave

Lack of crosswalks and ramps at intersection

Hwy 51 is wide to cross as a pedestrian

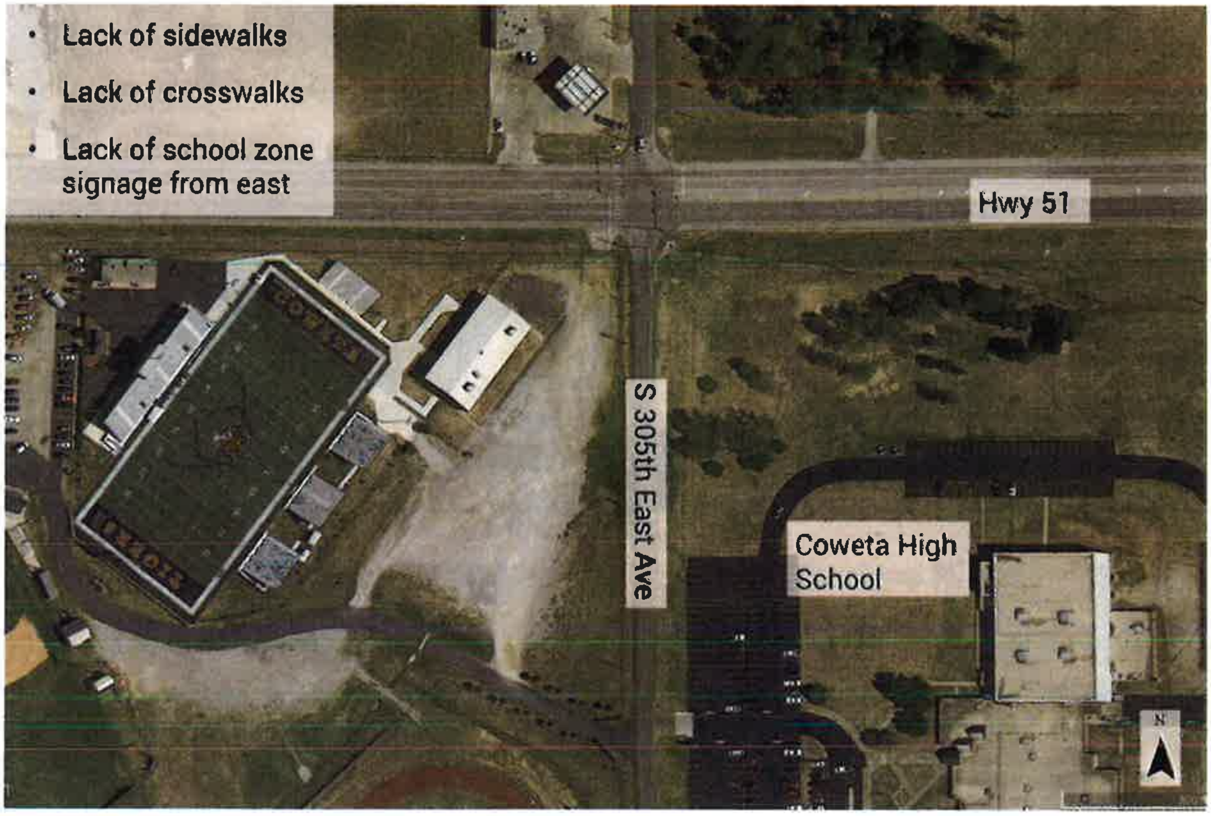
No ADA compliance or connection to sidewalks

Coweta High School and East Highway 51

Highway 51 is a large arterial roadway that is the main thoroughfare from Coweta to Tulsa. S 305th East Ave is a rural 2-lane street that serves as the entry drive to the Coweta High School. Hwy 51 experiences hostile driving patterns from speeding traffic, swerving, and congestion only during the peak times of morning and afternoon rush hour and schools' start and dismissal. At the intersection of S 305th East Ave, the lone crosswalk leads to no ramps or sidewalks and the time between walk signals is too long and the amount of time given to make the long crossing across Highway 51 is not long enough.

The concept solutions range from adding simple things like sidewalks and adding elements to the intersection to make it safer to cross. The intersection of 51 and S 305th East Ave should have push button detection and high visibility crosswalks on all 4 approaches and ADA accessible ramps to sidewalks. Sidewalks should be added along the east side of S 305th East Ave at a minimum and on both sides if available. At the entries to the high school and the high school sports complex off of S 305th East Ave, there should be a raised crossing and HAWK signal to allow easier pedestrian crossing. School zone signage should also be added along Highway 51 to the east of this intersection to notify drivers that they are approaching a high-volume pedestrian area.

SCHOOL CONNECTION ACROSS STATE HIGHWAY



Existing aerial of the Coweta High School complex and Highway 51

Conceptual plan of the Coweta High School complex and Highway 51

SCHOOL CONNECTION ACROSS STATE HIGHWAY

Existing photo of S 305th East Ave looking south toward Coweta High School

Conceptual photo-rendering of S 305th East Ave looking south toward Coweta High School

AT-GRADE HIGHWAY INTERSECTION

No pedestrian crossing across Highway 97

Right turn slip lane on W 41st Street

No sidewalks along E 41st Street

Wide driveway crossing issues along E 41st Street

Highway 97 at East 41st Street

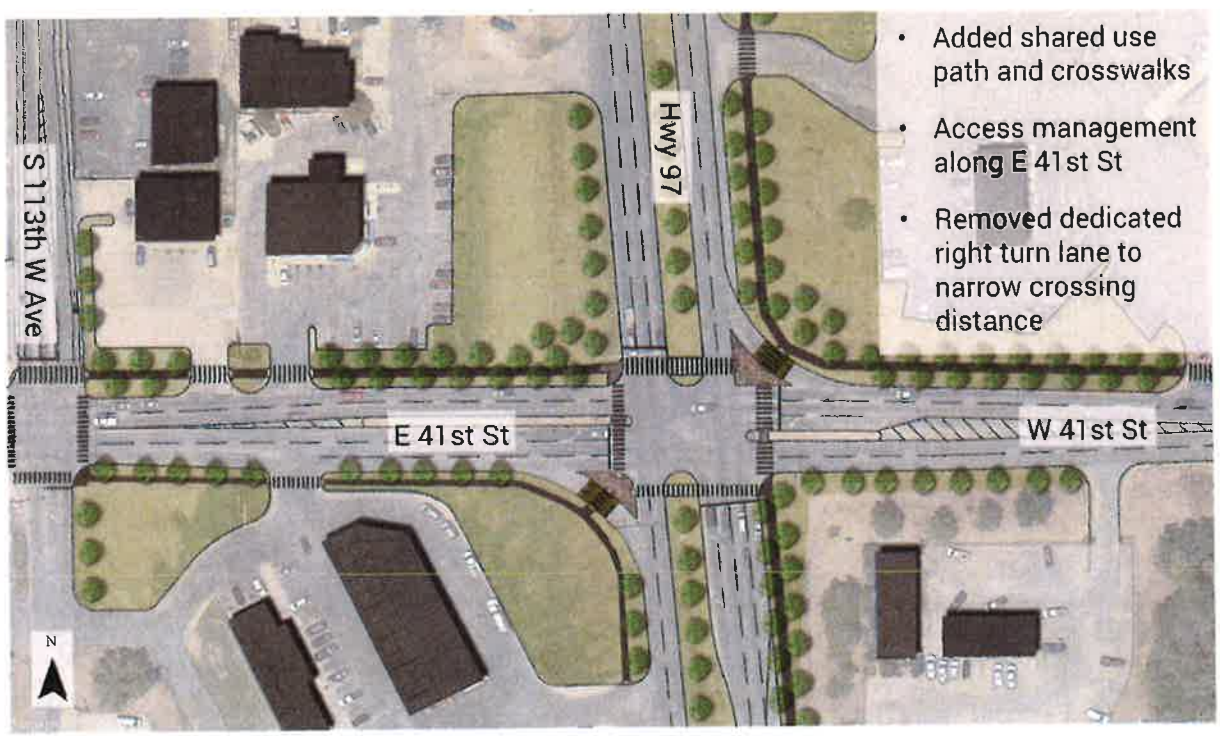
Highway 97 is a wide, median-divided roadway that is very hostile to pedestrians and bicyclists and lacks sidewalks or crosswalks at any of the approaches at the intersection of West 41st Street. Numerous destinations are located along Highway 97, though, as it is a main suburban commercial corridor for Sand Springs. Commercial destinations are located on three of the four corners at this intersection, and none has suitable pedestrian access. A sidepath exists on the north side of West 41st Street to the east of this area but ends before the intersection of Highway 97.

Additionally, Sand Springs has plans for a streetscape project along South 113th West Avenue which is parallel to Highway 97. This project includes a cycle track that will connect with West 41st Street. This facility should be built along the east side of the street to connect to a new shared use path along the north side of West 41st Street. The connection from 113th West Ave to Hwy 97 should be improved by narrowing and controlling driveway access along E 41st Street.

The intersection of 41st Street and Hwy 97 should have pedestrian push buttons, high visibility crosswalks at all approaches, and median refuge areas installed. Crossing distances should also be shortened through removal of the dedicated right turn lanes at all approaches of the intersection of Highway 97 and West 41st Street. A raised crosswalk should be installed across the remaining right turn slip lane on the northeast corner of the intersection.

AT-GRADE HIGHWAY INTERSECTION

Existing aerial of the intersection of Highway 97 and 41st Street.



Conceptual plan of the intersection of Highway 97 and 41st Street.

AT-GRADE HIGHWAY INTERSECTION

Existing photo looking east at the crossing of Highway 97 on 41st Street

Conceptual photo-rendering of the proposed crossing of Highway 97

SCHOOL ACCESS ON MAJOR ARTERIAL

Class dismissal of students crossing N 129th E Ave

Students crossing East 86th St N on N 129th E Ave

Sidewalk along N 129th E Ave and high school parking lot

Sidewalk on west side of N 129th E Ave

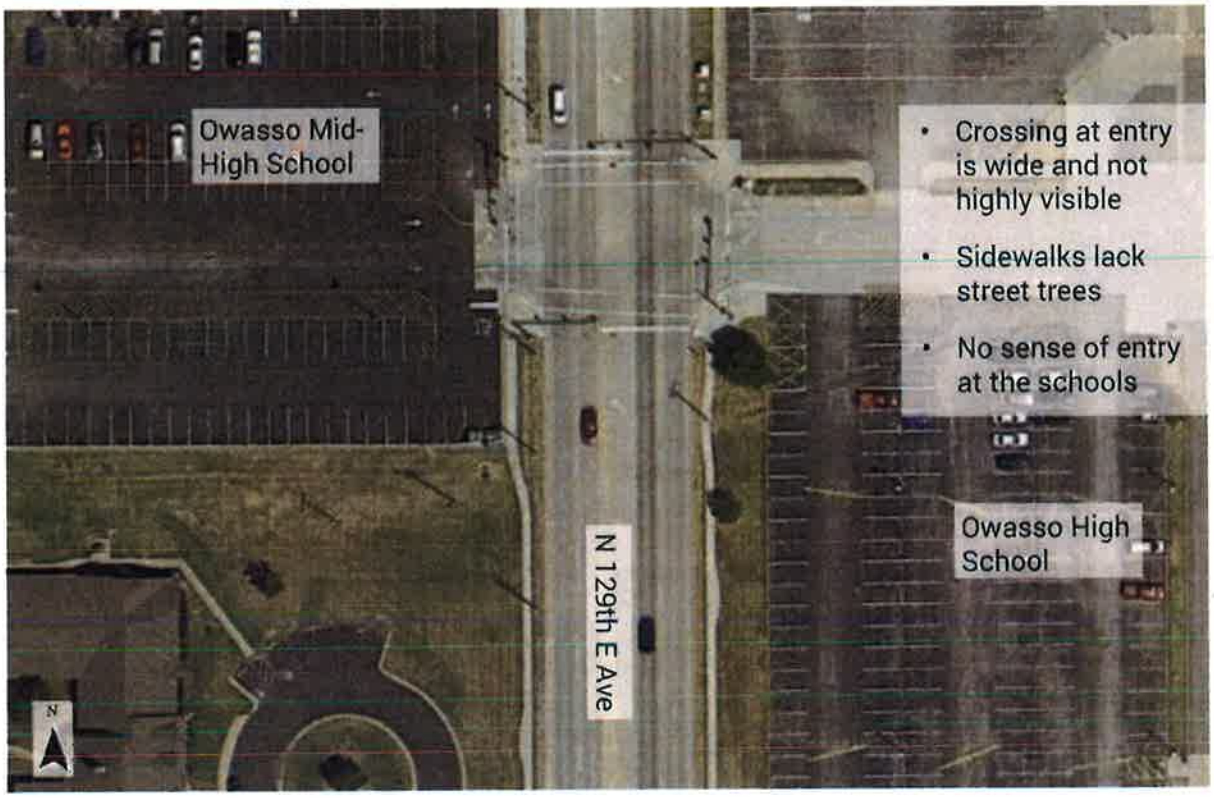
North 129th East Avenue and East 86th Street North, Owasso High School

North 129th East Avenue and East 86th Street North are both key arterial thoroughfares that connect Owasso to the Mingo Valley Expressway and the surrounding residential areas. Owasso High School and Mid-High School, the City's two largest, are located at this intersection. They are directly across from one another on N 129th E Ave and generate a high volume of vehicular and pedestrian traffic. Crossing guards are currently needed at all of the school entrances to control traffic and pedestrian conflicts. During school arrival and dismissal, four crossing guards assist students to cross this major intersection by controlling vehicle turning movements.

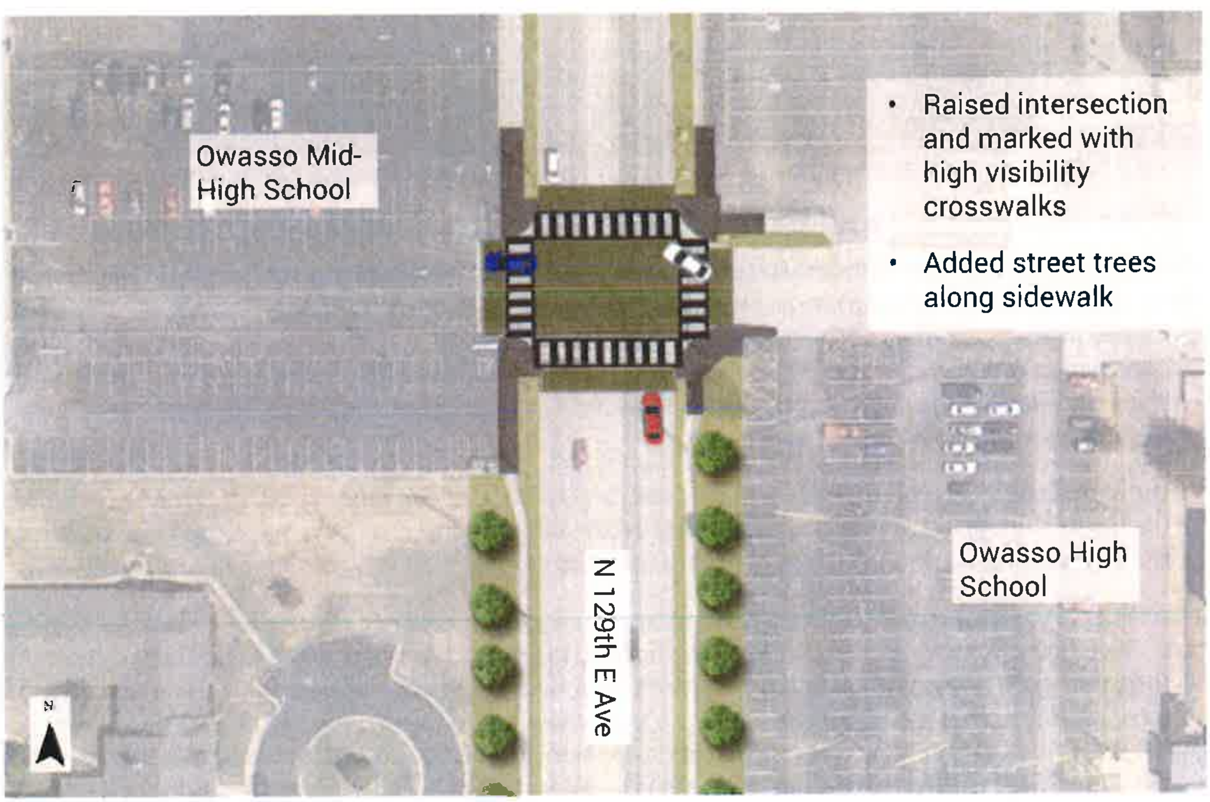
Traffic speeds are relatively normal and slow during school drop-off and pick-up times because of the high volume of traffic, but the rest of the day has vehicular speeding and behavioral issues. Surrounding development is mostly suburban strip retail and gas stations, with some nearby residential development.

The solutions to help this area must focus heavily on pedestrian improvements and ways to calm vehicular traffic along the arterials. The biggest impact would come from constructing raised crosswalks or a fully raised intersection at the High School/Mid-High School entrances off of N 129th East Ave. This would both slow vehicular traffic and would increase the safety of people walking across the intersection. It would also create a gateway to the area and provide sense of entry to the schools. It is also vital to widen the crosswalks and make them high visibility markings at the intersection of N 129th East Ave and E 86th Street N. Planting of street trees in the grass buffer would provide a more comfortable pedestrian experience and help slow traffic. Lastly, a mid-block crossing with HAWK signal and raised median along E 86th St N would allow safer crossing of high school students and the shopping center on the south side of the street.

SCHOOL ACCESS ON MAJOR ARTERIAL



Existing aerial of the Owasso High and Mid-high school entry intersection



Conceptual plan of the proposed raised intersection at the Owasso High and Mid-high school entry intersection

SCHOOL ACCESS ON MAJOR ARTERIAL

Existing photo looking east at the entry intersection of the Owasso High and Mid-high schools

Conceptual photo-rendering of the entry intersection of the Owasso High and Mid-high schools

COMMERCIAL MAIN STREET

Typical sidewalk view on north side of 15th Street

On street parking removed from south side of 15th Street

Lack of mid-block crossings along 15th Street

Access management issues along 15th Street

15th Street between Peoria Avenue and Utica Avenue

While 15th Street was narrowed from four lanes to two in 2012 this area, there are additional streetscape improvements that would further attract pedestrian traffic to this retail and restaurant corridor. Discontinuous sidewalks, access management issues with many driveways, poor crossing treatments, and the lack of a bicycle facility are all pressing issues for this area. Most of the existing crosswalks along 15th Street are faded and do not adequately alert drivers to pedestrian cross traffic. Many of these crossings also do not have ADA-compliant curb ramps. A dense commercial corridor such as this one needs frequent crossings to enable pedestrians to patronize businesses on both sides of the street safely and comfortably. The City of Tulsa is currently undertaking a streetscape plan for this corridor that should incorporate the recommendations provided here.

The conditions along these corridors can be improved with a few minimal investments and streetscape elements. The sidewalks should be made clear and continuous along both sides of the streets and high visibility crosswalks should be added at the intersection of 15th Street and Utica Avenue. This will require building raised sidewalks at driveway crossings along 15th Street and implementing some access management strategies for businesses that currently have open parking areas to the street. Along 15th Street there should be several mid-block crossings and crossing treatments at the intersection of SH-51/St Louis Avenue, south of 15th St. These crossings should be a part of a streetscape enhancement project that bring in curb extensions with street trees and pedestrian scale street lighting along the sidewalks. A robust planting and lighting plan will truly enhance this commercial corridor and encourage pedestrians to stroll and visit more than one business on a trip.

COMMERCIAL MAIN STREET

Existing aerial of E 15th Street

Conceptual plan of the proposed crossings, streetscape treatments, and sidewalk improvements on E 15th Street

COMMERCIAL MAIN STREET

Existing photo looking east at the faded crossing of E 15th Street

Conceptual photo-rendering of a raised mid-block crossing on E 15th Street

MAJOR ARTERIAL INTERSECTION

Looking west on E 21st St from the intersection of Garnett

Looking east on E 21st St from the intersection of Garnett

Looking North at the crossing of E 21st St on Garnett Rd

Wide intersection at E 21st Street and Garnett Road

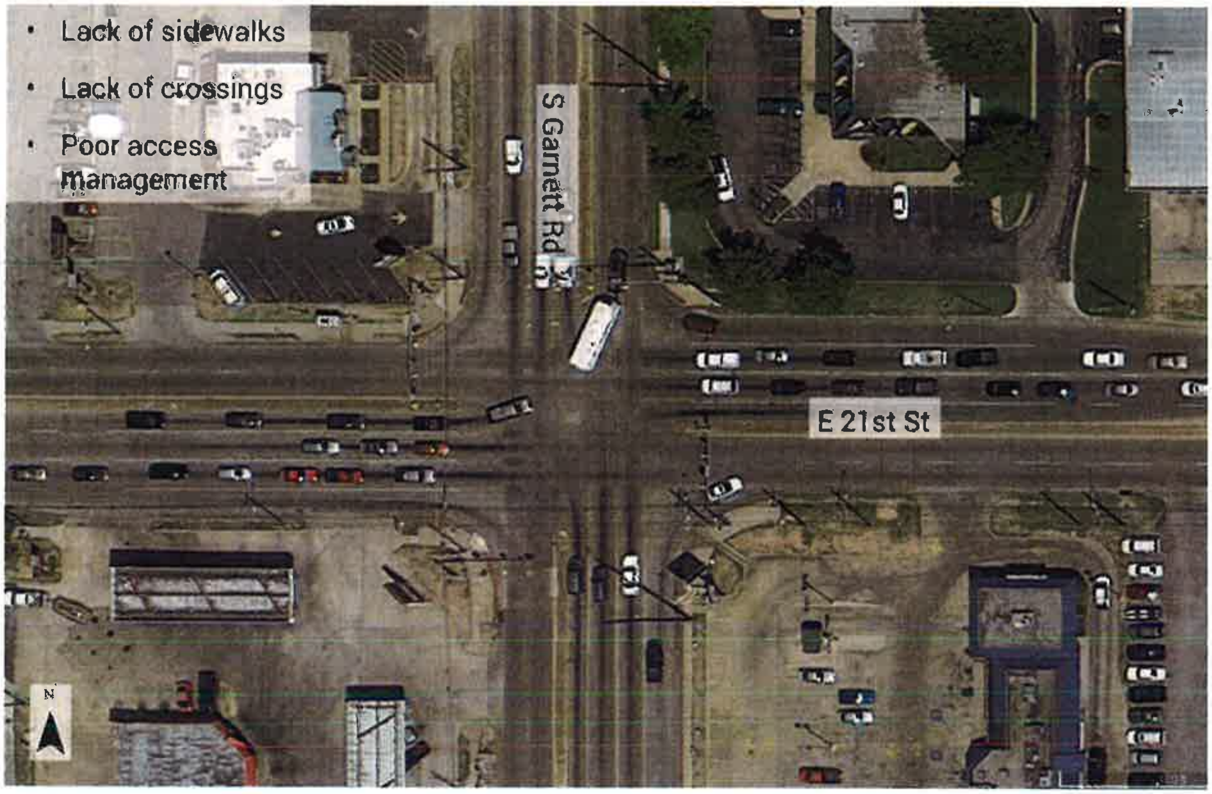
East 21st Street At South Garnett Road

East 21st Street and Garnett Road are key arterials that connect to Mingo Valley Expressway and Interstate 44. They have a typical suburban strip development character. At the intersection of East 21st Street and Garnett Road there is a small node of retail stores, chain restaurants, and gas stations. Unfortunately there are no continuous sidewalks along either side of E 21st Street, and there are multiple driveway cuts and access management issues with the development patterns and large surface parking lots. There are also no sidewalks or crossing treatments as a pedestrian approaches US Highway 169 exit ramps. Along this corridor there are additional pedestrian and vehicle conflicts because of the multiple parking lot entries and poor access management. Transit service exists on both 21st Street and Garnett Road, but the lack of sidewalk connectivity creates a barrier to access the bus stops for both lines.

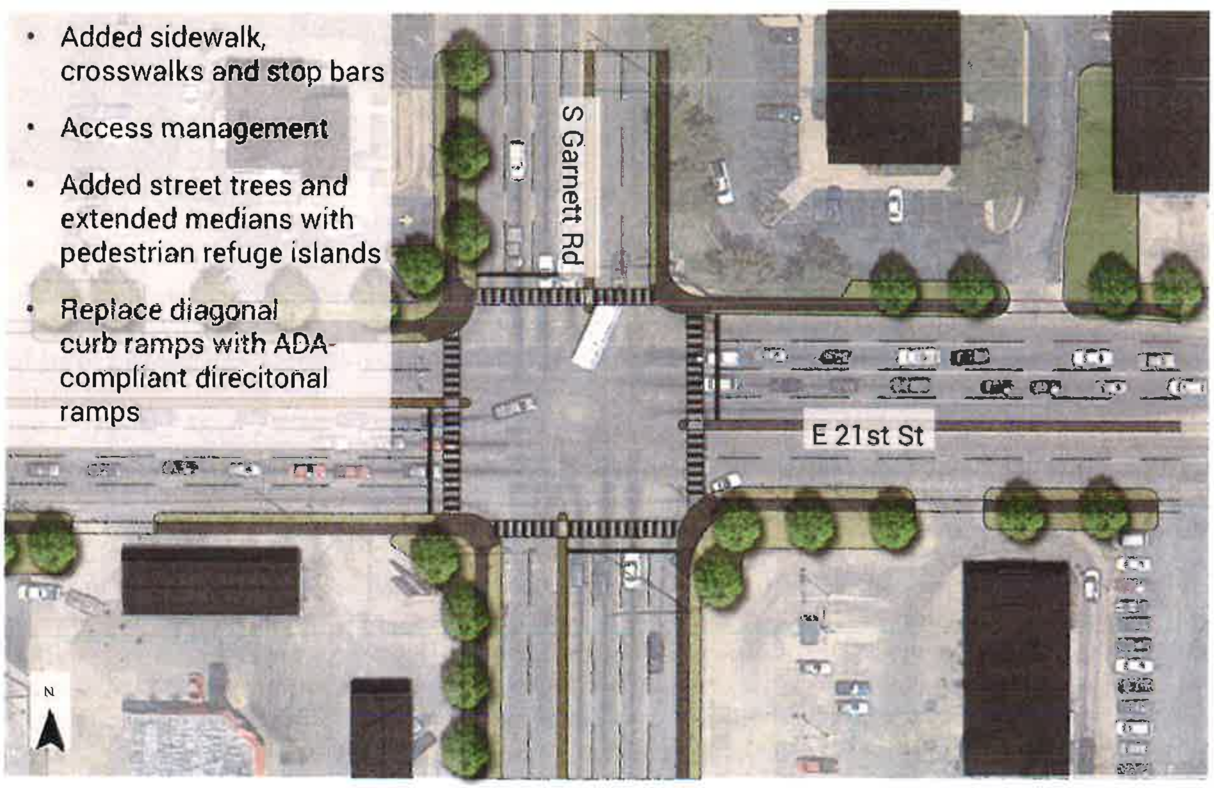
The first improvements to this area should occur within the pedestrian realm. Each side of E 21st Street should have continuous sidewalks with shade trees planted within a grass planting strip between the roadway and the new sidewalk. Access management strategies should be implemented along the streets to make the sidewalks safer from turning vehicles in the multiple driveway cuts for each property and parking lots. This will reduce the number of driveway crossings and make it safer for vehicles traveling along the streets by eliminating a number of conflict points. Eliminating driveway cuts close to intersections will also decrease driver confusion and frustration with vehicles entering/exiting.

There should also be high visibility crosswalk markings added to the intersection of Garnett Road and E 21st Street. These crossings can be further protected by adding raised median islands and extensions to the median island ends to provide refuge areas at the crossings.

MAJOR ARTERIAL INTERSECTION



Existing aerial of the intersection of E 21st Street and S Garnett Road



Conceptual plan of the proposed crossings, streetscape treatments, and sidewalk improvements at the intersection of E 21st Street and S Garnett Road

MAJOR ARTERIAL INTERSECTION

Existing photo looking east at the missing crosswalk at the crossing of South Garnett Road

Conceptual photo-rendering of a high visibility crosswalk, re-aligned curb ramp and refuge island median

GRADE-SEPARATED HIGHWAY INTERCHANGE


Lack of sidewalk under the Highway 169 overpass


Lack of crossing at the Highway 169 off ramps


Lack of sidewalk along East 21st Street


Lack of pedestrian crossings across East 21st Street

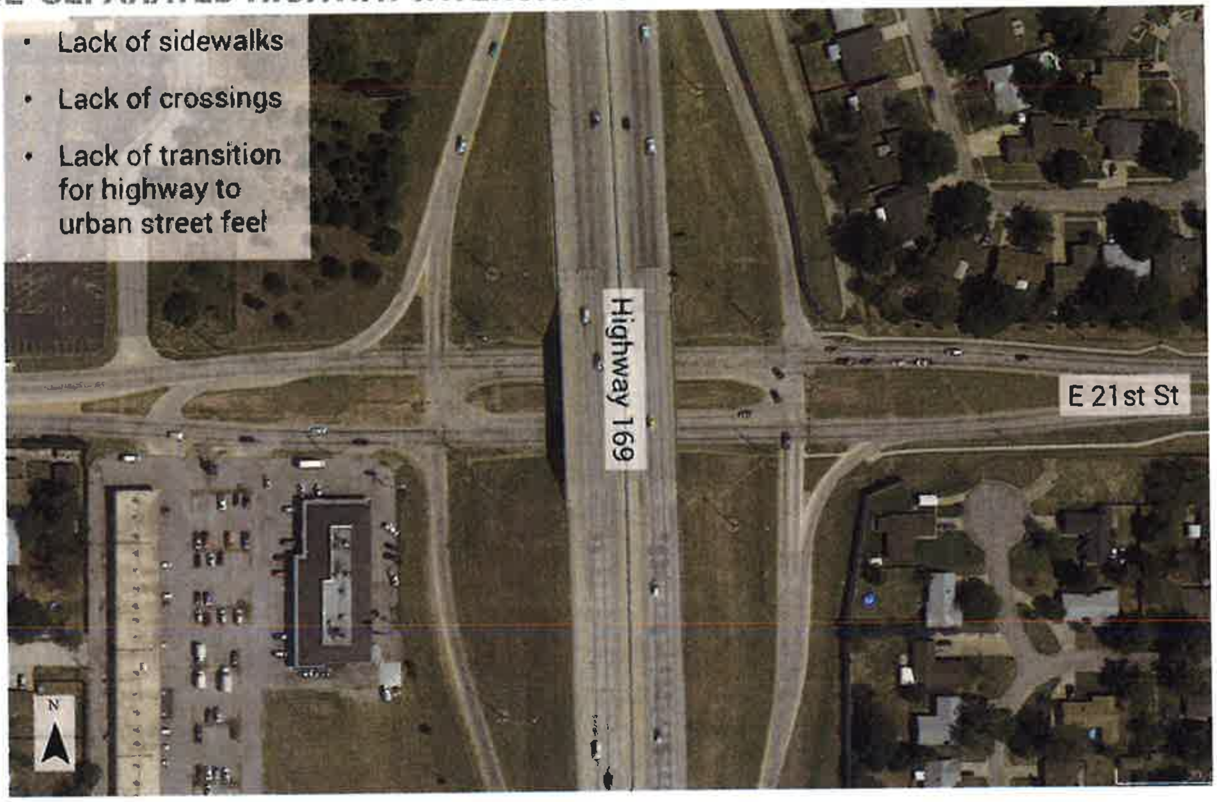
East 21st Street at Highway 169

There are similar issues at the intersection of Highway 169 and East 21st Street to what occurs to the east at the Garnett Road intersection concept area. Sidewalks are not present underneath or to the west of US Highway 169, but frequent pedestrian and bicyclist travel is evident from dirt "cow paths" along the edge of East 21st Street. There are pedestrian signals at the crossings of the highway ramps, but the push buttons are not activated and there are no crosswalks. There is also no ADA-compliant way to cross the median on East 21st Street though there is a pedestrian push button located on the utility pole in the median.

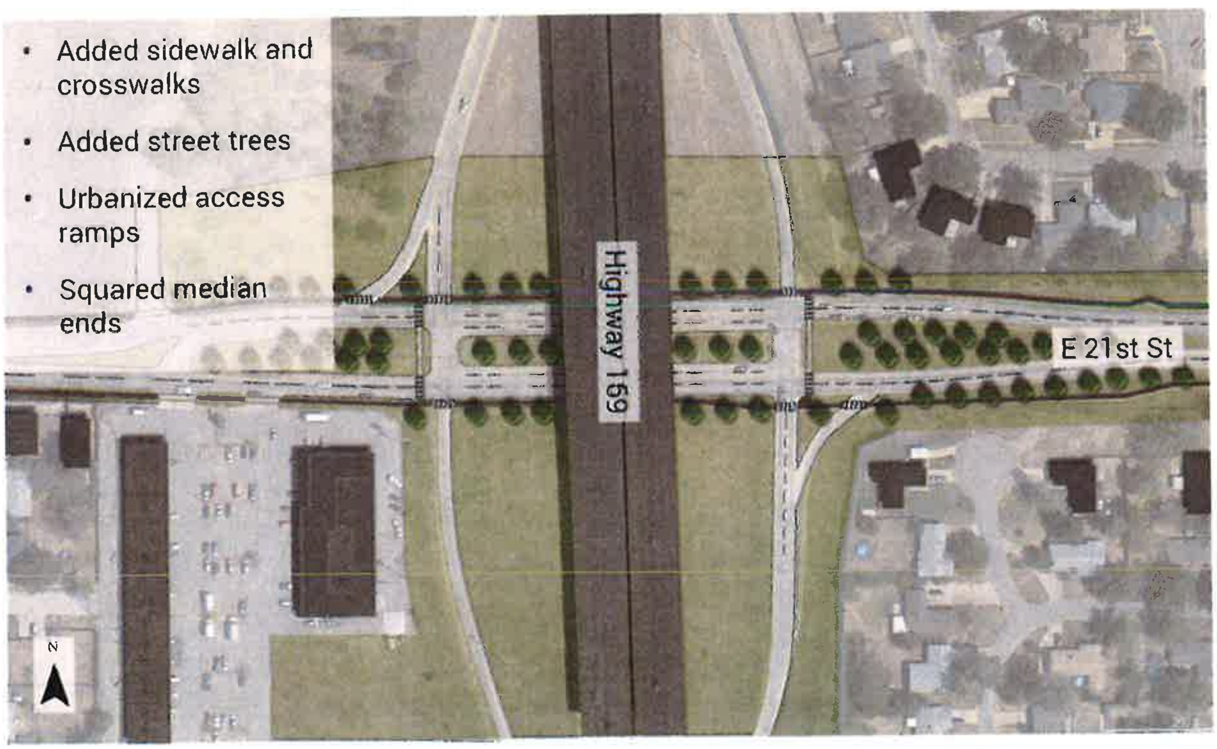
As with the area along East 21st Street to the east, sidewalks and ADA-compliant curb ramps are the top priority in this concept area. To help accommodate bikes these should be shared use paths under the Highway 169 overpass. To make crossings safer and more conspicuous, there should be high visibility crosswalk markings at the Highway ramp intersections and push button detection at the ramp crossings. The geometry of the medians and off ramps should also be urbanized and squared to slow traffic exiting Highway 169 and prepare drivers for interacting with pedestrians and bicyclists crossing their path of travel.

There should also be shade trees from an approved city planting list planted within the planting strip between the roadway and the new sidewalk where right-of-way is available. In this area and similar ones, vegetation should be managed so as not to impede travel along a sidewalk as it does now in the photo above at the bottom left. New street trees can be added through partnerships. The City of Tulsa should approach a third party such as Up With Trees to plant and maintain the plantings indicated.

GRADE-SEPARATED HIGHWAY INTERCHANGE



Existing aerial of the intersection of E 21st Street and Highway 169



Conceptual plan of the proposed crossings, streetscape treatments, and sidewalk improvements at the intersection of E 21st Street and Highway 169

GRADE-SEPARATED HIGHWAY INTERCHANGE

Existing photo looking east at the missing crosswalk at the crossing of the Highway 169 on ramp

Conceptual photo-rendering of a high visibility crosswalk at the crossing of the Highway 169 on ramp

4 IMPLEMENTATION

The bicycle and pedestrian facility recommendations in this plan are designed to be efficiently incorporated into jurisdiction planning and development processes. Implementation of these recommendations will occur over time, commensurate with available resources in each jurisdiction.

This chapter:

- Provides details on project prioritization and phasing
- Presents planning-level cost estimates and assumptions
- Enumerates possible funding sources

The recommendations for expanding the region's bicycle and pedestrian facility networks were based on historical and anticipated funding levels. The proposed approach also gives jurisdictions flexibility to pursue projects as opportunities arise and conditions change.

Plan Projects

The bicycle network was divided into a set of 700 projects for the purposes of recommending implementation approaches and developing a prioritized list, with cost estimates, by jurisdiction. The network was divided into projects through the following method:

Geography

- Recommendations located wholly within a city were assigned to that city
- Recommendations with a majority of their mileage located within a city were assigned to that city
- Recommendations with a majority of their mileage outside a city were assigned to the appropriate county
- Recommendations located on a street along a jurisdictional boundary (city-city or city-county) were assigned to the appropriate county

Facility

- Projects are located along a single street or trail corridor
- Signed routes are bounded by logical end points (e.g. destination, or major street or direction change) and often include more than one street
- Where the facility type changes along a corridor, recommendations were broken into separate projects
  - Exception: a project that calls for a bike lane along part of a street and a shared lane marking for part of that street is considered one project.

Main St in Broken Arrow is an example of a multi-facility project.

This method is intended to produce a project list that will lead jurisdictions logically toward implementation. Individual projects connect to one another to create the full network. However, inevitably, some bicycle facilities will be built that initially do not connect to other facilities or to destinations. This is a result of incremental implementation that will be the most practical approach to building out the entire network. Disconnected segments are particularly likely on arterial streets where sidepaths will be implemented over time during street reconstruction projects. It is important to understand that the ultimate value of a facility will not be fully realized until it is connected to the network.

Project Implementation

Bicycle and pedestrian projects are typically implemented in one of two ways: as part of a larger roadway project, or as a standalone effort. The former is often more efficient, as costs for materials and labor can achieve economies of scale when folded into a larger project. Bicycle and pedestrian facilities are typically a relatively small portion of a roadway project, whether it is a restriping, resurfacing or reconstruction project. While planned and programmed street improvements can help guide the implementation schedule for this plan, jurisdictions should also consider prioritizing improvements on streets where bicycle and pedestrian projects are recommended.

Standalone projects tend to be facilities that have minimal impact on a street. For bicycle projects, this includes the installation of rural signed routes and the construction of off-street trails. Urban signed routes may also be implemented as standalone projects, but they are more likely to need additional crossing treatments such as warning signage, signals or median islands and short lengths of sidepath that connect offset crossings. Trail projects will also require intersection improvements, but they are not likely to require reconstruction of a street. Projects implemented by striping or other paint installation may also be standalone projects, but they will require eradication of existing pavement markings.

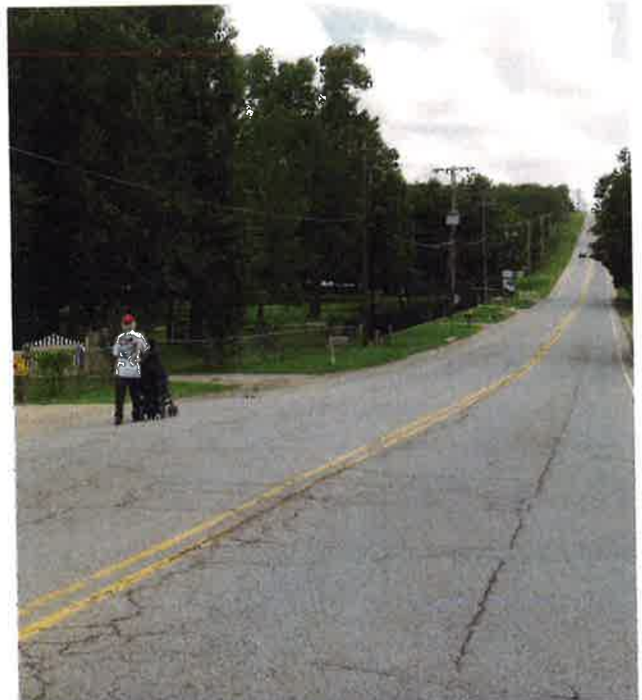
For pedestrian projects, sidewalk gaps will be filled as streets are reconstructed or as new development is located in adjacent parcels. Although funding may not be available to complete all projects at one time, the additional pedestrian recommendations in focus areas are intended to be implemented as a bundle because they work in concert to improve all observed pedestrian safety issues in the area.

Local governments will have primary responsibility for implementing projects in the GO Plan. Responsibility for design and construction of projects will be taken on by each jurisdiction individually. However, because the GO Plan network intends to connect major regional destinations, many projects connect across city lines, INCOG will assist in facilitation of finding federal funding sources and providing technical assistance with project development. It will be advantageous for communities to partner in implementing projects that provide regional connections both from the standpoint of creating a more connected network and for the efficiencies gained through economies of scale in constructing longer projects.

Project Prioritization

All projects in the bicycle network and sidewalk gap inventory were prioritized as part of the GO Plan. The prioritization methodology used for the plan is based on the 10-step method for prioritizing pedestrian and bicycle improvement locations developed for National Cooperative Highway Research Program (NCHRP) Report 803: *Pedestrian and Bicycle Transportation Along Existing Roads—ActiveTrans Priority Tool Guidebook.* The 10-step method is the result of findings from a national survey, literature review, and agency interviews. This method was used for all of the bicycle network projects as well as the sidewalk gaps within the City of Tulsa.

The prioritization tool reflects input of a project steering committee regarding community priorities. Each project is scored based on a set of criteria and weighting which are determined by the steering committee and reflect the vision



Sidewalk gaps such as this one on Union Street in Tulsa were prioritized based on a number of factors.

and goals of the project. The scoring uses a combination of selected factors and variables. Factors are categories used in the prioritization process to express community/agency values and group variables with similar characteristics. Variables are measurable characteristics of roadways, households, neighborhood areas and other features.

For this plan, factors, variables and weighting were recommended by the project team and reviewed by stakeholders. City of Tulsa staff from the planning and engineering departments provided input on these aspects of the prioritization tool and requested the inclusion of a number of City-specific variables for both the bicycle and pedestrian prioritization schemes. The project steering committee and the INCOG Bicycle and Pedestrian Advisory Committee also reviewed the prioritization inputs.

All bicycle projects were scored in the same manner across the region. Those located in the City of Tulsa were additionally scored with those variables noted as "Tulsa-specific" in the table below. Because Tulsa had more readily available data regarding prior plans and projected land use, these factors were incorporated into the prioritization of sidewalk gaps within the city. The final set of factors, variables and weights are provided in the tables [below]. The list of prioritized bicycle projects is presented for each community in Appendix C.

For the rest of the region, sidewalk gaps were prioritized based on proximity to key pedestrian traffic generators: transit lines, schools, parks and areas of low automobile ownership. Additionally, gaps on streets with high traffic volume were ranked higher because of the greater potential for conflicts between pedestrians and drivers. Each of those variables was weighted equally in the regional prioritization. A map of prioritized sidewalk gaps is presented for each community in Chapter 6.

Using the Prioritized Lists

Communities should use the resulting prioritized lists as a guide for implementation over the next 25 years. Projects near the top of each community's bicycle projects list will have

City of Tulsa Bike Prioritization Weighting Factors and Variables

Factor	Variables	Weight
Stakeholder Input		10%
	# WikiMap comments on corridor	
	Presence on project retreat prioritization list	
Opportunities		20%
	% of corridor included on Improve Our Tulsa[1]	
	% of corridor with project identified in prior plan[2]	
	Lower project cost (planning-level cost per mile)	
Safety		20%
	# of bike and pedestrian crashes per mile	
	# of fatal or severe bike and pedestrian crashes per mile	
	Change in Level of Traffic Stress based on recommended bike facility	
Demand		20%
	Average demand score for length of project	
	% of project coincident with existing transit line	
	Population density	
Equity		10%
	# of areas served with low automobile ownership	
	# of areas served a high % of low-income population	
	# of areas served with high % of population under 18	
Connectivity		20%
	# of connections to an existing in-street bike facility	
	# of connections to an existing trail	
	# of connections to a planned on-street bike facility	
	# of connections to planned off-street bike facility	

1 Tulsa-only variable

2 Tulsa-only variable. Included multimodal corridors from PLANiTULSA and small area plans provided by the City of Tulsa Planning Department.

the greatest impact on improving the bicycle environment and increasing bicycle travel. The list can also help INCOG prioritize funding decisions for applications that include pedestrian and bicycle infrastructure. Although the data-driven process is intended to determine broad priorities, it should be used as a guide, not as an infallible list of priorities. It's important that the prioritized list *not* be taken so literally as to preclude projects lower on the list from being constructed first if opportunity arises. For example, if a road rehabilitation project is imminent, a project lower on the list should be considered for implementation even if projects above it are not yet funded.

Cost Estimates

Bicycle Strategy

An order of magnitude cost estimate was developed for the recommended improvements. Cost estimates were developed by establishing a cost per linear foot for the recommended cross-section and applying it over the length of the project. Cost estimates considered the significant construction items, e.g. asphalt, pavement markings, excavation, etc. Unit prices for construction items were established based on regional historical bid prices and the estimator's experience and judgment. The cost estimate also included a 10 to 30 percent contingency based on the complexity of the improvement. Not included in this estimate are the costs for engineering, permitting, grading, right-of-way, survey, insurance and inspection. Although quantities and unit prices were developed for each estimate, a fluctuation in quantities and bid prices can be expected as the level of design progresses. Actual construction costs can only be determined following final design; as such, the costs at this level of review are budgetary in nature and are typically accurate within +/- 30 percent. Details for cost estimate line items are available in Appendix D.

It should be noted also that costs are for all elements of a facility and do not estimate costs that would be covered by other parts of a street reconstruction or resurfacing project. For instance, all on-street facility striping project costs include

On-street facility cost estimates developed for the GO Plan include the cost of replacing storm drain grates. The region's roads today have a mix of bicycle-safe and unsafe storm drain grates. To be safe for bicyclists, the grate holes must run perpendicular to the path of travel.

the cost of eradicating existing striping, which adds between three and 10 percent to the cost. This cost would not be present in a resurfacing project. Similarly, construction of a 10-foot sidepath instead of simply replacing a 6-foot sidewalk in the course of a reconstruction or widening project would add 60 to 70 percent to the project cost.

The bicycle facility cost estimates provided below were developed with the following assumptions:

- Estimates are in 2015 dollars based on recent bid prices of Oklahoma projects
- All facility types include an estimated cost for signage
- Rural signed routes have less dense sign coverage than urban signed routes because they require fewer turns
- Bike lane, buffered bike lane and cycle track costs include replacement of storm drain grates with bicycle-safe drain grates
- Sidepath and trail costs are based on the recommended 10-foot width

- Cycle track cost assumes a street-level facility separated from automobile traffic by flexible delineators placed in a striped buffer area

Facility Type	Cost/mi ($)
Rural Signed Route	$800
Urban Signed Route	$18,500
Shared Lane Markings	$33,400
Priority Shared Lanes	$77,100
Bike Lanes	$71,600
Bicycle Corridor	$71,600
Buffered Bike Lanes	$71,000
Cycle Track	$120,700
Sidepath	$719,000
Trail	$888,100

Pedestrian Strategy

Greater detail is provided for the pedestrian improvements recommended in each focus area. These sets of recommendations consist of infrastructure elements outlined in Appendix D where costs are listed for each element. The cost of filling gaps in the sidewalk network outside of these areas is not estimated for each community.

Funding Project Implementation

This section presents the current state of bicycle and pedestrian project funding generally in the U.S. and in the Tulsa region. Recommendations and resources for individual jurisdictions pursuing project funding are presented as well as recommendations to INCOG regarding funding processes.

Federal Funding Sources

Bicycle and pedestrian projects are broadly eligible for the majority of federal transportation funding programs. Nationally, of the $1.5 billion of federal-aid program funds obligated to bicycling and walking programs in fiscal years 2013 and 2014, 36 percent came from the Transportation Alternatives Program (TAP) or its predecessor the Transportation Enhancements Program (TEP). Several other federal programs contributed significant portions as well. The Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality Improvement Program (CMAQ) contributed 15 and 12 percent, respectively. The Highway Safety Improvement Program also contributed two percent of the funds spent on bicycling and walking during that period.

It is not uncommon for federal funds to be used for the implementation of pedestrian and bicycle projects in the Tulsa region. INCOG is involved in the selection and administration process for the TAP, STP and CMAQ programs.

- **Transportation Alternatives Program (TAP)** As mentioned above, TAP is a common source of federal funding for pedestrian and bicycle projects under MAP-21. Eligible project types include pedestrian and bicycle facilities, the conversion of abandoned railway corridors to trails, the development of safe routes for non-drivers and safe routes to school.

  INCOG administers regional TAP funds and opens funding rounds every other year, awarding approximately $2.2 million each funding cycle ($1.1 million per year). Combing two years' worth of funding into one selection cycle allows for funding larger projects. Funding was opened in 2013 for fiscal years 2014 and 2015. Eight projects were selected from 15 applications. There are also TAP funds available for cities and unincorporated areas outside the urbanized area through the ODOT portion of the TAP program.

  The Recreational Trails Program (RTP) is a set-aside within TAP that funds all types of recreational trail projects. It is administered by the Oklahoma Tourism and Recreation Department. Approximately $1.1 million is available for this program in Oklahoma.

- **Surface Transportation Program (STP)**
  STP is perhaps the most flexible federal funding program. STP funds can be used for a wide variety of bicycle and pedestrian activities, including any bicycling or pedestrian project-type eligible under the Transportation Alternatives Program (TAP) as well as for any recreational trail project eligible under the Recreational Trails Program.

  INCOG receives over $13 million per year in STP funds, and may consider funding bicycle and pedestrian projects. Currently, INCOG does not typically receive bicycle- and pedestrian-related applications from member communities for STP funds. However, the revised 2015 project prioritization and selection process awards the maximum points under the "livability" criteria to transit, pedestrian or bicycle projects. Road projects that include these components are eligible for five points in the livability section. Projects can also receive points for addressing pedestrian and bicycle safety.

- **Congestion Mitigation and Air Quality Improvement (CMAQ)**
  CMAQ funds are administered through the Oklahoma Department of Transportation (ODOT) and through Metropolitan Planning Organizations (MPOs) for areas that do not meet, or formerly did not meet, federal air quality standards. There are currently no such "non-attainment" or "maintenance" areas in Oklahoma. States without non-attainment or maintenance areas may use CMAQ funds for any CMAQ- or STP-eligible project.

  INCOG receives approximately $600,000 per year in CMAQ funds. Most of this funding is used for transit projects. In the past, INCOG has used CMAQ funds for the installation of bike racks, to conduct a bike share study, and to fund signage for bicycle facilities.

The table on the following page provides a list of federal funding sources that may be available for bicycle and pedestrian projects in the Tulsa region.

Popular bicycle and pedestrian infrastructure such as the high-quality, dual treadway River Parks Trails require a significant amount of funding but yield equally significant community benefits.

ACTIVITY	FTA	ATI	CMAQ	HSIP	NHPP/NHS	STP	TAP/TE	RTP	SRTS*	PLAN	402	FLH	BYW**	TCSP**
Access enhancements to public transportation	•	•	•			•	•					•		•
Bicycle and/or pedestrian plans	•					•				•		•		•
Bicycle lanes on road	•	•	•	•	•	•	•		•			•	•	•
Bicycle parking	•	•	•			•	•		•			•	•	•
Bike racks on transit	•	•	•			•	•					•		•
Bicycle share (capital/equipment; not operations)	•	•	•		•	•	•					•		•
Bicycle storage or service centers	•	•	•			•	•							•
Bridges / overcrossings	•	•	•	•	•	•	•	•	•			•	•	•
Bus shelters	•	•				•	•					•		•
Coordinator positions (State or local)			•			•	^		•					
Crosswalks (new or retrofit)	•	•	•	•	•	•	•	•	•			•	•	•
Curb cuts and ramps	•	•	•	•	•	•	•	•	•			•	•	•
Helmet promotion						•	^		•		•			
Historic preservation (bike, ped, transit facilities)	•	•				•	•					•		•
Land/streetscaping (bike/ped route; transit access)	•	•				•	•					•		•
Maps (for bicyclists and/or pedestrians)	•	•	•			•	^		•		•		•	•
Paved shoulders			•	•	•	•	•		•			•	•	•
Police patrols						^	^		•		•			
Recreational trails						•	•	•				•		•
Safety brochures, books						^	^		•		•			
Safety education positions						^	^		•		•			
Shared use paths / transportation trails	•	•	•	•	•	•	•	•	•			•	•	•
Sidewalks (new or retrofit)	•	•	•	•	•	•	•	•	•			•	•	•
Signs / signals / signal improvements	•	•	•	•	•	•	•		•			•		•
Signed bicycle or pedestrian routes	•	•	•		•	•	•		•			•	•	•
Spot improvement programs	•		•	•		•	•	•	•					•
Traffic calming	•			•	•	•	•		•					•
Trail bridges			•	•	•	•	•	•	•			•	•	•
Trail/highway intersections			•	•	•	•	•	•	•			•	•	•
Training			•			•	•	•	•		•			•
Tunnels / undercrossings	•	•	•	•	•	•	•	•	•			•	•	•

• Until Expended ** Until Not Available ^ As Safe Routes To School

TABLE KEY

FTA: Federal Transit Administration Capital Funds

ATI: Associated Transit Improvement

CMAQ: Congestion Mitigation and Air Quality Improvement Program

HSIP: Highway Safety Improvement Program

NHPP/NHS: National Highway Performance Program (National Highway System)

STP: Surface Transportation Program

TAP/TE: Transportation Alternatives Program / Transportation Enhancement Activities

RTP: Recreational Trails Program

SRTS: Safe Routes to School Program

PLAN: Statewide or Metropolitan Planning

402: State and Community Traffic Safety Program

FLH: Federal Lands Highway Program (Federal Lands Access Program, Federal Lands Transportation Program, Tribal Transportation Program)

BYW: National Scenic Byways Program

TCSP: Transportation, Community, and System Preservation Program

Recommendations

- Align the INCOG TAP application scoring system to the project prioritization process identified within this Master Plan.
- Publicize the eligibility and competitiveness of pedestrian and bicycling projects for STP and CMAQ funding among local jurisdictions.
- Increase the weighting for multi-jurisdictional projects with regional implications and possible connections between communities for all competitive funding opportunities.
- Provide application assistance to member communities to identify projects that have more impact.
- Include feasibility/opportunity/project readiness into the scoring of the applications.

State Funding Sources

Oklahoma recently, in late 2014, hired its first pedestrian and bicycle coordinator at ODOT. In 2013, the state legislature eliminated funding for the state Safe Routes to Schools Program. There is currently no statewide bicycle or pedestrian plan or dedicated state funding stream for projects for these modes. In its 2015 report card assessing Bicycle Friendly State ratings, the League of American Bicyclists noted that Oklahoma is in the bottom five states for federal funding for bicycling and walking projects based on the percentage of available federal funds obligated to those projects.[1]

Recommendations

- While neither INCOG nor its member jurisdictions can change state policy or funding, involvement in the new ODOT Bicycle and Pedestrian Advisory Committee may help bring state-level decisions to be more favorable to these modes.

1 League of American Bicyclists, Oklahoma Report Card, accessed 23 June 2015 http://bikeleague.org/sites/default/files/BFS2015_Oklahoma.pdf.

Local Funding Sources

The most effective way to fund the projects recommended in the GO Plan will be to review the plan when any decisions are made about street resurfacing, reconstruction and construction projects. In this manner, the projects will be an incremental cost added to a larger project. For standalone high-priority projects, local funds will need to be used on their own or as matching dollars for federal funding.

Local funding of pedestrian and bicycle infrastructure has generally come as part of street improvement projects in the region, with the exception of standalone trail projects. In 2003, Tulsa County voters approved a 13-year one percent **sales tax** increase called Vision 2025. A number of bicycle- and pedestrian-related projects funded under this banner including construction of the Osage Trail connecting Tulsa and Skiatook, an extension of the Midland Valley Trail in Tulsa, street reconstructions, and downtown and neighborhood streetscape projects in 10 communities throughout the county. Revenues from this tax have also leveraged federal funding for several street improvement projects. A renewal of this tax is currently under discussion which may provide further funding for bicycle and pedestrian projects. Other jurisdictions around the country have dedicated a portion of infrastructure sales tax increases to pedestrian and bicycle projects specifically. For instance, residents of the city of St. Louis and St. Louis County approved Proposition P in April 2013 which increased the percentage of sales tax dedicated to building the on- and off-street bicycle network. The 3/16th cent tax will provide $38.5 million for greenways and parks.

In 2013, City of Tulsa residents approved a **bond referendum** directing investment of $918.7 million from the Third Penny Sales Tax and General Obligation Bonds to more than 300 projects to improve streets and many city services. The majority, 72 percent, of the funds were allocated to street improvement projects. The locations of these projects were a weighted variable included in prioritizing the bicycle and sidewalk gap networks within the City of Tulsa.

Impact fees are another source of local funds for projects. These are assessed on new developments to pay for the construction or expansion of streets, parks, trails, water and wastewater facilities necessitated by and benefitting new growth. Many developments present good opportunities to fill gaps in pedestrian infrastructure, such as sidewalks and crossings, or to provide streetscape improvements and trail connections that make it easier and more appealing to walk or bike.

Funding from communities' **Capital Improvement Plans** (CIP) can also provide for construction and maintenance of pedestrian and bicycle projects on an annual basis. Placing pedestrian and bicycle projects into these annual budgets can guarantee a level of certainty that application funding does not. It is more likely that communities will use a CIP outlay for smaller projects such as on-street markings rather than street reconstructions or trail construction.

Recommendations

- Encourage member jurisdictions to continue to support continued sales tax and bond funding for street improvements.
- Encourage member jurisdictions to set aside a percentage allowance for bicycle and pedestrian improvements on any sales tax dedicated to infrastructure.
- Provide member jurisdictions with data on the cost-effectiveness of bicycling and walking projects from safety, economic and transportation perspectives.
- Encourage prioritization of street projects that include high-priority bicycle and pedestrian improvements identified in this plan.
- Encourage member jurisdictions to adopt ordinances to allow the collection of impact fees to fund bicycle and pedestrian improvements, among other applicable infrastructure improvements.

5 NON-INFRASTRUCTURE STRATEGIES

While the main focus of the GO Plan process has been the development of bicycle network and pedestrian recommendations, infrastructure is not the only element of a bicycle and pedestrian friendly region. Through this Plan, INCOG provides resources and recommendations to its member jurisdictions regarding the underlying policies and public programs that influence conditions for pedestrians and bicyclists.

This chapter provides:

- A brief overview of the policy review conducted during the planning process
- Region-wide policy recommendations for INCOG and its member jurisdictions[1]
- A review of existing efforts by INCOG and other non-governmental organizations to improve bicycling and walking through programming efforts, and
- A short list of programming recommendations based on national best practices

1 Jurisdiction-specific policy recommendations are provided in the community sections based upon priorities expressed by staff and stakeholders at the GO Plan mid-project retreat.

Policy Review

As a central element of both the analysis of existing conditions and the recommendations in this plan, the team performed a thorough analysis of the region's policy documents that influence the design of streets, street networks and off-street bicycle and pedestrian facilities. Zoning codes, engineering standards and design criteria and subdivision regulations were reviewed for all eleven jurisdictions involved in the GO Plan where applicable. A full account of this review is provided in tabular form in Appendix F.

Most existing guidelines and engineering standards in the region do not cover criteria for walking and bicycling facilities. Sidewalk, bike lane and trail widths are not addressed in most cities. Nor are other design elements such as the presence of a sidewalk buffer or frequency of driveway crossings that can significantly impact the pedestrian and bicyclist experience. However, sidewalk requirements are present in most communities' subdivision regulations or zoning code.

Subdivision regulations and zoning codes govern the connectivity and block-length of new streets. These elements impact the ability to complete short trips which is essential for effective pedestrian and bicyclist circulation. A connected and redundant street network facilitates these short trips and can make connections to trails, which provide comfortable and safe travel over longer distances. Access to existing trails can also be required through these codes. Some communities' regulations call for residential streets to be configured to discourage through-traffic. While this may reduce high-speed traffic on minor streets, it may also result in a more fragmented and misaligned street network that makes pedestrian and bicyclist travel difficult.

The walkability of an area is also highly influenced by the visual interest and variability of adjacent land use and form. The City of Tulsa's proposed zoning code begins to move the city's regulations in line with the goals of PLANiTULSA to create more livable, walkable places. Broken Arrow's zoning code also includes provisions to create a walkable downtown. Some key changes that will help in this regard are:

- Reduce off-street parking requirements
- Allow denser residential development and promotion of mixed-use development
- Lot and building regulations for mixed use zones, such as, prohibition of placing parking spaces between the sidewalk and building

Policy Recommendations

- Adopt regional standards for pedestrian and bicycle facility design as described within the GO Plan Design Guidelines.
- Encourage adoption of similar design guidelines in each jurisdiction to make facility implementation consistent.
- Subdivision regulations should require both residential and non-residential construction of sidewalks and bicycle infrastructure. Regulations should also require connectivity to local and regional trails as part of site review. In-lieu fees and bonding could also be considered by additional communities in the region to fund construction within new developments and connections to trails. Homeowners' associations should be encouraged to maintain sidewalks and bicycle infrastructure.
- Older developments should be required to address missing gaps and improve connectivity as part of resurfacing, redevelopment and retrofit projects. This could be accomplished through association fees or sidewalk grants allocated specifically for these connections.
- Encourage jurisdictions to adopt bike parking standards that include incentives to add bike parking and reduce the number of on-street and off-street parking.
- Encourage jurisdictions to adopt zoning code elements that result in a more pedestrian-friendly development pattern for downtown areas, such as the siting of off-street parking behind buildings and others outlined in the new Tulsa zoning code.

Other Es: Education, Encouragement, Enforcement and Evaluation and Planning

Bicycle and pedestrian planners typically approach improving the environment for those modes through a "five Es" model: engineering, education, encouragement, enforcement and evaluation and planning. The GO Plan's infrastructure and design recommendations are the most significant effort INCOG and the Tulsa region has made to date regarding the engineering portion of this model.

The other Es cover critical non-infrastructure aspects of supporting bicycling and walking:

- **Education:** Informs all road users of their rights and responsibilities to ensure safe roads for all.
- **Encouragement:** Creates a strong culture that celebrates walking and biking.
- **Enforcement:** Works with local law enforcement to target efforts in problem areas to keep all road users safe.
- **Evaluation and planning:** Collects data on walking and bicycling to help plan for these modes as safe and viable transportation options.[2]

Much of the programming in these areas is not the responsibility of a metropolitan planning organization (MPO) like INCOG. Typically, bicycle and pedestrian friendly communities take on programming at the city level or through non-governmental organizations such as advocacy coalitions or school-related groups. At INCOG, the Bicycle and Pedestrian Advisory Committee (BPAC) works to promote all five Es by advising the Transportation Committee on technical and policy matters, and by serving as a resource to member jurisdictions seeking public input pertaining to the bicycle and pedestrian environment. The BPAC also serves as a clearinghouse for efforts related to the five Es throughout the region, whether that is coordination of law enforcement training or disseminating information about nonprofits' bicycle education programs in schools.

One important step that was recently taken at the state level to improve traffic safety through enforcement is passage of a law banning texting while driving that will go into effect on November 1, 2015. In July 2015, the city of Tulsa updated its ordinances in accordance with the language in state law.

The area in which INCOG can and should take a lead role is evaluation and planning. Recommendations regarding INCOG's role as an implementer and as a resource are presented below in all four "other E" categories.

Evaluation and Planning

Count Data Collection

INCOG should use volunteers to expand its current biennial trail count program to an annual count program. The BPAC should be tasked with staffing the counts and recruiting additional volunteers.

INCOG should recommend on-street locations for annual counts to member jurisdictions. These counts should be staffed by volunteers or City staff. As more infrastructure is built, on-street counts will help tell the story of the impact on increasing pedestrian and bicyclist volumes. The best practice methodology of the National Bicycle and Pedestrian Documentation Project should be applied for counts.

Additionally, funding should be sought for three to five automatic counters to be placed at key locations along the regional trail system. These counters would supplement an existing automatic counter on the River Parks trails[3] and provide 24-hour coverage to count bicyclists and pedestrians. These continuous counts can be used to compute month- or year-long counts from the annual short-term manual counts.

2 Definitions adapted from the League of American Bicyclists, accessed 24 June 2015: http://bikeleague.org/content/5-es

3 According to the River Parks Authority, their infrared counter is possibly malfunctioning and should be investigated.

Annual Report on Bicycling and Walking

INCOG should publish an annual report on bicycling and walking in the region. This report will keep these modes in the public eye and provide an on-going source of information for member jurisdictions. It should include count and crash data analysis, a catalog of newly implemented facilities, BPAC efforts, policy changes and a summary of encouragement efforts completed throughout the year.

Travel Model

INCOG should refine its regional travel demand model to better reflect bicycle, pedestrian and transit trips. Many innovative MPOs are moving toward an activity-based model that takes personal mode choice into account in assigning trips to modes. Coupled with a new travel model, the region's household travel survey should be refined to better pick up modes that typically are underrepresented in travel surveys. The addition of data loggers with GPS capability would help to capture walk and bike trips and non-motorized trips to access transit.

Bicycle and Walk Friendly Community Designation

Tulsa is currently designated as a bronze Bicycle Friendly Community by the League of American Bicyclists (LAB). INCOG wrote the original application that led to recognition by the LAB in 2009. INCOG should continue to provide support to other communities completing a new or renewal application for this designation and support any additional communities in the region that apply. INCOG should encourage communities to use the application process for both of these designations as a learning process and a means of bringing together City staff who work on these issues.

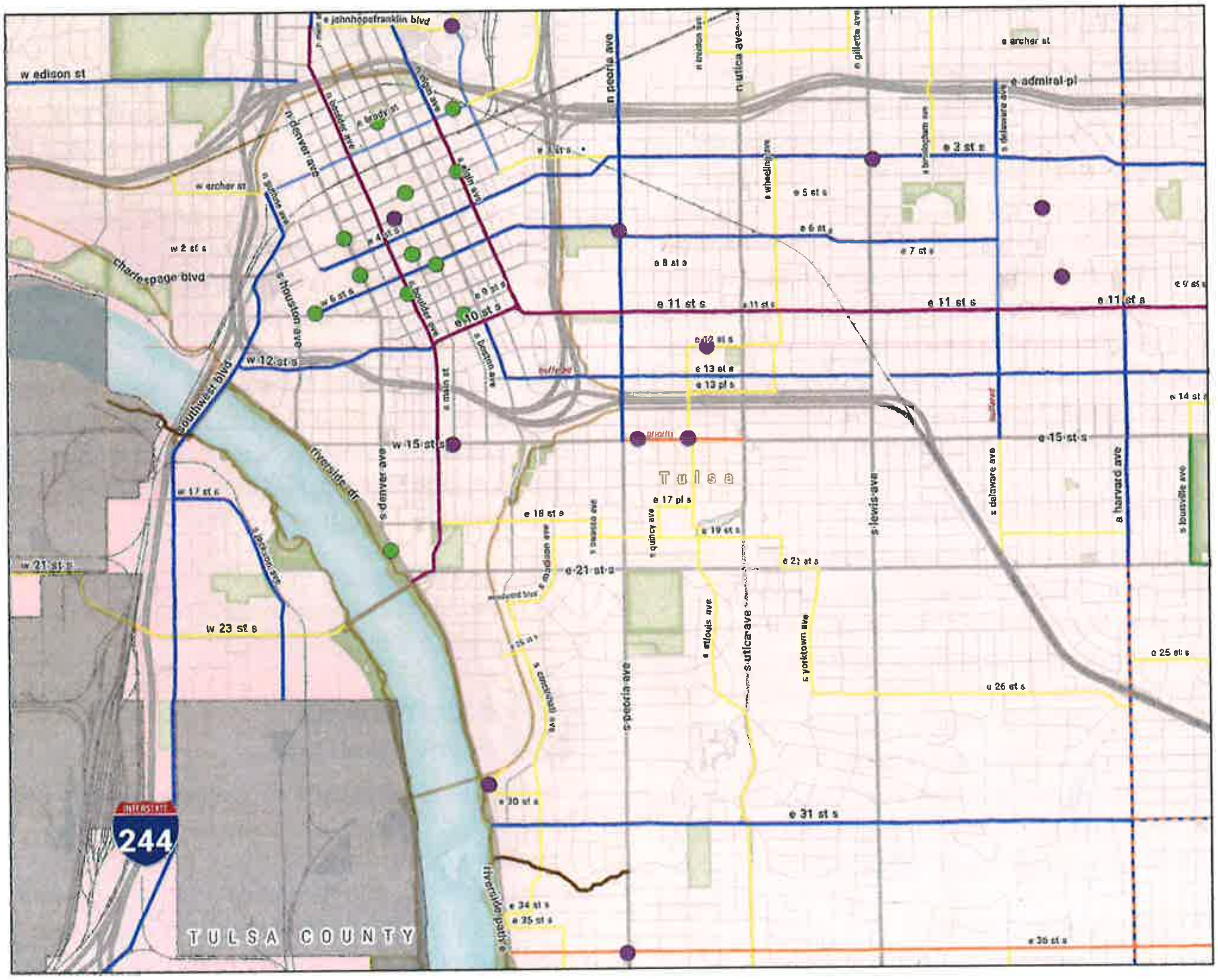
Encouragement

Bike Share System

The implementation of a bike share system can increase the number of the region's residents with access to a bicycle and get more people riding. INCOG completed a feasibility study and business plan for a bike share system in the City of Tulsa in 2015. The recommended system will consist of an initial launch phase of 12 stations and 108 bikes at

Cataloging bicycle parking and innovations such as in-street parking corrals should be included in an annual report on bicycling and walking.

The Tulsa Townies bike share systemhas been an asset to getting more residents and visitors on bikes. A new bike share system will attract even more riders.



key locations downtown and nearby destinations such as the University of Tulsa and the Gathering Place. Phase two will expand the network with 12 additional stations at OSU-Tulsa and University of Tulsa campuses, Pearl District and Brookside. A newly-formed nonprofit organization will own and operate the system, or contract operations to a private vendor.

Phases one and two are expected to cost $3.2 to $3.8 million over five years—depending on selected equipment and technology—including capital, launch, administration and operating costs. The key next steps outlined in the Bike Share White Paper should be undertaken by INCOG as soon as possible to aim for a 2017 system launch.

Phase

- 1
- 2

Recommendations

- Trail
- Sidepath
- Cycle Track
- Bike Lane
- Bike Corridor
- Shared Lane Marking
- Signed Route
- Trail
- Bike Lane

Bike to Work Day

INCOG is the lead organizer of Bike to Work Day (BTWD) in the region. In most bicycle friendly communities, this is the major bicycle transportation event of the year to encourage more people to ride. INCOG should continue this role and consider providing resources to member jurisdictions to execute their own BTWD events. Continued and increased partnership with outside organizations and business sponsors would help grow the event. A strong partnership with local universities and community colleges is especially recommended for this series of events.

Bike and Walk to School Days

These events are important components of Safe Routes to School programs to encourage and educate students about how to get to school via bicycling or walking. National resources are available to help school districts plan these events, but the BPAC should make an effort to disseminate these resources to local school districts. The existing bicycle education program at six Tulsa elementary schools could provide an example pilot event to demonstrate its impact to other schools.

Bicycling and Walking Maps

INCOG already maintains an online trails and bicycle facilities map for the region. This should be continually updated as facilities are implemented. Over time, INCOG should consider upgrading this map to a level of comfort map that uses a Level of Traffic Stress assessment to indicate to bicyclists what streets are most comfortable for riding for a large range of bicyclist types.

INCOG should also provide up-to-date bicycle facility information to Google Maps for use in its bike layer.

Education

Other organizations in the region such as the Tulsa Hub and the afterschool bicycle programs at Tulsa Public Schools are already providing strong education resources about bicycling. Often, these types of organizations are best suited to delivering educational classes, but INCOG should lend support to these efforts where it can through the BPAC.

Traffic Safety Education

INCOG received a grant from the Oklahoma Highway Safety Office to run public messaging about bicycle and pedestrian safety. The grant has funded radio ads with these messages in 2014 and 2015. Other MPOs coordinate safety campaigns with their member jurisdictions and provide marketing materials to create bus, bus shelter, billboard, online ad buys and other visual advertising. Region-scale campaigns are especially important in places like Tulsa where many residents live and work in different jurisdictions but would see a consistent message throughout the region. Education messages should be targeted at all types of road users.

INCOG should continue to use its social media outlets through the Transportation Resource Center to disseminate safety messages.

Enforcement

Bicycle Patrol Units

The Tulsa police department currently has a limited bicycle patrol unit but has expressed interest in increased funding for more officer training and bicycles. INCOG should educate and encourage all jurisdictions to replicate this program within their police departments to the extent feasible.

Bicycle Friendly Training in CLEET

The Bicycle/Pedestrian Advisory Committee recently started the process of including bicycle law training in regular law enforcement Council on Law Enforcement Education and Training (CLEET) courses. This will enable law enforcement officers to be more educated about bicycle laws and enforce them properly.

BPAC Membership

The BPAC currently has no representative filling the law enforcement slot. This slot should be filled and rotated among jurisdictions. The enforcement committee of the BPAC should continue its efforts to coordinate among local law enforcement agencies and seek to implement national best practices in bicycle and pedestrian law enforcement.

A DESIGN GUIDELINES

These Design Guidelines are intended to broaden the range of design options for streets in the Tulsa region, recognizing that streets and public rights-of-way comprise a significant portion of a city's area and as such must maximize the public benefit they offer.

As in other cities and communities, streets in Tulsa and the surrounding cities have always served multiple functions. In the nineteenth and early twentieth centuries, they were the primary component of local transportation infrastructure, allowing people and goods arriving by rail to reach local destinations throughout the city. This led to a variety of street users, and accordingly led to a variety of problems for safety and circulation in the streets. As automobile ownership and use increased dramatically in the decades that followed, the city had to accommodate the trend within the space for streets that had already been established.

Over time, street design focused primarily on motor vehicle movement, and the emerging discipline of traffic engineering worked to safely integrate cars and trucks into pre-existing urban forms. While there were clear benefits to accommodating automobile movement through the city, the negative effects have become increasingly evident over the last forty years. The focus on automobiles has resulted in a different form of land development patterns, namely emphasizing vehicle access, and not person access, to buildings and property. This access comes at the expense of other uses of the street and other transportation choices.

The intent of this appendix is to allow the region to choose a different direction for its future and recreate a system of streets that prioritize community-serving functions while still accommodating the automobile mobility needs that streets have traditionally had.

Pedestrian Realm

Sidewalks

Sidewalks are one of the most vibrant and active sections of the overall right-of-way. Throughout the region, sidewalks play a critical role in the character, function, enjoyment and accessibility of neighborhoods. People in the region value the walkability of their city and neighborhoods and wish to see this quality preserved and enhanced. The function and design of the sidewalk significantly impacts the character of each street. Extending from curb to building face or property line, sidewalks are, of course, the place typically reserved for pedestrians, but they also accommodate street trees and other plantings, stormwater infrastructure, street lights, bicycle racks, and transit stops. They are a place of transition and economic exchange as restaurants engage the public space and retailers attract people to their windows and shops.

In many ways, each community has two types of cities in one. Downtown and the neighborhoods in the historic core portion of the city reflect a traditional urban pattern characterized by a regular grid of streets. The grid distributes traffic well and offers many different routing options for pedestrians and travelers using a variety of different modes. Mixed land uses are common in these areas with some residences within walking distance of retail, commercial, community and green space amenities.

In the outlying areas of the city and farther out into the county, many streets have a more typical suburban development pattern and curve through quiet residential areas with little cut-through automobile traffic. The land use is generally of lower intensity with greater separation and more open space. Sidewalk network coverage on these local streets varies from community to commuity, and curvilinear streets create atypically shaped intersections with increased crossing distances and decreased pedestrian visibility. These neighborhood residential streets are set within an arterial grid of high-volume, high-speed streets that present barriers to pedestrian travel, especially those without sidewalks present.

Sidewalk Zones

Sidewalks are not a singular space, but are comprised of distinct usage zones. Sidewalks typically are located in the right-of-way that extends from the curbline to the property line behind it. They can be broken up into three primary zones, each of which performs a unique function in the overall operation of the street and interface with adjacent private property uses. Although boundaries between zones may blur and blend, their overall function of each zone generally remains consistent.

A. Frontage Zone

The Frontage Zone is the area of sidewalk that immediately abuts the private property along the street. In residential areas, the Frontage Zone may be occupied by front porches, stoops, lawns, or other landscape elements that extend from the front door to the sidewalk edge. The Frontage Zone of commercial properties may include architectural features or projections, outdoor retailing displays, café seating, awnings, signage, and other encroachments into or use of the public right-of-way. Frontage Zones may vary widely in width from just a few feet to several yards.

B. Pedestrian Clear Zone

Also known as the "walking zone," the Pedestrian Clear Zone is the portion of the sidewalk space used for active travel. For it to function, it must be kept clear of any obstacles and be wide enough to comfortably accommodate expected pedestrian volumes including those using mobility assistance devices, pushing strollers or pulling carts. To maintain the social quality of the street, the width should accommodate pedestrians passing singly, in pairs, or in small groups as anticipated by density and adjacent land use.

The Pedestrian Clear Zone should have a smooth surface, be well lit, provide a continuous and direct path with minimal to no deviation, and meet all applicable accessibility requirements. Although

Frontage Zone	Pedestrian Zone	Amenity Zone
• Door swings • Awnings • Cafe seating • Retail signage and displays • Building projections	• Zone should be clear of any and all fixed obstacles. Clear space for pedestrian travel only.	• Street lights, street trees, and utility poles • Bicycle racks • Parking meters • Transit stops • Street furniture and signage
2' to Several yards	6' Minimum	6' Minimum

currently legal throughout most of the region, bicycling on sidewalks is generally discouraged to decrease conflicts with pedestrians.

C. Amenity Zone

The Amenity Zone, or "landscape zone," lies between the curb and the Pedestrian Clear Zone. This area occupied by a number of street fixtures such as street lights, street trees, bicycle racks, parking meters, signposts, signal boxes, benches, trash and recycling receptacles, and other amenities. In commercial areas, it is typical for this zone to be hardscape pavement, pavers, or tree grates. In residential or lower intensity areas, it is commonly a planted strip.

Preferred Widths for Sidewalk Zones

The width of the various sidewalk zones will vary given the street type, the available right-of-way, and the intensity and type of uses expected along a particular street segment. A balanced approached for determining the sidewalk width should consider the character of the surrounding area and the anticipated pedestrian activities.

For example, is the street lined with retail that encourages window shopping that stops pedestrian travel, or does it connect a residential neighborhood to a commercial area where pedestrians frequently need to pass one another?

The width of the sidewalk should also relate to the street width and the height of adjoining buildings. If sidewalks are too wide, the street may feel empty and pedestrians may seem out of place, lost on a sea of sidewalk. If sidewalks are too constrained, friction may result between the sidewalk zones, leaving less space for healthy tree growth, limited access to parking meters or other fixtures, and a lower pedestrian level of service as pedestrians struggle to travel at their preferred pace.

Many streets in the region have considerable right-of-way constraints. Preferred sidewalk zone widths may not always be possible and design judgment must be used to achieve a comfortable and functional balance. Traditionally, right-of-way has been allocated from the inside out, starting with the needs of motor vehicles first and then dividing the remaining right-of-way among all other street users. Certain streets will require a paradigm shift: street design should allocate right-of-way from the outside in, prioritizing needs in the sidewalk zone and meeting pedestrian needs first.

- Fixtures in the Amenity Zone must be installed a minimum of 2' from the front of curb (or 18" into the Amenity Zone)
- The Americans with Disabilities Act requires a minimum 3' clear width while the draft Proposed Right Of Way Accessibility Guidelines (PROWAG) recommend 4' clear width in the Pedestrian Zone. However, in the the region, sidewalks are typically 5' at a minimum.

Street Trees

Trees play an important role in making streets comfortable, delightful, memorable, and sustainable. Used appropriately, they can help define the character of a street.

Trees provide shade that reduces energy use and mitigates the urban heat island effect. Their leaves capture rainwater and evaporation cools the ambient urban air temperature. Trees sequester carbon dioxide and thus contribute to the mitigation of climate change associated with the greenhouse effect. Trees capture gaseous pollutants and particulates in the tree canopy surface, removing as much as 60 percent of the airborne particulates at street level.

Trees are part of the urban forest contributing to natural diversity. They provide habitat for a range of living creatures in the urban context, including people. Psychologically, trees have been found to reduce stress and improve concentration. This may partly explain why studies have found that tree lined retail corridors do better than counterparts lacking street trees: consumers are likely to spend more time on tree-lined streets which can lead to spending more money there as well. Research has also found that trees on streets and in front yards increase property values, with increases generally in the range of 7 percent for homes in areas with good tree cover.

Street Trees and Urban Design

Street trees are both a transportation and urban design tool. As vertical elements in the streetscape, trees help to frame and define the street wall, accentuate spaces and focus view corridors. Canopy trees provide an enclosure to the street that reinforces the sense of intimacy and scale. This enclosure can have positive effects in slowing traffic and increasing driver awareness.

Street trees improve walkability by providing necessary shade and filtered light. They provide interest and intrigue to pedestrians walking along a block face. Street trees are an opportunity to express the image of a community through plant selection and arrangement. Trees also provide seasonal interest and variation.

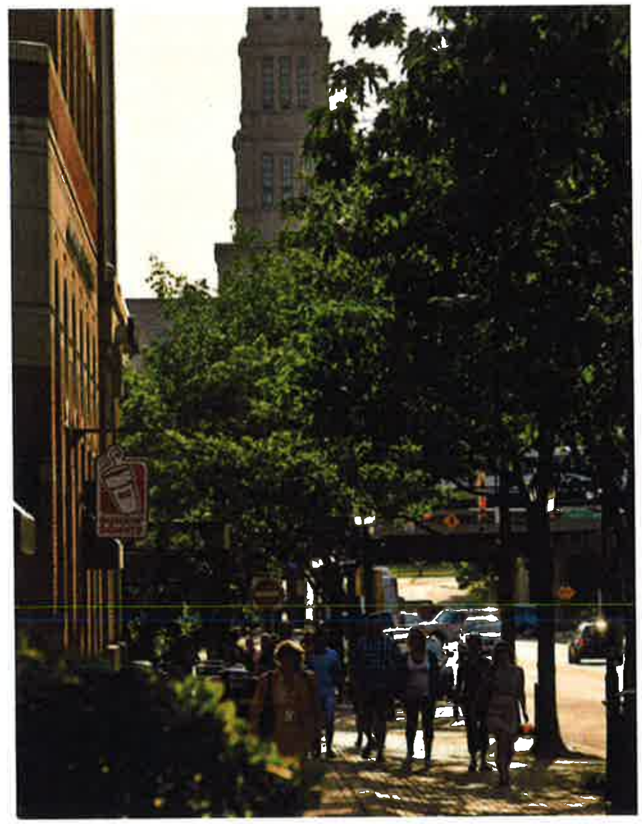
Selecting the Right Tree

Trees come in a wide variety of shapes and sizes. The biodiversity of the urban forest is an increasingly important aspect of maintaining healthy tree coverage. Using a range of tree species beyond those typically found on the City's streets is strongly encouraged.

In order to select an appropriate street tree for a specific street, the species must have the appropriate scale and form for the context of the street and the adjacent land uses and, most importantly, the appropriate amount of soil volume to thrive. Other considerations include: sun exposure and culture; whether the trees growth might interfere with sidewalks surfaces, site distances, or other site amenities; if overhead and subsurface utilities might impede growth; the desired quality of light and shade; mature canopy size in relation to adjacent buildings; and frequency of curb-running vehicles such as buses.

Design

- Tree species must remain constant along the entire length of a block face.
- Exposed surface area of tree wells should be a minimum of 4' by 10'. Larger dimensions may be required if deemed appropriate where part of a development of masterplanned area or required as part of the site plan process.



Shaded sidewalks make walking an enjoyable experience.

Suggested Street Tree Species

Large Trees

- Ginko (male)
- Common Hackberry
- Black Oak
- Bur Oak
- Northern Red Oak
- Shumard Oak
- Southern Red Oak
- Swamp White Oak
- Water Oak
- White Oak
- London Planetree
- American Sycamore
- Tulip Tree

Medium Trees

- Green Ash (Urbanite)
- White Ash
- Chittimwood
- Kentucky Coffeetree (male)
- Lacebark Elm
- Cedar Elm
- Goldenrain Tree (Panicled)
- Eastern Hophornbeam
- Thornless Honey Locust
- Shantung Maple
- Sugar Maple
- White Mulberry (male)
- Chinquapin Oak
- English Oak
- Sawtooth oak
- Callary Pear
- Chinese Pistache
- Japanese Zelkova

Small Trees

- Japanese Cherry
- Crapemyrtle (standard)
- Washington Hawthorn
- Deciduous Holly
- Sweet Mockorange
- Eastern Redbud
- Oklahoma Redbud
- Chinese Fringetree
- Common Smoketree

- Tree wells should support a subsurface tree trench large enough to provide sufficient arable soil volume and adequate moisture for individual trees. and shall hold a minimum volume of 300 cubic feet per tree. Continuous trenches which link individual wells shall be provided where possible.
- Planting strips for existing conditions should be a minimum of 2.5', in continuous width. New development shall be minimum of 4' in continuous width.
- Planting strips and tree wells should be planted with hardy evergreen ground cover or grass sod or covered with a tree grate. The grate's size, shape, material and design should be approved be the City where part of a development of masterplanned area.
- In densely urban areas or those with limited sidewalk width, tree grates are preferred.
- As street trees mature, they must be limbed up to a height of 7' from finished grade in order to provide clearance for pedestrians.
- Ornamental trees should be specified where overhead utilities are present to avoid conflicts.
- Evergreen trees are not to be used as street trees.
- Large street trees that mature over 60' in height should be spaced at least 35' on center.
- Medium street trees that mature from 30- 60' in height should be spaced at least 25' on center.
- Small street trees that mature under 30' in height should be spaced at least 15' on center.

Maintenance

For established street trees, standard maintenance consists of structural pruning on a regular cycle (typically every 3-5 years depending on the species, size, and location of the tree) and regular inspection by a certified arborist (recommended every 1-2 years) to assess the condition of the tree and determine the presence of any disease or damage that could lead to failure of the tree. Seasonal maintenance includes watering to ensure establishment of plant material; mulching to minimize water use, discourage weeds and protect against erosion; and pruning low shrubs and groundcover to control overgrowth onto sidewalks as overgrowth can reduce effective sidewalk width below ADA standards.

Street Lights

Street lights add comfort and safety to the street, while providing character and scale. Street lighting is typically oriented into the vehicle or pedestrian travel ways, however additional street lighting can highlight public art, architectural features or be an artistic expression itself.

Street lighting can also be an expression of street type. Higher activity commercial streets typically have a higher level of overall street lighting while lower intensity areas such as residential streets and parkways will generally have less frequent street lights and lower lighting levels.

Lighting lower than 20' brings the scale of the street down to the pedestrian level.

Highway-style lights (above left) serve to illuminate the automobile travel way but do not serve the sidewalk well. Parking lot lights (above right) should not be relied upon to provide sidewalk illumination.

Lighting levels should be consistent along the street without pools of light and dark. Lighting should be managed to reduce energy consumption and light pollution. The spectrum of light should ideally mimic sunlight as possible as this is more pleasing to the human eye.

Design

- In general, lighting should reflect the character and urban design of the street type to create a recognizable hierarchy of roads and spaces.
- Comply with lighting requirements in areas with existing design guidelines.
- Lighting is typically located in the Amenity Zone of the street. Depending on conditions, lighting may be permitted in medians, however this is less common and often restricted.
- Light poles are typically located 18" off the front of curb.
- Lighting should be oriented toward travelers both in the roadway and on the sidewalk. Adequate lighting at intersections and crossings is essential.
- Pedestrian scale lighting (lower than 20') should be used alone or in combination with roadway scale lighting in high-activity areas to encourage nighttime use and as a traffic calming device.
- Critical locations such as ramps, crosswalks, transit stops and seating areas that are used at night must be visible and lit.
- Lighting may alternate on either side of a street or be arranged in parallel. Parallel arrangements are more formal and common in retail corridors.
- Lighting should be located in concert with street trees – often alternating trees and lights – so that trees do not block the illumination.
- Light poles should not impede the pedestrian clear zone.

Access Management

A major challenge in street design is balancing the number of access points to a street. There are many benefits of well-connected street networks, but on the other hand, most conflicts between users occur at intersections and driveways. The presence of many driveways in addition to the necessary intersections creates more conflicts between vehicles entering or leaving a street and bicyclists and pedestrians riding or walking along the street. When possible, new driveways should be minimized and old driveways should be eliminated or consolidated. Raised medians should be used where possible and placed to limit left turns into and out of driveways.

Access management through limiting driveways and providing raised medians has many benefits:

- The number of conflict points is reduced, especially by replacing center-turn lanes with raised medians since left turns by motorists account for a high number of crashes with bicyclists and pedestrians.
- Pedestrian crossing opportunities can be enhanced with a raised median.
- Universal access for pedestrians is easier, since the sidewalk is less frequently interrupted by driveway slopes.
- Fewer driveways result in more space available for higher and better uses.
- Improved traffic flow may reduce the need for road widening, allowing part of the right-of-way to be recaptured for other users.
- Reference TRB Access Management Manual for in-depth guidance regarding access managment.

Possible Negatives of Access Management

The following possible negative effects of management should be considered and addressed:

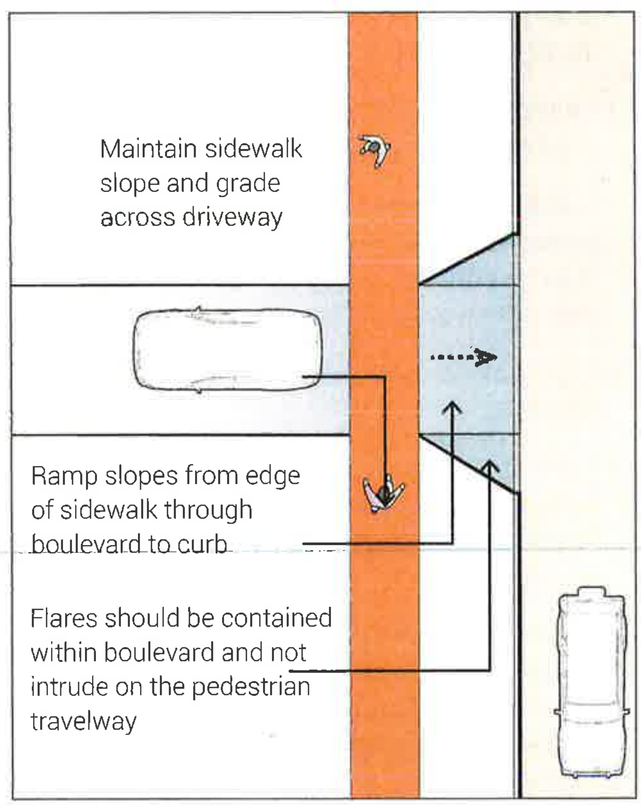
- Streamlining a street may increase motor vehicle speeds and volumes, which can be detrimental to other users.
- Reduced access to businesses may require out-of-direction travel for all users, including pedestrians and bicyclists.
- Concrete barriers and overly-landscaped medians act as barriers to pedestrian crossings. Medians should be designed with no more than normal curb height and with landscaping that allows pedestrians to see to the other side.
- Adjacent land uses can experience decreased access. This can impact businesses as well as residents.

Where angle parking is proposed for on-street parking, designers should consider the use of reverse-in angle (or head-out) parking in lieu of front-in angled parking. Drivers exiting a front-out angled parking space can better see the active street they are entering. This is especially important to bicyclists. Moreover, people exiting cars do so on the curb side and aren't likely to step into an active travel lane.

Driveways

Driveways occur wherever there are land uses that require vehicle access from the street network. Driveways often cross sidewalks, bike and parking lanes and affect moving traffic. These crossings can create conflicts between various users. To the extent possible:

- The number of driveways should be minimized, particularly along commercial corridors, in order to minimize conflicts.
- As an access management principle, driveways should be avoided within the functional area of an intersection to reduce the potential for conflicts with turning vehicles and pedestrians in the crosswalk.



The continuous pavement treatment above alerts drivers to expect pedestrian cross traffic.

Medians can provide space for street trees, gateway treatments (such as planters) and utilities (such as fire hydrants.)

Design

As a general rule, driveways should be designed to look like driveways, not roadway intersections, and incorporate the following principles:

- Sidewalks should be continuous across driveways at a continuous grade and cross-slope and the driveways flares should be contained within the boulevard space and not intrude on the pedestrian travel way.
- The pedestrian zone should be consistent with ADA guidelines to ensure that all pedestrians using wheeled mobility devices can safely cross the driveway.
- A standard driveway has a 4' flare on each side to prevent high speed turning movements, and this minimum should be a goal in areas of high pedestrian traffic or those where the city wants to encourage pedestrian traffic. Outside these areas, large flares are standard.
- Driveway width should be minimized to the extent appropriate for traffic conditions, use, type and location.
- Driveways should be located outside the functional area of the intersection, with an absolute minimum of 100 feet from intersections in commercial corridors and 40 to 60 feet in residential corridors.
    - The functional area of an intersection includes areas upstream and downstream of the intersection. In contrast with the physical area of an intersection, the functional area varies depending on several site specific variables including: amount of queuing at an intersection; distance traveled during perception-reaction time; and declaration distance.
    - In locations where a driveway must function as a leg of an intersection, it should be designed with pedestrian safety features such as crosswalks, small corner radii, and pedestrian signal indications if part of a signalized intersection.
- Truncated domes should not be used where driveways cross the sidewalk zone unless the driveway is functioning as a leg of an intersection and curb ramps are present.
- Site obstructions (signs, landscaping, decorative fencing, signal boxes, building features etc.) should be carefully located to maximize visibility between turning motorists and pedestrians at driveway.

Medians

Medians used on urban streets provide access management by limiting left turn movements into and out of abutting development to select locations where a separate left turn lane or pocket can be provided. The reduced number of conflict points decreases risk of vehicle crashes. Medians provide pedestrians with a refuge as they cross the road and provide space for landscaping, lighting, and utilities. These medians are usually raised and curbed. Landscaped medians enhance the street or help to create a gateway entrance into a community.

Medians can be used to create tree canopies over travel lanes, contributing to a sense of enclosure. Recommended widths depend on available right-of-way and function. Because medians require a wider right-of-way, the designer must weigh the benefits of a median with the issues of pedestrian crossing: distance, speed, context, and available roadside width.

Crossing Treatments

Curb Extensions

Curb extensions, also known as neckdowns, bulb-outs, or bump-outs, are created by extending the sidewalk at corners or mid-block. Curb extensions are intended to increase safety, calm traffic, and provide extra space along sidewalks for users and amenities. They shorten crossing distances (exposure time) and increase visibility between roadway users: the waiting pedestrian can better see approaching traffic and drivers can better see pedestrians waiting to cross the road. Curb extensions have a variety of potential benefits including:

- Additional space for pedestrians to queue before crossing
- Improved safety by reducing motor vehicle speeds and emphasizing pedestrian crossing locations
- Less pedestrian exposure to motor vehicles by reducing crossing distances
- Space for ADA-compliant curb ramps where sidewalks are too narrow
- Enhanced visibility between pedestrians and other roadway users
- Restricting cars from parking too close to the crosswalk area
- Space for utilities, signs, and amenities such as bus shelters or waiting areas, bicycle parking, public seating, street vendors, newspaper stands, trash and recycling receptacles, and planting, and landscape elements

Design

- Curb extensions should be considered only where parking is present or where motor vehicle traffic deflection is provided through other curbside uses.
- Curb extensions are particularly valuable in locations with high volumes of pedestrian traffic, near schools, at unsignalized pedestrian crossings, or where there are demonstrated pedestrian safety issues.
- A typical curb extension extends the approximate width of a parked car, or about 6' from the curb.
- The minimum length of a curb extension is the width of the crosswalk, allowing the curvature of the curb extension to start after the crosswalk which should deter parking; NO STOPPING signs should also be used to discourage parking. The length of a curb extension can vary depending on the intended use (i.e., stormwater management, transit stop waiting areas, restrict parking).

Curb extensions can be a valuable space for placing streetside amenitites such as bike parking.

- Curb extensions should not reduce a travel lane or a bicycle lane to an unsafe width.
- Curb extensions at intersections may extend into either one or multiple legs of the intersection, depending on the configuration of parking.
- Street furniture, trees, plantings, and other amenities must not interfere with pedestrian flow, emergency access, or visibility between pedestrians and other roadway users.
- Curb extensions may be located at corners or midblock locations.

Considerations

- The turning needs of larger and emergency vehicles should be considered in curb extension design.
- Care should be taken to maintain direct routes across intersections aligning pedestrian desire lines on either side of the sidewalk. Curb extensions often make this possible as they provide extra space for grade transitions.
- Consider providing a 20' long curb extension to restrict parking within 20' of an intersection.
- In order to move traffic more efficiently, curb extensions should not be installed on arterials with peak hour parking restrictions.
- When curb extensions conflict with turning movements, the width and/or length should be reduced rather than eliminating the extension wherever possible.
- Emergency access is often improved through the use of curb extensions as intersections are kept clear of parked cars.
- Curb extension installation may require the relocation of existing storm drainage inlets and above ground utilities. They may also impact underground utilities, parking, delivery access, garbage removal, and street sweepers. These impacts should be evaluated when considering whether to install a curb extension.
- Curb extension installation may require the relocation of existing storm catch basins which can increase costs substantially. Catch basins should be centered at least 5 feet from the beginning of the bump out.

Crossing Islands

As the number of travel lanes increases, pedestrians feel more exposed and less safe entering the intersection. Crossing islands are raised islands that provide a pedestrian refuge while crossing multilane roadways enabling pedestrians to find gaps in traffic and allowing a two stage crossing movement. At mid-block crossings where width is available, islands should be designed with a stagger, or in a "z" pattern, encouraging pedestrians to face oncoming traffic before progressing through the second phase of the crossing.

Design

Crossing islands should:

- Be installed where there is a demand for pedestrians to cross the road, but where the numbers of pedestrians are not high enough to warrant a signalized pedestrian crossing.

Crossing islands enable pedestrians to cross the street in two stages.

- Include at-grade pedestrian cut-throughs as wide as the connecting crosswalks, detectable warnings, and be gently sloped to prevent standing water and ensure adequate drainage.
- Be at least 6' wide, preferably 8–10'. Where a 6'-wide median cannot be attained, a narrower raised median is still preferable to nothing. The minimum protected width is 6 feet, based on the length of a bicycle or a person pushing a stroller. The refuge is ideally 40 feet long.
- Accommodate turning vehicles. Crossing islands at intersections or near driveways may affect left-turn access.
- All crossing islands at intersections should have a "nose" which extends past the crosswalk. The nose protects people waiting on the crossing island and slows turning drivers.
- Safety islands should include curbs, bollards, or other features to protect people waiting.
- Be illuminated or highlighted with street lights, signs, or reflectors to ensure that motorists see them.
- Crossing islands may be enhanced using plantings or street trees. Plantings may require additional maintenance responsibilities and need to be maintained to ensure visibility.

Considerations

- Crossing islands should be considered where crossing distances are greater than 50'.
- To guide motorists around crossing islands, consider incorporating diverging longitudinal lines on approaches to crossing islands.
- If there is enough width, center crossing islands and curb extensions can be used together to create a highly visible pedestrian crossing and effectively calm traffic.
- Where possible, stormwater management techniques should be used on crossings islands with adequate space. Plantings should be low growing to maximize visibility, and ideally involve minimum maintenance.

Raised Crossings and Intersections

Raised crossings and intersections create a safe, slow-speed crossing and public space at minor intersections. Raised crossings are created by raising the crosswalk to same level as the sidewalk. Raised intersections are a similar concept to raised crossings but are applied to the entire area of an intersection. These treatments provide an array of benefits especially for people with mobility and visual disabilities because there are no vertical transitions to navigate.

Raised crossings and intersections:

- Make it physically more difficult for drivers to go through crossings and intersections at unsafe speeds.
- Improve drivers' awareness by prioritizing pedestrian crossings and helping define locations where pedestrians are expected.
- Eliminate standing water and debris collection at the base of ramps.
- Increase visibility between drivers and pedestrians by raising pedestrians in the motorists' field of view and giving pedestrians an elevated vantage point from which to look for oncoming traffic.
- Create pedestrian crossings which are more comfortable, convenient and accessible since transitioning between the sidewalk and roadway does not require negotiating a curb ramp.

Design

- Raised crossings and intersections are appropriate in areas of high pedestrian demand. They should also be considered in school zones and locations where pedestrian visibility and motorist yielding have been identified as concerns.
- Raised crossings should be considered across free-flowing right turn slip lanes to slow automobiles in preparation for yielding to pedestrians.

Raised crossings can include pavement markings on the approach ramps that make it more evident to drivers that a grade change is present. Contrasting paving treatments in the crossing also call attention to pedestrian cross traffic.

- Care should be taken to maintain direct routes across intersections aligning pedestrian desire lines on either side of the sidewalk.
- Raised crossings can be provided across side streets of major thoroughfares to slow traffic entering the neighborhood.
- Raised crossings should provide pavement markings for motorists and appropriate signage at crosswalks per the MUTCD.
- Design speeds and emergency vehicle routes must be considered when designing approach ramps.
- Raised crossings and intersections require detectable warnings at the curb line for persons with visual disabilities.

Considerations

- Raised crossings are particularly valuable at unsignalized mid-block locations, where drivers are less likely to expect or yield to pedestrians.
- Raised intersections and crossings can be used as gateway treatments to signal to drivers when there are transitions to a slower speed environment that is more pedestrian-oriented.
- High-visibility or textured paving materials can be used to enhance the contrast between the raised crossing or intersection and the surrounding roadway.
- Designs should ensure proper drainage. Raised intersections can simplify drainage inlet placement by directing water away from the intersection. If the intersecting streets are sloped, catch basins should be placed on the high side of the intersection at the base of the ramp.

Crosswalk Design

Well-designed crosswalks are an important component of a pedestrian friendly city. Safety for all pedestrians, especially for those with limited mobility and disabilities, is the single most important criteria informing crosswalk design.

Legal crosswalks exist at all locations where two streets cross, including T-intersections, regardless of whether pavement markings are present. In other words, drivers are legally required to yield to pedestrians at intersections even when there are no pavement markings.

Marked crosswalks help guide pedestrians to locations where they should cross the street as well as inform drivers of pedestrian movements. In addition to intersections, marked crosswalks are used in locations where pedestrians may not be expected, such as at mid-block crossings or uncontrolled crossings (crossings where motorists do not have signals or stop signs).

Crosswalks should be marked only at locations where significant pedestrian activity is occurring or anticipated to help ensure that drivers associate crosswalks and pedestrian activity. In order to create a convenient, connected, and continuous walking network, the first step is identifying the location for marked crosswalk. Begin by identifying desire lines and destinations such as schools, parks, civic buildings, retail areas, and transit stops. Then, identify where it is safest for people to cross. These observations should inform location and prioritization of crossing improvements.

As with any installation of traffic control devices, the most essential tool for crosswalk installation is the use of engineering judgment. Engineering judgment should be used and, if applicable, an engineering study performed when considering the marking of crosswalks.

Ladder style crosswalks provide greater visibility for approaching drivers.

Standard Crosswalks

The typical crosswalk throughout the Tulsa region is the standard style, with 8" wide white stripes parallel to the path of travel. Textured pavement and colored crosswalks are discouraged except as special treatments in defined districts, as they often fade over time and lack sufficient retro-reflectivity.

For areas with high pedestrian traffic and locations with unsignalized crossings, crosswalks should be the high visibility ladder treatment. These would have the current parallel bars, but then add perpendicular 24" bands every 24".

Design

- Crosswalks should be at least 10' wide or the width of the approaching sidewalk if it is greater. In areas of heavy pedestrian volumes, crosswalks can be up to 25' wide.
- Crosswalks should be aligned with the approaching sidewalk and as close as possible to the parallel street to maximize the visibility of pedestrians while minimizing their exposure to conflicting traffic.
- Designs should balance the need to reflect the desired pedestrian walking path with orienting the crosswalk perpendicular to the curb; perpendicular crosswalks minimize crossing distances and therefore limit the time of exposure.
- ADA-compliant curb ramps should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk (flares do not need to fall within the crosswalk).
- Textured crossings should be constructed and maintained to ensure a regular surface that is traversable by those in wheelchairs.
- Stop lines at stop-controlled and signalized intersections should be striped no less than 4' and no more than 30' from the approach of crosswalks.

Marked Crosswalks at Signal-Controlled Locations

Intersection controls are one of the most important factors in intersection design. The goal of controlling intersections is to provide the safest, most efficient means to move people across an intersection, whether walking, riding a bicycle, taking transit, or driving. Specific attention should be given to vulnerable users, such as pedestrians and bicyclists.

Engineering judgment should be used to establish the most appropriate controls on a site-specific basis. The following factors should be considered when determining intersection controls:

- Vehicular, bicycle, and pedestrian traffic volumes on all approaches
- Number and angle of approaches
- Approach speeds
- Sight distance available on each approach
- Reported crash experience

Depending on the type of intersection and the selected control devices, it may not always be appropriate to mark crosswalks at all legs of an intersection. Alternate treatments may be necessary to optimize safety and visibility, which are discussed in the sections that follow.

Marked Crosswalks at Stop-Controlled Locations

Stop-controlled approaches are easiest for pedestrians to cross because motorists and bicyclists must stop and yield the right of way to pedestrians. Stop-controlled intersections also help reduce pedestrian delay. However, the use of stop signs must balance safety with efficient traffic flow for all modes, including bicyclists and transit vehicles. Stop sign installation requires specific warrants be met as determined by the MUTCD.

For neighborhood residential streets, marked crosswalks should be used at locations where pedestrian crossings are more frequent, such as school walking routes, park entrances, or other locations. Stop lines should be striped at stop-controlled intersections no less than 4' and no more than 30' from the approach of crosswalks, unless determined otherwise by an engineering study.

Marked Crosswalks at Uncontrolled Locations

As with other locations, crosswalks should be marked at mid-block uncontrolled locations where pedestrian volumes are high. In all cases, they should be accompanied by signage at the road edge or in the street, and in many cases, they should be combined with other treatments outlined in this section. On higher speed streets, advance yield markings and signage may be desirable to alert drivers early enough to ensure adequate stopping distance.

Advance yield markings on this multi-lane street alert drivers to expect pedestrian crossings ahead.

Rectangular Rapid-Flashing Beacons (RRFBs)

At some uncontrolled crossings, particularly those with four or more lanes, it can be difficult to achieve compliance with laws that require motorists to yield to pedestrians. Vehicle speeds and poor pedestrian visibility combine to create conditions in which very few drivers are compelled to yield.

One type of device proven to be successful in improving yielding compliance at these locations is the Rectangular Rapid Flash Beacon (RRFB). RRFBs are a pedestrian crossing sign combined with an intensely flashing beacon that is only activated when a pedestrian is present. RRFBs are placed curbside below the pedestrian crossing sign and above the arrow indication pointing at the crossing. They should not be used without the presence of a pedestrian crossing sign. The light-emitting diode (LED) flash is a "wig-wag" flickering pattern at a rate of 190 flashes per minute. The beacons are activated by a call button for pedestrians or bicyclists.

Another LED panel should be placed facing the pedestrian to indicate that the beacon has been activated. The pushbutton and other components of the crosswalk must meet all other accessibility requirements.

Design

- The design of RRFBs should be in accordance with FHWA's Interim Approval 11 (IA-11) for Optional Use of Rectangular Rapid Flashing Beacons issued July 16, 2008 and the Interpretation Letter 4(09)-41 (I) - Additional Flash Pattern for RRFBs issued July 25, 2014.
- RRFBs can be used when a signal is not warranted at an unsignalized crossing. They are not appropriate at intersections with signals or STOP signs.
- RRFBs are installed on both sides of the roadway at the edge of the crosswalk. If there is a pedestrian refuge or other type of median, an additional beacon should be installed in the median.

Considerations

- RRFBs are considerably less expensive to install than mast-arm mounted signals. They can also be installed with solar-power panels to eliminate the need for a power source.
- RRFBs should be limited to locations with critical safety concerns, and should not be installed in locations with sight distance constraints that limit the driver's ability to view pedestrians on the approach to the crosswalk.
- RRFBs should be used in conjunction with advance yield pavement lines and signs, which are discussed on the previous page.
- Usually implemented at high-volume pedestrian crossings, but may also be considered for priority bicycle route crossings or locations where bike facilities cross roads at mid-block locations.

Push buttons are located on the sign post of the RRFB which must be supplied with an electrical connection.

HAWK Signal

"HAWK" stands for High-intensity Activated Crosswalk and is also referred to as a pedestrian hybrid beacon. A HAWK signal is a push button-activated pedestrian signal that increases pedestrian safety at crossings while stopping vehicle traffic only as needed. The following describes how a HAWK signal works:

1. Signal remains dark until a pedestrian activates the walk indication by pushing a button.
2. Signal will then flash yellow to warn drivers that a pedestrian will be entering the crosswalk.
3. Steady yellow indication follows advising drivers to stop if safe to do so.
4. Signal then turns solid red, requiring vehicles to stop at the stop line. Pedestrian sees the walk indication and proceed into the crosswalk.
5. Once walk time is completed, the signal will flash red. This lets the driver know that once they come to a complete stop they may proceed through the intersection if there are no pedestrians in the crosswalk.
6. HAWK will return to the dark or "off" position until the push button is activated again.

HAWK signals may be used at mid-block crossings (including off-street path crossings) and should be considered where high traffic volumes and speeds (typically based on study of 35mph or less, per MUTCD) make it difficult for pedestrians to cross the street at locations that do not meet traffic engineering warrants for a conventional signal. HAWK signals provide a protected crossing while allowing vehicles to proceed through a pedestrian crossing as soon as it is clear, thus minimizing vehicle delay.

Design

HAWK signals must be accompanied by the following crossing treatments:

- Crosswalk pattern to match the intensity of the crossing, likely a higher-visibility crosswalk
- Advanced stop bar placed 20 to 50 feet from crosswalk
- MUTCD R10-23 signs mounted both on the mast arm and the supporting pole.

The HAWK signal indicates a preferred crossing location and thus does not improve crossing at all quadrants of an intersection as a signalized intersection would. It does not improve movement through the intersection for cyclists in on-street lanes as they are subject to motor vehicle indications.

HAWKs are particularly useful in multi-lane contexts like the one pictured here where a multiple threat crash risk exists.

Signalized Intersections

The design of signalized intersection should attempt to prioritize the safety, comfort, and convenience of all users. All signalized intersections should contain indications for motor vehicles and pedestrians, and signals for bicyclists and transit where appropriate. By optimizing signal phasing and timings, multiple modes are able to safely move through the intersection with limited conflicts, low delay, and more comfort.

Signal Timing for Pedestrians

Signal timing for pedestrians is provided through the use of pedestrian signal heads. Pedestrian signal heads display the three intervals of the pedestrian phase:

1. The Walk Interval, signified by the WALK indication—the walking person symbol—alerts pedestrians to begin crossing the street.
2. The Pedestrian Change Interval, signified by the flashing DON'T WALK indication—the flashing hand symbol accompanied by a countdown display—alerts pedestrians approaching the crosswalk that they should not begin crossing the street. The countdown display alerts pedestrians in the crosswalk how much time they have left to cross the street.
3. The Don't Walk Interval, signified by a steady DON'T WALK indication—the steady upraised hand symbol – alerts pedestrians that they should not cross the street. The beginning of the Don't Walk Interval is called the Buffer Interval, which should be displayed for a minimum of a three seconds prior to the release of any conflicting motor vehicle movements.

The total time for the pedestrian change interval plus the buffer interval is called the pedestrian clearance time, or the time it takes for a pedestrian to clear the intersection leaving at the onset of the DON'T WALK indication.

Pedestrian signal heads should be provided at all signalized intersections for all crosswalks. Additionally, it is highly recommended to install crosswalks on all legs of a signalized intersection unless it is determined to be unnecessary due to pedestrian travel patterns. Signal timing for pedestrians should be provided at all newly constructed signalized intersections and incorporated into all signalized intersection improvements.

The following design goals can help improve pedestrian crossing safety and comfort at signalized intersections:

- Reduce vehicle speeds
- Minimize crossing distance
- Minimize delay for WALK indication
- Minimize conflicts with turning vehicles
- Provide sufficient signal time to cross the street

Design

- Pedestrian signals should allocate enough time for pedestrians of all abilities to safely cross the roadway. The MUTCD specified pedestrian walking speed is 3.5 feet per second to account for an aging population and is endorsed by the City. The pedestrian clearance time, which is the total time for the pedestrian change interval plus the buffer interval, is calculated using the pedestrian walking speed and the distance a pedestrian has to cross the street.
- Countdown pedestrian displays inform pedestrians of the amount of time in seconds that is available to safely cross during the flashing Don't Walk Interval. All pedestrian signal heads should contain a countdown display provided with the DON'T WALK indication.
- In areas with higher pedestrian activity, such as near transit stops, along Main Streets, and in neighborhood centers, pedestrian push-button actuators may not be appropriate. Pedestrians should expect to get a pedestrian cycle at every signal phase, rather than having to push a button to call for a pedestrian phase.

- At more complex intersections (e.g., where there is more than one signal phase for each direction), where pedestrian volumes are lower, or uneven or variable volumes of users, push buttons should be provided. The responsiveness of the actuated signal should be as prompt as possible (as low as 5 seconds) based on the necessary transition time for approaching motorists to come safely to a stop.
- Along corridors where traffic signals are synchronized, they should be designed to meet target speeds to maintain safe vehicular travel speeds and discourage speeding.

Considerations

- One of primary challenges for traffic signal design is to balance the goals of minimizing conflicts between turning vehicles with the goal of minimizing the time required to wait at the curb for a WALK indication.
- Intersection geometry and traffic controls should encourage turning vehicles to yield the right-of-way to pedestrians.
- Requiring pedestrians to wait for extended periods can encourage crossing against the signal. The 2010 Highway Capacity Manual states that pedestrians have an increased likelihood of risk-taking behavior (e.g., jay-walking) after waiting longer than 30 seconds at signalized intersections.
- Opportunities to provide a WALK indication should be maximized whenever possible. Vehicular movements should be analyzed at every intersection in order to utilize non-conflicting phases to implement Walk Intervals. For example, pedestrians can always cross the approach where vehicles cannot turn at a four-leg intersection with the major road intersecting a one-way street when the major road has the green indication.

Leading Pedestrian Interval

The Leading Pedestrian Interval (LPI) initiates the pedestrian WALK indication three to seven seconds before motor vehicles traveling in the same direction are given the green indication. This technique allows pedestrians to establish themselves in the intersection in front of turning vehicles, increasing visibility between all modes.

Design

- Installation of new LPIs or retrofits should prioritize intersections with high volumes of pedestrians and conflicting turning vehicles, and locations with a large population of elderly or school children who tend to walk slower.
- 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.
- A lagging protected left arrow for vehicles may be provided to accommodate the LPI.
- Newly-installed LPIs should provide accessible pedestrian signals to notify visually-impaired pedestrians of the LPI. Without an accessible pedestrian signal, visually-impaired pedestrians may begin to cross with the vehicular movement when motorists less likely to yield to them.

Pedestrian signal timing should prioritize the safety, comfort, and convenience of all users.

Traffic Calming

Traffic calming is the combination of mainly physical measures that:

- Reduce the negative effects of motor vehicle use - changing the role and design of streets to accommodate motorists in ways that reduce the negative social and environmental effects on individuals, neighborhoods, districts, retail areas, corridors, downtowns, and society in general (e.g., reduced speeds, reduced sense of intrusion/dominance, reduced energy consumption and pollution, reduced sprawl, and reduced automobile dependence).
- Alter driver behavior - the street design helps drivers self-enforce lower speeds, resulting in less aggressive driving and increased respect for non-motorized users of the streets.
- Improve conditions for non-motorized street users - promoting walking and bicycling, changing expectations of all street users to support equitable use of the street, increasing safety and comfort (i.e., the feeling of safety), improving the aesthetics of the street, and supporting the context of the street.

The definition of traffic calming is broad enough to apply to myriad contexts and situations, but specific enough to have independent meaning so that it is not confused with other street design elements and design approaches.

Through design, traffic calming aims to slow the speeds of motorists to the "desired speed" (usually 20 mph or less for residential streets and 25 to 35 mph for boulevards and avenues) in a context-sensitive manner. Traffic calming is acceptable on all street types where pedestrians are allowed.

The greatest benefit of traffic calming is increased safety. Compared with conventionally designed streets, traffic calmed streets typically have fewer collisions and even higher reductions in injuries and fatalities. These dramatic safety benefits are mostly the result of slower speeds for motorists

Traffic calmng features are especially applicable in commercial areas where most visitors arrive by automobile. Drivers are signaled by street features that they have arrived in the commercial district, and they are induced to slow travel speeds in this area with higher pedestrian traffic.

that result in greater driver awareness, wider fields of vision, shorter stopping distances, and less kinetic energy during a collision. At 20 mph or less, chances are very high that a motorist will not kill or severely injure a pedestrian in a collision. Other contributing factors to these superior safety results include a more legible street environment and design advantages for pedestrians and cyclists. Bulb-outs on corners of intersections, for example, allow pedestrians to see past parked cars prior to crossing the street.

Design

There are both physical and visual elements that can help slow vehicle traffic. Visually narrowing a street, or changing its aesthetics can be effective traffic calming techniques, and can be more widely applicable than geometric measures. Treatments include:

- Curb and gutter, which defines the traveled part of the roadway
- Sidewalks, which indicate that motorists should expect to see pedestrians
- Outdoor cafes or other activities in the pedestrian zone, such as street furniture
- Street trees, which create a sense of enclosure
- On-street parking, which creates an activity zone to which drivers must pay attention
- Pavement type and road striping
- Buildings that are closer to the street (i.e., no parking or drive-through between the street and adjacent buildings)
- Bump outs, either at intersections or mid-block crossings, which also shorten pedestrian crossing distances
- Reduction in curb radii, in order to slow turning movements
- Lane diets or roadway diets, which reduce the number of lanes or amount of lane space and can result in slowed vehicle travel

Creating vertical or horizontal deflection of the vehicle path is a very effective way to slow traffic, and may be appropriate on residential streets. Horizontal deflection is typically most effective. Treatments include:

- Bump outs, either at intersections or mid-block crossings.
- Traffic circles, which force drivers to slow at intersections and yield to users approaching from the left.
- Speed humps provide a gentle rise on the roadway.
- Chicanes force drivers and bicyclists to navigate a narrowed "s" shaped pathway along the street created by the placement of bump outs that alternate from one side of a street to the other, typically in groups of three.

Traffic Calming Intersection Treatments

Blocking or restricting access is highly effective, but can have the unintended effect of creating traffic problems on neighboring streets. Treatments include:

- Diverter Median Barriers, which restrict a driver's ability to cross an intersecting street.
- Diverter Islands restrict turn or through movements for vehicle traffic, and may allow bicycle and pedestrian traffic in all directions. Diverter islands are typically used at intersections to deter heavy vehicle volumes and eliminate cut-through traffic. They should be part of a larger traffic calming strategy that evaluates and handles accessibility through the adjacent street network and considers emergency vehicle response times. Effects are generally limited to the intersection; the street may require additional traffic calming in addition to the intersection treatments to be effective.
- Right In/Right Out restrictions, which restrict left turns into and left turns out of a street.

Considerations

Traffic calming measures that may be applied depend on the context of the street. Special consideration should be given to:

- Street classification
- Traffic operational analysis
- Mix of traffic, including consideration of bus, bike or truck routes
- Adjacent land uses
- First responder vehicle needs
- Effect on on-street parking

Speed Humps

Speed humps are a roadway design feature that consists of raised pavement approximately 3 to 4 inches high at their center, which extend the full width of the street. The height of a speed hump tapers near the drain gutter to allow unimpeded bicycle travel. Speed humps should not be confused with speed bumps commonly found in parking structures.

Speed humps may be considered on low volume neighborhood streets in order to control vehicle speeds. Streets that have high traffic volumes, are transit routes or have frequent freight travel are typically not good candidates for speed humps.

Design

- Speed humps should have a smooth leading edge, a parabolic rise, and be engineered for a speed of 25 to 30 mph, so they can be negotiated by large vehicles.
- Speed humps should be clearly marked with reflective markings and signs.
- Typically speed humps are 22 feet in length, with a rise of 6 inches above the roadway and should extend the full width of the roadway. They should be tapered at the edges to the gutter to accommodate drainage.
- Grade should be considered; do not use on roadways with greater than 5 percent grade.
- Do not use on collector or arterial streets.

Diverter islands can allow for two-way bicycle access to a street while restricting automobile access at one end.

Speed hump locations are often indicated with signage to further alert drivers to slow speeds.

Chicanes divert traffic horizontally and may be designed to create a one-lane street that necessitates driver yielding.

- Parking must be restricted adjacent to humps.
- A speed study showing 85th percentile at least 5 mph over the speed limit required prior to implementation.

Chicanes

Chicanes can take the form of curb extensions, center islands, or staggered on-street parking. These traffic calming features slow vehicles by compelling them to shift laterally or pass through a narrowed section of roadway.

Chicanes may be considered on residential streets where:

- There is a high volume of high-speed cut through traffic
- Children frequently walk or bicycle to and from school
- A comprehensive neighborhood traffic calming program is present
- Other traffic calming measures have been implemented.

Design

- The size of chicanes will vary based on the targeted design speed and roadway width, but must be 20 feet wide curb to curb at a minimum to accommodate emergency vehicles.
- Can incorporate stormwater treatment and low growing landscaping.
- Parking may be affected to a greater extent than other traffic calming measures.

Curb Radii

Curb returns or radii are the curved connection of curbs at the corners formed by the intersection of two streets, which guide vehicles in turning corners. The shape of a corner curb radius has a significant effect on the overall operation and safety of an intersection.

The shape and dimensions of curb radii vary based on street type, transportation context, and design vehicle (vehicle type used to determine appropriate turn radius at an intersection). Smaller corner radii increase pedestrian safety by shortening crossing distances, increasing pedestrian visibility, and decreasing vehicle turning speed. Smaller corner radii also provide better geometry for installing perpendicular curb ramps for both crosswalks at each corner, resulting in simpler, more appropriate crosswalk placement, in line with the approaching sidewalk. Factors to consider when designing curb radii:

- Curb radius: the actual radius proscribed by the curb line at an intersection.
- Effective radius: The radius available for the design vehicle to make the vehicle turn, accounting for the presence of parking, bike lanes, medians, or other features.

Curb radii can be designed:

- To allow for the selected design vehicle to complete a turn fully within its designated travel lane or lanes.
- To accommodate a vehicle turn by allowing for a particular vehicle type to complete a turn with some latitude to partially use adjacent or opposing lanes on the origin or destination streets.

Tighter curb radii are particularly appropriate in downtown Main Street contexts.

Design

The effective turning radius (rather than the actual curb radius), should typically be used to determine the ability of vehicles to negotiate a turn. Determination of the design vehicle should consider and balance the needs of the various users of a street--from pedestrians and bicyclists to emergency vehicles and large trucks--considering the volume and frequency of these various users. The design vehicle should be selected according to the types of vehicles using the intersection with considerations to relative volumes and frequencies. The designer should balance designing for a larger vehicle versus accommodating the needs of large vehicles, which may allow encroachment into another lane. A typical curb radius of 20 feet (smaller radii may be considered) should be used wherever possible including where:

- There are higher pedestrian volumes
- There are few larger vehicles
- Bicycle and parking lanes create a larger effective radius.

Factors that may affect the curb radii must be taken into consideration:

- The street type
- The angle of the intersection
- Bump outs
- The number and width of receiving lanes
- Large vehicles
- Effective turning radius

Where there are high volumes of large vehicles making turns- inadequate curb radii could cause large vehicles to regularly travel across the curb and into the pedestrian waiting area.

1. On corners along bus routes, intersections should accommodate allowing a transit vehicle using the entire roadway, similar to an emergency vehicle.
2. Because emergency vehicles have sirens and flashing lights and other vehicles must pull over, they can typically use the full right-of-way without encountering opposing vehicles. On busier streets, the ability of emergency vehicles to swing wide may be limited by queued traffic which may not be able to pull over.
3. Freight corridors should be designed for WB-50 trucks. WB-60 and larger trucks may also be present on city streets, particularly on designated state highways, truck routes and in industrial areas. These may need to be accommodated in certain instances, though they generally do not fit well on the existing street network in most of the Tulsa region.

A variety of strategies can be used to maximize pedestrian safety while accommodating large vehicles including:

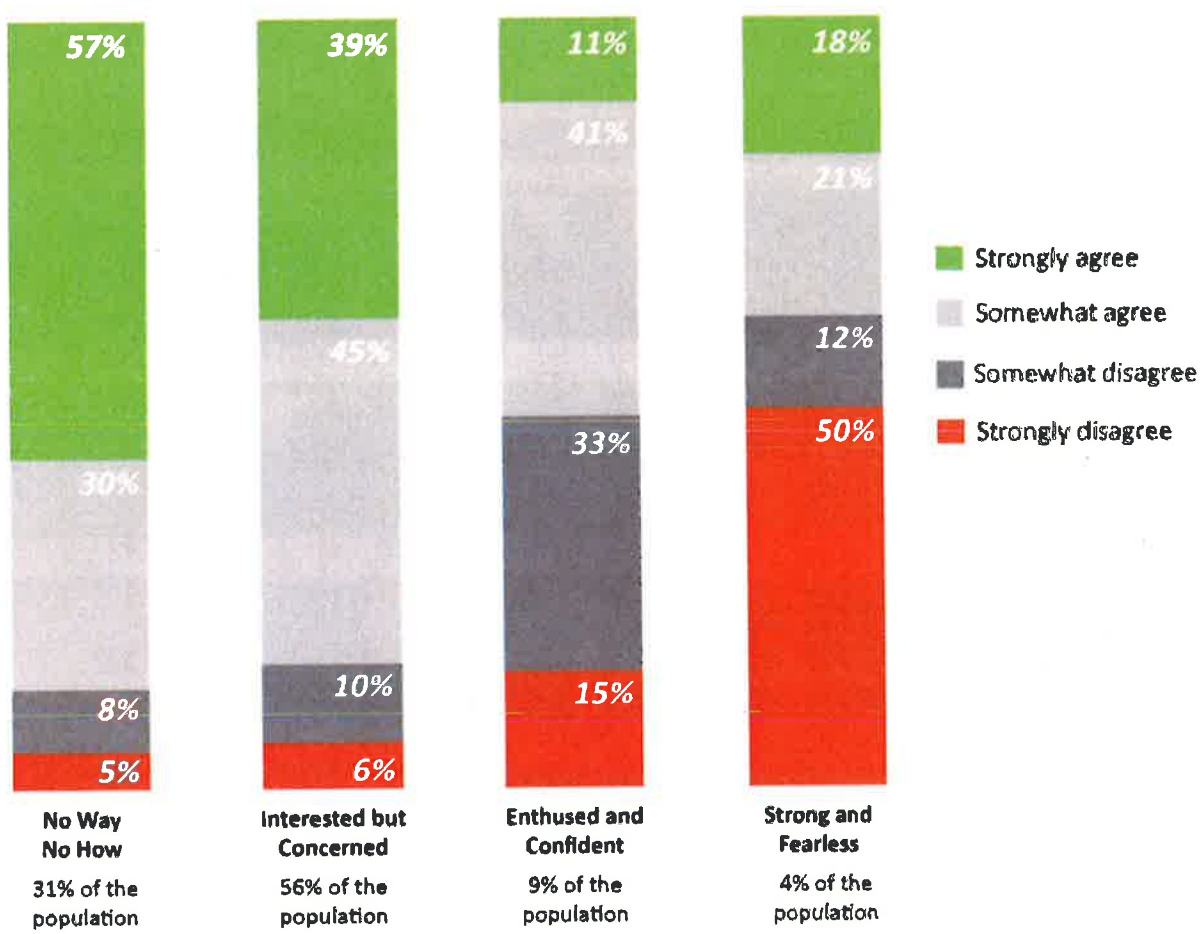
- Adding parking or bicycle lanes to increase the effective radius of the corner
- Varying the actual curb radius (i.e., compound curb radii) over the length of the turn so that the radius is smaller as vehicles approach a crosswalk and larger when making the turn. Compound radii effectively shorten crossing distances and make pedestrians visible while accommodating larger vehicle turns; because they allow more sweeping turns and they do not slow turning vehicles.
- Painting a median: Where there is sufficient lane width on the destination street, a painted median can enable a large vehicle to complete a turn without turning into opposing traffic.
- Restricting access: Where there is a desire to keep curb radii small, restrictions on large vehicles making the turn may be considered. This should be considered in light of the overall street network.
- Installing advance stop lines on the destination street to increase the space available for large vehicles to make a turn by enabling them to swing into opposing lanes on the destination street while opposing traffic is stopped.

Bicycle Facilities

These recommendations are built off of the adopted 1999 Trails Master Plan, the findings from the Tulsa Go Plan analysis, and from on-the-ground analysis of the existing facilities and conditions. Most importantly, these recommendations build off of the engaged bicycle community in the Tulsa region that have participated in the Go Plan's public engagement process. The planning process for the future bicycle network considered the needs, skills, and desires of a range of bicyclists. Generally, bicycle planning professionals accept that there is a large percentage of the American population that is interested in cycling for transportation purposes, but do not currently cycle for a variety of reasons. People typically have positive memories of bicycling in their youth and associate bicycling with expanded personal freedom and adventure. But as they have grown older, most have come to view bicycling as a recreational activity that is safest on trails; riding on the street network is perceived to be unsafe and unappealing. Conversations during the plan development process revealed similar attitudes in the Tulsa region, so the bicycle facility network recommendations are designed to meet this broader demographic of users.

Research focused on bicycle transportation has historically been very limited as has the collection of data regarding the use and safety of treatments, such as bike lanes, designed to improve bicycling. Over the last 5 -15 years, an increasing focus has been placed on understanding the desires and needs of bicyclists. Research identifying reasons

If or when I ride a bike, I'm concerned about being hit by a motor vehicle.



Survey response results from 2012 Portland study relating fear of being hit by motorist to bicyclist classification shows strong correlation between bicyclist classification and safety concerns operating in close proximity to traffic.

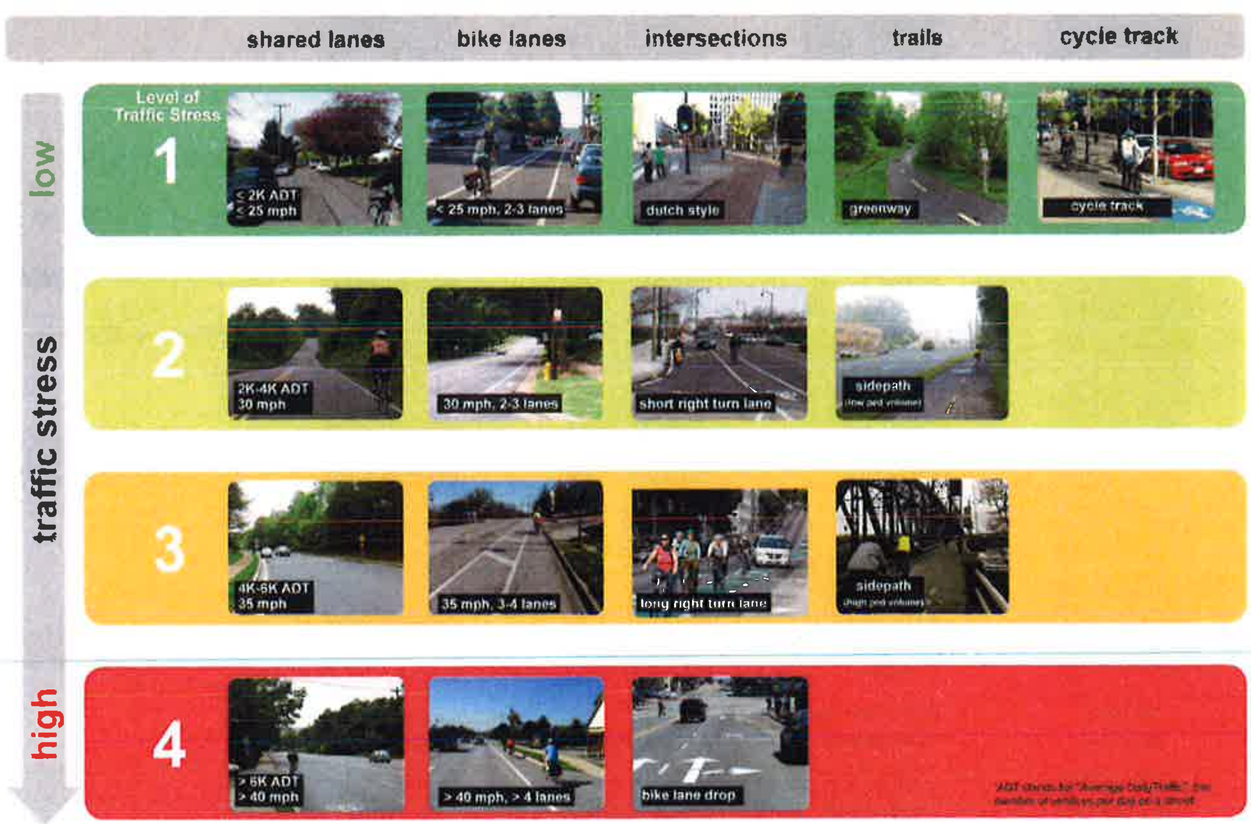
people choose other modes of transportation over bicycling consistently find people cite perceived risk, weather, topography, trip distance and support facilities (showers, bike parking) as primary discouragements to bicycling. Of these issues, perceived risk is the most critical and challenging barrier to overcome to increase rates of bicycling for transportation purposes.

A number of research studies have shown a bicyclist's perception of their personal safety riding on a roadway is greatly influenced by their proximity to and interaction with motorized traffic. At low-volumes and speeds of traffic, many people feel safe and comfortable sharing the roadway with traffic. As traffic speed and volume increase, their perception of safety degrades significantly resulting in a feeling of increased stress and discomfort on the roadway.

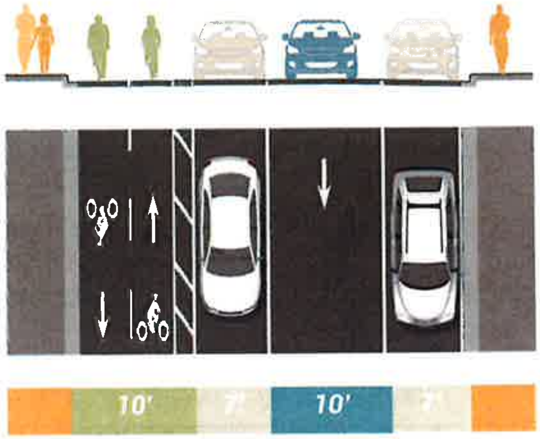
The degree to which people experience this stress is likely to vary by bicycling experience, health, age, and trip purpose (commuting vs. recreational family ride). A seminal 2012 survey in Portland, OR questioned residents about their level of comfort riding on various street types with and without bicycle facilities, signs or pavement markings. Respondents were then sorted into four categories based upon which correlated their stated comfort level riding on various street types with their concern about being hit by a motor vehicle. The results are summarized in the graphic below.

Priority Routes via Low-Stress Bicycling Concept

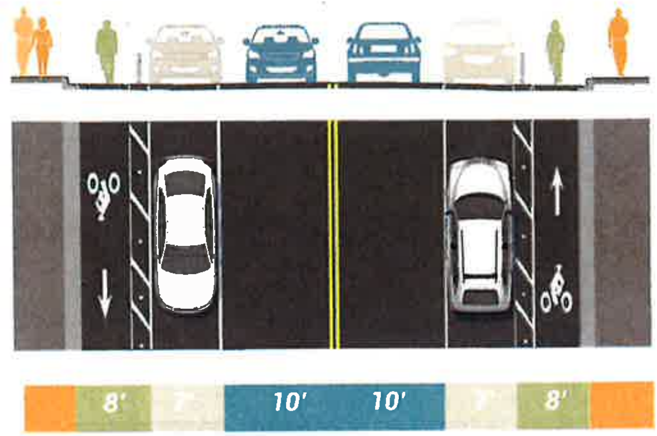
In looking at the current conditions of many of streets in the Tulsa region, it was clear that many of them are either over-built and have great potential in being reimagined to have bike facilities on them, or they are so heavily trafficked that major actions would have to occur to make them feel comfortable to ride on. The low-stress bicycling concept is premised on the experience of the Dutch who have focused on building a connected bicycle network that minimize bicyclists interaction with motorized traffic. Their approach



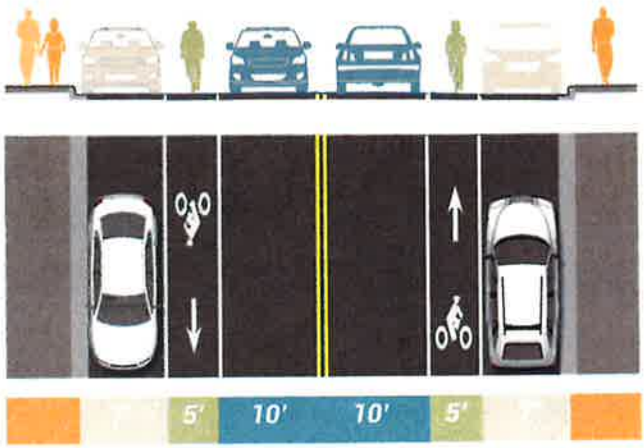
Level of Traffic Stress takes bicycle facility type, traffic speed and traffic volume into account to determine the bicyclist's level of stress experienced while traveling along that street or pathway.



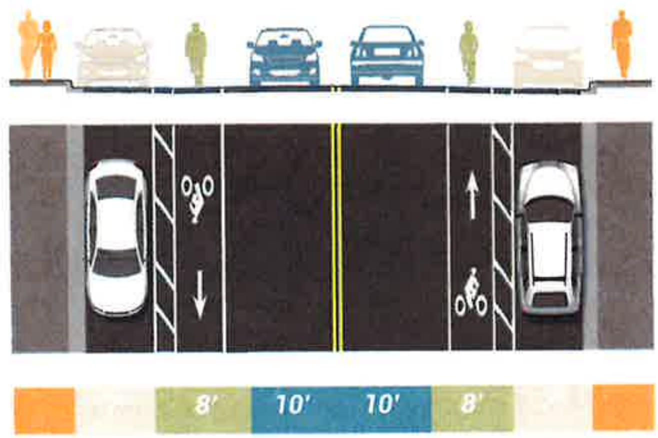
Two-way Cycle Track



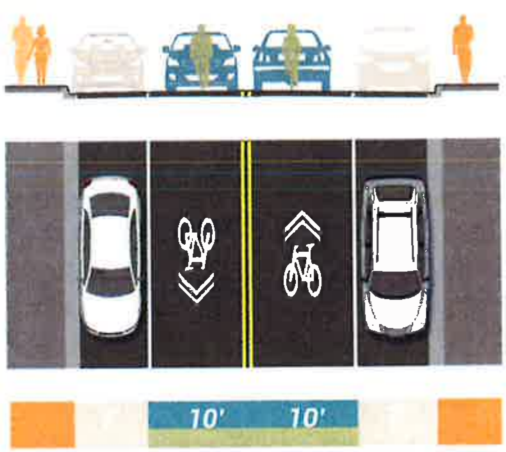
One-way Cycle Tracks



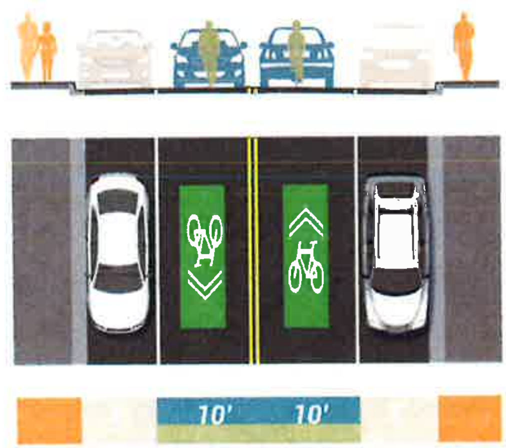
Bike Lanes



Buffered Bike Lane



Shared Lane Markings



Priority Shared Lane Markings

These cross sections indicate minimum facility and lane widths for on-street bicycle facilities. Widths are further detailed in each of the facility type write-ups in this section.

Automobile travel lane widths should adhere to the Context Sensitive Capacity-Volume-Geometrics table developed jointly by INCOG and the City of Tulsa engineering department. For instance, if a transit lane is located on a street, the lane for bus travel must be 11'. This table is included as the last page of this appendix.

targets mainstream adult bicyclists (Interested but Concerned population) by providing the following types of facilities:

- Shared lanes on low-volume, low speed, local streets
- Bicycle lanes on moderate-volume & moderate-speed streets
- Cycle tracks (cycle tracks) on high-volume or high-speed streets

For bicycling to be an appealing transportation choice for the Interested but Concerned population, the streets need to be less stressful to bike on, and the bicycle network should get people from point A to point B without significant additional mileage or delay.

A primary goal of the priority bicycle network for the Tulsa Go Plan was to identify and plan for a connected system of low stress routes which appeal to the Interested but Concerned population. These key routes were identified to link the existing and proposed trail system and provide direct north-south and east-west travel through the multimodal district. These routes also connect major destinations including parks and schools. Plus they are some of the only routes to cross the Arkansas River or provide access under Interstate 244 and 44. Many of the facilities recommended are self-explanatory and are designs that have been recommended before, but there are a few that are unique to the Go Plan and serve a greater purpose than just moving bicycles.

Sidepaths and Trails

Sidepath and trails are two facilities that provide off-street space intended for use by bicyclists and pedestrians. Both may be designated for one-way or two-way travel. Most off-street paths accommodate both bicyclists and pedestrians within the same space and are sometimes referred to as shared-use paths. Off-street facilities for exclusive bicyclist use are discussed in the following section, "Cycle Tracks."

A defining feature of off-street paths is that they place bicyclists and pedestrians in an off-street location, where they become subject to all applicable laws pertaining to pedestrian movement at intersections and driveways.

The difference between sidepaths and trails for the purposes of this plan and set of guidelines is their location in relation to a street right-of-way. Sidepaths are located in a right-of-way and place bicyclists and pedestrians in parallel travel paths to the on-street automobile traffic.

Trails are located off-street through open land, often, in the Tulsa region, along watercourses or former rail lines. They interact with streets through at-grade and grade-separated crossings. Where space is available, some trails are constructed with dual cartways: one for pedestrians and one for bicyclists.

Similar design principles and considerations apply to both facility types. However, sidepath design must consciously address driveway crossings and a higher frequency of street crossings to ensure path users and drivers are aware of potential conflicts.

Design

- Off-street paths are desirable along high volume or high speed roadways, where accommodating bicyclists within the roadway in a safe and comfortable way is impractical.
- Off-street paths typically have a lower design speed for bicyclists than in-street facilities do and may not provide appropriate accommodation for cyclists who desire to travel at greater speeds. In addition, greater numbers of driveways or intersections along a sidepath corridor can decrease bicycle travel speeds and traffic signals can increase delay for bicyclists on off-street paths compared to cyclists using in-street bicycle facilities such as bike lanes.
- Many bicyclists express a strong preference for separation from motorized vehicles provided by off-street paths when compared with on-street bike lanes. This may be especially true of less experienced or slower bicyclists. Off-street paths should not be considered a substitute to accommodating bicycles within the roadway.

- Off-street paths have a relationship with roadways similar to that of sidewalks to roadways, in that they function as parallel facilities located in close proximity to vehicle travel lanes. Conflicts with vehicles turning across the path of bicycles and pedestrians at driveways and intersections are an inherent drawback of off-street paths. Off-street paths are commonly used along recreational corridors, scenic corridors, or parkways, and may be part of a regional trail system.
- Off-street paths may be used to provide two-way bicycle and pedestrian travel adjacent to one-way roadways.
- Off-street paths should be a minimum of 10 feet wide ideally. Sidepaths in constrained locations with lower pedestrian volumes may be as narrow as 8 feet.

Considerations

- Off-street paths intended for use by bicyclists should be designed to meet adopted guidelines. This includes widths, clearance, design speed, stopping and sight distance.
- Off-street paths intended for use by pedestrians must meet accessibility requirements under the Americans with Disabilities Act (ADA). Grades may meet but not exceed the grade of the adjacent roadway.
- Crossings must be designed in a way that facilitate sight distance for drivers, bicyclists, and pedestrians, provide stacking room for vehicles waiting to enter the roadway or cross the off-street path, and allow bicyclists and pedestrians to anticipate and react to vehicular turning movements.
- Off-street paths should be designed to maintain constant cross slope and running slope through driveways.
- The desired buffer width between the off-street path and the roadway is a minimum of 5 feet, with a desired minimum of 6 feet, and may be a planted boulevard.
- One-way paths may be used in park settings to minimize conflicts between users where there are high volumes of bicyclists or pedestrians. Because pedestrians walk at relatively slow speeds, one-way pedestrian paths are generally not encouraged.
- When one-way paths for bicycles are desired, consideration should be given to discourage wrong way cycling.
- When one-way paths for bicycles are provided within roadway corridors, the paths in opposite directions should be provided in pairs. Generally a pair of one-way off-street paths will be provided on opposite sides of the roadway to allow bicyclists to travel adjacent to motorized traffic in the same direction.

Sidepaths are located along roadways and are shared by bicyclists and pedestrians.

Trails are located in their own off-street alignment and are shared by bicyclists and pedestrians.

- On a one-way path, an off-street facility may transition to an on-road bike lane or cycle track configuration in advance of an intersection or driveway. This allows cyclists to take advantage of the comfort of off-street paths in mid-block locations with the operational benefits of in-street cycling at intersections.
- Enhanced traffic control devices such as bike signals at intersections may be appropriate in some locations.
- At intersections with low-volume minor roadways, the crossing of an off-street path and/or sidewalk may be raised, in the form a raised crosswalk to serve as a traffic calming feature for motor vehicles. Raised paths through intersections are more difficult to construct and maintain as grade present issues for ADA compliance and drainage.
- Sidepath design may be complicated along corridors with pinch points that limit right-of-way where the path may be located. Roadway edge demands such as utility locations and driveways can impact location and design of these facilities.

Cycle Tracks

Cycle tracks, also known as separated or protected bike lanes, are exclusive bicycle facilities physically separated by a vertical element from the adjacent motor vehicle lanes. Separation can be achieved through a vertical curb, a parking lane, flexposts, plantings, removable curbs or other measures. Buffered bike lanes that do not include a vertical element are not considered cycle tracks.

There are four basic configurations for cycle tracks:

- Sidewalk level bike lanes
- Bike lanes constructed at an intermediate level between the sidewalk and the street
- Street level bike lanes separated from traffic or parking by a curb
- Street level bike lanes separated from traffic or parking by a vertical object

Cycle tracks dramatically increase rider comfort and decrease stress. They are usable by a broad spectrum of bicyclists including very young riders and more cautious bicyclists. Cycle tracks may be used on many different street types and are especially welcome on higher speed, higher volume roadways. Studies show that bicyclists prefer separation from motor vehicles on most types of roadways and can contribute to expanding bicycle mode share. Cycle tracks can be one-directional or two-directional; may be provided on both sides of two-way streets or on one side of one-way streets.

Design

Cycle tracks are appropriate on streets with operating speeds of 25 mph and higher, and volumes that exceed 4,000 vehicles per day.

Cycle tracks can be useful on-streets that provide connections to off-street trails, since bicyclists on these streets may be more accustomed to riding in an area separated from traffic.

Intersection design for cycle tracks is complex and requires careful attention to conflicts with turning vehicles.

- Dimensions are for bike lane only and do not include sidewalk or street buffer.
- Typical minimum bike lane width of 5' will not accommodate passing. 6.5' is required on a one-way facility for two bicyclists to pass one another, and 4' in each direction on a two-way facility. Edge conditions impact the ability to comfortably pass or ride two abreast. The minimum width is discouraged when a separated bike lane is located between raised curbs. If width is constrained, designer should consider options that allow bicyclists to use the buffer space to pass another user.
- Passing may occur in opposing lane.

Adjacent to on-street parking, a minimum 2' to 3' buffer should be provided between parking and the separated bike lane; the buffer serves as a pedestrian loading and unloading zone and helps keep bicyclists out of the door zone of parked vehicles.

Cycle tracks can be designed to be two-way facilities on a one-way street. Signage and pavement markings are provided at driveway crossings to alert drivers to the presence of two-way bicycle cross traffic.

Considerations

- Cycle tracks require increased parking restrictions approaching intersections compared to standard bicycle lanes to provide for visibility at intersection transitions.
- Vertical curb separation should be considered where on-street parking is not present. Stormwater drainage will need to be considered with this option. Street level cycle tracks may be combined with islands at corners and crossings.
- At transit stops, cycle tracks should be routed between the stop passenger waiting area and the sidewalk to reduce conflicts while passengers are boarding and alighting. Signage and/or markings may be added to alert transit riders and bicyclists of the conflict zone as pedestrians cross the bike lane from the sidewalk to the transit stop.
- Ensure gutter seams, drainage inlets and utility covers are flush with the roadway surface. Where possible, these features should be kept out of the bike lane.
- The presence of drainage and utility structures along the curb may reduce the effective width of a separated bike lane.
- Maintenance should be considered, including street sweeping.

Standard Bike Lanes

Bike lanes provide an exclusive space for bicyclists in the roadway. Bike lanes are established through the use of lines and symbols on the roadway surface. Bike lanes are for one-way travel and are normally provided in both directions on two-way streets and/or on one side of a one-way street. Bicyclists are not required to remain in a bicycle lane when traveling on a street and may leave the bicycle lane as necessary to make turns, pass other bicyclists, or to properly position themselves for other necessary movements. Bike lanes may only be used temporarily by vehicles accessing parking spaces and entering and exiting driveways and alleys. Stopping, standing and parking in bike lanes is prohibited.

Design

- Bike lanes can be used on one-way or two-way streets with single or multiple lanes.
- Bike lanes may be placed adjacent to a parking lane or against the curb if there is no parking. Conventional bicycle lanes are located on the right side of the roadway.
- Bike lanes are typically installed by reallocating existing street space (i.e., narrowing other travel lanes, converting travel lanes and/or reconfiguring parking lanes).
- The minimum width of bike lanes is 5' next to a curb and, if working in very constrained locations, 4' on a street with no curb. Bicycle lanes may be 6', but if more street width is available, the street should be evaluated for other treatments.
- When bike lanes are adjacent to parking, the combined width (from face of curb) of parking and bicycle lane should be at least 12'.
- Bike lanes are indicated by a solid white line along the left side of the lane. Use dotted or dashed line marks to indicate areas of bicycle/ vehicle conflict.
- Bicycle lane word and/or symbol and arrow markings (MUTCD Figure 9C-3) shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists.

Considerations

- Bike lane design should consider parking configurations and turnover, the presence of medians, the continuity of the facility and the configuration and complexity of turning movements at intersections.
- If bike lanes are adjacent to guardrails, walls or other vertical barriers, additional bicycle lane width is desired to account for bicyclist "shy" distance from the edge. Similarly, provide additional space if bicycle lanes are at sidewalk level and adjacent to the curb and travel lanes.
- Ensure gutter seams, drainage inlets and utility covers are flush with the roadway surface. Where possible, these features should be kept out of the bike lane.
- Where wider lanes are possible, consider providing a buffered bike lane, discussed next.
- On constrained corridors with high parking turnover, consider designing pavement markings to guide bicyclists outside of the door zone of parked vehicles. Treatments include installing a buffer on the parking side of the bicycle lane, door zone, hatch marks, or using parking T's instead of a longitudinal parking line.
- Consider using colored pavements to highlight areas where conflicts might occur, such as at intersection and driveway crossings.
- It is critical that bike lanes receive the same treatment as the remainder of a street surface with regard to cleaning. In addition, bike lanes need to have regular cleaning of storm drains, especially during spring and autumn seasons when fallen leaves or other tree debris may collect in drains and cause pooling or flooding of stormwater in curbside bike lanes.

Bike lanes are marked with a bicyclist symbol and arrow indicating direction of travel.

Buffered Bike Lanes

Buffered bicycle lanes are created by painting or otherwise creating a flush buffer zone between a bicycle lane and the adjacent travel lane. While buffers are typically used between bicycle lanes and motor vehicle travel lanes to increase bicyclists' comfort, they can also be provided between bicycle lanes and parking lanes in locations with high parking turnover to discourage bicyclists from riding too close to parked vehicles.

Buffered bicycle lanes are distinct from separated bicycle lanes in that they have no vertical barrier between travel lanes and/or parking. Like separated bicycle lanes, buffered bicycle lanes have been found to dramatically increase bicycling comfort for a wide range of community bicyclists.

Design

- The recommended minimum width of a buffer is 2'; however width may vary depending upon the available space and need for separation. Total assembled width of bicycle travel way (lane) and buffer should be at least 7'.
- Buffered bicycle lanes are typically installed by reallocating existing street space (i.e., narrowing other travel lanes, converting travel lanes and/or reconfiguring parking lanes).
- Buffers should be painted with solid white lines and channelization markings.
- Bicycle lane word and/or symbol and arrow markings (MUTCD Figure 9C-3) shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists.
- Buffers can be useful on multi-lane streets with higher speeds, but are not required in these locations.

Considerations

- Where only one buffer can be installed on a constrained corridor with on-street parking, the buffer should typically be placed between the bicycle lane and parking lane, depending upon roadway speeds and parking turnover.
- Generally speaking, there is no upper limit for buffer width and buffers of 5' to 6' are common where travel lanes are converted to buffered bicycle facilities, however, wide buffers without vertical separators may invite illegal use for vehicle travel. In this case, buffer space should be divided and placed on either side of the bike lane as opposed to all on one side.
- Ensure gutter seams, drainage inlets and utility covers are flush with the roadway surface. Where possible, these features should be kept out of the bike lane.
- Because they do not require construction of a separating element, buffered bicycle lanes may be established through simple street resurfacing and may enable trial or phasing prior to the installation of separated facilities.
- Buffered bicycle lanes, like cycle tracks, may transition at intersections to provide adequate visibility and safety.
- Buffered bike lanes can easily be converted to cycle tracks in the future through using vertical elements such as flexposts or rubber curbing.

Buffered bike lanes provide greater shy distance between motor vehicles and bicyclists.

Shared Lane Markings

Marked shared lanes are indicated by specific bicycle symbols called shared lane markings or sharrows. Sharrows markings are two chevrons positioned above a bicycle symbol.

In general, this is a design solution that can only be used in locations where a standard bike lane or separated bike lane is not feasible due to space constraints. On streets with narrow travel lanes, shared lane markings direct the bicyclist to the correct and most conspicuous position on the road: the middle of the travel lane. This marked "lane within the lane" can reduce conflicts by encouraging (though not requiring) vehicles to use inside lanes and reserve the outside lane for bicyclists. Markings also altert drivers to the presence of bicyclists on the roadway.

Shared lane markings should be placed in such a manner to direct bicyclists to ride in the most appropriate location on the roadway. They can also be used in multiple lanes to position bicyclists for turning movements.

Design

- Shared lane markings are not a preferred facility type except in locations with low traffic speeds and volumes (operating speeds less than 25 mph, volumes less than 4,000 vehicles per day).
- On streets that fall outside of these design parameters, shared lane marking can be used as an interim (retrofit) design solution, however they should not be used on streets with speed limits above 35 mph and are generally not appropriate on roadways with more than four travel lanes (two-way) or more than three travel lanes (one-way).
- Refer to the MUTCD for additional design guidance on the use of shared lane markings.
- On narrow travel lanes adjacent to on-street parking, shared lane markings should be placed in a location that is outside of the door zone of parked vehicles (such as the center of the travel lane).
- Shared lane markings should be supplemented by SHARE THE ROAD signs, and BICYCLES MAY USE FULL LANE signs where appropriate.

Shared lane markings indicate bicyclists' presence to drivers and appropriate placement on the roadway.

Green-backed priority shared lane markings are more visible and spaced more closely than normal sharrows.

Considerations

- Marked shared lanes should be provided after considering narrowing or removing travel lanes, parking lanes and medians as necessary to provide an exclusive bicycle facility.
- Shared lanes can be used as an interim solution to complete connections between bicycle lanes and other facilities.

Priority Shared Lanes

On multi-lane streets, marked shared lane symbols, or sharrows, can be enhanced with a green colored backing. These priority shared lane markings are also placed at greater frequency than standard shared lane markings to further emphasize the presence of bicyclists on the street. They are particularly appropriate for application in commercial areas with high bicyclist volumes and complex vehicle movements as drivers stop and start in the course of accessing on-street parking.

Design

- Priority shared lanes can be an appropriate retrofit solution on multi-lane one-way and two-way streets where roadway space is not available for separate bicycle facilities. They should not be used in locations with higher operating speeds (35 mph or greater).
- Shared lane markings can be supplemented by SHARE THE ROAD signs, and BICYCLE MAY USE FULL LANE signs where appropriate.

Considerations

- Priority shared lanes should be provided after considering narrowing or removing travel lanes, parking lanes, or medians as necessary to provide an exclusive facility.

Neighborhood Bikeway, Neighborways or Bike Boulevards

What most influences the way people drive isn't the speed limit, a caution sign, or the threat of a ticket. Rather, drivers take their cues from the design of the street. Narrower lanes, trees, wayfinding signage, pavement markings, people walking and biking give the impression that pedestrians and bicyclist are a priority, so drivers slow down.

Neighborhood slow streets are a network of quiet, often residential streets that are designed for slower speeds. These streets are designed to give priority to pedestrians and bicyclists. They are excellent places to play, walk a dog, or ride a bicycle that connect across neighborhoods and the city.

Urban signed routes provide a local street route that is an alternative to traveling on a high-volume, high-speed arterial. Most of these routes will need crossing treatments at intersections as described earlier in this appendix, and can range from curb extensions and marked crosswalks to raised crossings and signals. These signed routes are very similar to neighborhood slow streets and may be further enhanced with the addition of traffic diverters and traffic calming.

Design

- Design features that reduce operating speeds are used to maintain low speeds (20 mph or less) on neighborhood slow streets.

Many jurisdictions have used large bike symbols to indicate bicycle boulevards.

- Neighborhood slow streets are best accomplished in neighborhoods with a grid street network (where motor vehicle through-traffic can be directed to parallel routes), but can also be accomplished by combining a series of road and trail segments to form one continuous route.
- Ideally, neighborhood slow streets should not carry more than 1,000 motor vehicles per day to be comfortable for pedestrians and bicyclists. Traffic management devices are typically used to discourage motor vehicle through-traffic while still enabling local traffic access to the street.
- Neighborhood slow streets should be long enough to provide connectivity between neighborhoods and common destinations such as schools or parks.

Considerations

- At major street crossings, neighborhood slow streets may need additional treatments other than marked crosswalks for pedestrians and bicyclists. Treatments can include signage, median refuge islands, curb extensions, advisory bike lanes, rapid flash beacons, pedestrian-actuated signals and/or bicycle signal heads.
- Many local street connections are offset across major arterial crossings. Some are signalized at one leg, and in these situations, bicyclists should be directed to cross at the signalized leg. A short stretch of sidepath is required to connect the non-signalized leg to the signal. In situations without signalization, a HAWK or RRFB should be installed to create greater yielding behavior by drivers.

Bicycle Accommodations at Intersections

The majority of motor vehicle crashes involving bicycles in urban areas occur at intersections. In Oklahoma, on-street bicycles are operating vehicles and are required to follow the same rules of the road as motorists. Good intersection design makes bicycling more comfortable and attractive, reduces conflicts with motor vehicles and pedestrians, and contributes to reduced crashes and injuries. The following principles are applied to intersection design in order to accommodate bicyclists:

- Provide a direct, continuous facility to the intersection
- Provide a clear route for bicyclists through the intersection
- Reduce and manage conflicts with turning vehicles
- Provide signal design and timing to accommodate bicyclists, based on an engineering study.
- Provide access to off-street destinations.

Intersection improvements for bicycles should be considered during all roadway improvement projects, street redesign, and safety improvements or upgrades.

Bicycle Lanes at Intersections

Bicycle lanes provide a dedicated space for bicyclists to predictably ride along roadways and through intersections. When designing intersections for bicyclists, the approaches should be evaluated and designs should maintain continuity of bicycle facilities to the maximum extent feasible.

Streets with dedicated bicycle lanes should continue striping through unsignalized and complicated intersections to provide additional guidance and safety measures for bicyclists. This design principle is especially important at intersections where there are conflicting vehicular movements, unsignalized crossings, and/or crossings of more than four travel lanes. Signalized intersections may not require striping through each intersection, and should be evaluated on a case-by-case basis.

Design

- Standard details for bicycle lane markings at intersections are provided in the NACTO Urban Bikeway Design Guide. Additional guidance can also be found in the MUTCD and AASHTO "Bike Guide."
- Dedicated bicycle lanes should be provided on intersection approaches where space is available.
- At intersections with a dedicated right turn lane, bicycle lanes should be provided to the left of the right turn only lane unless bicycle signals and dedicated phasing is provided.

Considerations

- Bicycle lane markings, including green-colored pavement, shared lane markings, dashed bicycle lane lines, and signage may be provided through intersections per engineering judgment.
- Selective removal of parking spaces may be needed to provide adequate visibility and to establish sufficient bicycle lane width at approaches to intersections.
- Shared lane markings may be used where space is not available for bicycle lanes at intersections, however this should only be done if no other design is possible.
- Although the minimum recommended width of a bicycle lane within the intersection is 5', 4' bicycle lanes can be provided in extremely constrained conditions.
- Bicycle lanes at the entrance and exit of a circular intersection should allow direct access to a shared use bicycle/pedestrian path around the perimeter of the intersection via curb ramps; ramps should be provided for bicyclists to mount the sidewalk prior to the intersection.

Designs should also enable bicyclists to mix with traffic and proceed through the intersection.

Bicycles at Signalized Intersections

Bicycles have different operating characteristics than motor vehicles and special consideration is necessary in designing traffic signals that accommodate both motorists and bicyclists. Bicyclists have the disadvantage of slower acceleration rates than motorists, and traffic signal design should include adjustment of minimum green intervals, clearance time and extension time to account for tthis. Signal progression should be designed in order to balance the needs of all users, with appropriate design speeds and traffic signal coordination settings. Appropriate signal timing also can reduce delay, discourage bicyclists from running red lights and help minimize conflicts.

The AASHTO Guide for the Development of Bicycle Facilities provides a specific formula to estimate minimum green time for bicycles from a standing

Striping bike facilities through intersections highlights the bicyclist's path of travel.

position. It is based on the average adult bicyclists who can operate at 10 miles per hour. A slower speed or extended time may be appropriate at locations with young children, such as near schools.

Design

Where actuated signals are present, the signal system should automatically detect bicycles as well as motor vehicles. The City of Tulsa and some other communities have some loop detectors at actuated or semi-actuated intersections, but they are the only ones in the region. In order for bicyclists to prompt the green phase at these intersections, bicycle detection devices should be installed.

Detection devices can also include:

- Video, infra-red or microwave detection
- Magnetometers (special locations such as on or under bridges)
- Detection devices should be located within bicycle lanes or bicycle boxes, marked with a bicycle detector symbol, and supplemented by appropriate signage.
- When it is not feasible for the detection device to be located within the bicycle lane or bicycle box, detection devices should be located prior to the stop bar and span an appropriate distance to provide for left, though, and right turning bicyclists.

Considerations

- Reference the latest edition of the AASHTO Bike Guide and the NACTO Urban Bikeway Guide for more details on the signal timing needs of bicycles at intersections. The AASHTO Bike Guide provides the technical information necessary to calculate minimum green time and other aspects of signal design to accommodate bicycles. The NACTO Urban Bikeway Design provides less technical detail, but provides information regarding bike signal heads
- Where right-turn-only lanes for motor vehicles exist, bicycle lanes should be designed to the left of the turn lane.
- Special attention should be given to signal timing at locations with higher vehicular speeds and longer crossing distances. At these locations, bicyclists are more likely to have different signal timing needs than motorists, such as extending the green time to allow bicyclists to clear the intersection before the yellow/red phases. The AASHTO Bike Guide contains detailed guidance for bicyclists' signal timing needs at wide intersections.
- Bicycle signal heads provide dedicated signal indications to bicyclists and should be positioned to maximize visibility to bicycle traffic. They should be coordinated with pedestrian and non-conflicting vehicular movements to increase safety and minimize overall delay.
- Bicycle detection devices, particularly loop detectors, need regular testing to ensure the equipment is working correctly.

Bike Boxes

A bicycle box is dedicated space located between the crosswalk, and the motor vehicle stop line used to provide bicyclists a dedicated space to wait during the red light at signalized intersections. Placing bicyclists ahead of stopped vehicular traffic at a red light improves visibility and reduces conflicts among all users. They also

Bicyclists wait in a bike box in Chicago, which increases their visibility and reduces their signal delay.

provide bicyclists a head start to get through the intersection, which aids in bicyclists making difficult turning movements and improves safety and comfort due to the difference in acceleration rates between bicycles and motor vehicles. Bicycle boxes also provide more space for multiple bicyclists to wait at a red light as opposed to being constrained to a 5' wide bicycle lane. In all cases, the bicycle box allows a bicyclist to be in front of motor vehicles, which not only improves visibility and motorists awareness, but allows bicyclists to "claim the lane" if desired.

Design

- In locations with high volumes of turning movements by bicyclists, a bicycle box should be used to allow bicyclist to shift towards the desired side of the travel way. Depending on the context of the bicycle lane, left or right side, bicyclists can shift sides of the street to align themselves with vehicles making the same movement through the intersection.
- In locations where motor vehicles can continue straight, or turn right crossing a right side bicycle lane, the bicycle box allows bicyclists to move to the front of the traffic queue and make their movement fi rst, minimizing conflicts between the right turning motorist and the bicyclist. Where designs place bicycle boxes in front of a vehicle lane that may turn right on red, NO TURN ON RED signs must be provided.

Considerations

- When bike boxes are implemented, they are typically to be painted green, and area minimum of 13' in depth.
- Bicycle box design should be supplemented with appropriate signage according the latest version of the MUTCD.
- Where right turn only lanes for motor vehicles exist, bicycle lanes should be designed to the left of the turn lane. If right turn on red is desired, consider ending the bicycle box at the edge of the bicycle lane to allow motor vehicles to make this turning movement.

Wayfinding

The ability to navigate through a region is informed by landmarks, natural features, signs, and other visual cues. Wayfinding is a cost-effective and highly visible way to improve the bicycling environment by familiarizing users with the bicycle network, helping users identify the best routes to destinations, addressing misperceptions about time and distance, and helping overcome a barrier to entry for infrequent cyclists (e.g., "interested but concerned" cyclists).

A bikeway wayfinding system is typically composed of signs indicating direction of travel, location of destinations, and travel time/distance to those destinations; pavement markings indicating to bicyclists that they are on a designated route or bike boulevard and reminding motorists to drive courteously; and maps providing users with information regarding destinations, bicycle facilities, and route options.

General Principles

- Messages must be clear and concise
- Related signs should be combined to limit visual clutter, and signs should be limited in number and content as to not overpower the reader
- Signs should be placed in such a way that primary regulatory signs are not overlooked
- Groups of wayfinding signs should have a graphically standardized appearance
- Signs must be maintained to ensure current information and adequate condition
- Destination names will be kept generic to the extent possible to avoid advertising
- Private campus areas, such as a college campus, may provide a system of wayfinding to facilitate internal site circulation. These systems are developed independently from City wayfinding systems within the public right-of-way.

General Wayfinding

Primary signing may be accomplished through street name signs. Street name signs follow MUTCD standards. Street name signs are posted on one of the quadrants at residential intersections. At collector and arterial street intersections signs are posted on diagonally opposite corners. Signs may be mounted on stand-alone posts, light poles, or on signal mast arms. The signs list the street name, generalized street address range for that block and, if on a bike route, a bike symbol. Street signs are installed in conjunction with street reconstruction and are replaced to maintain good visibility.

Design

Refer to MUTCD standards for sign installation, such as mounting height, lateral placement from edge of path or roadway and other guidance.

- Mounting height should generally be above the eye of the intended user.
- Size of font should be legible to intended user
- Signs should be combined horizontally or vertically, where possible
- Lines of sight and visibility should be reviewed when placing signs
- A sign should be as simple and as short as possible to convey the intended message
- Pavement markings can also be used to assist with wayfinding in some locations and can also be a placemaking tool
- Wayfinding may be part of a broader district wayfinding/ branding initiative.
- Pedestrian wayfinding is primarily provided near major attractions, such as theaters or event centers.
- Pedestrian wayfinding may be useful in areas where large volumes of pedestrians may be walking to transit stops.
- Signs should meet all needs for public accessibility

Bicycle Route Wayfinding

This guidance is appropriate for on-street bicycle routes or sidepaths adjacent to roadways.

- Route identification signs may be placed generally every ½ mile, at the far side of intersections with major bike routes and at decision points.
- Use D11-1c series Bicycle Route Signs with route name, such as "RIVER BIKEWAY," in place of "BIKE ROUTE" or M1-8 series signs to identify bicycle routes.
- Place decision signs in advance of intersections with other major bike routes and at decision points.
- Decision signs should include destinations and directional arrows, and may include distance to destination
- D1-3 series Destination Supplemental Signs should be used and, where feasible, consolidated with route identification signs to minimize size and clutter.

Bicycle wayfinding typically includes destination, distance and direction.

- Destinations should be listed with the closest destinations towards the top of a sign assembly, with a maximum of three destinations used on any single sign.

Trail Wayfinding

This guidance is appropriate for trails located on independent rights-of-way.

- Where bikeways managed by multiple agencies or from multiple systems share a common segment, wayfinding signs for either agencies or systems may be used.
- Wayfinding or route identification signs should be posted at all major decision points along the trail (feeder trail intersections, forks in the trail, etc.) and after all roadway crossings (local streets and arterials).
- Street name signs should be installed at all locations where trails intersect streets. This type of sign should have a sign blade for both the street name and the trail name.
- Wayfinding signs may be part of a larger regional network and/ or branding system.

INCOG Context Sensitive Capacity-Volume-Geometrics Table
Recommended Standards for Arterial Street Improvements

Roadway Description	LoS D Range	LoS D Mid-point	FHWA/AASHTO Recommended Geometrics
2-Lane Arterial	11,900 - 15,300	13,600	14 FT Curb lane With Bike Sharrow (IF Curb Exists) 13 FT Curb lane With Bike Sharrow (IF No Curb) 11 FT Minimum outside lane for streets with Transit 5 FT Min for a striped Bike lane (With Curb); 4 FT Min (No Curb) All Other Cases: Share the Lane (Bike & Auto) - Signed Route
3-Lane Arterial - Center Left (TWLTL)	14,000 - 18,000	16,000	14 FT Curb lane With Bike Sharrow (IF Curb Exists) 13 FT Curb lane With Bike Sharrow (IF No Curb) 11 FT Minimum outside lane for streets with Transit (through lane) 5 FT Min for a striped Bike lane (With Curb); 4 FT Min (No Curb) All Other Cases: Share the Lane (Bike & Auto) - Signed Route 10 FT Minimum for TWLTL (Center Left)
4-Lane Arterial (Undivided) 4-Lane Arterial (Divided)	22,800 - 30,600 26,600 - 34,200	27,200 30,400	14 FT Curb lane With Bike Sharrow (IF Curb Exists) 13 FT Curb lane With Bike Sharrow (IF No Curb) 11 FT Minimum outside lane for streets with Transit 10 FT Minimum inside lane with 11 FT Outside Lane 5 FT Min for a striped Bike lane (With Curb); 4 FT Min (No Curb) All Other Cases: Share the Lane (Bike & Auto) - Signed Route
5-Lane Arterial - Center Left (TWLTL)	25,200 - 32,400	28,800	14 FT Curb lane With Bike Sharrow (IF Curb Exists) 13 FT Curb lane With Bike Sharrow (IF No Curb) 11 FT Minimum outside lane for Transit use (through lane) 10 FT Minimum inside lane with 11 FT Outside Lane 5 FT Min for a striped Bike lane (With Curb); 4 FT Min (No Curb) All Other Cases: Share the Lane (Bike & Auto) - Signed Route 10 FT Minimum for TWLTL (Center Left)

Notes:

LoS D Traffic Volume Range is based on the Capacity Table used for INCOG Travel Demand Models approved by INCOG, Fast Forward Plan, also used in City of Tulsa Capital Improvement Project determination.

Roadways with traffic volumes above the mid-point of LoS D are discouraged from any roadway lane-configuration change. Any changes may require additional pavement/RoW or involve moving curbs, or a policy change with regard to the Roadway. Level of Service at or above this level is considered volatile based on truck traffic, number of curb-cuts, number of bus-stops, variation in travel speed. Traffic Volume above this level may approach breakdown/gridlock if any of the exacerbating factors are present.

Roadway Geometrics are recommended practice as recognized by AASHTO & FHWA guidelines. They should be adhered to in any reconfiguration of lanes, if under study for consideration.

Sources:

1. A Policy on Geometric Design of Highways and Streets, 6th Edition, AASHTO, 2011
2. The 13 Controlling Criteria, FHWA, U.S. Department of Transportation
3. Guide to Bicycle Facilities, 4th Edition, AASHTO, 2012
4. INCOG, ACOG & ODOT Roadway Capacity Table

C PROJECT PRIORITIZATION

An overview of the project prioritization methodology is provided in Chapter 4. Further detail on both bicycle and sidewalk gap prioritization is provided in this appendix.

Bicycle Project Prioritization

All projects in the bicycle network were prioritized using the 10-step method developed for National Cooperative Highway Research Program (NCHRP) Report 803: *Pedestrian and Bicycle Transportation Along Existing Roads – ActiveTrans Priority Tool Guidebook*. This method was also used for prioritizing the sidewalk gaps within the City of Tulsa.

The scoring uses a combination of selected factors and variables. Factors are categories used in the prioritization process to express community/agency values and group variables with similar characteristics. Factors are categories such as "opportunities," "connectivity" and "equity." Variables are measurable characteristics of roadways, households, neighborhood areas and other features.

For this Plan, factors, variables and weighting were recommended by the project team and reviewed by stakeholders. City of Tulsa staff from the planning and engineering departments provided input on these aspects of the prioritization tool and requested the inclusion of a number of City-specific variables for both the bicycle and pedestrian prioritization schemes. The project steering committee and the INCOG Bicycle and Pedestrian Advisory Committee also reviewed the prioritization inputs.

All bicycle projects were scored in the same manner across the region. Those located in the City of Tulsa were additionally scored with those variables noted as "Tulsa-only" in the table below. The final set of factors, variables and weights are provided in the tables below. The full regional list of prioritized bicycle projects and scores was subdivided into lists for each participating community. City-specific prioritized lists are provided in Tables 1 through 11 in this appendix. The full prioritization data table with values for all inputs is held by INCOG in Excel spreadsheet format.

City of Tulsa Sidewalk Gap Prioritization

The greater complexity of Tulsa's street network and the larger number of sidewalk gaps to evaluate led the project team to use the 10-step evaluation method for sidewalk gaps within the city limits. The variables included in the model also ensured inclusion of prior planning work completed by the City in both the ADA Transition Plan and PLANiTULSA. Factors, variables and weighting are included in the table below. The full list of prioritized sidewalk gaps and scores is in Table 12 in this appendix.

Bicycle Project Prioritization Schema		
Factor	**Variables**	**Weight**
Stakeholder Input		10%
	# WikiMap comments on corridor	
	Presence on project retreat prioritization list	
Opportunities		20%
	% of corridor included on Improve Our Tulsa[1]	
	% of corridor with project identified in prior plan[2]	
	Lower project cost (planning-level cost per mile)	
Safety		20%
	# of bike and pedestrian crashes per mile	
	# of fatal or severe bike and pedestrian crashes per mile	
	Change in Level of Traffic Stress based on recommended bike facility	
Demand		20%
	Average demand score for length of project	
	% of project coincident with existing transit line	
	Population density	
Equity		10%
	# of areas served with low automobile ownership	
	# of areas served a high % of low-income population	
	# of areas served with high % of population under 18	
Connectivity		20%
	# of connections to an existing in-street bike facility	
	# of connections to an existing trail	
	# of connections to a planned on-street bike facility	
	# of connections to planned off-street bike facility	

1 *Tulsa-only variable*
2 *Tulsa-only variable. Included multimodal corridors from PLANiTULSA and small area plans provided by the City of Tulsa Planning Department.*

Regional Sidewalk Gap Prioritization

For the rest of the region, sidewalk gaps were prioritized based on proximity to key pedestrian traffic generators: transit lines, schools, parks and areas of low automobile ownership. Additionally, gaps on streets with high traffic volume were ranked higher because of the greater potential for conflicts between pedestrians and drivers. Each of those variables was weighted equally in the prioritization. The list of prioritized sidewalk gaps is presented for each community in Tables 12 through 22.

City of Tulsa Sidewalk Gap Prioritization Schema

Factor	Variables	Weight
Stakeholder Input		25%
	# of sidewalk complaints received	
Safety		30%
	Average ADT over length of gap	
	ADA Transition plan rating	
Demand		10%
	Weighted density score from Building Blocks land use plan	
Connectivity		25%
	# destinations within 1/2 mile	
	# transit stops within 1/2 mile	
Equity		10%
	# of areas served with low automobile ownership	

Table 1: Bixby Prioritized Bike Projects

Project	Facility	Length	Cost	Street	From	To	Score	Citywide Prioritization Rank	Regional Rank
BX-002	Bike Lane	1.49	$72,287	RIVERVIEW DR	BIXBY TRAIL	E 161 ST S	25.767	1	40
BX-001	Bike Lane	1.00	$36,168	E 151 ST S	S MEMORIAL DR	S MINGO RD	23.124	2	60
BX-003	Shared Lane Marking	0.65	$21,754	E 131 ST S	FRY CREEK TRAIL	S MEMORIAL DR	18.594	3	128
BX-020	Trail	1.20	$1,066,933	FRY CREEK TRAIL	E 111 ST S	FRY CREEK TRAIL	16.216	4	181
BX-030	Trail	1.48	$1,314,661	S MINGO RD	BIXBY TRAIL	RP BIXBY/BA TRAIL	16.203	5	183
BX-032	Trail	1.01	$898,603	PROPOSED TRAIL	FRY CREEK TRAIL	E 131 ST S	14.351	6	253
BX-017	Trail	3.01	$2,677,253	FRY CREEK TRAIL	E. 151ST ST S.	BIXBY RIVER TRAIL	14.114	7	267
BX-005	Shared Lane Marking	1.15	$38,220	E 141 ST S	MISSOURI PACIFIC TRAIL	S MEMORIAL DR	13.944	8	275
BX-006	Shared Lane Marking	0.51	$17,011	S YALE AVE	S KIMBERLY-CLARK PL	E 141 ST S	13.643	9	294
BX-008	Shared Lane Marking	1.64	$22,050	PROPOSED TRAIL	N RIVERVIEW DR	E 161 ST S	13.355	10	309
BX-015	Sidepath	2.98	$2,140,991	E 121 ST S	S SHERIDAN RD	HAIKEY CREEK	13.353	11	310
BX-007	Shared Lane Marking	0.50	$16,659	DAWES AVE	N RIVERVIEW DR	S MEMORIAL DR	13.262	12	317
BX-024	Sidepath	2.14	$1,540,426	S MEMORIAL DR	E 146TH ST S	E HWY64 EXPY	13.148	13	324
BX-021	Trail	2.40	$2,131,821	FRY CREEK TRAIL	E 121 ST S	FRY CREEK TRAIL	12.788	14	348
BX-014	Sidepath	1.99	$1,434,258	E 111 ST S	S MEMORIAL DR	S GARNETT RD	12.449	15	376
BX-013	Shared Lane Marking	1.02	$810	S HARVARD AVE	E 141 ST S	E 151 ST S	12.047	16	404
BX-019	Trail	0.45	$402,911	FRY CREEK TRAIL	E 131 ST S	FRY CREEK TRAIL	12.025	17	406
BX-011	Shared Lane Marking	0.20	$3,653	S 90 E AVE	S 91 E AVE	E 111 ST S	11.690	18	438
BX-025	Signed Route	1.37	$1,085	S MEMORIAL DR	E HWY64 EXPY	E 181 ST S	11.401	19	460
BX-012	Signed Route	0.74	$587	S HARVARD AVE	E 151 ST S	S HARVARD AVE	11.260	20	476
BX-004	Shared Lane Marking	1.10	$36,726	E 141 ST S	S YALE AVE	MISSOURI PACIFIC TRAIL	11.036	21	495
BX-016	Sidepath	3.51	$2,522,966	E 151 ST S	S. COLUMBIA AVE E.	S MEMORIAL DR	10.957	22	500
BX-009	Signed Route	3.00	$2,379	S SHERIDAN RD	E 151 ST S	E 181 ST S	10.896	23	505
BX-018	Trail	0.72	$637,715	BIXBY RIVER TRAIL	E. 151ST ST S.	N. RIVERVIEW DRIVE	10.852	24	510
BX-026	Trail	1.70	$1,509,312	MISSOURI PACIFIC TRAIL	MISSOURI PACIFIC TRAIL	BIXBY TRAIL	10.852	25	511
BX-022	Trail	0.95	$840,318	FRY CREEK TRAIL	E 121 ST S	E 113 ST S	10.605	26	521
BX-028	Trail	0.23	$207,022	E 131 ST S	S SHERIDAN RD	FRY CREEK TRAIL	10.339	27	532
BX-027	Trail	2.39	$2,121,209	RP BIXBY/BA TRAIL	RP BIXBY/BA TRAIL	BIXBY TRAIL	10.301	28	533
BX-034	Trail	0.48	$430,559	E EAGLE DR	FRY CREEK TRAIL	111TH STREET S.	9.163	29	562
BX-033	Trail	0.71	$627,453	PROPOSED TRAIL	E 111 ST S	HAIKEY CREEK PARK TRAIL	7.487	30	623
BX-029	Trail	2.62	$2,329,927	POSEY CREEK PROPOSED TRAIL	S LEWIS AVE	S KIMBERLY-CLARK PL	7.396	31	634
BX-023	Trail	2.18	$1,931,855	HAIKEY CREEK TRAIL	S GARNETT RD	HAIKEY CREEK TRAIL	7.200	32	643
BX-031	Trail	0.33	$294,018	PROPOSED TRAIL	HAIKEY CREEK TRAIL	PROPOSED TRAIL	6.776	33	656
BX-010	Signed Route	1.04	$926,275	S KIMBERLY-CLARK PL	E 151 ST S	PROPOSED TC TRAIL	3.406	34	662

Table 2: Broken Arrow Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
BA-003	Bike Lane	1.79	$119,780	E JUNEAU ST	W WASHINGTON ST	MIDWAY AVE	1	31.161	23
BA-039	Sidepath	6.00	$4,315,629	E 101 ST S	S GARNETT RD	S 209 E AVE	2	29.268	28
BA-037	Sidepath	5.10	$3,669,429	S 177 E AVE	E 51 ST S	E 101 ST S	3	24.012	53
BA-002	Sidepath	3.37	$2,421,461	W WASHINGTON ST	S GARNETT RD	S MAIN ST	4	22.925	61
BA-035	Trail	6.83	$6,075,837	BROKEN ARROW CREEK TRAIL	HAIKEY CREEK TRAIL	RP BIXBY/BA TRAIL	5	22.621	62
BA-025	Signed Route	2.86	$52,877	E COLLEGE ST	S 193RD E AVE	W KENOSHA ST N	6	22.302	64
BA-070	Sidepath	0.22	$155,166	S ELM PL	W QUANTICO PL	W UTICA ST	7	22.088	69
BA-038	Sidepath	1.43	$1,026,874	S 161 E AVE	CREEK TPKE	E 131 ST S	8	21.226	81
BA-041	Sidepath	4.01	$2,915,363	W HOUSTON ST	S GARNETT RD	S 177 E AVE	9	21.077	84
BA-065	Signed Route	3.01	$104,740	W COLLEGE ST	N OLIVE AVE	W PITTSBURGH PL	10	20.356	97
BA-001	Bike Lane	1.00	$71,535	S 1ST PL	W WASHINGTON ST	W NEW ORLEANS ST	11	18.900	119
BA-068	Signed Route	3.71	$177,110	W SOUTH PARK BLVD	CREEK TPKE TRAIL	S 4TH ST	12	18.861	121
BA-069	Signed Route	0.25	$4,611	W QUANTICO PL	S 161ST EAST AVE	A CEDAR AVE	13	18.848	123
BA-011	Signed Route	0.34	$6,320	E LANSING AVE	N 9 ST	E KENOSHA ST	14	18.594	129
BA-007	Signed Route	2.81	$51,897	E MASON DR	S 177TH EAST AVE	S CHESTNUT AVE	15	17.838	134
BA-042	Sidepath	4.95	$3,555,593	E 71 ST S	N 4 ST	FOREST RIDGE BLVD	16	17.823	135
BA-054	Sidepath	0.63	$451,671	W WASHINGTON ST	S MAIN ST	S LYNNLANE RD	17	17.766	136
BA-036	Sidepath	4.28	$3,078,757	S 129 E AVE	W KENOSHA ST N	CREEK TPKE	18	17.679	137
BA-080	Signed Route	2.66	$49,079	S REDBUD AVE	E 131ST ST S	1ST PL	19	17.256	151
BA-026	Signed Route	1.23	$22,646	N FIR AVE	W HOUSTON ST	W KENOSHA ST N	20	17.189	155
BA-031	Signed Route	0.51	$9,484	E MIDWAY AVE	N MAIN ST	E KENOSHA ST	21	17.082	156
BA-004	Signed Route	1.53	$28,240	S ASH AVE	W MIAMI ST	W VICKSBURG ST	22	17.007	158
BA-029	Signed Route	0.93	$17,187	JUNEAU ST	N 2ND ST	N 15TH ST	23	16.898	163
BA-023	Signed Route	1.12	$20,698	S LIONS AVE	W WASHINGTON ST	E 101ST ST S	24	16.821	166
BA-059	Signed Route	0.99	$25,460	ARCHDALE ST	E HILLSIDE DR	E KENOSHA ST	25	16.655	168
BA-008	Signed Route	2.67	$49,347	N ASTER AVE	S GARNETT ST	E HOUSTON ST	26	16.602	170
BA-062	Sidepath	1.00	$719,638	N 23RD ST	E ALBANY ST	E KENOSHA ST	27	16.475	173
BA-030	Signed Route	0.53	$9,757	ELEMENTARY SCHOOL DRIVEWAY	E 51ST ST S	E JUNEAU ST	28	16.270	179
BA-015	Signed Route	0.50	$9,291	N 14TH ST	E KENOSHA ST	E COLLEGE ST	29	16.153	184
BA-014	Signed Route	2.00	$36,921	E 131 ST S	S 145TH E AVE	S 177 E AVE	30	16.060	185
BA-057	Signed Route	1.10	$20,398	S 202ND AVE	E OMAHA ST	E 45TH ST/E 48TH ST S	31	15.968	188
BA-056	Signed Route	0.54	$9,936	N ASTER PL	W DETROIT ST	N BUTTERNUT PL	32	15.654	195
BA-027	Signed Route	1.72	$31,726	W GARY ST	S 129TH EAST AVE	S LIONS AVE	33	15.473	209
BA-018	Signed Route	0.85	$15,677	S BIRCH AVE	W CHARLOTTE ST	W QUANAH ST	34	15.154	224
BA-024	Signed Route	0.48	$8,887	S CHESTNUT AVE	W HOUSTON ST	W OAK RIDGE ST	35	15.103	225
BA-034	Signed Route	1.73	$32,051	S WILLOW AVE	W WASHINGTON ST	W HOUSTON ST	36	15.053	226
BA-066	Signed Route	1.52	$28,124	W EDGEWATER ST	S LIONS AVE	S 1ST PL	37	14.922	229
BA-076	Signed Route	0.50	$9,289	W CHARLOTTE ST	S 161 E AVE	END OF ROAD	38	14.855	232
BA-010	Signed Route	0.74	$13,734	N 11TH ST	E ALBANY ST	S HILLSIDE DR	39	14.852	233
BA-016	Signed Route	0.15	$2,752	S 165 E AVE	E 50 ST S	E 51 ST S	40	14.748	235
BA-017	Sidepath	2.03	$1,458,298	S 193 AVE E	E 101 ST S	E 121 ST S	41	14.579	242

Table 2, Continued: Broken Arrow Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
BA-009	Shared Lane Markings	2.16	$71,864	E HILLSIDE DR	W ALBANY ST	N 23RD ST	42	14.530	244
BA-006	Signed Route	2.95	$2,338	E 91ST ST S	S 177TH EAST AVE	E NEW ORLEANS ST	43	14.517	245
BA-020	Signed Route	1.12	$20,621	E ELMIRA ST	N 9TH ST	N 11TH ST	44	14.386	250
BA-045	Sidepath	6.42	$3,894,826	E 51 ST S	CREEK TPKE	N ASPEN AVE	46	14.004	271
BA-071	Signed Route	0.16	$2,998	S JUNIPER PL	W UTICA AVE	W WACO ST	47	13.838	279
BA-012	Signed Route	0.63	$9,875	N 15TH ST	E ALBANY ST	E HELENA ST	49	13.646	293
BA-013	Signed Route	0.65	$12,052	S 145 E AVE	E 131ST ST S	S FAWNWOOD CT	50	13.638	295
BA-047	Sidepath	3.33	$2,875,736	CREEK TPKE	E 71 ST S	E NEW ORLEANS ST	51	13.581	299
BA-058	Signed Route	1.47	$1,059,929	N 161 E AVE	E 51 ST S	STONE WOOD DR	52	13.444	305
BA-073	Signed Route	1.64	$93,945	W FREDERICKSBURG PL	S 145TH E AVE	E 129TH E AVE	53	13.098	330
BA-067	Signed Route	0.39	$7,194	W ITHICA ST	S 161ST EAST AVE	S LIONS AVE	54	13.037	333
BA-028	Signed Route/Trail	1.60	$409,790	S OAK AVE	E 101 ST S	CREEK TPKE TRAIL	55	12.644	357
BA-022	Signed Route	1.30	$23,976	W GRANGER ST	N ASPEN AVE	N 161ST EAST AVE	56	12.636	358
BA-061	Sidepath	0.81	$580,684	E ALBANY ST	N 12TH ST	N 23RD ST	57	12.374	380
BA-032	Signed Route	0.48	$8,860	N OAK AVE	W GRANGER ST	W OMAHA ST	58	12.288	388
BA-040	Sidepath	1.00	$719,559	E 111 ST S	S GARNETT RD	S OLIVE AVE	59	12.160	395
BA-033	Signed Route	0.40	$7,315	N OAK AVE	W OMAHA ST	W SANDUSKY ST	60	11.953	414
BA-079	Sidepath	0.23	$164,636	E 121ST ST S	S BIRCH AVE	S 3RD ST	61	11.787	430
BA-063	Signed Route	2.52	$46,653	S HIGHLANDS BLVD / FOREST RIDGE BLVD	S 241ST EAST AVE	E 71ST ST S	62	11.549	446
BA-021	Signed Route	1.25	$23,092	N LIONS DR	W GRANGER ST	N 161ST EAST AVE	63	11.333	469
BA-081	Signed Route	1.03	$819	E 141ST ST S	RECOMMENDED RIVER TRAIL	S 193RD E AVE	64	11.080	492
BA-019	Signed Route	0.25	$4,616	S 3 ST	E 121ST S	RAY HARRAL NATURE PARK	65	10.968	499
BA-050	Sidepath	1.03	$738,165	S MINGO RD	E 101ST ST S	E 111 ST S	66	10.939	503
BA-053	Trail	1.56	$1,386,860	PROPOSED TRAIL	E 91 ST S	LIBERTY TRAIL	67	10.558	524
BA-074	Signed Route	0.78	$14,459	S FIR AVE	E 121ST ST S	W FREDERICKSBURG PL	68	10.405	529
BA-046	Sidepath	2.94	$2,110,449	E 81 ST	CREEK TPKE	S 257 E AVE	69	10.236	535
BA-052	Trail	1.81	$1,607,239	PROPOSED TRAIL	LIBERTY TRAIL	S 225 E AVE	70	9.882	543
BA-055	Trail	1.25	$1,110,113	PROPOSED TRAIL	LIBERTY TRAIL	S 129 E AVE	71	9.459	557
BA-077	Sidepath	0.50	$356,334	E 121 ST S	S 185 E AVE	S 193 E AVE	72	9.386	558
BA-064	Sidepath	1.60	$1,055,314	S 241 E AVE	SOUTH OF GORDON ST	E 101 ST S	73	9.031	566
BA-048	Trail	2.77	$2,456,546	CREEK E/WILL ROGERS TRAIL	E OMAHA ST	E KENOSHA ST	74	8.741	575
BA-043	Trail	0.82	$730,993	PROPOSED TRAIL	PROPOSED TRAIL	CREEK E/WILL ROGERS TRAIL	75	8.571	584
BA-044	Trail	0.55	$487,766	PROPOSED TRAIL	E 61 ST	N 31 ST	76	8.256	591
BA-075	Sidepath	3.02	$2,171,939	E 121 ST S	S GARNETT RD	S 161ST EAST AVE	77	7.912	603
BA-051	Trail	0.28	$244,451	PROPOSED TRAIL	HAIKEY CREEK TRAIL	HAIKEY CREEK	78	7.791	606
BA-072	Trail	0.55	$491,298	NEW SCHOOL ACCESS TRAIL	W SOUTH PARK BLVD	TRAIL END	79	7.785	607
BA-049	Trail	1.83	$1,628,529	HAIKEY CREEK TRAIL	S GARNETT RD	E 111 ST S	80	7.628	617
BA-078	Trail	1.11	$992,244	PROPOSED TRAIL	S GARNETT RD	S 129 E AVE	81	3.511	661

Table 3: Catoosa Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
CA-002	Bike Lane	2.01	$144,060	CHEROKEE ST	N 193 E AVE	W RICE	1	19.826	109
CA-011	Sidepath	2.60	$1,869,029	TIGERSWITCH RD	N 177 E AVE	S CHEROKEE ST	2	16.377	177
CA-005	Signed Route	1.93	$1,526	HWY 167 EXPY	TIGERSWITCH RD	CHOUTEAU NATIONAL TRAIL	3	15.444	212
CA-007	Signed Route	1.78	$1,407	E PINE ST	CHEROKEE ST	N 177TH E AVE	4	13.628	296
CA-009	Trail	3.68	$3,271,637	HWY 66 EXPY	E PINE ST	CHOUTEAU NATIONAL TRAIL	5	12.765	349
CA-008	Signed Route	1.28	$1,012	REDBUD DR	REDBUD DR	HWY 167 EXPY	6	11.714	435
CA-004	Signed Route	1.42	$1,122	N LYNNLANE RD	I-44 EXPY	TIGERSWITCH RD	7	11.218	479
CA-001	Bike Lane	0.58	$41,379	E APACHE ST	N CHEROKEE ST	S HWY 66	8	10.927	504
CA-006	Signed Route	0.39	$307	DEADDOG RD	E PINE ST	TIGERSWITCH RD	9	10.807	514
CA-010	Sidepath	1.00	$718,327	E PINE ST	N 145TH E AVE	N 161 E AVE	10	9.312	559
CA-012	Sidepath	0.78	$562,705	N 161 E AVE	E PINE ST	TIGERSWITCH RD	11	8.708	577

Table 4: Collinsville Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
CV-001	Bike Lane/Shared Lane Markings	1.64	$99,325	W MAIN ST	E 146 ST N	N 137 E AVE	1	20.521	94
CV-002	Signed Route	1.66	$20,335	S 12 ST	N GARNETT RD	W UNION ST	2	15.340	217
CV-010	Trail	2.47	$2,195,167	SKO TRAIL	W MAPLE ST	E 126 ST N	3	14.228	260
CV-003	Signed Route	0.30	$5,608	S 15 ST	W MAIN ST	S 15 ST	4	13.817	281
CV-005	Signed Route	0.64	$11,854	W CENTER ST	S 10 ST	S 19 ST	5	13.363	308
CV-006	Signed Route	0.87	$16,138	W MAPLE ST	N GARNETT RD	SKO TRAIL	6	13.287	315
CV-007	Signed Route	0.72	$13,282	W UNION ST	N 9 ST	N GARNETT RD	7	12.835	347
CV-004	Signed Route	1.00	$18,470	W BROADWAY ST	N 5 ST	N GARNETT RD	8	12.615	362
CV-009	Sidepath	0.78	$559,647	S 19 ST	N 19 PL	E 138 PL N	9	12.371	381
CV-008	Sidepath	1.14	$816,279	E 146 ST N	WEST OF N 97 E AVE	W BROADWAY ST	10	10.839	513
CV-011	Trail	0.25	$220,124	PROPOSED TRAIL	S 19 ST	VETERANS DR	11	8.620	581

Table 5: Coweta Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
CW-001	Bike Lane	0.81	$57,976	N AVE G	51 HWY	E 151 ST S	1	20.099	103
CW-002	Signed Route	0.53	$9,778	BROADWAY ST	51 HWY	E 151 ST S	2	19.951	106
CW-003	Signed Route	0.62	$11,393	E 147TH ST S	N AVE G	S 305 E AVE	3	18.271	131
CW-004	Signed Route	0.31	$247	HWY 51 EXPY	E 101 ST S	S 305 E AVE	4	17.309	147
CW-005	Signed Route	1.01	$10,199	144ST ST	WEST OF N DIVISION ST	S 305 E AVE	5	15.212	221
CW-006	Signed Route	2.02	$37,294	E 151 St	S 273RD EAST AVE	S BEN LUMPKIN	6	14.409	249
CW-007	Signed Route	1.77	$32,727	DIVISION ST	E 141 ST S	LT COL ERNEST CHILDERS HWY	7	14.381	251
CW-008	Signed Route	0.35	$6,503	COWETA CREEK TRAIL	E 141 ST S	RP BA/COWETA TRAIL	8	13.600	298
CW-009	Signed Route	1.07	$19,859	N EUFALAW AVE	E 141ST ST S	E OAK ST	9	13.076	332
CW-010	Signed Route	1.01	$18,591	FLORENCE ST	257 E AVE	273RD E AVE	10	11.911	418
CW-011	Trail	0.32	$283,066	STATE HIGHWAY 72	E 151 ST S	INDIAN RD	11	11.297	471
CW-012	Sidepath	9.51	$6,836,447	S 51 HWY	S 305 E AVE	51 HWY	12	11.282	473
CW-013	Trail	3.24	$2,874,384	273RD E AVE	E 141 ST S	E 151 ST S	13	10.863	509
CW-014	Sidepath	1.10	$787,751	PROPOSED TRAIL	E 141 ST S	51 HWY	14	8.256	592

Table 6: Glenpool Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
GP-001	Bike Lane	3.02	$146,697	E 141 ST S	S 33 W AVE	S PEORIA AVE	1	21.538	75
GP-004	Sidepath	1.00	$720,594	S PEORIA AVE	E 141 ST S	E 151 ST S	2	13.685	287
GP-003	Shared Lane Marking	1.02	$34,148	S FERN ST	E 141 ST S	E 151 ST S	3	15.609	198
GP-005	Trail	3.52	$3,126,796	COAL CREEK TRAIL	W 121 ST S	E 151 ST S	4	13.119	328
GP-002	Shared Lane Marking	0.51	$17,136	E 146 ST S	S ELWOOD AVE	S FERN ST	5	12.991	338

Table 7: Jenks Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
JS-004	Shared Lane Marking	0.99	$32,881	E B ST	N ELM ST	S ACQUARIUM DR	1	24.645	49
JS-005	Shared Lane Marking	1.03	$34,243	W APACHE ST	N ELM ST	S ACQUARIUM DR	2	21.677	74
JS-013	Sidepath	3.01	$2,162,849	S ELM ST	W 111 ST S	E 141 ST S	3	19.935	107
JS-002	Shared Lane Marking	0.51	$16,989	S 1 ST	E B ST	W 101 ST S	4	16.377	176
JS-006	Shared Lane Marking	0.59	$19,804	W 91 ST S	N ELM ST	RIVERFRONT DR	5	15.613	197
JS-009	Signed Route	0.46	$8,514	N ELM ST	W 91ST ST S	W C STREET	6	15.450	211
JS-007	Signed Route	0.56	$10,284	N BIRCH ST	W 91ST ST S	W B STREET	7	14.969	227
JS-019	Sidepath	3.01	$2,161,198	S ELWOOD AVE	W 91 ST S	W 121 ST S	8	14.366	252
JS-026	Trail	2.24	$1,988,280	JENKS LOW WATER DAM PROJECT	S ELM ST	S DELAWARE AVE PROPOSED TRAIL	9	14.339	254
JS-016	Trail	0.90	$798,404	PROPOSED TRAIL	N ELM ST	E K PL	10	14.306	256
JS-027	Signed Route	0.38	$301	WEST C ST	W MAIN ST	N ELM ST	11	14.136	266
JS-021	Trail	6.13	$5,441,849	TULSA-SAPULPA UNION RAIL WAY PROPOSED TRAIL	N ELM ST	PROPOSED TRAIL	12	13.646	292
JS-031	Signed Route	3.83	$3,035	E 121 ST S	S ELM ST	E 141ST ST S	13	13.238	319
JS-003	Shared Lane Marking	0.50	$16,820	N ADAMS ST	W 91 ST S	W MAIN ST	14	11.981	410
JS-014	Trail	0.16	$138,588	E F ST	N 5 ST	RIVERFRONT DR	15	11.844	425
JS-017	Sidepath	1.68	$1,205,499	W MAIN ST	N FRANKLIN ST	N FIR ST	16	10.876	508
JS-008	Signed Route	1.02	$807	S KIMBERLY-CLARK PL	E 131 ST S	E 141ST ST S	17	10.600	522
JS-020	Sidepath	1.09	$786,372	S VANCOUVER AVE	W 111 ST S	W 121 ST S	18	10.385	531
JS-012	Sidepath	2.03	$1,459,134	W 111 ST S	S 26 W AVE	S PEORIA AVE	19	10.001	538
JS-018	Trail	0.57	$502,437	PROPOSED TRAIL	W MAIN ST	W 101ST ST S	20	9.789	545
JS-015	Sidepath	0.27	$193,058	W 91 ST S	RIVERWALK CROSSING	JENKS AQUARIUM TRAIL	21	9.054	564
JS-024	Trail	2.07	$1,839,234	POSEY CREEK PROPOSED TRAIL	S YALE PL	TULSA - SAPULPA UNION RAILWAY	22	7.594	618
JS-023	Trail	0.35	$313,773	SANDUSKY MULTI-USE TRAIL	E. 131ST ST S	PROPOSED TRAIL	23	7.454	625
JS-028	Trail	0.88	$779,144	PROPOSED TRAIL	PROPOSED TRAIL	JENKS LOW WATER DAM PROJECT	24	7.092	648
JS-030	Sidepath	0.43	$310,866	W 101 ST S	S KOA ST	JENKS PEORIA TRAIL	25	6.255	659
JS-011	Sidepath	1.99	$1,427,304	121 ST	S HARVARD AVE	S PEORIA AVE	26	4.413	660

Table 8: Owasso Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
OW-001	Bike Lane	0.25	$17,853	E 86 ST N	N MAIN ST	N GARNETT RD	1	28.372	32
OW-008	Signed Route	0.59	$10,896	N 117 E AVE	N 118TH E AVE	E 86 ST N	2	23.283	58
OW-046	Trail	0.14	$123,794	SEVENS CONNECTOR	OLD US 169	US HWY 169	3	21.083	83
OW-002	Bike Lane	2.00	$143,316	N 129 E AVE	E 76TH ST N	E 96 ST N	4	20.558	92
OW-011	Signed Route	0.33	$6,187	N 123 E AVE	E 86 ST N	E 83 ST N	5	20.216	100
OW-003	Bike Lane	1.00	$52,267	N MAIN ST	W 12 ST S	E 76 ST N	6	18.891	120
OW-019	Sidepath	4.14	$2,974,664	E 86 ST N	N GARNETT RD	N 177 E AVE	7	18.860	122
OW-017	Sidepath	4.02	$2,890,336	E 76 ST N	N MINGO RD	N 161 E AVE	8	18.759	124
OW-028	Sidepath	2.36	$1,865	E 76 ST N	N 161 E ST	E 72 ST N	9	17.951	133
OW-009	Signed Route	0.43	$7,983	N 118 E AVE	E 83RD ST N	E 80TH ST N	10	17.630	138
OW-014	Signed Route	0.23	$4,253	E 83 ST N	N 118 E AVE	N 122 E AVE	11	17.340	144
OW-010	Signed Route	0.64	$11,911	E 80 ST N	N 125TH E AVE	N 117TH E AVE	12	16.585	172
OW-036	Trail	1.46	$1,294,164	PROPOSED TRAIL	N OWASSO EXPY	THREE LAKES TRAIL	13	16.260	180
OW-005	Signed Route	0.11	$2,087	N GARNETT RD	E 86 ST N	N GARNETT RD	14	15.905	189
OW-004	Shared Lane Markings	2.50	$83,416	N BIRCH ST	E 106 ST N	E 12 ST S	15	15.190	222
OW-016	Signed Route	1.10	$20,406	N OWASSO EXPY E	E 76TH ST N	E 86TH ST N	16	14.888	230
OW-012	Signed Route	0.60	$11,136	N 127 E AVE	E 76TH ST N	E 81ST ST N	17	14.549	243
OW-006	Signed Route	1.01	$801	E 116 ST N	N GARNETT RD	N 97TH E AVE	18	14.095	268
OW-007	Signed Route	0.43	$7,873	N 120 E AVE	E 76TH ST N	E 80TH ST N	19	13.972	272
OW-013	Signed Route	1.06	$19,538	N 139 E AVE	E 86TH ST N	E 96TH ST N	20	13.545	303
OW-032	Trail	0.08	$71,424	ELM CREEK PARK TRAIL	ELM CREEK PARK TRAIL	N 126 E AVE	21	13.349	312
OW-053	Trail	0.60	$532,263	THREE LAKES TRAIL	RAYOLA PARK TRAIL	THREE LAKES TRAIL	22	13.282	316
OW-031	Trail	0.20	$179,285	ELM CREEK PARK TRAIL	N ELM CREEK TRAIL	PROPOSED TRAIL	23	13.178	323
OW-059	Shared Lane Markings	0.25	$179,526	E 106 ST N	PROPOSED TRAIL	PROPOSED TRAIL	24	13.120	327
OW-038	Trail	0.86	$765,154	LAKERIDGE TRAIL	LAKEVIEW TRAIL	LAKERIDGE E TRAIL	25	12.706	355
OW-029	Trail	0.94	$836,333	CENTRAL PARK/CAMDEN PARK TRAIL	E 92 ST N	E 86 ST N	26	12.502	367
OW-024	Sidepath	3.01	$2,163,399	N GARNETT RD	E 126 ST N	E 96 ST N	27	12.464	374
OW-015	Signed Route	0.16	$3,041	BRDWAY ST	S MAIN	SKO TRAIL	28	12.355	383
OW-045	Trail	1.24	$1,099,397	RAYOLA PARK TRAIL	E 86 ST N	E 2ND AVE	29	12.327	384
OW-064	Trail	3.67	$3,260,649	RANCH CREEK TRAIL	SKO TRAIL	RANCH CREEK TRAIL	30	12.293	386
OW-022	Trail	1.04	$921,063	PROPOSED TRAIL	N 137 E AVE	PROPOSED TRAIL	31	12.288	387
OW-041	Trail	0.34	$300,602	OWASSO HIGH SCHOOL CONNECTOR	BARRINGTON POINT TRAIL	N 129 E AVE	32	12.245	392
OW-058	Sidepath	3.01	$2,163,279	N 97 E AVE	E 116 ST N	E 86 ST N	33	12.023	407
OW-043	Trail	0.72	$638,795	PROPOSED RANCH CREEK TRAIL	PROPOSED TRAIL	E 76 ST N	34	11.967	412
OW-021	Trail	0.26	$228,375	BAPTIST RETIREMENT CENTER TRAIL	E 76 ST N	BAPTIST RETIREMENT CENTER TRAIL	35	11.680	440
OW-052	Trail	0.14	$122,820	THREE LAKES CONNECTOR A	OWASSO TRAIL	TRAIL END	36	11.543	447
OW-026	Sidepath	1.63	$1,169,216	E 86 ST N	N MEMORIAL DR	N MAIN ST	37	11.131	487

Table 8, Continued: Owasso Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
OW-027	Sidepath	1.00	$720,869	N 145 E AVE	E 86 ST N	E 96 ST N	38	11.116	489
OW-042	Trail	4.07	$3,618,390	N OWASSO EXPY	E OF N 145 E AVE	PROPOSED TRAIL	39	10.535	525
OW-040	Trail	1.96	$1,744,480	N ELM CREEK TRAIL	CENTRAL PARK/CAMDEN PARK TRAIL	SKO SE TRAIL	40	10.530	526
OW-033	Trail	0.16	$140,823	FAIRWAYS LINKAGE TRAIL	W 18 ST S	PSO W TRAIL	41	9.922	541
OW-066	Sidepath	1.40	$1,007,029	US HWY 169 SERVICE RD	E 116 ST N	E 103 ST N	42	9.908	542
OW-057	Trail	1.17	$1,038,949	FIREFLY TRAIL CROSSING	N 177 E AVE	E 72 ST N	43	9.761	548
OW-018	Trail	1.20	$1,063,462	PSO W TRAIL	SKO TRAIL	GARNETT RD TRAIL	44	9.657	554
OW-047	Trail	0.60	$529,698	SKO SPUR TRAIL	PROPOSED TRAIL	W 1 ST	45	9.585	555
OW-048	Trail	5.98	$5,309,375	SKO TRAIL	E 126 ST N	PROPOSED TRAIL	46	9.497	556
OW-067	Trail	0.45	$399,208	PRAIRIE VIEW E TRAIL	N 145TH E AVE	E 106 ST N	47	8.873	568
OW-034	Trail	1.92	$1,704,281	PROPOSED TRAIL	OLD US 169	N 129 E AVE	48	8.846	571
OW-030	Trail	0.49	$433,039	PROPOSED TRAIL LOOP	N 111 E AVE	OLD US 169	49	8.741	574
OW-061	Trail	0.50	$448,039	PROPOSED TRAIL	SPORTS PARK TRAIL	E 106 ST N	50	8.632	580
OW-035	Trail	0.61	$545,901	GREENS AT OWASSO TRAIL	E 86 ST N	TRAIL END	51	8.317	590
OW-050	Trail	1.35	$1,200,842	OWASSO SPORTS PARK TRAIL	PARK ENTRANCE	PARK ENTRANCE	52	8.178	596
OW-044	Trail	0.28	$248,546	RAYOLA-76TH CONNECTOR	PROPOSED TRAIL	E 2ND AVE	53	8.091	598
OW-049	Trail	1.40	$1,239,945	S CITY TRAIL	OWASSO TRAIL	RAYOLA PARK TRAIL	54	8.035	599
OW-062	Trail	0.52	$461,961	PROPOSED TRAIL	SPORTS PARK TRAIL	E 106 ST N	55	7.953	601
OW-065	Trail	1.49	$1,323,693	KRISTEN HEIGHTS TRAIL	E 116 ST N	OWASSO TRAIL CONNECTOR	56	7.752	609
OW-051	Trail	1.08	$954,917	THE LAKES AT BAILEY RANCH TRAIL	PROPOSED TRAIL	N GARNETT RD	57	7.668	616
OW-056	Trail	1.31	$1,162,467	PROPOSED TRAIL	E 106 ST N	SKO TRAIL	58	7.577	620
OW-055	Trail	0.91	$808,315	PROPOSED TRAIL	PROPOSED TRAIL	N GARNETT RD	59	7.451	626
OW-063	Trail	0.43	$385,856	PROPOSED TRAIL	PROPOSED TRAIl	N GARNETT RD	60	7.443	628
OW-054	Trail	0.41	$366,558	PROPOSED TRAIL LOOP	S OF E 106 ST N	S OF E 106 ST N	61	7.441	630
OW-039	Trail	0.55	$491,907	MEADOWCREST TRAIL	PROPOSED TRAIL	PROPOSED TRAIL	62	7.300	638
OW-020	Trail	0.57	$509,846	BAPTIST RETIREMENT CENTER TRAIL	SKO SE TRAIL	BRADFORD PARK DR	63	7.290	639
OW-023	Trail	1.15	$1,020,251	N HWY169 EXPY	E 126 ST N	E 116 ST N	64	7.145	645
OW-037	Trail	0.60	$532,533	PROPOSED TRAIL	E 76 ST N	E 82 PL N	65	7.099	647
OW-060	Trail	1.48	$1,316,236	PROPOSED TRAIL LOOP	E 66 ST N	E 66 ST N	66	6.763	657

Table 9: Sand Springs Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
SS-004	Cycle Track	1.066	$128,696	S 113 W AVE	HWY 51	W 41 ST S	1	29.146	29
SS-009	Shared Lane Marking	0.834	$27,779	N MCKINLEY AVE	E BROADWAY ST	E 12 ST S	2	23.274	59
SS-003	Bike Lane	0.164	$11,709	N MAIN ST	S OF E BROADWAY ST	KATY TRAIL	3	21.996	70
SS-002	Bike Lane	0.585	$41,874	E PARK RD N	N MAIN ST	N ADAMS RD	4	21.671	72
SS-017	Signed Route/ Sidepath	1.035	$238,375	S 81 W AVE	W CAMERON ST	E PARK RD N	5	20.247	98
SS-007	Shared Lane Marking	0.952	$31,713	N ADAMS RD	HWY 51	E OLDNORTH RD	6	19.584	111
SS-019	Trail	1.712	$1,520,804	HWY 97	E 34 ST S	S 113 W AVE	7	18.721	126
SS-008	Shared Lane Marking	0.887	$29,561	W 33 ST S	S NASSAU AVE	MASONIC DR	8	17.221	154
SS-006	Shared Lane Marking	1.850	$61,624	S SPRUCE AVE	W 33 ST S	W 51 ST S	9	15.655	194
SS-021	Sidepath	0.403	$289,625	W WEKIWA RD	RIVER CITY TRAIL	HWY 97	10	15.591	201
SS-005	Shared Lane Marking	0.908	$30,262	W 38 ST S	S NASSAU AVE	HWY 97	11	14.231	259
SS-001	Signed Route/Bike Lane	3.578	$73,045	W 51 ST S	S 129 W AVE	W SKYLINE DR	12	13.667	288
SS-011	Signed Route	2.761	$20,453	HWY 97	W WEKIWA RD	S OF N MCKINLEY AVE	13	12.739	353
SS-020	Trail	0.726	$644,937	SAND SPRINGS LAKE TRAIL	SAND SPRINGS LAKE TRAIL	W OLD NORTH RD	14	12.728	354
SS-014	Signed Route	3.944	$3,124	N AIRPORT RD	HWY 51	SHELL CREEK RD	15	12.632	360
SS-012	Signed Route	1.352	$24,989	N OAKRIDGE DR	N MCKINLEY RD	W OLD NORTH RD	16	12.399	378
SS-013	Signed Route	1.092	$865	S 112 W AVE	W 41ST ST S	W 51ST ST S	17	12.061	402
SS-016	Signed Route	0.716	$13,232	N MCKINLEY AVE	E 12TH ST	S OF E RIDGEVIEW DR	18	11.932	415
SS-018	Sidepath	1.006	$723,051	S 129 W AVE	W 41 ST S	W 51 ST S	19	11.908	419
SS-022	Signed Route	0.498	$395	S 129 W AVE	W 51 ST S	W 56 ST S	20	11.854	424
SS-010	Signed Route	0.403	$319	S 145 W AVE	W 56 ST S	W 61 ST S	21	11.799	428
SS-023	Signed Route	1.031	$817	W 56 ST S	S 129 W AVE	S 145 W AVE	22	11.268	474
SS-024	Signed Route	0.928	$735	S 113 W AVE	S OF W 51ST ST S	W 61 ST S	23	10.842	512

Table 10: Skiatook Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
SK-002	Signed Route	2.68	$2,126	W OAK ST	N 52 W AVE	OSAGE AVE	1	17.350	142
SK-004	Sidepath	1.22	$879,274	W ROGERS BLVD	S LOMBARD LN	HWY 11	2	15.892	190
SK-003	Signed Route	0.62	$489	E 146 ST N	S OSAGE AVE	E ROGERS BLVD	3	14.039	270
SK-001	Shared Lane Marking	0.99	$32,991	N LOMBARD LN	W COUNTRY RD	W OAK ST	4	12.075	401

Table 11: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Total Project Cost
TU-045	Cycle Track	4.355	E 11 ST S	S Elgin Street	S SHERIDAN RD	1	56.86	$525,706
TU-037	Bike Lanes/Shared Lane Marking	7.444	E PINE ST	N GILCREASEMUSEUM RD	N MEMORIAL DR	2	51.25	$457,453
TU-046	Cycle Track	2.327	S BOULDER AVE	E HASKELL ST	RIVERSIDE DR	3	47.89	$280,872
TU-011	Bike Lanes/Signed Route	3.994	E 3 ST S	GREENWOOD AVE	S 73 E AVE	4	47.44	$262,756
TU-148	Bicycle Corridor	7.464	S HARVARD AVE	E 21 ST S	E CREEK TURNPIKE	5	45.21	$534,373
TU-041	Bike Lanes	0.607	S PEORIA AVE	E 6 ST S	E 13 PL S	6	44.52	$43,453
TU-007	Buffered Bike Lanes	3.613	E 11 ST S	S SHERIDAN RD	S 123 E AVE	7	42.73	$256,586
TU-209	Priority Shared Lane Marking	0.478	E 15 ST S	S PEORIA AVE	S UTICA AVE	8	41.93	$36,845
TU-033	Bicycle Corridor	4.023	N HARVARD AVE	E APACHE ST	E 21 ST S	9	41.33	$288,035
TU-167	Bicycle Corridor	6.987	E 31 ST S	S HARVARD AVE	S 145 E AVE	10	41.21	$500,237
TU-040	Bike Lanes	0.192	S PEORIA AVE	E 13 PL S	E 15 ST S	11	41.11	$13,755
TU-161	Sidepath	0.249	E 21 ST S	S LOUISVILLE AVE	S PITTSBURG AVE	12	38.89	$178,930
TU-210	Bike Lanes/Shared Lane Marking	4.210	SOUTHWEST BLVD	RIVERSDE DR	W 48 ST S	13	38.45	$299,580
TU-092	Signed Route	0.850	W 23 ST S	River Parks West Trail	MLK Memorial Expwy	14	38.18	$15,711
TU-013	Bike Lanes	1.225	E 4 ST S	S FRISCO AVE	E 3 ST S	15	36.21	$87,700
TU-166	Bicycle Corridor	6.384	E 81 ST S	RIVERSIDE PKWY	S GARNETT RD	16	36.02	$457,061
TU-050	Bike Lanes	1.707	N PEORIA AVE	E PINE ST	E 6 ST S	17	35.67	$122,187
TU-016	Bike Lanes	1.288	E 6 ST S	S PEORIA AVE	W 7 ST S	18	35.37	$92,243
TU-047	Cycle Track	0.837	S ELGIN AVE	E ARCHER ST	E 11 ST S	19	33.65	$101,080
TU-056	Signed Route	4.589	S CINCINNATI AVE	E 19 ST S	SKELLY DR	20	33.48	$84,799
TU-009	Bike Lanes	0.197	W 17 ST S	S JACKSON AVE	SOUTHWEST BLVD	21	33.17	$14,092
TU-172	Bicycle Corridor	0.487	E 71 ST S	S 85 E AVE	S 92 E AVE	22	32.32	$34,867
TU-127	Signed Route	0.423	W ARCHER ST	N GUTHRIE AVE	KATY TRAIL	23	31.30	$7,817
TU-044	Cycle Track	0.388	E 10 ST S	S BOULDER AVE	S ELGIN AVE	24	30.72	$46,811
TU-012	Bike Lanes	2.504	E 31 ST S	RIVERSDE DR	S HARVARD AVE	25	30.42	$179,246
TU-098	Signed Route	2.609	N GREENWOOD AVE	JOHN HOPE FRANKLIN BLVD	GILCREASE EXPWY TRAIL	26	29.68	$48,219
TU-006	Bike Lanes	0.788	E 11TH ST S	S BOULDER AVE	SOUTHWEST BLVD	27	29.68	$56,435
TU-017	Bike Lanes	1.480	E 6 ST S	S PEORIA AVE	S DELAWARE AVE	28	29.45	$105,959
TU-042	Bike Lanes	0.812	SOUTHWEST BLVD	W ARCHER ST	RIVERSIDE DR	29	29.38	$58,135
TU-168	Bicycle Corridor	5.384	E 51 ST S	S FULTON AVE	E 51 ST S	30	29.25	$385,480
TU-170	Bicycle Corridor	3.523	E 61 ST S	RIVERSIDE DR	S YALE AVE	31	29.06	$252,223
TU-070	Bike Lanes/Signed Route	1.623	N CINCINNATI AVE	E Pine Street	GILCREASE EXPWY TRAIL	32	27.62	$86,825
TU-002	Buffered Bike Lanes	0.313	N GILCREASEMUSEUM RD	W HWY64-51WB EXPY	W EDISON ST	33	27.48	$22,241
TU-135	Signed Route	0.543	E JOHNHOPEFRANKLIN BLVD	N MAIN ST	N GREENWOOD AVE	34	27.02	$10,039
TU-039	Bike Lanes/Signed Route	1.686	E VIRGIN ST	N Cincinnati Ave	N Xanthus Ave	35	26.55	$83,522
TU-026	Bike Lanes	4.787	E 91 ST S	RIVERSIDE PKWY	S MINGO RD	36	26.15	$342,740
TU-048	Shared Lane Marking	3.990	E 36 ST S	RIVERSIDE DR	S HUDSON AVE	37	25.83	$132,931
TU-104	Signed Route	4.062	S UTICA AVE	Skelly Drive	E 19th Str	38	25.82	$75,073
TU-028	Bike Lanes	0.238	S CINCINNATI AVE	E 10 ST S	E 13 ST S	39	25.68	$17,058
TU-021	Bike Lanes	0.498	S 73 E AVE	E 4 PL S	E 11 ST S	40	25.60	$35,658
TU-203	Bicycle Corridor	2.460	S SHERIDAN RD	E 81 ST S	E 106 ST S	41	25.39	$176,124

Table 11, Continued: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Cost
TU-106	Signed Route	1.613	S FULTON AVE	E 36 ST S	E 51 ST S	42	25.34	$29,800
TU-034	Bike Lanes	0.854	S JACKSON AVE	W 17 ST S	W 25 ST S	43	25.26	$61,122
TU-175	Bicycle Corridor	0.981	E 91 ST S	S MINGO RD	S GARNETT RD	44	25.20	$70,255
TU-081	Signed Route	0.369	E 12 ST S	S STLOUIS AVE	S WHEELING AVE	46	24.88	$6,821
TU-086	Signed Route	1.033	S STLOUIS AVE	E 12th Street N	E 19th St S	47	24.64	$19,082
TU-089	Signed Route	1.405	E 19 ST S	S Boulder Ave	S WHEELING AVE	48	24.60	$25,965
TU-001	Bike Lanes/Buffered Bike Lanes	5.099	E 13 ST S	S CINCINNATI RAMP TO SIDLWB OR BAWB	S 77 E AVE	49	24.16	$364,833
TU-194	Sidepath	3.740	E SKELLY DR	RIVERSIDE DR	E 46 ST S / S YALE AVE	50	24.14	$2,688,665
TU-064	Signed Route	0.916	N GARNETT RD	E PINE ST	COOLEY CREEK TRAIL	51	24.10	$16,933
TU-094	Signed Route	0.459	E 24 ST S	S 137 E AVE	S 145 E AVE	52	23.82	$8,487
TU-061	Signed Route	4.398	E 56 ST S	Riverside Dr	Yale Ave	53	23.75	$81,266
TU-031	Bike Lanes	1.219	W EDISON ST	N CHEYENNE AVE	N GILCREASEMUSEUM RD	54	23.42	$87,291
TU-038	Bike Lanes	1.408	S UNION AVE	SOUTHWEST BLVD	W 51 ST S	55	22.70	$100,793
TU-115	Signed Route	0.447	W 63 ST N	N OSAGE DR	N CINCINATTI AVE	56	22.60	$8,268
TU-136	Signed Route	1.133	S LEWIS AVE	E 81 ST S	E 91 ST S	57	22.55	$20,932
TU-189	Trail	2.086	MINGO TRAIL 41ST ST. TO 81ST	51 ST RAMP TO HWY169SB	MINGO TRAIL 41ST ST. TO 81ST/ 71ST ST S	58	22.39	$1,852,146
TU-101	Signed Route	2.006	S 33 W AVE	W 41 ST S	W 61 ST S	59	22.21	$37,076
TU-159	Bicycle Corridor	1.003	S 137 E AVE	E 21 ST S	E 31 ST S	60	22.19	$71,823
TU-066	Bike Lanes/Signed Route	1.569	N MAIN ST	E Haskell St	N CINCINATTI AVE	61	22.15	$75,429
TU-128	Signed Route	3.822	E INDEPENDENCE ST	N OSWEGO AVE	N GREENWOOD AVE	62	22.15	$70,624
TU-100	Signed Route	1.743	S NEWHAVEN AVE	E 36th Street S	21st Place S	63	21.77	$32,205
TU-162	Bicycle Corridor	0.450	E 21 ST S	S 137 E AVE	S 145 E AVE	64	21.50	$32,253
TU-043	Bike Lanes	0.485	W APACHE ST	N DENVER ST	N CINCINATTI AVE	65	21.35	$34,716
TU-171	Bicycle Corridor	1.007	W 71 ST S	S ELWOOD AVE	S UNION AVE	66	21.17	$72,066
TU-082	Signed Route	3.729	S 121 E AVE	East 11th Street	East 35th Street S	67	21.11	$68,903
TU-015	Bike Lanes/Signed Route	2.160	S 90th East Ave	S 93rd E Ave	Mingo Trail	68	21.05	$112,812
TU-143	Signed Route	0.917	S WHEELING AVE	E 3RD S	E 13PL S	69	21.04	$16,944
TU-131	Signed Route	3.500	MLKJBLVD	E 66 ST S	GILCREASE EXPY	70	20.96	$64,684
TU-030	Bike Lanes	0.296	S Deleware Ave	E ADMIRAL PL	E 3rd Street South	71	20.82	$21,198
TU-035	Bike Lanes	1.058	MOHAWK BLVD	MLKBLVD	N PEORIA AVE	72	20.81	$75,759
TU-117	Signed Route	0.951	E 66 ST S	S MEMORIAL DR	E 65 ST S / WOODLAND HILLS RD	73	20.68	$17,577
TU-160	Sidepath	0.122	E 15 ST S	S GARNETT RD	E 13 ST	74	20.65	$88,043
TU-014	Bike Lanes/Shared Lane Marking/ Signed Route	2.607	W 41 ST S	S 55 W AVE	US 75	75	20.16	$110,670
TU-022	Bike Lanes	0.539	S 90 E AVE	S 88 E AVE	E 71 ST S	76	20.14	$38,606
TU-027	Bicycle Corridor	0.250	S Garnett Rd	E 7th Street S	E 11th Street S	77	20.06	$17,877
TU-032	Bike Lanes	0.396	N ELGIN AVE	E ARCHER ST	E JOHNHOPEFRANKLIN BLVD	78	19.96	$28,353
TU-108	Signed Route	3.307	E 46 ST S	Skelly Drive	S 104th East Ave	79	19.90	$61,118
TU-198	Bicycle Corridor	3.990	S UNION AVE	W 51 ST S	W 91 ST S	80	19.83	$285,680
TU-205	Trail	0.578	CROW CREEK TRAIL	RIVERSIDE PATH E	S PEORIA AVE	81	19.69	$513,044
TU-060	Signed Route	4.211	E 76 ST S	Mingo Ave	S 97th East Ave	82	19.62	$77,819

Table 11, Continued: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Cost
TU-164	Sidepath	1.056	N GILCREASEMUSEUM RD	W EDISON ST	W PINE ST	83	19.51	$759,118
TU-072	Signed Route	1.897	S LAKEWOOD AVE	S Yale Ave	S Sheridan Rd	84	19.45	$35,058
TU-004	Buffered Bike Lanes/Shared Lane Markings	1.434	S DELEWARE AVE	E 11 ST S	E 20 ST S	85	19.24	$52,727
TU-057	Signed Route	1.003	E 27 ST S	S 107 E AVE	S 121 E AVE	86	19.17	$18,529
TU-129	Signed Route	1.262	N LEWIS AVE	E INDEPENDENCE ST	E TECUMSEH ST	87	19.07	$23,314
TU-085	Signed Route	0.599	S 140 E AVE	E 14 ST S	E 21 ST S	88	18.97	$11,087
TU-126	Signed Route	2.090	S PITTSBURG AVE	E INDEPENDENCE ST	E 15 ST S	89	18.94	$38,625
TU-144	Signed Route	2.981	E 36 ST S	E 31ST S	S 106 E AVE	90	18.90	$55,086
TU-139	Signed Route	1.475	S PITTSBURG AVE	E 36 ST S	E SKELLY DR	91	18.48	$27,266
TU-169	Bicycle Corridor	1.644	W 61 ST S	S ELWOOD AVE	S 33 W AVE	92	18.13	$117,706
TU-184	Trail	2.653	JOE CREEK TRAIL	E 51 ST S	E 71 ST S	93	17.91	$2,355,801
TU-200	Bicycle Corridor	3.989	E PINE ST	N MEMORIAL DR	E 145TH E AVE	94	17.81	$285,600
TU-008	Bike Lanes	3.087	N LEWIS AVE	MOHAWK BLVD	E 66 ST N	95	17.68	$221,043
TU-093	Signed Route	3.197	E 25 ST S	S HARVARD AVE	77th East Ave	96	17.60	$59,080
TU-091	Signed Route	0.766	S YORKTOWN AVE	E19th Street S	26th Street S	97	17.48	$14,152
TU-058	Signed Route	0.791	S 93 E AVE	101st Street	S 97th East ave	98	17.33	$14,613
TU-079	Signed Route	4.375	E 11 ST S	S 123 E AVE	S 193 E AVE	99	17.30	$27,741
TU-155	Sidepath	0.675	S 119 E AVE	E 11 ST S	E 14 ST S	100	17.28	$485,148
TU-076	Signed Route	0.533	S 108 E AVE	E 31 ST S	E 36 ST S	101	17.25	$9,849
TU-204	Trail	1.646	FRED CREEK TRAIL	RIVERSIDE PATH E	S EVANSTON AVE	102	17.11	$1,461,488
TU-102	Signed Route	1.198	E 35 ST S	S MEMORIAL DR	S 95th East Ave	103	16.98	$22,144
TU-062	Signed Route	0.682	N BIRMINGHAM AVE	Independence Ave	E 3rd Street South	104	16.86	$12,612
TU-123	Signed Route	3.006	S 89 E AVE	E PINE ST	E 21 ST S	105	16.84	$55,544
TU-178	Bicycle Corridor	1.133	S ELWOOD AVE	W 61 ST S	W 71 ST S	106	16.82	$81,084
TU-142	Signed Route	0.808	E TECUMSEH ST	N ATLANTA CT	N HARVARD AVE	107	16.47	$14,935
TU-084	Signed Route	0.757	E 14 ST S	S 129th East Ave	E 11th Street S	108	16.45	$13,994
TU-157	Bicycle Corridor	3.482	E 101 ST S	RIVERSIDE PKWY	S MEMORIAL DR	109	16.37	$249,285
TU-173	Bicycle Corridor	1.003	W 81 ST S	S ELWOOD AVE	S UNION AVE	110	16.32	$71,842
TU-074	Signed Route	3.345	N HARVARD AVE	MOHAWK BLVD	E PINE ST	111	16.23	$61,811
TU-083	Signed Route	0.342	E 13 PL S	S STLOUIS AVE	S WHEELING AVE	112	16.20	$6,328
TU-177	Sidepath	2.003	S ELWOOD AVE	W 71 ST S	W 91 ST S	113	15.90	$1,440,330
TU-141	Signed Route	0.405	E SEMINOLE ST	N HARVARD AVE	N OSWEGO AVE	114	15.79	$7,483
TU-065	Signed Route	0.284	W SEMINOLE ST	N Main St	Planned Trail	115	15.60	$5,251
TU-036	Bike Lanes	3.361	MOHAWK BLVD	N PEORIA AVE	N WINSTON AVE	116	15.59	$240,606
TU-180	Trail	3.679	HAIKEY CREEK TULSA TRIBUT	MINGO TRAIL 81ST TO MEMORIAL	S KINGSTON AVE	117	15.48	$3,267,347
TU-029	Bike Lanes	0.527	S COLLEGE PL	E 91 ST S	E 95 ST S	118	15.44	$37,716
TU-068	Signed Route	2.075	W APACHE ST	N 41st Street W	OSAGE TRAIL	119	15.40	$1,643
TU-010	Bike Lanes/Shared Lane Marking	1.006	S 25 W AVE	W 41 ST S	W 51 ST S	120	15.39	$53,696
TU-186	Sidepath	0.494	S MINGO RD	MINGO TRAIL 81ST TO MEMORIAL	S MINGO RD	121	15.36	$354,880
TU-019	Bike Lanes	0.230	E 66 ST S	S MINGO RD	S 101 E AVE	122	15.21	$16,474
TU-075	Signed Route	1.593	S 107 E AVE	E 17th Street S	E 31st Street S	123	15.16	$29,435

Table 11, Continued: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Cost
TU-053	Signed Route	0.996	E 86 ST S	S SHERIDAN RD	S 73rd E Ave	124	14.92	$18,401
TU-134	Signed Route	1.148	N IRVINGTON AVE	E ADMIRAL PL	E PINE ST	125	14.87	$21,220
TU-063	Signed Route	2.524	N Kingston Pl	N Irvington Ave	Planned Trail	126	14.78	$46,644
TU-147	Trail	6.115	PROPOSED TRAIL	W EDISON ST	OSAGE TRAIL	127	14.69	$5,430,289
TU-096	Signed Route	0.184	E 26 CT S	S 90th E Ave	E 26th Pl S	128	14.65	$3,394
TU-119	Signed Route	0.902	E 66 ST S	S RICHMOND AVE	S FULTON AVE	129	14.43	$16,678
TU-151	Trail	1.501	PROPOSED TRAIL	MINGO TRAIL 41ST ST. TO 81ST	E 73 ST S	130	14.25	$1,332,815
TU-206	Trail	0.737	PROPOSED TRAIL	W APACHE ST	E GILCREASE EXPY	131	14.23	$654,155
TU-105	Signed Route	1.583	S COLUMBIA AVE	SKELLY DR	E 36 ST S	132	14.22	$29,257
TU-146	Signed Route	0.449	CREEK TURNPIKE TRAIL	E 91 ST S	CREEK TURNPIKE TRAIL	133	14.17	$8,298
TU-099	Signed Route	0.755	E 27 ST S	S 78 E AVE	S 89 E AVE	134	13.96	$13,958
TU-023	Bike Lanes	0.178	S 85 E AVE	E 71 ST S	E 73 ST S	135	13.96	$12,746
TU-003	Buffered Bike Lanes/Bike Lanes/ Shared Lane Marking	1.202	E 66th Street S	E 61st Street S	S MEMORIAL DR	136	13.74	$66,037
TU-122	Signed Route	1.776	S 88 E AVE	E 75 ST S	E 91 ST S	137	13.58	$32,812
TU-145	Signed Route	0.206	S 103 E AVE	MINGO TRAIL 11TH ST. TO 41ST	PROPOSED TRAIL	138	13.55	$3,800
TU-090	Signed Route	4.605	E 21 ST S	S 145th Ave	CREEK TURNPIKE TRAIL	139	13.44	$3,647
TU-176	Trail	1.996	COOLEY CREEK TRAIL	MINGO TRAIL 11TH ST. AND N	E ADMIRAL PL	140	13.42	$1,772,983
TU-024	Bike Lanes	0.389	S 89 E AVE	E 31 ST S	E 34 ST S	141	13.42	$27,857
TU-114	Signed Route	0.635	S FULTON AVE	E 66 ST S	E 61 ST S	142	13.24	$11,729
TU-196	Trail	8.588	SKO TRAIL	MIDLAND VALLEY RAIL TRACKS	E 56 ST N	143	13.24	$7,627,215
TU-077	Signed Route	1.236	E 4 PL S	S MINGO RD	S GARNETT RD	144	13.23	$22,833
TU-118	Signed Route	1.298	S 73 E AVE	E 76 ST S	E 66 ST S	145	13.20	$23,981
TU-020	Bike Lanes/Shared Lane Marking	1.305	E 7 ST S	S 73 E AVE	S 94 E AVE	146	13.10	$62,723
TU-097	Signed Route	1.279	E 26 ST S	S Yorktown Ave	S HARVARD AVE	147	13.09	$23,644
TU-181	Trail	2.016	HOWARD BRANCH TRAIL	E PINE ST	E 11 ST S	148	12.98	$1,790,468
TU-133	Signed Route	0.917	S ELWOOD AVE	W 36 ST S	W 45 ST S	149	12.89	$16,947
TU-156	Sidepath	0.553	E 99 ST S	S 97 E AVE	END OF S 100 E PL	150	12.62	$397,236
TU-208	Trail/Signed Route	0.932	W 37 PL S	S ELWOOD AVE	CHERRY CREEK TRAIL	151	12.50	$66,619
TU-124	Signed Route	0.658	S 90 E AVE	E SKELLY DR	E 31 ST S	152	12.50	$12,155
TU-054	Signed Route	1.678	E 106 ST S	S Sandusky Ave.	S Sheridan Rd.	153	12.03	$31,010
TU-192	Trail	2.262	PROPOSED TRAIL	S 30 W AVE	RP WEST BANK TRAIL	154	11.85	$2,008,545
TU-149	Trail	0.501	PROPOSED TRAIL	CREEK TURNPIKE TRAIL	E 101 ST S	155	11.71	$444,708
TU-087	Signed Route	0.246	S 165 E AVE	E 49th St	E 51 ST S	156	11.56	$4,541
TU-158	Sidepath	1.347	121 ST S	S DELAWARE AVE	S SHERIDAN RD	157	11.48	$968,736
TU-073	Signed Route	1.348	S 69 E AVE	S 97th Pl	106th St S	158	11.41	$24,910
TU-152	Trail	0.261	PROPOSED TRAIL	S 93 E AVE	S 97 E AVE	159	11.40	$231,967
TU-113	Signed Route	1.435	E 57 ST S	S HUDSON AVE	S 76 E AVE	160	11.40	$26,521
TU-183	Trail	1.921	JENKS MISSOURI PACIFIC TRAIL	W 71 ST S	N ELM ST	161	11.39	$1,706,116
TU-153	Trail	0.236	PROPOSED TRAIL	S 103 E AVE	S 106 E AVE	162	11.38	$209,913
TU-059	Signed Route	0.428	S LAKEWOOD AVE	E 86 ST S	E 91 ST S	163	11.33	$7,915
TU-051	Signed Route	0.694	W 53 ST S	W Skelly Dr. & 36th W Ave	30th W Ave	164	11.16	$12,821

Table 11, Continued: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Cost
TU-088	Signed Route	2.007	S 117th E Ave	E Archer St	E 21st Street S	165	11.02	$1,589
TU-179	Trail	0.668	GILCREASE W TRAIL	GILCREASE W TRAIL	GILCREASE W TRAIL	166	11.02	$592,812
TU-055	Signed Route	2.614	S ERIE AVE	101st Street	121st Street	167	10.94	$48,300
TU-071	Signed Route	1.703	N WINSTON AVE	Planned Trail	MOHAWK BLVD	168	10.74	$1,349
TU-197	Trail	3.156	S RIVER PARKS TRAIL	E 101 ST S	SANDUSKY MULTI-USE TRAIL	169	10.65	$2,802,924
TU-112	Signed Route	2.195	E 56 ST N	N YALE AVE	MOHAWK BLVD	170	10.57	$1,739
TU-188	Trail	5.020	MINGO TRAIL 11TH ST. AND N	MOHAWK/PORT OF CATOOSA TRAIL	MINGO TRAIL 11TH ST. AND N	171	10.35	$4,458,055
TU-052	Signed Route	1.349	S 193 E AVE	E 6th St	E 21 ST S	172	10.30	$1,068
TU-078	Signed Route	0.704	S SANDUSKY AVE	E 105th St Stou	E 11th St South	173	9.97	$13,009
TU-191	Trail	0.871	MOOSER CREEK TRAIL	PROPOSED TRAIL	S 28 W AVE	174	9.91	$773,943
TU-130	Signed Route	3.708	E CHEROKEE DR	N MEMORIAL DR	CHEROKEE DR	175	9.81	$2,936
TU-116	Signed Route	0.262	63 ST S	S 101 E AVE	PROPOSED TRAIL	176	9.75	$4,839
TU-125	Signed Route	0.997	S LOUISVILLE AVE	E 101 ST S	E 111 ST S	177	9.70	$18,417
TU-005	Bike Lanes	0.371	S 101 E AVE	E 62 ST S	E 66 ST S	178	9.40	$26,561
TU-120	Signed Route	1.001	W 81 ST S	S UNION AVE	S 33 W AVE	179	9.18	$18,505
TU-132	Signed Route	1.562	CHEROKEE DR	MOHAWK BLVD	CHOCTAW DR	180	8.86	$1,237
TU-121	Signed Route	1.372	E 81 ST S	S ELWOOD AVE	S PEORIA AVE	181	8.84	$25,346
TU-095	Signed Route	0.745	N GILCREASEMUSEUM RD	W APACHE ST	W PINE ST	182	8.84	$590
TU-107	Signed Route	0.675	N 41 W AVE	W APACHE ST	PROPOSED TRAIL	183	8.64	$535
TU-137	Signed Route	0.717	N MEMORIAL DR	E MOHAWK BLVD	CHEROKEE DR	184	8.61	$568
TU-069	Signed Route	3.228	W 31 ST N	N 41st Street W	W EDISON ST	185	8.57	$2,557
TU-080	Signed Route	0.331	E 111 ST S	S LOUISVILLE AVE	S QUEBEC PL	186	8.54	$6,122
TU-193	Trail	0.623	MOOSER CREEK TRAIL ALTERNATIVE	MOOSER CREEK TRAIL	MOOSER CREEK TRAIL	187	8.32	$553,245
TU-185	Bicycle Corridor	2.974	S LYNNLANE RD	E 21 ST S	E 51 ST S	188	8.29	$212,932
TU-201	Trail	0.486	RP TULSA/BIXBY TRAIL	E 131 ST S	RP TULSA/BIXBY TRAIL	189	7.84	$431,744
TU-190	Trail	5.217	MOHAWK/PORT OF CATOOSA TRAIL	N MEMORIAL DR	N 145 E AVE	190	7.74	$4,633,582
TU-182	Trail	0.425	HOWARD BRANCH TRAIL	N ERIE AVE	N YALE AVE	191	7.72	$377,792
TU-138	Signed Route	0.495	N MINGO RD	N MINGO RD	E 56 ST N	192	7.68	$392
TU-202	Trail	0.988	RP TULSA/BIXBY TRAIL	RP TULSA/BIXBY TRAIL	SANDUSKY MULTI-USE TRAIL	193	7.38	$877,549
TU-195	Trail	0.631	SKO SE TRAIL	SKO SE TRAIL	MOHAWK/PORT OF CATOOSA TRAIL	194	7.19	$560,329
TU-207	Trail	5.788	CREEK E/WILL ROGERS TRAIL	CREEK E/WILL ROGERS TRAIL	CREEK E/WILL ROGERS TRAIL	195	6.98	$5,140,144

Table 12: Broken Arrow Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BA-140	S Elm Pl	1	26755	1,025	$51,250
BA-141	S Elm Pl	2	26753	228	$11,400
BA-86	N Aspen Ave	3	23895	791	$39,550
BA-85	N Aspen Ave	4	23894	1,327	$66,350
BA-1	W Kenosha St	5	23025	191	$9,550
BA-87	N Elm Pl	6	21981	203	$10,150
BA-88	N Elm Pl	7	21981	139	$6,950
BA-90	N Elm Pl	9	21401	2,200	$110,000
BA-89	N Elm Pl	10	21398	341	$17,050
BA-45	W Kenosha St	11	20954	391	$19,550
BA-47	W Washington St	12	20029	173	$8,650
BA-21	E Kenosha St	13	19293	3,504	$175,200
BA-34	N Aspen Ave	14	18824	4,752	$237,600
BA-46	W Kenosha St	15	18028	1,160	$58,000
BA-134	N 9th St	16	17799	197	$9,850
BA-135	N 9th St	17	17797	1,655	$82,750
BA-91	W Houston St	18	17561	526	$26,300
BA-92	W Houston St	19	17561	614	$30,700
BA-80	E Kenosha St	20	17171	2,120	$106,000
BA-125	E Kenosha St	21	17070	571	$28,550
BA-126	E Kenosha St	22	17070	2,149	$107,450
BA-73	N 23rd St	23	15916	1,022	$51,100
BA-144	W New Orleans St	24	15703	421	$21,050
BA-145	W New Orleans St	25	15702	1,068	$53,400
BA-146	W New Orleans St	26	15701	266	$13,300
BA-7	S Elm Pl	27	15621	495	$24,750
BA-82	N Aspen Ave	29	14732	30	$1,500
BA-114	E Kenosha St	30	14309	751	$37,550
BA-115	E Kenosha St	31	14309	3,200	$160,000
BA-116	E Kenosha St	32	14309	131	$6,550
BA-6	W Washington St	33	14046	427	$21,350
BA-170	N 23rd St	34	13898	1,383	$69,150
BA-169	N 23rd St	35	13897	2,487	$124,350
BA-61	E 101st St S	36	13053	12	$600
BA-83	N Olive St	37	12845	1,538	$76,900
BA-84	N Olive St	38	12845	1,130	$56,500
BA-74	N 23rd St	39	12419	2,024	$101,200
BA-40	N 9th St	40	12163	1,333	$66,650
BA-10	W New Orleans St	41	11487	240	$12,000
BA-153	S Mingo Rd	43	11001	407	$20,350
BA-154	S Mingo Rd	44	11001	446	$22,300
BA-155	S Mingo Rd	45	11000	565	$28,250
BA-129	W Omaha St	51	10608	426	$21,300
BA-130	W Omaha St	52	10605	198	$9,900
BA-131	W Omaha St	53	10605	461	$23,050
BA-132	W Omaha St	54	10605	271	$13,550
BA-133	W Omaha St	55	10605	1,076	$53,800

Table 12, Continued: Broken Arrow Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BA-66	S Elm Pl	56	10487	674	$33,700
BA-139	W New Orleans St	57	10046	2,115	$105,750
BA-138	W New Orleans St	58	10044	1,088	$54,400
BA-142	E Albany St	59	10034	920	$46,000
BA-143	E Albany St	60	10030	523	$26,150
BA-127	S 23rd St	61	9911	1,247	$62,350
BA-128	S 23rd St	62	9911	459	$22,950
BA-167	E Kenosha St	66	9538	1,633	$81,650
BA-168	E Kenosha St	67	9538	2,409	$120,450
BA-137	N 23rd St	70	9313	2	$100
BA-136	S Lynn Lane Rd	71	9265	3	$150
BA-59	S Aspen Ave	72	9112	523	$26,150
BA-160	E Houston St	73	9028	373	$18,650
BA-159	E Houston St	74	9027	3,790	$189,500
BA-76	N Elm Pl	75	8984	579	$28,950
BA-101	S 9th St	76	8692	701	$35,050
BA-102	S 9th St	77	8692	2,311	$115,550
BA-103	S 9th St	78	8691	194	$9,700
BA-104	S 9th St	79	8691	990	$49,500
BA-20	E Houston St	80	8474	5,393	$269,650
BA-147	E Albany St	81	8336	455	$22,750
BA-148	E Albany St	82	8335	971	$48,550
BA-56	W Albany St	83	8296	406	$20,300
BA-75	S 23rd St	84	8174	5,286	$264,300
BA-60	W Florence St	86	7765	1,428	$71,400
BA-55	W Jasper St	87	7682	224	$11,200
BA-4	E Washington St	88	7659	697	$34,850
BA-2	E New Orleans St	89	7558	1,496	$74,800
BA-161	S Aspen Ave	90	7515	1,383	$69,150
BA-162	S Aspen Ave	91	7513	211	$10,550
BA-163	S Aspen Ave	92	7513	308	$15,400
BA-41	E New Orleans St	93	6729	5,212	$260,600
BA-78	W Florence St	94	6599	2,677	$133,850
BA-121	S Olive St	95	6556	779	$38,950
BA-120	S Olive St	96	6554	845	$42,250
BA-105	S Olive St	97	6508	1,626	$81,300
BA-106	S Olive St	98	6507	444	$22,200
BA-5	W Florence St	99	6461	171	$8,550
BA-166	E Omaha St	100	6423	10	$500
BA-79	S Olive St	101	6281	1,331	$66,550
BA-3	S 9th St	102	6125	2,855	$142,750
BA-54	W Tucson St	103	6123	243	$12,150
BA-72	E Houston St	104	5967	4,863	$243,150
BA-171	W Florence St	105	5893	575	$28,750
BA-172	W Florence St	106	5893	575	$28,750
BA-173	W Florence St	107	5892	237	$11,850
BA-174	W Florence St	108	5892	237	$11,850

Table 12, Continued: Broken Arrow Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BA-67	W Jasper St	109	5805	3,364	$168,200
BA-77	N Elm Pl	110	5757	435	$21,750
BA-110	W Jasper St	111	5617	1,012	$50,600
BA-111	W Jasper St	112	5616	261	$13,050
BA-165	W Tucson St	113	5467	1,734	$86,700
BA-164	W Tucson St	114	5466	1,602	$80,100
BA-156	S Garnett Rd	115	5447	1,780	$89,000
BA-157	S Garnett Rd	116	5447	1,193	$59,650
BA-158	S Garnett Rd	117	5447	491	$24,550
BA-24	E New Orleans St	118	5438	4,024	$201,200
BA-48	S Aspen Ave	119	5425	2,794	$139,700
BA-64	S Olive St	120	4938	897	$44,850
BA-49	S 23rd St	121	4864	160	$8,000
BA-53	W Florence St	122	4856	296	$14,800
BA-25	E Kenosha St	123	4825	5,261	$263,050
BA-37	E Houston St	124	4700	642	$32,100
BA-108	E Washington St	125	4287	2,039	$101,950
BA-107	E Washington St	126	4286	2,791	$139,550
BA-8	E Tucson St	127	4115	417	$20,850
BA-27	E 71st St	128	4005	3,307	$165,350
BA-70	S 9th St	129	3664	400	$20,000
BA-11	E Albany St	130	3405	693	$34,650
BA-9	S Aspen Ave	131	3399	1,856	$92,800
BA-68	E Jasper St	132	3305	6,588	$329,400
BA-51	N Oneta Rd	133	3264	540	$27,000
BA-26	E 71st St	134	3232	5,331	$266,550
BA-149	E Houston St	135	3173	192	$9,600
BA-150	E Houston St	136	3173	1,608	$80,400
BA-109	E Tucson St	137	2769	193	$9,650
BA-65	E 71st St	138	2708	2	$100
BA-69	E Florence St	139	2289	172	$8,600
BA-58	S Olive St	140	2225	30	$1,500
BA-17	N Midway Rd	141	2198	1,973	$98,650
BA-97	S 1st Pl	142	2136	1,025	$51,250
BA-98	S 1st Pl	144	2135	820	$41,000
BA-100	S 1st Pl	143	2135	361	$18,050
BA-99	S 1st Pl	145	2134	825	$41,250
BA-113	S 9th St	146	2106	1,059	$52,950
BA-112	S 9th St	147	2103	688	$34,400
BA-63	S Garnett Rd	148	2034	345	$17,250
BA-38	S Oneta Rd	149	2024	2,355	$117,750
BA-39	S 305th East Ave	150	1697	101	$5,050
BA-13	N Evans Rd	151	1593	3,330	$166,500
BA-30	S Evans Rd	152	1544	402	$20,100
BA-16	N Oak Grove Rd	153	1424	3,912	$195,600
BA-122	N Midway Rd	154	1389	2,323	$116,150
BA-123	N Midway Rd	155	1389	501	$25,050

Table 12, Continued: Broken Arrow Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BA-50	E Albany St	156	1226	2,128	$106,400
BA-71	S 37th St	157	1140	1,577	$78,850
BA-23	E Albany St	158	1096	2,470	$123,500
BA-28	S 305th East Ave	159	1092	16	$800
BA-36	N Oneta Rd	160	1073	3,857	$192,850
BA-35	N Oneta Rd	161	1025	2,397	$119,850
BA-124	N 37th St	162	1019	162	$8,100
BA-19	E Washington St	163	987	1,064	$53,200
BA-42	N Midway Rd	164	890	4,966	$248,300
BA-18	N Oak Grove Rd	165	798	3,726	$186,300
BA-15	E Albany St	166	777	3,683	$184,150
BA-12	N Evans Rd	167	641	62	$3,100
BA-14	S Evans Rd	168	459	1,568	$78,400
BA-44	N Evans Rd	169	426	5,127	$256,350
BA-22	S 37th St	170	185	73	$3,650
BA-31	S Oak Grove Rd	171	183	341	$17,050
BA-29	E Florence St	172	182	1,522	$76,100
BA-43	S 289th East Ave	173	182	48	$2,400
BA-52	E Washington St	174	182	212	$10,600

Table 13: Bixby Prioritized Sidewalk Gaps

Project Number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BX-12	United States Highway 64	1	34003	1,930	$96,500
BX-15	United States Highway 64	2	34003	2,524	$126,200
BX-11	United States Highway 64	3	30003	2,120	$106,000
BX-10	United States Highway 64	4	26000	5,298	$264,900
BX-55	S Mingo Rd	5	11000	761	$38,050
BX-16	E 111th St S	6	10204	5,347	$267,350
BX-4	State Highway 67	7	9801	3,808	$190,400
BX-8	United States Highway 64	9	9500	3,226	$161,300
BX-33	S Memorial Dr	8	9500	1,732	$86,600
BX-3	State Highway 67	10	8701	1,339	$66,950
BX-17	E 121st St S	11	8152	5,291	$264,550
BX-19	S Mingo Rd	12	8031	5,292	$264,600
BX-48	S Mingo Rd	13	8031	5,291	$264,550
BX-2	State Highway 67	14	7901	3,963	$198,150
BX-5	State Highway 67	15	7901	3,969	$198,450
BX-1	State Highway 67	16	7900	631	$31,550
BX-6	State Highway 67	17	7900	2,590	$129,500
BX-13	E 121st St S	18	7502	4,472	$223,600
BX-50	United States Highway 64	19	7200	2,718	$135,900
BX-24	W Florence St	20	6461	5,038	$251,900
BX-21	E 131st St	21	6382	4,337	$216,850
BX-51	United States Highway 64	22	5500	3,471	$173,550
BX-25	E 121st St	23	3729	5,124	$256,200
BX-36	E 151st St S	24	3277	2,641	$132,050
BX-22	E 161st St S	25	3263	5,270	$263,500
BX-18	E 131st St S	26	2750	5,297	$264,850
BX-56	E 131st St S	27	2750	3,257	$162,850
BX-57	E 131st St S	28	2750	1,144	$57,200
BX-27	S Memorial Dr	29	2400	2,575	$128,750
BX-49	S Garnett Rd	30	2034	1,139	$56,950
BX-23	S Yale Pl	31	1741	5,503	$275,150
BX-34	E 141st St S	32	1565	397	$19,850
BX-37	S Mingo Rd	33	1192	5,086	$254,300
BX-39	S Mingo Rd	34	1189	1,284	$64,200
BX-35	E 141st St S	35	1105	5,637	$281,850
BX-45	S Yale Ave	36	1104	5,265	$263,250
BX-20	S Mingo Rd	37	1103	168	$8,400
BX-32	E 161st St S	38	1103	2,828	$141,400
BX-40	E 161st St S	39	1103	5,273	$263,650
BX-41	S Harvard Ave	40	1103	5,215	$260,750
BX-28	E 171st St S	41	680	2,592	$129,600
BX-26	S Mingo Rd	42	605	1,519	$75,950
BX-53	E 171st St S	43	595	1,635	$81,750
BX-42	S Harvard Ave	44	562	1	$50
BX-54	S Harvard Ave	45	437	3	$150
BX-52	S Harvard Ave	46	423	3,775	$188,750
BX-30	E 161st St S	47	335	2	$100
BX-43	E 161st St S	48	325	131	$6,550

Table 13, Continued: Bixby Prioritized Sidewalk Gaps

Project Number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BX-38	E 161st St S	49	321	1	$50
BX-31	E 141st St S	50	320	3,426	$171,300
BX-46	S Yale Ave	51	320	2,483	$124,150
BX-29	S Sheridan Rd	52	319	5,335	$266,750
BX-44	S Sheridan Rd	53	319	5,271	$263,550
BX-47	S Sheridan Rd	54	319	5,171	$258,550

Table 14: Catoosa Prioritized Sidewalk Gaps

Project Number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
CA-4	State Highway 167	1	10403.00	1,236	$61,800
CA-8	State Highway 167	2	10403.00	1,227	$61,350
CA-2	State Highway 167	3	8801.00	1,914	$95,700
CA-3	State Highway 167	4	8703.00	1,487	$74,350
CA-1	State Highway 167	5	8302.00	3,423	$171,150
CA-5	State Highway 167	6	7702.00	5,298	$264,900
CA-12	S Cherokee St	7	7614.00	292	$14,600
CA-18	E Pine St	8	7612.00	2,814	$140,700
CA-25	E Pine St	9	5800.00	250	$12,500
CA-26	N 161st E Ave	10	5435.00	5,012	$250,600
CA-29	S Cherokee St	11	4351.00	41	$2,050
CA-10	E Pine St	12	4348.00	5,273	$263,650
CA-14	E Pine St	13	4348.00	2,177	$108,850
CA-27	S Cherokee St	14	3269.00	1,396	$69,800
CA-28	S Cherokee St	15	3268.00	773	$38,650
CA-19	W Denbo St	16	3267.00	232	$11,600
CA-23	N 193rd East Ave	17	3262.00	2,045	$102,250
CA-13	E 580 Rd	19	2899.00	2,309	$115,450
CA-21	N 177th East Ave	20	2701.00	5,434	$271,700
CA-11	Tiger Switch Rd	21	2174.00	4,879	$243,950
CA-20	Tiger Switch Rd	22	2174.00	863	$43,150
CA-16	Tiger Switch Rd	23	670.00	3,946	$197,300
CA-15	N Cherokee St	24	668.00	2,177	$108,850
CA-7	E Skelly Dr	26	662.00	908	$45,400
CA-24	Tiger Switch Rd	25	662.00	442	$22,100
CA-22	N 177th East Ave	27	206.00	2,219	$110,950
CA-17	N 225th E Ave	28	205.00	5,029	$251,450
CA-9	S Red Bud Dr	29	195.00	879	$43,950

Table 15: Collinsville Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
CV-23	State Highway 20	1	8501.00	774	$38,700
CV-24	State Highway 20	2	8003.00	393	$19,650
CV-6	State Highway 20	3	5100.00	1,308	$65,400
CV-1	State Highway 20	4	4713.00	2,426	$121,300
CV-5	N 113th East Ave	5	4555.00	4	$200
CV-3	N 5th St	6	2914.00	393	$19,650
CV-10	N Garnett Rd	7	2772.00	1,532	$76,600
CV-17	S 5th St	8	2346.00	880	$44,000
CV-4	S 19th St	9	2315.00	2,350	$117,500
CV-15	E 146th St N	10	2153.00	1,356	$67,800
CV-9	N 19th St	11	2065.00	2,785	$139,250
CV-19	N 19th St	12	2062.00	82	$4,100
CV-20	N 129th East Ave	13	1129.00	1,766	$88,300
CV-2	N 129th East Ave	14	1128.00	3,505	$175,250
CV-18	N 129th East Ave	15	988.00	2,059	$102,950
CV-13	N 97th East Ave	16	982.00	4	$200
CV-12	E 136th St N	17	798.00	295	$14,750
CV-11	Mingo Valley Expy	18	788.00	761	$38,050
CV-21	W Broadway St	19	678.00	2,207	$110,350
CV-22	W Broadway St	20	671.00	912	$45,600
CV-7	E 146th St N	21	617.00	1,442	$72,100
CV-16	E 156th St N	22	610.00	672	$33,600
CV-14	E 156th St N	23	532.00	3,465	$173,250
CV-8	N 97th East Ave	24	452.00	1,061	$53,050
CV-25	E 186th St N	25	340.00	990	$49,500
CV-26	E 186th St N	26	340.00	990	$49,500

Table 16: Coweta Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
CW-17	E 111th St	1	5435.00	2,606	$130,300
CW-22	E 141st St	2	4458.00	3,254	$162,700
CW-6	W South St	3	4359.00	1,254	$62,700
CW-32	E 111th St	4	3262.00	2,408	$120,400
CW-15	Oneta Rd	5	3261.00	109	$5,450
CW-12	E 121st St	6	2718.00	3,335	$166,750
CW-9	S 305th East Ave	7	2177.00	2,645	$132,250
CW-23	E New Orleans St	8	1533.00	475	$23,750
CW-14	S 289th East Ave	9	1460.00	5,277	$263,850
CW-1	S 289th East Ave	10	1448.00	1,308	$65,400
CW-8	S 305th East Ave	11	1088.00	2,624	$131,200
CW-3	E 131st St	13	1010.00	1,383	$69,150
CW-21	E 131st St	12	1010.00	3,265	$163,250
CW-20	W North St	14	770.00	561	$28,050
CW-30	E North St	15	770.00	1,909	$95,450
CW-29	E North St	16	769.00	1,776	$88,800
CW-7	E South St	17	198.00	1,983	$99,150
CW-25	S 305th East Ave	18	196.00	2,631	$131,550
CW-10	S 305th East Ave	19	185.00	1,203	$60,150
CW-13	E 151st St S	20	185.00	1,275	$63,750
CW-19	E 151st St	21	184.00	4,671	$233,550
CW-28	S 273rd East Ave	22	184.00	73	$3,650
CW-2	S 273rd East Ave	25	183.00	37	$1,850
CW-4	S 273rd East Ave	28	183.00	1,240	$62,000
CW-5	S 289th East Ave	29	183.00	1,375	$68,750
CW-11	S 289th East Ave	23	183.00	3,582	$179,100
CW-18	E 121st St	24	183.00	2,648	$132,400
CW-27	E 111th St	26	183.00	15	$750
CW-33	E 111th St	27	183.00	1,249	$62,450
CW-16	E New Orleans St	30	182.00	39	$1,950
CW-24	S 257th East Ave	31	182.00	1,234	$61,700
CW-26	E 131st St	32	182.00	152	$7,600
CW-31	S 273rd East Ave	33	182.00	3,086	$154,300

Table 17: Glenpool Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
GP-40	State Highway 117	1	11800.00	7	$350
GP-6	State Highway 117	2	11700.00	14	$700
GP-39	State Highway 117	3	11300.00	7	$350
GP-1	State Highway 67	4	7401.00	1,445	$72,250
GP-9	State Highway 67	5	7401.00	1,424	$71,200
GP-3	State Highway 67	7	7400.00	5,286	$264,300
GP-4	State Highway 67	8	7400.00	312	$15,600
GP-7	State Highway 67	9	7400.00	374	$18,700
GP-8	State Highway 67	10	7400.00	87	$4,350
GP-10	State Highway 67	6	7400.00	371	$18,550
GP-2	State Highway 67	11	6600.00	367	$18,350
GP-32	E 141st St S	12	6279.00	1,763	$88,150
GP-33	E 141st St S	13	6279.00	2,217	$110,850
GP-34	E 141st St S	14	6277.00	287	$14,350
GP-14	S Elwood Ave	15	4529.00	1,396	$69,800
GP-22	S Elwood Ave	16	4460.00	58	$2,900
GP-18	S Peoria Ave	17	4213.00	3	$150
GP-28	S Elwood Ave	18	3804.00	5,292	$264,600
GP-12	W 141st St S	19	2299.00	2,614	$130,700
GP-13	W 141st St S	20	2294.00	547	$27,350
GP-11	S Elwood Ave	21	2186.00	5,084	$254,200
GP-19	S Peoria Ave	22	1811.00	5,264	$263,200
GP-23	E 141st St S	23	1612.00	2,654	$132,700
GP-17	E 131st St S	24	1585.00	1,386	$69,300
GP-29	W 171st St S	25	1395.00	1,735	$86,750
GP-25	W 126th St S	26	1057.00	5,106	$255,300
GP-26	W 126th St S	27	1057.00	5,166	$258,300
GP-30	S 33rd West Ave	28	1056.00	220	$11,000
GP-38	State Highway 117	29	1056.00	7	$350
GP-27	W 131st St S	30	1055.00	3,148	$157,400
GP-5	W 171st St S	31	522.00	1	$50
GP-24	S Peoria Ave	32	380.00	3,675	$183,750
GP-20	W 161st St S	33	358.00	850	$42,500
GP-15	S 26th West Ave	34	321.00	9	$450
GP-16	Union Ave	35	319.00	5,005	$250,250
GP-36	S 33rd West Ave	36	319.00	828	$41,400
GP-37	State Highway 117	37	319.00	7	$350
GP-31	S 33rd West Ave	38	169.00	795	$39,750
GP-35	S 33rd West Ave	39	169.00	828	$41,400
GP-21	W 161st St S	40	65.00	94	$4,700

Table 18: Jenks Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
JS-47	S Union Ave	1	41805.00	5,555	$277,750
JS-61	E A St	2	21744.00	149	$7,450
JS-43	W Main St	3	18483.00	306	$15,300
JS-60	E A St	4	18483.00	149	$7,450
JS-44	W Main St	5	16235.00	1,305	$65,250
JS-35	W Main St	6	14138.00	4,903	$245,150
JS-33	S Peoria Ave	7	12707.00	4,799	$239,950
JS-3	State Highway 117	8	11801.00	1,554	$77,700
JS-4	State Highway 117	9	11801.00	1,552	$77,600
JS-2	State Highway 117	10	11700.00	118	$5,900
JS-36	W 96th St S	11	10213.00	5,586	$279,300
JS-48	S Peoria Ave	12	8701.00	241	$12,050
JS-13	S Elwood Ave	13	7653.00	10	$500
JS-50	S Peoria Ave	14	6533.00	371	$18,550
JS-59	E A St	15	6528.00	149	$7,450
JS-51	S Peoria Ave	16	6527.00	298	$14,900
JS-52	S Peoria Ave	17	6524.00	460	$23,000
JS-5	W 121st St S	18	5906.00	3,372	$168,600
JS-23	S Elwood Ave	19	5803.00	2,644	$132,200
JS-25	S Peoria Ave	20	5442.00	2,308	$115,400
JS-49	E A St	21	5441.00	789	$39,450
JS-40	W 91st St S	22	5310.00	3,079	$153,950
JS-46	W 121st St S	23	5282.00	1,069	$53,450
JS-1	W 91st St S	24	4843.00	1,988	$99,400
JS-7	S Elwood Ave	25	4529.00	11	$550
JS-34	E 121st St S	26	4253.00	5,292	$264,600
JS-45	W 121st St S	27	4099.00	1,072	$53,600
JS-14	S Elwood Ave	28	3838.00	7,933	$396,650
JS-10	S Elwood Ave	29	3831.00	5,286	$264,300
JS-21	E 111th St S	30	3799.00	4,848	$242,400
JS-37	W 111th St S	31	3795.00	3,265	$163,250
JS-41	W 91st St S	32	3140.00	1,312	$65,600
JS-55	W 91st St S	33	3115.00	1,936	$96,800
JS-56	W 91st St S	34	3114.00	655	$32,750
JS-54	S Union Ave	35	3003.00	5	$250
JS-39	S Union Ave	36	2204.00	2,586	$129,300
JS-6	S Yale Pl	38	1741.00	1,453	$72,650
JS-16	W 111th St S	39	1524.00	377	$18,850
JS-38	W 111th St S	40	1185.00	356	$17,800
JS-29	S Yale Ave	41	1134.00	1,752	$87,600
JS-18	E 121st St S	42	1130.00	1,582	$79,100
JS-19	E 121st St S	43	1130.00	3,776	$188,800
JS-57	E 121st St S	44	1123.00	1,881	$94,050
JS-58	E 121st St S	45	1123.00	514	$25,700
JS-26	W 111th St S	46	1108.00	1,437	$71,850
JS-27	E 111th St S	47	1106.00	1,457	$72,850
JS-30	S Yale Ave	48	1104.00	45	$2,250

Table 18, Continued: Jenks Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
JS-20	S Florence Ave	49	818.00	2,900	$145,000
JS-9	E 126th St S	51	817.00	1,269	$63,450
JS-17	S Harvard Ave	50	817.00	2,662	$133,100
JS-8	E 131st St S	53	544.00	131	$6,550
JS-31	E 131st St S	52	544.00	2,733	$136,650
JS-32	S Lewis Ave	54	489.00	1,235	$61,750
JS-53	S Harvard Ave	55	437.00	1,717	$85,850
JS-11	W 101st St S	56	321.00	1,213	$60,650
JS-15	E 141st St S	57	320.00	1,321	$66,050
JS-28	E 131st St S	58	319.00	1,997	$99,850

Table 19: Owasso Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
OW-5	N 115th East Ave	1	45006.00	2,809	$140,450
OW-16	E 96th St N	2	23493.00	1,254	$62,700
OW-25	N Garnett Rd	3	14392.00	407	$20,350
OW-26	N Garnett Rd	4	14392.00	487	$24,350
OW-13	E 76th St N	5	13403.00	2,970	$148,500
OW-31	E 76th St N	6	12928.00	2,222	$111,100
OW-30	E 76th St N	7	12919.00	743	$37,150
OW-12	E 76th St N	8	10680.00	1,343	$67,150
OW-23	N Garnett Rd	9	10543.00	481	$24,050
OW-22	N Garnett Rd	10	10542.00	1,986	$99,300
OW-29	E 116th St N	11	10243.00	215	$10,750
OW-32	E 76th St N	12	7297.00	560	$28,000
OW-17	E 96th St N	13	7070.00	355	$17,750
OW-27	E 116th St N	14	6427.00	1,102	$55,100
OW-28	E 116th St N	15	6427.00	3,336	$166,800
OW-4	N 115th East Ave	16	6139.00	5,845	$292,250
OW-15	N 129th East Ave	17	5342.00	2,204	$110,200
OW-9	N Mingo Rd	18	5011.00	668	$33,400
OW-11	E 116th St N	19	4910.00	31	$1,550
OW-24	N Garnett Rd	20	4564.00	542	$27,100
OW-35	N 145th Ave E	21	3593.00	482	$24,100
OW-36	N 145th Ave E	22	3593.00	482	$24,100
OW-33	N 145th Ave E	23	3591.00	784	$39,200
OW-34	N 145th Ave E	24	3591.00	784	$39,200
OW-10	N Mingo Rd	25	3576.00	3,567	$178,350
OW-3	N Mingo Rd	26	3431.00	2	$100
OW-14	E 76th St N	27	3200.00	3	$150
OW-18	N Owasso Expy	28	3194.00	364	$18,200
OW-19	N Owasso Expy	29	3194.00	4,169	$208,450

Table 19, Continued: Owasso Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
OW-20	N Owasso Expy	30	3191.00	1,103	$55,150
OW-2	E 106th St N	31	2999.00	631	$31,550
OW-1	E 106th St N	32	2562.00	7	$350
OW-8	N 97th East Ave	33	2141.00	3,494	$174,700
OW-7	N 97th East Ave	34	1488.00	64	$3,200
OW-21	N 129th East Ave	35	1288.00	228	$11,400
OW-6	N 145th East Ave	36	206.00	13	$650

Table 20: Sand Springs Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
SS-3	State Highway 51	1	29302.00	472	$23,600
SS-10	State Highway 51	1	29302.00	458	$22,900
SS-80	State Highway 51	3	26019.00	85	$4,250
SS-84	State Highway 51	4	26009.00	73	$3,650
SS-83	State Highway 51	5	20709.00	73	$3,650
SS-24	W Wekiwa Rd	6	20701.00	2,202	$110,100
SS-37	Wekiwa Rd	7	20701.00	147	$7,350
SS-63	Wekiwa Rd	8	20700.00	350	$17,500
SS-18	State Highway 97	9	16009.00	1,309	$65,450
SS-5	State Highway 97	10	16006.00	1,981	$99,050
SS-12	State Highway 97	11	16005.00	1,987	$99,350
SS-6	State Highway 97	13	16003.00	2,050	$102,500
SS-11	State Highway 97	12	16003.00	2,041	$102,050
SS-29	W Morrow Rd	14	15235.00	2,464	$123,200
SS-68	S Adams Rd	15	14144.00	195	$9,750
SS-69	S Adams Rd	16	14142.00	164	$8,200
SS-13	State Highway 97	17	13809.00	1,311	$65,550
SS-4	State Highway 97	19	13710.00	5,134	$256,700
SS-14	State Highway 97	18	13710.00	5,252	$262,600
SS-28	W Morrow Rd	20	13058.00	741	$37,050
SS-50	W 41st St S	21	12708.00	1,015	$50,750
SS-27	Charles Page Blvd	22	10886.00	5,442	$272,100
SS-74	Broad St	23	10872.00	456	$22,800
SS-7	State Highway 51	24	10004.00	3,274	$163,700
SS-9	State Highway 51	25	9104.00	6,713	$335,650
SS-8	State Highway 51	26	9102.00	2,717	$135,850
SS-72	W 2nd St	27	8706.00	161	$8,050
SS-71	W 2nd St	28	8705.00	182	$9,100
SS-54	W Wekiwa Rd	29	8697.00	2,649	$132,450
SS-79	State Highway 51	30	8319.00	85	$4,250
SS-82	State Highway 51	31	8309.00	73	$3,650
SS-89	S Adams Rd	32	7624.00	87	$4,350
SS-88	S Adams Rd	33	6539.00	87	$4,350

Table 20, Continued: Sand Springs Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
SS-36	S 81st West Ave	34	6165.00	1,821	$91,050
SS-58	W 51st St S	35	5483.00	302	$15,100
SS-1	Avery Dr	36	5142.00	10,033	$501,650
SS-26	Charles Page Blvd	37	4919.00	1,022	$51,100
SS-57	W 41st St S	38	4651.00	812	$40,600
SS-40	N Adams Rd	39	4181.00	1,119	$55,950
SS-38	Connector	40	3806.00	336	$16,800
SS-31	Old Sapulpa Rd	41	3272.00	5,619	$280,950
SS-16	State Highway 97T	42	3263.00	570	$28,500
SS-42	N Wilson Ave	43	3117.00	2,179	$108,950
SS-60	Willow St	44	3070.00	1,709	$85,450
SS-39	S 129th West Ave	45	2915.00	5,296	$264,800
SS-47	E 10th St	46	2903.00	2,796	$139,800
SS-62	E 10th St	47	2720.00	2,498	$124,900
SS-34	E 10th St	48	2263.00	2,431	$121,550
SS-25	W 21st St S	49	2186.00	5,571	$278,550
SS-15	State Highway 97	50	2108.00	4,727	$236,350
SS-56	W 10th St	51	1998.00	1,120	$56,000
SS-61	E 12th St	52	1472.00	2,267	$113,350
SS-32	S 81st West Ave	53	1394.00	2,433	$121,650
SS-41	N Franklin Ave	54	1337.00	3,555	$177,750
SS-87	S Adams Rd	55	1331.00	87	$4,350
SS-78	W 10th St	56	1327.00	681	$34,050
SS-46	Old Sapulpa Rd	57	1325.00	5,733	$286,650
SS-86	S Adams Rd	58	1234.00	87	$4,350
SS-49	N Sand Springs Rd	59	1134.00	1,029	$51,450
SS-59	S 129th West Ave	60	1090.00	2,559	$127,950
SS-76	S 129th West Ave	61	1090.00	26	$1,300
SS-45	S 129th West Ave	62	1089.00	194	$9,700
SS-51	S 129th West Ave	63	1089.00	9	$450
SS-75	S 129th West Ave	64	1089.00	26	$1,300
SS-48	Old North Rd	65	975.00	6,495	$324,750
SS-23	Willow St	66	870.00	3,893	$194,650
SS-44	Shell Creek Rd	67	820.00	119	$5,950
SS-70	W 7th St	68	778.00	536	$26,800
SS-30	W Wekiwa Rd	69	676.00	2,865	$143,250
SS-21	Willow St	70	652.00	954	$47,700
SS-35	N Sand Springs Rd	71	626.00	676	$33,800
SS-43	Shell Creek Rd	72	370.00	6,463	$323,150
SS-77	W 10th St	73	331.00	681	$34,050
SS-73	Broad St	74	321.00	456	$22,800
SS-22	129th West Ave	75	320.00	2,092	$104,600
SS-52	W 56th St S	76	320.00	3,049	$152,450
SS-53	W Wekiwa Rd	77	320.00	619	$30,950
SS-33	S 145th West Ave	78	319.00	692	$34,600

Table 21: Skiatook Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
SK-10	State Highway 20	1	12000.00	2,067	$103,350
SK-5	State Highway 20	2	11800.00	4,054	$202,700
SK-9	State Highway 20	3	11701.00	195	$9,750
SK-4	State Highway 20	4	11501.00	177	$8,850
SK-1	State Highway 20	5	6300.00	656	$32,800
SK-2	State Highway 20	6	6300.00	4,960	$248,000
SK-6	State Highway 11	7	5800.00	3,162	$158,100
SK-12	State Highway 20	8	5700.00	230	$11,500
SK-11	State Highway 20	9	5600.00	222	$11,100
SK-7	State Highway 11	10	4802.00	5,260	$263,000
SK-8	State Highway 11	11	4801.00	676	$33,800
SK-23	N Cincinnati Ave	12	2701.00	186	$9,300
SK-3	State Highway 11	13	2501.00	195	$9,750
SK-38	E 136th St N	14	1811.00	2,302	$115,100
SK-27	N Javine Hill	15	1531.00	1,498	$74,900
SK-45	E 136th St N	16	1155.00	8	$400
SK-22	W 133rd St N	17	1139.00	3,494	$174,700
SK-40	S Osage St	18	1139.00	933	$46,650
SK-39	W 133rd St N	19	1138.00	1,307	$65,350
SK-35	E 126th St N	20	1025.00	2,754	$137,700
SK-34	E 126th St N	21	972.00	1,415	$70,750
SK-37	W Oak St	22	899.00	2,426	$121,300
SK-18	S Lombard Ln	23	896.00	724	$36,200
SK-36	N Lombard Ln	24	896.00	2,597	$129,850
SK-28	N 52nd West Ave	25	705.00	274	$13,700
SK-15	E 5th St	26	603.00	512	$25,600
SK-44	S C St	27	603.00	1,042	$52,100
SK-47	E 5th St	28	603.00	1,487	$74,350
SK-14	W 136th St N	29	600.00	624	$31,200
SK-48	S Osage St	30	381.00	421	$21,050
SK-50	S Osage St	31	381.00	1,492	$74,600
SK-43	N C St	32	322.00	1,335	$66,750
SK-49	S Osage St	33	321.00	1,492	$74,600
SK-19	E 179th St N	34	319.00	2,057	$102,850
SK-20	E 181st St N	35	319.00	933	$46,650
SK-21	N Lousiville Ave	36	319.00	180	$9,000
SK-42	N Urbana Ave	37	319.00	1,417	$70,850
SK-46	N Lewis Ave	38	160.00	27	$1,350
SK-26	Lennapah St	39	105.00	621	$31,050
SK-25	W Oak St	40	104.00	1,290	$64,500
SK-30	W Oak St	41	104.00	1,784	$89,200
SK-33	Lennapah St	42	104.00	2,620	$131,000
SK-32	S Lombard Ln	43	103.00	5,230	$261,500
SK-17	N Lenapah Ave	44	102.00	2,605	$130,250
SK-24	W Country Rd	45	102.00	1,822	$91,100
SK-31	W Country Rd	46	102.00	3,323	$166,150

Table 21, Continued: Skiatook Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
SK-16	N Harvard Ave	47	98.00	1,861	$93,050
SK-13	E 176th St N	48	90.00	1,348	$67,400
SK-41	S Lombard Ln	49	86.00	245	$12,250
SK-29	N Lombard Ln	50	85.00	500	$25,000

Table 22: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-506	S Lewis Ave	1	126.79	3,397	$169,850
TU-449	S Memorial Dr	2	118.69	1,869	$93,450
TU-217	E Skelly Dr	3	114.77	2,661	$133,050
TU-400	S Lewis Ave	4	113.76	2,610	$130,500
TU-431	E 13 Pl	5	111.95	2,505	$125,250
TU-77	W Easton St	6	106.59	377	$18,850
TU-548	Riverside Dr	7	103.74	2,336	$116,800
TU-8	S Cincinnati Ave	8	101.29	796	$39,800
TU-226	E Skelly Dr	9	101.12	1,765	$88,250
TU-377	S Memorial Dr	10	101.01	1,810	$90,500
TU-295	N Lewis Ave	11	100.54	4,380	$219,000
TU-221	E 51st St S	12	99.97	4,163	$208,150
TU-413	E Skelly Dr	13	97.94	2,264	$113,200
TU-392	S Cincinnati Ave	14	97.88	1,910	$95,500
TU-249	S Boulder Ave	15	97.70	371	$18,550
TU-434	E Skelly Dr	16	97.51	2,807	$140,350
TU-364	S Lawton Ave	17	96.91	95	$4,750
TU-483	S Lansing Ave	18	96.02	179	$8,950
TU-497	E 31st St S	19	95.83	1,602	$80,100
TU-382	E 31st St S	20	95.42	4,730	$236,500
TU-213	S Carson Ave	21	95.00	103	$5,150
TU-73	W 12th St	22	94.49	358	$17,900
TU-209	W 12th St	23	94.30	140	$7,000
TU-267	S Elwood Ave	24	93.57	237	$11,850
TU-187	E Skelly Dr	25	93.39	5,812	$290,600
TU-273	E Skelly Dr	26	93.18	3,059	$152,950
TU-194	E John Hope Franklin Blvd	27	93.07	569	$28,450
TU-394	E 5th St	28	91.97	357	$17,850
TU-340	State Highway 11	29	91.90	5,111	$255,550
TU-444	E Skelly Dr	30	91.44	5,292	$264,600
TU-369	E Skelly Dr	31	91.04	5,301	$265,050
TU-179	E 21st St S	32	90.86	1,897	$94,850
TU-62	S Hartford Ave	33	90.58	381	$19,050
TU-345	S Sheridan Rd	34	90.55	218	$10,900
TU-519	W 4th St	35	90.47	344	$17,200
TU-282	State Highway 11	36	90.18	1,093	$54,650
TU-216	E 1st St	37	89.66	138	$6,900

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-367	S Hartford Ave	38	89.53	174	$8,700
TU-1	E Admiral Blvd	39	89.24	409	$20,450
TU-286	S Iroquois Ave	40	88.83	160	$8,000
TU-21	S Jackson Ave	41	88.51	354	$17,700
TU-318	N Guthrie Ave	42	88.45	510	$25,500
TU-196	W Easton St	43	88.25	380	$19,000
TU-408	N Boulder Ave W	44	88.09	375	$18,750
TU-223	W 1st St	45	88.04	558	$27,900
TU-103	N Iroquois Ave	46	87.58	128	$6,400
TU-135	W Easton St	47	86.93	369	$18,450
TU-306	E Skelly Dr	48	85.96	1,873	$93,650
TU-419	E Skelly Dr	49	85.17	5,152	$257,600
TU-97	N Frankfort Ave	50	84.41	323	$16,150
TU-20	S Jackson Ave	51	84.38	392	$19,600
TU-129	S Memorial Dr	52	84.14	3,729	$186,450
TU-410	S Memorial Dr	53	84.13	4,371	$218,550
TU-418	E Skelly Dr	54	83.91	1,712	$85,600
TU-222	N Union Ave	55	83.32	5,528	$276,400
TU-198	S Harvard Ave	56	83.04	852	$42,600
TU-350	Riverside Dr	57	82.89	6,208	$310,400
TU-478	S Denver Ave	58	82.71	162	$8,100
TU-215	E 1st St	59	82.69	226	$11,300
TU-263	S Denver Ave	60	82.50	162	$8,100
TU-414	S Lansing Ave	61	82.38	364	$18,200
TU-533	E 46th St N	62	82.34	4,413	$220,650
TU-357	S Utica Ave	63	82.28	360	$18,000
TU-378	N Lewis Ave	64	81.83	591	$29,550
TU-337	E 41st St S	65	81.67	350	$17,500
TU-26	E 1st Pl	66	81.02	67	$3,350
TU-457	E 1st Pl	67	80.86	67	$3,350
TU-80	N Guthrie Ave	68	80.82	255	$12,750
TU-417	E 51st St S	69	80.75	847	$42,350
TU-347	E 1st Pl	70	80.60	51	$2,550
TU-455	S Lansing Ave	71	80.53	211	$10,550
TU-331	E 91st St S	72	80.52	450	$22,500
TU-536	Dawson Rd	73	80.50	5,870	$293,500
TU-426	E Admiral Pl	74	80.48	3,407	$170,350
TU-121	E 1st Pl	75	80.45	51	$2,550
TU-416	N Lawton Ave	76	80.40	514	$25,700
TU-301	N Union Ave	77	80.19	1,615	$80,750
TU-520	E Skelly Dr	78	80.16	1,821	$91,050
TU-387	S Lawton Ave	79	79.84	316	$15,800
TU-323	E 1st St	80	79.79	179	$8,950
TU-204	Riverside Dr	81	79.59	4,975	$248,750
TU-454	S Heavy Traffic Way	82	79.59	308	$15,400
TU-225	N Lewis Ave	83	79.19	1,380	$69,000
TU-373	E Skelly Dr	84	79.18	1,741	$87,050

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-544	S Memorial Dr	85	79.00	3,989	$199,450
TU-172	E Admiral Blvd	86	78.82	1,218	$60,900
TU-24	E 36th St N	87	78.74	4,289	$214,450
TU-395	E 41st St S	88	78.48	2,775	$138,750
TU-175	S Guthrie Ave	89	78.43	78	$3,900
TU-465	S Guthrie Ave	89	78.43	26	$1,300
TU-521	E 91st St S	91	78.05	509	$25,450
TU-51	S Guthrie Ave	92	78.01	38	$1,900
TU-281	E 71st St S	93	78.00	232	$11,600
TU-299	I- 44 Access Rd	94	77.98	953	$47,650
TU-461	W Edison St	95	77.78	1,837	$91,850
TU-151	E 11th St S	96	77.25	1,329	$66,450
TU-344	W 1st St	97	77.15	75	$3,750
TU-334	E 51st St S	98	77.08	1,110	$55,500
TU-297	S Mingo Rd	99	76.76	4,184	$209,200
TU-193	E Apache St	100	76.51	4,368	$218,400
TU-274	E 11th St S	101	75.83	5,282	$264,100
TU-253	Mohawk Blvd	102	75.50	2,829	$141,450
TU-219	S Lansing Ave	103	75.36	366	$18,300
TU-348	Riverside Pkwy	104	75.05	6,303	$315,150
TU-108	E Admiral Blvd	105	74.86	604	$30,200
TU-115	S Boston Ave	106	74.75	272	$13,600
TU-22	E 71st St S	107	74.48	167	$8,350
TU-368	W 15th St S	108	74.19	300	$15,000
TU-383	S Lawton Ave	109	74.17	367	$18,350
TU-52	S Harvard Ave	110	73.83	2,392	$119,600
TU-477	E Apache St	111	73.55	266	$13,300
TU-492	Martin Luther King Jr Blvd	112	73.50	4,682	$234,100
TU-145	Riverside Dr	113	73.45	3,830	$191,500
TU-462	Riverside Dr	114	73.36	2,686	$134,300
TU-147	E 41st St S	115	72.91	2,921	$146,050
TU-79	E 21st St S	116	72.79	2,298	$114,900
TU-91	E 31st St S	117	72.65	535	$26,750
TU-396	S Pittsburg Ave	118	72.53	397	$19,850
TU-466	S Lewis Ave	119	72.43	1,092	$54,600
TU-188	S Delaware Ave	120	72.28	4,033	$201,650
TU-166	E 14th St	121	72.25	603	$30,150
TU-104	E Broken Arrow Expy	122	72.16	2,974	$148,700
TU-43	E John Hope Franklin Blvd	123	72.11	34	$1,700
TU-218	E John Hope Franklin Blvd	124	72.08	34	$1,700
TU-447	E John Hope Franklin Blvd	125	72.02	34	$1,700
TU-269	E John Hope Franklin Blvd	126	71.96	34	$1,700
TU-54	State Highway 11	127	71.56	2,194	$109,700
TU-120	Riverside Dr	128	71.54	719	$35,950
TU-526	S 91st East Ave	129	71.43	1,636	$81,800
TU-420	E 1st St	130	71.40	94	$4,700
TU-549	E Admiral Blvd	131	71.34	347	$17,350

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-257	N Lewis Ave	132	71.30	482	$24,100
TU-389	I- 44 Access Rd	133	70.89	5,332	$266,600
TU-116	E 21st St S	134	70.86	1,897	$94,850
TU-289	E 31st St S	135	70.76	2,314	$115,700
TU-338	E 11th St S	136	69.91	996	$49,800
TU-245	S Hartford Ave	137	69.43	194	$9,700
TU-37	W 13th St	138	69.34	172	$8,600
TU-200	E 36th St S	139	69.13	5,280	$264,000
TU-312	S Peoria Ave	140	69.12	432	$21,600
TU-233	W Skelly Dr	141	69.11	1,323	$66,150
TU-162	E Skelly Dr	142	68.89	921	$46,050
TU-485	E 11th St S	143	68.41	1,182	$59,100
TU-168	S Sheridan Rd	144	68.19	803	$40,150
TU-443	S Boulder Ave	145	67.81	43	$2,150
TU-270	E Skelly Dr	146	67.78	6,060	$303,000
TU-352	S Memorial Dr	147	67.72	721	$36,050
TU-154	S Peoria Ave	148	67.60	610	$30,500
TU-503	W 71st St S	149	67.56	4,398	$219,900
TU-439	E Skelly Dr	150	67.42	1,354	$67,700
TU-75	E 21st St S	151	67.42	1,017	$50,850
TU-432	S Memorial Dr	152	67.28	5,003	$250,150
TU-504	W 41st St S	153	67.03	4,559	$227,950
TU-241	E Skelly Dr	154	66.49	796	$39,800
TU-214	W Skelly Dr	155	66.47	5,042	$252,100
TU-6	S Memorial Dr	156	66.43	992	$49,600
TU-212	S Memorial Dr	157	66.41	2,655	$132,750
TU-473	S Union Ave	158	66.39	4,007	$200,350
TU-351	E Skelly Dr	159	66.11	2,834	$141,700
TU-89	E 56th St N	160	65.96	3,871	$193,550
TU-427	N Lewis Ave	161	65.92	1,561	$78,050
TU-88	E 1st St	162	65.83	94	$4,700
TU-507	E 51st St S	163	65.75	489	$24,450
TU-464	E Skelly Dr	164	65.47	3,619	$180,950
TU-11	S Columbia Ave	165	65.43	345	$17,250
TU-149	Mohawk Blvd	166	65.37	5,244	$262,200
TU-317	S Lewis Ave	167	64.90	1,140	$57,000
TU-78	W Skelly Dr	168	64.65	824	$41,200
TU-429	E Pine St	169	64.58	4,521	$226,050
TU-346	S 33rd West Ave	170	64.45	2,269	$113,450
TU-437	E 4th Pl	171	64.38	5,277	$263,850
TU-438	S Memorial Dr	172	64.31	1,841	$92,050
TU-303	S Guthrie Ave	173	64.13	39	$1,950
TU-453	W 71st St S	174	64.06	1,132	$56,600
TU-199	S Guthrie Ave	175	63.91	39	$1,950
TU-265	N New Haven Ave	176	63.15	470	$23,500
TU-94	E Apache St	177	63.10	1,464	$73,200
TU-525	W 11th St	178	63.05	1,270	$63,500

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-411	E Skelly Dr	179	62.96	1,134	$56,700
TU-490	Mohawk Blvd	180	62.86	4,743	$237,150
TU-501	E Skelly Dr	181	62.84	2,696	$134,800
TU-159	W Pine St	182	62.31	2,629	$131,450
TU-530	S Cincinnati Ave	183	62.03	3,472	$173,600
TU-514	E Skelly Dr	184	62.02	1,169	$58,450
TU-309	E 41st St S	185	61.92	253	$12,650
TU-136	E Apache St	186	61.75	821	$41,050
TU-84	E 21st St S	187	61.69	491	$24,550
TU-542	Southwest Blvd	188	61.65	298	$14,900
TU-153	Southwest Blvd	189	61.50	2,140	$107,000
TU-550	E Pine St	190	61.32	2,960	$148,000
TU-313	E 41st St S	191	61.25	323	$16,150
TU-349	E 33rd Ct	192	60.88	420	$21,000
TU-287	E 11th St S	193	60.81	2,642	$132,100
TU-343	E Admiral Pl	194	60.33	315	$15,750
TU-72	E Admiral Pl	195	60.22	822	$41,100
TU-545	E 1st St	196	60.15	354	$17,700
TU-244	N Memorial Dr	197	60.10	4,634	$231,700
TU-320	E Admiral Pl	198	59.95	1,689	$84,450
TU-155	S Yale Ave	199	59.91	4,592	$229,600
TU-157	Riverside Dr	200	59.74	1,754	$87,700
TU-415	E 91st St S	201	59.47	1,642	$82,100
TU-236	W 71st St S	202	59.35	277	$13,850
TU-391	W 41st St S	203	59.19	1,186	$59,300
TU-58	N Mingo Traffic Ci	204	59.15	1,043	$52,150
TU-141	E 38th St	205	59.14	381	$19,050
TU-422	E 61st St S	206	59.12	5,009	$250,450
TU-412	S Mingo Rd	207	59.01	1,108	$55,400
TU-242	N Mingo Rd	208	58.94	266	$13,300
TU-210	S Utica Ave	209	58.86	5,287	$264,350
TU-314	E 15th St S	210	58.77	1,325	$66,250
TU-355	E Admiral Pl	211	58.59	1,529	$76,450
TU-460	E Admiral Blvd	212	58.58	1,084	$54,200
TU-476	N 33rd West Ave	213	58.15	9,478	$473,900
TU-446	S Peoria Ave	214	58.10	371	$18,550
TU-537	S 33rd West Ave	215	57.88	1,629	$81,450
TU-158	N Lewis Ave	216	57.70	810	$40,500
TU-484	E Admiral Pl	217	57.15	345	$17,250
TU-524	E 41st St S	218	57.12	4,251	$212,550
TU-510	S Mingo Rd	219	56.98	2,284	$114,200
TU-74	E Admiral Pl	220	56.89	285	$14,250
TU-131	S Sheridan Rd	221	56.87	4,344	$217,200
TU-182	E 15th St	222	56.85	835	$41,750
TU-393	W 51st St S	223	56.52	2,789	$139,450
TU-170	W 41st St S	224	56.49	382	$19,100
TU-511	E 81st St S	225	56.21	4,736	$236,800

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-491	S 129th East Ave	226	56.16	3,642	$182,100
TU-451	S Harvard Ave	227	56.03	1,245	$62,250
TU-118	N Union Ave	228	55.87	561	$28,050
TU-144	N 33rd West Ave	229	55.83	858	$42,900
TU-122	E Skelly Dr	230	55.80	1,779	$88,950
TU-81	N Aspen Ave	231	55.73	1,069	$53,450
TU-71	S Lewis Ave	232	55.73	354	$17,700
TU-12	N 23rd St	233	55.53	110	$5,500
TU-55	S Mingo Rd	234	55.45	288	$14,400
TU-211	E Admiral Pl	236	55.07	288	$14,400
TU-150	E 41st St S	237	54.98	1	$50
TU-255	S Yale Ave	238	54.95	241	$12,050
TU-305	E 41st St S	239	54.95	1,054	$52,700
TU-130	Southwest Blvd	240	54.64	3,192	$159,600
TU-296	S Memorial Dr	241	54.62	2,671	$133,550
TU-46	S Elwood Ave	242	54.59	5,286	$264,300
TU-488	N Mingo Rd	243	54.46	251	$12,550
TU-2	E 46th St N	244	54.29	1,958	$97,900
TU-87	S 33rd West Ave	245	54.25	837	$41,850
TU-228	W 41st St S	246	54.09	2,408	$120,400
TU-229	E 41st St S	247	54.07	844	$42,200
TU-336	E 46th St N	248	53.91	1,954	$97,700
TU-110	N Aspen Ave	249	53.87	2,159	$107,950
TU-85	W 41st St S	250	53.67	1	$50
TU-424	S Delaware Ave	251	53.65	2,553	$127,650
TU-86	S Union Ave	252	53.64	3,685	$184,250
TU-541	State Highway 11	253	53.46	2,198	$109,900
TU-518	S Memorial Dr	254	53.43	880	$44,000
TU-546	S Union Ave	255	53.40	5,288	$264,400
TU-271	N Gilcrease Museum Rd	256	53.31	68	$3,400
TU-480	E 41st St S	258	53.29	7,555	$377,750
TU-515	Martin Luther King Jr Blvd	259	53.13	926	$46,300
TU-362	Riverside Dr	260	53.06	581	$29,050
TU-300	S 145th East Ave	261	52.88	1,648	$82,400
TU-146	E Omaha St	262	52.68	1,886	$94,300
TU-260	E 36th St N	263	52.66	1,399	$69,950
TU-509	N 23rd St	264	52.56	3,996	$199,800
TU-445	E 36th St N	265	52.51	705	$35,250
TU-126	S Memorial Dr	266	52.39	1,067	$53,350
TU-248	E 81st St	267	52.37	272	$13,600
TU-183	N 49th West Ave	268	52.31	612	$30,600
TU-98	S Atlanta Pl	269	52.27	568	$28,400
TU-5	State Highway 11	270	52.21	1,691	$84,550
TU-311	S Yale Ave	271	52.02	3,162	$158,100
TU-4	N Union Ave	272	51.82	3,627	$181,350
TU-127	Martin Luther King Jr Blvd	273	51.80	78	$3,900
TU-48	S 33rd West Ave	274	51.78	491	$24,550

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-208	Charles Page Blvd	275	51.63	1,108	$55,400
TU-14	S Harvard Ave	276	51.58	4,400	$220,000
TU-41	S Memorial Dr	277	51.50	1,290	$64,500
TU-341	S Memorial Dr	277	51.50	1,290	$64,500
TU-472	E 41st St S	279	51.47	377	$18,850
TU-65	Riverside Dr	280	51.39	5,677	$283,850
TU-93	S 145th East Ave	281	51.26	5,282	$264,100
TU-247	S Elwood Ave	282	51.25	5,896	$294,800
TU-375	N Lewis Ave	283	51.07	2,584	$129,200
TU-186	N 23rd St	284	50.98	765	$38,250
TU-57	S Mingo Rd	285	50.97	285	$14,250
TU-258	E Admiral Pl	286	50.94	674	$33,700
TU-359	S Harvard Ave	289	50.87	4,567	$228,350
TU-529	E 81st St S	290	50.83	1,601	$80,050
TU-63	S Cincinnati Ave	291	50.79	215	$10,750
TU-278	Martin Luther King Jr Blvd	292	50.78	2,654	$132,700
TU-133	E 51st St S	293	50.69	1,658	$82,900
TU-185	S Union Ave	294	50.61	4,415	$220,750
TU-353	S Memorial Dr	295	50.58	1,227	$61,350
TU-448	E 11th St S	296	50.44	684	$34,200
TU-173	E Skelly Dr	297	50.34	2,349	$117,450
TU-177	Charles Page Blvd	298	50.13	1,367	$68,350
TU-328	E 36th St S	299	50.06	2,407	$120,350
TU-540	Riverside Dr	300	49.96	2,016	$100,800
TU-64	S 33rd West Ave	301	49.91	657	$32,850
TU-69	E 91st St S	302	49.82	4,189	$209,450
TU-235	E Skelly Dr	303	49.70	2,689	$134,450
TU-254	W 46th St N	304	49.68	1,633	$81,650
TU-252	E 21st St S	306	49.44	5,287	$264,350
TU-539	E 51st St S	307	49.44	993	$49,650
TU-134	S Lynn Lane Rd	308	49.25	5,283	$264,150
TU-474	Dawson Rd	309	49.13	2,090	$104,500
TU-384	E 41st St S	310	49.09	1,436	$71,800
TU-559	State Highway 11	311	48.87	44	$2,200
TU-169	E 61st St S	312	48.83	235	$11,750
TU-502	E 61st St S	312	48.83	235	$11,750
TU-259	S Union Ave	314	48.76	201	$10,050
TU-246	N 77th East Ave	315	48.69	973	$48,650
TU-441	S Mingo Rd	317	48.42	151	$7,550
TU-47	W 71st St S	318	48.38	1,085	$54,250
TU-268	E 41st St S	319	48.33	761	$38,050
TU-380	Mohawk Blvd	320	48.29	873	$43,650
TU-13	S Lynn Lane Rd	321	48.24	5,275	$263,750
TU-470	S Lynn Lane Rd	322	48.24	144	$7,200
TU-105	N Sheridan Rd	323	47.91	5,734	$286,700
TU-468	S Harvard Ave	324	47.80	3,085	$154,250
TU-178	E 31st St S	325	47.46	284	$14,200

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-527	S Lynn Lane Rd	326	47.33	755	$37,750
TU-176	E 61st St S	327	47.29	1,497	$74,850
TU-112	S Garnett Rd	328	47.10	2,918	$145,900
TU-456	N Mingo Rd	329	47.03	419	$20,950
TU-325	S Mingo Rd	330	46.86	4,267	$213,350
TU-404	State Highway 11	331	46.77	404	$20,200
TU-90	N Yale Ave	332	46.45	1,872	$93,600
TU-399	S Memorial Dr	333	46.44	1,206	$60,300
TU-555	E 4th Pl	334	46.25	5,292	$264,600
TU-552	E Pine St	335	46.19	5,269	$263,450
TU-436	N Memorial Dr	336	46.18	1,011	$50,550
TU-381	Riverside Pky	338	46.02	2,474	$123,700
TU-288	S 193rd East Ave	339	45.97	445	$22,250
TU-276	E 21st St S	341	45.79	5,283	$264,150
TU-280	N Garnett Rd	342	45.75	417	$20,850
TU-307	E 41st St S	343	45.40	303	$15,150
TU-70	N 129th East Ave	344	45.31	168	$8,400
TU-192	N 129th East Ave	344	45.31	5,392	$269,600
TU-390	S 161st East Ave	346	45.30	5,265	$263,250
TU-113	E Apache St	347	45.20	1,190	$59,500
TU-261	E 31st St S	348	45.19	1,295	$64,750
TU-523	E 56th St N	349	45.14	642	$32,100
TU-101	N Yale Ave	350	44.86	3,624	$181,200
TU-327	S Delaware Ave	351	44.84	263	$13,150
TU-535	E 91st St S	352	44.72	216	$10,800
TU-40	W Apache St	353	44.48	419	$20,950
TU-164	E 36th St S	354	44.21	5,267	$263,350
TU-442	E 36th St N	355	44.20	5,247	$262,350
TU-205	State Highway 266	356	44.06	3,855	$192,750
TU-291	N Mingo Rd	357	43.97	4,124	$206,200
TU-469	S 101st East Ave	358	43.66	3,825	$191,250
TU-335	E Admiral Pl	359	43.44	1,871	$93,550
TU-238	W 41st St S	360	43.39	600	$30,000
TU-206	E Admiral Pl	361	43.33	2,559	$127,950
TU-279	S Harvard Ave	362	43.31	2,474	$123,700
TU-498	E Admiral Pl	364	43.23	274	$13,700
TU-557	E Admiral Pl	364	43.23	274	$13,700
TU-513	S Utica Ave	366	43.17	218	$10,900
TU-237	W 46th St N	367	43.05	28	$1,400
TU-398	E Pine St	368	43.03	2,864	$143,200
TU-9	S Lewis Ave	369	43.02	238	$11,900
TU-207	E 111th St S	370	42.79	3,933	$196,650
TU-356	Dawson Rd	371	42.33	501	$25,050
TU-354	S 33rd West Ave	373	42.14	552	$27,600
TU-106	S Union Ave	374	42.00	2,684	$134,200
TU-83	E 31st St S	375	41.99	1,549	$77,450
TU-319	W Main St	376	41.91	505	$25,250

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-330	W Main St	376	41.91	7	$350
TU-109	N Osage Dr	378	41.33	4,102	$205,100
TU-283	N Memorial Dr	379	41.31	1,004	$50,200
TU-114	S Hudson Ave	381	41.19	776	$38,800
TU-262	S Union Ave	383	41.06	1,274	$63,700
TU-315	E 31st St S	384	40.98	2,615	$130,750
TU-342	E Admiral Pl	385	40.96	395	$19,750
TU-517	E 21st St S	386	40.71	2,414	$120,700
TU-543	W 71st St S	387	40.53	495	$24,750
TU-379	Southwest Blvd	388	40.45	833	$41,650
TU-68	N Gilcrease Museum Rd	389	40.43	878	$43,900
TU-23	W 51st St S	391	40.40	827	$41,350
TU-553	E Admiral Pl	392	40.18	366	$18,300
TU-28	E Skelly Dr	393	40.08	3,174	$158,700
TU-66	S 225th East Ave	394	40.07	4,257	$212,850
TU-16	State Highway 266	396	39.49	3,854	$192,700
TU-44	S Mingo Rd	397	39.31	334	$16,700
TU-496	E 4th St	398	39.27	1,725	$86,250
TU-407	E 38th St	399	39.25	1,970	$98,500
TU-230	N Gilcrease Museum Rd	400	39.22	1,198	$59,900
TU-231	E Virgin St	401	39.22	878	$43,900
TU-475	W 51st St S	402	39.18	323	$16,150
TU-493	S Union Ave	403	39.12	1,142	$57,100
TU-92	N Garnett Rd	404	38.97	394	$19,700
TU-277	N Yale Ave	405	38.94	1,147	$57,350
TU-324	S Delaware Ave	406	38.93	1,194	$59,700
TU-61	E 56th St N	408	38.66	135	$6,750
TU-142	Gilcrease Museum Rd	409	38.63	5,596	$279,800
TU-332	E Virgin St	410	38.37	1,595	$79,750
TU-495	S 79th East Ave	411	38.32	1,277	$63,850
TU-425	E 101st St S	412	38.30	3,961	$198,050
TU-534	E 46th St N	413	38.29	5,068	$253,400
TU-99	S Mingo Rd	414	38.28	4,535	$226,750
TU-360	N Memorial Dr	415	38.20	93	$4,650
TU-152	E 38th St	416	38.04	1,904	$95,200
TU-452	N Garnett Rd	417	37.95	3,227	$161,350
TU-167	E 46th St N	419	37.73	5,069	$253,450
TU-32	S Union Pl	420	37.55	962	$48,100
TU-467	S Mingo Rd	421	37.46	955	$47,750
TU-463	S Utica Ave	422	37.26	2,190	$109,500
TU-388	E 36th St S	423	37.23	2,638	$131,900
TU-123	E Pine St	424	36.84	4,932	$246,600
TU-38	W Edison St	425	36.67	1,506	$75,300
TU-290	S Union Ave	426	36.61	785	$39,250
TU-489	E 51st St S	427	36.51	1,360	$68,000
TU-49	N 49th West Ave	429	36.37	2,284	$114,200
TU-272	E 121st St S	430	36.23	242	$12,100

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-137	N Mingo Rd	431	36.19	3,638	$181,900
TU-7	S 145th East Ave	432	36.18	5,277	$263,850
TU-95	E Pine St	433	36.12	1,971	$98,550
TU-25	State Highway 266	434	36.11	1,578	$78,900
TU-376	N 49th West Ave	435	36.08	2	$100
TU-538	S Yale Ave	436	36.06	2,361	$118,050
TU-440	N Mingo Rd	437	36.00	4,412	$220,600
TU-264	Gilcrease Museum Rd	439	35.94	3,915	$195,750
TU-180	W Edison St	440	35.74	773	$38,650
TU-298	N Aspen Ave	441	35.73	926	$46,300
TU-35	E Pine St	444	35.38	1,003	$50,150
TU-304	E Pine St	444	35.38	1,157	$57,850
TU-160	N 129th East Ave	446	35.36	4,868	$243,400
TU-117	N Mingo Rd	447	35.14	299	$14,950
TU-165	N Mingo Rd	447	35.14	526	$26,300
TU-386	E 31st St S	450	35.08	4,773	$238,650
TU-531	E Pine St	452	34.96	532	$26,600
TU-250	S Memorial Dr	453	34.91	223	$11,150
TU-339	N Mingo Rd	454	34.86	6,753	$337,650
TU-53	E 36th St N	456	34.79	3,172	$158,600
TU-50	N 41st W Ave	457	34.59	2,592	$129,600
TU-82	E 51st St S	458	34.51	2,765	$138,250
TU-321	Mohawk Blvd	459	34.50	821	$41,050
TU-358	State Highway 266	461	34.39	5,491	$274,550
TU-532	E 36th St N	462	34.36	2,464	$123,200
TU-174	N 53rd W Ave	463	34.32	7,841	$392,050
TU-156	W 61st St S	464	34.31	2,852	$142,600
TU-34	W 81st St S	465	34.30	1,587	$79,350
TU-308	S Union Ave	466	34.15	677	$33,850
TU-30	Riverside Dr	467	34.13	1,761	$88,050
TU-56	E 21st St S	468	33.89	5,290	$264,500
TU-224	W Newton St	469	33.86	878	$43,900
TU-163	S Elwood Ave	470	33.78	1,058	$52,900
TU-234	Martin Luther King Jr Blvd	471	33.69	1,047	$52,350
TU-397	W 81st St S	472	33.69	5,910	$295,500
TU-482	W 41st St S	473	33.67	144	$7,200
TU-36	S Sheridan Rd	474	33.64	1,289	$64,450
TU-161	E Pine St	475	33.52	5,270	$263,500
TU-202	W Apache St	476	33.46	2,482	$124,100
TU-294	E 31st St S	477	33.46	2,456	$122,800
TU-371	N Garnett Rd	478	33.35	5,275	$263,750
TU-293	W 51st St S	479	33.32	1,314	$65,700
TU-406	E 101st St S	480	33.19	2,247	$112,350
TU-560	N 49th West Ave	481	32.84	515	$25,750
TU-558	N Gilcrease Museum Rd	482	32.74	352	$17,600
TU-481	S 145th East Ave	484	32.60	3,638	$181,900
TU-125	E 121st St S	485	32.59	5,006	$250,300

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-522	E 101st St S	486	32.53	5,292	$264,600
TU-39	E 91st St S	487	32.44	4,415	$220,750
TU-10	E Admiral Pl	488	32.44	5,194	$259,700
TU-486	E 101st St S	489	32.40	3,322	$166,100
TU-385	N Aspen Ave	490	32.11	692	$34,600
TU-243	State Highway 11	492	31.66	1,747	$87,350
TU-111	E Port Rd	494	31.34	10,253	$512,650
TU-562	N Lewis Ave	495	31.22	50	$2,500
TU-333	57th West Ave	496	30.94	4,283	$214,150
TU-450	E 81st St S	498	30.78	1,679	$83,950
TU-322	W 81st St S	499	30.67	687	$34,350
TU-285	E Port Rd	500	30.64	10,251	$512,550
TU-189	S Elwood Ave	501	30.55	5,271	$263,550
TU-190	E 41st St S	502	30.45	4,773	$238,650
TU-403	E Apache St	503	30.29	2,649	$132,450
TU-76	S Lynn Lane Rd	504	30.27	756	$37,800
TU-138	E 36th St N	505	30.01	4,840	$242,000
TU-19	S Peoria Ave W	506	29.90	97	$4,850
TU-42	S Peoria Ave W	506	29.90	1,236	$61,800
TU-29	S Lynn Lane Rd	508	29.88	4,604	$230,200
TU-459	E Admiral Pl	509	29.86	5,278	$263,900
TU-119	E 91st St S	510	29.86	4,798	$239,900
TU-374	E 36th St N	511	29.84	2,702	$135,100
TU-3	N Garnett Rd	513	29.79	5,434	$271,700
TU-240	S Yale Ave	514	29.68	736	$36,800
TU-326	N 129th East Ave	515	29.64	5,185	$259,250
TU-363	E 31st St S	516	29.51	2,538	$126,900
TU-266	S Sheridan Rd	517	29.40	289	$14,450
TU-27	E Apache St	518	29.35	2,797	$139,850
TU-310	W 71st St S	520	28.96	4,778	$238,900
TU-561	State Highway 11	521	28.78	5	$250
TU-423	N 177th East Ave	522	28.65	517	$25,850
TU-251	S Delaware Ave	524	28.63	7,033	$351,650
TU-435	S Sheridan Rd	525	28.42	5,158	$257,900
TU-17	S 193rd East Ave	526	28.10	1,970	$98,500
TU-171	N Mingo Rd	527	27.93	2,124	$106,200
TU-232	S 145th East Ave	528	27.92	3,752	$187,600
TU-275	S Sheridan Rd	529	27.69	96	$4,800
TU-284	E 121st St S	530	27.67	1,834	$91,700
TU-195	Southwest Blvd	531	27.67	558	$27,900
TU-67	E Port Rd	532	27.66	1,005	$50,250
TU-433	E Port Rd	532	27.66	1,030	$51,500
TU-201	S Lynn Lane Rd	534	27.62	5,275	$263,750
TU-421	N 23rd St	535	27.48	4,919	$245,950
TU-203	E 31st St S	536	27.45	2,648	$132,400
TU-220	E 111th St S	537	27.41	5,282	$264,100
TU-554	E 31st St S	539	27.29	5,280	$264,000

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-516	W Apache St	540	27.15	2,580	$129,000
TU-148	S Delaware Ave	541	27.08	2,081	$104,050
TU-458	N 177th East Ave	542	27.02	39	$1,950
TU-316	N Harvard Ave	543	26.71	2,576	$128,800
TU-494	S Yale Ave	544	26.67	5,279	$263,950
TU-100	E 11th St S	545	26.66	5,287	$264,350
TU-45	W 81st St S	548	26.58	166	$8,300
TU-96	N 141st E Ave	549	26.07	5,642	$282,100
TU-128	E Port Rd	550	26.01	252	$12,600
TU-181	E Port Rd	550	26.01	252	$12,600
TU-430	S Elwood Ave	552	25.87	4,928	$246,400
TU-528	W 51st St S	553	25.84	3,258	$162,900
TU-505	E 31st St S	554	25.45	3,962	$198,100
TU-471	Riverside Dr	555	25.32	3,315	$165,750
TU-197	N 129th East Ave	557	25.20	4,651	$232,550
TU-60	E Apache St	558	24.94	3,472	$173,600
TU-512	E 11th St S	559	24.61	5,273	$263,650
TU-329	S 161st East Ave	560	24.50	4,554	$227,700
TU-405	S 145th East Ave	561	24.50	855	$42,750
TU-227	Mohawk Blvd	562	24.44	4,714	$235,700
TU-132	S 193rd East Ave	563	24.41	4,823	$241,150
TU-139	E 11th St S	564	24.37	8	$400
TU-500	E 11th St S	565	24.28	5,296	$264,800
TU-143	S 193rd East Ave	566	24.26	5,283	$264,150
TU-361	E 11th St S	568	24.06	10,117	$505,850
TU-487	S Elwood Ave	569	23.90	1,313	$65,650
TU-15	W 81st St S	570	23.89	5,269	$263,450
TU-302	E Admiral Pl	571	23.81	5,289	$264,450
TU-401	W Apache St	572	23.63	2,901	$145,050
TU-184	S Utica Ave	573	23.59	207	$10,350
TU-366	W 31st St N	574	23.43	4,011	$200,550
TU-556	E 31st St S	576	23.17	5,212	$260,600
TU-31	S 161st East Ave	578	23.13	92	$4,600
TU-33	S 161st East Ave	578	23.13	83	$4,150
TU-59	S 161st East Ave	578	23.13	83	$4,150
TU-102	S 161st East Ave	578	23.13	83	$4,150
TU-239	S 161st East Ave	578	23.13	92	$4,600
TU-499	S 161st East Ave	578	23.13	92	$4,600
TU-547	S 225th East Ave	584	23.11	4,686	$234,300
TU-292	S Lewis Ave	585	23.02	238	$11,900
TU-107	N 145th E Ave	586	22.82	12	$600
TU-256	N 145th E Ave	586	22.82	594	$29,700
TU-402	N Osage Dr	588	22.22	6	$300
TU-409	N Osage Dr	588	22.22	27	$1,350
TU-551	E 101st St S	591	22.16	1,729	$86,450
TU-140	E 21st St S	594	21.89	24	$1,200
TU-18	Mohawk Blvd	595	21.71	39	$1,950

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-372	E Admiral Pl	596	21.44	5,756	$287,800
TU-479	S 257th East Ave	597	21.10	5,265	$263,250
TU-124	N 41st W Ave	598	20.75	882	$44,100
TU-508	E Admiral Pl	599	20.63	10,244	$512,200
TU-365	N 225th E Ave	600	20.39	567	$28,350
TU-428	S Louisville Ave	601	18.93	5,284	$264,200
TU-370	W Apache St	602	18.12	399	$19,950
TU-191	N 41st W Ave	603	17.11	518	$25,900

D COST ESTIMATE DETAILS

Cost estimates for construction of recommendations were developed to complement the Plan. They were developed by identifying pay items and establishing rough per-mile quantities. Unit costs are based on 2015 dollars and were assigned based on historical cost data from Oklahoma Department of Transportation bid prices and the estimator's experience and judgement.

The costs shown reflect only the cost associated with construction of the particular bicycle facility indicated and do not reflect other costs that may be associated with a larger project such as signal timing assessment and design. Costs considered in the estimate include pavement markings, standard signage for the facility type, pavement, curb and gutter, limited grading, and sidewalk as appropriate. Landscaping, drainage improvements, maintenance of traffic, and utility adjustments were also considered as percentages of the calculated project cost, as appropriate. The costs are intended to be general and used for planning purposes. A 10 to 30 percent contingency is applied to the cost for each item based on the type of project. The component unit costs for each facility type are detailed in the first set of tables in this appendix.

It is worth noting a number of assumptions for particular facility types:

- Urban Signed Route v. Rural Signed Route: sign frequency for urban signed routes is assumed to be greater than rural ones owing to a greater density of turns and greater number of streets involved. Most rural signed routes in this Plan are along county roads and have a significantly lower density of turns.

- Trail v. Sidepath:
    - Both of these facilities are assume to be 10-foot asphalt paths.
    - Both facility costs include earthwork and excavation (sidewalk removal for sidepath), but the trail cost also includes grading and fill to account for a 20-foot wide disturbance in open land.
    - Both costs incorporate curb ramps and crosswalks at intersections, with a greater frequency assumed for the sidepath. The sidepath cost also includes driveway adjustments and raised crossings.
- Urban Signed Route, Shared Lane Marking, Priority Shared Lane Marking, Bike Lane and Buffered Bike Lane costs all include replacement of storm grates with bicycle-safe grates to ensure bicyclists' safety when riding along the road edge.
- The Cycle Track cost assumes a street-level facility separated from traffic by flexible delineators.
- Bike Lane, Buffered Bike Lane and Cycle Track costs include the cost for eradication of existing pavement markings. In many cases, the recommended facilities will be implemented as part of resurfacing programs, and this cost will not be applicable, but the goal was to provide a conservative (high) estimate.

It is also worth noting what is NOT included in these bicycle facility cost estimates:

- Signal adjustments including changes to signal timing or installation of new signals
- Intersection crossing treatments that may be necessary where a Signed Route on a local street crosses a major arterial at an unsignalized location
- Surveying, engineering design, right-of-way acquisition, addition of closed drainage systems, mobilization or future maintenance.

Construction costs will vary based on the ultimate project scope (i.e. combination with other projects) and economic conditions at the time of construction.

Live Excel files of these cost estimates have been provided to INCOG so costs may be scaled in future years and so elements may be altered as local designers see fit once a project moves to implementation.

Signed Route (Rural)
Includes: sign and post.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Sign Panel (Class I)	EA	3	$150.00	$396	1 Sign every 4000 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	3	$100.00	$264	
Subtotal				**$660**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$66.00	$66	
			Subtotal	**$726**	
			10% Contingency	$73	
			Total Estimated Cost	**$800**	→ **$0.15** **Per Linear Foot**

Signed Route (Urban)
Includes: sign and post.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Sign Panel (Class I)	EA	13	$150.00	$1,980	1 Sign every 800 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	13	$100.00	$1,320	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$15,268**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$1,527.00	$1,527	
			Subtotal	**$16,795**	
			10% Contingency	$1,680	
			Total Estimated Cost	**$18,500**	→ **$3.50** **Per Linear Foot**

Shared Lane Markings (Sharrows)
Includes: shared lane pavement marking at 250 foot spacing. No markings on existing roadway require removal.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Symbol	EA	42	$250.00	$10,560	1 Symbol every 250 feet per side of the road
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$27,528**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$2,753.00	$2,753	
			Subtotal	**$30,281**	
			10% Contingency	$3,028	
			Total Estimated Cost	**$33,400**	→ **$6.33** **Per Foot**

Priority Shared Lane Markings
Includes: shared lane pavement marking at 125 foot spacing with green color bracketing symbol. No markings on existing roadway require removal.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Symbol	EA	84	$250.00	$21,120	1 Symbol every 125 feet per side of the road
Green Bike Lane Paint	SF	5,069	$4.00	$20,275	6'x10' color at $325 per gal./100sf per gal. rounded to $4/sf
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$58,363**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$5,836.00	$5,836	
			Subtotal	**$64,199**	
			20% Contingency	$12,840	
			Total Estimated Cost	**$77,100**	→ **$14.60** **Per Foot**

Bike Lanes

Includes: bicycle lane markings in both directions with bicycle lane signs. Up to 2 traffic lane lines removed.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	21,120	$0.75	$15,840	4 solid lines entire length
Thermoplastic Pavement Marking Symbol	EA	53	$250.00	$13,200	1 Symbol every 200 feet, each side of road
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Eradication (Skip Lines)	LF	2,640	$0.50	$1,320	eradicate 2 skip lines
Replace Skip Lines	LF	2,640	$2.60	$6,864	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$54,192**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$5,419.00	$5,419	
			Subtotal	**$59,611**	
			20% Contingency	$11,922	
			Total Estimated Cost	**$71,600**	→ **$13.56** **Per Linear Foot**

Buffered Bike Lane

Includes: add buffer markings to existing roadway in both directions with bicycle lane signs. Eradicate and reinstall lane lines on road.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	25,608	$0.75	$19,206	2 solid lines entire length, each side of road, and gore for buffer
Thermoplastic Pavement Marking Buffer Lines (6")	LF	1,056	$1.00	$1,056	1 solid line, 4 feet long, every 40 feet
Thermoplastic Pavement Marking Symbol	EA	53	$250.00	$13,200	1 Symbol every 200 feet, each side of road
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Eradication (Skip Lines)	LF	2,640	$0.50	$1,320	eradicate 2 skip lines
Replace Skip Lines	LF	2,640	$0.75	$1,980	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$53,730**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$5,373.00	$5,373	
			Subtotal	**$59,103**	
			20% Contingency	$11,821	
			Total Estimated Cost	**$71,000**	→ **$13.45** **Per Foot**

Cycle Track - Retrofit with Flexible Delineators

Includes: Cycle Track with no widening. Note: Cost may be adjusted for some cycle track recommendations where design is intended to be two-way on one side of street.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	25,608	$0.75	$19,206	2 solid lines entire length, each side of road, and gore for buffer
Thermoplastic Pavement Marking Buffer Lines (6")	LF	1,056	$1.00	$1,056	1 solid line, 4 feet long, every 40 feet
Thermoplastic Pavement Marking Symbol	EA	53	$250.00	$13,200	1 Symbol every 200 feet, each side of road
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Eradication (Skip Lines)	LF	2,640	$0.50	$1,320	eradicate 2 skip lines
Replace Skip Lines	LF	2,640	$0.75	$1,980	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Flexible Delineators	EA	528	$58.00	$30,624	1 every 20' each side
Subtotal				**$84,354**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$8,435.00	$8,435	
			Subtotal	**$92,789**	
			30% Contingency	$27,837	
			Total Estimated Cost	**$120,700**	→ **$22.86** **Per Foot**

Sidepath

Includes: Removal of existing sidewalk for a 10' wide curb-side path with markings,signage, and intersection crosswalk/curb ramp improvements.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	1,320	$0.75	$990	1 dashed lines entire length
Sign Panel (Class I)	EA	18	$150.00	$2,640	2 Sign every 600 feet (back-to-back on one post)
Steel Sign Post (2x2 Inch Tubing)	EA	9	$100.00	$900	
Earthwork, Excavation	CY	3,911	$20.00	$78,222	10 wide disturbance / 2 feet depth (incl. sidewalk removal)
Aggregate Base Course	CY	1,956	$40.00	$78,222	10 feet width, 1 feet depth
Asphalt Surface Course	TON	587	$85.00	$49,867	10 feet width and 2" depth, 1.8 Ton/CY
Asphalt Base Course	TON	1,760	$70.00	$123,200	10 feet width and 0.5 feet depth, 1.8 Ton/CY
Geotextile Filter Cloth	SY	5867	$3.00	$17,600	
Intersection Treatments	EA	9	$4,000.00	$36,000	Assumed every 600' w/ curb ramps, raised crossings, & crosswalk markings
Driveway Adjustments	EA	10	$2,200.00	$22,000	Assumed every 500' w/ raised driveway crossings
Subtotal				**$409,641**	Note: Does not include signal upgrades
Lump Sum Items					
Landscaping (5%)	LS	1.00	$20,482.00	$20,482	
Drainage and E&S (10%)	LS	1.00	$40,964.00	$40,964	
Maintenance of Traffic (10%)	LS	1.00	$40,964.00	$40,964	
Utility Adjustments (10%)	LS	1.00	$40,964.00	$40,964	
			Subtotal	**$553,015**	
			30% Contingency	$165,905	
			Total Estimated Cost	**$719,000**	→ **$136.17** **Per Foot**

Trail

Includes: New path with markings and signage

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	1,320	$0.75	$990	1 dashed lines entire length
Sign Panel (Class I)	EA	10	$150.00	$1,500	1 Sign every 1000 feet, each side of path
Steel Sign Post (2x2 Inch Tubing)	EA	10	$100.00	$1,000	
Earthwork, Excavation, Grading, Fill	CY	7,822	$25.00	$195,556	20 wide disturbance / 2 feet depth
Aggregate Base Course	CY	2,347	$40.00	$93,867	12 feet width, 1 feet depth
Asphalt Surface Course	TON	704	$85.00	$59,840	12 feet width and 2" depth, 1.8 Ton/CY
Asphalt Base Course	TON	2,112	$70.00	$147,840	12 feet width and 0.5 feet depth, 1.8 Ton/CY
Geotextile Filter Cloth	SY	7040	$3.00	$21,120	
Intersection Treatments	EA	3	$1,250.00	$3,750	Assumed 3 every 1-mile segment. Curb ramps & crosswalk markings
Subtotal				**$525,462**	
Lump Sum Items					
Landscaping (5%)	LS	1.00	$26,273.00	$26,273	
Drainage and E&S (10%)	LS	1.00	$52,546.00	$52,546	
Maintenance of Traffic (5%)	LS	1.00	$26,273.00	$26,273	
Utility Adjustments (10%)	LS	1.00	$52,546.00	$52,546	
			Subtotal	**$683,100**	
			30% Contingency	$204,930	
			Total Estimated Cost	**$888,100**	→ **$168.20** **Per Foot**

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E

POLICY REVIEW SUMMARY

The project team reviewed planning and design standards for each community in the region. The following tables summarize the relevant code in these documents that pertains to the pedestrian and bicycling environment.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Bixby	Engineering Design Criteria Manual Sidewalk Design Standards Criteria	Design Standards * Minor Streets (25 mph) – 4 ft with a 6 ft setback * Collector Streets (35 mph) – 4 ft min with a 10 ft setback * Arterial Streets (40-60 mph) – 4 ft min with 10 ft min setback. All sidewalks need to be 4 inches thick	Provides minimum construction standards on all types of roadways. Includes setback widths to provide more comfortable pedestrian facilities.
Bixby	Engineering Design Criteria Manual Sidewalk Design Standards Criteria	No less than 3 ft from the outside curb line	Calls for the construction of buffers on sidewalks to provide at least 3 ft separation between pedestrians and adjacent traffic, making a more comfortable walking environment.
Bixby	Subdivision Regulations TITLE 12.3-2M	No pedestrian scale lighting required. Only requirements include: Lights shall be provided at each street intersection within or abutting the subdivision in accordance with the engineering design standards of the city.	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting
Bixby	Engineering Design Criteria Manual Sidewalk Design Standards Criteria	Property owners along sidewalk are responsible for maintenance.	Implies that property owners are required to clear their sidewalks of snow or other debris.
Bixby	Zoning Regulations SECTION 12.3-3	To be located along rear and side lot lines, underground unless topography doesn't allow it. * Utility - 17.5 ft perimeter around subdivision * Drainage - 100 year flow	Policy may help facilitate the implementation of a safe, continuous, and connected network of bicycle and pedestrian facilities.
Broken Arrow	Subdivision Code	Concrete sidewalks shall be constructed along both sides of every arterial street, collector street or minor street provided that there is no commercial activity (only 1 side) or there are industrial subdivisions	Requires the construction of sidewalks on both sides of all street types, resulting in a more connected sidewalk network.
Broken Arrow	Zoning Ordinance - Pedestrian Facilities Ordinance SECTION 5.5.4.C	Sidewalks shall be installed on both sides of all arterials, collector streets, and local streets (including loop streets and cul-de-sacs), and within and along the frontage of all new development or redevelopment.	Requires the construction of sidewalks on both sides of all street types, resulting in a more connected sidewalk network.
Broken Arrow	Engineering Design Criteria Manual	Design Standards: 1. Residential Streets – 4 feet 2. Industrial Streets – not required 3. Commercial Streets – not required 4. Arterial Streets - 5 feet	Provides minimum construction standards in different types of roadways, however does not require the construction of sidewalks on industrial or commercial streets, making pedestrian connectivity difficult in these areas.
Broken Arrow	Zoning Ordinance - Pedestrian Facilities Ordinance SECTION 5.5.4.C	Ped access and connections required if trail is located within one-quarter (1/4) mile of the site.	Requires that new developments provide pedestrian access/connection if located within 1/4 mile from existing trails.
Broken Arrow	Zoning Ordinance - Pedestrian Facilities Ordinance SECTION 5.3	At least two (2) points of access shall be provided per half mile.	Helps increase pedestrian/bicycle access to a development.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Broken Arrow	Engineering Design Criteria Manual	Design Standards: Locally Funded - 8 ft Federally funded - 10 Ft or as dictated by funding source	Locally funded trails will be a substandard width based on national guidance, whereas federally funded trails will provide adequate width.
Catoosa	Subdivision Ordinance	Sidewalks shall be required on both sides of all primary arterial, secondary arterial and residential collector streets, except where Residential Estates zoning has been approved.	Requires the construction of sidewalks along both sides of most street types.
Catoosa	Design Criteria for Stormwater, Erosion Control, Streets, Water and Sewer	Sidewalks may be required on both sides of local and collector streets except where Residential Single Family Estate District zoning has been approved. Design Standards include: Minimum 4 ft wide and 3.5 inches deep	Requires the construction of sidewalks along various street types. Provides minimum design standards for the construction of sidewalks.
Catoosa	Design Criteria for Stormwater, Erosion Control, Streets, Water and Sewer	ADA requirements rule. Ramps shall be constructed in accordance with standard details provided by the City	Requires the construction of curb ramps to be compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.
Catoosa	Subdivision Ordinance SECTION 4.1.4.B	Residential streets, excluding collector streets, shall be laid out so that their use by through-traffic is discouraged	Lack of through streets may help calm automobile traffic but also decreases access and connectivity for pedestrian and bicyclist travel.
Catoosa	Subdivision Ordinance SECTION 4.4-2	Performance bond in favor of the City in the amount of 150% of the estimated construction costs	Construction of sidewalks might not be required and in-lieu fees may be accepted. Sidewalk connectivity may be affected.
Collinsville	Zoning Code SECTION 1140 C	Pedestrian access to buildings shall be provided from rights-of-way and parking areas by means of a pathway leading to at least one public entrance.	Calls for the provision of pedestrian facilities to easily connect between different sites.
Coweta	Subdivision Regulations CHAPTER 4	Sidewalks shall be required on both sides of local and collector streets serving a residential subdivision, except where zoned Agricultural.	Does not require sidewalk construction on arterial streets serving a subdivision, which may impact access to destinations outside the development.
Coweta	Subdivision Regulations CHAPTER 4	No less than 3 ft from the outside curb line. A green belt of no less than 2 feet between the street pavement and the sidewalk.	Calls for the construction of buffers on sidewalks to provide at least 3 ft separation between motorists and pedestrians.
Coweta	Subdivision Regulations CHAPTER 4	Sidewalks must provide personal access for safe and convenient movement across curbs of physically handicapped persons, including those persons in wheelchairs. All sidewalks must conform to the Americans with Disabilities Act (ADA) requirements.	Requires the construction of sidewalks and curb ramps to be compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Coweta	Subdivision Regulations SECTION 4.3.11	Minor streets shall be arranged so that their use by through traffic will be discouraged. Industrial and commercial streets shall not inject non-residential traffic into residential area. The arrangement of streets within a subdivision shall, except for cul-de-sacs, connect with streets already dedicated in adjoining subdivision or provide for future connections to adjoining unplatted tracts	Lack of through streets may help calm automobile traffic but also decreases access and connectivity for pedestrian and bicyclist travel.
Coweta	Subdivision Regulations CHAPTER 5	No pedestrian oriented lighting is required. Subdivider shall provide adequate street lighting in the subdivision to the specifications of the City Engineer and Technical Advisory Committee.	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting.
Coweta	Subdivision Regulations CHAPTER 5	Design speed shall be 25 miles per hour on all residential streets and 30 miles per hour on all collector streets.	Policy may help reduce the number of crashes resulting in injury and fatality for motorists, pedestrian, and bicyclists.
Glenpool	Engineering Design Criteria	Public sidewalks shall be required on both sides of local and collector streets serving a single family or multifamily residential subdivision, except on projects where Residential Estate (RE) zoning has been granted. Individual homebuilders shall be required to construct sidewalks as part of any residential building project fronting onto a public street. In general, public sidewalks in residential subdivisions shall be constructed within the dedicated street right-of-way, parallel to, and not less than one (1) foot from the outside right-of-way line, or no less than three (3) feet from the back of curb line on the adjacent street. Design Standards: Minimum 4ft wide and 4 inches deep	Requires the construction of sidewalks along various street types. Provides minimum design standards for the construction of sidewalks.
Glenpool	Zoning Ordinance	All sidewalks shall conform to and be in compliance with the Americans with Disabilities Act (ADA) requirements and standards.	Requires the construction of sidewalks to be compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.
Glenpool	Engineering Design Criteria	No required pedestrian scale lighting. Installation should be done by developer and submitted for review to the City. City does not accept maintenance responsibility or the cost of operation along PRIVATE streets	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting
Glenpool	Engineering Design Criteria ARTICLE 5.5.1.B	The subdivider shall be allowed to submit to the City Engineer certified Performance Bonds or a Letter-of-Credit issued to the City of Glenpool by a banking institution acceptable to the City. Any such Performance Bonds or Letters-of-Credit shall guarantee such installation of improvements in amounts equal to one hundred (100) percent of the Engineers Estimate of Cost.	Construction of sidewalks might not be required and in-lieu fees may be accepted. Sidewalk connectivity may be affected.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Jenks	Zoning Code SECTION 940.3.E.b	Where pedestrian routes cross driveways or vehicular access aisles, a continuous raised crossing composed of a different paving material shall be provided. Pedestrian circulation routes shall be a minimum of eight feet in width.	Provides for the construction of continuous pedestrian facilities across vehicle access alerting drivers to pedestrians' presences and potentially helping avoid conflicts.
Jenks	Zoning Code SECTION 940.3.E.a; SECTION 1160.B.2.c	Pedestrian linkages shall be designed with development to connect to the public infrastructure. Linkages shall be a continuation of the public infrastructure to reduce dead-end paths and encourage users to directly access the development. Consideration shall be given to off-site destinations in the design of the on-site pedestrian system. Locations along or near to the proposed routes of the Jenks Trail System should be encouraged to provide for pedestrian, bicycle access to the System.	Calls for the provision of pedestrian facilities to easily connect between different sites. Encourages developers to provide for pedestrian and bicycle access to the Jenks Trail System when new development is close to the existing facility.
Jenks	Zoning Code SECTION 940.3.B.c.3	Pedestrian-scale elements such as canopies, awnings, porches, building overhangs and arcades, and outdoor seating are required along pedestrian-oriented streets.	Calls for the provision of comfortable and amenable pedestrian related facilities along pedestrian-oriented streets.
Jenks	Zoning Code (Town of Jenks) SECTION 940.3.E.d	Pedestrian facilities along building frontages and developments shall incorporate rain protection and boulevard landscaping whenever possible. When such facilities are provided, special attention shall be given to ensure pedestrian safety, security and convenience by not creating enclosed spaces that may shelter potential criminal activity.	Requires amenities where possible that will make pedestrian experience more comfortable.
Jenks	Zoning Code SECTION 940.3.E.d	Appropriate lighting shall be incorporated whenever possible	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting.
Jenks	Zoning Code SECTION 940.3.F	Site Design Requirements - the intent of this subsection is to promote a high level of accessibility for pedestrians to structures within a development and to create a welcoming streetscape; to provide spaces for civic interaction; to increase the pedestrian accessibility of developments from the street; and to foster a sense of community identity and arrival within developments.	May help increase street connectivity and encourage more people walking and biking.
Jenks	Zoning Code SECTION 1260.B.3.d	Any of the following conditions may be imposed as conditions of approval to assure compatibility of the proposed development with the surrounding area... Street dedication and improvements or bonds in lieu of improvements.	Construction of sidewalks might not be required and in-lieu fees may be accepted. Sidewalk connectivity may be affected.
Owasso	Subdivision Regulations SECTION 3.2.5	Minor streets shall be arranged so that their use by through traffic will be discouraged. Industrial and commercial streets shall not inject non-residential traffic into residential areas. The arrangement of streets within a subdivision shall, except for cul-de-sacs, connect with streets already dedicated in adjoining subdivisions or provide for future connections to adjoining unplatted tracts.	Lack of through streets may help calm automobile traffic but also decreases access and connectivity for pedestrian and bicyclist travel.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Owasso	Zoning Code SECTION 9.2.1.E	Bicycle parking shall be provided as shown in Table 9.1. Bicycle parking shall be provided in a bike rack or other structure affixed to the ground that holds a bicycle vertical and allows a lock or chain to be connected from the bike to the rack. A minimum of two (2) bicycle spaces shall be provided for any business requiring bicycle parking.	When applied in new development, will result in provision of bicycle parking, but no design standards are provided. The minimum may be too little if bicycling grows.
Owasso	Zoning Code SECTION 860.4.9.G	All buildings, parking areas, public spaces, amenity features, and adjoining developments of similar use, shall be linked with sidewalks. Sidewalks shall be provided along public streets that provide access to the development. Sidewalks shall be constructed in accordance with the standards for sidewalks as set forth in City of Owasso Engineering Standards.	Requires developers to construct and provide adequate pedestrian friendly facilities throughout new developments and alongside public streets linking to the development. Links construction standards to local Engineering requirements.
Owasso	Subdivision Regulations SECTION 3.4	Sidewalks shall be installed along both sides of all streets in all zoning categories except industrial. The design and location shall be in accordance with the Owasso Design Criteria. Subdivisions shall include sidewalks located in such a manner that pedestrian access is provided to adjacent land. Subdivisions in RE Residential and AG Agricultural zoning districts are not required to have sidewalks if the development contains a pedestrian trail in a common area or reserve area connecting the development with adjacent properties.	Requires developers to construct sidewalks on both sides of all streets except in industrial areas, resulting in a more connected pedestrian network.
Owasso	Construction and Engineering Standards STR-07	Construction Standards for sidewalk varies 4' TO 5' (Curb, Gutter and Sidewalk)	Provides minimum standards on the construction of sidewalks. To increase ADA accessibility, standard should be raised to 5' minimum.
Owasso	Construction and Engineering Standards SECTION 2403.6	All sidewalk construction shall conform to the American's with Disabilities Act (ADA) Sidewalk cross slopes at driveways shall not exceed 2%	Existing policy helps increase accessibility for people with disabilities.
Owasso	Zoning Code SECTION 20.4.4	All buildings, parking areas, public spaces, amenity features, and adjoining developments of similar use, shall be linked with sidewalks. Sidewalks shall be provided along public streets that provide access to the development. Sidewalks shall be constructed in accordance with the standards for sidewalks as set forth in City of Owasso Engineering Standards.For parking lots in excess of 250 spaces a pedestrian landscape island (see Figure 20-6) containing a sidewalk shall be installed for the entire length of a parking aisle. Said island shall align with the main entrance to the building, shall be bounded on both ends by perpendicular landscape islands, shall be a minimum of at least sixteen (16) feet wide with a five (5) foot sidewalk in the middle OR twelve (12) feet wide with a five (5) foot sidewalk along one side.	By requiring standards for sidewalks and pedestrian landscape islands, policy is helping provide safe and continuous pedestrian facilities.
Owasso	Subdivision Regulations SECTION 3.7.1	Blocks for residential use shall normally not exceed one thousand three hundred twenty (1320) feet in length. When such a block exceeds eight hundred (800) feet, the City of Owasso may require a dedicated easement not less than fifteen (15) feet in width and a paved crosswalk according to ANSI standards to provide pedestrian access across the block.	Encourages the development of short blocks. By reducing the block length, the existing policy might help encourage people to walk and bike throughout the city.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Owasso	Zoning Code SECTION 20.10.4.4	Within residential subdivisions, the maintenance of street trees in planting strips between curbs and sidewalks which are within the street right-of-way shall be the responsibility of the respective homeowners association, or the abutting homeowner, in the absence of a homeowners association.	Including landscaping is an important element to providing a safe and pleasant bike/pedestrian experience along corridors. As it is written, the code is not clear on who is responsible for clearing out debris or dead vegetation along the right of way, which may create difficult conditions for people on bicycles and walking.
Owasso	Subdivision Regulations SECTION 3.5.1	In the dedication of easements and rights-of-way, the developer shall stipulate that no building, structure, or other above or below ground obstruction shall be placed, constructed, installed or permitted on sucheasement or rights-of-way shown in such a manner that will interfere with the installation,	Policy may help facilitate the implementation of a safe, continuous, and connected network of bicycle and pedestrian facilities.
Regulations	Subdivision Regulations TITLE 12.3-2N	Concrete sidewalks shall be constructed along both sides of every arterial street, collector street or minor street provided that there is no commercial activity (only 1 side) or there are industrial subdivisions	Requires the construction of sidewalks along some street types, but specifically does not require sidewalks on both sides in commercial areas, which will result in a disconnected network in areas needing pedestrian access.
Sand Springs	Subdivision Regulations SECTION 16.20.030.D	Sidewalks shall provide for safe and convenient access for persons with disabilities, including those persons in a wheelchair. Curb ramps shall be constructed in accordance with standard details provided by the City Engineer;	Requires the construction of sidewalks and curb ramps to be compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.
Sand Springs	Subdivision Regulations SECTION 16.20.010.D	Residential streets shall be laid out so that their use by through traffic will be discouraged.	Lack of through streets may help calm automobile traffic, but also decreases access and connectivity for pedestrian and bicyclist travel.
Sand Springs	Subdivision Regulations SECTION 16.20.050	Length. Block lengths in residential areas shall not be greater than fifteen hundred (1,500) feet. In those cases where length of the block exceeds one thousand (1,000) feet, the planning commission may require easements for pedestrian ways through the block which shall have a minimum width of ten (10) feet and a paved sidewalk constructed in accordance with the engineering design criteria and these regulations.	Encourages the development of short blocks. By reducing the block length, the existing policy might help encourage people to walk and bike throughout the city.
Sand Springs	Subdivision Regulations SECTION 16.20.030.E	The planning commission may require (in order to facilitate pedestrian access to schools, parks, playgrounds) perpetual unobstructed easements of not more than ten (10) feet wide to provide adequate pedestrian circulation. Such easements shall be shown on the plat. (Subdivision Regulations § 4.3)	Policy may help facilitate the implementation of a safe, continuous, and connected network of bicycle and pedestrian facilities.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Sand Springs	Subdivision Regulations SECTION 16.20.030; SECTION 16.20.010.D	All sidewalk layouts and designs for primary and secondary arterial streets, the central business district and other commercial and industrial areas shall be furnished by the City Engineer; Sidewalks shall be required on both sides of all primary and secondaryarterial streets, commercial and industrial collectors and on both sides of minor andcollector streets serving a residential subdivision except where the typical pavement section provides for a shoulder and borrow ditch (no curb) or where residential estates (RE) zoning has been allowedThe street and sidewalk system of a subdivision shall be appropriately designed and related to the proposed land use.	Requires the construction of sidewalks along both sides of various street types. Requires the City Engineer to provide sidewalks on different street types.
Skiatook	Zoning Regulations (2011 Code) TITLE 7.5.6; TITTLE 8.2.4.D AND F	No bicycle parking requirements. No person shall park a bicycle upon a street or upon the sidewalk in such manner as to impede pedestrian or vehicular traffic. It shall be unlawful for any person in a public park or recreation area to: D. Leave a bicycle in a place other than a bicycle rack when such is provided and there is space available. F. Leave a bicycle lying on the ground or paving or set against trees or in any place or position where other persons may trip over or be injured by it.	As code is currently written, it might discourage the use of bicycling by preventing people from parking their bicycle on various places throughout the City.
Skiatook	Zoning Regulations ORDINANCE 2003-14, 10-14-2003 (TITLE 12.7.G.2-5)	Sidewalks shall be required on both sides of local and collector streets serving a residential subdivision, except where agriculture (AG), and residential estate (RE) zoning has been allowed. Design Requirements/Standards: The finished thickness of portland cement concrete sidewalks shall not be less than four inches (4") and the width shall not be less than four feet (4'). (TITLE 12.7.G.4) Sidewalks shall be no less than six feet (6') from the outside curb line of the street pavements. (TITLE 12.7.G.5)	Requires the construction of sidewalks along both sides of local and collector street types but not arterials. Provides minimum design standards for the construction of sidewalks, including a wide buffer area.
Skiatook	Zoning Regulations TITLE 12.7.G.6	Sidewalks must provide personable access for the safe and convenient movement across curbs of physically handicapped persons, including those persons in wheelchairs. Wheelchair ramps shall be constructed in accordance with standard details provided by the city engineer's office.	Calls for the construction of sidewalks that are compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.
Skiatook	Zoning Regulations (City of Skiatook) ORDINANCE 99-01, 1-26-1999; TITLE 12.7.6.I.I; AND TITLE 12.7.6.1.2	No lighting requirements. The city shall not assume maintenance and operation costs of streetlights installed as a part of the original subdivision for security purposes, should status change occur (i.e., annexation). 2. The city shall plan the location of streetlights in all new subdivisions upon receiving an official "preliminary" plat of the subdivision for review.	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Tulsa	Zoning Code SECTION 55.060; SECTION 55.060-C.1: SECTION 55.060-2	Bicycle parking requirements are included in TABLE 55.3 (Bicycle Parking) DESIGN: Required short-term bicycle parking spaces must: (1) consist of bike racks or lockers that are anchored so that they cannot be easily removed; (2) be of solid construction, resistant to rust, corrosion, hammers, and saws; (3) allow both the bicycle frame and the wheels to be locked with the bicycle in an upright position using a standard U-lock; (4) be designed so as not to cause damage to the bicycle; (5) facilitate easy locking without interference from or to adjacent bicycles; and (6) have minimum dimensions of 2 feet in width by 6 feet in length, with a mini-mum overhead vertical clearance of 7 feet.	Provides model guidelines for the design of bicycle parking facilities. Could have implications on private development and their parking requirements and the way people park their bicycles.
Tulsa	Complete Streets Manual Appendix A.2.3	The minimum width for a bicycle lane next to a parked car is 5 feet, with a recommended width of 6 feet.	Provides good minimum standards for bike lanes. Aligns local standards to federal standards (AASHTO Bike Guide).
Tulsa	Infrastructure Development Process Manual SECTION 502.8.1	The design of sidewalk includes all required infrastructure such as water, sanitary sewer, stormwater drainage structures, streets and sidewalks, and other facilities as required.	Provides for the construction of sidewalks in relation to stormwater drainage and other facilities.
Tulsa	Zoning Code SECTION 65.030-C.2.b	No requirements on pedestrian scale lighting. Allowable heights of light fixtures must be measured from the light-emitting sur-face to finished grade at the base of the pole. Maximum allowed light fixture heights are based on the (ground-level) horizontal distance between the light pole and any agricultural or residential zoning district or public right-of-way, as established in Table 65-1.	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting.

INCOG Regional Partners — Regional Solutions

2 West Second Street Suite 800 | Tulsa, OK 74103 | 918.584.7526 | www.INCOG.org

March 29th, 2017

Matt Liechti
P.E., CFM | Planning and Coordination Manager
City of Tulsa Engineering Services Department
2317 S. Jackson Ave.
Tulsa, OK 74107

RE: GO Plan Modification for the City of Tulsa

Dear Matt,

In response to your request for a GO Plan modification, INCOG presented the change request to both the Technical Advisory and Transportation Policy committee for consideration to change the regional GO plan.

Both committees have approved the submitted request. The request is for a signed route that connects neighborhoods spread from LaFortune Park to the South of the Creek Turnpike.

The map is attached for reference.

If you need any further assistance let us know.

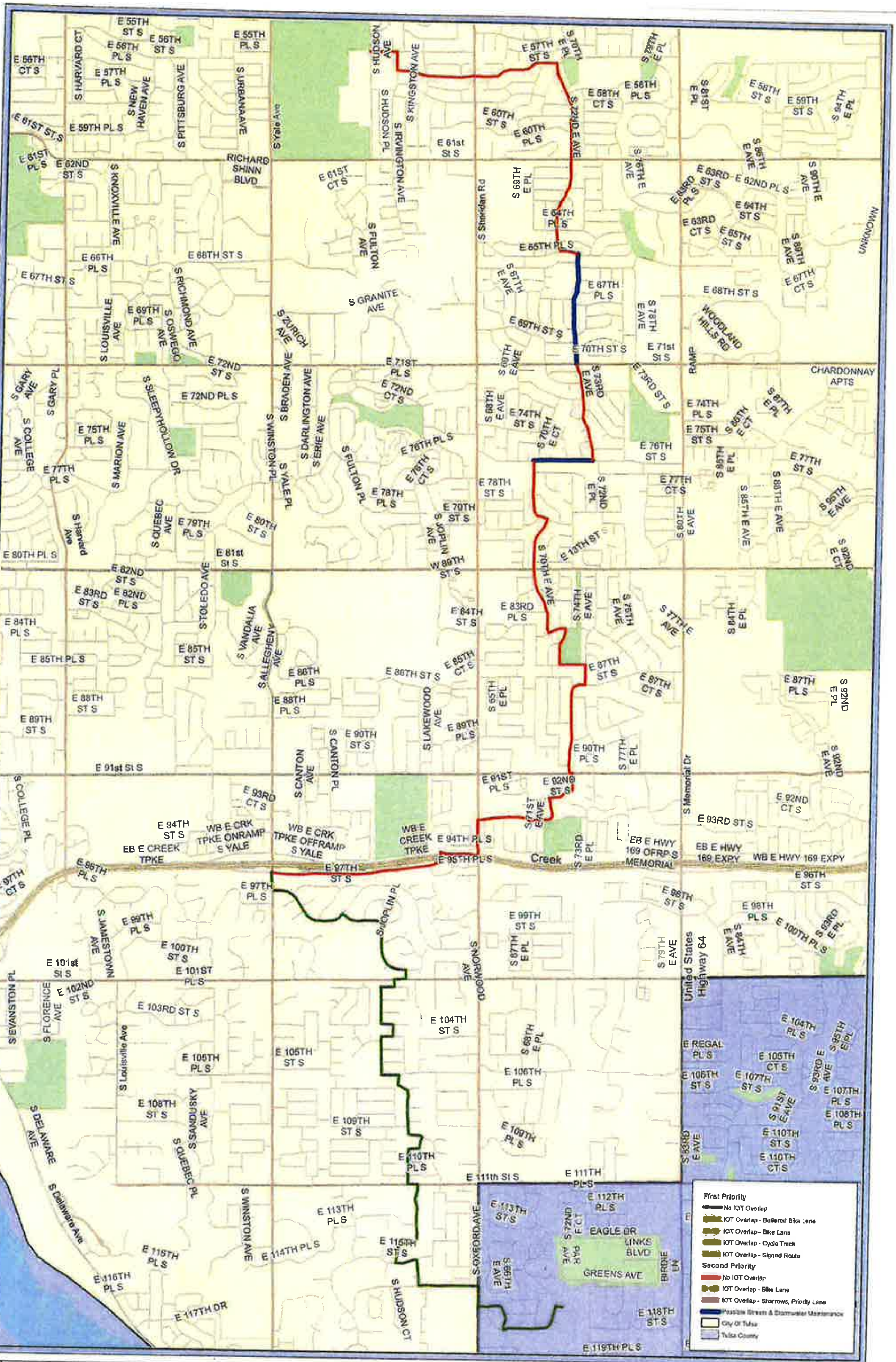
Sincerely,

Viplava Putta

Viplava Putta
Transportation Manager

CC: Jennifer Haddaway

9-33



Bicycle and Pedestrian Master Plan Implementation
South Tulsa - GO Plan with IOT Projects

THE TULSA REGIONAL

Bicycle and Pedestrian Master Plan

Recommended for adoption by the Transportation Technical Committee: November 18, 2015

Adopted by the Transportation Policy Committee: December 2, 2015

Endorsed by the INCOG Board of Directors: December 8, 2015

ACKNOWLEDGMENTS

MEMBERSHIP LISTING FOR INCOG

Transportation Technical Committee and Technical Policy Committee

	TTC	Liann Alfaro, *Tulsa Transit*
	TTC	Bill Bell, *Federal Aeronautics Association*
TPC		Doug Bonebrake, *City of Owasso - Ward 5*
TPC		Rich Brierre, *INCOG*
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Jared Cottle, *City of Bixby*

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CONTENTS

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1 INTRODUCTION

The Indian Nations Council of Governments (INCOG) and its member jurisdictions are seeking to change the norm for travel in the region by overcoming current challenges to active transportation with smart design and implementation of facilities for pedestrians and bicyclists. As the regional transportation planning body, INCOG provides a vision for transportation, administers funding programs and provides member jurisdictions with resources to plan and implement projects at the local level. This Plan is part of that suite of resources and equips member jurisdictions with:

- Bicycle network recommendations,
- Pedestrian design approaches,
- Policy and funding recommendations, and
- Design guidance.

Each element of this plan will help the 11 cities involved make walking and bicycling safe, comfortable and convenient for its residents and visitors.[1] Taken as a whole, the GO Plan provides a clear path toward achieving this vision for all communities in the region.

1 The 11 communities are: Bixby, Broken Arrow, Catoosa, Collinsville, Coweta, Glenpool, Jenks, Owasso, Sand Springs, Skiatook and Tulsa.

Plan Vision and Goals

The vision:

The Tulsa metropolitan area is a place where walking and biking are viable and appealing choices for transportation and recreation. Safety, comfort and convenience for users are addressed along roads, at crossings, on multi-use trails and at key destinations.

This powerful vision to make the Tulsa area a great place for walking and biking for everyone was conceived by community members and leaders during an 18-month planning process to create the GO Plan, the region's first comprehensive bicycle and pedestrian plan. This vision and the goals stated below were developed early in the planning process in concert with the project steering committee which includes representatives from all 11 participating communities.

The vision for bicycling and walking in the Tulsa region guided development of the plan process and the goals and recommendations included in this report. They achieve the vision through the following strategy:

1. Make bicycling and walking *viable* options through connected networks of facilities
2. Make bicycling and walking *appealing* options through facilities that provide a level of design that makes them safe, comfortable and convenient for the widest possible range of users

The goals:

Goal 1: Implement and maintain a **connected network** of walking and bicycling facilities focusing on linking destinations to neighborhoods.

Goal 2: **Improve safety and security** for all users of the transportation system by applying strategies that reduce fatal and injury crash rates in the Tulsa metropolitan area.

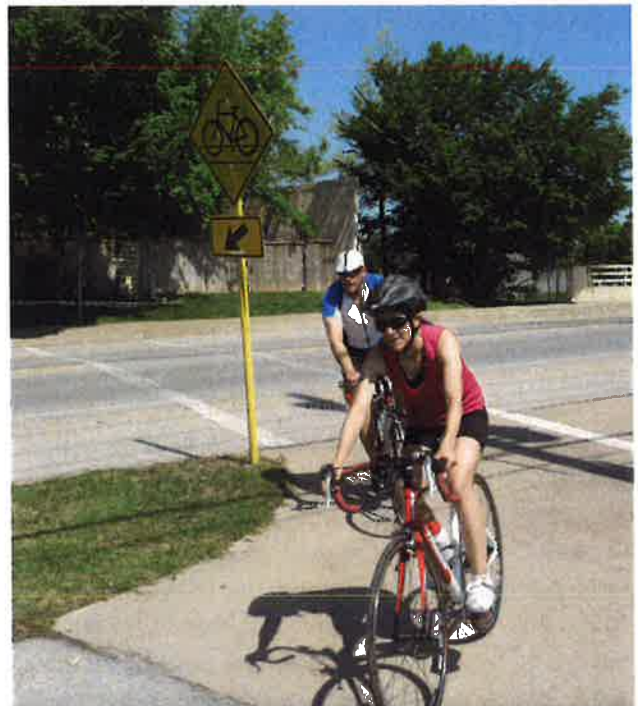
Goal 3: Establish or increase local bicycle and pedestrian **mode share goals** across the Tulsa metropolitan area with target milestones for 2017 and 2022.

Goal 4: Develop implementation of **public education campaigns and programs** that include targeted efforts for law enforcement, students, traditionally underserved populations and other key stakeholders with target outreach goals set for 2017.

Goal 5: Position Tulsa and the surrounding areas as officially **recognized Walk and Bicycle Friendly Communities** by engaging or continuing efforts to achieve status with the national certification programs applicable to walk and bicycle friendliness.

Goal 6: Pursue **funding toward bicycle and pedestrian infrastructure** within local transportation funding bond and sales tax packages.

The Brookside commercial district in Tulsa feautres pedestrian amenities such as curb extensions, street trees and a lower speed limit.


Area residents enjoy access to long-distance trails such as the Creek Turnpike Trail for recreation and transportation.

Plan Purpose and Scope

The GO Plan is a regional pedestrian and bicycle plan. It does not provide the same level of detail that a city-scale plan would, but instead seeks to create a bicycle network that connects major destinations in the region. These destinations include significant employment centers, downtown business districts, schools and universities, and the existing trails system. Although the plan provides a list of bicycle network projects and prioritizes arterial sidewalk gaps, it is not a comprehensive master plan for each community. Pedestrian improvements are addressed through recommendations in a community-chosen focus area in each jurisdiction and through design approaches to typical pedestrian challenges in the region. Implementation of the facility recommendations will be an important start to improving pedestrian and bicycling conditions, but the routine application of the Plan's design guidelines for each mode will have an even greater impact over the long term. The design guidelines are included in Appendix A.

The Benefits of Walking and Biking for the Tulsa Region

Improving walking and bicycling conditions in the Tulsa region can foster economic development, improve health, increase safety and provide additional transportation options for residents.

Cities around the country are recognizing the attractive force of livable places.[2] Communities that are walkable and bikeable for the majority of their residents are seeing rising property values and increases in population.[3] The Tulsa Young Professionals (TYPros) group has seen this national trend and is pushing the city forward by encouraging a focus on creating more pedestrian and bike friendly streets. The 2014 StreetCred event temporarily transformed a street to put the focus on people instead of traffic and showed residents the possibilities when space is reallocated. The City of Broken Arrow has also recognized the importance of creating a better

2 http://www.realtor.org/sites/default/files/reports/2013/2013-community-preference-analysis-slides.pdf

3 http://www.advocacyadvance.org/site_images/content/Final_Econ_Update(small).pdf

walking environment and recently revamped its downtown streetscapes in the Rose District, leading to a more vibrant area that attracts visitors and retains residents. New businesses attracted to the revitalized neighborhood by $3.7 million in streetscape improvements are already contributing to a 120-percent increase in tax revenues in the district.[4] Other communities in the region can look to these examples to see the power of creating streets that not only move people but create a place where they want to spend time.

Existing trails in the region are already immensely popular with thousands of bicyclists and pedestrians using trails weekly, and improving access to them for bicyclists and pedestrians will enable more residents to use them without needing to get in a car. The Master Trails Plan adopted by INCOG in 1999 set a vision for the development of a robust trail system that reaches and connects all communities. The facilities that have been built as a result of that plan are designed to be comfortable for all types of users from families out for a Sunday walk to running groups to bicyclists on a long ride.

Low-Stress Bicycle Facilities

Low-stress bicycle facilities include low-speed and low-volume streets with comfortable crossings, cycle tracks or sidepaths on major roads, and paved trails. These streets and off-street facilities are comfortable for the full range of bicyclists—including children and inexperienced riders—and are more likely to encourage greater numbers of people to bicycle. The Tulsa region has the backbone of a low-stress bicycle network with paved trails such as the KATY Trail and Creek Turnpike Trail. While many low-stress neighborhood streets exist, they are disconnected by busy arterial street barriers.[5]

The regional trail system provides opportunities to improve community health through increased physical activity. This is another reason the Tulsa region wants to make walking and bicycling easier and safer beyond trails. Residents who live in communities with opportunities for physical activity nearby are more active.[6] These opportunities can be as simple as a sidewalk network that connects work to a lunch destination, or a safe, comfortable bike route on local streets that connects home to a local grocery store.

Improving pedestrian and bicyclist safety is also a critical element for improving community health. From 2009 to 2014, there were 815 pedestrian and 363 bicycle crashes reported in the region.[7] Most occurred on the high-speed, high-volume arterial streets that connect major destinations in the region and are also the location of much of the commercial development throughout communities. People do and will want to access these stores on foot and by bicycle, so providing adequate facilities for these modes will improve safety.

Enabling and encouraging travel by foot and bicycle can also help take burdens off the roadway system by decreasing the number of necessary car trips. As the Tulsa region grows, automobile traffic will continue to increase. Further investments in the roadway system to increase automobile capacity can require substantial investment by communities, but these may be reduced or avoided through shifting more trips away from single-occupancy automobiles. The region has already recognized the value of improving its transit system with on-going implementation of Fast Forward, the regional transit system plan adopted by INCOG in 2011. The project team recognized that every transit rider is a pedestrian at both ends of his or her trip. Implementation of the GO Plan recommendations will complement and maximize these improvements by providing better first and last mile access to transit stops.

4 http://www.tulsaworld.com/communities/brokenarrow/news/broken-arrow-s-rose-district-blossoming/article_ca17b50c-9191-53c2-97be-0ccc6055e473.html

5 The Level of Traffic Stress analysis conducted for this plan is detailed in Chapter 3.

6 http://www.hsph.harvard.edu/obesity-prevention-source/obesity-causes/physical-activity-environment/

7 Crash data compiled by Oklahoma Department of Transportation from local police department reports.

Support for Walking and Biking in Existing Plans

Numerous plans developed for the Tulsa region and individual communities have called for and supported improved conditions for pedestrians and bicyclists. In particular, the Connections 2035 Regional Transportation Plan, which was completed in 2012, called for the development of a regional bicycle and pedestrian master plan. The Connections 2035 plan touched on a number of elements that have been further developed in the GO Plan:

- Incorporation of pedestrian and bicyclist needs into the land development process through:
  - Acquisition of trail easements
  - Aditional sidewalk connections, and
  - Acommodation at planned transit stops
- Improved connections between regional trails and neighborhoods
- Consistent application of pedestrian and bicycle facility design standards
- Trail improvements including lighting, maintenance and wayfinding
- Use of context sensitive design to improve the pedestrian and bicycling environment

The GO Plan also builds on the bicycle and pedestrian planning effort of the 1999 Trails Master Plan by integrating that Plan's off-street trail recommendations with new on-street bikeway recommendations to make region-wide connections.

Recent comprehensive planning in the City of Tulsa also supports a multimodal vision. PLANiTULSA, the city's comprehensive plan adopted in 2010, calls for a transportation system that provides a wide variety of mode choices. These choices will be supported by changes in land use that direct development toward downtown and new communities that are mixed use, dense and walkable.

Recommendations in PLANiTULSA about the street network itself call for a greater level of connectivity in the construction of new streets. The City will move away from a disjointed network that funnels trips onto arterial streets and toward one that provides greater connectivity. Street design is also addressed through a recommendation for "context sensitive solutions," which respond to the surrounding land uses rather than prioritizing automobile throughput on all streets. All of these changes would benefit bicyclists and pedestrians through creating the ability to take more short trips and through providing facilities such as high-quality sidewalks and bike lanes on more streets.

Planning efforts in other communities in the region are beginning to reflect this move toward a more concentrated mixed-use development pattern rather than the lower-density single use patterns typical today.

GO Plan Development

The GO Plan was developed over the course of 18 months during 2014 and 2015. The process was guided by a steering committee, representatives from participating jurisdictions, and INCOG staff. Their input was sought on critical issues such as the Plan vision and goals, bicycle network recommendations, and the project prioritization process. A mid-point check-in was held with the committee and key stakeholders such as elected officials and advocates in October 2014 to ensure the process was on the right track. This stakeholder retreat was also used to gather input and priorities for policy recommendations included in this report.

Public input was sought through a number of means. A kick-off meeting was held in March 2014 which introduced the region's residents to project goals and the upcoming process to develop the plan. Local residents were engaged through a series of "walkshops," walking workshops that evaluated the pedestrian and bicycle conditions for a set of neighborhoods defined by the communities themselves. Most jurisdictions held one walkshop in or near their downtown, and the City of Tulsa held four separate events focused on East Tulsa, Cherry Street, Northwest Tulsa, and South Tulsa. A final public workshop was held for this planning process in September 2015 to celebrate the release of the plan and seek final public comment.

The public was also engaged through two online means: an interactive WikiMap map and a survey. WikiMap input helped identify priority locations for improvements throughout the region where barriers to walking and biking exist today and locations where residents would like to be able to walk and bike more comfortably and safely. The online survey sought more general information about travel patterns and attitudes about bicycling and walking. Survey results are presented throughout the plan and fully reported in Appendix B.

Importantly, staff from each jurisdiction have also been involved throughout the process. Though INCOG is the coordinating body for this plan, recommendations will be implemented by each of its member jurisdictions, so their involvement in the

Community staff reviewed network recommendations throughout the planning process., including at the October 2014 check-in.

The project team presented on the engagement and data analysis that led to draft recommendations development.

plan development was essential. Local staff were involved in the following efforts:

- Development and review of the bicycle network
- Identification of pedestrian focus areas
- Mid-point check-in on plan process and results
- Full-day facilities design training on the 2012 American Association of State Highway and Transportation Officials Guide for the Development of Bicycle Facilities
- Review meetings with INCOG staff for community plans

Regular presentations were also made to update the INCOG Transportation Technical and Policy Committees and Bicycle and Pedestrian Advisory Committee throughout the plan process.

Plan Organization

The GO Plan contains the following elements to help communities implement pedestrian and bicycle projects and policies.

2 Bicycle Strategy

Chapter 2 summarizes the existing state of bicycling in the Tulsa region and outlines the process undertaken to develop the bicycle facility network recommendations of the GO Plan and describes the proposed network.

3 Pedestrian Strategy

Chapter 3 summarizes the existing state of the pedestrian environment in the Tulsa region. It provides general guidance about improvements that will increase safety and comfort and a summary of the selected pedestrian focus areas for each community. Concept designs for five typical locations are also provided that can be used by any community with similar pedestrian design challenges.

4 Project Implementation

Chapter 4 outlines how bicycle and pedestrian projects were prioritized for this plan and how this prioritized list can be used at the local and regional scales. Cost estimates for bicycle facility types are also presented, as well as a review of the current funding process for bicycle and pedestrian projects and recommendations for future funding.

5 Non-Infrastructure Strategies

Recommendations for policy and code changes that will result in an improved bicycling and pedestrian environment are presented in Chapter 5. Brief guidance on education, enforcement and encouragement programs is also provided.

6 Community Plans

Chapter 6 contains a summary of input received for each participating community, maps of network recommendations, a table detailing bicycle network facilities, mileage and costs, and the detailed recommendations for each community's focus area(s). This section is intended as a standalone element for each community to use, along with the bicycle and pedestrian design guidelines, in implementing their pieces of the network.

Appendices:

A. Bicycle and Pedestrian Facility Design Guidelines

B. Public Involvement: Complete summary including all survey results

C. Prioritization: Detail on methodology, scores for all projects

D. Cost Estimate Details

E. Policy Review: Full table; summary of input from retreat

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2 BICYCLE STRATEGY

Bicycling is already part of life for many people in the Tulsa region today. Many residents enjoy the extensive system of trails for recreation. There is a strong and growing bicycle culture in the region for recreational road and mountain bike riding. The Tulsa Hub is a nationally recognized nonprofit that provides bicycles and bicycle education to residents. Tulsa Tough, a weekend of professional and amateur racing, is the city's largest event of the year, attracting tens of thousands of spectators and millions of dollars of revenue. And a growing number of the region's residents use bicycles for transportation either out of necessity or by choice. INCOG wants to help its member jurisdictions build on this strong foundation through the implementation of this plan.

Building a connected network of bicycle facilities will help the Tulsa region achieve all of the goals set forth in this plan: It will increase mode share by making more routes comfortable and accessible by bike, spurring residents to choose to ride more often for transportation and recreation. It will improve safety by providing facilities separated from automobile traffic in high-volume, high-speed locations. It will link neighborhoods to destinations. And it will position communities in the region to be recognized by national organizations, such as the Bicycle Friendly Community designation from the League of American Bicyclists, as exemplary places for bicycling.

This chapter provides an overview of the current conditions for bicycling in the region, including travel patterns, infrastructure and attitudes. It then presents the comprehensive and collaborative process through which the consultant team, INCOG staff and local jurisdictions developed the bicycle facilities network. The resulting network is described at the end of this chapter and in further detail within each jurisdiction's community plan section in Chapter 6.

Facility recommendations should be implemented following the Bicycle Design Guidelines presented in Appendix A. While the network provides a framework for facility location decisions, these guidelines provide more detailed instruction on implementation of facilities and should be consulted throughout the design process.

Existing Bicycle Environment

Bicycle Travel

Bicycling for transportation in the Tulsa region is limited today. American Community Survey (ACS) data show that the City of Tulsa has the highest bicycle commute mode share in the region at 0.3 percent.[1] All other jurisdictions are estimated to have an average commute mode share of less than 0.1 percent. ACS data also indicate that fewer than 15 percent of those bicycle commuting are women. It is perhaps unsurprising that commute mode share is at this level given that most residents travel five miles or more to their jobs.[2] Employment centers are clustered throughout the region in locations that do not have nearby residential land use. The development pattern of the region has separated home and work far enough that most residents choose to drive. Despite the distances, bicycle commuting could be encouraged by improving the connections between neighborhoods and the existing trails system and transit lines.

Work trips, however, only represent 11.6 percent of all trips in the Tulsa region.[3] There are not good data about the percentage of trips for other purposes – shopping, social, school, etc. – taken by bicycle today. Respondents to the GO Plan survey indicated that about 60 percent of trips for errands, entertainment and meals out are three miles or less. This distance is bikeable for most adults within about 20 minutes, but most trips are completed today by car. They could be taken by bicycle if infrastructure were in place to provide safe and comfortable connections.

Infrastructure

The region's large trails system forms the backbone of existing bicycle infrastructure in and around Tulsa. These trails take advantage of rail, highway and natural corridors to provide long-distance, separated connections between cities and towns. They are used both for transportation and for recreation and are an attractive amenity for residents, visitors and prospective residents and businesses.

Most trails are asphalt paved and 10 feet wide. These facilities are shared by bicyclists with people walking, in-line skaters and other human-powered modes. Most street crossings are at grade, with crosswalks and signage provided at unsignalized intersections. Some locations, such as the one pictured below at the Creek Turnpike Trail and Memorial Drive, have little indication that drivers should expect a high volume of pedestrians and bicyclists crossing here. A number of trail users have been struck by cars at this location.

Creek Turnpike Trail at Memorial Dr

1 American Community Survey 5-Year Estimate 2009-2013, Table B08006.

2 GO Plan survey results. This is not a statistically valid survey, but it gives an indication of the region's travel patterns.

3 National Household Travel Survey, 2009.

On-street bicycle facilities are limited. Some of the bikeways identified within the City of Tulsa in the 1999 Plan have had bike route signage added and bike symbols that predated the MUTCD standard. Many of the signed bike routes are on comfortable, low-volume local streets and have been adopted into the network for the GO Plan.

Bike lanes are present on several of Tulsa's streets. Existing bike lanes tend to meet national standards for width, but some are not fully compliant with *design* standards. For example, a segment of 4th Place has bike lanes that are striped with a dashed line rather than a solid one as called for in the American Association of State Highway and Transportation Officials (AASHTO) Guide to the Development of Bicycle Facilities. As another example, bike lanes on Delaware Avenue end abruptly before the intersection with 11th Street without accommodation to the crossing of 11th Street. The recommendations of this Plan offer facility recommendations and design guidance in these situations.

Broken Arrow has recently added shared lane markings to Broadway Avenue as part of a larger streetscape project that narrowed the street to calm traffic. These are the only on-street bicycle facilities today in the region outside of the City of Tulsa.

Because of the lack of on-street bicycle facilities, some riders today use the sidewalk network to travel. This is especially the case on high-volume, high-speed arterial streets where riding in the road would be uncomfortable and unsafe. Conflicts arise with pedestrians in areas with transit stops or more pedestrian traffic generators such as a commercial corridor. Conflicts with automobiles occur at driveways, which are frequent along some arterials, and at intersections. Drivers typically do not anticipate a faster moving vehicle on the sidewalk where they expect only pedestrian traffic. Sidewalk riding is not illegal anywhere in the region, except in downtown Tulsa, but it should not be a primary means of accommodating bicycle travel.

Symbols are painted in all lanes and do not include any accompanying arrow or chevron. It is unclear to the bicyclist and the driver what they indicate.

Sidewalk riding is common on high-speed, high-volume streets where people are not comfortable sharing space with cars.

Dashed lines should indicate areas of a bike lane where automobiles will cross the lane such as at a driveway crossing as pictured above.

Where it is not possible to continue a bike lane to the intersection, shared lane markings should be placed in the right turn lane to help bicyclists center themselves in the lane and avoid conflict with a right-turning automobile.

Attitudes

Residents of the Tulsa region bicycle today for a number of reasons. When asked what they like best about biking in the region, a large majority (88 percent) of survey respondents cited exercise and health benefits. Many also cited the trails system as a major amenity and the opportunity to spend time with family and friends. However, a majority of respondents (55 percent) noted that a lack of comfort with sharing the road with automobiles prevents them from bicycling more. A number also cited the lack of bike friendly roads or trails near their home as a barrier. Respondents said that education and enforcement programs designed to improve driver-bicyclist interaction would increase bicycling in the region. But even when specifically asked about programs that would increase their likelihood of bicycling, many respondents' comments pertained to infrastructure such as bike lanes and trails. The implementation of an on-road and trail network is a clear community priority.

Study Network Development

The goal in developing a network of bicycle facilities for the Tulsa region is to connect major regional destinations to one another and to connect neighborhoods to the existing backbone network of trails. Examples of regional destinations are communities' downtowns, large shopping centers and colleges and universities. In general, the network is intended to serve both transportation and recreation purposes for a wide range of users.

A study network of 250 miles of roadway was created by the project team and INCOG staff, by utilizing a number of inputs: demand analysis, WikiMap input and on-the-ground community comments from Walkshops.

The demand analysis used a set of generators and attractors of bicyclist and pedestrian trips to estimate likely demand for improved facilities. Factors incorporated into this analysis are noted in the tables on the following page. The resulting generators and attractors maps show that demand for facilities is anticipated to be greatest in the downtown cores of each community and along some major corridors in the region. Though the analysis was performed for the entire region, City of Tulsa results were studied separately to better illustrate differing gradations of demand within this high-demand area of the region.

WikiMap input also helped define the study network through users' input regarding destinations and areas that need improvement, both specific barriers to travel and longer roadway corridors. Many of the barriers noted were crossings of major streets and highways, as well as access to trails. Lack of a trail or on-road bike facility was cited as the biggest issue for routes that residents would like to bike but currently do not. Respondents' focus on trails is not surprising given the fact that they comprise the majority of bicycle facilities in the region today.

Though Walkshop input focused mostly on pedestrian issues within each of the areas visited, areas needing bicycle improvements were also identified. For instance, participants in Bixby called out a connection between their city and Glenpool along Highway 67 as a critical, longer distance solution to improve bicycle access.

Use of these three tools resulted in a 690-mile initial study network which was further refined by focusing on streets that provide access to the existing regional trail network. The final 250-mile network was assessed through the means described below.

Study Network Assessment

Fieldwork

Every street in the 250-mile network was visited during a week of fieldwork performed in June 2014. The consultant team documented the study network through photographs and data gathering that included roadway and lane widths, posted speed limits, the presence of curbs, and other general notes about conditions observed along the corridors such as the frequency of driveways, adjacent land uses and intersection configurations where pertinent.

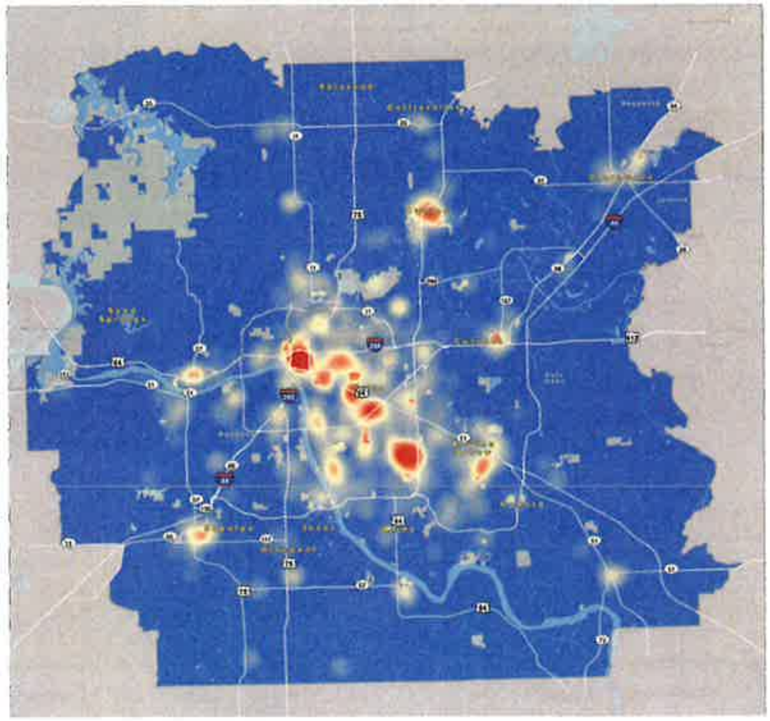
Demand Analysis

Attractors	Weighting
Employment locations	20
Traffic generators (INCOG dataset)	15
Schools	10
Recreation/community centers	5
Parks	5
Libraries	2.5
Industrial employment	-10

Attractors Demand

High

Low

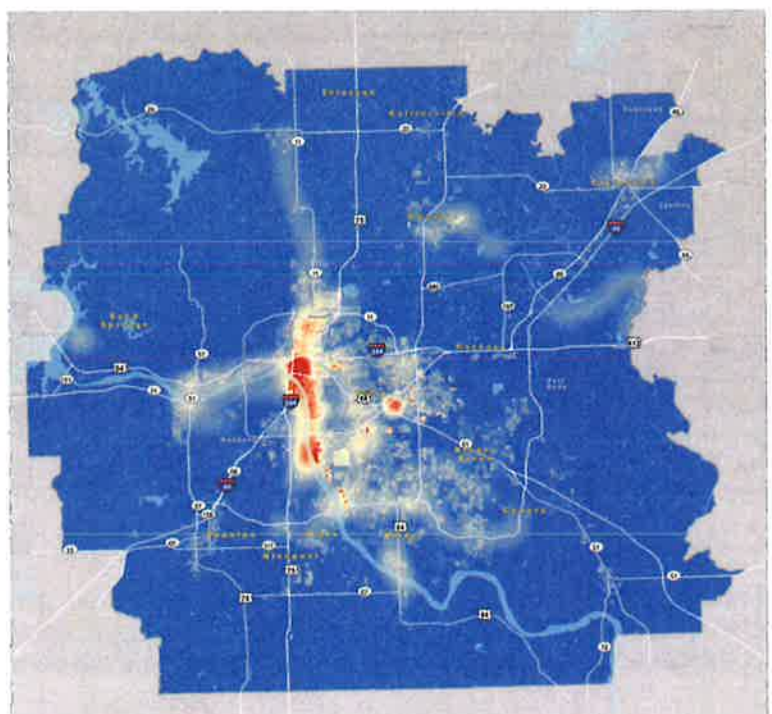


Generators	Weighting
Population density	20
Proximity to existing trail	10
Proximity to transit	10
High percentage of zero car households	2.5
High bicycle mode share	2.5

Generators Demand

High

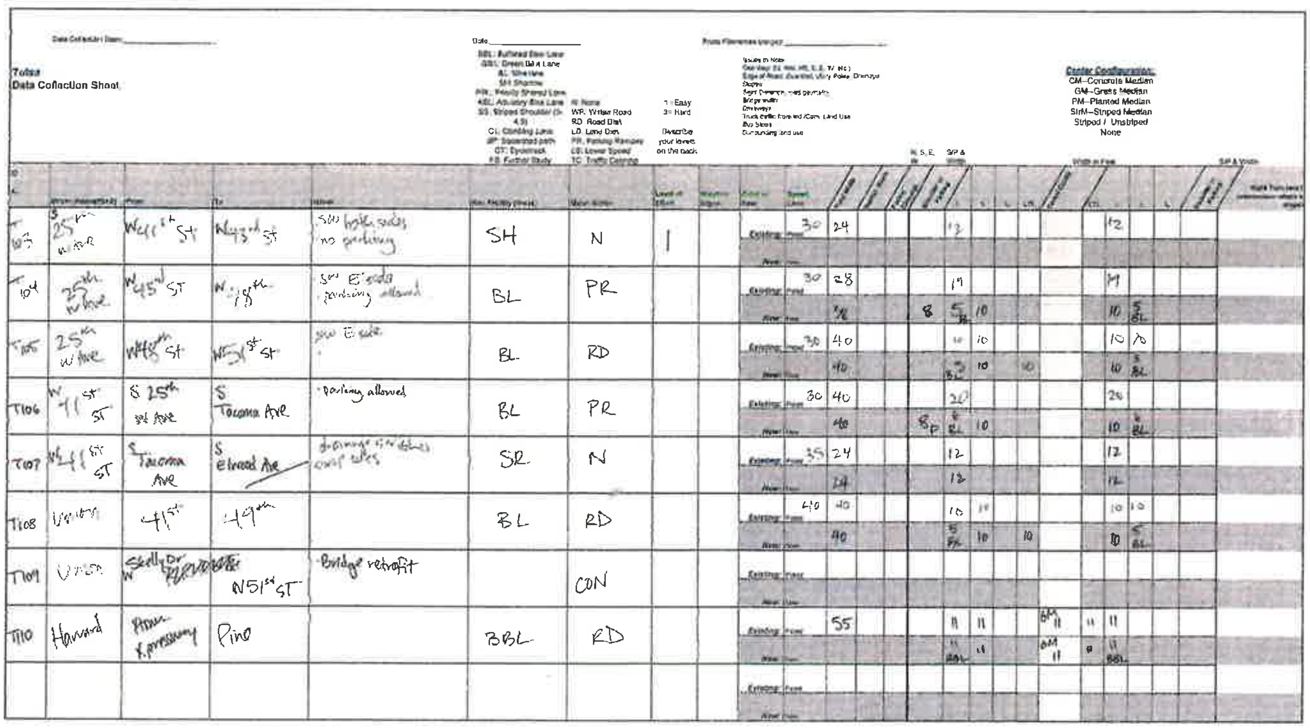
Low



Fieldwork Data Example

South 25th West Avenue in Tulsa, changes character multiple times along the length included in the study network. The street width, parking and lane configurations change twice in the one-mile segment between West 41st Street and 51st Street. Each change was noted and demarcates the start of a new segment in the study network data as can be seen below in each row of the data collection sheet.

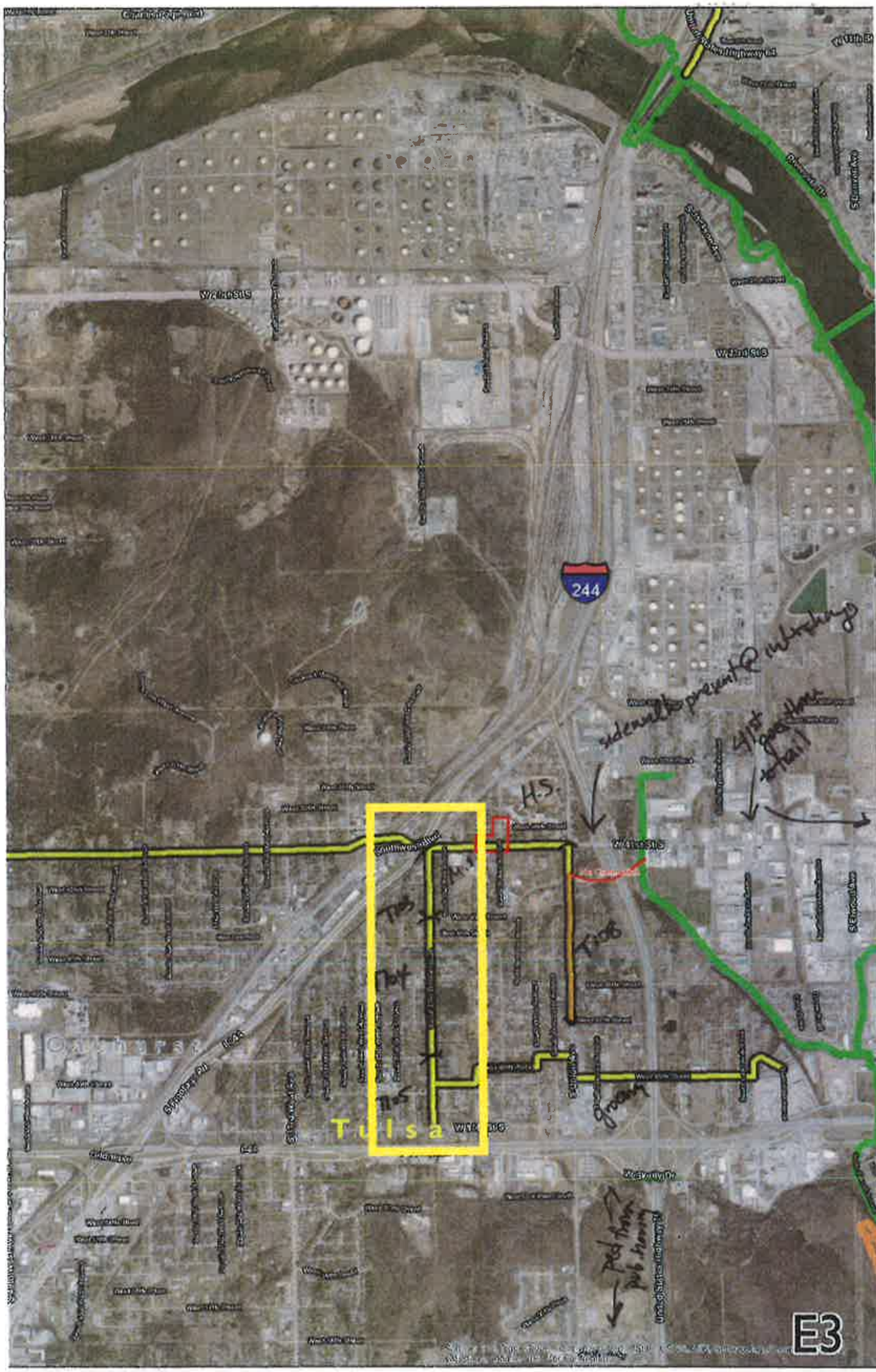
Project team members measured street and lane widths as configurations changed along study corridors.



Tulsa
Data Collection Sheet

ID	Street	From	To	Notes	Facility	Major Action	Level of Effort
T103	S 25th W Ave	W 41st St	W 43rd St	SW both sides no parking	SH	N	1
T104	25th W Ave	W 45th ST	W 48th	S & E side parking allowed	BL	PR	
T105	25th W Ave	W 48th St	W 51st St	SW E side	BL	RD	
T106	W 41st ST	S 25th W Ave	S Tacoma Ave	parking allowed	BL	PR	
T107	W 41st ST	S Tacoma Ave	S Elwood Ave		SR	N	
T108	Union	41st	49th		BL	RD	
T109	Union	W Skelly Dr	N 51st ST	Bridge retrofit		CON	
T110	Harvard	Expressway	Pine		BBL	RD	

Fieldwork data collection sheet example. First three rows pertain to S 25th West Ave and indicate changing roadway width and lane configurations. Initial recommendations for bicycle facilities were made in the field, e.g., "BL" in the middle column indicates a bike lane recommendations.



Fieldwork maps were marked with the start and end of each roadway segment as can be seen for South 25th West Avenue in the yellow box below. Notes were also made regarding land use, difficult crossings and other elements that would impact bicyclist and pedestrian travel.

Quantitative roadway data were collected for use in determining what bicycle facility type could fit within the existing curb-to-curb dimension and for performing a Level of Traffic Stress assessment discussed in the following section.

Fieldwork also afforded the opportunity to assess how users of different modes travel along the study network today. For instance, many arterial streets on the one-mile grid have high speeds and traffic volumes that cause bicyclists to avoid arterial streets or to ride on the sidewalk. These streets also often had multiple driveway cuts per business, or long stretches of street without curb which allows drivers to turn at any point across the sidewalk to access adjacent businesses. These multiple entrances create more opportunities for conflicts between automobiles and bicyclists riding along the road edge or on the sidewalk. Many highway underpasses were also observed to lack sidewalks and crosswalks. This placed pedestrians in grass or dirt areas for walking and did not make drivers entering and exiting the freeway aware of potential conflicts with pedestrians at ramps.

In more rural areas, the study network included many county roadways, often two-lane roads through low-density land uses. These roads had high posted speed limits (45+ mph) and low traffic volumes. There were few pedestrians or bicyclists observed, but these roads were included for their potential as routes for longer distance recreational bicycle rides. As these rural areas become developed, however, accommodation for pedestrians and bicyclists making short trips will become more important.

Desktop Assessment

After completion of the fieldwork, some streets were reviewed via Google Earth and Street View to check the accuracy of data recorded. This method was also used to help assess network streets from the 1999 Trails Master Plan. INCOG staff requested the inclusion of these streets in the GO Plan to the extent that they improved regional connections for bicycling. Streets deemed worthy for inclusion were reviewed for width and character to determine an appropriate facility type since the 1999 Plan did not indicate facility types or on-street recommendations. All trails from the 1999 Plan were initiall adopted into the GO Plan network.

Level of Traffic Stress Assessment

The Level of Traffic Stress (LTS) assessment analyzes the roads and trails in a bicycle network to identify the amount of comfort a relatively inexperienced bicyclist would likely feel on each road segment. For the purpose of this plan, low-stress streets and bicycle facilities, including paved trails, are those rated with LTS 1 or 2. On-street bicycle facilities in these low-stress categories are those where a bicyclist shares the street with low-volume, low-speed automobile traffic, is adjacent to such traffic in a bike lane of adequate width, or is completely separated from traffic on a sidepath or cycle track.

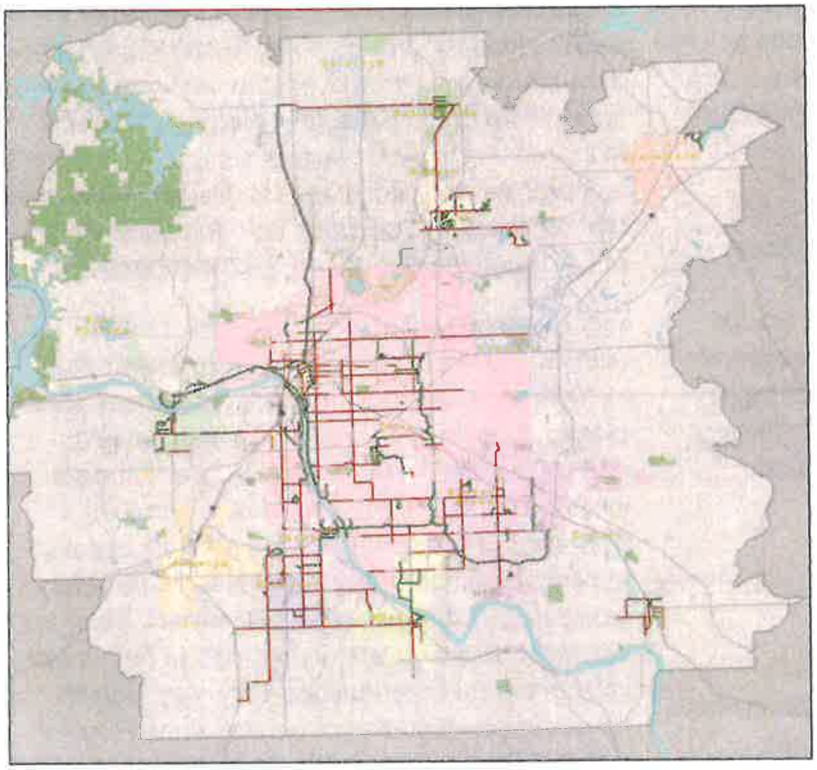
The LTS method uses a number of inputs to evaluate the comfort of a given street segment for bicyclists including:

- Posted speed limit
- Traffic volumes
- Number of automobile travel lanes
- Presence/absence and width of a dedicated bicycle facility

Segments are scored on a least common denominator method whereby the most stressful element assessed overrides the others. For example, a two-lane street with a wide shoulder and low traffic volume would be rated as LTS 4 (most stressful) if the speed limit were over 35 mph. While all of the other characteristics of the street make for a comfortable ride, traffic passing a bicyclist at 35 to 40 mph makes for an uncomfortable ride.[4]

4 It should be noted that the LTS scoring system is geared toward a less experienced bicyclist whose choice to ride a given street is highly impacted by its infrastructure and traffic characteristics. More experienced bicyclists may not be deterred from riding by sharing the road with higher speed or volumes of traffic.

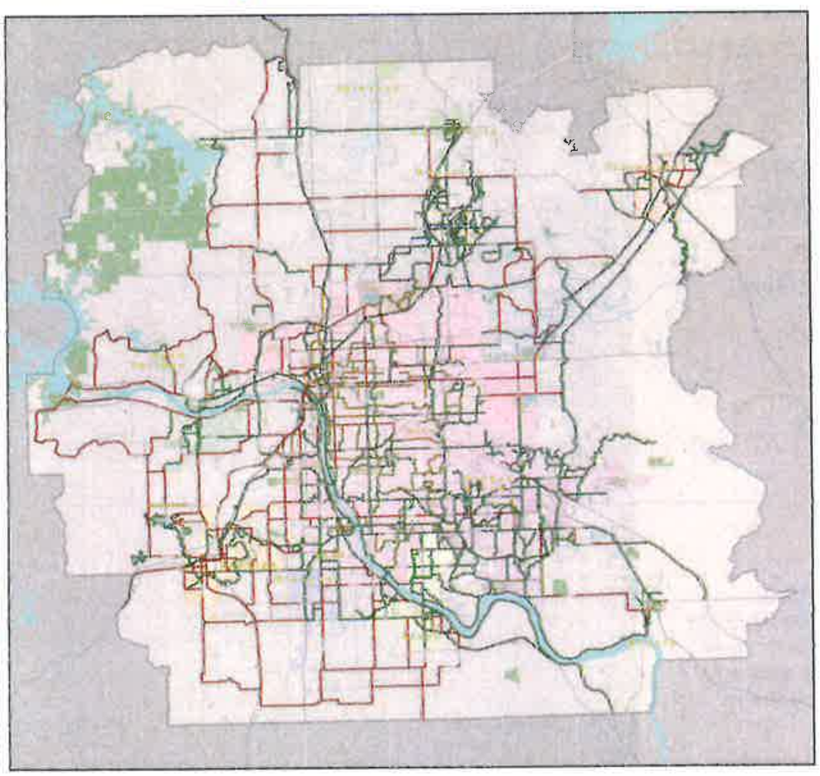
Study Network



Existing LTS	Percent of Total Network
1	13.66%
2	13.44%
3	4.35%
4	68.54%

Many study network streets are marked here in red indicating LTS 4, the highest stress level for bicyclists.

Planned Facilities



Planned LTS	Percent of Total Network
1	30.60%
2	12.89%
3	5.32%
4	51.19%

Arterial streets such as SH-20 between Skiatook and Collinsville drop from LTS 4 to LTS 1 in the planned network with the addition of a sidepath.[1]

1 This assessment only pertains to changes to the original study network since an "before" assessment of added streeets as not performed.

Comfortable crossings of major streets are also necessary to complete a low-stress network. A low-volume neighborhood street presents a comfortable riding environment, but it may cross an arterial with no traffic signal, and that crossing presents a high-stress experience for a bicyclist.[5]

The majority of the study network for bicycling today presents a high-stress riding experience. Because this plan seeks to create regional connections, the network includes many arterial streets which provide those direct connections to primary regional destinations. Nearly all of these streets are rated LTS 4 as a result of their traffic volumes and speeds and lack of a dedicated bicycle facility.

Bicycle Recommendations Development

The team followed a number of principles in developing on-street facility recommendations for the region. The principles are outlined below:

- Facilities fit within the existing pavement width or are off-street construction where there is available right-of-way[6]
- Avoided in-street facilities on high-stress roads: these facilities would remain high-stress owing to traffic volumes and speeds, to the extent possible
- Rural area on-street facilities focus on signed routes for experienced recreational riders
- Urban area on-street facilities focus on sharrows, bike lanes and buffered bike lanes
- Aim for facility types that appeal to and encourage use by casual bike riders
- Continuity of facility is strived for along the length of a studied segment

These principles reflect both best practices in bicycle planning and residents' opinions expressed in the online survey. Respondents were asked through a series of photo questions which types of bicycle facilities they prefer. All answers indicated that a greater level of separation from both automobiles and pedestrians is desired. It was clear that a shared lane situation on a four-lane street is not a desirable place to bike for most people.

While understanding these preferences, this plan strives to be realistic and understands that inclusion of a sidepath on every high-stress street in the network would create an unreasonable and unattainable goal. Therefore, some streets included in the study network were removed from the recommended facility network because making them comfortable and safe for bicycling would require a high level of investment. Because sidepaths and trails are understood to be a major investment for communities, they may wish to pursue implementation of parallel signed routes first that would connect the same destinations. Investment in these routes would require signage on low-volume local streets and improvements at any difficult arterial crossings.

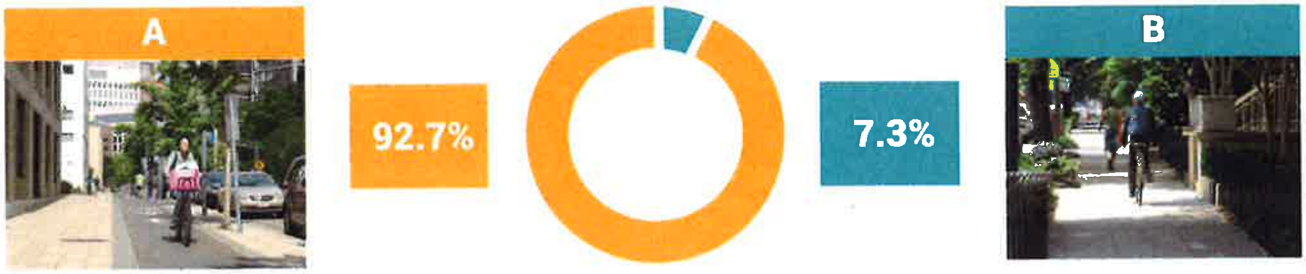
Confident bicyclists feel comfortable taking the lane as seen here in a group ride on Southwest Boulevard in Tulsa.

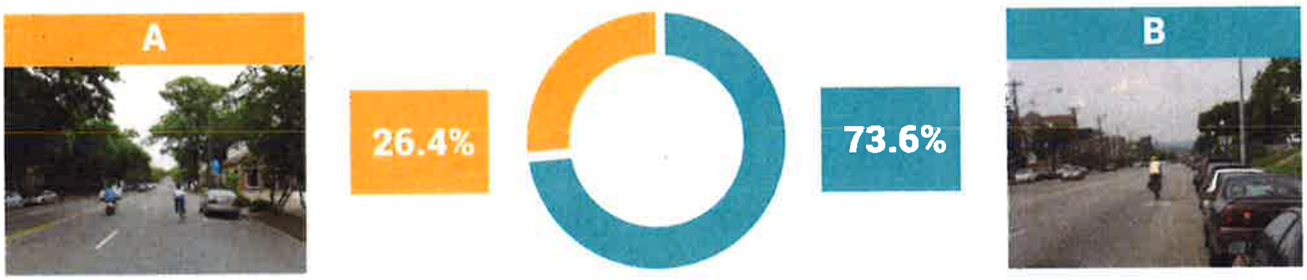
5 For the purposes of this planning effort, the stress of intersections was not evaluated. It can be assumed that any unsignalized arterial crossing is a high-stress intersection where additional infrastructure will be needed to ensure a comfortable bicyclist crossing. These design treatments are presented in Appendix A.

6 Right-of-way assessment was based on visual inspection not measurement.

Facility Preferences

Respondents chose the photo for the facility they'd prefer to ride..





The facility types outlined here cover all of the on-street facilities used in the GO Plan network. More detail on their application and design is provided in the Bicycle Design Guidelines in Appendix A.

Trail

- Path fully separated from a street, shared by bicylists, pedestrians and others
- Typically paved and marked with a center line
- Located along a separate alignment from street right-of-way
- High-volume or high-speed streets

Sidepath

- Path for use by both bicyclists and pedestrians within street right of way
- At curb level to separate from traffic, preferably with buffer between path and street
- Typically marked with a center line
- High-volume or high-speed streets

Cycle Track

- Provides bike-only facility physically separated from automobile travel lane and sidewalk
- Separated from traffic by curb, bollards, parked cars and/or other vertical elements
- Medium- and high-volume streets

Buffered Bike Lane

- Increases riding space and comfort by adding a painted buffer to standard bike lane
- Buffer located either between the bike lane and automobile travel lane, or between bike lane and parking
- Medium- to high-volume streets

Bike Lane

- Marks dedicated space for bicyclists on the street with pavement markings
- Often on the right side of the street, and can be marked on one-way streets
- Medium- or low-volume streets

Priority Shared Lane Marking

- Similar to Shared Lane Markings but underlayed with a bright green box and spaced more frequently
- Used in locations with higher volumes of traffic and/or complex traffic patterns such as those with higher turnover on-street parking
- Medium- or low-volume streets wtih speed limits under 35 mph

Shared-Lane Marking ("Sharrow")

- Shows both bicyclists and drivers where bicyclists should ride on street for safe travel
- Reinforces that bicyclists belong in the lane and drivers must share the road
- Low- and medium-volume streets where bicycle lanes cannot be accommodated

Signed Route

- Directs bicyclists to connecting routes
- Notifies drivers to expect bicyclists on the roadway
- "Share the Road" signs often used
- Low-volume streets in rural or local neighborhood contexts

Recommendations Refinement

Once draft facility recommendations were complete, INCOG shared the network with staff in all local member jurisdictions. Staff consulted ranged from City Managers to planning to transportation staff. This local knowledge helped eliminate some projects from both the GO Plan network and incorporated 1999 Plan recommendations. Some facility types were also adjusted based on the comfort level of local officials with roadway changes such as road diets or the construction of a sidepath. Feedback was also sought from INCOG staff knowledgeable about bicycling in the region, the Bicycle and Pedestrian Advisory Committee, and the GO Plan steering committee.

Additionally, the 1999 Plan on-street recommendations were reviewed to assign an appropriate facility type to those routes that represented important regional connections. Many of these "bikeways" in rural areas were recommended to be signed routes that will primarily serve experienced recreational riders. Urban, local street bikeways were predominantly recommended to be signed routes as well. Though these routes consist of low-volume, low-speed local streets, they may need improvements at arterial intersections to function effectively and safely for bicyclists. In the long term, communities may decide that they want to enhance these neighborhood bikeways with traffic calming measures such as those outlined in the Pedestrian and Bicycle Design Guidelines in Appendix A.

Network Facility Recommendations

The bicycle network for the Tulsa region sets an ambitious vision for connecting major destinations via a 800-mile system of on-street facilities and routes, 165 miles of sidepaths and 408 miles of off-street trails. The full build-out of this network will link communities to one another and important destinations within each community.

Facility Type	Total Regional Mileage
Signed Route	605.7
Shared Lane Markings	33.6
Priority Shared Lane	0.5
Bicycle Corridor	55.5
Bike Lane	89.7
Buffered Bike Lane	5.7
Cycle Track	9.0
Sidepath	165.3
Trail	407.7
TOTAL MILES	1372.8

Overall, the set of facility recommendations provides a lower-stress bicycling experience throughout the region.[7] The 408 miles of recommended trails will provide a family-friendly, off-street riding experience. Sidepaths and cycle tracks on major arterials will allow less experienced riders to access the many commercial destinations located along these corridors. And bike lanes and signed routes on lower volume streets will help bicyclists navigate comfortable routes.

Wayfinding

The bicycle network will only be useful to the region's residents if it is clearly recognizable. Though signed routes are the only facility type indicated to explicitly include signage, INCOG should consider a comprehensive wayfinding system to be implemented as bicycle facilities are added to the network. In order to attract riders, this network must be publicized through a new bike map, and more directly identified through a wayfinding and branding system.

7 The "Bicycle Corridor" facility included in this table is used in the City of Tulsa and indicates a street where a bike lane is the desired facility, but shared lane markings may be necessary in some segments due to roadway constraints.

Wayfinding consists of signs that direct bicyclists along routes, providing clarity about turns and reassuring riders that they are continuing along a designated bicycle route. As new or novice riders see wayfinding signage throughout the region, they may be encouraged to try riding along a new route where they can be assured a low-stress trip. Wayfinding is also helpful to visitors and could help orient newcomers such as University of Tulsa students.

A wayfinding system should indicate distance and destinations. Destinations typically identified by the public as important include: parks, neighborhoods, business districts, schools, and trails. Wayfinding should not be limited to on-street routes. There is no current signage on trails. Wayfinding signs on trails should use the same destinations as the on-street network and should indicate the name of cross streets at access points. Access points can also be marked with directional wayfinding orienting trail users and helping them to make decisions about which way to turn.

Wayfinding signage design guidance is provided in the MUTCD and results in assemblies like the one pictured above.

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3 PEDESTRIAN STRATEGY

Every resident and visitor in the Tulsa region is a pedestrian at some point. People enjoy strolling their city's main streets and walking and running for health. Some of the region's residents also walk for transportation, for their whole trip or as part of a transit trip. However, the vast majority of trips in the region are still taken by private automobile.

This chapter provides an overview of the existing pedestrian environment and how the region's development patterns have influenced pedestrian travel. It also reports on regional attitudes toward walking and existing infrastructure. The chapter then outlines this plan's approach to pedestrian recommendations and concludes with a set of concept designs for typical challenging pedestrian locations.

Existing Pedestrian Environment

The decision to walk for a given trip is influenced by a number of factors outlined below. The GO Plan recommendations seek to address the pedestrian environment as it exists today but acknowledges that some influences on walking, such as land use and the layout of street networks, will not change quickly if at all.

Development Patterns

Today, much of the walking in the Tulsa region is for recreation. Residents indicated on the Plan survey that they view it as great means of exercise, but walking and bicycling for transportation today are limited. Some residents commute or travel for other purposes by these modes because they are inexpensive, because there is no car available, or because they can complete the "last mile" of a transit trip connecting to a destination not directly on a bus line. Others use these modes because their trips are short, easily completed in a short time on foot or bike. And still other residents use these modes because they want to incorporate activity into their daily travel for health or environmental reasons.

Proximity of Destinations

Many trips in the region cannot be completed by foot today. Sprawling development in the suburban and rural communities of the region has resulted in destinations that are far away from one another. Grocery shopping or dining out, for example, often require trips of at least three miles.

Walk Score, an online resource that rates communities and neighborhoods on their walkability, awards points based on walking distance to amenities. Amenities within a five-minute walk (0.25 miles) are given maximum points. Walk Score also measures pedestrian friendliness by analyzing population density and road metrics such as block length and intersection density. In this evaluation system, the vast majority of the Tulsa region is rated in Walk Score as "car dependent." There are limited neighborhoods close to downtown Tulsa that are rated "somewhat walkable" because of mixed land use and a more fine-grained street network.

As noted in the Introduction, the region's planners are hoping to move new development toward mixed-use centers that increase the proximity of destinations and improve walkability.

Suburban Street Networks

The typical street network in suburban development also presents a barrier to making short trips. Outside of downtown and main street core areas, the region's development is framed by a one-mile arterial grid system. The central areas retain a grid system that was developed in a pre-automobile era, whereas subsequent development, especially since World War II, moved toward meandering residential streets and cul-de-sacs. The boom in residential development in the last 10 years in the region's fast-growing communities of Owasso and Broken Arrow has continued in this pattern. This type of street network makes travel through neighborhoods difficult and funnels all modes of traffic onto the arterial grid. Trips are longer than they could be if connections were provided between neighborhoods. Local streets that do not align in a regular intersection across arterial streets also make pedestrian travel difficult, especially when no sidewalk is present on the arterial. Small investments in short connector paths or segments of sidewalk could help overcome these challenges.

Infrastructure

Trips that may be within a walkable distance, such as from a subdivision to a nearby convenience store, are not taken by foot today because pedestrian infrastructure is not reliably available. Sidewalk construction along arterial streets in many communities has been ad hoc as new landowners develop parcels. Even in communities with good sidewalk coverage on arterial streets, there are often gaps approaching intersections where sidewalks dead-end into parking lots for shopping centers, convenience stores or gas stations located on these desirable commercial lots. The resulting fragmented network is substandard and largely inaccessible for physically disabled people or even those pushing a stroller.

Pedestrian Travel

Walking for transportation in the Tulsa region is limited today. American Community Survey (ACS) data shows that the City of Tulsa has the highest walking commute mode share in the region at 1.8 percent which is not surprising given that destinations are in closer proximity than other communities.[1] All other jurisdictions are estimated to have an average walking commute mode

1 American Community Survey 5-Year Estimate 2009-2013, Table B08006.

Sidewalks that do exist in many locations are serviceable but do not provide a pleasant or desirable walking experience.

Street trees would provide shade and a welcome buffer from traffic on this high-speed arterial. Additionally, vertical elements next to the roadway have been shown to help reduce speeding by visually narrowing the roadway for drivers.

The presence of multiple driveway cuts over a short distance creates conflicts between drivers and pedestrians.

Standard crosswalks consisting of two parallel white lines are less visible to drivers than zebra or ladder designs that include wide white stripes perpendicular to the road edge. Stop bars are also needed at intersections to direct drivers to stop at a greater distance from the crosswalk, making it less likely they will block a pedestrian's path of travel.

To be ADA compliant, curb ramps must meet standards for grade, width and landing area. They must also align directly with crosswalks rather than pointing to the diagonal of an intersection.

Long gaps between signalized crossings on a commercial arterial, such as this segment of Admiral Street, can lead to dangerous crossing behavior for pedestrians accessing destinations on the other side of the street.

Walkable Districts in the Tulsa Region

The Tulsa region has a number of examples of areas that are or can become highly walkable. Within the City of Tulsa, the Brady Arts and Blue Dome districts in downtown have many commercial and retail destinations in close proximity, and more residential development is being added every year. Streetscape efforts have been made in other small business districts such as Cherry Street and Brookside on Peoria Avenue to make them attractive to pedestrian travel. This encourages "park once" behavior whereby visitors who drive to the district park and complete trips to multiple destinations within the district on foot. Other areas of the City of Tulsa, such as Kendall-Whittier, are starting to redevelop their strips with historical buildings into vibrant, walkable commercial areas.

The downtowns of other smaller communities in the region also have the good bones of a gridded street network and small, historic commercial properties that will lend themselves to becoming highly walkable districts. Some communities, such as Jenks and Broken Arrow, have redesigned their Main Streets through road diets that provide additional space for pedestrians and calm traffic through narrowing the roadway with curb extensions.

Broken Arrow's Rose District features a pedestrian-friendly streetscape.

share of less than 1.0 percent. The land use and street network patterns described above have contributed to these mode share numbers.

As noted in Chapter 2, work trips account for only 11.6 percent of all trips in the region. According to the GO Plan survey, the most frequently walked-to destination is a restaurant or coffee shop. It is likely that these trips take place during the work day when more respondents are in walkable parts of the region where restaurants are in close proximity to workplaces.

Every community in the region includes some households without access to an automobile. According to the 2013 American Community Survey, Jenks had the lowest percentage of households without a vehicle available (2.1 percent), and Tulsa had the highest (8.4 percent). Residents of households without a vehicle are more likely to walk, bike or take transit trips. Areas with low automobile ownership are priority areas for improvements in this plan.

Attitudes

Similar to bicycling, residents in the region tend to view walking as a good means of exercise and an opportunity to spend time with friends and family. Survey respondents also recognized that many destinations are simply too far to walk to with 58 percent citing distance as a barrier to walking. In written comments, a number of respondents also noted that the current design of facilities does not invite walking. The lack of a buffer between pedestrians and high-speed traffic and a lack of crosswalks were cited as factors that make residents less likely to walk. Similarly, respondents cited the construction of new sidewalks as the improvement that would make them most likely to walk more. Improved street lighting and additional trails were also cited. Comments received on the WikiMap were similar in citing sidewalk gaps and dangerous intersections as the main barriers to walking.

Pedestrian Recommendations Approach

Though it is possible to craft a bicycle network at the regional scale as was presented in Chapter 2, the creation of a comprehensive set of pedestrian recommendations is difficult at this scale. Pedestrians take short trips that are not centered on arterial streets but are much more destination-oriented, focused on locations such as transit stops, parks, schools and shopping centers. Fieldwork conducted for the bicycle strategy enabled the project team to gain a general sense of the infrastructure qualities noted above and to see how pedestrians tend to navigate some of the more typical place types and locations found throughout the region. However, detailed data on the pedestrian infrastructure such as curb ramps, crosswalks, signals and sidewalk gaps was not noted.

The pedestrian recommendations of the GO Plan focus on four elements:

- Prioritization of the existing INCOG sidewalk gap inventory,
- Detailed assessment and recommendations for one or more focus areas per jurisdiction,
- Concept designs for typical challenging pedestrian scenarios, and
- Policy recommendations.

All policy recommendations are presented in Chapter 5, some of which are specific to pedestrian access and improvements, and some of which will benefit pedestrians and bicyclists equally.

Sidewalk Gap Prioritization

Some communities in the region have sidewalk construction policies that have resulted in relatively comprehensive coverage on arterial streets. Gaps in the network do exist, however. INCOG conducted an inventory of arterial sidewalk gaps in 2013 to document segments where there are no sidewalks on either side of the street. Region-wide, gaps were prioritized based on their proximity to schools, parks, transit lines and areas with low automobile ownership. Streets with higher traffic volumes were also ranked higher.

Within the City of Tulsa, gaps were prioritized using the methodology set forth in a 2015 national report from the National Cooperative Highway Research Program (NCHRP). City staff provided input on what variables to incorporate into the analysis, including data from the City's ADA Transition Plan completed in 2011. The tables on the following page presents the factors, variables and weighting included in this scheme.

This approach is further detailed in Appendix C.

While the inventory is helpful for identifying these worst-case locations, installing a sidewalk on only one side of an arterial is not a best practice. Arterial streets in the region often have long distances between signalized crossings where pedestrians can safely access destinations on the other side of the street. Forcing pedestrians to travel on one side of the street will lead to unsafe midblock crossings where facilities that notify drivers to expect pedestrians are not provided.

All of the sidepath and trail recommendations in the bicycle network will also benefit pedestrians. Some sidepath recommendations will close small sidewalk gaps, while others will provide longer distance connections more likely to be used by recreational walkers and runners.

Community Focus Areas

The focus areas identified in each community represent high-priority locations for pedestrian improvements. Many are locations of pedestrian crashes or near misses that have occurred in the last few years. They also often include pedestrian traffic generators such as schools and shopping destinations. These small areas were identified by planners in each jurisdiction and by stakeholders at community Walkshops. They should be considered the highest priority pedestrian projects for each community to complete when implementing this plan.

Regional Pedestrian Prioritization Factors and Variables

Factor	Variables
Safety	
	Roadway average daily traffic (data from INCOG)
Equity	
	Serves area with low automobile ownership
Connectivity	
	Within 10 minute walk of:
	- Schools
	- Parks
	- Transit stops

City Of Tulsa Pedestrian Prioritization Factors and Variables

Factor	Variables
Stakeholder Input	
	Sidewalk Complaint List
Safety	
	Weighted Pedestrian Accessibility Score from ADA Transition Plan
	Roadway average daily traffic
Demand	
	Proximity to planned dense land use (Building Blocks from PLANiTULSA)
Equity	
	Serves area with low automobile ownership
Connectivity	
	Within 10 minute walk of:
	- Schools
	- Parks
	- Daily shopping needs
	- Medical
	- Transit stops

Concept Designs

A subset of the focus areas were identified as typical pedestrian environments that occur throughout the region. A concept-level design was prepared for each of these five areas, and elements of these designs can be applied to similar locations. The five areas included six typical situations:

- School connection across state highway
- At-grade highway intersection
- School access on major arterial
- Commercial main street
- Major arterial intersection
- Grade-separated highway interchange

Assessment and design details of these situations are included in the following pages.

SCHOOL CONNECTION ACROSS STATE HIGHWAY


Lack of sidewalks along S 305th East Ave


Lack of crosswalks and ramps at intersection


Hwy 51 is wide to cross as a pedestrian

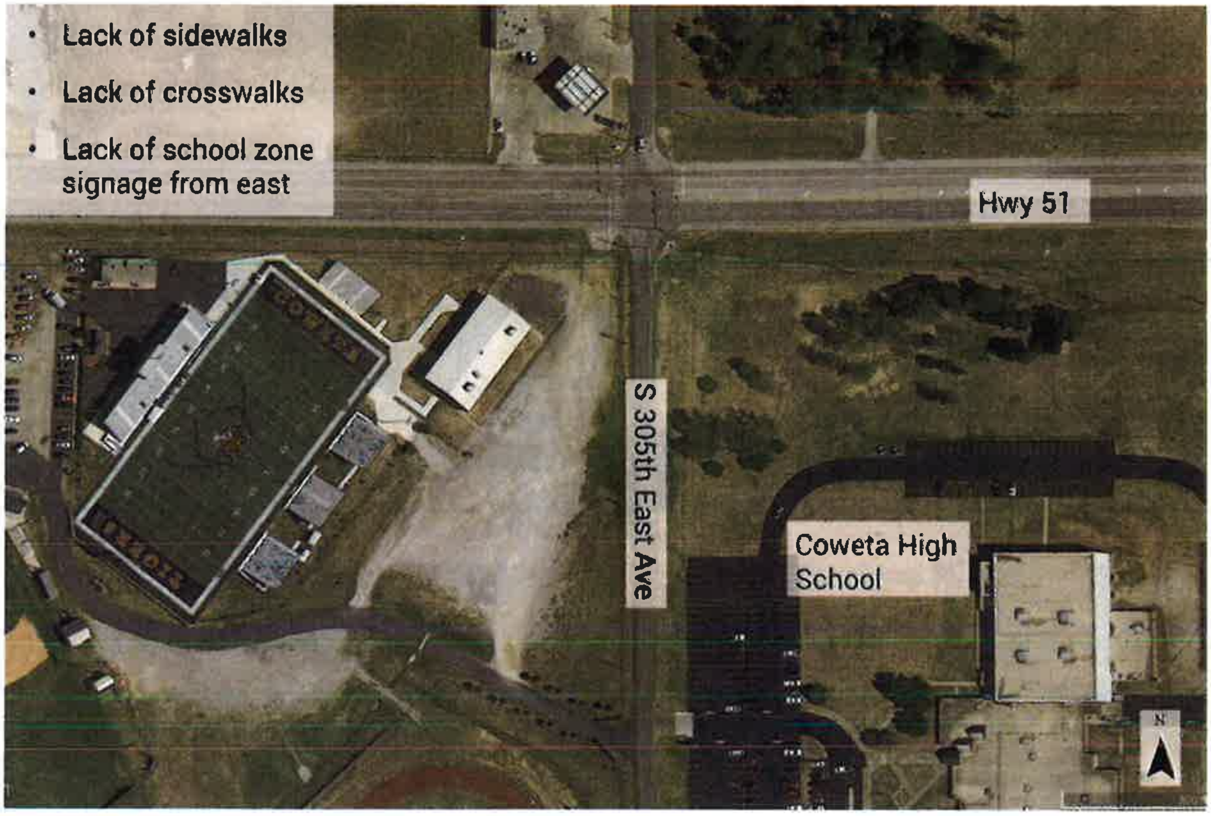

No ADA compliance or connection to sidewalks

Coweta High School and East Highway 51

Highway 51 is a large arterial roadway that is the main thoroughfare from Coweta to Tulsa. S 305th East Ave is a rural 2-lane street that serves as the entry drive to the Coweta High School. Hwy 51 experiences hostile driving patterns from speeding traffic, swerving, and congestion only during the peak times of morning and afternoon rush hour and schools' start and dismissal. At the intersection of S 305th East Ave, the lone crosswalk leads to no ramps or sidewalks and the time between walk signals is too long and the amount of time given to make the long crossing across Highway 51 is not long enough.

The concept solutions range from adding simple things like sidewalks and adding elements to the intersection to make it safer to cross. The intersection of 51 and S 305th East Ave should have push button detection and high visibility crosswalks on all 4 approaches and ADA accessible ramps to sidewalks. Sidewalks should be added along the east side of S 305th East Ave at a minimum and on both sides if available. At the entries to the high school and the high school sports complex off of S 305th East Ave, there should be a raised crossing and HAWK signal to allow easier pedestrian crossing. School zone signage should also be added along Highway 51 to the east of this intersection to notify drivers that they are approaching a high-volume pedestrian area.

SCHOOL CONNECTION ACROSS STATE HIGHWAY



Existing aerial of the Coweta High School complex and Highway 51

Conceptual plan of the Coweta High School complex and Highway 51

SCHOOL CONNECTION ACROSS STATE HIGHWAY

Existing photo of S 305th East Ave looking south toward Coweta High School

Conceptual photo-rendering of S 305th East Ave looking south toward Coweta High School

No pedestrian crossing across Highway 97

Right turn slip lane on W 41st Street

No sidewalks along E 41st Street

Wide driveway crossing issues along E 41st Street

Highway 97 at East 41st Street

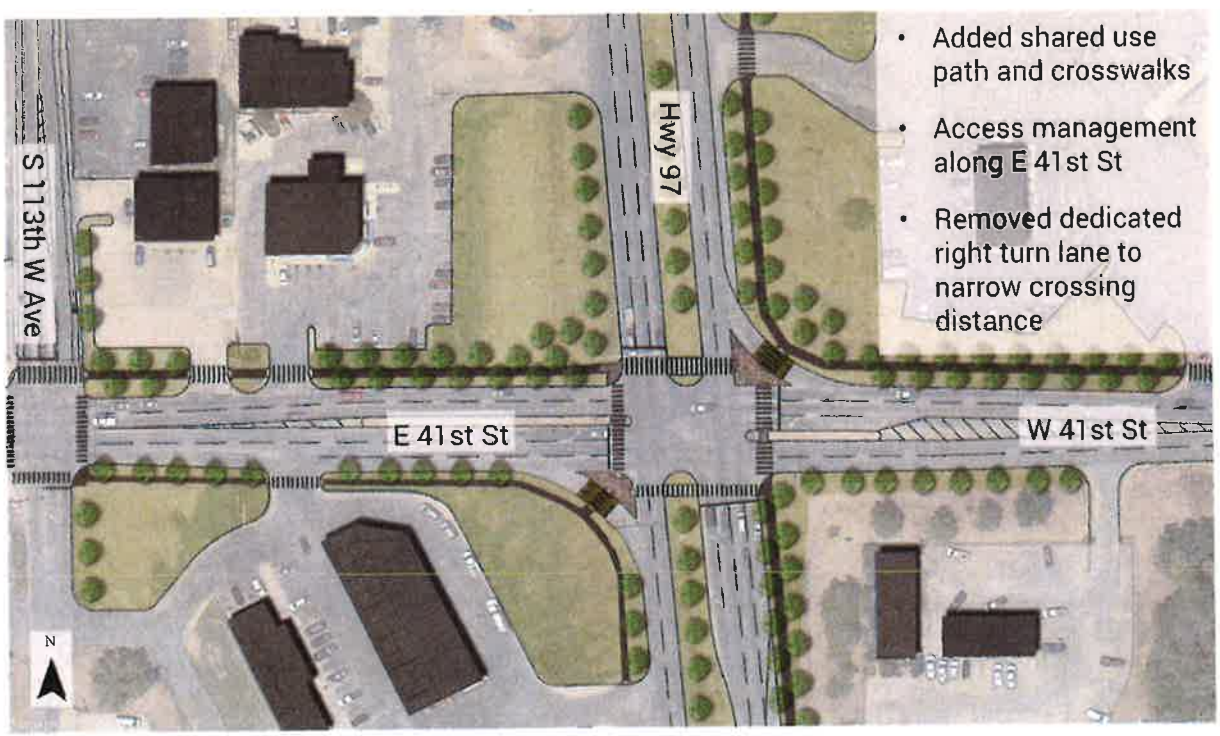
Highway 97 is a wide, median-divided roadway that is very hostile to pedestrians and bicyclists and lacks sidewalks or crosswalks at any of the approaches at the intersection of West 41st Street. Numerous destinations are located along Highway 97, though, as it is a main suburban commercial corridor for Sand Springs. Commercial destinations are located on three of the four corners at this intersection, and none has suitable pedestrian access. A sidepath exists on the north side of West 41st Street to the east of this area but ends before the intersection of Highway 97.

Additionally, Sand Springs has plans for a streetscape project along South 113th West Avenue which is parallel to Highway 97. This project includes a cycle track that will connect with West 41st Street. This facility should be built along the east side of the street to connect to a new shared use path along the north side of West 41st Street. The connection from 113th West Ave to Hwy 97 should be improved by narrowing and controlling driveway access along E 41st Street.

The intersection of 41st Street and Hwy 97 should have pedestrian push buttons, high visibility crosswalks at all approaches, and median refuge areas installed. Crossing distances should also be shortened through removal of the dedicated right turn lanes at all approaches of the intersection of Highway 97 and West 41st Street. A raised crosswalk should be installed across the remaining right turn slip lane on the northeast corner of the intersection.

AT-GRADE HIGHWAY INTERSECTION

Existing aerial of the intersection of Highway 97 and 41st Street.



Conceptual plan of the intersection of Highway 97 and 41st Street.

AT-GRADE HIGHWAY INTERSECTION

Existing photo looking east at the crossing of Highway 97 on 41st Street

Conceptual photo-rendering of the proposed crossing of Highway 97

SCHOOL ACCESS ON MAJOR ARTERIAL


Class dismissal of students crossing N 129th E Ave


Students crossing East 86th St N on N 129th E Ave


Sidewalk along N 129th E Ave and high school parking lot


Sidewalk on west side of N 129th E Ave

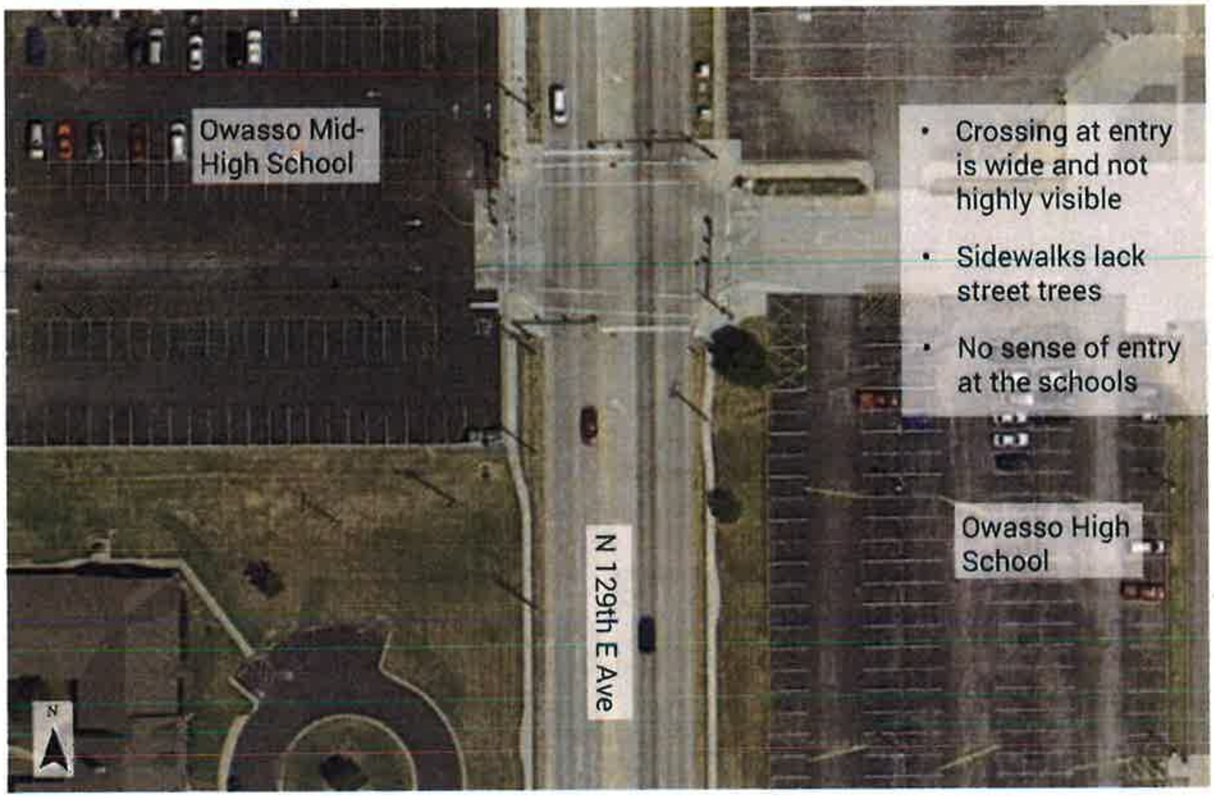
North 129th East Avenue and East 86th Street North, Owasso High School

North 129th East Avenue and East 86th Street North are both key arterial thoroughfares that connect Owasso to the Mingo Valley Expressway and the surrounding residential areas. Owasso High School and Mid-High School, the City's two largest, are located at this intersection. They are directly across from one another on N 129th E Ave and generate a high volume of vehicular and pedestrian traffic. Crossing guards are currently needed at all of the school entrances to control traffic and pedestrian conflicts. During school arrival and dismissal, four crossing guards assist students to cross this major intersection by controlling vehicle turning movements.

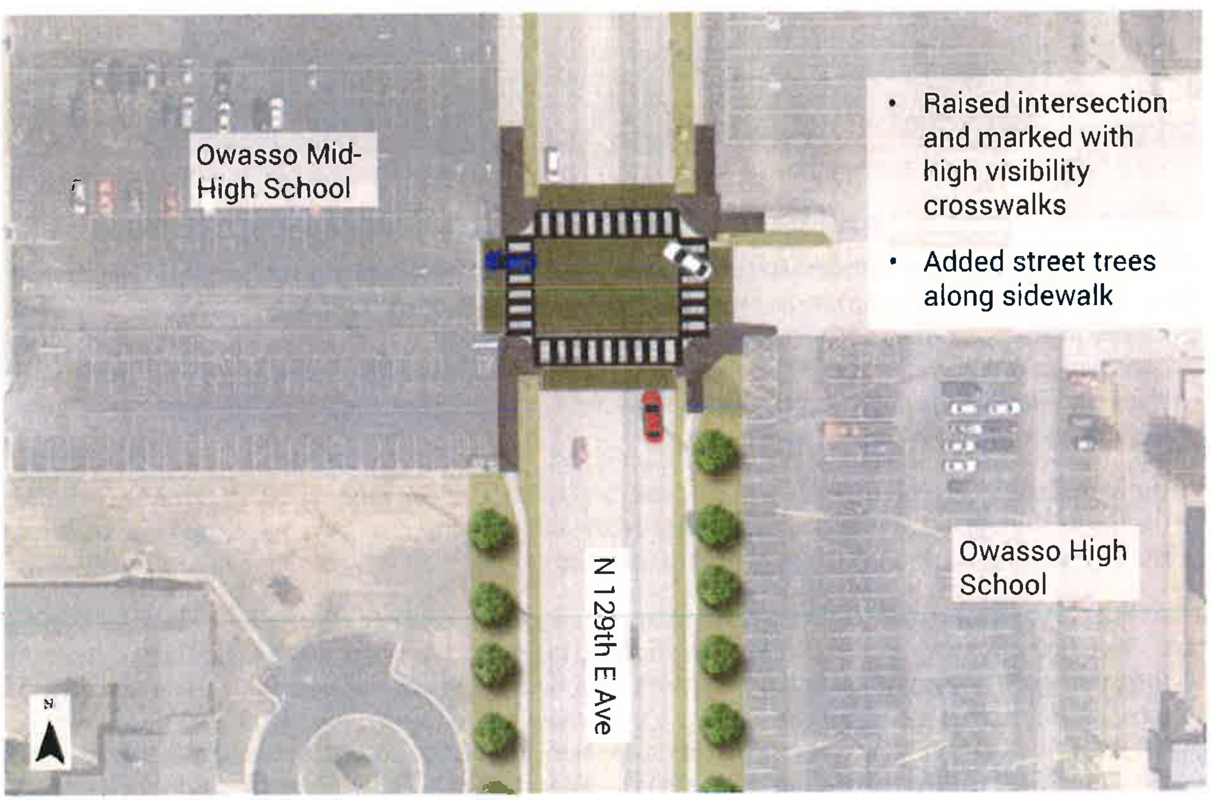
Traffic speeds are relatively normal and slow during school drop-off and pick-up times because of the high volume of traffic, but the rest of the day has vehicular speeding and behavioral issues. Surrounding development is mostly suburban strip retail and gas stations, with some nearby residential development.

The solutions to help this area must focus heavily on pedestrian improvements and ways to calm vehicular traffic along the arterials. The biggest impact would come from constructing raised crosswalks or a fully raised intersection at the High School/Mid-High School entrances off of N 129th East Ave. This would both slow vehicular traffic and would increase the safety of people walking across the intersection. It would also create a gateway to the area and provide sense of entry to the schools. It is also vital to widen the crosswalks and make them high visibility markings at the intersection of N 129th East Ave and E 86th Street N. Planting of street trees in the grass buffer would provide a more comfortable pedestrian experience and help slow traffic. Lastly, a mid-block crossing with HAWK signal and raised median along E 86th St N would allow safer crossing of high school students and the shopping center on the south side of the street.

SCHOOL ACCESS ON MAJOR ARTERIAL



Existing aerial of the Owasso High and Mid-high school entry intersection



Conceptual plan of the proposed raised intersection at the Owasso High and Mid-high school entry intersection

SCHOOL ACCESS ON MAJOR ARTERIAL

Existing photo looking east at the entry intersection of the Owasso High and Mid-high schools

Conceptual photo-rendering of the entry intersection of the Owasso High and Mid-high schools

COMMERCIAL MAIN STREET

Typical sidewalk view on north side of 15th Street

On street parking removed from south side of 15th Street

Lack of mid-block crossings along 15th Street

Access management issues along 15th Street

15th Street between Peoria Avenue and Utica Avenue

While 15th Street was narrowed from four lanes to two in 2012 this area, there are additional streetscape improvements that would further attract pedestrian traffic to this retail and restaurant corridor. Discontinuous sidewalks, access management issues with many driveways, poor crossing treatments, and the lack of a bicycle facility are all pressing issues for this area. Most of the existing crosswalks along 15th Street are faded and do not adequately alert drivers to pedestrian cross traffic. Many of these crossings also do not have ADA-compliant curb ramps. A dense commercial corridor such as this one needs frequent crossings to enable pedestrians to patronize businesses on both sides of the street safely and comfortably. The City of Tulsa is currently undertaking a streetscape plan for this corridor that should incorporate the recommendations provided here.

The conditions along these corridors can be improved with a few minimal investments and streetscape elements. The sidewalks should be made clear and continuous along both sides of the streets and high visibility crosswalks should be added at the intersection of 15th Street and Utica Avenue. This will require building raised sidewalks at driveway crossings along 15th Street and implementing some access management strategies for businesses that currently have open parking areas to the street. Along 15th Street there should be several mid-block crossings and crossing treatments at the intersection of SH-51/St Louis Avenue, south of 15th St. These crossings should be a part of a streetscape enhancement project that bring in curb extensions with street trees and pedestrian scale street lighting along the sidewalks. A robust planting and lighting plan will truly enhance this commercial corridor and encourage pedestrians to stroll and visit more than one business on a trip.

COMMERCIAL MAIN STREET

Existing aerial of E 15th Street

Conceptual plan of the proposed crossings, streetscape treatments, and sidewalk improvements on E 15th Street

COMMERCIAL MAIN STREET

Existing photo looking east at the faded crossing of E 15th Street

Conceptual photo-rendering of a raised mid-block crossing on E 15th Street

MAJOR ARTERIAL INTERSECTION

Looking west on E 21st St from the intersection of Garnett

Looking east on E 21st St from the intersection of Garnett

Looking North at the crossing of E 21st St on Garnett Rd

Wide intersection at E 21st Street and Garnett Road

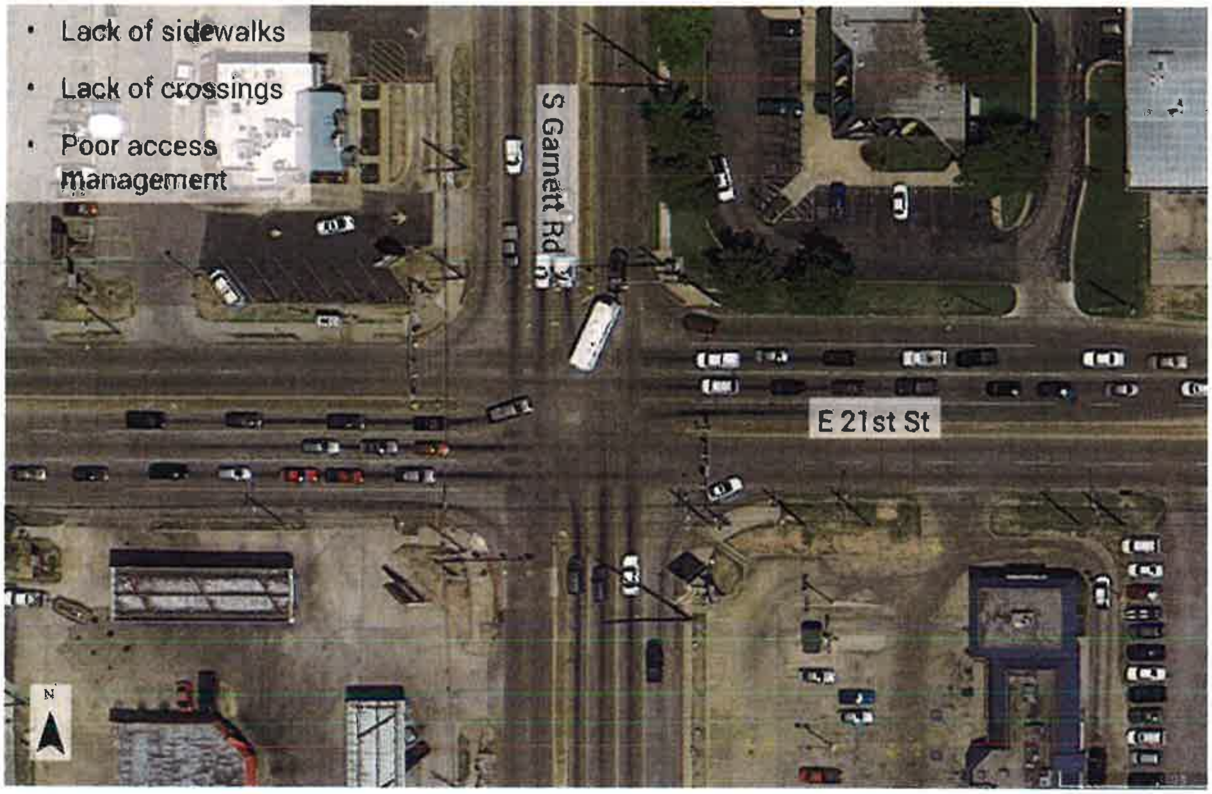
East 21st Street At South Garnett Road

East 21st Street and Garnett Road are key arterials that connect to Mingo Valley Expressway and Interstate 44. They have a typical suburban strip development character. At the intersection of East 21st Street and Garnett Road there is a small node of retail stores, chain restaurants, and gas stations. Unfortunately there are no continuous sidewalks along either side of E 21st Street, and there are multiple driveway cuts and access management issues with the development patterns and large surface parking lots. There are also no sidewalks or crossing treatments as a pedestrian approaches US Highway 169 exit ramps. Along this corridor there are additional pedestrian and vehicle conflicts because of the multiple parking lot entries and poor access management. Transit service exists on both 21st Street and Garnett Road, but the lack of sidewalk connectivity creates a barrier to access the bus stops for both lines.

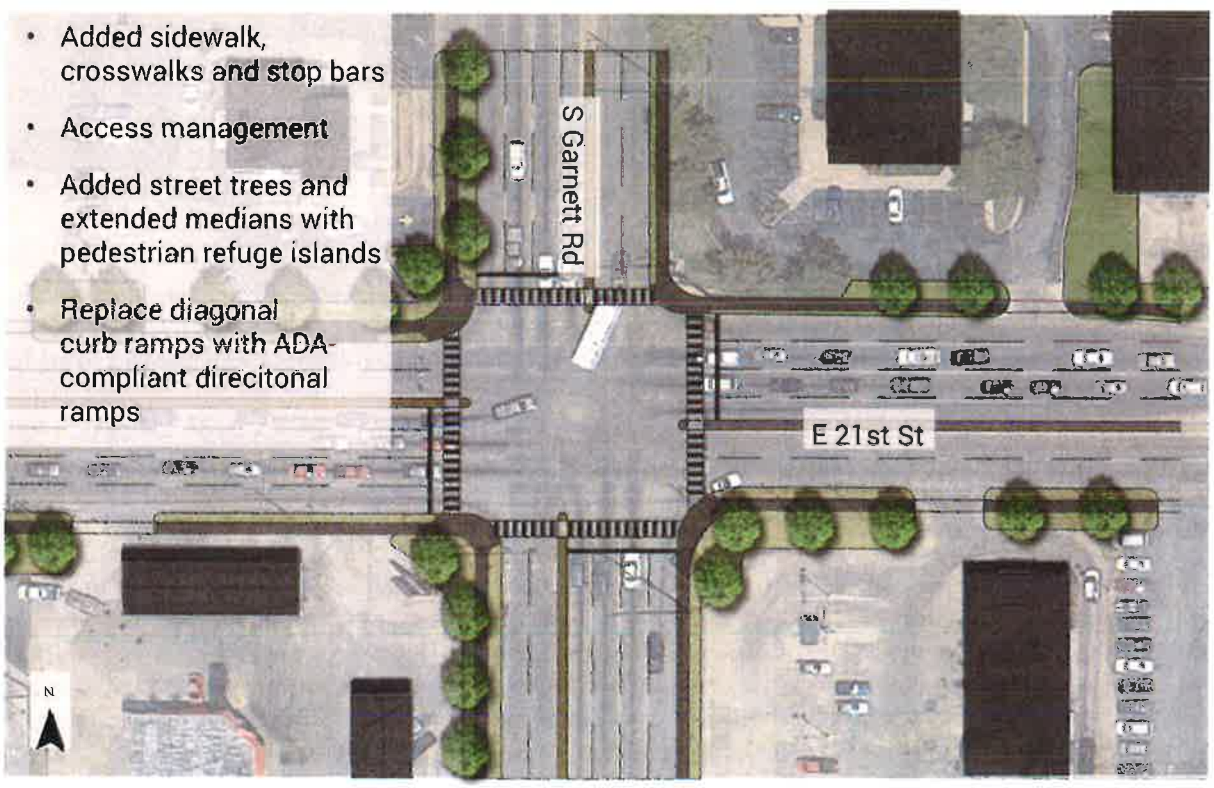
The first improvements to this area should occur within the pedestrian realm. Each side of E 21st Street should have continuous sidewalks with shade trees planted within a grass planting strip between the roadway and the new sidewalk. Access management strategies should be implemented along the streets to make the sidewalks safer from turning vehicles in the multiple driveway cuts for each property and parking lots. This will reduce the number of driveway crossings and make it safer for vehicles traveling along the streets by eliminating a number of conflict points. Eliminating driveway cuts close to intersections will also decrease driver confusion and frustration with vehicles entering/exiting.

There should also be high visibility crosswalk markings added to the intersection of Garnett Road and E 21st Street. These crossings can be further protected by adding raised median islands and extensions to the median island ends to provide refuge areas at the crossings.

MAJOR ARTERIAL INTERSECTION



Existing aerial of the intersection of E 21st Street and S Garnett Road



Conceptual plan of the proposed crossings, streetscape treatments, and sidewalk improvements at the intersection of E 21st Street and S Garnett Road

MAJOR ARTERIAL INTERSECTION

Existing photo looking east at the missing crosswalk at the crossing of South Garnett Road

Conceptual photo-rendering of a high visibility crosswalk, re-aligned curb ramp and refuge island median

GRADE-SEPARATED HIGHWAY INTERCHANGE

Lack of sidewalk under the Highway 169 overpass

Lack of crossing at the Highway 169 off ramps

Lack of sidewalk along East 21st Street

Lack of pedestrian crossings across East 21st Street

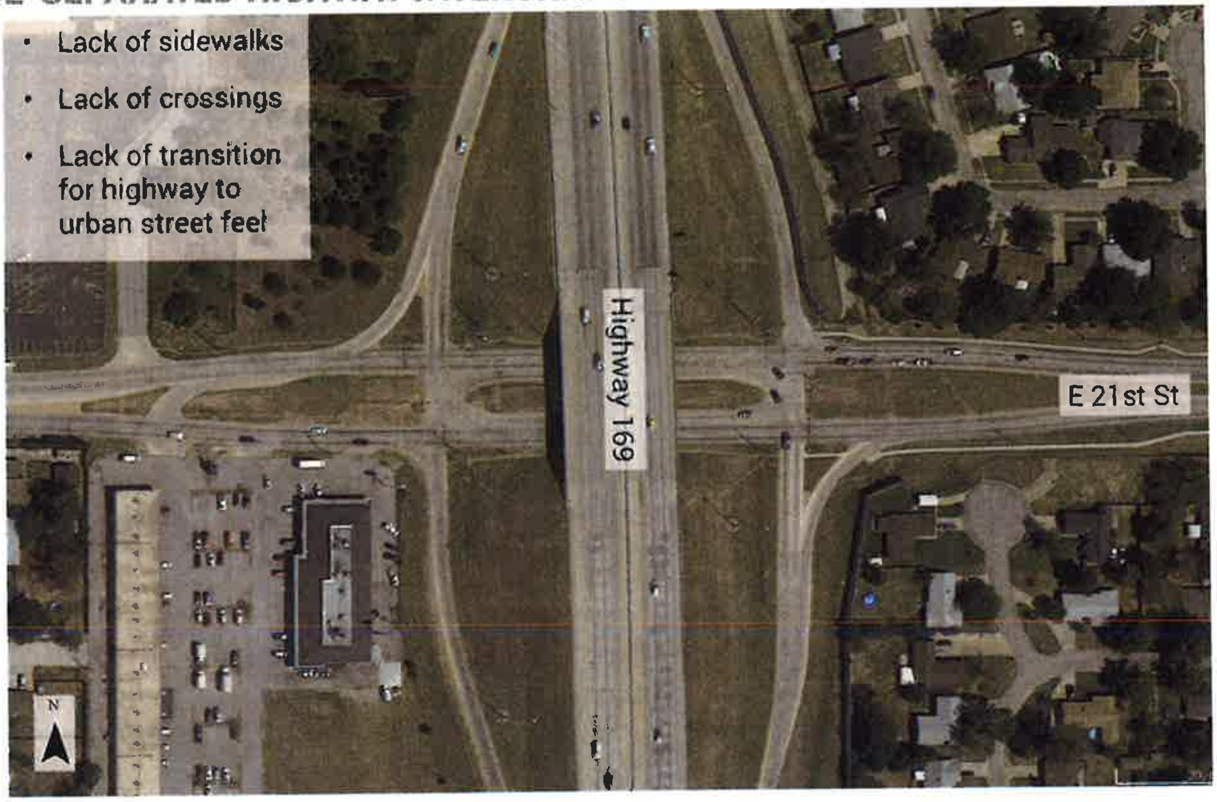
East 21st Street at Highway 169

There are similar issues at the intersection of Highway 169 and East 21st Street to what occurs to the east at the Garnett Road intersection concept area. Sidewalks are not present underneath or to the west of US Highway 169, but frequent pedestrian and bicyclist travel is evident from dirt "cow paths" along the edge of East 21st Street. There are pedestrian signals at the crossings of the highway ramps, but the push buttons are not activated and there are no crosswalks. There is also no ADA-compliant way to cross the median on East 21st Street though there is a pedestrian push button located on the utility pole in the median.

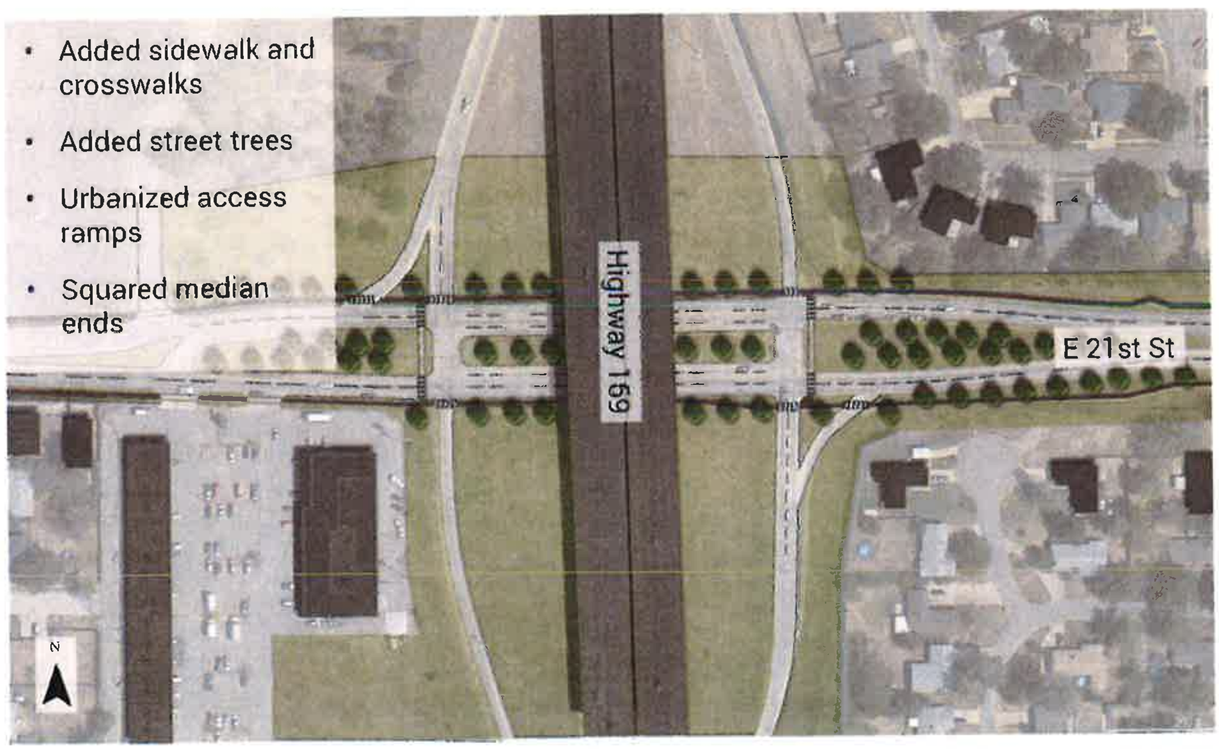
As with the area along East 21st Street to the east, sidewalks and ADA-compliant curb ramps are the top priority in this concept area. To help accommodate bikes these should be shared use paths under the Highway 169 overpass. To make crossings safer and more conspicuous, there should be high visibility crosswalk markings at the Highway ramp intersections and push button detection at the ramp crossings. The geometry of the medians and off ramps should also be urbanized and squared to slow traffic exiting Highway 169 and prepare drivers for interacting with pedestrians and bicyclists crossing their path of travel.

There should also be shade trees from an approved city planting list planted within the planting strip between the roadway and the new sidewalk where right-of-way is available. In this area and similar ones, vegetation should be managed so as not to impede travel along a sidewalk as it does now in the photo above at the bottom left. New street trees can be added through partnerships. The City of Tulsa should approach a third party such as Up With Trees to plant and maintain the plantings indicated.

GRADE-SEPARATED HIGHWAY INTERCHANGE



Existing aerial of the intersection of E 21st Street and Highway 169



Conceptual plan of the proposed crossings, streetscape treatments, and sidewalk improvements at the intersection of E 21st Street and Highway 169

GRADE-SEPARATED HIGHWAY INTERCHANGE

Existing photo looking east at the missing crosswalk at the crossing of the Highway 169 on ramp

Conceptual photo-rendering of a high visibility crosswalk at the crossing of the Highway 169 on ramp

4 IMPLEMENTATION

The bicycle and pedestrian facility recommendations in this plan are designed to be efficiently incorporated into jurisdiction planning and development processes. Implementation of these recommendations will occur over time, commensurate with available resources in each jurisdiction.

This chapter:

- Provides details on project prioritization and phasing
- Presents planning-level cost estimates and assumptions
- Enumerates possible funding sources

The recommendations for expanding the region's bicycle and pedestrian facility networks were based on historical and anticipated funding levels. The proposed approach also gives jurisdictions flexibility to pursue projects as opportunities arise and conditions change.

Plan Projects

The bicycle network was divided into a set of 700 projects for the purposes of recommending implementation approaches and developing a prioritized list, with cost estimates, by jurisdiction. The network was divided into projects through the following method:

Geography

- Recommendations located wholly within a city were assigned to that city
- Recommendations with a majority of their mileage located within a city were assigned to that city
- Recommendations with a majority of their mileage outside a city were assigned to the appropriate county
- Recommendations located on a street along a jurisdictional boundary (city-city or city-county) were assigned to the appropriate county

Facility

- Projects are located along a single street or trail corridor
- Signed routes are bounded by logical end points (e.g. destination, or major street or direction change) and often include more than one street
- Where the facility type changes along a corridor, recommendations were broken into separate projects
    - Exception: a project that calls for a bike lane along part of a street and a shared lane marking for part of that street is considered one project.

Main St in Broken Arrow is an example of a multi-facility project.

This method is intended to produce a project list that will lead jurisdictions logically toward implementation. Individual projects connect to one another to create the full network. However, inevitably, some bicycle facilities will be built that initially do not connect to other facilities or to destinations. This is a result of incremental implementation that will be the most practical approach to building out the entire network. Disconnected segments are particularly likely on arterial streets where sidepaths will be implemented over time during street reconstruction projects. It is important to understand that the ultimate value of a facility will not be fully realized until it is connected to the network.

Project Implementation

Bicycle and pedestrian projects are typically implemented in one of two ways: as part of a larger roadway project, or as a standalone effort. The former is often more efficient, as costs for materials and labor can achieve economies of scale when folded into a larger project. Bicycle and pedestrian facilities are typically a relatively small portion of a roadway project, whether it is a restriping, resurfacing or reconstruction project. While planned and programmed street improvements can help guide the implementation schedule for this plan, jurisdictions should also consider prioritizing improvements on streets where bicycle and pedestrian projects are recommended.

Standalone projects tend to be facilities that have minimal impact on a street. For bicycle projects, this includes the installation of rural signed routes and the construction of off-street trails. Urban signed routes may also be implemented as standalone projects, but they are more likely to need additional crossing treatments such as warning signage, signals or median islands and short lengths of sidepath that connect offset crossings. Trail projects will also require intersection improvements, but they are not likely to require reconstruction of a street. Projects implemented by striping or other paint installation may also be standalone projects, but they will require eradication of existing pavement markings.

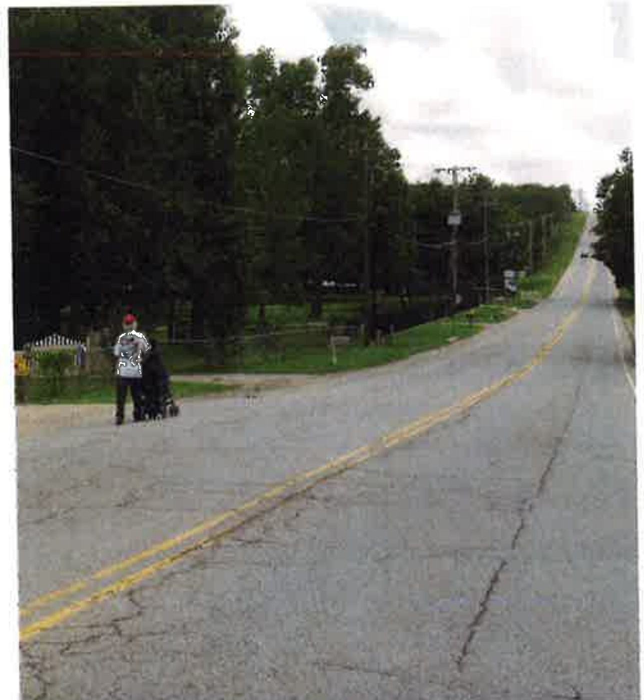
For pedestrian projects, sidewalk gaps will be filled as streets are reconstructed or as new development is located in adjacent parcels. Although funding may not be available to complete all projects at one time, the additional pedestrian recommendations in focus areas are intended to be implemented as a bundle because they work in concert to improve all observed pedestrian safety issues in the area.

Local governments will have primary responsibility for implementing projects in the GO Plan. Responsibility for design and construction of projects will be taken on by each jurisdiction individually. However, because the GO Plan network intends to connect major regional destinations, many projects connect across city lines, INCOG will assist in facilitation of finding federal funding sources and providing technical assistance with project development. It will be advantageous for communities to partner in implementing projects that provide regional connections both from the standpoint of creating a more connected network and for the efficiencies gained through economies of scale in constructing longer projects.

Project Prioritization

All projects in the bicycle network and sidewalk gap inventory were prioritized as part of the GO Plan. The prioritization methodology used for the plan is based on the 10-step method for prioritizing pedestrian and bicycle improvement locations developed for National Cooperative Highway Research Program (NCHRP) Report 803: *Pedestrian and Bicycle Transportation Along Existing Roads—ActiveTrans Priority Tool Guidebook.* The 10-step method is the result of findings from a national survey, literature review, and agency interviews. This method was used for all of the bicycle network projects as well as the sidewalk gaps within the City of Tulsa.

The prioritization tool reflects input of a project steering committee regarding community priorities. Each project is scored based on a set of criteria and weighting which are determined by the steering committee and reflect the vision



Sidewalk gaps such as this one on Union Street in Tulsa were prioritized based on a number of factors.

and goals of the project. The scoring uses a combination of selected factors and variables. Factors are categories used in the prioritization process to express community/agency values and group variables with similar characteristics. Variables are measurable characteristics of roadways, households, neighborhood areas and other features.

For this plan, factors, variables and weighting were recommended by the project team and reviewed by stakeholders. City of Tulsa staff from the planning and engineering departments provided input on these aspects of the prioritization tool and requested the inclusion of a number of City-specific variables for both the bicycle and pedestrian prioritization schemes. The project steering committee and the INCOG Bicycle and Pedestrian Advisory Committee also reviewed the prioritization inputs.

All bicycle projects were scored in the same manner across the region. Those located in the City of Tulsa were additionally scored with those variables noted as "Tulsa-specific" in the table below. Because Tulsa had more readily available data regarding prior plans and projected land use, these factors were incorporated into the prioritization of sidewalk gaps within the city. The final set of factors, variables and weights are provided in the tables [below]. The list of prioritized bicycle projects is presented for each community in Appendix C.

For the rest of the region, sidewalk gaps were prioritized based on proximity to key pedestrian traffic generators: transit lines, schools, parks and areas of low automobile ownership. Additionally, gaps on streets with high traffic volume were ranked higher because of the greater potential for conflicts between pedestrians and drivers. Each of those variables was weighted equally in the regional prioritization. A map of prioritized sidewalk gaps is presented for each community in Chapter 6.

Using the Prioritized Lists

Communities should use the resulting prioritized lists as a guide for implementation over the next 25 years. Projects near the top of each community's bicycle projects list will have

City of Tulsa Bike Prioritization Weighting Factors and Variables

Factor	Variables	Weight
Stakeholder Input		10%
	# WikiMap comments on corridor	
	Presence on project retreat prioritization list	
Opportunities		20%
	% of corridor included on Improve Our Tulsa[1]	
	% of corridor with project identified in prior plan[2]	
	Lower project cost (planning-level cost per mile)	
Safety		20%
	# of bike and pedestrian crashes per mile	
	# of fatal or severe bike and pedestrian crashes per mile	
	Change in Level of Traffic Stress based on recommended bike facility	
Demand		20%
	Average demand score for length of project	
	% of project coincident with existing transit line	
	Population density	
Equity		10%
	# of areas served with low automobile ownership	
	# of areas served a high % of low-income population	
	# of areas served with high % of population under 18	
Connectivity		20%
	# of connections to an existing in-street bike facility	
	# of connections to an existing trail	
	# of connections to a planned on-street bike facility	
	# of connections to planned off-street bike facility	

1 Tulsa-only variable

2 Tulsa-only variable. Included multimodal corridors from PLANiTULSA and small area plans provided by the City of Tulsa Planning Department.

the greatest impact on improving the bicycle environment and increasing bicycle travel. The list can also help INCOG prioritize funding decisions for applications that include pedestrian and bicycle infrastructure. Although the data-driven process is intended to determine broad priorities, it should be used as a guide, not as an infallible list of priorities. It's important that the prioritized list *not* be taken so literally as to preclude projects lower on the list from being constructed first if opportunity arises. For example, if a road rehabilitation project is imminent, a project lower on the list should be considered for implementation even if projects above it are not yet funded.

On-street facility cost estimates developed for the GO Plan include the cost of replacing storm drain grates. The region's roads today have a mix of bicycle-safe and unsafe storm drain grates. To be safe for bicyclists, the grate holes must run perpendicular to the path of travel.

Cost Estimates

Bicycle Strategy

An order of magnitude cost estimate was developed for the recommended improvements. Cost estimates were developed by establishing a cost per linear foot for the recommended cross-section and applying it over the length of the project. Cost estimates considered the significant construction items, e.g. asphalt, pavement markings, excavation, etc. Unit prices for construction items were established based on regional historical bid prices and the estimator's experience and judgment. The cost estimate also included a 10 to 30 percent contingency based on the complexity of the improvement. Not included in this estimate are the costs for engineering, permitting, grading, right-of-way, survey, insurance and inspection. Although quantities and unit prices were developed for each estimate, a fluctuation in quantities and bid prices can be expected as the level of design progresses. Actual construction costs can only be determined following final design; as such, the costs at this level of review are budgetary in nature and are typically accurate within +/- 30 percent. Details for cost estimate line items are available in Appendix D.

It should be noted also that costs are for all elements of a facility and do not estimate costs that would be covered by other parts of a street reconstruction or resurfacing project. For instance, all on-street facility striping project costs include the cost of eradicating existing striping, which adds between three and 10 percent to the cost. This cost would not be present in a resurfacing project. Similarly, construction of a 10-foot sidepath instead of simply replacing a 6-foot sidewalk in the course of a reconstruction or widening project would add 60 to 70 percent to the project cost.

The bicycle facility cost estimates provided below were developed with the following assumptions:

- Estimates are in 2015 dollars based on recent bid prices of Oklahoma projects
- All facility types include an estimated cost for signage
- Rural signed routes have less dense sign coverage than urban signed routes because they require fewer turns
- Bike lane, buffered bike lane and cycle track costs include replacement of storm drain grates with bicycle-safe drain grates
- Sidepath and trail costs are based on the recommended 10-foot width

- Cycle track cost assumes a street-level facility separated from automobile traffic by flexible delineators placed in a striped buffer area

Facility Type	Cost/mi ($)
Rural Signed Route	$800
Urban Signed Route	$18,500
Shared Lane Markings	$33,400
Priority Shared Lanes	$77,100
Bike Lanes	$71,600
Bicycle Corridor	$71,600
Buffered Bike Lanes	$71,000
Cycle Track	$120,700
Sidepath	$719,000
Trail	$888,100

Pedestrian Strategy

Greater detail is provided for the pedestrian improvements recommended in each focus area. These sets of recommendations consist of infrastructure elements outlined in Appendix D where costs are listed for each element. The cost of filling gaps in the sidewalk network outside of these areas is not estimated for each community.

Funding Project Implementation

This section presents the current state of bicycle and pedestrian project funding generally in the U.S. and in the Tulsa region. Recommendations and resources for individual jurisdictions pursuing project funding are presented as well as recommendations to INCOG regarding funding processes.

Federal Funding Sources

Bicycle and pedestrian projects are broadly eligible for the majority of federal transportation funding programs. Nationally, of the $1.5 billion of federal-aid program funds obligated to bicycling and walking programs in fiscal years 2013 and 2014, 36 percent came from the Transportation Alternatives Program (TAP) or its predecessor the Transportation Enhancements Program (TEP). Several other federal programs contributed significant portions as well. The Surface Transportation Program (STP) and the Congestion Mitigation and Air Quality Improvement Program (CMAQ) contributed 15 and 12 percent, respectively. The Highway Safety Improvement Program also contributed two percent of the funds spent on bicycling and walking during that period.

It is not uncommon for federal funds to be used for the implementation of pedestrian and bicycle projects in the Tulsa region. INCOG is involved in the selection and administration process for the TAP, STP and CMAQ programs.

- **Transportation Alternatives Program (TAP)** As mentioned above, TAP is a common source of federal funding for pedestrian and bicycle projects under MAP-21. Eligible project types include pedestrian and bicycle facilities, the conversion of abandoned railway corridors to trails, the development of safe routes for non-drivers and safe routes to school.

  INCOG administers regional TAP funds and opens funding rounds every other year, awarding approximately $2.2 million each funding cycle ($1.1 million per year). Combing two years' worth of funding into one selection cycle allows for funding larger projects. Funding was opened in 2013 for fiscal years 2014 and 2015. Eight projects were selected from 15 applications. There are also TAP funds available for cities and unincorporated areas outside the urbanized area through the ODOT portion of the TAP program.

  The Recreational Trails Program (RTP) is a set-aside within TAP that funds all types of recreational trail projects. It is administered by the Oklahoma Tourism and Recreation Department. Approximately $1.1 million is available for this program in Oklahoma.

- **Surface Transportation Program (STP)**
  STP is perhaps the most flexible federal funding program. STP funds can be used for a wide variety of bicycle and pedestrian activities, including any bicycling or pedestrian project-type eligible under the Transportation Alternatives Program (TAP) as well as for any recreational trail project eligible under the Recreational Trails Program.

  INCOG receives over $13 million per year in STP funds, and may consider funding bicycle and pedestrian projects. Currently, INCOG does not typically receive bicycle- and pedestrian-related applications from member communities for STP funds. However, the revised 2015 project prioritization and selection process awards the maximum points under the "livability" criteria to transit, pedestrian or bicycle projects. Road projects that include these components are eligible for five points in the livability section. Projects can also receive points for addressing pedestrian and bicycle safety.

- **Congestion Mitigation and Air Quality Improvement (CMAQ)**
  CMAQ funds are administered through the Oklahoma Department of Transportation (ODOT) and through Metropolitan Planning Organizations (MPOs) for areas that do not meet, or formerly did not meet, federal air quality standards. There are currently no such "non-attainment" or "maintenance" areas in Oklahoma. States without non-attainment or maintenance areas may use CMAQ funds for any CMAQ- or STP-eligible project.

  INCOG receives approximately $600,000 per year in CMAQ funds. Most of this funding is used for transit projects. In the past, INCOG has used CMAQ funds for the installation of bike racks, to conduct a bike share study, and to fund signage for bicycle facilities.

The table on the following page provides a list of federal funding sources that may be available for bicycle and pedestrian projects in the Tulsa region.

Popular bicycle and pedestrian infrastructure such as the high-quality, dual treadway River Parks Trails require a significant amount of funding but yield equally significant community benefits.

ACTIVITY	FTA	ATI	CMAQ	HSIP	NHPP/NHS	STP	TAP/TE	RTP	SRTS*	PLAN	402	FLH	BYW**	TCSP**
Access enhancements to public transportation	•	•	•			•	•					•		•
Bicycle and/or pedestrian plans	•					•				•		•		•
Bicycle lanes on road	•	•	•	•	•	•	•		•			•	•	•
Bicycle parking	•	•	•			•	•		•			•	•	•
Bike racks on transit	•	•	•			•	•					•		•
Bicycle share (capital/equipment; not operations)	•	•	•		•	•	•					•		•
Bicycle storage or service centers	•	•	•			•	•							•
Bridges / overcrossings	•	•	•	•	•	•	•	•	•			•	•	•
Bus shelters	•	•				•	•					•		•
Coordinator positions (State or local)			•			•	^		•					
Crosswalks (new or retrofit)	•	•	•	•	•	•	•	•	•			•	•	•
Curb cuts and ramps	•	•	•	•	•	•	•	•	•			•	•	•
Helmet promotion						•	^		•		•			
Historic preservation (bike, ped, transit facilities)	•	•				•	•					•		•
Land/streetscaping (bike/ped route; transit access)	•	•				•	•					•		•
Maps (for bicyclists and/or pedestrians)	•	•	•			•	^		•		•		•	•
Paved shoulders			•	•	•	•	•		•			•	•	•
Police patrols						^	^		•		•			
Recreational trails						•	•	•				•		•
Safety brochures, books						^	^		•		•			
Safety education positions						^	^		•		•			
Shared use paths / transportation trails	•	•	•	•	•	•	•	•	•			•	•	•
Sidewalks (new or retrofit)	•	•	•	•	•	•	•	•	•			•	•	•
Signs / signals / signal improvements	•	•	•	•	•	•	•		•			•		•
Signed bicycle or pedestrian routes	•	•	•		•	•	•		•			•	•	•
Spot improvement programs	•		•	•		•	•	•	•					•
Traffic calming	•			•	•	•	•		•					•
Trail bridges			•	•	•	•	•	•	•			•	•	•
Trail/highway intersections			•	•	•	•	•	•	•			•	•	•
Training			•			•	•	•	•		•			•
Tunnels / undercrossings	•	•	•	•	•	•	•	•	•			•	•	•

• Until Expended ** Until Not Available ^ As Safe Routes To School

TABLE KEY

FTA: Federal Transit Administration Capital Funds

ATI: Associated Transit Improvement

CMAQ: Congestion Mitigation and Air Quality Improvement Program

HSIP: Highway Safety Improvement Program

NHPP/NHS: National Highway Performance Program (National Highway System)

STP: Surface Transportation Program

TAP/TE: Transportation Alternatives Program / Transportation Enhancement Activities

RTP: Recreational Trails Program

SRTS: Safe Routes to School Program

PLAN: Statewide or Metropolitan Planning

402: State and Community Traffic Safety Program

FLH: Federal Lands Highway Program (Federal Lands Access Program, Federal Lands Transportation Program, Tribal Transportation Program)

BYW: National Scenic Byways Program

TCSP: Transportation, Community, and System Preservation Program

Recommendations

- Align the INCOG TAP application scoring system to the project prioritization process identified within this Master Plan.
- Publicize the eligibility and competitiveness of pedestrian and bicycling projects for STP and CMAQ funding among local jurisdictions.
- Increase the weighting for multi-jurisdictional projects with regional implications and possible connections between communities for all competitive funding opportunities.
- Provide application assistance to member communities to identify projects that have more impact.
- Include feasibility/opportunity/project readiness into the scoring of the applications.

State Funding Sources

Oklahoma recently, in late 2014, hired its first pedestrian and bicycle coordinator at ODOT. In 2013, the state legislature eliminated funding for the state Safe Routes to Schools Program. There is currently no statewide bicycle or pedestrian plan or dedicated state funding stream for projects for these modes. In its 2015 report card assessing Bicycle Friendly State ratings, the League of American Bicyclists noted that Oklahoma is in the bottom five states for federal funding for bicycling and walking projects based on the percentage of available federal funds obligated to those projects.[1]

Recommendations

- While neither INCOG nor its member jurisdictions can change state policy or funding, involvement in the new ODOT Bicycle and Pedestrian Advisory Committee may help bring state-level decisions to be more favorable to these modes.

1 League of American Bicyclists, Oklahoma Report Card, accessed 23 June 2015 http://bikeleague.org/sites/default/files/BFS2015_Oklahoma.pdf.

Local Funding Sources

The most effective way to fund the projects recommended in the GO Plan will be to review the plan when any decisions are made about street resurfacing, reconstruction and construction projects. In this manner, the projects will be an incremental cost added to a larger project. For standalone high-priority projects, local funds will need to be used on their own or as matching dollars for federal funding.

Local funding of pedestrian and bicycle infrastructure has generally come as part of street improvement projects in the region, with the exception of standalone trail projects. In 2003, Tulsa County voters approved a 13-year one percent **sales tax** increase called Vision 2025. A number of bicycle- and pedestrian-related projects funded under this banner including construction of the Osage Trail connecting Tulsa and Skiatook, an extension of the Midland Valley Trail in Tulsa, street reconstructions, and downtown and neighborhood streetscape projects in 10 communities throughout the county. Revenues from this tax have also leveraged federal funding for several street improvement projects. A renewal of this tax is currently under discussion which may provide further funding for bicycle and pedestrian projects. Other jurisdictions around the country have dedicated a portion of infrastructure sales tax increases to pedestrian and bicycle projects specifically. For instance, residents of the city of St. Louis and St. Louis County approved Proposition P in April 2013 which increased the percentage of sales tax dedicated to building the on- and off-street bicycle network. The 3/16th cent tax will provide $38.5 million for greenways and parks.

In 2013, City of Tulsa residents approved a **bond referendum** directing investment of $918.7 million from the Third Penny Sales Tax and General Obligation Bonds to more than 300 projects to improve streets and many city services. The majority, 72 percent, of the funds were allocated to street improvement projects. The locations of these projects were a weighted variable included in prioritizing the bicycle and sidewalk gap networks within the City of Tulsa.

Impact fees are another source of local funds for projects. These are assessed on new developments to pay for the construction or expansion of streets, parks, trails, water and wastewater facilities necessitated by and benefitting new growth. Many developments present good opportunities to fill gaps in pedestrian infrastructure, such as sidewalks and crossings, or to provide streetscape improvements and trail connections that make it easier and more appealing to walk or bike.

Funding from communities' **Capital Improvement Plans** (CIP) can also provide for construction and maintenance of pedestrian and bicycle projects on an annual basis. Placing pedestrian and bicycle projects into these annual budgets can guarantee a level of certainty that application funding does not. It is more likely that communities will use a CIP outlay for smaller projects such as on-street markings rather than street reconstructions or trail construction.

Recommendations

- Encourage member jurisdictions to continue to support continued sales tax and bond funding for street improvements.
- Encourage member jurisdictions to set aside a percentage allowance for bicycle and pedestrian improvements on any sales tax dedicated to infrastructure.
- Provide member jurisdictions with data on the cost-effectiveness of bicycling and walking projects from safety, economic and transportation perspectives.
- Encourage prioritization of street projects that include high-priority bicycle and pedestrian improvements identified in this plan.
- Encourage member jurisdictions to adopt ordinances to allow the collection of impact fees to fund bicycle and pedestrian improvements, among other applicable infrastructure improvements.

5 NON-INFRASTRUCTURE STRATEGIES

While the main focus of the GO Plan process has been the development of bicycle network and pedestrian recommendations, infrastructure is not the only element of a bicycle and pedestrian friendly region. Through this Plan, INCOG provides resources and recommendations to its member jurisdictions regarding the underlying policies and public programs that influence conditions for pedestrians and bicyclists.

This chapter provides:

- A brief overview of the policy review conducted during the planning process
- Region-wide policy recommendations for INCOG and its member jurisdictions[1]
- A review of existing efforts by INCOG and other non-governmental organizations to improve bicycling and walking through programming efforts, and
- A short list of programming recommendations based on national best practices

1 Jurisdiction-specific policy recommendations are provided in the community sections based upon priorities expressed by staff and stakeholders at the GO Plan mid-project retreat.

Policy Review

As a central element of both the analysis of existing conditions and the recommendations in this plan, the team performed a thorough analysis of the region's policy documents that influence the design of streets, street networks and off-street bicycle and pedestrian facilities. Zoning codes, engineering standards and design criteria and subdivision regulations were reviewed for all eleven jurisdictions involved in the GO Plan where applicable. A full account of this review is provided in tabular form in Appendix F.

Most existing guidelines and engineering standards in the region do not cover criteria for walking and bicycling facilities. Sidewalk, bike lane and trail widths are not addressed in most cities. Nor are other design elements such as the presence of a sidewalk buffer or frequency of driveway crossings that can significantly impact the pedestrian and bicyclist experience. However, sidewalk requirements are present in most communities' subdivision regulations or zoning code.

Subdivision regulations and zoning codes govern the connectivity and block-length of new streets. These elements impact the ability to complete short trips which is essential for effective pedestrian and bicyclist circulation. A connected and redundant street network facilitates these short trips and can make connections to trails, which provide comfortable and safe travel over longer distances. Access to existing trails can also be required through these codes. Some communities' regulations call for residential streets to be configured to discourage through-traffic. While this may reduce high-speed traffic on minor streets, it may also result in a more fragmented and misaligned street network that makes pedestrian and bicyclist travel difficult.

The walkability of an area is also highly influenced by the visual interest and variability of adjacent land use and form. The City of Tulsa's proposed zoning code begins to move the city's regulations in line with the goals of PLANiTULSA to create more livable, walkable places. Broken Arrow's zoning code also includes provisions to create a walkable downtown. Some key changes that will help in this regard are:

- Reduce off-street parking requirements
- Allow denser residential development and promotion of mixed-use development
- Lot and building regulations for mixed use zones, such as, prohibition of placing parking spaces between the sidewalk and building

Policy Recommendations

- Adopt regional standards for pedestrian and bicycle facility design as described within the GO Plan Design Guidelines.
- Encourage adoption of similar design guidelines in each jurisdiction to make facility implementation consistent.
- Subdivision regulations should require both residential and non-residential construction of sidewalks and bicycle infrastructure. Regulations should also require connectivity to local and regional trails as part of site review. In-lieu fees and bonding could also be considered by additional communities in the region to fund construction within new developments and connections to trails. Homeowners' associations should be encouraged to maintain sidewalks and bicycle infrastructure.
- Older developments should be required to address missing gaps and improve connectivity as part of resurfacing, redevelopment and retrofit projects. This could be accomplished through association fees or sidewalk grants allocated specifically for these connections.
- Encourage jurisdictions to adopt bike parking standards that include incentives to add bike parking and reduce the number of on-street and off-street parking.
- Encourage jurisdictions to adopt zoning code elements that result in a more pedestrian-friendly development pattern for downtown areas, such as the siting of off-street parking behind buildings and others outlined in the new Tulsa zoning code.

Other Es: Education, Encouragement, Enforcement and Evaluation and Planning

Bicycle and pedestrian planners typically approach improving the environment for those modes through a "five Es" model: engineering, education, encouragement, enforcement and evaluation and planning. The GO Plan's infrastructure and design recommendations are the most significant effort INCOG and the Tulsa region has made to date regarding the engineering portion of this model.

The other Es cover critical non-infrastructure aspects of supporting bicycling and walking:

- **Education:** Informs all road users of their rights and responsibilities to ensure safe roads for all.
- **Encouragement:** Creates a strong culture that celebrates walking and biking.
- **Enforcement:** Works with local law enforcement to target efforts in problem areas to keep all road users safe.
- **Evaluation and planning:** Collects data on walking and bicycling to help plan for these modes as safe and viable transportation options.[2]

Much of the programming in these areas is not the responsibility of a metropolitan planning organization (MPO) like INCOG. Typically, bicycle and pedestrian friendly communities take on programming at the city level or through non-governmental organizations such as advocacy coalitions or school-related groups. At INCOG, the Bicycle and Pedestrian Advisory Committee (BPAC) works to promote all five Es by advising the Transportation Committee on technical and policy matters, and by serving as a resource to member jurisdictions seeking public input pertaining to the bicycle and pedestrian environment. The BPAC also serves as a clearinghouse for efforts related to the five Es throughout the region, whether that is coordination of law enforcement training or disseminating information about nonprofits' bicycle education programs in schools.

One important step that was recently taken at the state level to improve traffic safety through enforcement is passage of a law banning texting while driving that will go into effect on November 1, 2015. In July 2015, the city of Tulsa updated its ordinances in accordance with the language in state law.

The area in which INCOG can and should take a lead role is evaluation and planning. Recommendations regarding INCOG's role as an implementer and as a resource are presented below in all four "other E" categories.

Evaluation and Planning

Count Data Collection

INCOG should use volunteers to expand its current biennial trail count program to an annual count program. The BPAC should be tasked with staffing the counts and recruiting additional volunteers.

INCOG should recommend on-street locations for annual counts to member jurisdictions. These counts should be staffed by volunteers or City staff. As more infrastructure is built, on-street counts will help tell the story of the impact on increasing pedestrian and bicyclist volumes. The best practice methodology of the National Bicycle and Pedestrian Documentation Project should be applied for counts.

Additionally, funding should be sought for three to five automatic counters to be placed at key locations along the regional trail system. These counters would supplement an existing automatic counter on the River Parks trails[3] and provide 24-hour coverage to count bicyclists and pedestrians. These continuous counts can be used to compute month- or year-long counts from the annual short-term manual counts.

2 Definitions adapted from the League of American Bicyclists, accessed 24 June 2015: http://bikeleague.org/content/5-es

3 According to the River Parks Authority, their infrared counter is possibly malfunctioning and should be investigated.

Annual Report on Bicycling and Walking

INCOG should publish an annual report on bicycling and walking in the region. This report will keep these modes in the public eye and provide an on-going source of information for member jurisdictions. It should include count and crash data analysis, a catalog of newly implemented facilities, BPAC efforts, policy changes and a summary of encouragement efforts completed throughout the year.

Travel Model

INCOG should refine its regional travel demand model to better reflect bicycle, pedestrian and transit trips. Many innovative MPOs are moving toward an activity-based model that takes personal mode choice into account in assigning trips to modes. Coupled with a new travel model, the region's household travel survey should be refined to better pick up modes that typically are underrepresented in travel surveys. The addition of data loggers with GPS capability would help to capture walk and bike trips and non-motorized trips to access transit.

Bicycle and Walk Friendly Community Designation

Tulsa is currently designated as a bronze Bicycle Friendly Community by the League of American Bicyclists (LAB). INCOG wrote the original application that led to recognition by the LAB in 2009. INCOG should continue to provide support to other communities completing a new or renewal application for this designation and support any additional communities in the region that apply. INCOG should encourage communities to use the application process for both of these designations as a learning process and a means of bringing together City staff who work on these issues.

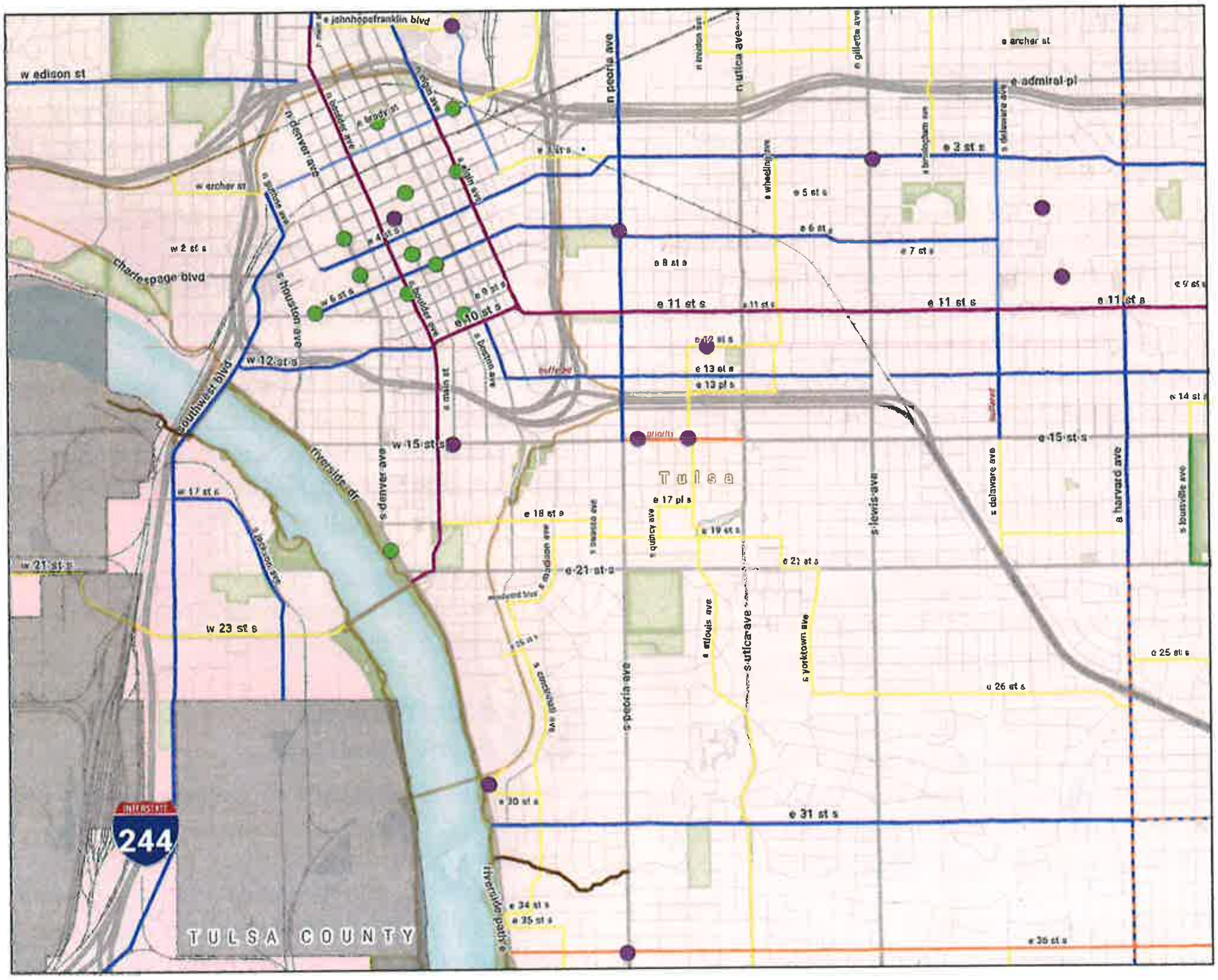
Encouragement

Bike Share System

The implementation of a bike share system can increase the number of the region's residents with access to a bicycle and get more people riding. INCOG completed a feasibility study and business plan for a bike share system in the City of Tulsa in 2015. The recommended system will consist of an initial launch phase of 12 stations and 108 bikes at

Cataloging bicycle parking and innovations such as in-street parking corrals should be included in an annual report on bicycling and walking.

The Tulsa Townies bike share systemhas been an asset to getting more residents and visitors on bikes. A new bike share system will attract even more riders.



key locations downtown and nearby destinations such as the University of Tulsa and the Gathering Place. Phase two will expand the network with 12 additional stations at OSU-Tulsa and University of Tulsa campuses, Pearl District and Brookside. A newly-formed nonprofit organization will own and operate the system, or contract operations to a private vendor.

Phases one and two are expected to cost $3.2 to $3.8 million over five years—depending on selected equipment and technology—including capital, launch, administration and operating costs. The key next steps outlined in the Bike Share White Paper should be undertaken by INCOG as soon as possible to aim for a 2017 system launch.

Phase

- 1
- 2

Recommendations

- Trail
- Sidepath
- Cycle Track
- Bike Lane
- Bike Corridor
- Shared Lane Marking
- Signed Route
- Trail
- Bike Lane

Bike to Work Day

INCOG is the lead organizer of Bike to Work Day (BTWD) in the region. In most bicycle friendly communities, this is the major bicycle transportation event of the year to encourage more people to ride. INCOG should continue this role and consider providing resources to member jurisdictions to execute their own BTWD events. Continued and increased partnership with outside organizations and business sponsors would help grow the event. A strong partnership with local universities and community colleges is especially recommended for this series of events.

Bike and Walk to School Days

These events are important components of Safe Routes to School programs to encourage and educate students about how to get to school via bicycling or walking. National resources are available to help school districts plan these events, but the BPAC should make an effort to disseminate these resources to local school districts. The existing bicycle education program at six Tulsa elementary schools could provide an example pilot event to demonstrate its impact to other schools.

Bicycling and Walking Maps

INCOG already maintains an online trails and bicycle facilities map for the region. This should be continually updated as facilities are implemented. Over time, INCOG should consider upgrading this map to a level of comfort map that uses a Level of Traffic Stress assessment to indicate to bicyclists what streets are most comfortable for riding for a large range of bicyclist types.

INCOG should also provide up-to-date bicycle facility information to Google Maps for use in its bike layer.

Education

Other organizations in the region such as the Tulsa Hub and the afterschool bicycle programs at Tulsa Public Schools are already providing strong education resources about bicycling. Often, these types of organizations are best suited to delivering educational classes, but INCOG should lend support to these efforts where it can through the BPAC.

Traffic Safety Education

INCOG received a grant from the Oklahoma Highway Safety Office to run public messaging about bicycle and pedestrian safety. The grant has funded radio ads with these messages in 2014 and 2015. Other MPOs coordinate safety campaigns with their member jurisdictions and provide marketing materials to create bus, bus shelter, billboard, online ad buys and other visual advertising. Region-scale campaigns are especially important in places like Tulsa where many residents live and work in different jurisdictions but would see a consistent message throughout the region. Education messages should be targeted at all types of road users.

INCOG should continue to use its social media outlets through the Transportation Resource Center to disseminate safety messages.

Enforcement

Bicycle Patrol Units

The Tulsa police department currently has a limited bicycle patrol unit but has expressed interest in increased funding for more officer training and bicycles. INCOG should educate and encourage all jurisdictions to replicate this program within their police departments to the extent feasible.

Bicycle Friendly Training in CLEET

The Bicycle/Pedestrian Advisory Committee recently started the process of including bicycle law training in regular law enforcement Council on Law Enforcement Education and Training (CLEET) courses. This will enable law enforcement officers to be more educated about bicycle laws and enforce them properly.

BPAC Membership

The BPAC currently has no representative filling the law enforcement slot. This slot should be filled and rotated among jurisdictions. The enforcement committee of the BPAC should continue its efforts to coordinate among local law enforcement agencies and seek to implement national best practices in bicycle and pedestrian law enforcement.

6 COMMUNITY PLANS

Bixby

Broken Arrow

Catoosa

Collinsville

Coweta

Glenpool

Jenks

Owasso

Sand Springs

Skiatook

Tulsa

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COMMUNITY PLAN

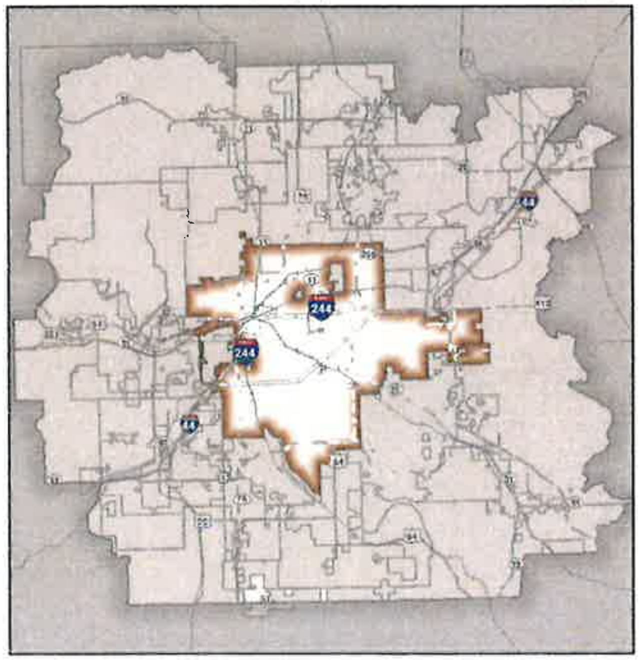
Tulsa

Tulsa

Community Overview

Tulsa is the major city of the region and the employment center for most of the region's residents. The city recently outlined a vision for its future in the PLANiTULSA comprehensive plan, adopted in 2010 and updated in 2014. The plan focuses on five key themes:

- Have a Vibrant & Dynamic Economy
- Attract & Retain Young People
- Provide Effective Transportation
- Provide Housing Choices
- Protect the Environment & Provide Sustainability



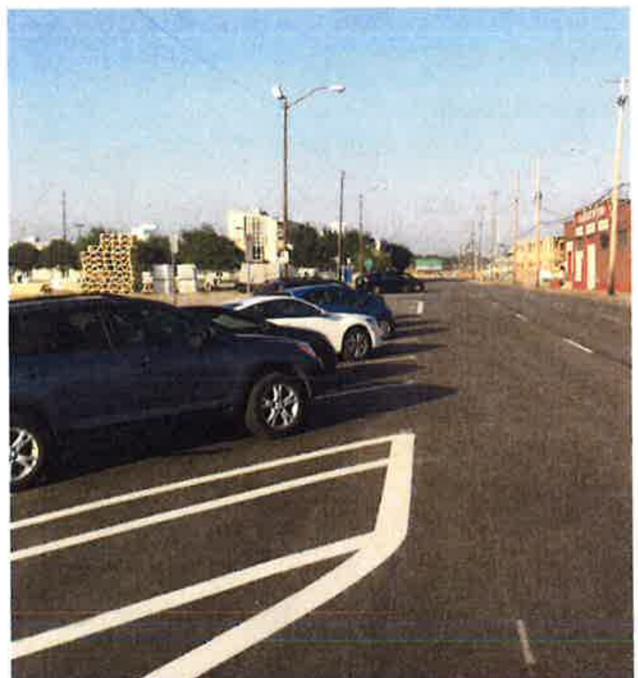
An improved pedestrian and bicycle environment can support each of these themes as the City moves forward with this vision of a more vibrant and attractive community. PLANiTULSA's transportation chapter focuses on creating a system where residents have a variety of modes to choose from, including driving, biking and frequent, reliable transit. Pedestrian travel is a key element of new mixed-use development centers. The GO Plan recommendations can form an initial bicycle network for the city, and design guidelines for both modes can help with project development as the city incorporates more of these elements into street construction and reconstruction.

Though Tulsa remains the largest city in the region, its share of the population has declined over time. Adjacent suburbs such as Owasso and Jenks are growing faster than Tulsa. In 1970, the city was home to nearly 60 percent of the region's population. Today, Tulsa's share is closer to 40 percent, with just under 400,000 residents. Similarly, employment growth has also been dispersed outside of the Tulsa core in the last 30 years. With more dispersed employment destinations, commute travel patterns are more complex. But there is strong interest from residents and City leaders and staff to create more mixed-use centers and to bring more residential development to downtown, both of which will enable shorter commute trips.

Over the past few years, Tulsa has been implementing infrastructure improvements to make biking and walking easier. One pertinent example is the four-lane to three-lane road diet conversion of 4th Place, between Yale Avenue and Sheridan Avenue. The street was reconstructed with a concrete surface. During that process, engineers recognized that four travel lanes were not needed for present or projected volumes of traffic. 4th Place was a designated on-street bikeway in the 1999 Trails Master Plan, and this road diet afforded the opportunity to upgrade the bike facility from a signed route to bike lanes.

City staff should consult the GO Plan in the same fashion to find opportunities for improving the bicycle and pedestrian realm in the course of regular street resurfacing and reconstructions. The City of Tulsa uses a Multimodal Level of Service (MMLOS) analysis to determine the best outcome for a street rehabilitation project. Due to the heavy data required for a MMLOS, the GO Plan did not go into that level of detailed analysis for the regional analysis. However, for all on-street facilities in the plan, the team did look at traffic volume and width of the street, curb-to-curb to get an idea of the level of excess capacity the street had for analyzing the possibility of a road diet.

Bike lanes on 4th Place were installed through reducing automobile travel lanes from four to three.



The City of Tulsa has begun implementing back-in angled parking in commercial districts throughout the city. These first instances in Oklahoma are a good example of how design can make the street safer through improving visibility for drivers.

Walkshop Summary

Five "walkshops" were held throughout the City of Tulsa during April 2014. They were attended by City staff, elected officials, community members, INCOG staff and the media. Walkshops were conducted in the following locations across the City:

- **Cherry Street**
  Peoria Avenue to Utica Avenue
- **North Tulsa**
  Lewis Avenue near 46th Street North
- **West Tulsa**
  41st Street near Southwest Boulevard
- **East Tulsa**
  Garnett Road near 21st Street South
- **South Tulsa**
  93rd Street South near Memorial Drive

Comments made during these walkshops contributed to the selection of the four pedestrian focus areas presented later in this chapter and helped identify typical issues faced by pedestrians and bicyclists within the city.

Based on the comments expressed during the walkshops, the following are priorities for improvement:

Local residents and business owners joined elected officials and the project team to evaluate walking conditions in the field in East Tulsa.

Identified Issue:
The segment of Peoria Avenue from 51st Street to 71st Street was identified as a difficult pedestrian environment. Lack of sidewalks means that pedestrians walk on shoulders or through parking lots, routes which are often not accessible to those traveling in a wheelchair. The high frequency of driveway crossings also leads to conflicts between pedestrians and drivers.

Response:
A portion of this segment, from 61st Street to 66th Street, is included as a focus area.

Response:
Access management strategies necessary on Peoria are addressed in the concept design for 21st Street at Garnett Road, in the design guidelines and in the policy recommendations for the City of Tulsa.

Note: This segment does not appear in the sidewalk gaps prioritization because that inventory only captured areas with no sidewalk on either side of the street; a sidewalk is present on the west side of this segment.

Walkshop Summary

Identified Issue:
Unsignalized trail crossings of arterials, such as the Creek Turnpike Trail at Mingo Road, were noted as an issue. These crossings interrupt the comfortable and safe travel experience of pedestrians and bicyclists along a trail.

Response:
Recommended trail crossing treatments are presented in the design guidelines.

Identified Issue:
Crossings of highway on- and off-ramps were called out as particular challenges for pedestrians. For instance, the US-75 ramps at Pine Street present a barrier to residents on the east side of the highway accessing retail, Carver Middle School and the YMCA on the west side. The Mingo Trail crossing of the Route 169 off-ramp at 91st Street was also noted as an issue.

Response:
Highway ramp crossings are addressed in the concept design for 21st Street and Route 169 interchange. Slip lane crossings are addressed in the concept design for the 41st Street and Route 97 intersection in Sand Springs.

Identified Issue:
The Broken Arrow Expressway was noted as a barrier to east-west bicycle travel in Tulsa because the existing through streets are major arterials which are uncomfortable for riding.

Response:
The recommended sidepath on Harvard Ave will connect a signed route on 25th Street and 26th Street that travels east-west across the BA Expressway. The recommended sidepath on 31st Street will also provide a connection across the highway.

Identified Issue:
The lack of connectivity is a challenge for pedestrians and bicyclists in East Tulsa. There are few safe and convenient access points to the trail system.

Response:
Recommendations from the East Tulsa Small Area Plan were adopted into the bicycle network. Additional connectivity to the Mingo Valley Trail will be provided by a sidepath along 31st Street and buffered bike lanes along 11th Street.

Identified Issue:
Bicyclists noted the lack of safe on-road connections from the River Parks trails, and the Gathering Place in the future, into the core of downtown. Topography is challenging as the city is on a bluff above the Arkansas River, so bicycle connections need to take this into account. Connections are also needed from downtown to midtown.

Response:
A number of bicycle network recommendations address this challenge including a separated bike lane on Boulder Ave connecting the 21st Street bridge to downtown, a bike lane on 12th Street from the Southwest Blvd bridge to Boulder Ave, and signed routes on low-volume local streets on either side of Peoria Ave from Skelly Drive to 11th Street.

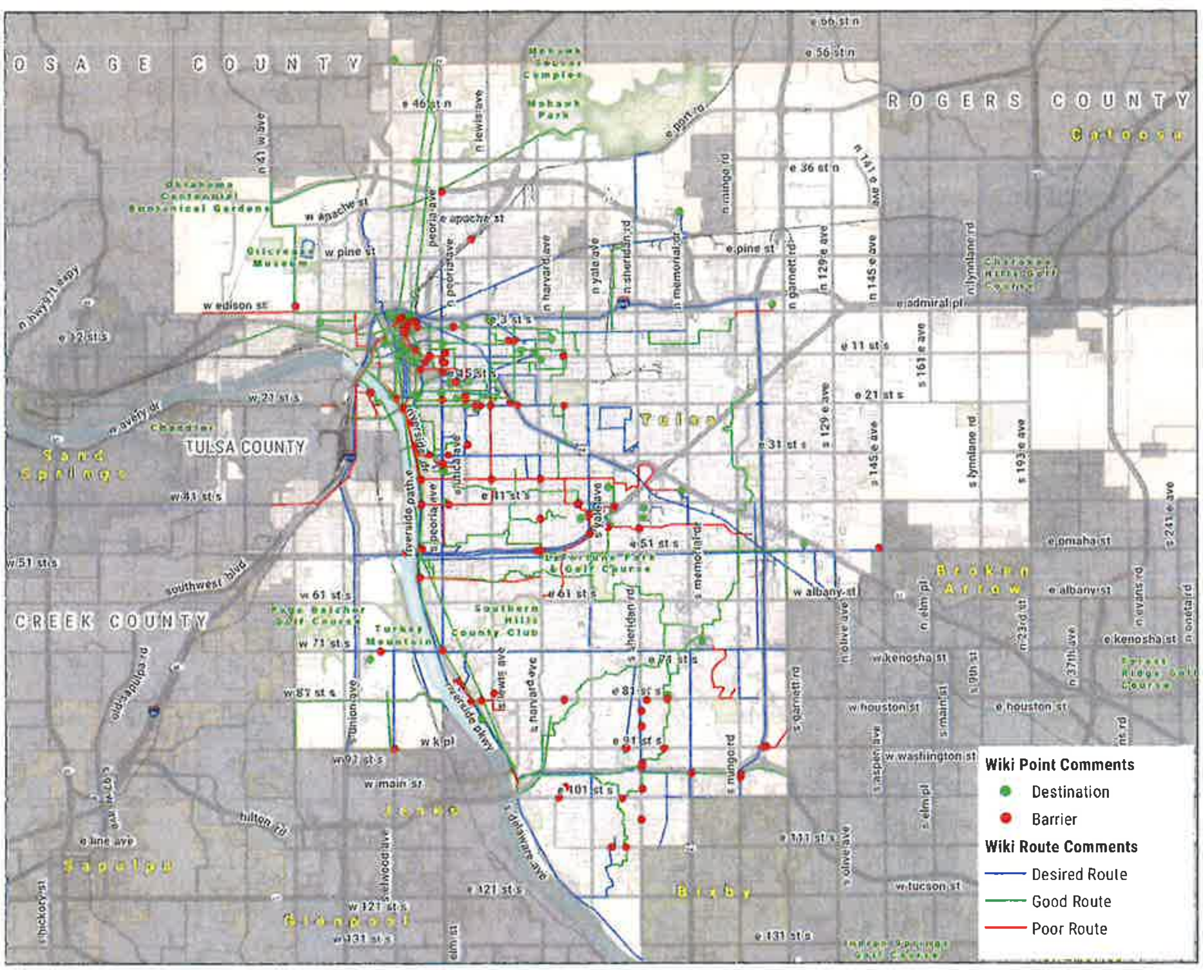
WikiMap Summary

There were 76 registered users of the WikiMap who indicated a home zip code in Tulsa. These users indicated that most destinations they walk or bike to today are located in downtown and midtown which is not surprising given that these are the most mixed-use neighborhoods in the city, and destinations are close to one another.

Users generally indicated that places they walk and bike today feel comfortable and safe from traffic. These included the major trails in Tulsa and low-volume, low-speed neighborhood streets. Poor walking experiences occurred on streets without sidewalks, where sidewalks are close to high-speed traffic, and those with seasonal maintenance issues such as snow build-up and encroaching vegetation. Locations with barriers to walking were also marked, and dangerous intersections were the most frequently cited issue. A number of these intersections are located in the downtown area where the highest concentration of pedestrians is also located. Lack of sidewalks and lack of crosswalks were the second most cited pedestrian barriers.

Tulsa bicyclists cited dangerous intersections as the largest barrier to riding. The majority of these intersections were related to trail access either along Riverside Drive or the Creek Turnpike Trail. Lack of traffic signals and bicycle detection at existing signals were also cited as barriers, especially where comfortable bike routes cross major arterials.

WikiMap users also indicated many routes they would like to walk or bike if improvements were made. For bicyclists, many of these were along arterial streets that provide direct connections between destinations but have too much or too fast traffic today to be comfortable. On-street bike facilities or trails were desired along these routes.



Policy Review and Recommendations

In general, the existing policies that govern the development of Tulsa's streets and parcels should lead to the creation of spaces that are friendly to pedestrians and bicyclists. The zoning code update takes some additional critical steps toward ensuring vibrant pedestrian spaces in mixed-use areas of the city. The City adopted its Complete Streets policy in 2012 and a 2013 procedural manual to implement the policy. The manual identifies priority design elements that will make streets, especially those in downtown, in new centers, and along multimodal corridors friendlier to pedestrians, bicyclists and transit riders. As more streets are constructed and reconstructed in this model, the share of the street network available to these modes for safe and comfortable travel will grow.

The recommendations below will improve existing policies that affect the pedestrian and bicycle environment and network connectivity.

Recommendations:

- Develop an Access Management Plan that guides City decisions regarding a program of driveway consolidation and shared parking along commercial corridors that improves the pedestrian and bicyclist experience by reducing traffic conflicts. Prioritize consolidation in areas of high pedestrian and bicyclist volume, and in locations of sidepath recommendations.
- Continue adherence to adopted Complete Streets policy in new roadway construction and in reconstruction
- Consistently follow minimum on-street bicycle facility widths included in INCOG/City of Tulsa Context Sensitive Capacity-Volume-Geometrics Table
- Consider amending subdivision regulations to include connectivity items addressed in Chapter 5:
    - Include a provision for connecting cul-de-sacs to the rest of the street network with trails for pedestrian and bicyclist access
    - Require connections to regional trails within ¼ mile via trail segment, sidepath (along an arterial) or signed route (along low-volume local streets)
    - Consistently apply the sidewalk requirements included in Section 4.3 of existing subdivision regulations
    - Prohibit offset intersections of local streets across arterials.
- Consider amending the zoning code to include long-term bike parking as option for decreasing automobile parking requirements.

Pedestrian Network Recommendations

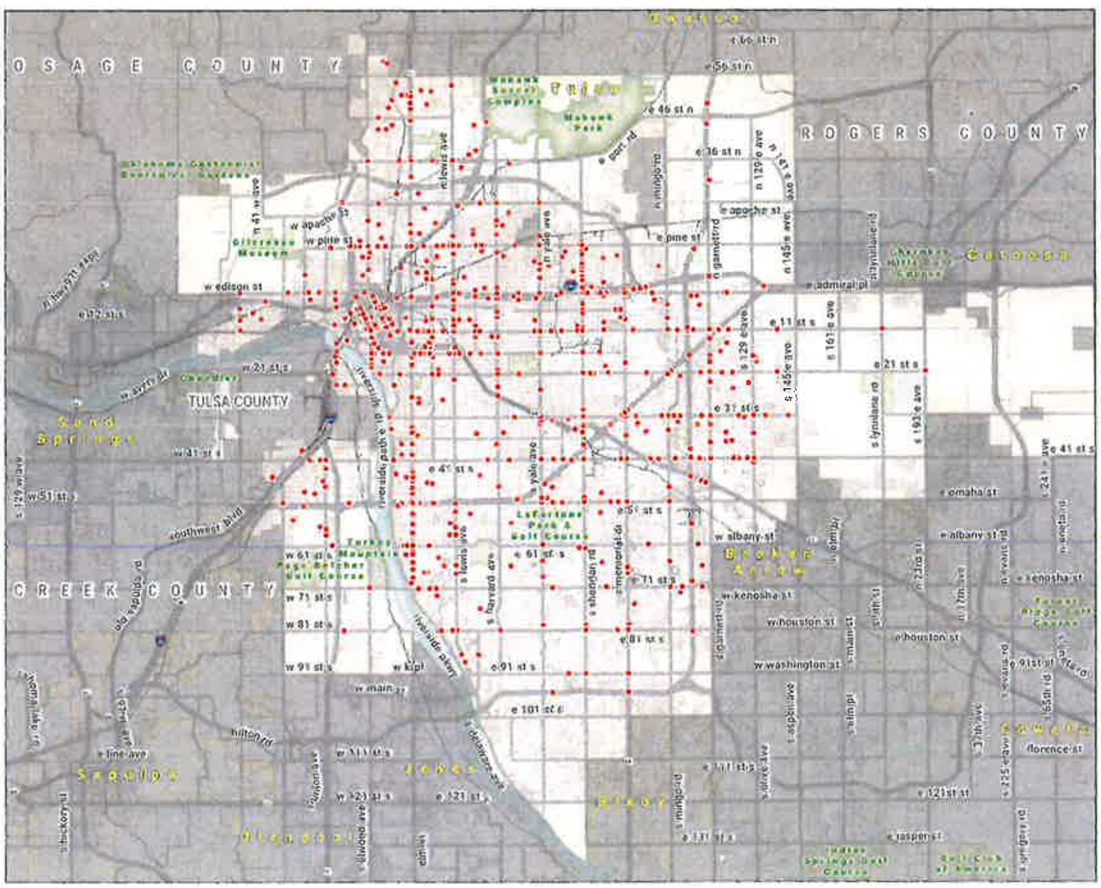
The pedestrian facility recommendations in this Plan comprise two elements: a prioritization of known sidewalk gaps on arterial streets and specific infrastructure recommendations for the community's chosen focus areas.

Prioritized Arterial Sidewalk Gaps

The map and project list that follow detail a prioritized set of improvements to fill sidewalk gaps on arterials. Arterial sidewalk gaps are targeted because these streets have the highest traffic volumes and speeds, but also many destinations for pedestrians, as well as some transit routes. Approximately 85 percent of the 608 pedestrian crashes reported in Tulsa in the five years ending July 2014 were located on arterial streets. The highest crash corridors are the location of transit routes and commercial corridors (Sheridan Street, Peoria Avenue, 11th Street) where there are likely to be more pedestrians.

Many conflicts and crashes occur at intersections. Appendix A: Design Guidelines and the concept designs presented in Chapter 3: Pedestrian Strategy present recommendations for arterial intersection treatments to improvedsafety.

There are important sidewalk gaps that are not captured within this data set: those locations on high-traffic pedestrian corridors with a sidewalk on only one side of the street, and those locations where sidewalks end before the intersection approach. Especially through commercial



Pedestrian or bicycle crash

corridors or those with transit lines, it is critical to have sidewalks on both sides of the street. In particular, the team believes the following areas should be prioritized for pedestrian needs:

1) W. 71st Street at US-75

2) S. Peoria Ave between 61st and Riverside Dr.

3) S. Union Ave between I-44 and 61st Street

Many locations were observed where sidewalks end before reaching the intersection, dead ending into commercial parking lots. This lack of connectivity forces pedestrians into more conflicts with drivers accessing businesses or forces them to walk in grass buffers which are not accessible for those with physical disabilities.

Today, in this segment of Peoria Avenue, pedestrians are provided a sidewalk on only one side of the street and must cross the with no accommodations to reach their destinations.

One additional important element of the pedestrian environment that is not captured in the analysis of sidewalk gaps is the presence of marked and signalized crossings. The distance between these crossings on Tulsa's arterial streets tends to be longer than desirable, up to one mile where no accommodation is provided between major arterial intersections. When destinations or bus stops are located on both sides of the street, this can lead to dangerous crossing behavior in locations where drivers do not expect pedestrians. While the resources needed to conduct a full regional analysis of crosswalks and signalized crossings was not available for this plan, these are important improvements to consider as street upgrades occur.

Focus Areas

Three focus areas were selected for Tulsa that are areas of particular concern for pedestrian safety:

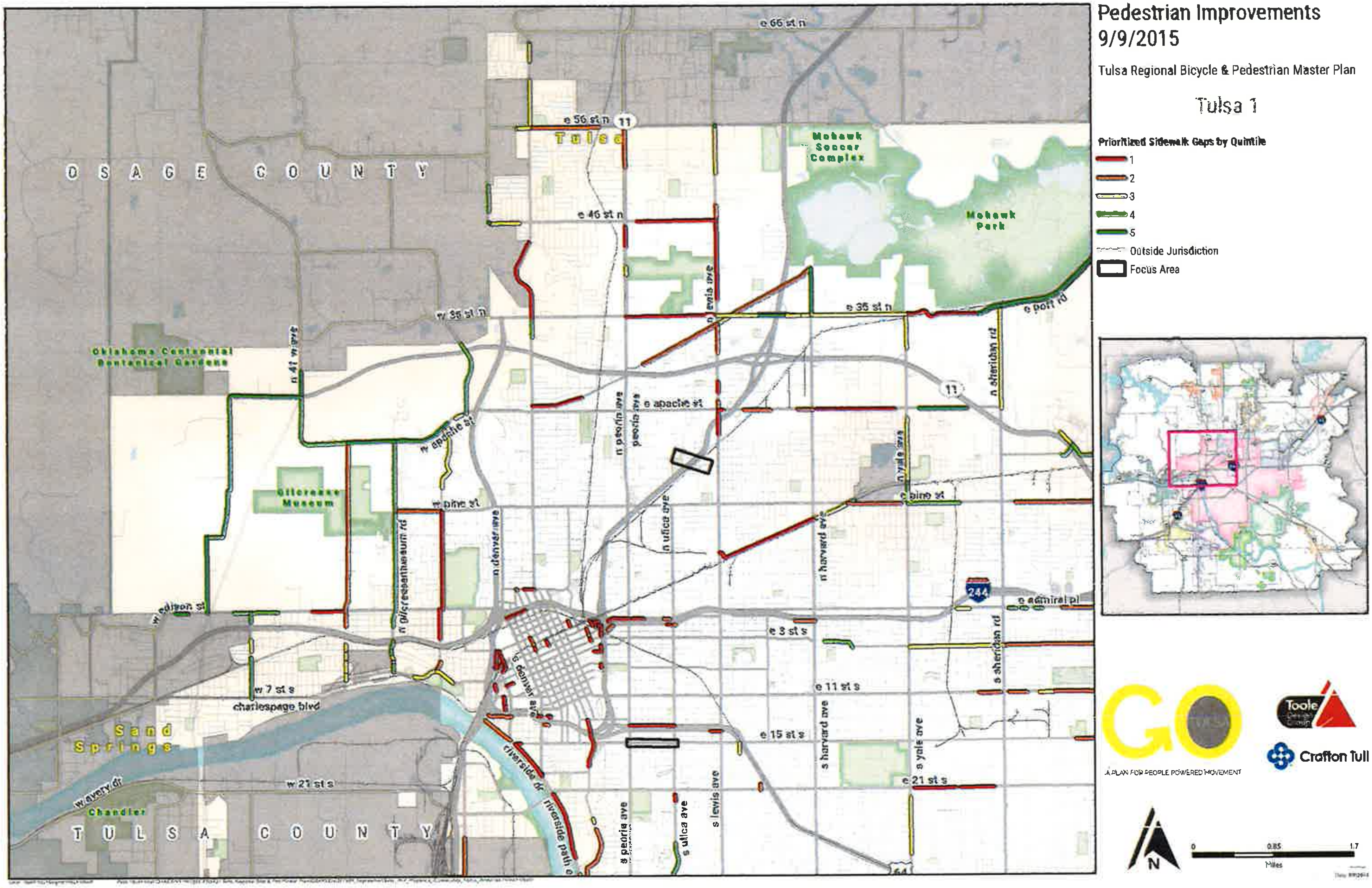
- Cherry Street from Peoria Avenue to Utica Avenue
- East 21st Street North from Hwy 169 to Garnett Road
- Peoria Avenue from East 61st Street to East 66th Street

These streets have varying types of challenges from the interaction of highway ramps with pedestrian infrastructure to designing a safe and pleasant main street environment. Details are provided in the following pages that assess these locations and provide planning-level infrastructure recommendations.

Pedestrian Improvements
9/9/2015

Tulsa Regional Bicycle & Pedestrian Master Plan

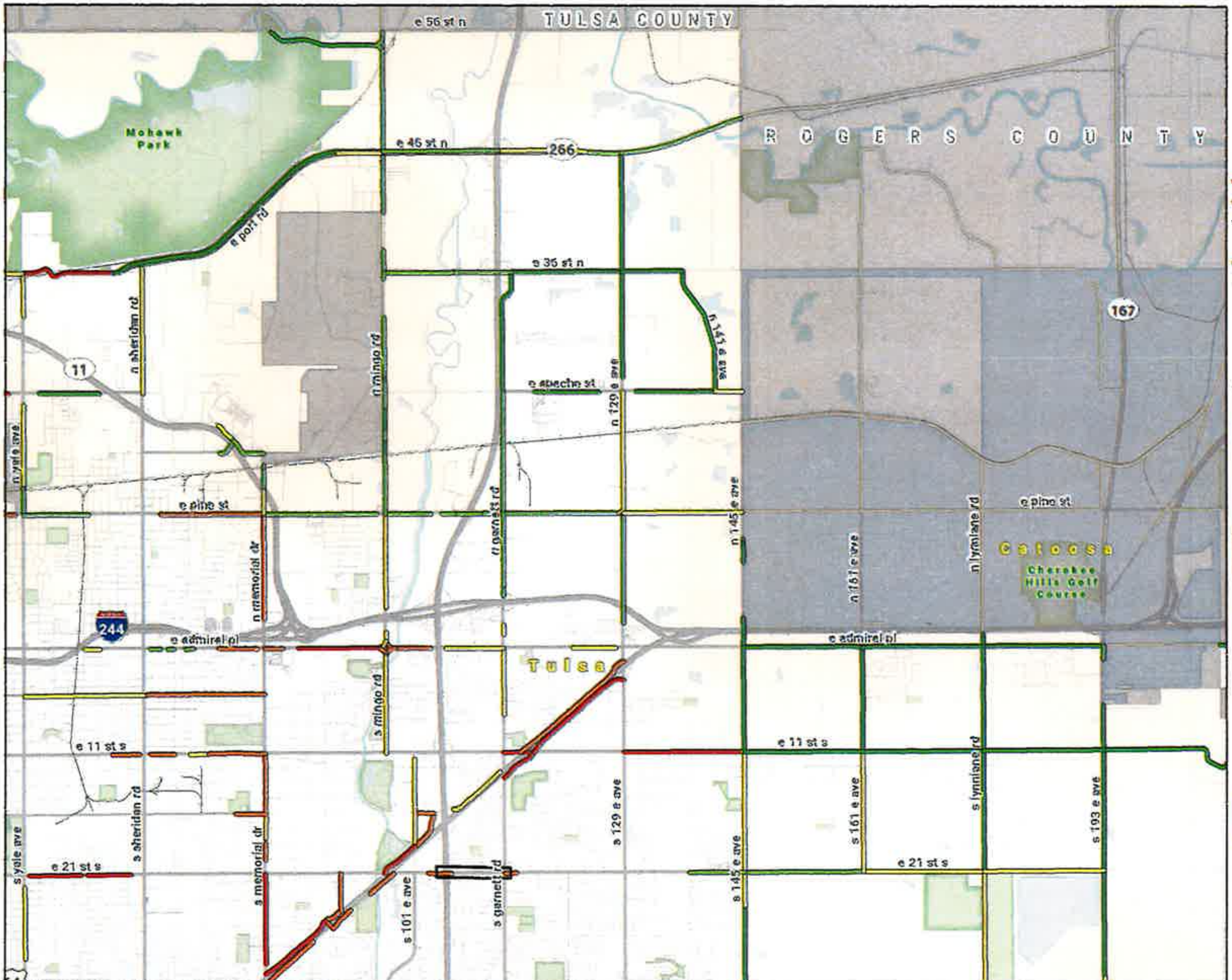
Tulsa 1



Pedestrian Improvements
9/9/2015

Tulsa Regional Bicycle & Pedestrian Master Plan

Tulsa 2



Prioritized Sidewalk Gaps by Quintile

- 1
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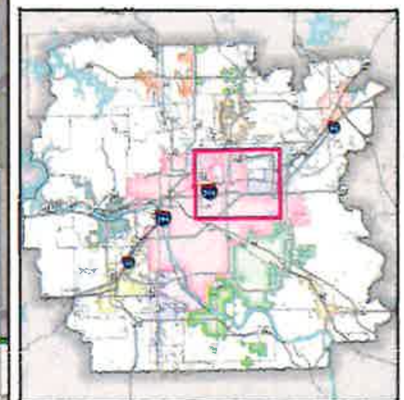
- 3
- 4
- 5
- Outside Jurisdiction
- Focus Area



A PLAN FOR PEOPLE POWERED MOVEMENT

Toole Design Group

Crafton Tull

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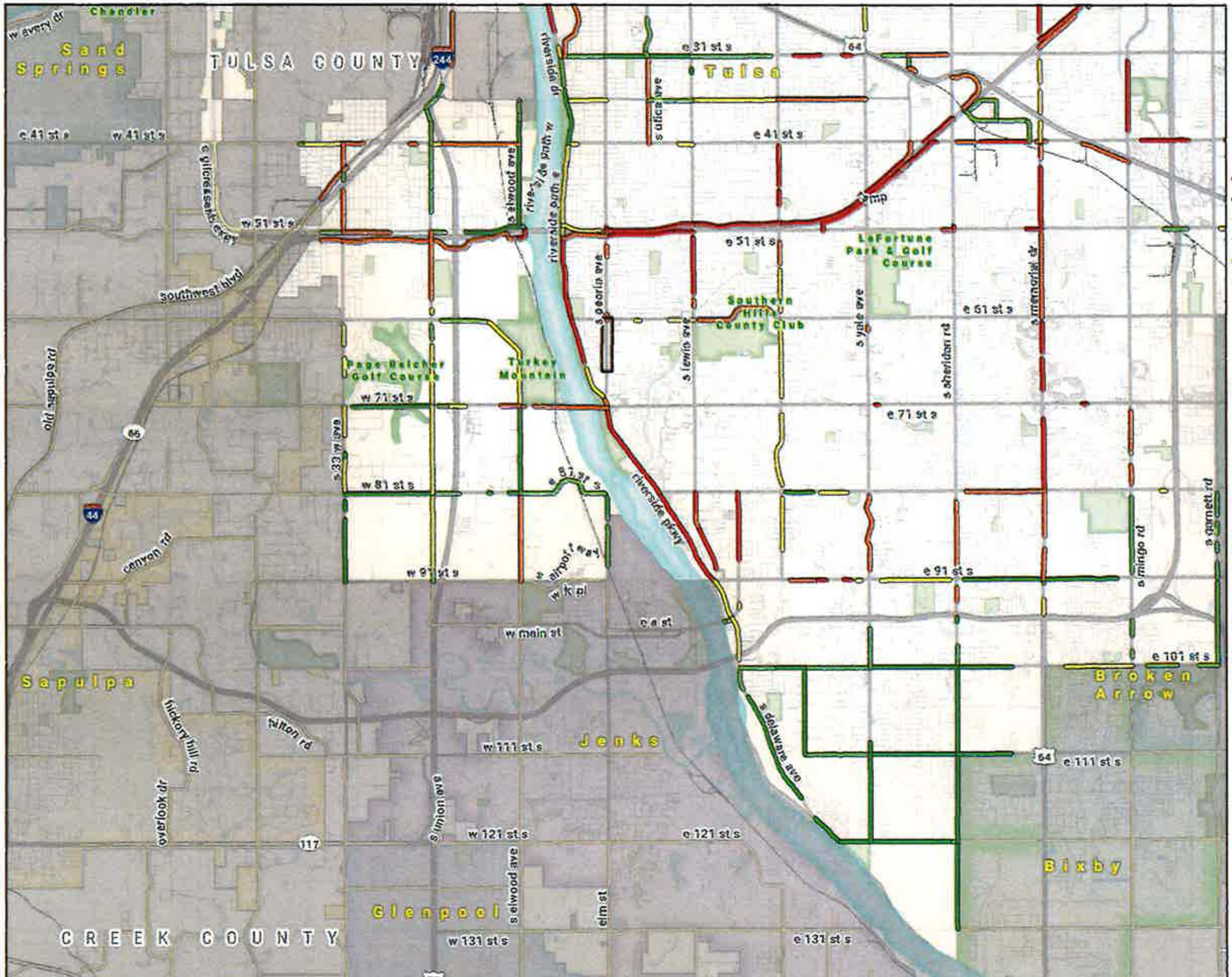
Miles



Pedestrian Improvements
9/9/2015

Tulsa Regional Bicycle & Pedestrian Master Plan

Tulsa 3

Prioritized Sidewalk Gaps by Quintile

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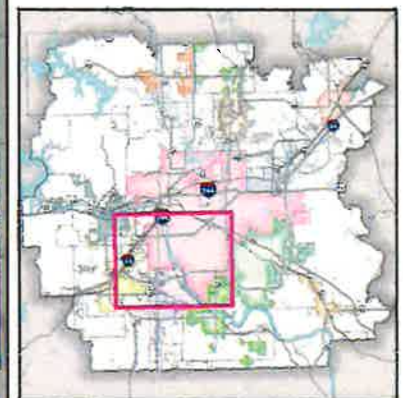
- Outside Jurisdiction
- Focus Area



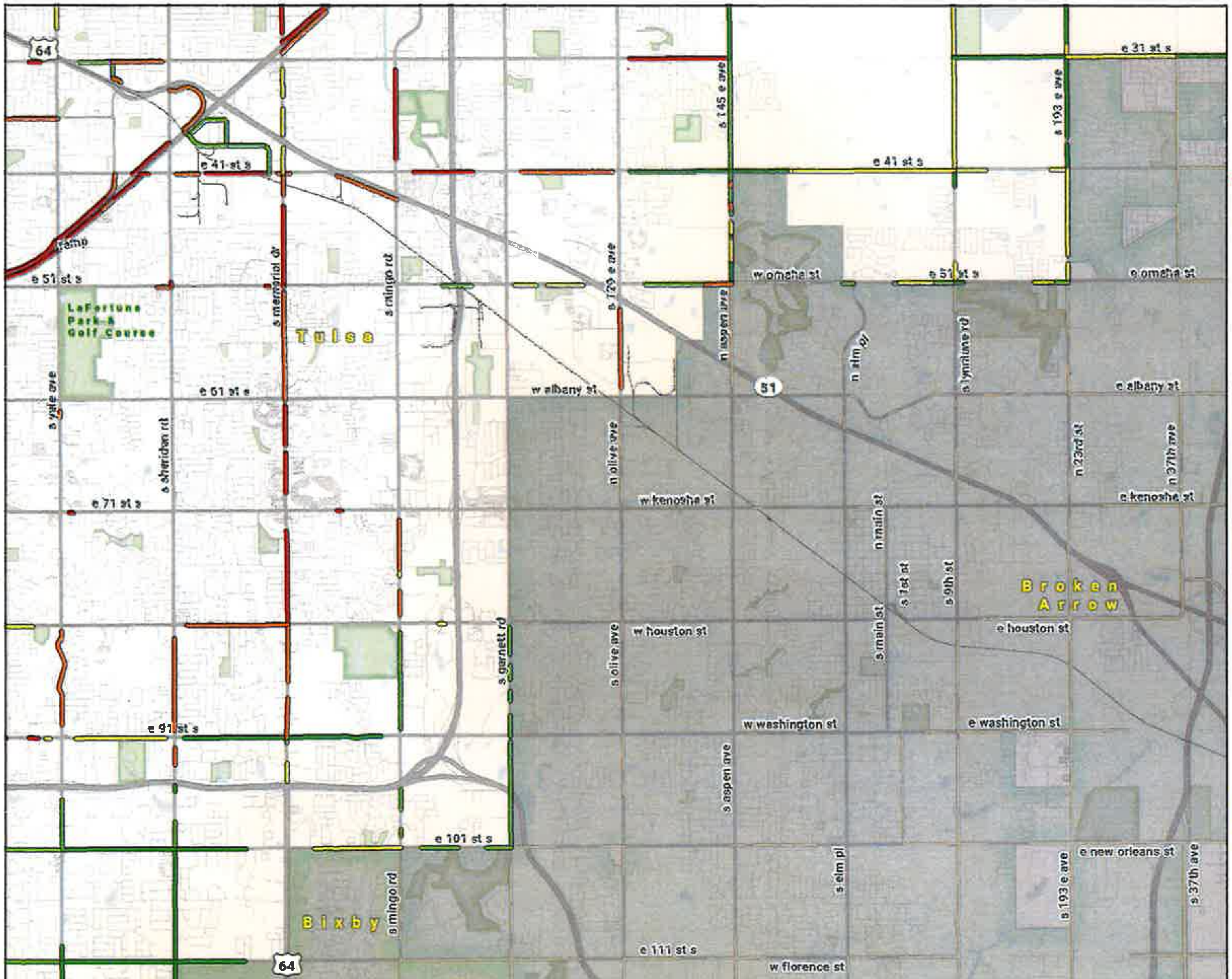
GO — A PLAN FOR PEOPLE POWERED MOVEMENT

Toole Design Group

Crafton Tull

N

0 1 2 Miles



Pedestrian Improvements
9/9/2015

Tulsa Regional Bicycle & Pedestrian Master Plan

Tulsa 4

Prioritized Sidewalk Gaps by Quintile

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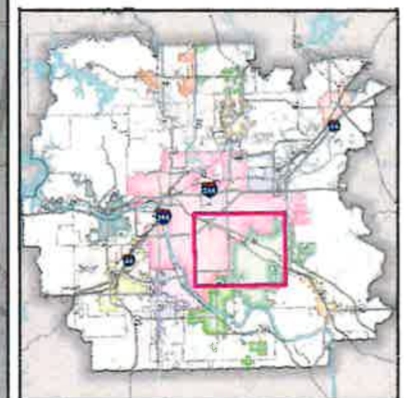
- 5
- Outside Jurisdiction



GO Tulsa

A PLAN FOR PEOPLE POWERED MOVEMENT

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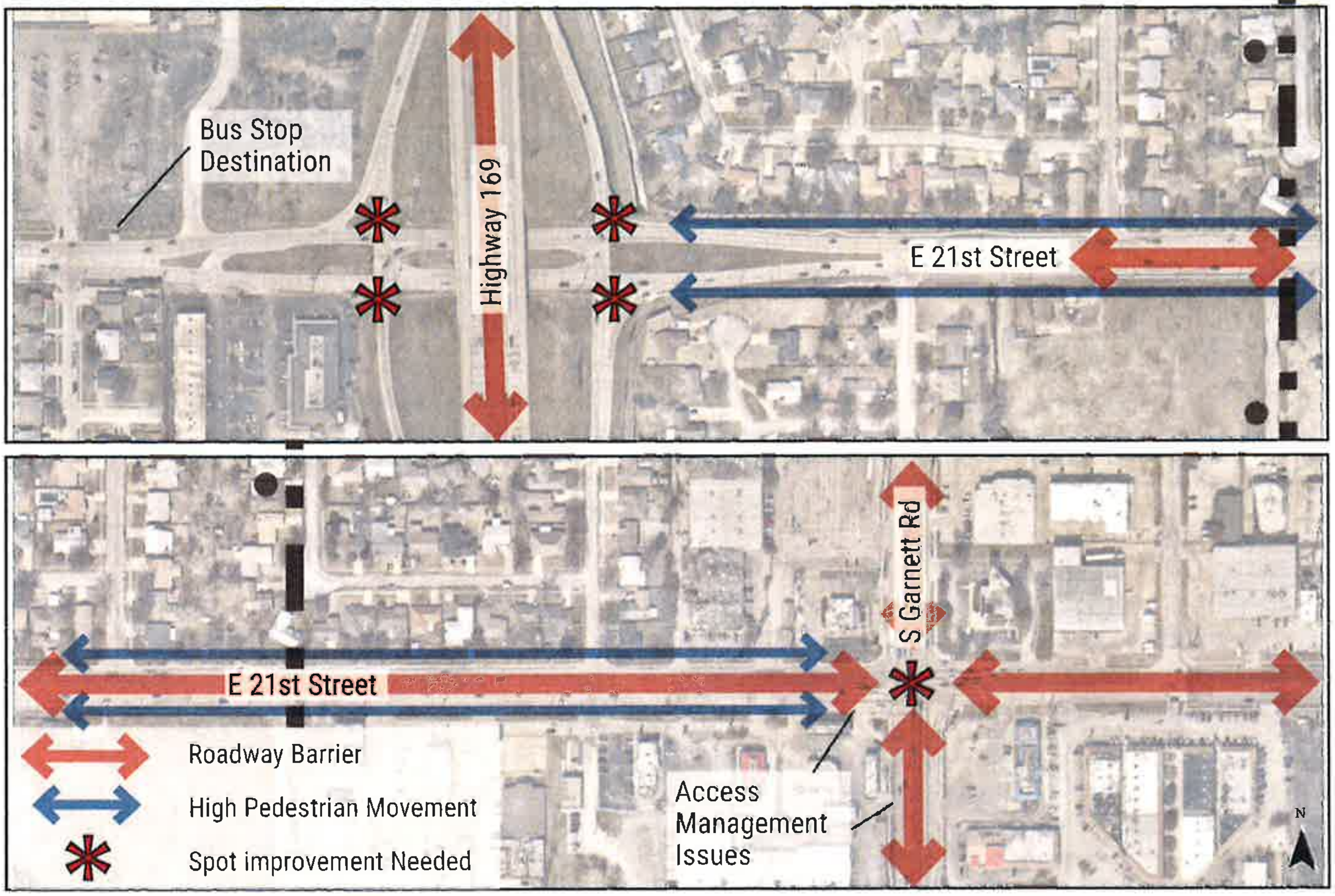
EAST 21ST STREET FROM SOUTH GARNETT ROAD TO HIGHWAY 169



Why is this a focus area?

- East 21st Street is a major arterial with typical suburban strip development
- Major intersection with HWY 169 with on- and off-ramps being crossed by pedestrians and bicyclists where no crossing treatments exist
- No sidewalks along either side of E 21st St
- Multiple driveway cuts and access management issues with the development patterns and large surface parking lots
- Pedestrian and vehicle conflicts in parking lots
- Lack of connected access to the bus stops along the E 21st St corridor and Garnett Road
- One bicycle and two pedestrian crashes occurred along 21st Street between July 2009 and July 2014

No sidewalks along E 21st Street under Hwy 169

No crosswalk across E 21st Street along Garnett Rd

Proposed solutions

- Add sidewalks along each side of E 21st St east of Hwy 169 where none exist
- Plant shade trees within the planting strip between the roadway and the new sidewalk
- Implement access management strategies with the multiple driveway cuts for each property and parking lot and reduce the number of sidewalk crossings
- Add high visibility crosswalk markings at the intersection of Garnett Rd and E 21st St
- Add sidewalk under the Highway 169 overpass, add crosswalk markings at the Highway ramp intersections, and add push button detection at the ramp crossings

High visibility crosswalk

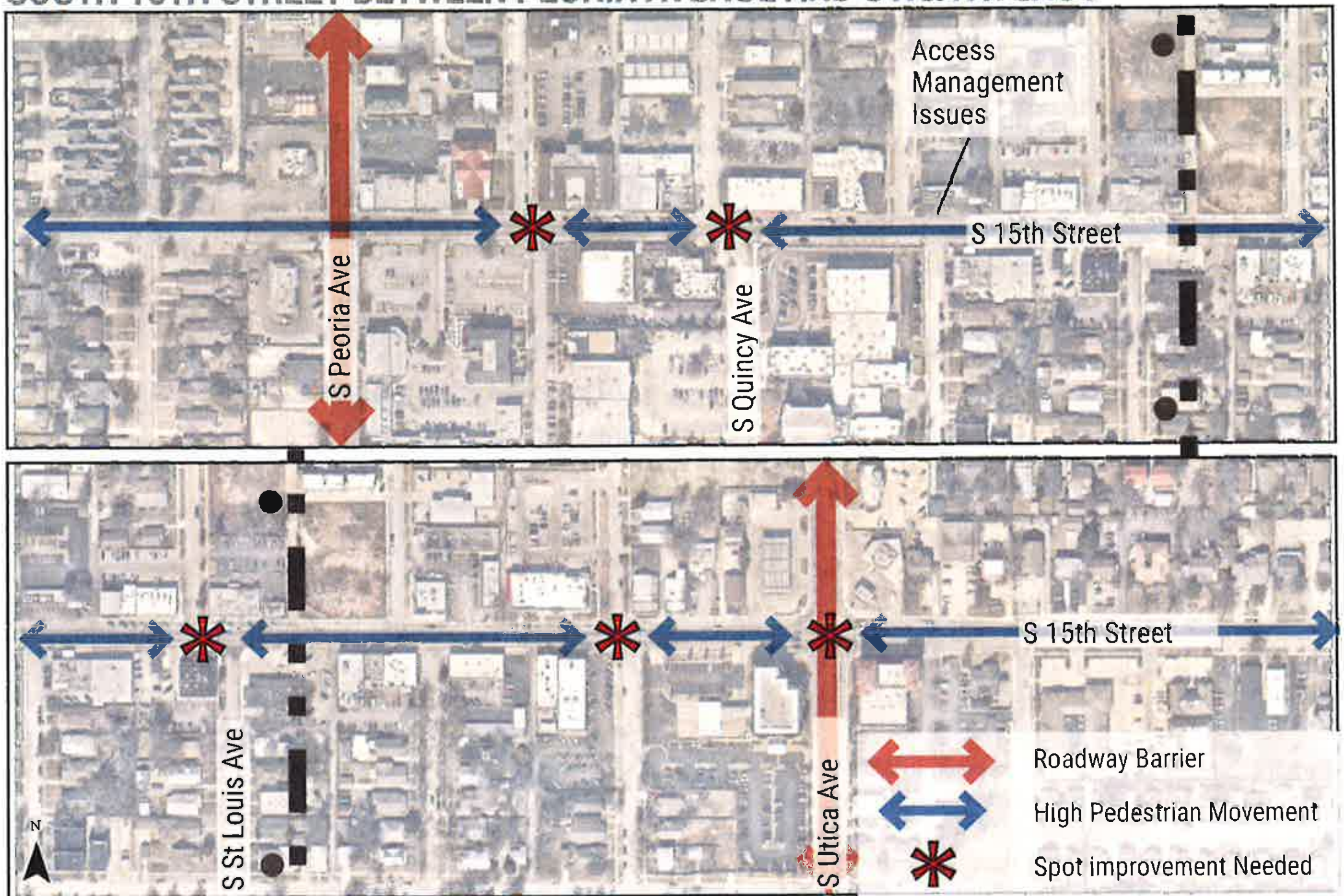
For design specifics on these recommended facilities, see Appendix A: Design Guidelines.

High visibility crosswalk at intersection

6-foot wide sidewalk and street trees

EAST 21ST STREET FROM SOUTH GARNETT ROAD TO HIGHWAY 169

SOUTH 15TH STREET BETWEEN PEORIA AVENUE AND UTICA AVENUE



Why is this a focus area?

- 15th Street is a high-volume pedestrian corridor with small retail and restaurant destinations
- Improved streetscape and crossing treatments could further enhance the attractiveness of this corridor and encourage "park once" behavior
- Lack of continuous sidewalks along Cherry Street and poor crossing treatments at driveway cuts
- Poor ADA compliance for intersection and mid-block crossings of Cherry Street
- Lack of crosswalks at key intersections

Painted curb extensions along 15th Street

Lack of quality crosswalks along 15th Street

Proposed solutions

- Install high visibility crosswalks at the intersection of 15th Street and Utica Avenue
- Install raised sidewalks at driveway crossings along 15th Street and implement some access management strategies
- Install RRFB and crossing treatments at the intersection of SH-51 St Louis Avenue, south of 15th Street
- Install RRFB and crossing treatmet at the intersection of Quaker Street
- Enhance the lighting at the intersections and along the sidewalks along 15th St

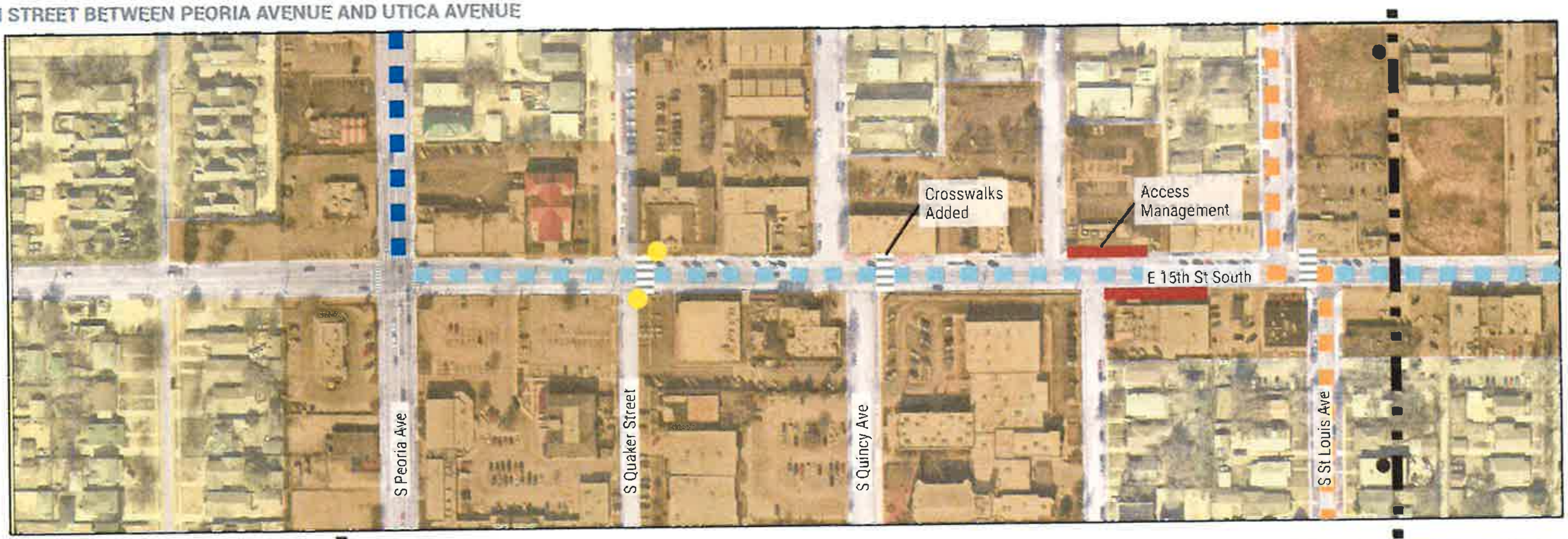
For design specifics on these recommended facilities, see Appendix A: Design Guidelines.

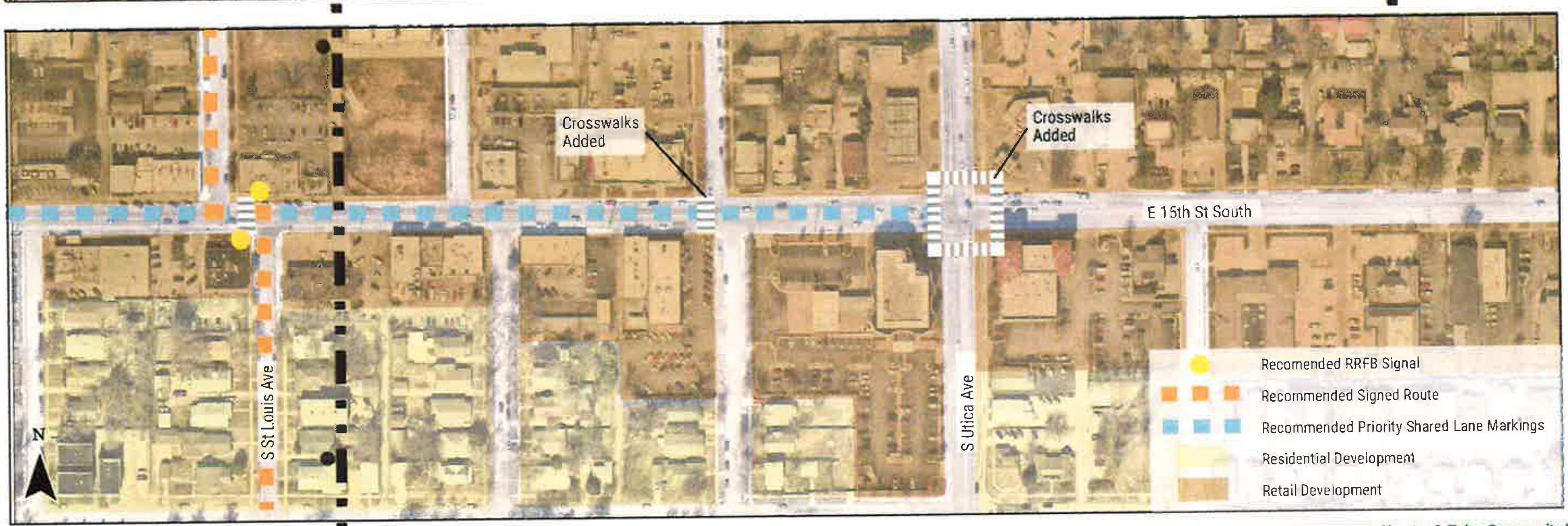
High visibility crosswalk

Raised mid-block crossing

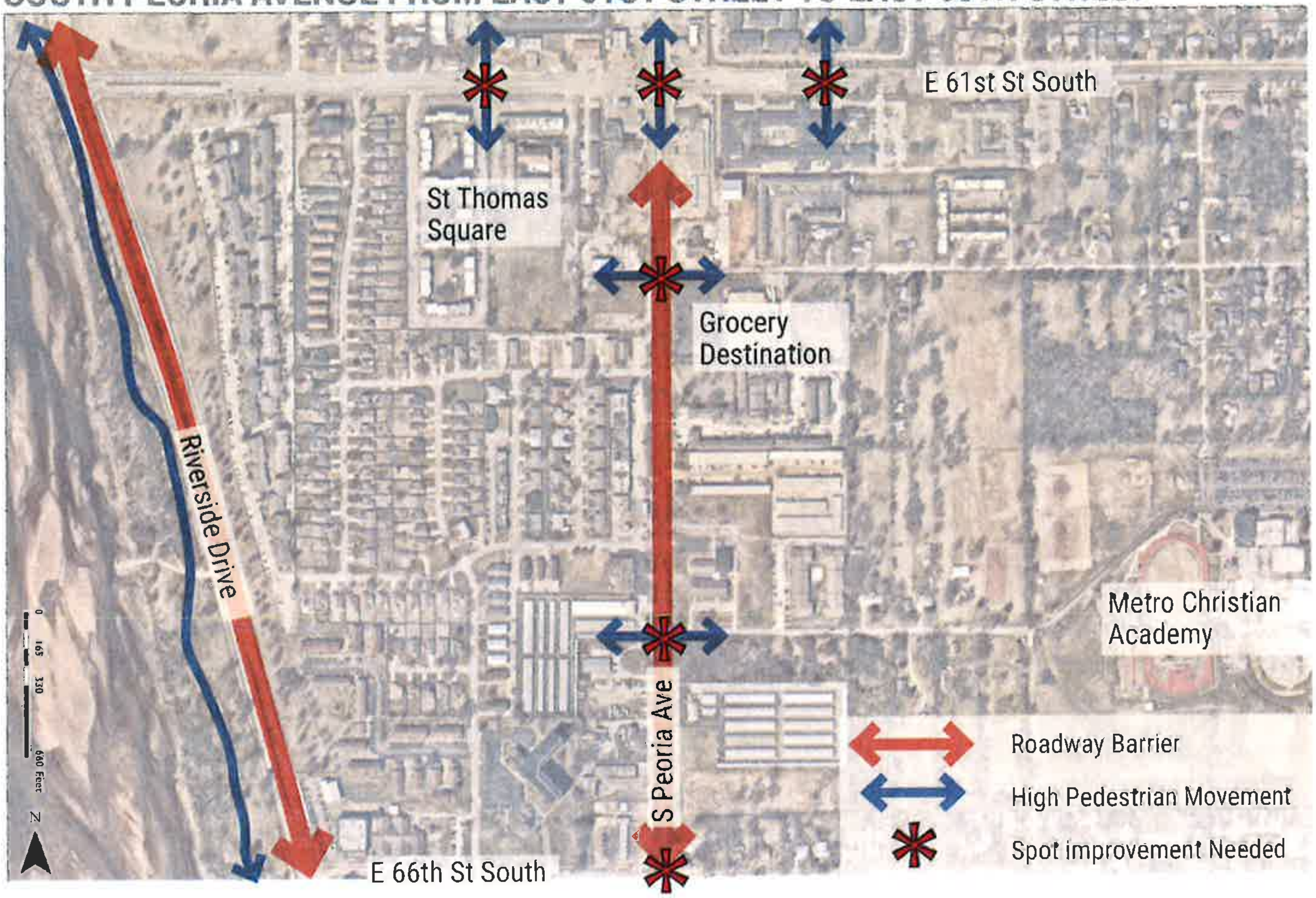
LID bulbout stormwater planter

Pedestrian and vehicular scale lighting at intersection


S Peoria Ave
S Quaker Street
Crosswalks Added
S Quincy Ave
Access Management
E 15th St South
S St Louis Ave


N
S St Louis Ave
Crosswalks Added
Crosswalks Added
E 15th St South
S Utica Ave
Recomended RRFB Signal
Recommended Signed Route
Recommended Priority Shared Lane Markings
Residential Development
Retail Development

SOUTH PEORIA AVENUE FROM EAST 61ST STREET TO EAST 66TH STREET



Why is this a focus area?

- South Peoria is a critical old "farm to market" road that still plays a key role in the City and region's transportation network
- Peoria and 61st St contains strip development, big box groceries and stores, and provides connectivity to suburban residential areas
- Higher density of residential development along Peoria Avenue
- Pedestrian crossings spaced too far apart along Peoria or 61st St
- Lack of access to bus stops along Peoria and 61st St
- Several residential developments that are multi-family and have little or no pedestrian or bicycle connectivity
- Seven pedestrian crashes occurred in this segment from July 2009 to July 2014, including one fatality

Typical section of S Peoria Ave south of 61st Street

Poor crossing treatments along S Peoria Ave

SOUTH PEORIA AVENUE FROM EAST 61ST STREET TO EAST 66TH STREET

Proposed solutions

- Construct bus pull offs and ensure sidewalk connection to transit stops
- Install continuous sidewalks along both sides of Peoria and 61st St
- When installing the new sidewalks, install with planted buffer and street trees between edge of curb and sidewalk
- Add mid-block and intersection crossings with refuge medians and high visibility crosswalk markings
- Install a Rectangular Rapid Flashing Beacon at Peoria and 64th St mid-block crossing for safer pedestrian crossing along route to school. In future roadway widening projects, this location should be evaluated for a HAWK signal when the crossing becomes more than two lanes.
- During design phase for bus rapid transit along Peoria Avenue, incorporate dedicated bicycle facility to provide separation between bicyclists, pedestrians and automobiles

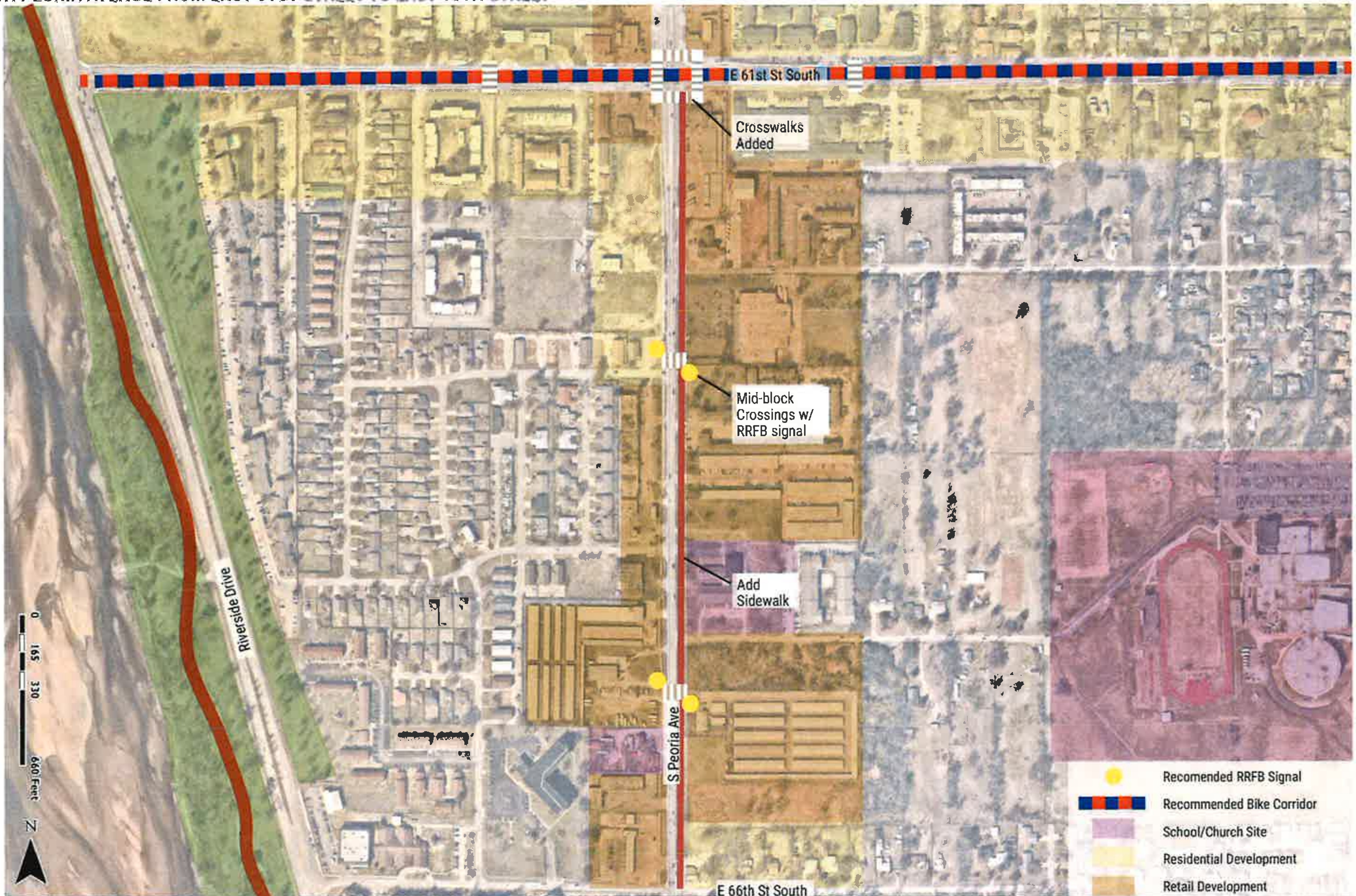
High-visibility crosswalk

Median refuge island

For design specifics on these recommended facilities, see Appendix A: Design Guidelines.

RRFB signal at ped crossing

SOUTH PEORIA AVENUE FROM EAST 61ST STREET TO EAST 66TH STREET



Bicycle Network Recommendations

This bicyclist on the sidewalk of 11th Street is avoiding sharing the road with high-speed traffic.

The bicycle facility recommendations for Tulsa were developed through the process described in Chapter 4, including a number of conversations and reviews with City staff in the Planning and Engineering departments. These recommendations connect neighborhoods, commercial centers, schools and other major destinations with a range of facility types appropriate to the given street type.

Bicycle facility recommendations on arterial streets focus on providing sidepaths, a facility separated from fast, high-volume traffic, where feasible. Close to 75 percent of bicycle crashes occurred on arterial streets during the July 2009 to July 2014 period. Bicyclists do not avoid riding on arterials since they are often the most direct route, but are likely to ride on the sidewalk. A larger percent of these arterial crashes resulted in incapacitating injuries or fatalities than those on local streets and collectors likely due to the higher speed of automobiles involved in the crashes.

The cycle track recommended for 11th Street from Sheridan Ave to Elgin Ave is one example of a non-sidepath facility that will provide greater separation and protection for bicyclists on a high-volume, high-speed arterial street. 11th Street is part of US Bicycle Route 66, the former Route 66 and a gateway to Tulsa. As such, there is great opportunity for turning this street into a premier bicycle route in the city. The segment of 11th Street from Peoria Avenue to Yale Avenue is an Improve Our Tulsa capital improvement project which offers great opportunity for reconstruction and redevelopment.

The Project Team recognized that a sidepath and cycle track recommendation on all arterial streets in the study network is not feasible. Where possible, bike lane recommendations were made on arterials that provide critical connections and have traffic volumes that could sustain a reduction in the number of lanes. All road diet recommendations were vetted with City of Tulsa staff to ensure maintenance of an acceptable automobile level of service on these corridors. Bike lanes are recommended through a road diet on 6th Street from 7th Street downtown to Delaware Avenue at the University of Tulsa campus. Traffic counts on 6th Street are in the range of 3,000 to 4,500 vehicles per day, a count that does not indicate the need for a four-lane street. In addition to connecting the two regional destinations at either end of the project, these bike lanes will traverse the Pearl, a redeveloping neighborhood which would benefit from the traffic calming impacts of a road diet.

Peoria Avenue

One of the most-studied corridors for bicycling in the GO Plan was Peoria Avenue. This street provides access to neighborhoods from North Tulsa to South Tulsa, commercial destinations such as Brookside, a Walmart Neighborhood Market and numerous smaller retail establishments, and parks, places of worship and schools. Peoria's importance for access was recognized in the Fast Forward regional transit system plan which will place a bus rapid transit line on the street where Tulsa Transit's line with the highest ridership is today.

Given its importance for direct access to destinations, the street was studied from Pine Street in the north to Riverside Drive/71st Street in the south. At this time, a road diet is the only way bike lanes could be accommodated within the existing pavement width. A four-lane to three-lane road diet is recommended from Pine Street to 15th Street where traffic volumes do not exceed 15,000 vehicles per day, and a road diet would not result in an automobile level of service worse than D. South of 15th Street, a road diet is not recommended because it would push level of service to an E, and the available curb-to-curb space would not accommodate travel lanes and bike lanes that meet minimum widths set by the City. Additionally, the City has performed Multimodal Level of Service (MMLOS) studies from 6th Street to Riverside Drive, and the resulting recommended cross sections from that MMLOS study were consulted for GO Plan recommendations.

Shared lane markings and priority shared lane markings were discussed for the segment south of 15th Street, but the Project Team, BPAC and City staff agreed that a shared lane facility was not appropriate for this context. The curb-to-curb width from 21st Street to 31st Street is too narrow to accommodate bike lanes through a road diet, and further study of this segment is recommended.

In lieu of accommodating bicyclists on Peoria Avenue, two signed routes are recommended that parallel the street on the east and west. These routes utilize low-volume local streets that already provide a comfortable and safe bicycling environment. Improvements will be needed at a number of unsignalized arterial crossings to make these routes viable, however. For instance, the intersection of St. Louis Avenue and 21st Street has no traffic controls for automobiles on 21st Street. The existing bike crossing warning signs are not sufficient to facilitate a safe and comfortable bicyclist crossing and should be augmented with high-visibility crosswalks, better intersection lighting, and bicyclist/pedestrian-actuated rectangular rapid flashing beacons.

It should be noted that when network prioritization was run with the Peoria Ave bike lanes included, that project ranked within the top ten for the city. There is a clear demand for better bicyclist access to destinations on Peoria, especially in Brookside. Once construction of the Gathering Place is completed and Riverside Drive reopened, bicycle improvements to Peoria Avenue should be revisited. Bicycle facilities should also be included as an important consideration in the redesign of the street for bus rapid transit operations.

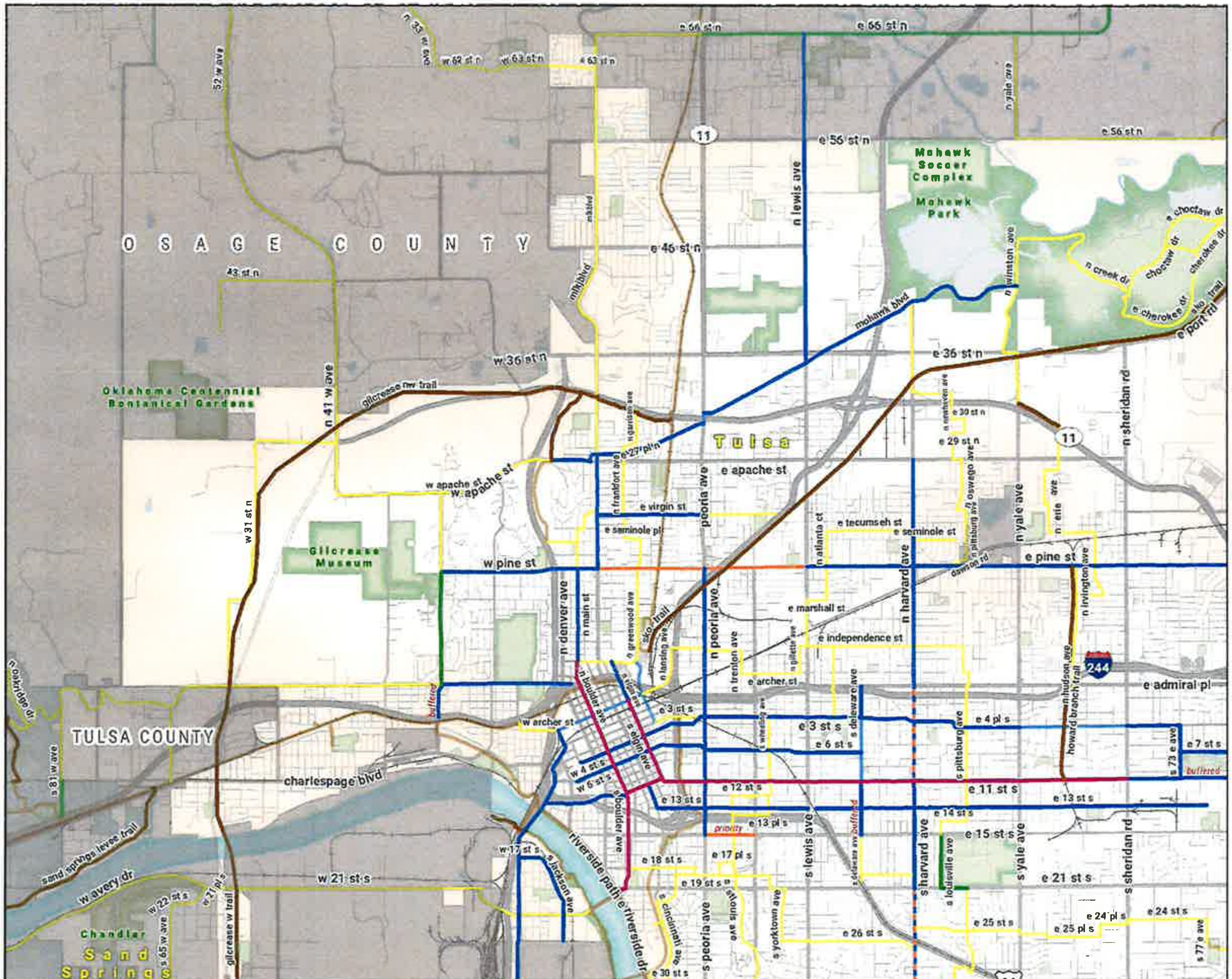
Project Priorities

The prioritization process used to rank projects is outlined in Chapter 4 of the GO Plan. That process was informed by stakeholders, including City staff from numerous departments. A full list of prioritized projects with scores is included in Appendix C. While this prioritized list represents a quantitative assessment of the projects, the City should also consult this Plan whenever street reconstruction or resurfacing projects occur to capitalize on programmed project investments.

The prioritization process is only one tool in determining how the City should go about implementing projects. Other factors such as grant opportunities or new development may enable a city to construct the network in an order not consistent with the priorities. The list in the appendix should be used as a guide and is not intended as an implementation schedule.

Note that projects identified on the following maps as "Bicycle Corridor" are intended for further study. The preferred facility type along these streets is bike lanes, but in some cases, it may not be desirable to road diet these streets to provide the space needed to separate bicyclists from automobile traffic. To estimate costs conservatively, these projects were assigned the bike lane per mile cost.

TULSA	TOTAL MILEAGE	COST PER MILE	TOTAL COST
Signed Route	148.51	$ 800 to 18,500	$2,232,000
Shared Lane Markings	7.54	$33,400	$251,000
Priority Shared Lane Markings	0.48	$77,100	$37,000
Bicycle Corridor	55.49	$71,600	$3,973,000
Bike Lane	58.89	$71,600	$4,216,000
Buffered Bike Lane	5.24	$71,000	$372,000
Cycle Track	7.91	$120,700	$954,000
Sidepath	10.24	$719,000	$7,361,000
Trail	60.70	$888,100	$53,912,000
Total	**354.99**		**$73,308,000**



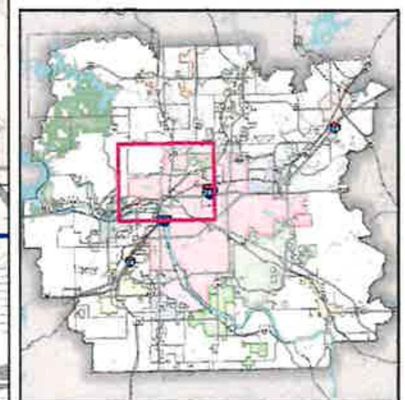
Final Network
8/31/2015

Tulsa Regional Bicycle & Pedestrian Master Plan

Tulsa 1

Recommendations
- Trail
- Sidepath
- Cycle Track
- Bike Lane
- Bike Corridor (bike lanes when possible, otherwise shared lane
- Shared Lane Marking
- Signed Route

Existing Facilities
- Trail
- Bike Lane



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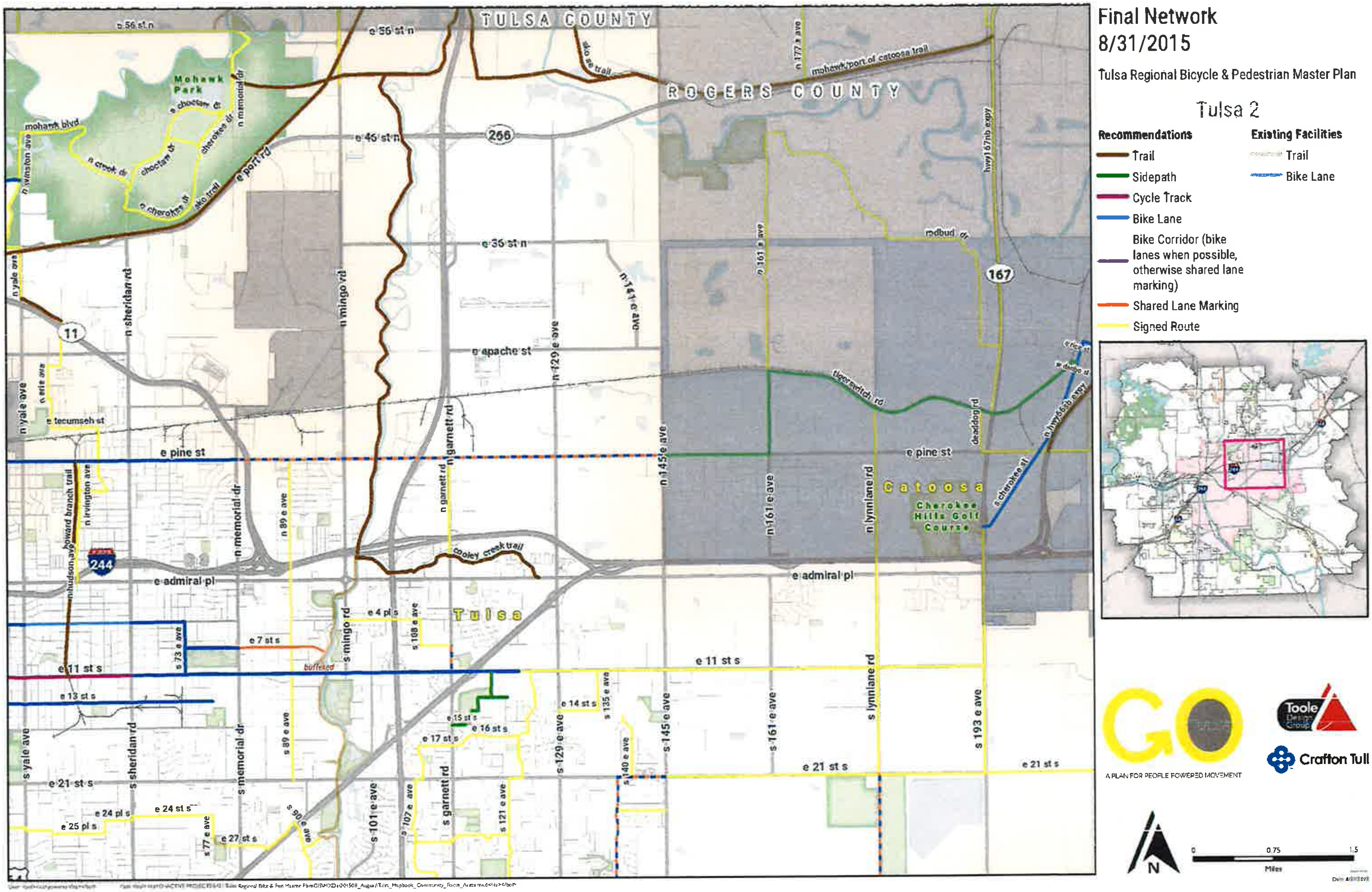
Final Network
8/31/2015
Tulsa Regional Bicycle & Pedestrian Master Plan
Tulsa 2
Recommendations
Trail
Sidepath
Cycle Track
Bike Lane
Bike Corridor (bike lanes when possible, otherwise shared lane marking)
Shared Lane Marking
Signed Route
Existing Facilities
Trail
Bike Lane
TULSA COUNTY
ROGERS COUNTY
Mohawk Park
Tulsa
Catoosa
Cherokee Hills Golf Course
e 56 st n
e 46 st n
e 36 st n
e apache st
e pine st
e admiral pl
e 11 st s
e 13 st s
e 21 st s
mohawk/port of catoosa trail
ako se trail
cooley creek trail
tiger switch rd
howard branch trail
n yale ave
n sheridan rd
n mingo rd
n memorial dr
n garnett rd
n 129 e ave
n 141 e ave
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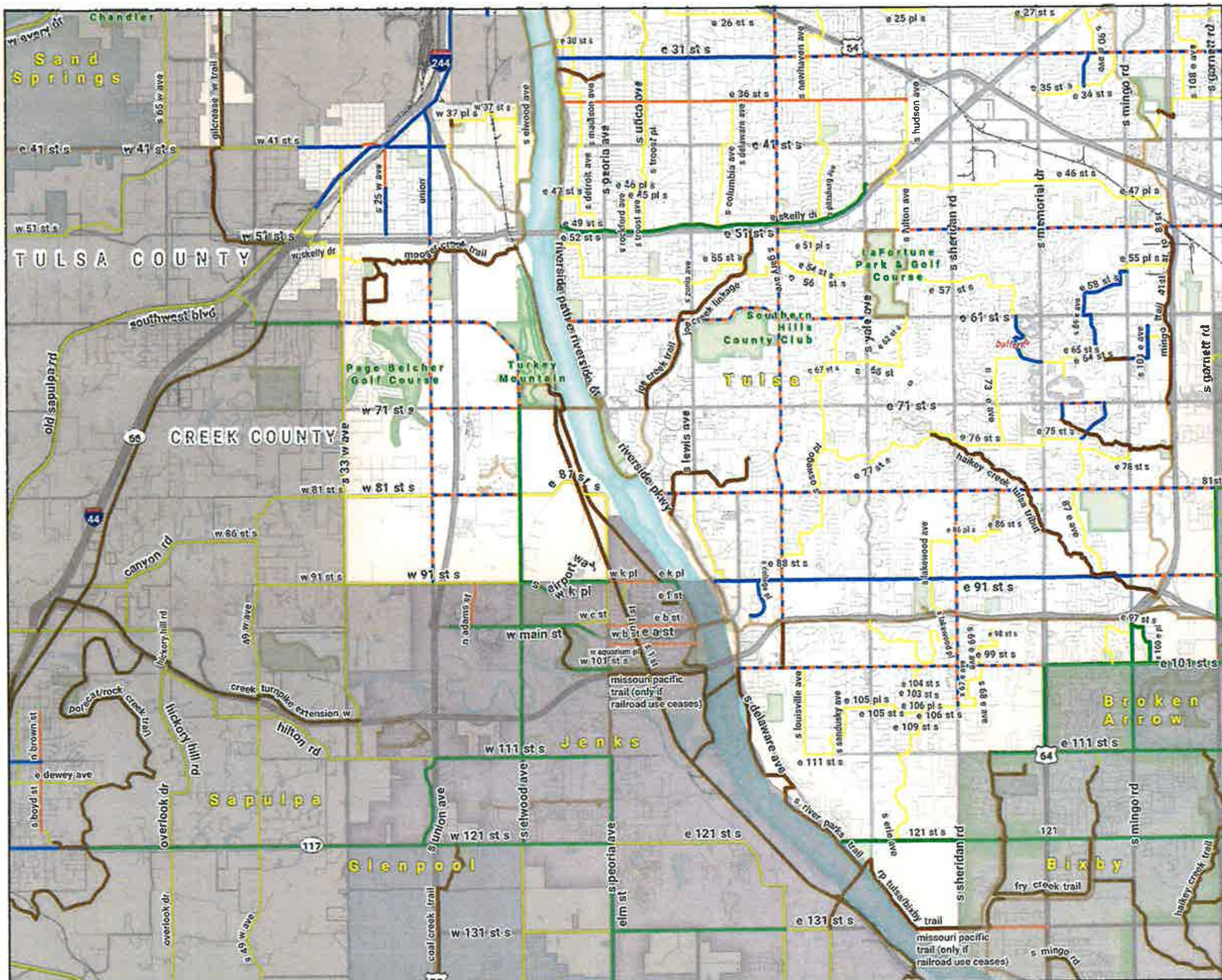
8/31/2015

Tulsa Regional Bicycle & Pedestrian Master Plan

Tulsa 3



Recommendations
- Trail
- Sidepath
- Bike Lane
- Bike Corridor (bike lanes when possible, otherwise shared lane marking)
- Shared Lane Marking
- Signed Route

Existing Facilities
- Trail
- Unpaved Trail

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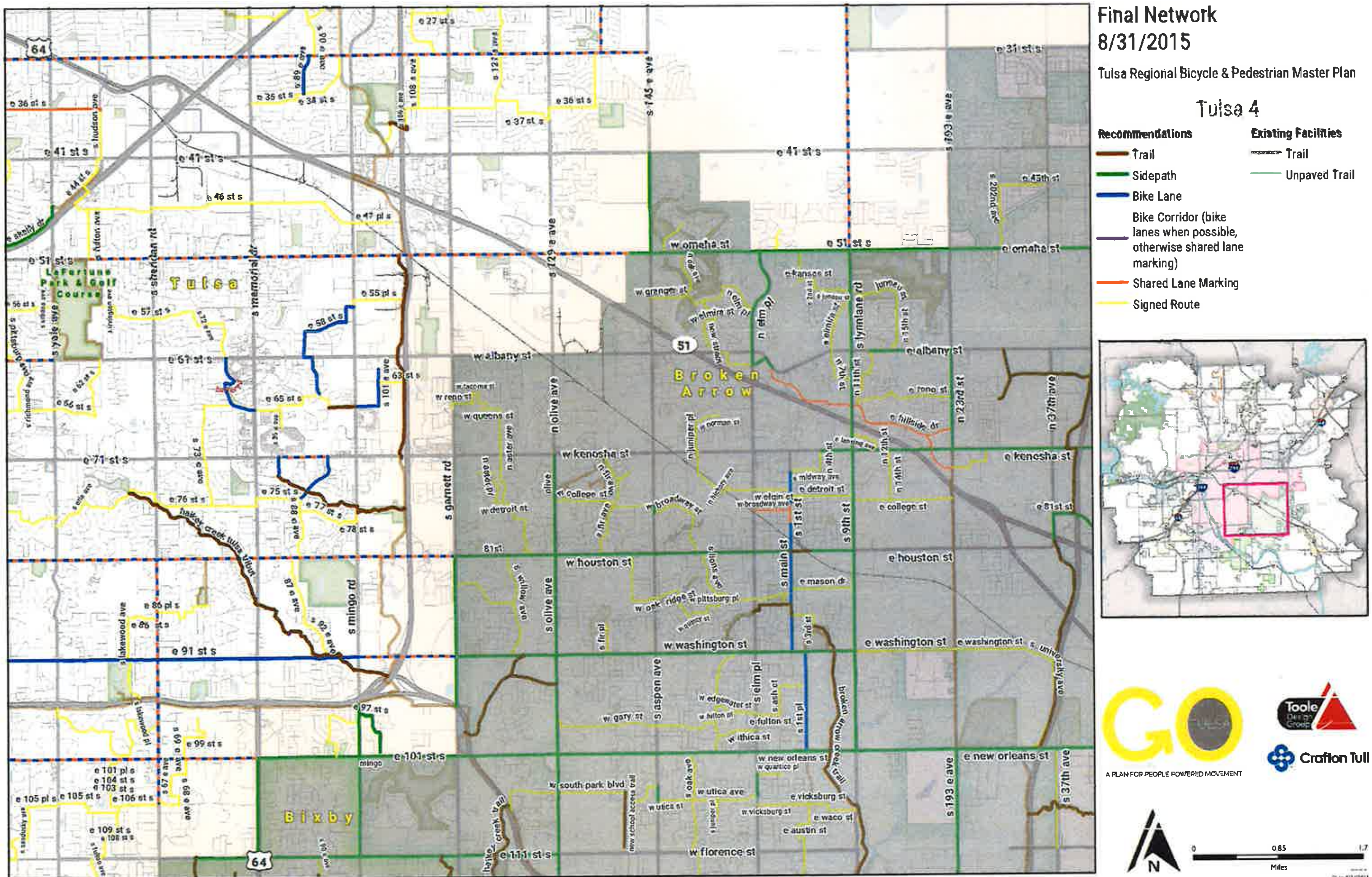
Tulsa Regional Bicycle & Pedestrian Master Plan

Tulsa 4



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A

DESIGN GUIDELINES

These Design Guidelines are intended to broaden the range of design options for streets in the Tulsa region, recognizing that streets and public rights-of-way comprise a significant portion of a city's area and as such must maximize the public benefit they offer.

As in other cities and communities, streets in Tulsa and the surrounding cities have always served multiple functions. In the nineteenth and early twentieth centuries, they were the primary component of local transportation infrastructure, allowing people and goods arriving by rail to reach local destinations throughout the city. This led to a variety of street users, and accordingly led to a variety of problems for safety and circulation in the streets. As automobile ownership and use increased dramatically in the decades that followed, the city had to accommodate the trend within the space for streets that had already been established.

Over time, street design focused primarily on motor vehicle movement, and the emerging discipline of traffic engineering worked to safely integrate cars and trucks into pre-existing urban forms. While there were clear benefits to accommodating automobile movement through the city, the negative effects have become increasingly evident over the last forty years. The focus on automobiles has resulted in a different form of land development patterns, namely emphasizing vehicle access, and not person access, to buildings and property. This access comes at the expense of other uses of the street and other transportation choices.

The intent of this appendix is to allow the region to choose a different direction for its future and recreate a system of streets that prioritize community-serving functions while still accommodating the automobile mobility needs that streets have traditionally had.

Pedestrian Realm

Sidewalks

Sidewalks are one of the most vibrant and active sections of the overall right-of-way. Throughout the region, sidewalks play a critical role in the character, function, enjoyment and accessibility of neighborhoods. People in the region value the walkability of their city and neighborhoods and wish to see this quality preserved and enhanced. The function and design of the sidewalk significantly impacts the character of each street. Extending from curb to building face or property line, sidewalks are, of course, the place typically reserved for pedestrians, but they also accommodate street trees and other plantings, stormwater infrastructure, street lights, bicycle racks, and transit stops. They are a place of transition and economic exchange as restaurants engage the public space and retailers attract people to their windows and shops.

In many ways, each community has two types of cities in one. Downtown and the neighborhoods in the historic core portion of the city reflect a traditional urban pattern characterized by a regular grid of streets. The grid distributes traffic well and offers many different routing options for pedestrians and travelers using a variety of different modes. Mixed land uses are common in these areas with some residences within walking distance of retail, commercial, community and green space amenities.

In the outlying areas of the city and farther out into the county, many streets have a more typical suburban development pattern and curve through quiet residential areas with little cut-through automobile traffic. The land use is generally of lower intensity with greater separation and more open space. Sidewalk network coverage on these local streets varies from community to commuity, and curvilinear streets create atypically shaped intersections with increased crossing distances and decreased pedestrian visibility. These neighborhood residential streets are set within an arterial grid of high-volume, high-speed streets that present barriers to pedestrian travel, especially those without sidewalks present.

Sidewalk Zones

Sidewalks are not a singular space, but are comprised of distinct usage zones. Sidewalks typically are located in the right-of-way that extends from the curbline to the property line behind it. They can be broken up into three primary zones, each of which performs a unique function in the overall operation of the street and interface with adjacent private property uses. Although boundaries between zones may blur and blend, their overall function of each zone generally remains consistent.

A. Frontage Zone

The Frontage Zone is the area of sidewalk that immediately abuts the private property along the street. In residential areas, the Frontage Zone may be occupied by front porches, stoops, lawns, or other landscape elements that extend from the front door to the sidewalk edge. The Frontage Zone of commercial properties may include architectural features or projections, outdoor retailing displays, café seating, awnings, signage, and other encroachments into or use of the public right-of-way. Frontage Zones may vary widely in width from just a few feet to several yards.

B. Pedestrian Clear Zone

Also known as the "walking zone," the Pedestrian Clear Zone is the portion of the sidewalk space used for active travel. For it to function, it must be kept clear of any obstacles and be wide enough to comfortably accommodate expected pedestrian volumes including those using mobility assistance devices, pushing strollers or pulling carts. To maintain the social quality of the street, the width should accommodate pedestrians passing singly, in pairs, or in small groups as anticipated by density and adjacent land use.

The Pedestrian Clear Zone should have a smooth surface, be well lit, provide a continuous and direct path with minimal to no deviation, and meet all applicable accessibility requirements. Although

Frontage Zone	Pedestrian Zone	Amenity Zone
• Door swings • Awnings • Cafe seating • Retail signage and displays • Building projections	• Zone should be clear of any and all fixed obstacles. Clear space for pedestrian travel only.	• Street lights, street trees, and utility poles • Bicycle racks • Parking meters • Transit stops • Street furniture and signage
2' to Several yards	6' Minimum	6' Minimum

currently legal throughout most of the region, bicycling on sidewalks is generally discouraged to decrease conflicts with pedestrians.

C. Amenity Zone

The Amenity Zone, or "landscape zone," lies between the curb and the Pedestrian Clear Zone. This area occupied by a number of street fixtures such as street lights, street trees, bicycle racks, parking meters, signposts, signal boxes, benches, trash and recycling receptacles, and other amenities. In commercial areas, it is typical for this zone to be hardscape pavement, pavers, or tree grates. In residential or lower intensity areas, it is commonly a planted strip.

Preferred Widths for Sidewalk Zones

The width of the various sidewalk zones will vary given the street type, the available right-of-way, and the intensity and type of uses expected along a particular street segment. A balanced approached for determining the sidewalk width should consider the character of the surrounding area and the anticipated pedestrian activities.

For example, is the street lined with retail that encourages window shopping that stops pedestrian travel, or does it connect a residential neighborhood to a commercial area where pedestrians frequently need to pass one another?

The width of the sidewalk should also relate to the street width and the height of adjoining buildings. If sidewalks are too wide, the street may feel empty and pedestrians may seem out of place, lost on a sea of sidewalk. If sidewalks are too constrained, friction may result between the sidewalk zones, leaving less space for healthy tree growth, limited access to parking meters or other fixtures, and a lower pedestrian level of service as pedestrians struggle to travel at their preferred pace.

Many streets in the region have considerable right-of-way constraints. Preferred sidewalk zone widths may not always be possible and design judgment must be used to achieve a comfortable and functional balance. Traditionally, right-of-way has been allocated from the inside out, starting with the needs of motor vehicles first and then dividing the remaining right-of-way among all other street users. Certain streets will require a paradigm shift: street design should allocate right-of-way from the outside in, prioritizing needs in the sidewalk zone and meeting pedestrian needs first.

- Fixtures in the Amenity Zone must be installed a minimum of 2' from the front of curb (or 18" into the Amenity Zone)
- The Americans with Disabilities Act requires a minimum 3' clear width while the draft Proposed Right Of Way Accessibility Guidelines (PROWAG) recommend 4' clear width in the Pedestrian Zone. However, in the the region, sidewalks are typically 5' at a minimum.

Street Trees

Trees play an important role in making streets comfortable, delightful, memorable, and sustainable. Used appropriately, they can help define the character of a street.

Trees provide shade that reduces energy use and mitigates the urban heat island effect. Their leaves capture rainwater and evaporation cools the ambient urban air temperature. Trees sequester carbon dioxide and thus contribute to the mitigation of climate change associated with the greenhouse effect. Trees capture gaseous pollutants and particulates in the tree canopy surface, removing as much as 60 percent of the airborne particulates at street level.

Trees are part of the urban forest contributing to natural diversity. They provide habitat for a range of living creatures in the urban context, including people. Psychologically, trees have been found to reduce stress and improve concentration. This may partly explain why studies have found that tree lined retail corridors do better than counterparts lacking street trees: consumers are likely to spend more time on tree-lined streets which can lead to spending more money there as well. Research has also found that trees on streets and in front yards increase property values, with increases generally in the range of 7 percent for homes in areas with good tree cover.

Street Trees and Urban Design

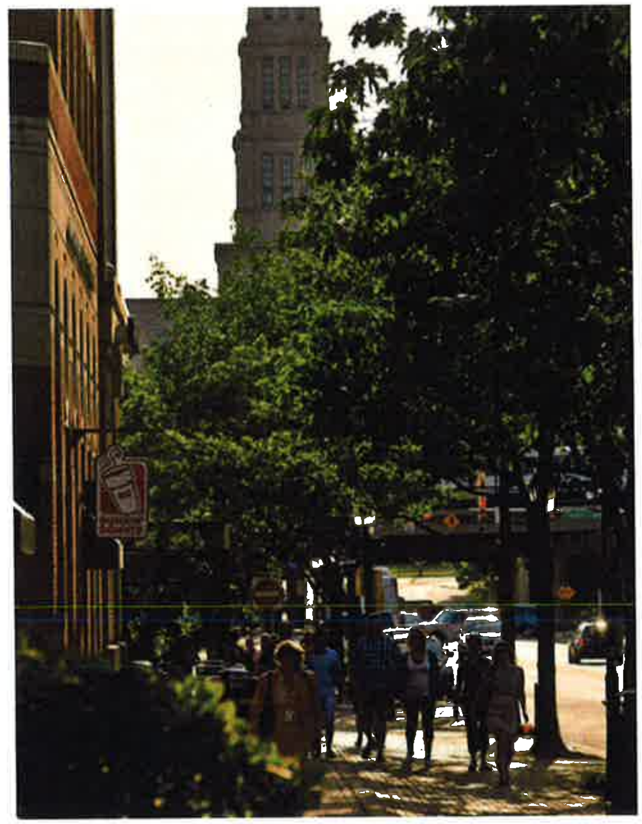
Street trees are both a transportation and urban design tool. As vertical elements in the streetscape, trees help to frame and define the street wall, accentuate spaces and focus view corridors. Canopy trees provide an enclosure to the street that reinforces the sense of intimacy and scale. This enclosure can have positive effects in slowing traffic and increasing driver awareness.

Street trees improve walkability by providing necessary shade and filtered light. They provide interest and intrigue to pedestrians walking along a block face. Street trees are an opportunity to express the image of a community through plant selection and arrangement. Trees also provide seasonal interest and variation.

Selecting the Right Tree

Trees come in a wide variety of shapes and sizes. The biodiversity of the urban forest is an increasingly important aspect of maintaining healthy tree coverage. Using a range of tree species beyond those typically found on the City's streets is strongly encouraged.

In order to select an appropriate street tree for a specific street, the species must have the appropriate scale and form for the context of the street and the adjacent land uses and, most importantly, the appropriate amount of soil volume to thrive. Other considerations include: sun exposure and culture; whether the trees growth might interfere with sidewalks surfaces, site distances, or other site amenities; if overhead and subsurface utilities might impede growth; the desired quality of light and shade; mature canopy size in relation to adjacent buildings; and frequency of curb-running vehicles such as buses.



Shaded sidewalks make walking an enjoyable experience.

Design

- Tree species must remain constant along the entire length of a block face.
- Exposed surface area of tree wells should be a minimum of 4' by 10'. Larger dimensions may be required if deemed appropriate where part of a development of masterplanned area or required as part of the site plan process.

Suggested Street Tree Species

Large Trees

- Ginko (male)
- Common Hackberry
- Black Oak
- Bur Oak
- Northern Red Oak
- Shumard Oak
- Southern Red Oak
- Swamp White Oak
- Water Oak
- White Oak
- London Planetree
- American Sycamore
- Tulip Tree

Medium Trees

- Green Ash (Urbanite)
- White Ash
- Chittimwood
- Kentucky Coffeetree (male)
- Lacebark Elm
- Cedar Elm
- Goldenrain Tree (Panicled)
- Eastern Hophornbeam
- Thornless Honey Locust
- Shantung Maple
- Sugar Maple
- White Mulberry (male)
- Chinquapin Oak
- English Oak
- Sawtooth oak
- Callary Pear
- Chinese Pistache
- Japanese Zelkova

Small Trees

- Japanese Cherry
- Crapemyrtle (standard)
- Washington Hawthorn
- Deciduous Holly
- Sweet Mockorange
- Eastern Redbud
- Oklahoma Redbud
- Chinese Fringetree
- Common Smoketree

- Tree wells should support a subsurface tree trench large enough to provide sufficient arable soil volume and adequate moisture for individual trees. and shall hold a minimum volume of 300 cubic feet per tree. Continuous trenches which link individual wells shall be provided where possible.

- Planting strips for existing conditions should be a minimum of 2.5', in continuous width. New development shall be minimum of 4' in continuous width.

- Planting strips and tree wells should be planted with hardy evergreen ground cover or grass sod or covered with a tree grate. The grate's size, shape, material and design should be approved be the City where part of a development of masterplanned area.

- In densely urban areas or those with limited sidewalk width, tree grates are preferred.

- As street trees mature, they must be limbed up to a height of 7' from finished grade in order to provide clearance for pedestrians.

- Ornamental trees should be specified where overhead utilities are present to avoid conflicts.

- Evergreen trees are not to be used as street trees.

- Large street trees that mature over 60' in height should be spaced at least 35' on center.

- Medium street trees that mature from 30- 60' in height should be spaced at least 25' on center.

- Small street trees that mature under 30' in height should be spaced at least 15' on center.

Maintenance

For established street trees, standard maintenance consists of structural pruning on a regular cycle (typically every 3-5 years depending on the species, size, and location of the tree) and regular inspection by a certified arborist (recommended every 1-2 years) to assess the condition of the tree and determine the presence of any disease or damage that could lead to failure of the tree. Seasonal maintenance includes watering to ensure establishment of plant material; mulching to minimize water use, discourage weeds and protect against erosion; and pruning low shrubs and groundcover to control overgrowth onto sidewalks as overgrowth can reduce effective sidewalk width below ADA standards.

Street Lights

Street lights add comfort and safety to the street, while providing character and scale. Street lighting is typically oriented into the vehicle or pedestrian travel ways, however additional street lighting can highlight public art, architectural features or be an artistic expression itself.

Street lighting can also be an expression of street type. Higher activity commercial streets typically have a higher level of overall street lighting while lower intensity areas such as residential streets and parkways will generally have less frequent street lights and lower lighting levels.

Lighting lower than 20' brings the scale of the street down to the pedestrian level.

Highway-style lights (above left) serve to illuminate the automobile travel way but do not serve the sidewalk well. Parking lot lights (above right) should not be relied upon to provide sidewalk illumination.

Lighting levels should be consistent along the street without pools of light and dark. Lighting should be managed to reduce energy consumption and light pollution. The spectrum of light should ideally mimic sunlight as possible as this is more pleasing to the human eye.

Design

- In general, lighting should reflect the character and urban design of the street type to create a recognizable hierarchy of roads and spaces.
- Comply with lighting requirements in areas with existing design guidelines.
- Lighting is typically located in the Amenity Zone of the street. Depending on conditions, lighting may be permitted in medians, however this is less common and often restricted.
- Light poles are typically located 18" off the front of curb.
- Lighting should be oriented toward travelers both in the roadway and on the sidewalk. Adequate lighting at intersections and crossings is essential.
- Pedestrian scale lighting (lower than 20') should be used alone or in combination with roadway scale lighting in high-activity areas to encourage nighttime use and as a traffic calming device.
- Critical locations such as ramps, crosswalks, transit stops and seating areas that are used at night must be visible and lit.
- Lighting may alternate on either side of a street or be arranged in parallel. Parallel arrangements are more formal and common in retail corridors.
- Lighting should be located in concert with street trees – often alternating trees and lights – so that trees do not block the illumination.
- Light poles should not impede the pedestrian clear zone.

Access Management

A major challenge in street design is balancing the number of access points to a street. There are many benefits of well-connected street networks, but on the other hand, most conflicts between users occur at intersections and driveways. The presence of many driveways in addition to the necessary intersections creates more conflicts between vehicles entering or leaving a street and bicyclists and pedestrians riding or walking along the street. When possible, new driveways should be minimized and old driveways should be eliminated or consolidated. Raised medians should be used where possible and placed to limit left turns into and out of driveways.

Access management through limiting driveways and providing raised medians has many benefits:

- The number of conflict points is reduced, especially by replacing center-turn lanes with raised medians since left turns by motorists account for a high number of crashes with bicyclists and pedestrians.
- Pedestrian crossing opportunities can be enhanced with a raised median.
- Universal access for pedestrians is easier, since the sidewalk is less frequently interrupted by driveway slopes.
- Fewer driveways result in more space available for higher and better uses.
- Improved traffic flow may reduce the need for road widening, allowing part of the right-of-way to be recaptured for other users.
- Reference TRB Access Management Manual for in-depth guidance regarding access managment.

Possible Negatives of Access Management

The following possible negative effects of management should be considered and addressed:

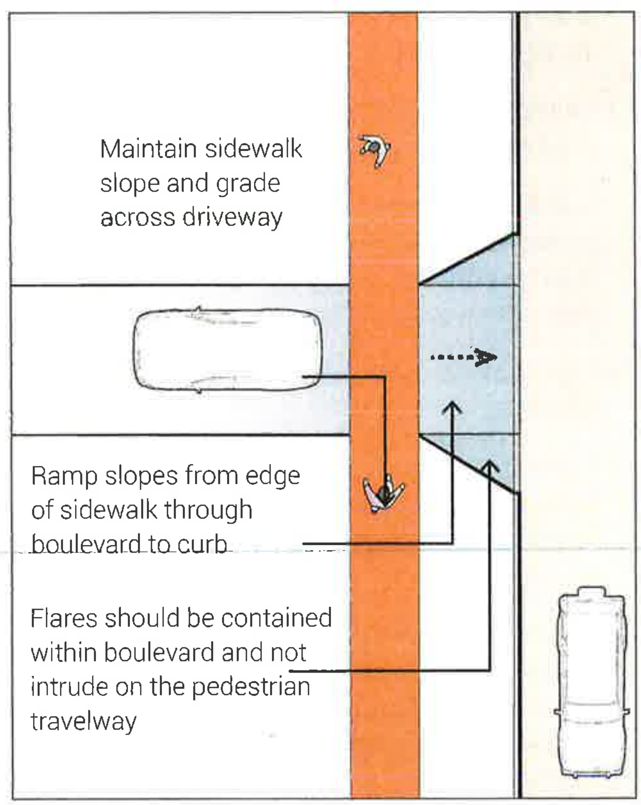
- Streamlining a street may increase motor vehicle speeds and volumes, which can be detrimental to other users.
- Reduced access to businesses may require out-of-direction travel for all users, including pedestrians and bicyclists.
- Concrete barriers and overly-landscaped medians act as barriers to pedestrian crossings. Medians should be designed with no more than normal curb height and with landscaping that allows pedestrians to see to the other side.
- Adjacent land uses can experience decreased access. This can impact businesses as well as residents.

Where angle parking is proposed for on-street parking, designers should consider the use of reverse-in angle (or head-out) parking in lieu of front-in angled parking. Drivers exiting a front-out angled parking space can better see the active street they are entering. This is especially important to bicyclists. Moreover, people exiting cars do so on the curb side and aren't likely to step into an active travel lane.

Driveways

Driveways occur wherever there are land uses that require vehicle access from the street network. Driveways often cross sidewalks, bike and parking lanes and affect moving traffic. These crossings can create conflicts between various users. To the extent possible:

- The number of driveways should be minimized, particularly along commercial corridors, in order to minimize conflicts.
- As an access management principle, driveways should be avoided within the functional area of an intersection to reduce the potential for conflicts with turning vehicles and pedestrians in the crosswalk.



The continuous pavement treatment above alerts drivers to expect pedestrian cross traffic.

Design

As a general rule, driveways should be designed to look like driveways, not roadway intersections, and incorporate the following principles:

- Sidewalks should be continuous across driveways at a continuous grade and cross-slope and the driveways flares should be contained within the boulevard space and not intrude on the pedestrian travel way.
- The pedestrian zone should be consistent with ADA guidelines to ensure that all pedestrians using wheeled mobility devices can safely cross the driveway.
- A standard driveway has a 4' flare on each side to prevent high speed turning movements, and this minimum should be a goal in areas of high pedestrian traffic or those where the city wants to encourage pedestrian traffic. Outside these areas, large flares are standard.
- Driveway width should be minimized to the extent appropriate for traffic conditions, use, type and location.
- Driveways should be located outside the functional area of the intersection, with an absolute minimum of 100 feet from intersections in commercial corridors and 40 to 60 feet in residential corridors.

Medians can provide space for street trees, gateway treatments (such as planters) and utilities (such as fire hydrants.)

  - The functional area of an intersection includes areas upstream and downstream of the intersection. In contrast with the physical area of an intersection, the functional area varies depending on several site specific variables including: amount of queuing at an intersection; distance traveled during perception-reaction time; and declaration distance.
  - In locations where a driveway must function as a leg of an intersection, it should be designed with pedestrian safety features such as crosswalks, small corner radii, and pedestrian signal indications if part of a signalized intersection.
- Truncated domes should not be used where driveways cross the sidewalk zone unless the driveway is functioning as a leg of an intersection and curb ramps are present.
- Site obstructions (signs, landscaping, decorative fencing, signal boxes, building features etc.) should be carefully located to maximize visibility between turning motorists and pedestrians at driveway.

Medians

Medians used on urban streets provide access management by limiting left turn movements into and out of abutting development to select locations where a separate left turn lane or pocket can be provided. The reduced number of conflict points decreases risk of vehicle crashes. Medians provide pedestrians with a refuge as they cross the road and provide space for landscaping, lighting, and utilities. These medians are usually raised and curbed. Landscaped medians enhance the street or help to create a gateway entrance into a community.

Medians can be used to create tree canopies over travel lanes, contributing to a sense of enclosure. Recommended widths depend on available right-of-way and function. Because medians require a wider right-of-way, the designer must weigh the benefits of a median with the issues of pedestrian crossing: distance, speed, context, and available roadside width.

Crossing Treatments

Curb Extensions

Curb extensions, also known as neckdowns, bulb-outs, or bump-outs, are created by extending the sidewalk at corners or mid-block. Curb extensions are intended to increase safety, calm traffic, and provide extra space along sidewalks for users and amenities. They shorten crossing distances (exposure time) and increase visibility between roadway users: the waiting pedestrian can better see approaching traffic and drivers can better see pedestrians waiting to cross the road. Curb extensions have a variety of potential benefits including:

- Additional space for pedestrians to queue before crossing
- Improved safety by reducing motor vehicle speeds and emphasizing pedestrian crossing locations
- Less pedestrian exposure to motor vehicles by reducing crossing distances
- Space for ADA-compliant curb ramps where sidewalks are too narrow
- Enhanced visibility between pedestrians and other roadway users
- Restricting cars from parking too close to the crosswalk area
- Space for utilities, signs, and amenities such as bus shelters or waiting areas, bicycle parking, public seating, street vendors, newspaper stands, trash and recycling receptacles, and planting, and landscape elements

Design

- Curb extensions should be considered only where parking is present or where motor vehicle traffic deflection is provided through other curbside uses.
- Curb extensions are particularly valuable in locations with high volumes of pedestrian traffic, near schools, at unsignalized pedestrian crossings, or where there are demonstrated pedestrian safety issues.
- A typical curb extension extends the approximate width of a parked car, or about 6' from the curb.
- The minimum length of a curb extension is the width of the crosswalk, allowing the curvature of the curb extension to start after the crosswalk which should deter parking; NO STOPPING signs should also be used to discourage parking. The length of a curb extension can vary depending on the intended use (i.e., stormwater management, transit stop waiting areas, restrict parking).

Curb extensions can be a valuable space for placing streetside amenitites such as bike parking.

- Curb extensions should not reduce a travel lane or a bicycle lane to an unsafe width.
- Curb extensions at intersections may extend into either one or multiple legs of the intersection, depending on the configuration of parking.
- Street furniture, trees, plantings, and other amenities must not interfere with pedestrian flow, emergency access, or visibility between pedestrians and other roadway users.
- Curb extensions may be located at corners or midblock locations.

Considerations

- The turning needs of larger and emergency vehicles should be considered in curb extension design.
- Care should be taken to maintain direct routes across intersections aligning pedestrian desire lines on either side of the sidewalk. Curb extensions often make this possible as they provide extra space for grade transitions.
- Consider providing a 20' long curb extension to restrict parking within 20' of an intersection.
- In order to move traffic more efficiently, curb extensions should not be installed on arterials with peak hour parking restrictions.
- When curb extensions conflict with turning movements, the width and/or length should be reduced rather than eliminating the extension wherever possible.
- Emergency access is often improved through the use of curb extensions as intersections are kept clear of parked cars.
- Curb extension installation may require the relocation of existing storm drainage inlets and above ground utilities. They may also impact underground utilities, parking, delivery access, garbage removal, and street sweepers. These impacts should be evaluated when considering whether to install a curb extension.
- Curb extension installation may require the relocation of existing storm catch basins which can increase costs substantially. Catch basins should be centered at least 5 feet from the beginning of the bump out.

Crossing Islands

As the number of travel lanes increases, pedestrians feel more exposed and less safe entering the intersection. Crossing islands are raised islands that provide a pedestrian refuge while crossing multilane roadways enabling pedestrians to find gaps in traffic and allowing a two stage crossing movement. At mid-block crossings where width is available, islands should be designed with a stagger, or in a "z" pattern, encouraging pedestrians to face oncoming traffic before progressing through the second phase of the crossing.

Design

Crossing islands should:

- Be installed where there is a demand for pedestrians to cross the road, but where the numbers of pedestrians are not high enough to warrant a signalized pedestrian crossing.

Crossing islands enable pedestrians to cross the street in two stages.

- Include at-grade pedestrian cut-throughs as wide as the connecting crosswalks, detectable warnings, and be gently sloped to prevent standing water and ensure adequate drainage.
- Be at least 6' wide, preferably 8–10'. Where a 6'-wide median cannot be attained, a narrower raised median is still preferable to nothing. The minimum protected width is 6 feet, based on the length of a bicycle or a person pushing a stroller. The refuge is ideally 40 feet long.
- Accommodate turning vehicles. Crossing islands at intersections or near driveways may affect left-turn access.
- All crossing islands at intersections should have a "nose" which extends past the crosswalk. The nose protects people waiting on the crossing island and slows turning drivers.
- Safety islands should include curbs, bollards, or other features to protect people waiting.
- Be illuminated or highlighted with street lights, signs, or reflectors to ensure that motorists see them.
- Crossing islands may be enhanced using plantings or street trees. Plantings may require additional maintenance responsibilities and need to be maintained to ensure visibility.

Considerations

- Crossing islands should be considered where crossing distances are greater than 50'.
- To guide motorists around crossing islands, consider incorporating diverging longitudinal lines on approaches to crossing islands.
- If there is enough width, center crossing islands and curb extensions can be used together to create a highly visible pedestrian crossing and effectively calm traffic.
- Where possible, stormwater management techniques should be used on crossings islands with adequate space. Plantings should be low growing to maximize visibility, and ideally involve minimum maintenance.

Raised Crossings and Intersections

Raised crossings and intersections create a safe, slow-speed crossing and public space at minor intersections. Raised crossings are created by raising the crosswalk to same level as the sidewalk. Raised intersections are a similar concept to raised crossings but are applied to the entire area of an intersection. These treatments provide an array of benefits especially for people with mobility and visual disabilities because there are no vertical transitions to navigate.

Raised crossings and intersections:

- Make it physically more difficult for drivers to go through crossings and intersections at unsafe speeds.
- Improve drivers' awareness by prioritizing pedestrian crossings and helping define locations where pedestrians are expected.
- Eliminate standing water and debris collection at the base of ramps.
- Increase visibility between drivers and pedestrians by raising pedestrians in the motorists' field of view and giving pedestrians an elevated vantage point from which to look for oncoming traffic.
- Create pedestrian crossings which are more comfortable, convenient and accessible since transitioning between the sidewalk and roadway does not require negotiating a curb ramp.

Design

- Raised crossings and intersections are appropriate in areas of high pedestrian demand. They should also be considered in school zones and locations where pedestrian visibility and motorist yielding have been identified as concerns.
- Raised crossings should be considered across free-flowing right turn slip lanes to slow automobiles in preparation for yielding to pedestrians.

Raised crossings can include pavement markings on the approach ramps that make it more evident to drivers that a grade change is present. Contrasting paving treatments in the crossing also call attention to pedestrian cross traffic.

- Care should be taken to maintain direct routes across intersections aligning pedestrian desire lines on either side of the sidewalk.
- Raised crossings can be provided across side streets of major thoroughfares to slow traffic entering the neighborhood.
- Raised crossings should provide pavement markings for motorists and appropriate signage at crosswalks per the MUTCD.
- Design speeds and emergency vehicle routes must be considered when designing approach ramps.
- Raised crossings and intersections require detectable warnings at the curb line for persons with visual disabilities.

Considerations

- Raised crossings are particularly valuable at unsignalized mid-block locations, where drivers are less likely to expect or yield to pedestrians.
- Raised intersections and crossings can be used as gateway treatments to signal to drivers when there are transitions to a slower speed environment that is more pedestrian-oriented.
- High-visibility or textured paving materials can be used to enhance the contrast between the raised crossing or intersection and the surrounding roadway.
- Designs should ensure proper drainage. Raised intersections can simplify drainage inlet placement by directing water away from the intersection. If the intersecting streets are sloped, catch basins should be placed on the high side of the intersection at the base of the ramp.

Crosswalk Design

Well-designed crosswalks are an important component of a pedestrian friendly city. Safety for all pedestrians, especially for those with limited mobility and disabilities, is the single most important criteria informing crosswalk design.

Legal crosswalks exist at all locations where two streets cross, including T-intersections, regardless of whether pavement markings are present. In other words, drivers are legally required to yield to pedestrians at intersections even when there are no pavement markings.

Marked crosswalks help guide pedestrians to locations where they should cross the street as well as inform drivers of pedestrian movements. In addition to intersections, marked crosswalks are used in locations where pedestrians may not be expected, such as at mid-block crossings or uncontrolled crossings (crossings where motorists do not have signals or stop signs).

Crosswalks should be marked only at locations where significant pedestrian activity is occurring or anticipated to help ensure that drivers associate crosswalks and pedestrian activity. In order to create a convenient, connected, and continuous walking network, the first step is identifying the location for marked crosswalk. Begin by identifying desire lines and destinations such as schools, parks, civic buildings, retail areas, and transit stops. Then, identify where it is safest for people to cross. These observations should inform location and prioritization of crossing improvements.

As with any installation of traffic control devices, the most essential tool for crosswalk installation is the use of engineering judgment. Engineering judgment should be used and, if applicable, an engineering study performed when considering the marking of crosswalks.

Ladder style crosswalks provide greater visibility for approaching drivers.

Standard Crosswalks

The typical crosswalk throughout the Tulsa region is the standard style, with 8" wide white stripes parallel to the path of travel. Textured pavement and colored crosswalks are discouraged except as special treatments in defined districts, as they often fade over time and lack sufficient retro-reflectivity.

For areas with high pedestrian traffic and locations with unsignalized crossings, crosswalks should be the high visibility ladder treatment. These would have the current parallel bars, but then add perpendicular 24" bands every 24".

Design

- Crosswalks should be at least 10' wide or the width of the approaching sidewalk if it is greater. In areas of heavy pedestrian volumes, crosswalks can be up to 25' wide.
- Crosswalks should be aligned with the approaching sidewalk and as close as possible to the parallel street to maximize the visibility of pedestrians while minimizing their exposure to conflicting traffic.
- Designs should balance the need to reflect the desired pedestrian walking path with orienting the crosswalk perpendicular to the curb; perpendicular crosswalks minimize crossing distances and therefore limit the time of exposure.
- ADA-compliant curb ramps should direct pedestrians into the crosswalk. The bottom of the ramp should lie within the area of the crosswalk (flares do not need to fall within the crosswalk).
- Textured crossings should be constructed and maintained to ensure a regular surface that is traversable by those in wheelchairs.
- Stop lines at stop-controlled and signalized intersections should be striped no less than 4' and no more than 30' from the approach of crosswalks.

Marked Crosswalks at Signal-Controlled Locations

Intersection controls are one of the most important factors in intersection design. The goal of controlling intersections is to provide the safest, most efficient means to move people across an intersection, whether walking, riding a bicycle, taking transit, or driving. Specific attention should be given to vulnerable users, such as pedestrians and bicyclists.

Engineering judgment should be used to establish the most appropriate controls on a site-specific basis. The following factors should be considered when determining intersection controls:

- Vehicular, bicycle, and pedestrian traffic volumes on all approaches
- Number and angle of approaches
- Approach speeds
- Sight distance available on each approach
- Reported crash experience

Depending on the type of intersection and the selected control devices, it may not always be appropriate to mark crosswalks at all legs of an intersection. Alternate treatments may be necessary to optimize safety and visibility, which are discussed in the sections that follow.

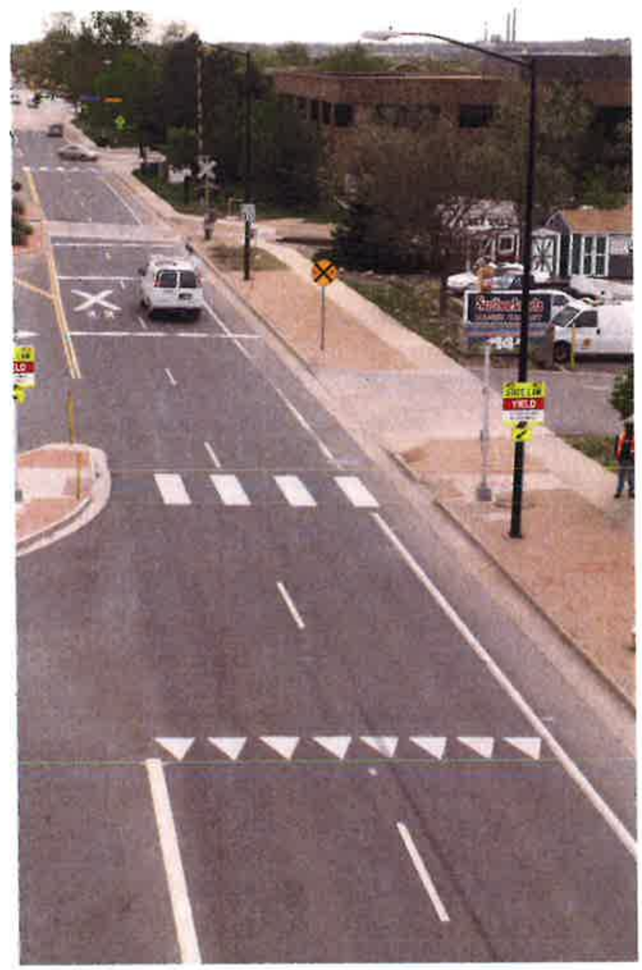
Marked Crosswalks at Stop-Controlled Locations

Stop-controlled approaches are easiest for pedestrians to cross because motorists and bicyclists must stop and yield the right of way to pedestrians. Stop-controlled intersections also help reduce pedestrian delay. However, the use of stop signs must balance safety with efficient traffic flow for all modes, including bicyclists and transit vehicles. Stop sign installation requires specific warrants be met as determined by the MUTCD.

For neighborhood residential streets, marked crosswalks should be used at locations where pedestrian crossings are more frequent, such as school walking routes, park entrances, or other locations. Stop lines should be striped at stop-controlled intersections no less than 4' and no more than 30' from the approach of crosswalks, unless determined otherwise by an engineering study.

Marked Crosswalks at Uncontrolled Locations

As with other locations, crosswalks should be marked at mid-block uncontrolled locations where pedestrian volumes are high. In all cases, they should be accompanied by signage at the road edge or in the street, and in many cases, they should be combined with other treatments outlined in this section. On higher speed streets, advance yield markings and signage may be desirable to alert drivers early enough to ensure adequate stopping distance.



Advance yield markings on this multi-lane street alert drivers to expect pedestrian crossings ahead.

Rectangular Rapid-Flashing Beacons (RRFBs)

At some uncontrolled crossings, particularly those with four or more lanes, it can be difficult to achieve compliance with laws that require motorists to yield to pedestrians. Vehicle speeds and poor pedestrian visibility combine to create conditions in which very few drivers are compelled to yield.

One type of device proven to be successful in improving yielding compliance at these locations is the Rectangular Rapid Flash Beacon (RRFB). RRFBs are a pedestrian crossing sign combined with an intensely flashing beacon that is only activated when a pedestrian is present. RRFBs are placed curbside below the pedestrian crossing sign and above the arrow indication pointing at the crossing. They should not be used without the presence of a pedestrian crossing sign. The light-emitting diode (LED) flash is a "wig-wag" flickering pattern at a rate of 190 flashes per minute. The beacons are activated by a call button for pedestrians or bicyclists.

Another LED panel should be placed facing the pedestrian to indicate that the beacon has been activated. The pushbutton and other components of the crosswalk must meet all other accessibility requirements.

Design

- The design of RRFBs should be in accordance with FHWA's Interim Approval 11 (IA-11) for Optional Use of Rectangular Rapid Flashing Beacons issued July 16, 2008 and the Interpretation Letter 4(09)-41 (I) - Additional Flash Pattern for RRFBs issued July 25, 2014.
- RRFBs can be used when a signal is not warranted at an unsignalized crossing. They are not appropriate at intersections with signals or STOP signs.
- RRFBs are installed on both sides of the roadway at the edge of the crosswalk. If there is a pedestrian refuge or other type of median, an additional beacon should be installed in the median.

Considerations

- RRFBs are considerably less expensive to install than mast-arm mounted signals. They can also be installed with solar-power panels to eliminate the need for a power source.
- RRFBs should be limited to locations with critical safety concerns, and should not be installed in locations with sight distance constraints that limit the driver's ability to view pedestrians on the approach to the crosswalk.
- RRFBs should be used in conjunction with advance yield pavement lines and signs, which are discussed on the previous page.
- Usually implemented at high-volume pedestrian crossings, but may also be considered for priority bicycle route crossings or locations where bike facilities cross roads at mid-block locations.

Push buttons are located on the sign post of the RRFB which must be supplied with an electrical connection.

HAWK Signal

"HAWK" stands for High-intensity Activated Crosswalk and is also referred to as a pedestrian hybrid beacon. A HAWK signal is a push button-activated pedestrian signal that increases pedestrian safety at crossings while stopping vehicle traffic only as needed. The following describes how a HAWK signal works:

1. Signal remains dark until a pedestrian activates the walk indication by pushing a button.
2. Signal will then flash yellow to warn drivers that a pedestrian will be entering the crosswalk.
3. Steady yellow indication follows advising drivers to stop if safe to do so.
4. Signal then turns solid red, requiring vehicles to stop at the stop line. Pedestrian sees the walk indication and proceed into the crosswalk.
5. Once walk time is completed, the signal will flash red. This lets the driver know that once they come to a complete stop they may proceed through the intersection if there are no pedestrians in the crosswalk.
6. HAWK will return to the dark or "off" position until the push button is activated again.

HAWK signals may be used at mid-block crossings (including off-street path crossings) and should be considered where high traffic volumes and speeds (typically based on study of 35mph or less, per MUTCD) make it difficult for pedestrians to cross the street at locations that do not meet traffic engineering warrants for a conventional signal. HAWK signals provide a protected crossing while allowing vehicles to proceed through a pedestrian crossing as soon as it is clear, thus minimizing vehicle delay.

Design

HAWK signals must be accompanied by the following crossing treatments:

- Crosswalk pattern to match the intensity of the crossing, likely a higher-visibility crosswalk
- Advanced stop bar placed 20 to 50 feet from crosswalk
- MUTCD R10-23 signs mounted both on the mast arm and the supporting pole.

The HAWK signal indicates a preferred crossing location and thus does not improve crossing at all quadrants of an intersection as a signalized intersection would. It does not improve movement through the intersection for cyclists in on-street lanes as they are subject to motor vehicle indications.

HAWKs are particularly useful in multi-lane contexts like the one pictured here where a multiple threat crash risk exists.

Signalized Intersections

The design of signalized intersection should attempt to prioritize the safety, comfort, and convenience of all users. All signalized intersections should contain indications for motor vehicles and pedestrians, and signals for bicyclists and transit where appropriate. By optimizing signal phasing and timings, multiple modes are able to safely move through the intersection with limited conflicts, low delay, and more comfort.

Signal Timing for Pedestrians

Signal timing for pedestrians is provided through the use of pedestrian signal heads. Pedestrian signal heads display the three intervals of the pedestrian phase:

1. The Walk Interval, signified by the WALK indication—the walking person symbol—alerts pedestrians to begin crossing the street.
2. The Pedestrian Change Interval, signified by the flashing DON'T WALK indication—the flashing hand symbol accompanied by a countdown display—alerts pedestrians approaching the crosswalk that they should not begin crossing the street. The countdown display alerts pedestrians in the crosswalk how much time they have left to cross the street.
3. The Don't Walk Interval, signified by a steady DON'T WALK indication—the steady upraised hand symbol – alerts pedestrians that they should not cross the street. The beginning of the Don't Walk Interval is called the Buffer Interval, which should be displayed for a minimum of a three seconds prior to the release of any conflicting motor vehicle movements.

The total time for the pedestrian change interval plus the buffer interval is called the pedestrian clearance time, or the time it takes for a pedestrian to clear the intersection leaving at the onset of the DON'T WALK indication.

Pedestrian signal heads should be provided at all signalized intersections for all crosswalks. Additionally, it is highly recommended to install crosswalks on all legs of a signalized intersection unless it is determined to be unnecessary due to pedestrian travel patterns. Signal timing for pedestrians should be provided at all newly constructed signalized intersections and incorporated into all signalized intersection improvements.

The following design goals can help improve pedestrian crossing safety and comfort at signalized intersections:

- Reduce vehicle speeds
- Minimize crossing distance
- Minimize delay for WALK indication
- Minimize conflicts with turning vehicles
- Provide sufficient signal time to cross the street

Design

- Pedestrian signals should allocate enough time for pedestrians of all abilities to safely cross the roadway. The MUTCD specified pedestrian walking speed is 3.5 feet per second to account for an aging population and is endorsed by the City. The pedestrian clearance time, which is the total time for the pedestrian change interval plus the buffer interval, is calculated using the pedestrian walking speed and the distance a pedestrian has to cross the street.
- Countdown pedestrian displays inform pedestrians of the amount of time in seconds that is available to safely cross during the flashing Don't Walk Interval. All pedestrian signal heads should contain a countdown display provided with the DON'T WALK indication.
- In areas with higher pedestrian activity, such as near transit stops, along Main Streets, and in neighborhood centers, pedestrian push-button actuators may not be appropriate. Pedestrians should expect to get a pedestrian cycle at every signal phase, rather than having to push a button to call for a pedestrian phase.

- At more complex intersections (e.g., where there is more than one signal phase for each direction), where pedestrian volumes are lower, or uneven or variable volumes of users, push buttons should be provided. The responsiveness of the actuated signal should be as prompt as possible (as low as 5 seconds) based on the necessary transition time for approaching motorists to come safely to a stop.
- Along corridors where traffic signals are synchronized, they should be designed to meet target speeds to maintain safe vehicular travel speeds and discourage speeding.

Considerations

- One of primary challenges for traffic signal design is to balance the goals of minimizing conflicts between turning vehicles with the goal of minimizing the time required to wait at the curb for a WALK indication.
- Intersection geometry and traffic controls should encourage turning vehicles to yield the right-of-way to pedestrians.
- Requiring pedestrians to wait for extended periods can encourage crossing against the signal. The 2010 Highway Capacity Manual states that pedestrians have an increased likelihood of risk-taking behavior (e.g., jay-walking) after waiting longer than 30 seconds at signalized intersections.
- Opportunities to provide a WALK indication should be maximized whenever possible. Vehicular movements should be analyzed at every intersection in order to utilize non-conflicting phases to implement Walk Intervals. For example, pedestrians can always cross the approach where vehicles cannot turn at a four-leg intersection with the major road intersecting a one-way street when the major road has the green indication.

Leading Pedestrian Interval

The Leading Pedestrian Interval (LPI) initiates the pedestrian WALK indication three to seven seconds before motor vehicles traveling in the same direction are given the green indication. This technique allows pedestrians to establish themselves in the intersection in front of turning vehicles, increasing visibility between all modes.

Design

- Installation of new LPIs or retrofits should prioritize intersections with high volumes of pedestrians and conflicting turning vehicles, and locations with a large population of elderly or school children who tend to walk slower.
- 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.
- A lagging protected left arrow for vehicles may be provided to accommodate the LPI.
- Newly-installed LPIs should provide accessible pedestrian signals to notify visually-impaired pedestrians of the LPI. Without an accessible pedestrian signal, visually-impaired pedestrians may begin to cross with the vehicular movement when motorists less likely to yield to them.

Pedestrian signal timing should prioritize the safety, comfort, and convenience of all users.

Traffic Calming

Traffic calming is the combination of mainly physical measures that:

- Reduce the negative effects of motor vehicle use - changing the role and design of streets to accommodate motorists in ways that reduce the negative social and environmental effects on individuals, neighborhoods, districts, retail areas, corridors, downtowns, and society in general (e.g., reduced speeds, reduced sense of intrusion/dominance, reduced energy consumption and pollution, reduced sprawl, and reduced automobile dependence).
- Alter driver behavior - the street design helps drivers self-enforce lower speeds, resulting in less aggressive driving and increased respect for non-motorized users of the streets.
- Improve conditions for non-motorized street users - promoting walking and bicycling, changing expectations of all street users to support equitable use of the street, increasing safety and comfort (i.e., the feeling of safety), improving the aesthetics of the street, and supporting the context of the street.

The definition of traffic calming is broad enough to apply to myriad contexts and situations, but specific enough to have independent meaning so that it is not confused with other street design elements and design approaches.

Through design, traffic calming aims to slow the speeds of motorists to the "desired speed" (usually 20 mph or less for residential streets and 25 to 35 mph for boulevards and avenues) in a context-sensitive manner. Traffic calming is acceptable on all street types where pedestrians are allowed.

The greatest benefit of traffic calming is increased safety. Compared with conventionally designed streets, traffic calmed streets typically have fewer collisions and even higher reductions in injuries and fatalities. These dramatic safety benefits are mostly the result of slower speeds for motorists

Traffic calmng features are especially applicable in commercial areas where most visitors arrive by automobile. Drivers are signaled by street features that they have arrived in the commercial district, and they are induced to slow travel speeds in this area with higher pedestrian traffic.

that result in greater driver awareness, wider fields of vision, shorter stopping distances, and less kinetic energy during a collision. At 20 mph or less, chances are very high that a motorist will not kill or severely injure a pedestrian in a collision. Other contributing factors to these superior safety results include a more legible street environment and design advantages for pedestrians and cyclists. Bulb-outs on corners of intersections, for example, allow pedestrians to see past parked cars prior to crossing the street.

Design

There are both physical and visual elements that can help slow vehicle traffic. Visually narrowing a street, or changing its aesthetics can be effective traffic calming techniques, and can be more widely applicable than geometric measures. Treatments include:

- Curb and gutter, which defines the traveled part of the roadway
- Sidewalks, which indicate that motorists should expect to see pedestrians
- Outdoor cafes or other activities in the pedestrian zone, such as street furniture
- Street trees, which create a sense of enclosure
- On-street parking, which creates an activity zone to which drivers must pay attention
- Pavement type and road striping
- Buildings that are closer to the street (i.e., no parking or drive-through between the street and adjacent buildings)
- Bump outs, either at intersections or mid-block crossings, which also shorten pedestrian crossing distances
- Reduction in curb radii, in order to slow turning movements
- Lane diets or roadway diets, which reduce the number of lanes or amount of lane space and can result in slowed vehicle travel

Creating vertical or horizontal deflection of the vehicle path is a very effective way to slow traffic, and may be appropriate on residential streets. Horizontal deflection is typically most effective. Treatments include:

- Bump outs, either at intersections or mid-block crossings.
- Traffic circles, which force drivers to slow at intersections and yield to users approaching from the left.
- Speed humps provide a gentle rise on the roadway.
- Chicanes force drivers and bicyclists to navigate a narrowed "s" shaped pathway along the street created by the placement of bump outs that alternate from one side of a street to the other, typically in groups of three.

Traffic Calming Intersection Treatments

Blocking or restricting access is highly effective, but can have the unintended effect of creating traffic problems on neighboring streets. Treatments include:

- Diverter Median Barriers, which restrict a driver's ability to cross an intersecting street.
- Diverter Islands restrict turn or through movements for vehicle traffic, and may allow bicycle and pedestrian traffic in all directions. Diverter islands are typically used at intersections to deter heavy vehicle volumes and eliminate cut-through traffic. They should be part of a larger traffic calming strategy that evaluates and handles accessibility through the adjacent street network and considers emergency vehicle response times. Effects are generally limited to the intersection; the street may require additional traffic calming in addition to the intersection treatments to be effective.
- Right In/Right Out restrictions, which restrict left turns into and left turns out of a street.

Considerations

Traffic calming measures that may be applied depend on the context of the street. Special consideration should be given to:

- Street classification
- Traffic operational analysis
- Mix of traffic, including consideration of bus, bike or truck routes
- Adjacent land uses
- First responder vehicle needs
- Effect on on-street parking

Speed Humps

Speed humps are a roadway design feature that consists of raised pavement approximately 3 to 4 inches high at their center, which extend the full width of the street. The height of a speed hump tapers near the drain gutter to allow unimpeded bicycle travel. Speed humps should not be confused with speed bumps commonly found in parking structures.

Speed humps may be considered on low volume neighborhood streets in order to control vehicle speeds. Streets that have high traffic volumes, are transit routes or have frequent freight travel are typically not good candidates for speed humps.

Design

- Speed humps should have a smooth leading edge, a parabolic rise, and be engineered for a speed of 25 to 30 mph, so they can be negotiated by large vehicles.
- Speed humps should be clearly marked with reflective markings and signs.
- Typically speed humps are 22 feet in length, with a rise of 6 inches above the roadway and should extend the full width of the roadway. They should be tapered at the edges to the gutter to accommodate drainage.
- Grade should be considered; do not use on roadways with greater than 5 percent grade.
- Do not use on collector or arterial streets.

Diverter islands can allow for two-way bicycle access to a street while restricting automobile access at one end.

Speed hump locations are often indicated with signage to further alert drivers to slow speeds.

Chicanes divert traffic horizontally and may be designed to create a one-lane street that necessitates driver yielding.

- Parking must be restricted adjacent to humps.
- A speed study showing 85th percentile at least 5 mph over the speed limit required prior to implementation.

Chicanes

Chicanes can take the form of curb extensions, center islands, or staggered on-street parking. These traffic calming features slow vehicles by compelling them to shift laterally or pass through a narrowed section of roadway.

Chicanes may be considered on residential streets where:

- There is a high volume of high-speed cut through traffic
- Children frequently walk or bicycle to and from school
- A comprehensive neighborhood traffic calming program is present
- Other traffic calming measures have been implemented.

Design

- The size of chicanes will vary based on the targeted design speed and roadway width, but must be 20 feet wide curb to curb at a minimum to accommodate emergency vehicles.
- Can incorporate stormwater treatment and low growing landscaping.
- Parking may be affected to a greater extent than other traffic calming measures.

Curb Radii

Curb returns or radii are the curved connection of curbs at the corners formed by the intersection of two streets, which guide vehicles in turning corners. The shape of a corner curb radius has a significant effect on the overall operation and safety of an intersection.

The shape and dimensions of curb radii vary based on street type, transportation context, and design vehicle (vehicle type used to determine appropriate turn radius at an intersection). Smaller corner radii increase pedestrian safety by shortening crossing distances, increasing pedestrian visibility, and decreasing vehicle turning speed. Smaller corner radii also provide better geometry for installing perpendicular curb ramps for both crosswalks at each corner, resulting in simpler, more appropriate crosswalk placement, in line with the approaching sidewalk. Factors to consider when designing curb radii:

- Curb radius: the actual radius proscribed by the curb line at an intersection.
- Effective radius: The radius available for the design vehicle to make the vehicle turn, accounting for the presence of parking, bike lanes, medians, or other features.

Curb radii can be designed:

- To allow for the selected design vehicle to complete a turn fully within its designated travel lane or lanes.
- To accommodate a vehicle turn by allowing for a particular vehicle type to complete a turn with some latitude to partially use adjacent or opposing lanes on the origin or destination streets.

Tighter curb radii are particularly appropriate in downtown Main Street contexts.

Design

The effective turning radius (rather than the actual curb radius), should typically be used to determine the ability of vehicles to negotiate a turn. Determination of the design vehicle should consider and balance the needs of the various users of a street--from pedestrians and bicyclists to emergency vehicles and large trucks--considering the volume and frequency of these various users. The design vehicle should be selected according to the types of vehicles using the intersection with considerations to relative volumes and frequencies. The designer should balance designing for a larger vehicle versus accommodating the needs of large vehicles, which may allow encroachment into another lane. A typical curb radius of 20 feet (smaller radii may be considered) should be used wherever possible including where:

- There are higher pedestrian volumes
- There are few larger vehicles
- Bicycle and parking lanes create a larger effective radius.

Factors that may affect the curb radii must be taken into consideration:

- The street type
- The angle of the intersection
- Bump outs
- The number and width of receiving lanes
- Large vehicles
- Effective turning radius

Where there are high volumes of large vehicles making turns- inadequate curb radii could cause large vehicles to regularly travel across the curb and into the pedestrian waiting area.

1. On corners along bus routes, intersections should accommodate allowing a transit vehicle using the entire roadway, similar to an emergency vehicle.
2. Because emergency vehicles have sirens and flashing lights and other vehicles must pull over, they can typically use the full right-of-way without encountering opposing vehicles. On busier streets, the ability of emergency vehicles to swing wide may be limited by queued traffic which may not be able to pull over.
3. Freight corridors should be designed for WB-50 trucks. WB-60 and larger trucks may also be present on city streets, particularly on designated state highways, truck routes and in industrial areas. These may need to be accommodated in certain instances, though they generally do not fit well on the existing street network in most of the Tulsa region.

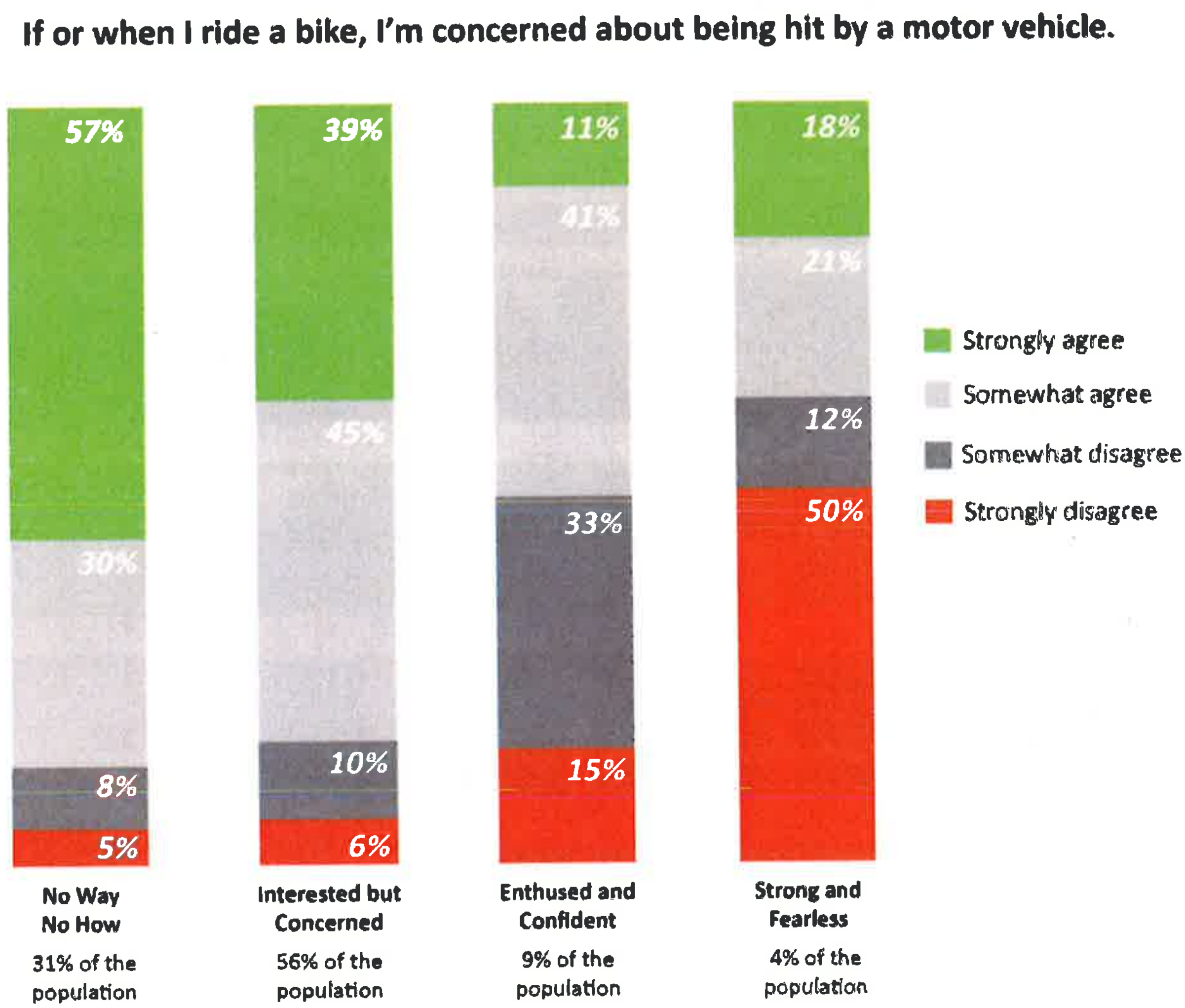
A variety of strategies can be used to maximize pedestrian safety while accommodating large vehicles including:

- Adding parking or bicycle lanes to increase the effective radius of the corner
- Varying the actual curb radius (i.e., compound curb radii) over the length of the turn so that the radius is smaller as vehicles approach a crosswalk and larger when making the turn. Compound radii effectively shorten crossing distances and make pedestrians visible while accommodating larger vehicle turns; because they allow more sweeping turns and they do not slow turning vehicles.
- Painting a median: Where there is sufficient lane width on the destination street, a painted median can enable a large vehicle to complete a turn without turning into opposing traffic.
- Restricting access: Where there is a desire to keep curb radii small, restrictions on large vehicles making the turn may be considered. This should be considered in light of the overall street network.
- Installing advance stop lines on the destination street to increase the space available for large vehicles to make a turn by enabling them to swing into opposing lanes on the destination street while opposing traffic is stopped.

Bicycle Facilities

These recommendations are built off of the adopted 1999 Trails Master Plan, the findings from the Tulsa Go Plan analysis, and from on-the-ground analysis of the existing facilities and conditions. Most importantly, these recommendations build off of the engaged bicycle community in the Tulsa region that have participated in the Go Plan's public engagement process. The planning process for the future bicycle network considered the needs, skills, and desires of a range of bicyclists. Generally, bicycle planning professionals accept that there is a large percentage of the American population that is interested in cycling for transportation purposes, but do not currently cycle for a variety of reasons. People typically have positive memories of bicycling in their youth and associate bicycling with expanded personal freedom and adventure. But as they have grown older, most have come to view bicycling as a recreational activity that is safest on trails; riding on the street network is perceived to be unsafe and unappealing. Conversations during the plan development process revealed similar attitudes in the Tulsa region, so the bicycle facility network recommendations are designed to meet this broader demographic of users.

Research focused on bicycle transportation has historically been very limited as has the collection of data regarding the use and safety of treatments, such as bike lanes, designed to improve bicycling. Over the last 5 -15 years, an increasing focus has been placed on understanding the desires and needs of bicyclists. Research identifying reasons



Survey response results from 2012 Portland study relating fear of being hit by motorist to bicyclist classification shows strong correlation between bicyclist classification and safety concerns operating in close proximity to traffic.

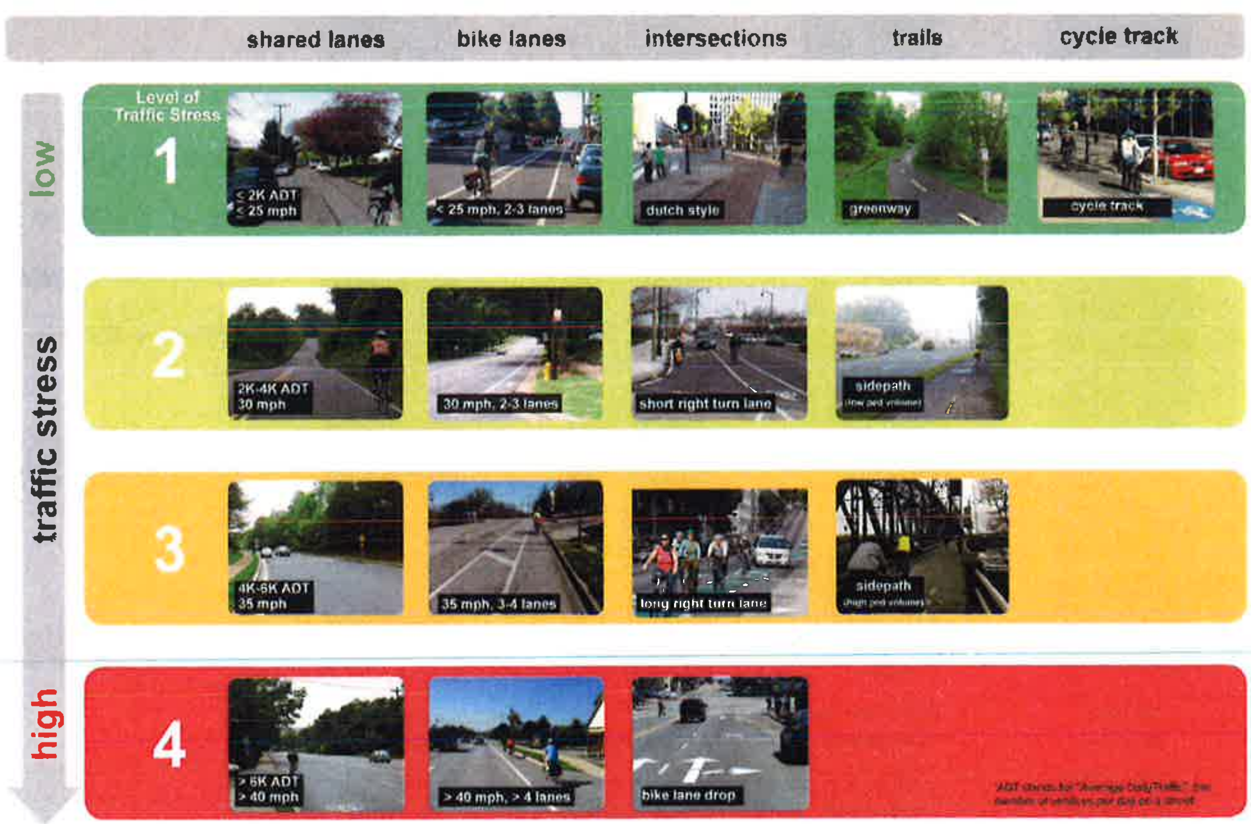
people choose other modes of transportation over bicycling consistently find people cite perceived risk, weather, topography, trip distance and support facilities (showers, bike parking) as primary discouragements to bicycling. Of these issues, perceived risk is the most critical and challenging barrier to overcome to increase rates of bicycling for transportation purposes.

A number of research studies have shown a bicyclist's perception of their personal safety riding on a roadway is greatly influenced by their proximity to and interaction with motorized traffic. At low-volumes and speeds of traffic, many people feel safe and comfortable sharing the roadway with traffic. As traffic speed and volume increase, their perception of safety degrades significantly resulting in a feeling of increased stress and discomfort on the roadway.

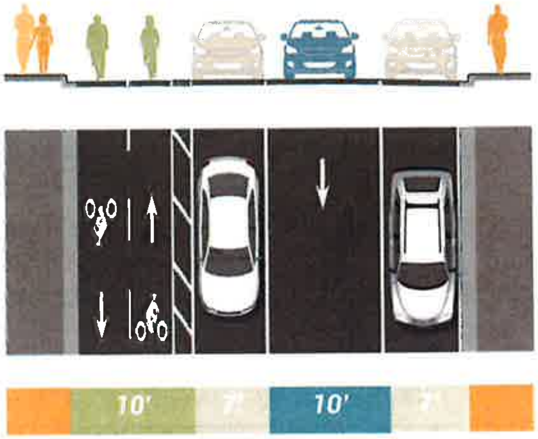
The degree to which people experience this stress is likely to vary by bicycling experience, health, age, and trip purpose (commuting vs. recreational family ride). A seminal 2012 survey in Portland, OR questioned residents about their level of comfort riding on various street types with and without bicycle facilities, signs or pavement markings. Respondents were then sorted into four categories based upon which correlated their stated comfort level riding on various street types with their concern about being hit by a motor vehicle. The results are summarized in the graphic below.

Priority Routes via Low-Stress Bicycling Concept

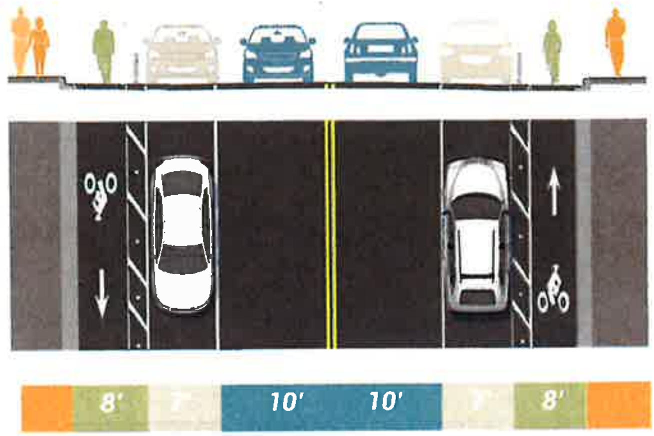
In looking at the current conditions of many of streets in the Tulsa region, it was clear that many of them are either over-built and have great potential in being reimagined to have bike facilities on them, or they are so heavily trafficked that major actions would have to occur to make them feel comfortable to ride on. The low-stress bicycling concept is premised on the experience of the Dutch who have focused on building a connected bicycle network that minimize bicyclists interaction with motorized traffic. Their approach



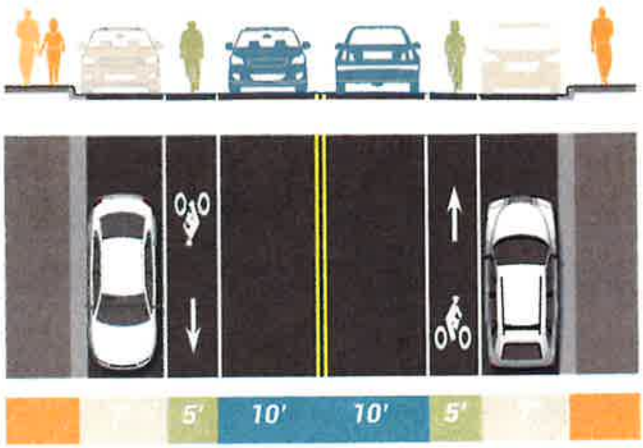
Level of Traffic Stress takes bicycle facility type, traffic speed and traffic volume into account to determine the bicyclist's level of stress experienced while traveling along that street or pathway.



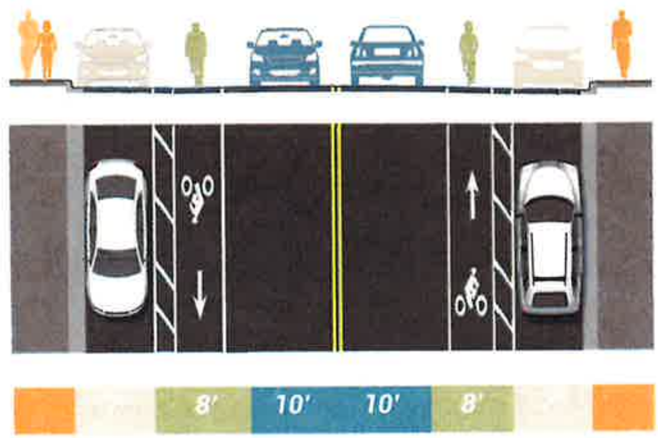
Two-way Cycle Track



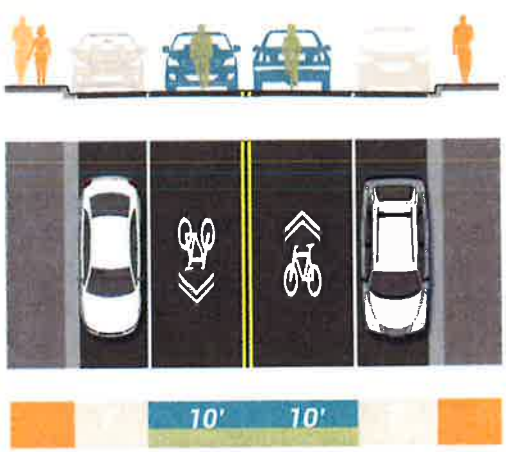
One-way Cycle Tracks



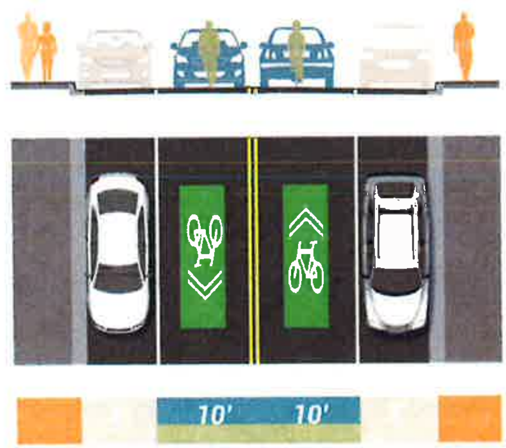
Bike Lanes



Buffered Bike Lane



Shared Lane Markings



Priority Shared Lane Markings

These cross sections indicate minimum facility and lane widths for on-street bicycle facilities. Widths are further detailed in each of the facility type write-ups in this section.

Automobile travel lane widths should adhere to the Context Sensitive Capacity-Volume-Geometrics table developed jointly by INCOG and the City of Tulsa engineering department. For instance, if a transit lane is located on a street, the lane for bus travel must be 11'. This table is included as the last page of this appendix.

targets mainstream adult bicyclists (Interested but Concerned population) by providing the following types of facilities:

- Shared lanes on low-volume, low speed, local streets
- Bicycle lanes on moderate-volume & moderate-speed streets
- Cycle tracks (cycle tracks) on high-volume or high-speed streets

For bicycling to be an appealing transportation choice for the Interested but Concerned population, the streets need to be less stressful to bike on, and the bicycle network should get people from point A to point B without significant additional mileage or delay.

A primary goal of the priority bicycle network for the Tulsa Go Plan was to identify and plan for a connected system of low stress routes which appeal to the Interested but Concerned population. These key routes were identified to link the existing and proposed trail system and provide direct north-south and east-west travel through the multimodal district. These routes also connect major destinations including parks and schools. Plus they are some of the only routes to cross the Arkansas River or provide access under Interstate 244 and 44. Many of the facilities recommended are self-explanatory and are designs that have been recommended before, but there are a few that are unique to the Go Plan and serve a greater purpose than just moving bicycles.

Sidepaths and Trails

Sidepath and trails are two facilities that provide off-street space intended for use by bicyclists and pedestrians. Both may be designated for one-way or two-way travel. Most off-street paths accommodate both bicyclists and pedestrians within the same space and are sometimes referred to as shared-use paths. Off-street facilities for exclusive bicyclist use are discussed in the following section, "Cycle Tracks."

A defining feature of off-street paths is that they place bicyclists and pedestrians in an off-street location, where they become subject to all applicable laws pertaining to pedestrian movement at intersections and driveways.

The difference between sidepaths and trails for the purposes of this plan and set of guidelines is their location in relation to a street right-of-way. Sidepaths are located in a right-of-way and place bicyclists and pedestrians in parallel travel paths to the on-street automobile traffic.

Trails are located off-street through open land, often, in the Tulsa region, along watercourses or former rail lines. They interact with streets through at-grade and grade-separated crossings. Where space is available, some trails are constructed with dual cartways: one for pedestrians and one for bicyclists.

Similar design principles and considerations apply to both facility types. However, sidepath design must consciously address driveway crossings and a higher frequency of street crossings to ensure path users and drivers are aware of potential conflicts.

Design

- Off-street paths are desirable along high volume or high speed roadways, where accommodating bicyclists within the roadway in a safe and comfortable way is impractical.
- Off-street paths typically have a lower design speed for bicyclists than in-street facilities do and may not provide appropriate accommodation for cyclists who desire to travel at greater speeds. In addition, greater numbers of driveways or intersections along a sidepath corridor can decrease bicycle travel speeds and traffic signals can increase delay for bicyclists on off-street paths compared to cyclists using in-street bicycle facilities such as bike lanes.
- Many bicyclists express a strong preference for separation from motorized vehicles provided by off-street paths when compared with on-street bike lanes. This may be especially true of less experienced or slower bicyclists. Off-street paths should not be considered a substitute to accommodating bicycles within the roadway.

- Off-street paths have a relationship with roadways similar to that of sidewalks to roadways, in that they function as parallel facilities located in close proximity to vehicle travel lanes. Conflicts with vehicles turning across the path of bicycles and pedestrians at driveways and intersections are an inherent drawback of off-street paths. Off-street paths are commonly used along recreational corridors, scenic corridors, or parkways, and may be part of a regional trail system.
- Off-street paths may be used to provide two-way bicycle and pedestrian travel adjacent to one-way roadways.
- Off-street paths should be a minimum of 10 feet wide ideally. Sidepaths in constrained locations with lower pedestrian volumes may be as narrow as 8 feet.

Considerations

- Off-street paths intended for use by bicyclists should be designed to meet adopted guidelines. This includes widths, clearance, design speed, stopping and sight distance.
- Off-street paths intended for use by pedestrians must meet accessibility requirements under the Americans with Disabilities Act (ADA). Grades may meet but not exceed the grade of the adjacent roadway.
- Crossings must be designed in a way that facilitate sight distance for drivers, bicyclists, and pedestrians, provide stacking room for vehicles waiting to enter the roadway or cross the off-street path, and allow bicyclists and pedestrians to anticipate and react to vehicular turning movements.
- Off-street paths should be designed to maintain constant cross slope and running slope through driveways.
- The desired buffer width between the off-street path and the roadway is a minimum of 5 feet, with a desired minimum of 6 feet, and may be a planted boulevard.
- One-way paths may be used in park settings to minimize conflicts between users where there are high volumes of bicyclists or pedestrians. Because pedestrians walk at relatively slow speeds, one-way pedestrian paths are generally not encouraged.
- When one-way paths for bicycles are desired, consideration should be given to discourage wrong way cycling.
- When one-way paths for bicycles are provided within roadway corridors, the paths in opposite directions should be provided in pairs. Generally a pair of one-way off-street paths will be provided on opposite sides of the roadway to allow bicyclists to travel adjacent to motorized traffic in the same direction.

Sidepaths are located along roadways and are shared by bicyclists and pedestrians.

Trails are located in their own off-street alignment and are shared by bicyclists and pedestrians.

- On a one-way path, an off-street facility may transition to an on-road bike lane or cycle track configuration in advance of an intersection or driveway. This allows cyclists to take advantage of the comfort of off-street paths in mid-block locations with the operational benefits of in-street cycling at intersections.
- Enhanced traffic control devices such as bike signals at intersections may be appropriate in some locations.
- At intersections with low-volume minor roadways, the crossing of an off-street path and/or sidewalk may be raised, in the form a raised crosswalk to serve as a traffic calming feature for motor vehicles. Raised paths through intersections are more difficult to construct and maintain as grade present issues for ADA compliance and drainage.
- Sidepath design may be complicated along corridors with pinch points that limit right-of-way where the path may be located. Roadway edge demands such as utility locations and driveways can impact location and design of these facilities.

Cycle Tracks

Cycle tracks, also known as separated or protected bike lanes, are exclusive bicycle facilities physically separated by a vertical element from the adjacent motor vehicle lanes. Separation can be achieved through a vertical curb, a parking lane, flexposts, plantings, removable curbs or other measures. Buffered bike lanes that do not include a vertical element are not considered cycle tracks.

There are four basic configurations for cycle tracks:

- Sidewalk level bike lanes
- Bike lanes constructed at an intermediate level between the sidewalk and the street
- Street level bike lanes separated from traffic or parking by a curb
- Street level bike lanes separated from traffic or parking by a vertical object

Cycle tracks dramatically increase rider comfort and decrease stress. They are usable by a broad spectrum of bicyclists including very young riders and more cautious bicyclists. Cycle tracks may be used on many different street types and are especially welcome on higher speed, higher volume roadways. Studies show that bicyclists prefer separation from motor vehicles on most types of roadways and can contribute to expanding bicycle mode share. Cycle tracks can be one-directional or two-directional; may be provided on both sides of two-way streets or on one side of one-way streets.

Design

Cycle tracks are appropriate on streets with operating speeds of 25 mph and higher, and volumes that exceed 4,000 vehicles per day.

Cycle tracks can be useful on-streets that provide connections to off-street trails, since bicyclists on these streets may be more accustomed to riding in an area separated from traffic.

Intersection design for cycle tracks is complex and requires careful attention to conflicts with turning vehicles.

- Dimensions are for bike lane only and do not include sidewalk or street buffer.
- Typical minimum bike lane width of 5' will not accommodate passing. 6.5' is required on a one-way facility for two bicyclists to pass one another, and 4' in each direction on a two-way facility. Edge conditions impact the ability to comfortably pass or ride two abreast. The minimum width is discouraged when a separated bike lane is located between raised curbs. If width is constrained, designer should consider options that allow bicyclists to use the buffer space to pass another user.
- Passing may occur in opposing lane.

Adjacent to on-street parking, a minimum 2' to 3' buffer should be provided between parking and the separated bike lane; the buffer serves as a pedestrian loading and unloading zone and helps keep bicyclists out of the door zone of parked vehicles.

Cycle tracks can be designed to be two-way facilities on a one-way street. Signage and pavement markings are provided at driveway crossings to alert drivers to the presence of two-way bicycle cross traffic.

Considerations

- Cycle tracks require increased parking restrictions approaching intersections compared to standard bicycle lanes to provide for visibility at intersection transitions.
- Vertical curb separation should be considered where on-street parking is not present. Stormwater drainage will need to be considered with this option. Street level cycle tracks may be combined with islands at corners and crossings.
- At transit stops, cycle tracks should be routed between the stop passenger waiting area and the sidewalk to reduce conflicts while passengers are boarding and alighting. Signage and/or markings may be added to alert transit riders and bicyclists of the conflict zone as pedestrians cross the bike lane from the sidewalk to the transit stop.
- Ensure gutter seams, drainage inlets and utility covers are flush with the roadway surface. Where possible, these features should be kept out of the bike lane.
- The presence of drainage and utility structures along the curb may reduce the effective width of a separated bike lane.
- Maintenance should be considered, including street sweeping.

Standard Bike Lanes

Bike lanes provide an exclusive space for bicyclists in the roadway. Bike lanes are established through the use of lines and symbols on the roadway surface. Bike lanes are for one-way travel and are normally provided in both directions on two-way streets and/or on one side of a one-way street. Bicyclists are not required to remain in a bicycle lane when traveling on a street and may leave the bicycle lane as necessary to make turns, pass other bicyclists, or to properly position themselves for other necessary movements. Bike lanes may only be used temporarily by vehicles accessing parking spaces and entering and exiting driveways and alleys. Stopping, standing and parking in bike lanes is prohibited.

Design

- Bike lanes can be used on one-way or two-way streets with single or multiple lanes.
- Bike lanes may be placed adjacent to a parking lane or against the curb if there is no parking. Conventional bicycle lanes are located on the right side of the roadway.
- Bike lanes are typically installed by reallocating existing street space (i.e., narrowing other travel lanes, converting travel lanes and/or reconfiguring parking lanes).
- The minimum width of bike lanes is 5' next to a curb and, if working in very constrained locations, 4' on a street with no curb. Bicycle lanes may be 6', but if more street width is available, the street should be evaluated for other treatments.
- When bike lanes are adjacent to parking, the combined width (from face of curb) of parking and bicycle lane should be at least 12'.
- Bike lanes are indicated by a solid white line along the left side of the lane. Use dotted or dashed line marks to indicate areas of bicycle/ vehicle conflict.
- Bicycle lane word and/or symbol and arrow markings (MUTCD Figure 9C-3) shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists.

Considerations

- Bike lane design should consider parking configurations and turnover, the presence of medians, the continuity of the facility and the configuration and complexity of turning movements at intersections.
- If bike lanes are adjacent to guardrails, walls or other vertical barriers, additional bicycle lane width is desired to account for bicyclist "shy" distance from the edge. Similarly, provide additional space if bicycle lanes are at sidewalk level and adjacent to the curb and travel lanes.
- Ensure gutter seams, drainage inlets and utility covers are flush with the roadway surface. Where possible, these features should be kept out of the bike lane.
- Where wider lanes are possible, consider providing a buffered bike lane, discussed next.
- On constrained corridors with high parking turnover, consider designing pavement markings to guide bicyclists outside of the door zone of parked vehicles. Treatments include installing a buffer on the parking side of the bicycle lane, door zone, hatch marks, or using parking T's instead of a longitudinal parking line.
- Consider using colored pavements to highlight areas where conflicts might occur, such as at intersection and driveway crossings.
- It is critical that bike lanes receive the same treatment as the remainder of a street surface with regard to cleaning. In addition, bike lanes need to have regular cleaning of storm drains, especially during spring and autumn seasons when fallen leaves or other tree debris may collect in drains and cause pooling or flooding of stormwater in curbside bike lanes.

Bike lanes are marked with a bicyclist symbol and arrow indicating direction of travel.

Buffered Bike Lanes

Buffered bicycle lanes are created by painting or otherwise creating a flush buffer zone between a bicycle lane and the adjacent travel lane. While buffers are typically used between bicycle lanes and motor vehicle travel lanes to increase bicyclists' comfort, they can also be provided between bicycle lanes and parking lanes in locations with high parking turnover to discourage bicyclists from riding too close to parked vehicles.

Buffered bicycle lanes are distinct from separated bicycle lanes in that they have no vertical barrier between travel lanes and/or parking. Like separated bicycle lanes, buffered bicycle lanes have been found to dramatically increase bicycling comfort for a wide range of community bicyclists.

Design

- The recommended minimum width of a buffer is 2'; however width may vary depending upon the available space and need for separation. Total assembled width of bicycle travel way (lane) and buffer should be at least 7'.
- Buffered bicycle lanes are typically installed by reallocating existing street space (i.e., narrowing other travel lanes, converting travel lanes and/or reconfiguring parking lanes).
- Buffers should be painted with solid white lines and channelization markings.
- Bicycle lane word and/or symbol and arrow markings (MUTCD Figure 9C-3) shall be used to define the bike lane and designate that portion of the street for preferential use by bicyclists.
- Buffers can be useful on multi-lane streets with higher speeds, but are not required in these locations.

Considerations

- Where only one buffer can be installed on a constrained corridor with on-street parking, the buffer should typically be placed between the bicycle lane and parking lane, depending upon roadway speeds and parking turnover.
- Generally speaking, there is no upper limit for buffer width and buffers of 5' to 6' are common where travel lanes are converted to buffered bicycle facilities, however, wide buffers without vertical separators may invite illegal use for vehicle travel. In this case, buffer space should be divided and placed on either side of the bike lane as opposed to all on one side.
- Ensure gutter seams, drainage inlets and utility covers are flush with the roadway surface. Where possible, these features should be kept out of the bike lane.
- Because they do not require construction of a separating element, buffered bicycle lanes may be established through simple street resurfacing and may enable trial or phasing prior to the installation of separated facilities.
- Buffered bicycle lanes, like cycle tracks, may transition at intersections to provide adequate visibility and safety.
- Buffered bike lanes can easily be converted to cycle tracks in the future through using vertical elements such as flexposts or rubber curbing.

Buffered bike lanes provide greater shy distance between motor vehicles and bicyclists.

Shared Lane Markings

Marked shared lanes are indicated by specific bicycle symbols called shared lane markings or sharrows. Sharrows markings are two chevrons positioned above a bicycle symbol.

In general, this is a design solution that can only be used in locations where a standard bike lane or separated bike lane is not feasible due to space constraints. On streets with narrow travel lanes, shared lane markings direct the bicyclist to the correct and most conspicuous position on the road: the middle of the travel lane. This marked "lane within the lane" can reduce conflicts by encouraging (though not requiring) vehicles to use inside lanes and reserve the outside lane for bicyclists. Markings also altert drivers to the presence of bicyclists on the roadway.

Shared lane markings should be placed in such a manner to direct bicyclists to ride in the most appropriate location on the roadway. They can also be used in multiple lanes to position bicyclists for turning movements.

Design

- Shared lane markings are not a preferred facility type except in locations with low traffic speeds and volumes (operating speeds less than 25 mph, volumes less than 4,000 vehicles per day).
- On streets that fall outside of these design parameters, shared lane marking can be used as an interim (retrofit) design solution, however they should not be used on streets with speed limits above 35 mph and are generally not appropriate on roadways with more than four travel lanes (two-way) or more than three travel lanes (one-way).
- Refer to the MUTCD for additional design guidance on the use of shared lane markings.
- On narrow travel lanes adjacent to on-street parking, shared lane markings should be placed in a location that is outside of the door zone of parked vehicles (such as the center of the travel lane).
- Shared lane markings should be supplemented by SHARE THE ROAD signs, and BICYCLES MAY USE FULL LANE signs where appropriate.

Shared lane markings indicate bicyclists' presence to drivers and appropriate placement on the roadway.

Green-backed priority shared lane markings are more visible and spaced more closely than normal sharrows.

Considerations

- Marked shared lanes should be provided after considering narrowing or removing travel lanes, parking lanes and medians as necessary to provide an exclusive bicycle facility.
- Shared lanes can be used as an interim solution to complete connections between bicycle lanes and other facilities.

Priority Shared Lanes

On multi-lane streets, marked shared lane symbols, or sharrows, can be enhanced with a green colored backing. These priority shared lane markings are also placed at greater frequency than standard shared lane markings to further emphasize the presence of bicyclists on the street. They are particularly appropriate for application in commercial areas with high bicyclist volumes and complex vehicle movements as drivers stop and start in the course of accessing on-street parking.

Design

- Priority shared lanes can be an appropriate retrofit solution on multi-lane one-way and two-way streets where roadway space is not available for separate bicycle facilities. They should not be used in locations with higher operating speeds (35 mph or greater).
- Shared lane markings can be supplemented by SHARE THE ROAD signs, and BICYCLE MAY USE FULL LANE signs where appropriate.

Considerations

- Priority shared lanes should be provided after considering narrowing or removing travel lanes, parking lanes, or medians as necessary to provide an exclusive facility.

Neighborhood Bikeway, Neighborways or Bike Boulevards

What most influences the way people drive isn't the speed limit, a caution sign, or the threat of a ticket. Rather, drivers take their cues from the design of the street. Narrower lanes, trees, wayfinding signage, pavement markings, people walking and biking give the impression that pedestrians and bicyclist are a priority, so drivers slow down.

Neighborhood slow streets are a network of quiet, often residential streets that are designed for slower speeds. These streets are designed to give priority to pedestrians and bicyclists. They are excellent places to play, walk a dog, or ride a bicycle that connect across neighborhoods and the city.

Urban signed routes provide a local street route that is an alternative to traveling on a high-volume, high-speed arterial. Most of these routes will need crossing treatments at intersections as described earlier in this appendix, and can range from curb extensions and marked crosswalks to raised crossings and signals. These signed routes are very similar to neighborhood slow streets and may be further enhanced with the addition of traffic diverters and traffic calming.

Design

- Design features that reduce operating speeds are used to maintain low speeds (20 mph or less) on neighborhood slow streets.

Many jurisdictions have used large bike symbols to indicate bicycle boulevards.

- Neighborhood slow streets are best accomplished in neighborhoods with a grid street network (where motor vehicle through-traffic can be directed to parallel routes), but can also be accomplished by combining a series of road and trail segments to form one continuous route.
- Ideally, neighborhood slow streets should not carry more than 1,000 motor vehicles per day to be comfortable for pedestrians and bicyclists. Traffic management devices are typically used to discourage motor vehicle through-traffic while still enabling local traffic access to the street.
- Neighborhood slow streets should be long enough to provide connectivity between neighborhoods and common destinations such as schools or parks.

Considerations

- At major street crossings, neighborhood slow streets may need additional treatments other than marked crosswalks for pedestrians and bicyclists. Treatments can include signage, median refuge islands, curb extensions, advisory bike lanes, rapid flash beacons, pedestrian-actuated signals and/or bicycle signal heads.
- Many local street connections are offset across major arterial crossings. Some are signalized at one leg, and in these situations, bicyclists should be directed to cross at the signalized leg. A short stretch of sidepath is required to connect the non-signalized leg to the signal. In situations without signalization, a HAWK or RRFB should be installed to create greater yielding behavior by drivers.

Bicycle Accommodations at Intersections

The majority of motor vehicle crashes involving bicycles in urban areas occur at intersections. In Oklahoma, on-street bicycles are operating vehicles and are required to follow the same rules of the road as motorists. Good intersection design makes bicycling more comfortable and attractive, reduces conflicts with motor vehicles and pedestrians, and contributes to reduced crashes and injuries. The following principles are applied to intersection design in order to accommodate bicyclists:

- Provide a direct, continuous facility to the intersection
- Provide a clear route for bicyclists through the intersection
- Reduce and manage conflicts with turning vehicles
- Provide signal design and timing to accommodate bicyclists, based on an engineering study.
- Provide access to off-street destinations.

Intersection improvements for bicycles should be considered during all roadway improvement projects, street redesign, and safety improvements or upgrades.

Bicycle Lanes at Intersections

Bicycle lanes provide a dedicated space for bicyclists to predictably ride along roadways and through intersections. When designing intersections for bicyclists, the approaches should be evaluated and designs should maintain continuity of bicycle facilities to the maximum extent feasible.

Streets with dedicated bicycle lanes should continue striping through unsignalized and complicated intersections to provide additional guidance and safety measures for bicyclists. This design principle is especially important at intersections where there are conflicting vehicular movements, unsignalized crossings, and/or crossings of more than four travel lanes. Signalized intersections may not require striping through each intersection, and should be evaluated on a case-by-case basis.

Design

- Standard details for bicycle lane markings at intersections are provided in the NACTO Urban Bikeway Design Guide. Additional guidance can also be found in the MUTCD and AASHTO "Bike Guide."
- Dedicated bicycle lanes should be provided on intersection approaches where space is available.
- At intersections with a dedicated right turn lane, bicycle lanes should be provided to the left of the right turn only lane unless bicycle signals and dedicated phasing is provided.

Considerations

- Bicycle lane markings, including green-colored pavement, shared lane markings, dashed bicycle lane lines, and signage may be provided through intersections per engineering judgment.
- Selective removal of parking spaces may be needed to provide adequate visibility and to establish sufficient bicycle lane width at approaches to intersections.
- Shared lane markings may be used where space is not available for bicycle lanes at intersections, however this should only be done if no other design is possible.
- Although the minimum recommended width of a bicycle lane within the intersection is 5', 4' bicycle lanes can be provided in extremely constrained conditions.
- Bicycle lanes at the entrance and exit of a circular intersection should allow direct access to a shared use bicycle/pedestrian path around the perimeter of the intersection via curb ramps; ramps should be provided for bicyclists to mount the sidewalk prior to the intersection.

Designs should also enable bicyclists to mix with traffic and proceed through the intersection.

Bicycles at Signalized Intersections

Bicycles have different operating characteristics than motor vehicles and special consideration is necessary in designing traffic signals that accommodate both motorists and bicyclists. Bicyclists have the disadvantage of slower acceleration rates than motorists, and traffic signal design should include adjustment of minimum green intervals, clearance time and extension time to account for tthis. Signal progression should be designed in order to balance the needs of all users, with appropriate design speeds and traffic signal coordination settings. Appropriate signal timing also can reduce delay, discourage bicyclists from running red lights and help minimize conflicts.

The AASHTO Guide for the Development of Bicycle Facilities provides a specific formula to estimate minimum green time for bicycles from a standing

Striping bike facilities through intersections highlights the bicyclist's path of travel.

position. It is based on the average adult bicyclists who can operate at 10 miles per hour. A slower speed or extended time may be appropriate at locations with young children, such as near schools.

Design

Where actuated signals are present, the signal system should automatically detect bicycles as well as motor vehicles. The City of Tulsa and some other communities have some loop detectors at actuated or semi-actuated intersections, but they are the only ones in the region. In order for bicyclists to prompt the green phase at these intersections, bicycle detection devices should be installed.

Detection devices can also include:

- Video, infra-red or microwave detection
- Magnetometers (special locations such as on or under bridges)
- Detection devices should be located within bicycle lanes or bicycle boxes, marked with a bicycle detector symbol, and supplemented by appropriate signage.
- When it is not feasible for the detection device to be located within the bicycle lane or bicycle box, detection devices should be located prior to the stop bar and span an appropriate distance to provide for left, though, and right turning bicyclists.

Considerations

- Reference the latest edition of the AASHTO Bike Guide and the NACTO Urban Bikeway Guide for more details on the signal timing needs of bicycles at intersections. The AASHTO Bike Guide provides the technical information necessary to calculate minimum green time and other aspects of signal design to accommodate bicycles. The NACTO Urban Bikeway Design provides less technical detail, but provides information regarding bike signal heads
- Where right-turn-only lanes for motor vehicles exist, bicycle lanes should be designed to the left of the turn lane.
- Special attention should be given to signal timing at locations with higher vehicular speeds and longer crossing distances. At these locations, bicyclists are more likely to have different signal timing needs than motorists, such as extending the green time to allow bicyclists to clear the intersection before the yellow/red phases. The AASHTO Bike Guide contains detailed guidance for bicyclists' signal timing needs at wide intersections.
- Bicycle signal heads provide dedicated signal indications to bicyclists and should be positioned to maximize visibility to bicycle traffic. They should be coordinated with pedestrian and non-conflicting vehicular movements to increase safety and minimize overall delay.
- Bicycle detection devices, particularly loop detectors, need regular testing to ensure the equipment is working correctly.

Bike Boxes

A bicycle box is dedicated space located between the crosswalk, and the motor vehicle stop line used to provide bicyclists a dedicated space to wait during the red light at signalized intersections. Placing bicyclists ahead of stopped vehicular traffic at a red light improves visibility and reduces conflicts among all users. They also

Bicyclists wait in a bike box in Chicago, which increases their visibility and reduces their signal delay.

provide bicyclists a head start to get through the intersection, which aids in bicyclists making difficult turning movements and improves safety and comfort due to the difference in acceleration rates between bicycles and motor vehicles. Bicycle boxes also provide more space for multiple bicyclists to wait at a red light as opposed to being constrained to a 5' wide bicycle lane. In all cases, the bicycle box allows a bicyclist to be in front of motor vehicles, which not only improves visibility and motorists awareness, but allows bicyclists to "claim the lane" if desired.

Design

- In locations with high volumes of turning movements by bicyclists, a bicycle box should be used to allow bicyclist to shift towards the desired side of the travel way. Depending on the context of the bicycle lane, left or right side, bicyclists can shift sides of the street to align themselves with vehicles making the same movement through the intersection.
- In locations where motor vehicles can continue straight, or turn right crossing a right side bicycle lane, the bicycle box allows bicyclists to move to the front of the traffic queue and make their movement fi rst, minimizing conflicts between the right turning motorist and the bicyclist. Where designs place bicycle boxes in front of a vehicle lane that may turn right on red, NO TURN ON RED signs must be provided.

Considerations

- When bike boxes are implemented, they are typically to be painted green, and area minimum of 13' in depth.
- Bicycle box design should be supplemented with appropriate signage according the latest version of the MUTCD.
- Where right turn only lanes for motor vehicles exist, bicycle lanes should be designed to the left of the turn lane. If right turn on red is desired, consider ending the bicycle box at the edge of the bicycle lane to allow motor vehicles to make this turning movement.

Wayfinding

The ability to navigate through a region is informed by landmarks, natural features, signs, and other visual cues. Wayfinding is a cost-effective and highly visible way to improve the bicycling environment by familiarizing users with the bicycle network, helping users identify the best routes to destinations, addressing misperceptions about time and distance, and helping overcome a barrier to entry for infrequent cyclists (e.g., "interested but concerned" cyclists).

A bikeway wayfinding system is typically composed of signs indicating direction of travel, location of destinations, and travel time/distance to those destinations; pavement markings indicating to bicyclists that they are on a designated route or bike boulevard and reminding motorists to drive courteously; and maps providing users with information regarding destinations, bicycle facilities, and route options.

General Principles

- Messages must be clear and concise
- Related signs should be combined to limit visual clutter, and signs should be limited in number and content as to not overpower the reader
- Signs should be placed in such a way that primary regulatory signs are not overlooked
- Groups of wayfinding signs should have a graphically standardized appearance
- Signs must be maintained to ensure current information and adequate condition
- Destination names will be kept generic to the extent possible to avoid advertising
- Private campus areas, such as a college campus, may provide a system of wayfinding to facilitate internal site circulation. These systems are developed independently from City wayfinding systems within the public right-of-way.

General Wayfinding

Primary signing may be accomplished through street name signs. Street name signs follow MUTCD standards. Street name signs are posted on one of the quadrants at residential intersections. At collector and arterial street intersections signs are posted on diagonally opposite corners. Signs may be mounted on stand-alone posts, light poles, or on signal mast arms. The signs list the street name, generalized street address range for that block and, if on a bike route, a bike symbol. Street signs are installed in conjunction with street reconstruction and are replaced to maintain good visibility.

Design

Refer to MUTCD standards for sign installation, such as mounting height, lateral placement from edge of path or roadway and other guidance.

- Mounting height should generally be above the eye of the intended user.
- Size of font should be legible to intended user
- Signs should be combined horizontally or vertically, where possible
- Lines of sight and visibility should be reviewed when placing signs
- A sign should be as simple and as short as possible to convey the intended message
- Pavement markings can also be used to assist with wayfinding in some locations and can also be a placemaking tool
- Wayfinding may be part of a broader district wayfinding/ branding initiative.
- Pedestrian wayfinding is primarily provided near major attractions, such as theaters or event centers.
- Pedestrian wayfinding may be useful in areas where large volumes of pedestrians may be walking to transit stops.
- Signs should meet all needs for public accessibility

Bicycle Route Wayfinding

This guidance is appropriate for on-street bicycle routes or sidepaths adjacent to roadways.

- Route identification signs may be placed generally every ½ mile, at the far side of intersections with major bike routes and at decision points.
- Use D11-1c series Bicycle Route Signs with route name, such as "RIVER BIKEWAY," in place of "BIKE ROUTE" or M1-8 series signs to identify bicycle routes.
- Place decision signs in advance of intersections with other major bike routes and at decision points.
- Decision signs should include destinations and directional arrows, and may include distance to destination
- D1-3 series Destination Supplemental Signs should be used and, where feasible, consolidated with route identification signs to minimize size and clutter.

Bicycle wayfinding typically includes destination, distance and direction.

- Destinations should be listed with the closest destinations towards the top of a sign assembly, with a maximum of three destinations used on any single sign.

Trail Wayfinding

This guidance is appropriate for trails located on independent rights-of-way.

- Where bikeways managed by multiple agencies or from multiple systems share a common segment, wayfinding signs for either agencies or systems may be used.
- Wayfinding or route identification signs should be posted at all major decision points along the trail (feeder trail intersections, forks in the trail, etc.) and after all roadway crossings (local streets and arterials).
- Street name signs should be installed at all locations where trails intersect streets. This type of sign should have a sign blade for both the street name and the trail name.
- Wayfinding signs may be part of a larger regional network and/ or branding system.

INCOG Context Sensitive Capacity-Volume-Geometrics Table
Recommended Standards for Arterial Street Improvements

Roadway Description	LoS D Range	LoS D Mid-point	FHWA/AASHTO Recommended Geometrics
2-Lane Arterial	11,900 - 15,300	13,600	14 FT Curb lane With Bike Sharrow (IF Curb Exists) 13 FT Curb lane With Bike Sharrow (IF No Curb) 11 FT Minimum outside lane for streets with Transit 5 FT Min for a striped Bike lane (With Curb); 4 FT Min (No Curb) All Other Cases: Share the Lane (Bike & Auto) - Signed Route
3-Lane Arterial - Center Left (TWLTL)	14,000 - 18,000	16,000	14 FT Curb lane With Bike Sharrow (IF Curb Exists) 13 FT Curb lane With Bike Sharrow (IF No Curb) 11 FT Minimum outside lane for streets with Transit (through lane) 5 FT Min for a striped Bike lane (With Curb); 4 FT Min (No Curb) All Other Cases: Share the Lane (Bike & Auto) - Signed Route 10 FT Minimum for TWLTL (Center Left)
4-Lane Arterial (Undivided) 4-Lane Arterial (Divided)	22,800 - 30,600 26,600 - 34,200	27,200 30,400	14 FT Curb lane With Bike Sharrow (IF Curb Exists) 13 FT Curb lane With Bike Sharrow (IF No Curb) 11 FT Minimum outside lane for streets with Transit 10 FT Minimum inside lane with 11 FT Outside Lane 5 FT Min for a striped Bike lane (With Curb); 4 FT Min (No Curb) All Other Cases: Share the Lane (Bike & Auto) - Signed Route
5-Lane Arterial - Center Left (TWLTL)	25,200 - 32,400	28,800	14 FT Curb lane With Bike Sharrow (IF Curb Exists) 13 FT Curb lane With Bike Sharrow (IF No Curb) 11 FT Minimum outside lane for Transit use (through lane) 10 FT Minimum inside lane with 11 FT Outside Lane 5 FT Min for a striped Bike lane (With Curb); 4 FT Min (No Curb) All Other Cases: Share the Lane (Bike & Auto) - Signed Route 10 FT Minimum for TWLTL (Center Left)

Notes:

LoS D Traffic Volume Range is based on the Capacity Table used for INCOG Travel Demand Models approved by INCOG, Fast Forward Plan, also used in City of Tulsa Capital Improvement Project determination.

Roadways with traffic volumes above the mid-point of LoS D are discouraged from any roadway lane-configuration change. Any changes may require additional pavement/RoW or involve moving curbs, or a policy change with regard to the Roadway. Level of Service at or above this level is considered volatile based on truck traffic, number of curb-cuts, number of bus-stops, variation in travel speed. Traffic Volume above this level may approach breakdown/gridlock if any of the exacerbating factors are present.

Roadway Geometrics are recommended practice as recognized by AASHTO & FHWA guidelines. They should be adhered to in any reconfiguration of lanes, if under study for consideration.

Sources:

1. A Policy on Geometric Design of Highways and Streets, 6th Edition, AASHTO, 2011
2. The 13 Controlling Criteria, FHWA, U.S. Department of Transportation
3. Guide to Bicycle Facilities, 4th Edition, AASHTO, 2012
4. INCOG, ACOG & ODOT Roadway Capacity Table

C PROJECT PRIORITIZATION

An overview of the project prioritization methodology is provided in Chapter 4. Further detail on both bicycle and sidewalk gap prioritization is provided in this appendix.

Bicycle Project Prioritization

All projects in the bicycle network were prioritized using the 10-step method developed for National Cooperative Highway Research Program (NCHRP) Report 803: *Pedestrian and Bicycle Transportation Along Existing Roads – ActiveTrans Priority Tool Guidebook*. This method was also used for prioritizing the sidewalk gaps within the City of Tulsa.

The scoring uses a combination of selected factors and variables. Factors are categories used in the prioritization process to express community/agency values and group variables with similar characteristics. Factors are categories such as "opportunities," "connectivity" and "equity." Variables are measurable characteristics of roadways, households, neighborhood areas and other features.

For this Plan, factors, variables and weighting were recommended by the project team and reviewed by stakeholders. City of Tulsa staff from the planning and engineering departments provided input on these aspects of the prioritization tool and requested the inclusion of a number of City-specific variables for both the bicycle and pedestrian prioritization schemes. The project steering committee and the INCOG Bicycle and Pedestrian Advisory Committee also reviewed the prioritization inputs.

All bicycle projects were scored in the same manner across the region. Those located in the City of Tulsa were additionally scored with those variables noted as "Tulsa-only" in the table below. The final set of factors, variables and weights are provided in the tables below. The full regional list of prioritized bicycle projects and scores was subdivided into lists for each participating community. City-specific prioritized lists are provided in Tables 1 through 11 in this appendix. The full prioritization data table with values for all inputs is held by INCOG in Excel spreadsheet format.

City of Tulsa Sidewalk Gap Prioritization

The greater complexity of Tulsa's street network and the larger number of sidewalk gaps to evaluate led the project team to use the 10-step evaluation method for sidewalk gaps within the city limits. The variables included in the model also ensured inclusion of prior planning work completed by the City in both the ADA Transition Plan and PLANiTULSA. Factors, variables and weighting are included in the table below. The full list of prioritized sidewalk gaps and scores is in Table 12 in this appendix.

Bicycle Project Prioritization Schema

Factor	Variables	Weight
Stakeholder Input		10%
	# WikiMap comments on corridor	
	Presence on project retreat prioritization list	
Opportunities		20%
	% of corridor included on Improve Our Tulsa[1]	
	% of corridor with project identified in prior plan[2]	
	Lower project cost (planning-level cost per mile)	
Safety		20%
	# of bike and pedestrian crashes per mile	
	# of fatal or severe bike and pedestrian crashes per mile	
	Change in Level of Traffic Stress based on recommended bike facility	
Demand		20%
	Average demand score for length of project	
	% of project coincident with existing transit line	
	Population density	
Equity		10%
	# of areas served with low automobile ownership	
	# of areas served a high % of low-income population	
	# of areas served with high % of population under 18	
Connectivity		20%
	# of connections to an existing in-street bike facility	
	# of connections to an existing trail	
	# of connections to a planned on-street bike facility	
	# of connections to planned off-street bike facility	

1 *Tulsa-only variable*
2 *Tulsa-only variable. Included multimodal corridors from PLANiTULSA and small area plans provided by the City of Tulsa Planning Department.*

Regional Sidewalk Gap Prioritization

For the rest of the region, sidewalk gaps were prioritized based on proximity to key pedestrian traffic generators: transit lines, schools, parks and areas of low automobile ownership. Additionally, gaps on streets with high traffic volume were ranked higher because of the greater potential for conflicts between pedestrians and drivers. Each of those variables was weighted equally in the prioritization. The list of prioritized sidewalk gaps is presented for each community in Tables 12 through 22.

City of Tulsa Sidewalk Gap Prioritization Schema		
Factor	**Variables**	**Weight**
Stakeholder Input		25%
	# of sidewalk complaints received	
Safety		30%
	Average ADT over length of gap	
	ADA Transition plan rating	
Demand		10%
	Weighted density score from Building Blocks land use plan	
Connectivity		25%
	# destinations within 1/2 mile	
	# transit stops within 1/2 mile	
Equity		10%
	# of areas served with low automobile ownership	

Table 1: Bixby Prioritized Bike Projects

Project	Facility	Length	Cost	Street	From	To	Score	Citywide Prioritization Rank	Regional Rank
BX-002	Bike Lane	1.49	$72,287	RIVERVIEW DR	BIXBY TRAIL	E 161 ST S	25.767	1	40
BX-001	Bike Lane	1.00	$36,168	E 151 ST S	S MEMORIAL DR	S MINGO RD	23.124	2	60
BX-003	Shared Lane Marking	0.65	$21,754	E 131 ST S	FRY CREEK TRAIL	S MEMORIAL DR	18.594	3	128
BX-020	Trail	1.20	$1,066,933	FRY CREEK TRAIL	E 111 ST S	FRY CREEK TRAIL	16.216	4	181
BX-030	Trail	1.48	$1,314,661	S MINGO RD	BIXBY TRAIL	RP BIXBY/BA TRAIL	16.203	5	183
BX-032	Trail	1.01	$898,603	PROPOSED TRAIL	FRY CREEK TRAIL	E 131 ST S	14.351	6	253
BX-017	Trail	3.01	$2,677,253	FRY CREEK TRAIL	E. 151ST ST S.	BIXBY RIVER TRAIL	14.114	7	267
BX-005	Shared Lane Marking	1.15	$38,220	E 141 ST S	MISSOURI PACIFIC TRAIL	S MEMORIAL DR	13.944	8	275
BX-006	Shared Lane Marking	0.51	$17,011	S YALE AVE	S KIMBERLY-CLARK PL	E 141 ST S	13.643	9	294
BX-008	Shared Lane Marking	1.64	$22,050	PROPOSED TRAIL	N RIVERVIEW DR	E 161 ST S	13.355	10	309
BX-015	Sidepath	2.98	$2,140,991	E 121 ST S	S SHERIDAN RD	HAIKEY CREEK	13.353	11	310
BX-007	Shared Lane Marking	0.50	$16,659	DAWES AVE	N RIVERVIEW DR	S MEMORIAL DR	13.262	12	317
BX-024	Sidepath	2.14	$1,540,426	S MEMORIAL DR	E 146TH ST S	E HWY64 EXPY	13.148	13	324
BX-021	Trail	2.40	$2,131,821	FRY CREEK TRAIL	E 121 ST S	FRY CREEK TRAIL	12.788	14	348
BX-014	Sidepath	1.99	$1,434,258	E 111 ST S	S MEMORIAL DR	S GARNETT RD	12.449	15	376
BX-013	Shared Lane Marking	1.02	$810	S HARVARD AVE	E 141 ST S	E 151 ST S	12.047	16	404
BX-019	Trail	0.45	$402,911	FRY CREEK TRAIL	E 131 ST S	FRY CREEK TRAIL	12.025	17	406
BX-011	Shared Lane Marking	0.20	$3,653	S 90 E AVE	S 91 E AVE	E 111 ST S	11.690	18	438
BX-025	Signed Route	1.37	$1,085	S MEMORIAL DR	E HWY64 EXPY	E 181 ST S	11.401	19	460
BX-012	Signed Route	0.74	$587	S HARVARD AVE	E 151 ST S	S HARVARD AVE	11.260	20	476
BX-004	Shared Lane Marking	1.10	$36,726	E 141 ST S	S YALE AVE	MISSOURI PACIFIC TRAIL	11.036	21	495
BX-016	Sidepath	3.51	$2,522,966	E 151 ST S	S. COLUMBIA AVE E.	S MEMORIAL DR	10.957	22	500
BX-009	Signed Route	3.00	$2,379	S SHERIDAN RD	E 151 ST S	E 181 ST S	10.896	23	505
BX-018	Trail	0.72	$637,715	BIXBY RIVER TRAIL	E. 151ST ST S.	N. RIVERVIEW DRIVE	10.852	24	510
BX-026	Trail	1.70	$1,509,312	MISSOURI PACIFIC TRAIL	MISSOURI PACIFIC TRAIL	BIXBY TRAIL	10.852	25	511
BX-022	Trail	0.95	$840,318	FRY CREEK TRAIL	E 121 ST S	E 113 ST S	10.605	26	521
BX-028	Trail	0.23	$207,022	E 131 ST S	S SHERIDAN RD	FRY CREEK TRAIL	10.339	27	532
BX-027	Trail	2.39	$2,121,209	RP BIXBY/BA TRAIL	RP BIXBY/BA TRAIL	BIXBY TRAIL	10.301	28	533
BX-034	Trail	0.48	$430,559	E EAGLE DR	FRY CREEK TRAIL	111TH STREET S.	9.163	29	562
BX-033	Trail	0.71	$627,453	PROPOSED TRAIL	E 111 ST S	HAIKEY CREEK PARK TRAIL	7.487	30	623
BX-029	Trail	2.62	$2,329,927	POSEY CREEK PROPOSED TRAIL	S LEWIS AVE	S KIMBERLY-CLARK PL	7.396	31	634
BX-023	Trail	2.18	$1,931,855	HAIKEY CREEK TRAIL	S GARNETT RD	HAIKEY CREEK TRAIL	7.200	32	643
BX-031	Trail	0.33	$294,018	PROPOSED TRAIL	HAIKEY CREEK TRAIL	PROPOSED TRAIL	6.776	33	656
BX-010	Signed Route	1.04	$926,275	S KIMBERLY-CLARK PL	E 151 ST S	PROPOSED TC TRAIL	3.406	34	662

Table 2: Broken Arrow Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
BA-003	Bike Lane	1.79	$119,780	E JUNEAU ST	W WASHINGTON ST	MIDWAY AVE	1	31.161	23
BA-039	Sidepath	6.00	$4,315,629	E 101 ST S	S GARNETT RD	S 209 E AVE	2	29.268	28
BA-037	Sidepath	5.10	$3,669,429	S 177 E AVE	E 51 ST S	E 101 ST S	3	24.012	53
BA-002	Sidepath	3.37	$2,421,461	W WASHINGTON ST	S GARNETT RD	S MAIN ST	4	22.925	61
BA-035	Trail	6.83	$6,075,837	BROKEN ARROW CREEK TRAIL	HAIKEY CREEK TRAIL	RP BIXBY/BA TRAIL	5	22.621	62
BA-025	Signed Route	2.86	$52,877	E COLLEGE ST	S 193RD E AVE	W KENOSHA ST N	6	22.302	64
BA-070	Sidepath	0.22	$155,166	S ELM PL	W QUANTICO PL	W UTICA ST	7	22.088	69
BA-038	Sidepath	1.43	$1,026,874	S 161 E AVE	CREEK TPKE	E 131 ST S	8	21.226	81
BA-041	Sidepath	4.01	$2,915,363	W HOUSTON ST	S GARNETT RD	S 177 E AVE	9	21.077	84
BA-065	Signed Route	3.01	$104,740	W COLLEGE ST	N OLIVE AVE	W PITTSBURGH PL	10	20.356	97
BA-001	Bike Lane	1.00	$71,535	S 1ST PL	W WASHINGTON ST	W NEW ORLEANS ST	11	18.900	119
BA-068	Signed Route	3.71	$177,110	W SOUTH PARK BLVD	CREEK TPKE TRAIL	S 4TH ST	12	18.861	121
BA-069	Signed Route	0.25	$4,611	W QUANTICO PL	S 161ST EAST AVE	A CEDAR AVE	13	18.848	123
BA-011	Signed Route	0.34	$6,320	E LANSING AVE	N 9 ST	E KENOSHA ST	14	18.594	129
BA-007	Signed Route	2.81	$51,897	E MASON DR	S 177TH EAST AVE	S CHESTNUT AVE	15	17.838	134
BA-042	Sidepath	4.95	$3,555,593	E 71 ST S	N 4 ST	FOREST RIDGE BLVD	16	17.823	135
BA-054	Sidepath	0.63	$451,671	W WASHINGTON ST	S MAIN ST	S LYNNLANE RD	17	17.766	136
BA-036	Sidepath	4.28	$3,078,757	S 129 E AVE	W KENOSHA ST N	CREEK TPKE	18	17.679	137
BA-080	Signed Route	2.66	$49,079	S REDBUD AVE	E 131ST ST S	1ST PL	19	17.256	151
BA-026	Signed Route	1.23	$22,646	N FIR AVE	W HOUSTON ST	W KENOSHA ST N	20	17.189	155
BA-031	Signed Route	0.51	$9,484	E MIDWAY AVE	N MAIN ST	E KENOSHA ST	21	17.082	156
BA-004	Signed Route	1.53	$28,240	S ASH AVE	W MIAMI ST	W VICKSBURG ST	22	17.007	158
BA-029	Signed Route	0.93	$17,187	JUNEAU ST	N 2ND ST	N 15TH ST	23	16.898	163
BA-023	Signed Route	1.12	$20,698	S LIONS AVE	W WASHINGTON ST	E 101ST ST S	24	16.821	166
BA-059	Signed Route	0.99	$25,460	ARCHDALE ST	E HILLSIDE DR	E KENOSHA ST	25	16.655	168
BA-008	Signed Route	2.67	$49,347	N ASTER AVE	S GARNETT ST	E HOUSTON ST	26	16.602	170
BA-062	Sidepath	1.00	$719,638	N 23RD ST	E ALBANY ST	E KENOSHA ST	27	16.475	173
BA-030	Signed Route	0.53	$9,757	ELEMENTARY SCHOOL DRIVEWAY	E 51ST ST S	E JUNEAU ST	28	16.270	179
BA-015	Signed Route	0.50	$9,291	N 14TH ST	E KENOSHA ST	E COLLEGE ST	29	16.153	184
BA-014	Signed Route	2.00	$36,921	E 131 ST S	S 145TH E AVE	S 177 E AVE	30	16.060	185
BA-057	Signed Route	1.10	$20,398	S 202ND AVE	E OMAHA ST	E 45TH ST/E 48TH ST S	31	15.968	188
BA-056	Signed Route	0.54	$9,936	N ASTER PL	W DETROIT ST	N BUTTERNUT PL	32	15.654	195
BA-027	Signed Route	1.72	$31,726	W GARY ST	S 129TH EAST AVE	S LIONS AVE	33	15.473	209
BA-018	Signed Route	0.85	$15,677	S BIRCH AVE	W CHARLOTTE ST	W QUANAH ST	34	15.154	224
BA-024	Signed Route	0.48	$8,887	S CHESTNUT AVE	W HOUSTON ST	W OAK RIDGE ST	35	15.103	225
BA-034	Signed Route	1.73	$32,051	S WILLOW AVE	W WASHINGTON ST	W HOUSTON ST	36	15.053	226
BA-066	Signed Route	1.52	$28,124	W EDGEWATER ST	S LIONS AVE	S 1ST PL	37	14.922	229
BA-076	Signed Route	0.50	$9,289	W CHARLOTTE ST	S 161 E AVE	END OF ROAD	38	14.855	232
BA-010	Signed Route	0.74	$13,734	N 11TH ST	E ALBANY ST	S HILLSIDE DR	39	14.852	233
BA-016	Signed Route	0.15	$2,752	S 165 E AVE	E 50 ST S	E 51 ST S	40	14.748	235
BA-017	Sidepath	2.03	$1,458,298	S 193 AVE E	E 101 ST S	E 121 ST S	41	14.579	242

Table 2, Continued: Broken Arrow Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
BA-009	Shared Lane Markings	2.16	$71,864	E HILLSIDE DR	W ALBANY ST	N 23RD ST	42	14.530	244
BA-006	Signed Route	2.95	$2,338	E 91ST ST S	S 177TH EAST AVE	E NEW ORLEANS ST	43	14.517	245
BA-020	Signed Route	1.12	$20,621	E ELMIRA ST	N 9TH ST	N 11TH ST	44	14.386	250
BA-045	Sidepath	6.42	$3,894,826	E 51 ST S	CREEK TPKE	N ASPEN AVE	46	14.004	271
BA-071	Signed Route	0.16	$2,998	S JUNIPER PL	W UTICA AVE	W WACO ST	47	13.838	279
BA-012	Signed Route	0.53	$9,875	N 15TH ST	E ALBANY ST	E HELENA ST	49	13.646	293
BA-013	Signed Route	0.65	$12,052	S 145 E AVE	E 131ST ST S	S FAWNWOOD CT	50	13.638	295
BA-047	Sidepath	3.33	$2,875,736	CREEK TPKE	E 71 ST S	E NEW ORLEANS ST	51	13.581	299
BA-058	Signed Route	1.47	$1,059,929	N 161 E AVE	E 51 ST S	STONE WOOD DR	52	13.444	305
BA-073	Signed Route	1.64	$93,945	W FREDERICKSBURG PL	S 145TH E AVE	E 129TH E AVE	53	13.098	330
BA-067	Signed Route	0.39	$7,194	W ITHICA ST	S 161ST EAST AVE	S LIONS AVE	54	13.037	333
BA-028	Signed Route/Trail	1.60	$409,790	S OAK AVE	E 101 ST S	CREEK TPKE TRAIL	55	12.644	357
BA-022	Signed Route	1.30	$23,976	W GRANGER ST	N ASPEN AVE	N 161ST EAST AVE	56	12.636	358
BA-061	Sidepath	0.81	$580,684	E ALBANY ST	N 12TH ST	N 23RD ST	57	12.374	380
BA-032	Signed Route	0.48	$8,860	N OAK AVE	W GRANGER ST	W OMAHA ST	58	12.288	388
BA-040	Sidepath	1.00	$719,559	E 111 ST S	S GARNETT RD	S OLIVE AVE	59	12.160	395
BA-033	Signed Route	0.40	$7,315	N OAK AVE	W OMAHA ST	W SANDUSKY ST	60	11.953	414
BA-079	Sidepath	0.23	$164,636	E 121ST ST S	S BIRCH AVE	S 3RD ST	61	11.787	430
BA-063	Signed Route	2.52	$46,653	S HIGHLANDS BLVD / FOREST RIDGE BLVD	S 241ST EAST AVE	E 71ST ST S	62	11.549	446
BA-021	Signed Route	1.25	$23,092	N LIONS DR	W GRANGER ST	N 161ST EAST AVE	63	11.333	469
BA-081	Signed Route	1.03	$819	E 141ST ST S	RECOMMENDED RIVER TRAIL	S 193RD E AVE	64	11.080	492
BA-019	Signed Route	0.25	$4,616	S 3 ST	E 121ST S	RAY HARRAL NATURE PARK	65	10.968	499
BA-050	Sidepath	1.03	$738,165	S MINGO RD	E 101ST ST S	E 111 ST S	66	10.939	503
BA-053	Trail	1.56	$1,386,860	PROPOSED TRAIL	E 91 ST S	LIBERTY TRAIL	67	10.558	524
BA-074	Signed Route	0.78	$14,459	S FIR AVE	E 121ST ST S	W FREDERICKSBURG PL	68	10.405	529
BA-046	Sidepath	2.94	$2,110,449	E 81 ST	CREEK TPKE	S 257 E AVE	69	10.236	535
BA-052	Trail	1.81	$1,607,239	PROPOSED TRAIL	LIBERTY TRAIL	S 225 E AVE	70	9.882	543
BA-055	Trail	1.25	$1,110,113	PROPOSED TRAIL	LIBERTY TRAIL	S 129 E AVE	71	9.459	557
BA-077	Sidepath	0.50	$356,334	E 121 ST S	S 185 E AVE	S 193 E AVE	72	9.386	558
BA-064	Sidepath	1.60	$1,055,314	S 241 E AVE	SOUTH OF GORDON ST	E 101 ST S	73	9.031	566
BA-048	Trail	2.77	$2,456,546	CREEK E/WILL ROGERS TRAIL	E OMAHA ST	E KENOSHA ST	74	8.741	575
BA-043	Trail	0.82	$730,993	PROPOSED TRAIL	PROPOSED TRAIL	CREEK E/WILL ROGERS TRAIL	75	8.571	584
BA-044	Trail	0.55	$487,766	PROPOSED TRAIL	E 61 ST	N 31 ST	76	8.256	591
BA-075	Sidepath	3.02	$2,171,939	E 121 ST S	S GARNETT RD	S 161ST EAST AVE	77	7.912	603
BA-051	Trail	0.28	$244,451	PROPOSED TRAIL	HAIKEY CREEK TRAIL	HAIKEY CREEK	78	7.791	606
BA-072	Trail	0.55	$491,298	NEW SCHOOL ACCESS TRAIL	W SOUTH PARK BLVD	TRAIL END	79	7.785	607
BA-049	Trail	1.83	$1,628,529	HAIKEY CREEK TRAIL	S GARNETT RD	E 111 ST S	80	7.628	617
BA-078	Trail	1.11	$992,244	PROPOSED TRAIL	S GARNETT RD	S 129 E AVE	81	3.511	661

Table 3: Catoosa Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
CA-002	Bike Lane	2.01	$144,060	CHEROKEE ST	N 193 E AVE	W RICE	1	19.826	109
CA-011	Sidepath	2.60	$1,869,029	TIGERSWITCH RD	N 177 E AVE	S CHEROKEE ST	2	16.377	177
CA-005	Signed Route	1.93	$1,526	HWY 167 EXPY	TIGERSWITCH RD	CHOUTEAU NATIONAL TRAIL	3	15.444	212
CA-007	Signed Route	1.78	$1,407	E PINE ST	CHEROKEE ST	N 177TH E AVE	4	13.628	296
CA-009	Trail	3.68	$3,271,637	HWY 66 EXPY	E PINE ST	CHOUTEAU NATIONAL TRAIL	5	12.765	349
CA-008	Signed Route	1.28	$1,012	REDBUD DR	REDBUD DR	HWY 167 EXPY	6	11.714	435
CA-004	Signed Route	1.42	$1,122	N LYNNLANE RD	I-44 EXPY	TIGERSWITCH RD	7	11.218	479
CA-001	Bike Lane	0.58	$41,379	E APACHE ST	N CHEROKEE ST	S HWY 66	8	10.927	504
CA-006	Signed Route	0.39	$307	DEADDOG RD	E PINE ST	TIGERSWITCH RD	9	10.807	514
CA-010	Sidepath	1.00	$718,327	E PINE ST	N 145TH E AVE	N 161 E AVE	10	9.312	559
CA-012	Sidepath	0.78	$562,705	N 161 E AVE	E PINE ST	TIGERSWITCH RD	11	8.708	577

Table 4: Collinsville Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
CV-001	Bike Lane/Shared Lane Markings	1.64	$99,325	W MAIN ST	E 146 ST N	N 137 E AVE	1	20.521	94
CV-002	Signed Route	1.66	$20,335	S 12 ST	N GARNETT RD	W UNION ST	2	15.340	217
CV-010	Trail	2.47	$2,195,167	SKO TRAIL	W MAPLE ST	E 126 ST N	3	14.228	260
CV-003	Signed Route	0.30	$5,608	S 15 ST	W MAIN ST	S 15 ST	4	13.817	281
CV-005	Signed Route	0.64	$11,854	W CENTER ST	S 10 ST	S 19 ST	5	13.363	308
CV-006	Signed Route	0.87	$16,138	W MAPLE ST	N GARNETT RD	SKO TRAIL	6	13.287	315
CV-007	Signed Route	0.72	$13,282	W UNION ST	N 9 ST	N GARNETT RD	7	12.835	347
CV-004	Signed Route	1.00	$18,470	W BROADWAY ST	N 5 ST	N GARNETT RD	8	12.615	362
CV-009	Sidepath	0.78	$559,647	S 19 ST	N 19 PL	E 138 PL N	9	12.371	381
CV-008	Sidepath	1.14	$816,279	E 146 ST N	WEST OF N 97 E AVE	W BROADWAY ST	10	10.839	513
CV-011	Trail	0.25	$220,124	PROPOSED TRAIL	S 19 ST	VETERANS DR	11	8.620	581

Table 5: Coweta Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
CW-001	Bike Lane	0.81	$57,976	N AVE G	51 HWY	E 151 ST S	1	20.099	103
CW-002	Signed Route	0.53	$9,778	BROADWAY ST	51 HWY	E 151 ST S	2	19.951	106
CW-003	Signed Route	0.62	$11,393	E 147TH ST S	N AVE G	S 305 E AVE	3	18.271	131
CW-004	Signed Route	0.31	$247	HWY 51 EXPY	E 101 ST S	S 305 E AVE	4	17.309	147
CW-005	Signed Route	1.01	$10,199	144ST ST	WEST OF N DIVISION ST	S 305 E AVE	5	15.212	221
CW-006	Signed Route	2.02	$37,294	E 151 St	S 273RD EAST AVE	S BEN LUMPKIN	6	14.409	249
CW-007	Signed Route	1.77	$32,727	DIVISION ST	E 141 ST S	LT COL ERNEST CHILDERS HWY	7	14.381	251
CW-008	Signed Route	0.35	$6,503	COWETA CREEK TRAIL	E 141 ST S	RP BA/COWETA TRAIL	8	13.600	298
CW-009	Signed Route	1.07	$19,859	N EUFALAW AVE	E 141ST ST S	E OAK ST	9	13.076	332
CW-010	Signed Route	1.01	$18,591	FLORENCE ST	257 E AVE	273RD E AVE	10	11.911	418
CW-011	Trail	0.32	$283,066	STATE HIGHWAY 72	E 151 ST S	INDIAN RD	11	11.297	471
CW-012	Sidepath	9.51	$6,836,447	S 51 HWY	S 305 E AVE	51 HWY	12	11.282	473
CW-013	Trail	3.24	$2,874,384	273RD E AVE	E 141 ST S	E 151 ST S	13	10.863	509
CW-014	Sidepath	1.10	$787,751	PROPOSED TRAIL	E 141 ST S	51 HWY	14	8.256	592

Table 6: Glenpool Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
GP-001	Bike Lane	3.02	$146,697	E 141 ST S	S 33 W AVE	S PEORIA AVE	1	21.538	75
GP-004	Sidepath	1.00	$720,594	S PEORIA AVE	E 141 ST S	E 151 ST S	2	13.685	287
GP-003	Shared Lane Marking	1.02	$34,148	S FERN ST	E 141 ST S	E 151 ST S	3	15.609	198
GP-005	Trail	3.52	$3,126,796	COAL CREEK TRAIL	W 121 ST S	E 151 ST S	4	13.119	328
GP-002	Shared Lane Marking	0.51	$17,136	E 146 ST S	S ELWOOD AVE	S FERN ST	5	12.991	338

Table 7: Jenks Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
JS-004	Shared Lane Marking	0.99	$32,881	E B ST	N ELM ST	S ACQUARIUM DR	1	24.645	49
JS-005	Shared Lane Marking	1.03	$34,243	W APACHE ST	N ELM ST	S ACQUARIUM DR	2	21.677	74
JS-013	Sidepath	3.01	$2,162,849	S ELM ST	W 111 ST S	E 141 ST S	3	19.935	107
JS-002	Shared Lane Marking	0.51	$16,989	S 1 ST	E B ST	W 101 ST S	4	16.377	176
JS-006	Shared Lane Marking	0.59	$19,804	W 91 ST S	N ELM ST	RIVERFRONT DR	5	15.613	197
JS-009	Signed Route	0.46	$8,514	N ELM ST	W 91ST ST S	W C STREET	6	15.450	211
JS-007	Signed Route	0.56	$10,284	N BIRCH ST	W 91ST ST S	W B STREET	7	14.969	227
JS-019	Sidepath	3.01	$2,161,198	S ELWOOD AVE	W 91 ST S	W 121 ST S	8	14.366	252
JS-026	Trail	2.24	$1,988,280	JENKS LOW WATER DAM PROJECT	S ELM ST	S DELAWARE AVE PROPOSED TRAIL	9	14.339	254
JS-016	Trail	0.90	$798,404	PROPOSED TRAIL	N ELM ST	E K PL	10	14.306	256
JS-027	Signed Route	0.38	$301	WEST C ST	W MAIN ST	N ELM ST	11	14.136	266
JS-021	Trail	6.13	$5,441,849	TULSA-SAPULPA UNION RAIL WAY PROPOSED TRAIL	N ELM ST	PROPOSED TRAIL	12	13.646	292
JS-031	Signed Route	3.83	$3,035	E 121 ST S	S ELM ST	E 141ST ST S	13	13.238	319
JS-003	Shared Lane Marking	0.50	$16,820	N ADAMS ST	W 91 ST S	W MAIN ST	14	11.981	410
JS-014	Trail	0.16	$138,588	E F ST	N 5 ST	RIVERFRONT DR	15	11.844	425
JS-017	Sidepath	1.68	$1,205,499	W MAIN ST	N FRANKLIN ST	N FIR ST	16	10.876	508
JS-008	Signed Route	1.02	$807	S KIMBERLY-CLARK PL	E 131 ST S	E 141ST ST S	17	10.600	522
JS-020	Sidepath	1.09	$786,372	S VANCOUVER AVE	W 111 ST S	W 121 ST S	18	10.385	531
JS-012	Sidepath	2.03	$1,459,134	W 111 ST S	S 26 W AVE	S PEORIA AVE	19	10.001	538
JS-018	Trail	0.57	$502,437	PROPOSED TRAIL	W MAIN ST	W 101ST ST S	20	9.789	545
JS-015	Sidepath	0.27	$193,058	W 91 ST S	RIVERWALK CROSSING	JENKS AQUARIUM TRAIL	21	9.054	564
JS-024	Trail	2.07	$1,839,234	POSEY CREEK PROPOSED TRAIL	S YALE PL	TULSA - SAPULPA UNION RAILWAY	22	7.594	618
JS-023	Trail	0.35	$313,773	SANDUSKY MULTI-USE TRAIL	E. 131ST ST S	PROPOSED TRAIL	23	7.454	625
JS-028	Trail	0.88	$779,144	PROPOSED TRAIL	PROPOSED TRAIL	JENKS LOW WATER DAM PROJECT	24	7.092	648
JS-030	Sidepath	0.43	$310,866	W 101 ST S	S KOA ST	JENKS PEORIA TRAIL	25	6.255	659
JS-011	Sidepath	1.99	$1,427,304	121 ST	S HARVARD AVE	S PEORIA AVE	26	4.413	660

Table 8: Owasso Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
OW-001	Bike Lane	0.25	$17,853	E 86 ST N	N MAIN ST	N GARNETT RD	1	28.372	32
OW-008	Signed Route	0.59	$10,896	N 117 E AVE	N 118TH E AVE	E 86 ST N	2	23.283	58
OW-046	Trail	0.14	$123,794	SEVENS CONNECTOR	OLD US 169	US HWY 169	3	21.083	83
OW-002	Bike Lane	2.00	$143,316	N 129 E AVE	E 76TH ST N	E 96 ST N	4	20.558	92
OW-011	Signed Route	0.33	$6,187	N 123 E AVE	E 86 ST N	E 83 ST N	5	20.216	100
OW-003	Bike Lane	1.00	$52,267	N MAIN ST	W 12 ST S	E 76 ST N	6	18.891	120
OW-019	Sidepath	4.14	$2,974,664	E 86 ST N	N GARNETT RD	N 177 E AVE	7	18.860	122
OW-017	Sidepath	4.02	$2,890,336	E 76 ST N	N MINGO RD	N 161 E AVE	8	18.759	124
OW-028	Sidepath	2.36	$1,865	E 76 ST N	N 161 E ST	E 72 ST N	9	17.951	133
OW-009	Signed Route	0.43	$7,983	N 118 E AVE	E 83RD ST N	E 80TH ST N	10	17.630	138
OW-014	Signed Route	0.23	$4,253	E 83 ST N	N 118 E AVE	N 122 E AVE	11	17.340	144
OW-010	Signed Route	0.64	$11,911	E 80 ST N	N 125TH E AVE	N 117TH E AVE	12	16.585	172
OW-036	Trail	1.46	$1,294,164	PROPOSED TRAIL	N OWASSO EXPY	THREE LAKES TRAIL	13	16.260	180
OW-005	Signed Route	0.11	$2,087	N GARNETT RD	E 86 ST N	N GARNETT RD	14	15.905	189
OW-004	Shared Lane Markings	2.50	$83,416	N BIRCH ST	E 106 ST N	E 12 ST S	15	15.190	222
OW-016	Signed Route	1.10	$20,406	N OWASSO EXPY E	E 76TH ST N	E 86TH ST N	16	14.888	230
OW-012	Signed Route	0.60	$11,136	N 127 E AVE	E 76TH ST N	E 81ST ST N	17	14.549	243
OW-006	Signed Route	1.01	$801	E 116 ST N	N GARNETT RD	N 97TH E AVE	18	14.095	268
OW-007	Signed Route	0.43	$7,873	N 120 E AVE	E 76TH ST N	E 80TH ST N	19	13.972	272
OW-013	Signed Route	1.06	$19,538	N 139 E AVE	E 86TH ST N	E 96TH ST N	20	13.545	303
OW-032	Trail	0.08	$71,424	ELM CREEK PARK TRAIL	ELM CREEK PARK TRAIL	N 126 E AVE	21	13.349	312
OW-053	Trail	0.60	$532,263	THREE LAKES TRAIL	RAYOLA PARK TRAIL	THREE LAKES TRAIL	22	13.282	316
OW-031	Trail	0.20	$179,285	ELM CREEK PARK TRAIL	N ELM CREEK TRAIL	PROPOSED TRAIL	23	13.178	323
OW-059	Shared Lane Markings	0.25	$179,526	E 106 ST N	PROPOSED TRAIL	PROPOSED TRAIL	24	13.120	327
OW-038	Trail	0.86	$765,154	LAKERIDGE TRAIL	LAKEVIEW TRAIL	LAKERIDGE E TRAIL	25	12.706	355
OW-029	Trail	0.94	$836,333	CENTRAL PARK/CAMDEN PARK TRAIL	E 92 ST N	E 86 ST N	26	12.502	367
OW-024	Sidepath	3.01	$2,163,399	N GARNETT RD	E 126 ST N	E 96 ST N	27	12.464	374
OW-015	Signed Route	0.16	$3,041	BRDWAY ST	S MAIN	SKO TRAIL	28	12.355	383
OW-045	Trail	1.24	$1,099,397	RAYOLA PARK TRAIL	E 86 ST N	E 2ND AVE	29	12.327	384
OW-064	Trail	3.67	$3,260,649	RANCH CREEK TRAIL	SKO TRAIL	RANCH CREEK TRAIL	30	12.293	386
OW-022	Trail	1.04	$921,063	PROPOSED TRAIL	N 137 E AVE	PROPOSED TRAIL	31	12.288	387
OW-041	Trail	0.34	$300,602	OWASSO HIGH SCHOOL CONNECTOR	BARRINGTON POINT TRAIL	N 129 E AVE	32	12.245	392
OW-058	Sidepath	3.01	$2,163,279	N 97 E AVE	E 116 ST N	E 86 ST N	33	12.023	407
OW-043	Trail	0.72	$638,795	PROPOSED RANCH CREEK TRAIL	PROPOSED TRAIL	E 76 ST N	34	11.967	412
OW-021	Trail	0.26	$228,375	BAPTIST RETIREMENT CENTER TRAIL	E 76 ST N	BAPTIST RETIREMENT CENTER TRAIL	35	11.680	440
OW-052	Trail	0.14	$122,820	THREE LAKES CONNECTOR A	OWASSO TRAIL	TRAIL END	36	11.543	447
OW-026	Sidepath	1.63	$1,169,216	E 86 ST N	N MEMORIAL DR	N MAIN ST	37	11.131	487

Table 8, Continued: Owasso Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
OW-027	Sidepath	1.00	$720,869	N 145 E AVE	E 86 ST N	E 96 ST N	38	11.116	489
OW-042	Trail	4.07	$3,618,390	N OWASSO EXPY	E OF N 145 E AVE	PROPOSED TRAIL	39	10.535	525
OW-040	Trail	1.96	$1,744,480	N ELM CREEK TRAIL	CENTRAL PARK/CAMDEN PARK TRAIL	SKO SE TRAIL	40	10.530	526
OW-033	Trail	0.16	$140,823	FAIRWAYS LINKAGE TRAIL	W 18 ST S	PSO W TRAIL	41	9.922	541
OW-066	Sidepath	1.40	$1,007,029	US HWY 169 SERVICE RD	E 116 ST N	E 103 ST N	42	9.908	542
OW-057	Trail	1.17	$1,038,949	FIREFLY TRAIL CROSSING	N 177 E AVE	E 72 ST N	43	9.761	548
OW-018	Trail	1.20	$1,063,462	PSO W TRAIL	SKO TRAIL	GARNETT RD TRAIL	44	9.657	554
OW-047	Trail	0.60	$529,698	SKO SPUR TRAIL	PROPOSED TRAIL	W 1 ST	45	9.585	555
OW-048	Trail	5.98	$5,309,375	SKO TRAIL	E 126 ST N	PROPOSED TRAIL	46	9.497	556
OW-067	Trail	0.45	$399,208	PRAIRIE VIEW E TRAIL	N 145TH E AVE	E 106 ST N	47	8.873	568
OW-034	Trail	1.92	$1,704,281	PROPOSED TRAIL	OLD US 169	N 129 E AVE	48	8.846	571
OW-030	Trail	0.49	$433,039	PROPOSED TRAIL LOOP	N 111 E AVE	OLD US 169	49	8.741	574
OW-061	Trail	0.50	$448,039	PROPOSED TRAIL	SPORTS PARK TRAIL	E 106 ST N	50	8.632	580
OW-035	Trail	0.61	$545,901	GREENS AT OWASSO TRAIL	E 86 ST N	TRAIL END	51	8.317	590
OW-050	Trail	1.35	$1,200,842	OWASSO SPORTS PARK TRAIL	PARK ENTRANCE	PARK ENTRANCE	52	8.178	596
OW-044	Trail	0.28	$248,546	RAYOLA-76TH CONNECTOR	PROPOSED TRAIL	E 2ND AVE	53	8.091	598
OW-049	Trail	1.40	$1,239,945	S CITY TRAIL	OWASSO TRAIL	RAYOLA PARK TRAIL	54	8.035	599
OW-062	Trail	0.52	$461,961	PROPOSED TRAIL	SPORTS PARK TRAIL	E 106 ST N	55	7.953	601
OW-065	Trail	1.49	$1,323,693	KRISTEN HEIGHTS TRAIL	E 116 ST N	OWASSO TRAIL CONNECTOR	56	7.752	609
OW-051	Trail	1.08	$954,917	THE LAKES AT BAILEY RANCH TRAIL	PROPOSED TRAIL	N GARNETT RD	57	7.668	616
OW-056	Trail	1.31	$1,162,467	PROPOSED TRAIL	E 106 ST N	SKO TRAIL	58	7.577	620
OW-055	Trail	0.91	$808,315	PROPOSED TRAIL	PROPOSED TRAIL	N GARNETT RD	59	7.451	626
OW-063	Trail	0.43	$385,856	PROPOSED TRAIL	PROPOSED TRAIl	N GARNETT RD	60	7.443	628
OW-054	Trail	0.41	$366,558	PROPOSED TRAIL LOOP	S OF E 106 ST N	S OF E 106 ST N	61	7.441	630
OW-039	Trail	0.55	$491,907	MEADOWCREST TRAIL	PROPOSED TRAIL	PROPOSED TRAIL	62	7.300	638
OW-020	Trail	0.57	$509,846	BAPTIST RETIREMENT CENTER TRAIL	SKO SE TRAIL	BRADFORD PARK DR	63	7.290	639
OW-023	Trail	1.15	$1,020,251	N HWY169 EXPY	E 126 ST N	E 116 ST N	64	7.145	645
OW-037	Trail	0.60	$532,533	PROPOSED TRAIL	E 76 ST N	E 82 PL N	65	7.099	647
OW-060	Trail	1.48	$1,316,236	PROPOSED TRAIL LOOP	E 66 ST N	E 66 ST N	66	6.763	657

Table 9: Sand Springs Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
SS-004	Cycle Track	1.066	$128,696	S 113 W AVE	HWY 51	W 41 ST S	1	29.146	29
SS-009	Shared Lane Marking	0.834	$27,779	N MCKINLEY AVE	E BROADWAY ST	E 12 ST S	2	23.274	59
SS-003	Bike Lane	0.164	$11,709	N MAIN ST	S OF E BROADWAY ST	KATY TRAIL	3	21.996	70
SS-002	Bike Lane	0.585	$41,874	E PARK RD N	N MAIN ST	N ADAMS RD	4	21.671	72
SS-017	Signed Route/ Sidepath	1.035	$238,375	S 81 W AVE	W CAMERON ST	E PARK RD N	5	20.247	98
SS-007	Shared Lane Marking	0.952	$31,713	N ADAMS RD	HWY 51	E OLDNORTH RD	6	19.584	111
SS-019	Trail	1.712	$1,520,804	HWY 97	E 34 ST S	S 113 W AVE	7	18.721	126
SS-008	Shared Lane Marking	0.887	$29,561	W 33 ST S	S NASSAU AVE	MASONIC DR	8	17.221	154
SS-006	Shared Lane Marking	1.850	$61,624	S SPRUCE AVE	W 33 ST S	W 51 ST S	9	15.655	194
SS-021	Sidepath	0.403	$289,625	W WEKIWA RD	RIVER CITY TRAIL	HWY 97	10	15.591	201
SS-005	Shared Lane Marking	0.908	$30,262	W 38 ST S	S NASSAU AVE	HWY 97	11	14.231	259
SS-001	Signed Route/Bike Lane	3.578	$73,045	W 51 ST S	S 129 W AVE	W SKYLINE DR	12	13.667	288
SS-011	Signed Route	2.761	$20,453	HWY 97	W WEKIWA RD	S OF N MCKINLEY AVE	13	12.739	353
SS-020	Trail	0.726	$644,937	SAND SPRINGS LAKE TRAIL	SAND SPRINGS LAKE TRAIL	W OLD NORTH RD	14	12.728	354
SS-014	Signed Route	3.944	$3,124	N AIRPORT RD	HWY 51	SHELL CREEK RD	15	12.632	360
SS-012	Signed Route	1.352	$24,989	N OAKRIDGE DR	N MCKINLEY RD	W OLD NORTH RD	16	12.399	378
SS-013	Signed Route	1.092	$865	S 112 W AVE	W 41ST ST S	W 51ST ST S	17	12.061	402
SS-016	Signed Route	0.716	$13,232	N MCKINLEY AVE	E 12TH ST	S OF E RIDGEVIEW DR	18	11.932	415
SS-018	Sidepath	1.006	$723,051	S 129 W AVE	W 41 ST S	W 51 ST S	19	11.908	419
SS-022	Signed Route	0.498	$395	S 129 W AVE	W 51 ST S	W 56 ST S	20	11.854	424
SS-010	Signed Route	0.403	$319	S 145 W AVE	W 56 ST S	W 61 ST S	21	11.799	428
SS-023	Signed Route	1.031	$817	W 56 ST S	S 129 W AVE	S 145 W AVE	22	11.268	474
SS-024	Signed Route	0.928	$735	S 113 W AVE	S OF W 51ST ST S	W 61 ST S	23	10.842	512

Table 10: Skiatook Prioritized Bike Projects

Project	Facility	Length (Mi)	Cost	Street	From	To	Citywide Prioritization Rank	Score	Regional Rank
SK-002	Signed Route	2.68	$2,126	W OAK ST	N 52 W AVE	OSAGE AVE	1	17.350	142
SK-004	Sidepath	1.22	$879,274	W ROGERS BLVD	S LOMBARD LN	HWY 11	2	15.892	190
SK-003	Signed Route	0.62	$489	E 146 ST N	S OSAGE AVE	E ROGERS BLVD	3	14.039	270
SK-001	Shared Lane Marking	0.99	$32,991	N LOMBARD LN	W COUNTRY RD	W OAK ST	4	12.075	401

Table 11: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Total Project Cost
TU-045	Cycle Track	4.355	E 11 ST S	S Elgin Street	S SHERIDAN RD	1	56.86	$525,706
TU-037	Bike Lanes/Shared Lane Marking	7.444	E PINE ST	N GILCREASEMUSEUM RD	N MEMORIAL DR	2	51.25	$457,453
TU-046	Cycle Track	2.327	S BOULDER AVE	E HASKELL ST	RIVERSIDE DR	3	47.89	$280,872
TU-011	Bike Lanes/Signed Route	3.994	E 3 ST S	GREENWOOD AVE	S 73 E AVE	4	47.44	$262,756
TU-148	Bicycle Corridor	7.464	S HARVARD AVE	E 21 ST S	E CREEK TURNPIKE	5	45.21	$534,373
TU-041	Bike Lanes	0.607	S PEORIA AVE	E 6 ST S	E 13 PL S	6	44.52	$43,453
TU-007	Buffered Bike Lanes	3.613	E 11 ST S	S SHERIDAN RD	S 123 E AVE	7	42.73	$256,586
TU-209	Priority Shared Lane Marking	0.478	E 15 ST S	S PEORIA AVE	S UTICA AVE	8	41.93	$36,845
TU-033	Bicycle Corridor	4.023	N HARVARD AVE	E APACHE ST	E 21 ST S	9	41.33	$288,035
TU-167	Bicycle Corridor	6.987	E 31 ST S	S HARVARD AVE	S 145 E AVE	10	41.21	$500,237
TU-040	Bike Lanes	0.192	S PEORIA AVE	E 13 PL S	E 15 ST S	11	41.11	$13,755
TU-161	Sidepath	0.249	E 21 ST S	S LOUISVILLE AVE	S PITTSBURG AVE	12	38.89	$178,930
TU-210	Bike Lanes/Shared Lane Marking	4.210	SOUTHWEST BLVD	RIVERSDE DR	W 48 ST S	13	38.45	$299,580
TU-092	Signed Route	0.850	W 23 ST S	River Parks West Trail	MLK Memorial Expwy	14	38.18	$15,711
TU-013	Bike Lanes	1.225	E 4 ST S	S FRISCO AVE	E 3 ST S	15	36.21	$87,700
TU-166	Bicycle Corridor	6.384	E 81 ST S	RIVERSIDE PKWY	S GARNETT RD	16	36.02	$457,061
TU-050	Bike Lanes	1.707	N PEORIA AVE	E PINE ST	E 6 ST S	17	35.67	$122,187
TU-016	Bike Lanes	1.288	E 6 ST S	S PEORIA AVE	W 7 ST S	18	35.37	$92,243
TU-047	Cycle Track	0.837	S ELGIN AVE	E ARCHER ST	E 11 ST S	19	33.65	$101,080
TU-056	Signed Route	4.589	S CINCINNATI AVE	E 19 ST S	SKELLY DR	20	33.48	$84,799
TU-009	Bike Lanes	0.197	W 17 ST S	S JACKSON AVE	SOUTHWEST BLVD	21	33.17	$14,092
TU-172	Bicycle Corridor	0.487	E 71 ST S	S 85 E AVE	S 92 E AVE	22	32.32	$34,867
TU-127	Signed Route	0.423	W ARCHER ST	N GUTHRIE AVE	KATY TRAIL	23	31.30	$7,817
TU-044	Cycle Track	0.388	E 10 ST S	S BOULDER AVE	S ELGIN AVE	24	30.72	$46,811
TU-012	Bike Lanes	2.504	E 31 ST S	RIVERSDE DR	S HARVARD AVE	25	30.42	$179,246
TU-098	Signed Route	2.609	N GREENWOOD AVE	JOHN HOPE FRANKLIN BLVD	GILCREASE EXPWY TRAIL	26	29.68	$48,219
TU-006	Bike Lanes	0.788	E 11TH ST S	S BOULDER AVE	SOUTHWEST BLVD	27	29.68	$56,435
TU-017	Bike Lanes	1.480	E 6 ST S	S PEORIA AVE	S DELAWARE AVE	28	29.45	$105,959
TU-042	Bike Lanes	0.812	SOUTHWEST BLVD	W ARCHER ST	RIVERSIDE DR	29	29.38	$58,135
TU-168	Bicycle Corridor	5.384	E 51 ST S	S FULTON AVE	E 51 ST S	30	29.25	$385,480
TU-170	Bicycle Corridor	3.523	E 61 ST S	RIVERSIDE DR	S YALE AVE	31	29.06	$252,223
TU-070	Bike Lanes/Signed Route	1.623	N CINCINNATI AVE	E Pine Street	GILCREASE EXPWY TRAIL	32	27.62	$86,825
TU-002	Buffered Bike Lanes	0.313	N GILCREASEMUSEUM RD	W HWY64-51WB EXPY	W EDISON ST	33	27.48	$22,241
TU-135	Signed Route	0.543	E JOHNHOPEFRANKLIN BLVD	N MAIN ST	N GREENWOOD AVE	34	27.02	$10,039
TU-039	Bike Lanes/Signed Route	1.686	E VIRGIN ST	N Cincinnati Ave	N Xanthus Ave	35	26.55	$83,522
TU-026	Bike Lanes	4.787	E 91 ST S	RIVERSIDE PKWY	S MINGO RD	36	26.15	$342,740
TU-048	Shared Lane Marking	3.990	E 36 ST S	RIVERSIDE DR	S HUDSON AVE	37	25.83	$132,931
TU-104	Signed Route	4.062	S UTICA AVE	Skelly Drive	E 19th Str	38	25.82	$75,073
TU-028	Bike Lanes	0.238	S CINCINNATI AVE	E 10 ST S	E 13 ST S	39	25.68	$17,058
TU-021	Bike Lanes	0.498	S 73 E AVE	E 4 PL S	E 11 ST S	40	25.60	$35,658
TU-203	Bicycle Corridor	2.460	S SHERIDAN RD	E 81 ST S	E 106 ST S	41	25.39	$176,124

Table 11, Continued: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Cost
TU-106	Signed Route	1.613	S FULTON AVE	E 36 ST S	E 51 ST S	42	25.34	$29,800
TU-034	Bike Lanes	0.854	S JACKSON AVE	W 17 ST S	W 25 ST S	43	25.26	$61,122
TU-175	Bicycle Corridor	0.981	E 91 ST S	S MINGO RD	S GARNETT RD	44	25.20	$70,255
TU-081	Signed Route	0.369	E 12 ST S	S STLOUIS AVE	S WHEELING AVE	46	24.88	$6,821
TU-086	Signed Route	1.033	S STLOUIS AVE	E 12th Street N	E 19th St S	47	24.64	$19,082
TU-089	Signed Route	1.405	E 19 ST S	S Boulder Ave	S WHEELING AVE	48	24.60	$25,965
TU-001	Bike Lanes/Buffered Bike Lanes	5.099	E 13 ST S	S CINCINNATI RAMP TO SIDLWB OR BAWB	S 77 E AVE	49	24.16	$364,833
TU-194	Sidepath	3.740	E SKELLY DR	RIVERSIDE DR	E 46 ST S / S YALE AVE	50	24.14	$2,688,665
TU-064	Signed Route	0.916	N GARNETT RD	E PINE ST	COOLEY CREEK TRAIL	51	24.10	$16,933
TU-094	Signed Route	0.459	E 24 ST S	S 137 E AVE	S 145 E AVE	52	23.82	$8,487
TU-061	Signed Route	4.398	E 56 ST S	Riverside Dr	Yale Ave	53	23.75	$81,266
TU-031	Bike Lanes	1.219	W EDISON ST	N CHEYENNE AVE	N GILCREASEMUSEUM RD	54	23.42	$87,291
TU-038	Bike Lanes	1.408	S UNION AVE	SOUTHWEST BLVD	W 51 ST S	55	22.70	$100,793
TU-115	Signed Route	0.447	W 63 ST N	N OSAGE DR	N CINCINATTI AVE	56	22.60	$8,268
TU-136	Signed Route	1.133	S LEWIS AVE	E 81 ST S	E 91 ST S	57	22.55	$20,932
TU-189	Trail	2.086	MINGO TRAIL 41ST ST. TO 81ST	51 ST RAMP TO HWY169SB	MINGO TRAIL 41ST ST. TO 81ST/ 71ST ST S	58	22.39	$1,852,146
TU-101	Signed Route	2.006	S 33 W AVE	W 41 ST S	W 61 ST S	59	22.21	$37,076
TU-159	Bicycle Corridor	1.003	S 137 E AVE	E 21 ST S	E 31 ST S	60	22.19	$71,823
TU-066	Bike Lanes/Signed Route	1.569	N MAIN ST	E Haskell St	N CINCINATTI AVE	61	22.15	$75,429
TU-128	Signed Route	3.822	E INDEPENDENCE ST	N OSWEGO AVE	N GREENWOOD AVE	62	22.15	$70,624
TU-100	Signed Route	1.743	S NEWHAVEN AVE	E 36th Street S	21st Place S	63	21.77	$32,205
TU-162	Bicycle Corridor	0.450	E 21 ST S	S 137 E AVE	S 145 E AVE	64	21.50	$32,253
TU-043	Bike Lanes	0.485	W APACHE ST	N DENVER ST	N CINCINATTI AVE	65	21.35	$34,716
TU-171	Bicycle Corridor	1.007	W 71 ST S	S ELWOOD AVE	S UNION AVE	66	21.17	$72,066
TU-082	Signed Route	3.729	S 121 E AVE	East 11th Street	East 35th Street S	67	21.11	$68,903
TU-015	Bike Lanes/Signed Route	2.160	S 90th East Ave	S 93rd E Ave	Mingo Trail	68	21.05	$112,812
TU-143	Signed Route	0.917	S WHEELING AVE	E 3RD S	E 13PL S	69	21.04	$16,944
TU-131	Signed Route	3.500	MLKJBLVD	E 66 ST S	GILCREASE EXPY	70	20.96	$64,684
TU-030	Bike Lanes	0.296	S Deleware Ave	E ADMIRAL PL	E 3rd Street South	71	20.82	$21,198
TU-035	Bike Lanes	1.058	MOHAWK BLVD	MLKBLVD	N PEORIA AVE	72	20.81	$75,759
TU-117	Signed Route	0.951	E 66 ST S	S MEMORIAL DR	E 65 ST S / WOODLAND HILLS RD	73	20.68	$17,577
TU-160	Sidepath	0.122	E 15 ST S	S GARNETT RD	E 13 ST	74	20.65	$88,043
TU-014	Bike Lanes/Shared Lane Marking/ Signed Route	2.607	W 41 ST S	S 55 W AVE	US 75	75	20.16	$110,670
TU-022	Bike Lanes	0.539	S 90 E AVE	S 88 E AVE	E 71 ST S	76	20.14	$38,606
TU-027	Bicycle Corridor	0.250	S Garnett Rd	E 7th Street S	E 11th Street S	77	20.06	$17,877
TU-032	Bike Lanes	0.396	N ELGIN AVE	E ARCHER ST	E JOHNHOPEFRANKLIN BLVD	78	19.96	$28,353
TU-108	Signed Route	3.307	E 46 ST S	Skelly Drive	S 104th East Ave	79	19.90	$61,118
TU-198	Bicycle Corridor	3.990	S UNION AVE	W 51 ST S	W 91 ST S	80	19.83	$285,680
TU-205	Trail	0.578	CROW CREEK TRAIL	RIVERSIDE PATH E	S PEORIA AVE	81	19.69	$513,044
TU-060	Signed Route	4.211	E 76 ST S	Mingo Ave	S 97th East Ave	82	19.62	$77,819

Table 11, Continued: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Cost
TU-164	Sidepath	1.056	N GILCREASEMUSEUM RD	W EDISON ST	W PINE ST	83	19.51	$759,118
TU-072	Signed Route	1.897	S LAKEWOOD AVE	S Yale Ave	S Sheridan Rd	84	19.45	$35,058
TU-004	Buffered Bike Lanes/Shared Lane Markings	1.434	S DELEWARE AVE	E 11 ST S	E 20 ST S	85	19.24	$52,727
TU-057	Signed Route	1.003	E 27 ST S	S 107 E AVE	S 121 E AVE	86	19.17	$18,529
TU-129	Signed Route	1.262	N LEWIS AVE	E INDEPENDENCE ST	E TECUMSEH ST	87	19.07	$23,314
TU-085	Signed Route	0.599	S 140 E AVE	E 14 ST S	E 21 ST S	88	18.97	$11,087
TU-126	Signed Route	2.090	S PITTSBURG AVE	E INDEPENDENCE ST	E 15 ST S	89	18.94	$38,625
TU-144	Signed Route	2.981	E 36 ST S	E 31ST S	S 106 E AVE	90	18.90	$55,086
TU-139	Signed Route	1.475	S PITTSBURG AVE	E 36 ST S	E SKELLY DR	91	18.48	$27,266
TU-169	Bicycle Corridor	1.644	W 61 ST S	S ELWOOD AVE	S 33 W AVE	92	18.13	$117,706
TU-184	Trail	2.653	JOE CREEK TRAIL	E 51 ST S	E 71 ST S	93	17.91	$2,355,801
TU-200	Bicycle Corridor	3.989	E PINE ST	N MEMORIAL DR	E 145TH E AVE	94	17.81	$285,600
TU-008	Bike Lanes	3.087	N LEWIS AVE	MOHAWK BLVD	E 66 ST N	95	17.68	$221,043
TU-093	Signed Route	3.197	E 25 ST S	S HARVARD AVE	77th East Ave	96	17.60	$59,080
TU-091	Signed Route	0.766	S YORKTOWN AVE	E19th Street S	26th Street S	97	17.48	$14,152
TU-058	Signed Route	0.791	S 93 E AVE	101st Street	S 97th East ave	98	17.33	$14,613
TU-079	Signed Route	4.375	E 11 ST S	S 123 E AVE	S 193 E AVE	99	17.30	$27,741
TU-155	Sidepath	0.675	S 119 E AVE	E 11 ST S	E 14 ST S	100	17.28	$485,148
TU-076	Signed Route	0.533	S 108 E AVE	E 31 ST S	E 36 ST S	101	17.25	$9,849
TU-204	Trail	1.646	FRED CREEK TRAIL	RIVERSIDE PATH E	S EVANSTON AVE	102	17.11	$1,461,488
TU-102	Signed Route	1.198	E 35 ST S	S MEMORIAL DR	S 95th East Ave	103	16.98	$22,144
TU-062	Signed Route	0.682	N BIRMINGHAM AVE	Independence Ave	E 3rd Street South	104	16.86	$12,612
TU-123	Signed Route	3.006	S 89 E AVE	E PINE ST	E 21 ST S	105	16.84	$55,544
TU-178	Bicycle Corridor	1.133	S ELWOOD AVE	W 61 ST S	W 71 ST S	106	16.82	$81,084
TU-142	Signed Route	0.808	E TECUMSEH ST	N ATLANTA CT	N HARVARD AVE	107	16.47	$14,935
TU-084	Signed Route	0.757	E 14 ST S	S 129th East Ave	E 11th Street S	108	16.45	$13,994
TU-157	Bicycle Corridor	3.482	E 101 ST S	RIVERSIDE PKWY	S MEMORIAL DR	109	16.37	$249,285
TU-173	Bicycle Corridor	1.003	W 81 ST S	S ELWOOD AVE	S UNION AVE	110	16.32	$71,842
TU-074	Signed Route	3.345	N HARVARD AVE	MOHAWK BLVD	E PINE ST	111	16.23	$61,811
TU-083	Signed Route	0.342	E 13 PL S	S STLOUIS AVE	S WHEELING AVE	112	16.20	$6,328
TU-177	Sidepath	2.003	S ELWOOD AVE	W 71 ST S	W 91 ST S	113	15.90	$1,440,330
TU-141	Signed Route	0.405	E SEMINOLE ST	N HARVARD AVE	N OSWEGO AVE	114	15.79	$7,483
TU-065	Signed Route	0.284	W SEMINOLE ST	N Main St	Planned Trail	115	15.60	$5,251
TU-036	Bike Lanes	3.361	MOHAWK BLVD	N PEORIA AVE	N WINSTON AVE	116	15.59	$240,606
TU-180	Trail	3.679	HAIKEY CREEK TULSA TRIBUT	MINGO TRAIL 81ST TO MEMORIAL	S KINGSTON AVE	117	15.48	$3,267,347
TU-029	Bike Lanes	0.527	S COLLEGE PL	E 91 ST S	E 95 ST S	118	15.44	$37,716
TU-068	Signed Route	2.075	W APACHE ST	N 41st Street W	OSAGE TRAIL	119	15.40	$1,643
TU-010	Bike Lanes/Shared Lane Marking	1.006	S 25 W AVE	W 41 ST S	W 51 ST S	120	15.39	$53,696
TU-186	Sidepath	0.494	S MINGO RD	MINGO TRAIL 81ST TO MEMORIAL	S MINGO RD	121	15.36	$354,880
TU-019	Bike Lanes	0.230	E 66 ST S	S MINGO RD	S 101 E AVE	122	15.21	$16,474
TU-075	Signed Route	1.593	S 107 E AVE	E 17th Street S	E 31st Street S	123	15.16	$29,435

Table 11, Continued: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Cost
TU-053	Signed Route	0.996	E 86 ST S	S SHERIDAN RD	S 73rd E Ave	124	14.92	$18,401
TU-134	Signed Route	1.148	N IRVINGTON AVE	E ADMIRAL PL	E PINE ST	125	14.87	$21,220
TU-063	Signed Route	2.524	N Kingston Pl	N Irvington Ave	Planned Trail	126	14.78	$46,644
TU-147	Trail	6.115	PROPOSED TRAIL	W EDISON ST	OSAGE TRAIL	127	14.69	$5,430,289
TU-096	Signed Route	0.184	E 26 CT S	S 90th E Ave	E 26th Pl S	128	14.65	$3,394
TU-119	Signed Route	0.902	E 66 ST S	S RICHMOND AVE	S FULTON AVE	129	14.43	$16,678
TU-151	Trail	1.501	PROPOSED TRAIL	MINGO TRAIL 41ST ST. TO 81ST	E 73 ST S	130	14.25	$1,332,815
TU-206	Trail	0.737	PROPOSED TRAIL	W APACHE ST	E GILCREASE EXPY	131	14.23	$654,155
TU-105	Signed Route	1.583	S COLUMBIA AVE	SKELLY DR	E 36 ST S	132	14.22	$29,257
TU-146	Signed Route	0.449	CREEK TURNPIKE TRAIL	E 91 ST S	CREEK TURNPIKE TRAIL	133	14.17	$8,298
TU-099	Signed Route	0.755	E 27 ST S	S 78 E AVE	S 89 E AVE	134	13.96	$13,958
TU-023	Bike Lanes	0.178	S 85 E AVE	E 71 ST S	E 73 ST S	135	13.96	$12,746
TU-003	Buffered Bike Lanes/Bike Lanes/ Shared Lane Marking	1.202	E 66th Street S	E 61st Street S	S MEMORIAL DR	136	13.74	$66,037
TU-122	Signed Route	1.776	S 88 E AVE	E 75 ST S	E 91 ST S	137	13.58	$32,812
TU-145	Signed Route	0.206	S 103 E AVE	MINGO TRAIL 11TH ST. TO 41ST	PROPOSED TRAIL	138	13.55	$3,800
TU-090	Signed Route	4.605	E 21 ST S	S 145th Ave	CREEK TURNPIKE TRAIL	139	13.44	$3,647
TU-176	Trail	1.996	COOLEY CREEK TRAIL	MINGO TRAIL 11TH ST. AND N	E ADMIRAL PL	140	13.42	$1,772,983
TU-024	Bike Lanes	0.389	S 89 E AVE	E 31 ST S	E 34 ST S	141	13.42	$27,857
TU-114	Signed Route	0.635	S FULTON AVE	E 66 ST S	E 61 ST S	142	13.24	$11,729
TU-196	Trail	8.588	SKO TRAIL	MIDLAND VALLEY RAIL TRACKS	E 56 ST N	143	13.24	$7,627,215
TU-077	Signed Route	1.236	E 4 PL S	S MINGO RD	S GARNETT RD	144	13.23	$22,833
TU-118	Signed Route	1.298	S 73 E AVE	E 76 ST S	E 66 ST S	145	13.20	$23,981
TU-020	Bike Lanes/Shared Lane Marking	1.305	E 7 ST S	S 73 E AVE	S 94 E AVE	146	13.10	$62,723
TU-097	Signed Route	1.279	E 26 ST S	S Yorktown Ave	S HARVARD AVE	147	13.09	$23,644
TU-181	Trail	2.016	HOWARD BRANCH TRAIL	E PINE ST	E 11 ST S	148	12.98	$1,790,468
TU-133	Signed Route	0.917	S ELWOOD AVE	W 36 ST S	W 45 ST S	149	12.89	$16,947
TU-156	Sidepath	0.553	E 99 ST S	S 97 E AVE	END OF S 100 E PL	150	12.62	$397,236
TU-208	Trail/Signed Route	0.932	W 37 PL S	S ELWOOD AVE	CHERRY CREEK TRAIL	151	12.50	$66,619
TU-124	Signed Route	0.658	S 90 E AVE	E SKELLY DR	E 31 ST S	152	12.50	$12,155
TU-054	Signed Route	1.678	E 106 ST S	S Sandusky Ave.	S Sheridan Rd.	153	12.03	$31,010
TU-192	Trail	2.262	PROPOSED TRAIL	S 30 W AVE	RP WEST BANK TRAIL	154	11.85	$2,008,545
TU-149	Trail	0.501	PROPOSED TRAIL	CREEK TURNPIKE TRAIL	E 101 ST S	155	11.71	$444,708
TU-087	Signed Route	0.246	S 165 E AVE	E 49th St	E 51 ST S	156	11.56	$4,541
TU-158	Sidepath	1.347	121 ST S	S DELAWARE AVE	S SHERIDAN RD	157	11.48	$968,736
TU-073	Signed Route	1.348	S 69 E AVE	S 97th Pl	106th St S	158	11.41	$24,910
TU-152	Trail	0.261	PROPOSED TRAIL	S 93 E AVE	S 97 E AVE	159	11.40	$231,967
TU-113	Signed Route	1.436	E 57 ST S	S HUDSON AVE	S 76 E AVE	160	11.40	$26,521
TU-183	Trail	1.921	JENKS MISSOURI PACIFIC TRAIL	W 71 ST S	N ELM ST	161	11.39	$1,706,116
TU-153	Trail	0.236	PROPOSED TRAIL	S 103 E AVE	S 106 E AVE	162	11.38	$209,913
TU-059	Signed Route	0.428	S LAKEWOOD AVE	E 86 ST S	E 91 ST S	163	11.33	$7,915
TU-051	Signed Route	0.694	W 53 ST S	W Skelly Dr. & 36th W Ave	30th W Ave	164	11.16	$12,821

Table 11, Continued: Tulsa Prioritized Bike Projects

Project	Facility	Length (Mi)	Street	From	To	Citywide Prioritization Rank	Score	Cost
TU-088	Signed Route	2.007	S 117th E Ave	E Archer St	E 21st Street S	165	11.02	$1,589
TU-179	Trail	0.668	GILCREASE W TRAIL	GILCREASE W TRAIL	GILCREASE W TRAIL	166	11.02	$592,812
TU-055	Signed Route	2.614	S ERIE AVE	101st Street	121st Street	167	10.94	$48,300
TU-071	Signed Route	1.703	N WINSTON AVE	Planned Trail	MOHAWK BLVD	168	10.74	$1,349
TU-197	Trail	3.156	S RIVER PARKS TRAIL	E 101 ST S	SANDUSKY MULTI-USE TRAIL	169	10.65	$2,802,924
TU-112	Signed Route	2.195	E 56 ST N	N YALE AVE	MOHAWK BLVD	170	10.57	$1,739
TU-188	Trail	5.020	MINGO TRAIL 11TH ST. AND N	MOHAWK/PORT OF CATOOSA TRAIL	MINGO TRAIL 11TH ST. AND N	171	10.35	$4,458,055
TU-052	Signed Route	1.349	S 193 E AVE	E 6th St	E 21 ST S	172	10.30	$1,068
TU-078	Signed Route	0.704	S SANDUSKY AVE	E 105th St Stou	E 11th St South	173	9.97	$13,009
TU-191	Trail	0.871	MOOSER CREEK TRAIL	PROPOSED TRAIL	S 28 W AVE	174	9.91	$773,943
TU-130	Signed Route	3.708	E CHEROKEE DR	N MEMORIAL DR	CHEROKEE DR	175	9.81	$2,936
TU-116	Signed Route	0.262	63 ST S	S 101 E AVE	PROPOSED TRAIL	176	9.75	$4,839
TU-125	Signed Route	0.997	S LOUISVILLE AVE	E 101 ST S	E 111 ST S	177	9.70	$18,417
TU-005	Bike Lanes	0.371	S 101 E AVE	E 62 ST S	E 66 ST S	178	9.40	$26,561
TU-120	Signed Route	1.001	W 81 ST S	S UNION AVE	S 33 W AVE	179	9.18	$18,505
TU-132	Signed Route	1.562	CHEROKEE DR	MOHAWK BLVD	CHOCTAW DR	180	8.86	$1,237
TU-121	Signed Route	1.372	E 81 ST S	S ELWOOD AVE	S PEORIA AVE	181	8.84	$25,346
TU-095	Signed Route	0.745	N GILCREASEMUSEUM RD	W APACHE ST	W PINE ST	182	8.84	$590
TU-107	Signed Route	0.675	N 41 W AVE	W APACHE ST	PROPOSED TRAIL	183	8.64	$535
TU-137	Signed Route	0.717	N MEMORIAL DR	E MOHAWK BLVD	CHEROKEE DR	184	8.61	$568
TU-069	Signed Route	3.228	W 31 ST N	N 41st Street W	W EDISON ST	185	8.57	$2,557
TU-080	Signed Route	0.331	E 111 ST S	S LOUISVILLE AVE	S QUEBEC PL	186	8.54	$6,122
TU-193	Trail	0.623	MOOSER CREEK TRAIL ALTERNATIVE	MOOSER CREEK TRAIL	MOOSER CREEK TRAIL	187	8.32	$553,245
TU-185	Bicycle Corridor	2.974	S LYNNLANE RD	E 21 ST S	E 51 ST S	188	8.29	$212,932
TU-201	Trail	0.486	RP TULSA/BIXBY TRAIL	E 131 ST S	RP TULSA/BIXBY TRAIL	189	7.84	$431,744
TU-190	Trail	5.217	MOHAWK/PORT OF CATOOSA TRAIL	N MEMORIAL DR	N 145 E AVE	190	7.74	$4,633,582
TU-182	Trail	0.425	HOWARD BRANCH TRAIL	N ERIE AVE	N YALE AVE	191	7.72	$377,792
TU-138	Signed Route	0.495	N MINGO RD	N MINGO RD	E 56 ST N	192	7.68	$392
TU-202	Trail	0.988	RP TULSA/BIXBY TRAIL	RP TULSA/BIXBY TRAIL	SANDUSKY MULTI-USE TRAIL	193	7.38	$877,549
TU-195	Trail	0.631	SKO SE TRAIL	SKO SE TRAIL	MOHAWK/PORT OF CATOOSA TRAIL	194	7.19	$560,329
TU-207	Trail	5.788	CREEK E/WILL ROGERS TRAIL	CREEK E/WILL ROGERS TRAIL	CREEK E/WILL ROGERS TRAIL	195	6.98	$5,140,144

Table 12: Broken Arrow Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BA-140	S Elm Pl	1	26755	1,025	$51,250
BA-141	S Elm Pl	2	26753	228	$11,400
BA-86	N Aspen Ave	3	23895	791	$39,550
BA-85	N Aspen Ave	4	23894	1,327	$66,350
BA-1	W Kenosha St	5	23025	191	$9,550
BA-87	N Elm Pl	6	21981	203	$10,150
BA-88	N Elm Pl	7	21981	139	$6,950
BA-90	N Elm Pl	9	21401	2,200	$110,000
BA-89	N Elm Pl	10	21398	341	$17,050
BA-45	W Kenosha St	11	20954	391	$19,550
BA-47	W Washington St	12	20029	173	$8,650
BA-21	E Kenosha St	13	19293	3,504	$175,200
BA-34	N Aspen Ave	14	18824	4,752	$237,600
BA-46	W Kenosha St	15	18028	1,160	$58,000
BA-134	N 9th St	16	17799	197	$9,850
BA-135	N 9th St	17	17797	1,655	$82,750
BA-91	W Houston St	18	17561	526	$26,300
BA-92	W Houston St	19	17561	614	$30,700
BA-80	E Kenosha St	20	17171	2,120	$106,000
BA-125	E Kenosha St	21	17070	571	$28,550
BA-126	E Kenosha St	22	17070	2,149	$107,450
BA-73	N 23rd St	23	15916	1,022	$51,100
BA-144	W New Orleans St	24	15703	421	$21,050
BA-145	W New Orleans St	25	15702	1,068	$53,400
BA-146	W New Orleans St	26	15701	266	$13,300
BA-7	S Elm Pl	27	15621	495	$24,750
BA-82	N Aspen Ave	29	14732	30	$1,500
BA-114	E Kenosha St	30	14309	751	$37,550
BA-115	E Kenosha St	31	14309	3,200	$160,000
BA-116	E Kenosha St	32	14309	131	$6,550
BA-6	W Washington St	33	14046	427	$21,350
BA-170	N 23rd St	34	13898	1,383	$69,150
BA-169	N 23rd St	35	13897	2,487	$124,350
BA-61	E 101st St S	36	13053	12	$600
BA-83	N Olive St	37	12845	1,538	$76,900
BA-84	N Olive St	38	12845	1,130	$56,500
BA-74	N 23rd St	39	12419	2,024	$101,200
BA-40	N 9th St	40	12163	1,333	$66,650
BA-10	W New Orleans St	41	11487	240	$12,000
BA-153	S Mingo Rd	43	11001	407	$20,350
BA-154	S Mingo Rd	44	11001	446	$22,300
BA-155	S Mingo Rd	45	11000	565	$28,250
BA-129	W Omaha St	51	10608	426	$21,300
BA-130	W Omaha St	52	10605	198	$9,900
BA-131	W Omaha St	53	10605	461	$23,050
BA-132	W Omaha St	54	10605	271	$13,550
BA-133	W Omaha St	55	10605	1,076	$53,800

Table 12, Continued: Broken Arrow Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BA-66	S Elm Pl	56	10487	674	$33,700
BA-139	W New Orleans St	57	10046	2,115	$105,750
BA-138	W New Orleans St	58	10044	1,088	$54,400
BA-142	E Albany St	59	10034	920	$46,000
BA-143	E Albany St	60	10030	523	$26,150
BA-127	S 23rd St	61	9911	1,247	$62,350
BA-128	S 23rd St	62	9911	459	$22,950
BA-167	E Kenosha St	66	9538	1,633	$81,650
BA-168	E Kenosha St	67	9538	2,409	$120,450
BA-137	N 23rd St	70	9313	2	$100
BA-136	S Lynn Lane Rd	71	9265	3	$150
BA-59	S Aspen Ave	72	9112	523	$26,150
BA-160	E Houston St	73	9028	373	$18,650
BA-159	E Houston St	74	9027	3,790	$189,500
BA-76	N Elm Pl	75	8984	579	$28,950
BA-101	S 9th St	76	8692	701	$35,050
BA-102	S 9th St	77	8692	2,311	$115,550
BA-103	S 9th St	78	8691	194	$9,700
BA-104	S 9th St	79	8691	990	$49,500
BA-20	E Houston St	80	8474	5,393	$269,650
BA-147	E Albany St	81	8336	455	$22,750
BA-148	E Albany St	82	8335	971	$48,550
BA-56	W Albany St	83	8296	406	$20,300
BA-75	S 23rd St	84	8174	5,286	$264,300
BA-60	W Florence St	86	7765	1,428	$71,400
BA-55	W Jasper St	87	7682	224	$11,200
BA-4	E Washington St	88	7659	697	$34,850
BA-2	E New Orleans St	89	7558	1,496	$74,800
BA-161	S Aspen Ave	90	7515	1,383	$69,150
BA-162	S Aspen Ave	91	7513	211	$10,550
BA-163	S Aspen Ave	92	7513	308	$15,400
BA-41	E New Orleans St	93	6729	5,212	$260,600
BA-78	W Florence St	94	6599	2,677	$133,850
BA-121	S Olive St	95	6556	779	$38,950
BA-120	S Olive St	96	6554	845	$42,250
BA-105	S Olive St	97	6508	1,626	$81,300
BA-106	S Olive St	98	6507	444	$22,200
BA-5	W Florence St	99	6461	171	$8,550
BA-166	E Omaha St	100	6423	10	$500
BA-79	S Olive St	101	6281	1,331	$66,550
BA-3	S 9th St	102	6125	2,855	$142,750
BA-54	W Tucson St	103	6123	243	$12,150
BA-72	E Houston St	104	5967	4,863	$243,150
BA-171	W Florence St	105	5893	575	$28,750
BA-172	W Florence St	106	5893	575	$28,750
BA-173	W Florence St	107	5892	237	$11,850
BA-174	W Florence St	108	5892	237	$11,850

Table 12, Continued: Broken Arrow Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BA-67	W Jasper St	109	5805	3,364	$168,200
BA-77	N Elm Pl	110	5757	435	$21,750
BA-110	W Jasper St	111	5617	1,012	$50,600
BA-111	W Jasper St	112	5616	261	$13,050
BA-165	W Tucson St	113	5467	1,734	$86,700
BA-164	W Tucson St	114	5466	1,602	$80,100
BA-156	S Garnett Rd	115	5447	1,780	$89,000
BA-157	S Garnett Rd	116	5447	1,193	$59,650
BA-158	S Garnett Rd	117	5447	491	$24,550
BA-24	E New Orleans St	118	5438	4,024	$201,200
BA-48	S Aspen Ave	119	5425	2,794	$139,700
BA-64	S Olive St	120	4938	897	$44,850
BA-49	S 23rd St	121	4864	160	$8,000
BA-53	W Florence St	122	4856	296	$14,800
BA-25	E Kenosha St	123	4825	5,261	$263,050
BA-37	E Houston St	124	4700	642	$32,100
BA-108	E Washington St	125	4287	2,039	$101,950
BA-107	E Washington St	126	4286	2,791	$139,550
BA-8	E Tucson St	127	4115	417	$20,850
BA-27	E 71st St	128	4005	3,307	$165,350
BA-70	S 9th St	129	3664	400	$20,000
BA-11	E Albany St	130	3405	693	$34,650
BA-9	S Aspen Ave	131	3399	1,856	$92,800
BA-68	E Jasper St	132	3305	6,588	$329,400
BA-51	N Oneta Rd	133	3264	540	$27,000
BA-26	E 71st St	134	3232	5,331	$266,550
BA-149	E Houston St	135	3173	192	$9,600
BA-150	E Houston St	136	3173	1,608	$80,400
BA-109	E Tucson St	137	2769	193	$9,650
BA-65	E 71st St	138	2708	2	$100
BA-69	E Florence St	139	2289	172	$8,600
BA-58	S Olive St	140	2225	30	$1,500
BA-17	N Midway Rd	141	2198	1,973	$98,650
BA-97	S 1st Pl	142	2136	1,025	$51,250
BA-98	S 1st Pl	144	2135	820	$41,000
BA-100	S 1st Pl	143	2135	361	$18,050
BA-99	S 1st Pl	145	2134	825	$41,250
BA-113	S 9th St	146	2106	1,059	$52,950
BA-112	S 9th St	147	2103	688	$34,400
BA-63	S Garnett Rd	148	2034	345	$17,250
BA-38	S Oneta Rd	149	2024	2,355	$117,750
BA-39	S 305th East Ave	150	1697	101	$5,050
BA-13	N Evans Rd	151	1593	3,330	$166,500
BA-30	S Evans Rd	152	1544	402	$20,100
BA-16	N Oak Grove Rd	153	1424	3,912	$195,600
BA-122	N Midway Rd	154	1389	2,323	$116,150
BA-123	N Midway Rd	155	1389	501	$25,050

Table 12, Continued: Broken Arrow Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BA-50	E Albany St	156	1226	2,128	$106,400
BA-71	S 37th St	157	1140	1,577	$78,850
BA-23	E Albany St	158	1096	2,470	$123,500
BA-28	S 305th East Ave	159	1092	16	$800
BA-36	N Oneta Rd	160	1073	3,857	$192,850
BA-35	N Oneta Rd	161	1025	2,397	$119,850
BA-124	N 37th St	162	1019	162	$8,100
BA-19	E Washington St	163	987	1,064	$53,200
BA-42	N Midway Rd	164	890	4,966	$248,300
BA-18	N Oak Grove Rd	165	798	3,726	$186,300
BA-15	E Albany St	166	777	3,683	$184,150
BA-12	N Evans Rd	167	641	62	$3,100
BA-14	S Evans Rd	168	459	1,568	$78,400
BA-44	N Evans Rd	169	426	5,127	$256,350
BA-22	S 37th St	170	185	73	$3,650
BA-31	S Oak Grove Rd	171	183	341	$17,050
BA-29	E Florence St	172	182	1,522	$76,100
BA-43	S 289th East Ave	173	182	48	$2,400
BA-52	E Washington St	174	182	212	$10,600

Table 13: Bixby Prioritized Sidewalk Gaps

Project Number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BX-12	United States Highway 64	1	34003	1,930	$96,500
BX-15	United States Highway 64	2	34003	2,524	$126,200
BX-11	United States Highway 64	3	30003	2,120	$106,000
BX-10	United States Highway 64	4	26000	5,298	$264,900
BX-55	S Mingo Rd	5	11000	761	$38,050
BX-16	E 111th St S	6	10204	5,347	$267,350
BX-4	State Highway 67	7	9801	3,808	$190,400
BX-8	United States Highway 64	9	9500	3,226	$161,300
BX-33	S Memorial Dr	8	9500	1,732	$86,600
BX-3	State Highway 67	10	8701	1,339	$66,950
BX-17	E 121st St S	11	8152	5,291	$264,550
BX-19	S Mingo Rd	12	8031	5,292	$264,600
BX-48	S Mingo Rd	13	8031	5,291	$264,550
BX-2	State Highway 67	14	7901	3,963	$198,150
BX-5	State Highway 67	15	7901	3,969	$198,450
BX-1	State Highway 67	16	7900	631	$31,550
BX-6	State Highway 67	17	7900	2,590	$129,500
BX-13	E 121st St S	18	7502	4,472	$223,600
BX-50	United States Highway 64	19	7200	2,718	$135,900
BX-24	W Florence St	20	6461	5,038	$251,900
BX-21	E 131st St	21	6382	4,337	$216,850
BX-51	United States Highway 64	22	5500	3,471	$173,550
BX-25	E 121st St	23	3729	5,124	$256,200
BX-36	E 151st St S	24	3277	2,641	$132,050
BX-22	E 161st St S	25	3263	5,270	$263,500
BX-18	E 131st St S	26	2750	5,297	$264,850
BX-56	E 131st St S	27	2750	3,257	$162,850
BX-57	E 131st St S	28	2750	1,144	$57,200
BX-27	S Memorial Dr	29	2400	2,575	$128,750
BX-49	S Garnett Rd	30	2034	1,139	$56,950
BX-23	S Yale Pl	31	1741	5,503	$275,150
BX-34	E 141st St S	32	1565	397	$19,850
BX-37	S Mingo Rd	33	1192	5,086	$254,300
BX-39	S Mingo Rd	34	1189	1,284	$64,200
BX-35	E 141st St S	35	1105	5,637	$281,850
BX-45	S Yale Ave	36	1104	5,265	$263,250
BX-20	S Mingo Rd	37	1103	168	$8,400
BX-32	E 161st St S	38	1103	2,828	$141,400
BX-40	E 161st St S	39	1103	5,273	$263,650
BX-41	S Harvard Ave	40	1103	5,215	$260,750
BX-28	E 171st St S	41	680	2,592	$129,600
BX-26	S Mingo Rd	42	605	1,519	$75,950
BX-53	E 171st St S	43	595	1,635	$81,750
BX-42	S Harvard Ave	44	562	1	$50
BX-54	S Harvard Ave	45	437	3	$150
BX-52	S Harvard Ave	46	423	3,775	$188,750
BX-30	E 161st St S	47	335	2	$100
BX-43	E 161st St S	48	325	131	$6,550

Table 13, Continued: Bixby Prioritized Sidewalk Gaps

Project Number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
BX-38	E 161st St S	49	321	1	$50
BX-31	E 141st St S	50	320	3,426	$171,300
BX-46	S Yale Ave	51	320	2,483	$124,150
BX-29	S Sheridan Rd	52	319	5,335	$266,750
BX-44	S Sheridan Rd	53	319	5,271	$263,550
BX-47	S Sheridan Rd	54	319	5,171	$258,550

Table 14: Catoosa Prioritized Sidewalk Gaps

Project Number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
CA-4	State Highway 167	1	10403.00	1,236	$61,800
CA-8	State Highway 167	2	10403.00	1,227	$61,350
CA-2	State Highway 167	3	8801.00	1,914	$95,700
CA-3	State Highway 167	4	8703.00	1,487	$74,350
CA-1	State Highway 167	5	8302.00	3,423	$171,150
CA-5	State Highway 167	6	7702.00	5,298	$264,900
CA-12	S Cherokee St	7	7614.00	292	$14,600
CA-18	E Pine St	8	7612.00	2,814	$140,700
CA-25	E Pine St	9	5800.00	250	$12,500
CA-26	N 161st E Ave	10	5435.00	5,012	$250,600
CA-29	S Cherokee St	11	4351.00	41	$2,050
CA-10	E Pine St	12	4348.00	5,273	$263,650
CA-14	E Pine St	13	4348.00	2,177	$108,850
CA-27	S Cherokee St	14	3269.00	1,396	$69,800
CA-28	S Cherokee St	15	3268.00	773	$38,650
CA-19	W Denbo St	16	3267.00	232	$11,600
CA-23	N 193rd East Ave	17	3262.00	2,045	$102,250
CA-13	E 580 Rd	19	2899.00	2,309	$115,450
CA-21	N 177th East Ave	20	2701.00	5,434	$271,700
CA-11	Tiger Switch Rd	21	2174.00	4,879	$243,950
CA-20	Tiger Switch Rd	22	2174.00	863	$43,150
CA-16	Tiger Switch Rd	23	670.00	3,946	$197,300
CA-15	N Cherokee St	24	668.00	2,177	$108,850
CA-7	E Skelly Dr	26	662.00	908	$45,400
CA-24	Tiger Switch Rd	25	662.00	442	$22,100
CA-22	N 177th East Ave	27	206.00	2,219	$110,950
CA-17	N 225th E Ave	28	205.00	5,029	$251,450
CA-9	S Red Bud Dr	29	195.00	879	$43,950

Table 15: Collinsville Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
CV-23	State Highway 20	1	8501.00	774	$38,700
CV-24	State Highway 20	2	8003.00	393	$19,650
CV-6	State Highway 20	3	5100.00	1,308	$65,400
CV-1	State Highway 20	4	4713.00	2,426	$121,300
CV-5	N 113th East Ave	5	4555.00	4	$200
CV-3	N 5th St	6	2914.00	393	$19,650
CV-10	N Garnett Rd	7	2772.00	1,532	$76,600
CV-17	S 5th St	8	2346.00	880	$44,000
CV-4	S 19th St	9	2315.00	2,350	$117,500
CV-15	E 146th St N	10	2153.00	1,356	$67,800
CV-9	N 19th St	11	2065.00	2,785	$139,250
CV-19	N 19th St	12	2062.00	82	$4,100
CV-20	N 129th East Ave	13	1129.00	1,766	$88,300
CV-2	N 129th East Ave	14	1128.00	3,505	$175,250
CV-18	N 129th East Ave	15	988.00	2,059	$102,950
CV-13	N 97th East Ave	16	982.00	4	$200
CV-12	E 136th St N	17	798.00	295	$14,750
CV-11	Mingo Valley Expy	18	788.00	761	$38,050
CV-21	W Broadway St	19	678.00	2,207	$110,350
CV-22	W Broadway St	20	671.00	912	$45,600
CV-7	E 146th St N	21	617.00	1,442	$72,100
CV-16	E 156th St N	22	610.00	672	$33,600
CV-14	E 156th St N	23	532.00	3,465	$173,250
CV-8	N 97th East Ave	24	452.00	1,061	$53,050
CV-25	E 186th St N	25	340.00	990	$49,500
CV-26	E 186th St N	26	340.00	990	$49,500

Table 16: Coweta Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
CW-17	E 111th St	1	5435.00	2,606	$130,300
CW-22	E 141st St	2	4458.00	3,254	$162,700
CW-6	W South St	3	4359.00	1,254	$62,700
CW-32	E 111th St	4	3262.00	2,408	$120,400
CW-15	Oneta Rd	5	3261.00	109	$5,450
CW-12	E 121st St	6	2718.00	3,335	$166,750
CW-9	S 305th East Ave	7	2177.00	2,645	$132,250
CW-23	E New Orleans St	8	1533.00	475	$23,750
CW-14	S 289th East Ave	9	1460.00	5,277	$263,850
CW-1	S 289th East Ave	10	1448.00	1,308	$65,400
CW-8	S 305th East Ave	11	1088.00	2,624	$131,200
CW-3	E 131st St	13	1010.00	1,383	$69,150
CW-21	E 131st St	12	1010.00	3,265	$163,250
CW-20	W North St	14	770.00	561	$28,050
CW-30	E North St	15	770.00	1,909	$95,450
CW-29	E North St	16	769.00	1,776	$88,800
CW-7	E South St	17	198.00	1,983	$99,150
CW-25	S 305th East Ave	18	196.00	2,631	$131,550
CW-10	S 305th East Ave	19	185.00	1,203	$60,150
CW-13	E 151st St S	20	185.00	1,275	$63,750
CW-19	E 151st St	21	184.00	4,671	$233,550
CW-28	S 273rd East Ave	22	184.00	73	$3,650
CW-2	S 273rd East Ave	25	183.00	37	$1,850
CW-4	S 273rd East Ave	28	183.00	1,240	$62,000
CW-5	S 289th East Ave	29	183.00	1,375	$68,750
CW-11	S 289th East Ave	23	183.00	3,582	$179,100
CW-18	E 121st St	24	183.00	2,648	$132,400
CW-27	E 111th St	26	183.00	15	$750
CW-33	E 111th St	27	183.00	1,249	$62,450
CW-16	E New Orleans St	30	182.00	39	$1,950
CW-24	S 257th East Ave	31	182.00	1,234	$61,700
CW-26	E 131st St	32	182.00	152	$7,600
CW-31	S 273rd East Ave	33	182.00	3,086	$154,300

Table 17: Glenpool Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
GP-40	State Highway 117	1	11800.00	7	$350
GP-6	State Highway 117	2	11700.00	14	$700
GP-39	State Highway 117	3	11300.00	7	$350
GP-1	State Highway 67	4	7401.00	1,445	$72,250
GP-9	State Highway 67	5	7401.00	1,424	$71,200
GP-3	State Highway 67	7	7400.00	5,286	$264,300
GP-4	State Highway 67	8	7400.00	312	$15,600
GP-7	State Highway 67	9	7400.00	374	$18,700
GP-8	State Highway 67	10	7400.00	87	$4,350
GP-10	State Highway 67	6	7400.00	371	$18,550
GP-2	State Highway 67	11	6600.00	367	$18,350
GP-32	E 141st St S	12	6279.00	1,763	$88,150
GP-33	E 141st St S	13	6279.00	2,217	$110,850
GP-34	E 141st St S	14	6277.00	287	$14,350
GP-14	S Elwood Ave	15	4529.00	1,396	$69,800
GP-22	S Elwood Ave	16	4460.00	58	$2,900
GP-18	S Peoria Ave	17	4213.00	3	$150
GP-28	S Elwood Ave	18	3804.00	5,292	$264,600
GP-12	W 141st St S	19	2299.00	2,614	$130,700
GP-13	W 141st St S	20	2294.00	547	$27,350
GP-11	S Elwood Ave	21	2186.00	5,084	$254,200
GP-19	S Peoria Ave	22	1811.00	5,264	$263,200
GP-23	E 141st St S	23	1612.00	2,654	$132,700
GP-17	E 131st St S	24	1585.00	1,386	$69,300
GP-29	W 171st St S	25	1395.00	1,735	$86,750
GP-25	W 126th St S	26	1057.00	5,106	$255,300
GP-26	W 126th St S	27	1057.00	5,166	$258,300
GP-30	S 33rd West Ave	28	1056.00	220	$11,000
GP-38	State Highway 117	29	1056.00	7	$350
GP-27	W 131st St S	30	1055.00	3,148	$157,400
GP-5	W 171st St S	31	522.00	1	$50
GP-24	S Peoria Ave	32	380.00	3,675	$183,750
GP-20	W 161st St S	33	358.00	850	$42,500
GP-15	S 26th West Ave	34	321.00	9	$450
GP-16	Union Ave	35	319.00	5,005	$250,250
GP-36	S 33rd West Ave	36	319.00	828	$41,400
GP-37	State Highway 117	37	319.00	7	$350
GP-31	S 33rd West Ave	38	169.00	795	$39,750
GP-35	S 33rd West Ave	39	169.00	828	$41,400
GP-21	W 161st St S	40	65.00	94	$4,700

Table 18: Jenks Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
JS-47	S Union Ave	1	41805.00	5,555	$277,750
JS-61	E A St	2	21744.00	149	$7,450
JS-43	W Main St	3	18483.00	306	$15,300
JS-60	E A St	4	18483.00	149	$7,450
JS-44	W Main St	5	16235.00	1,305	$65,250
JS-35	W Main St	6	14138.00	4,903	$245,150
JS-33	S Peoria Ave	7	12707.00	4,799	$239,950
JS-3	State Highway 117	8	11801.00	1,554	$77,700
JS-4	State Highway 117	9	11801.00	1,552	$77,600
JS-2	State Highway 117	10	11700.00	118	$5,900
JS-36	W 96th St S	11	10213.00	5,586	$279,300
JS-48	S Peoria Ave	12	8701.00	241	$12,050
JS-13	S Elwood Ave	13	7653.00	10	$500
JS-50	S Peoria Ave	14	6533.00	371	$18,550
JS-59	E A St	15	6528.00	149	$7,450
JS-51	S Peoria Ave	16	6527.00	298	$14,900
JS-52	S Peoria Ave	17	6524.00	460	$23,000
JS-5	W 121st St S	18	5906.00	3,372	$168,600
JS-23	S Elwood Ave	19	5803.00	2,644	$132,200
JS-25	S Peoria Ave	20	5442.00	2,308	$115,400
JS-49	E A St	21	5441.00	789	$39,450
JS-40	W 91st St S	22	5310.00	3,079	$153,950
JS-46	W 121st St S	23	5282.00	1,069	$53,450
JS-1	W 91st St S	24	4843.00	1,988	$99,400
JS-7	S Elwood Ave	25	4529.00	11	$550
JS-34	E 121st St S	26	4253.00	5,292	$264,600
JS-45	W 121st St S	27	4099.00	1,072	$53,600
JS-14	S Elwood Ave	28	3838.00	7,933	$396,650
JS-10	S Elwood Ave	29	3831.00	5,286	$264,300
JS-21	E 111th St S	30	3799.00	4,848	$242,400
JS-37	W 111th St S	31	3795.00	3,265	$163,250
JS-41	W 91st St S	32	3140.00	1,312	$65,600
JS-55	W 91st St S	33	3115.00	1,936	$96,800
JS-56	W 91st St S	34	3114.00	655	$32,750
JS-54	S Union Ave	35	3003.00	5	$250
JS-39	S Union Ave	36	2204.00	2,586	$129,300
JS-6	S Yale Pl	38	1741.00	1,453	$72,650
JS-16	W 111th St S	39	1524.00	377	$18,850
JS-38	W 111th St S	40	1185.00	356	$17,800
JS-29	S Yale Ave	41	1134.00	1,752	$87,600
JS-18	E 121st St S	42	1130.00	1,582	$79,100
JS-19	E 121st St S	43	1130.00	3,776	$188,800
JS-57	E 121st St S	44	1123.00	1,881	$94,050
JS-58	E 121st St S	45	1123.00	514	$25,700
JS-26	W 111th St S	46	1108.00	1,437	$71,850
JS-27	E 111th St S	47	1106.00	1,457	$72,850
JS-30	S Yale Ave	48	1104.00	45	$2,250

Table 18, Continued: Jenks Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
JS-20	S Florence Ave	49	818.00	2,900	$145,000
JS-9	E 126th St S	51	817.00	1,269	$63,450
JS-17	S Harvard Ave	50	817.00	2,662	$133,100
JS-8	E 131st St S	53	544.00	131	$6,550
JS-31	E 131st St S	52	544.00	2,733	$136,650
JS-32	S Lewis Ave	54	489.00	1,235	$61,750
JS-53	S Harvard Ave	55	437.00	1,717	$85,850
JS-11	W 101st St S	56	321.00	1,213	$60,650
JS-15	E 141st St S	57	320.00	1,321	$66,050
JS-28	E 131st St S	58	319.00	1,997	$99,850

Table 19: Owasso Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
OW-5	N 115th East Ave	1	45006.00	2,809	$140,450
OW-16	E 96th St N	2	23493.00	1,254	$62,700
OW-25	N Garnett Rd	3	14392.00	407	$20,350
OW-26	N Garnett Rd	4	14392.00	487	$24,350
OW-13	E 76th St N	5	13403.00	2,970	$148,500
OW-31	E 76th St N	6	12928.00	2,222	$111,100
OW-30	E 76th St N	7	12919.00	743	$37,150
OW-12	E 76th St N	8	10680.00	1,343	$67,150
OW-23	N Garnett Rd	9	10543.00	481	$24,050
OW-22	N Garnett Rd	10	10542.00	1,986	$99,300
OW-29	E 116th St N	11	10243.00	215	$10,750
OW-32	E 76th St N	12	7297.00	560	$28,000
OW-17	E 96th St N	13	7070.00	355	$17,750
OW-27	E 116th St N	14	6427.00	1,102	$55,100
OW-28	E 116th St N	15	6427.00	3,336	$166,800
OW-4	N 115th East Ave	16	6139.00	5,845	$292,250
OW-15	N 129th East Ave	17	5342.00	2,204	$110,200
OW-9	N Mingo Rd	18	5011.00	668	$33,400
OW-11	E 116th St N	19	4910.00	31	$1,550
OW-24	N Garnett Rd	20	4564.00	542	$27,100
OW-35	N 145th Ave E	21	3593.00	482	$24,100
OW-36	N 145th Ave E	22	3593.00	482	$24,100
OW-33	N 145th Ave E	23	3591.00	784	$39,200
OW-34	N 145th Ave E	24	3591.00	784	$39,200
OW-10	N Mingo Rd	25	3576.00	3,567	$178,350
OW-3	N Mingo Rd	26	3431.00	2	$100
OW-14	E 76th St N	27	3200.00	3	$150
OW-18	N Owasso Expy	28	3194.00	364	$18,200
OW-19	N Owasso Expy	29	3194.00	4,169	$208,450

Table 19, Continued: Owasso Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
OW-20	N Owasso Expy	30	3191.00	1,103	$55,150
OW-2	E 106th St N	31	2999.00	631	$31,550
OW-1	E 106th St N	32	2562.00	7	$350
OW-8	N 97th East Ave	33	2141.00	3,494	$174,700
OW-7	N 97th East Ave	34	1488.00	64	$3,200
OW-21	N 129th East Ave	35	1288.00	228	$11,400
OW-6	N 145th East Ave	36	206.00	13	$650

Table 20: Sand Springs Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
SS-3	State Highway 51	1	29302.00	472	$23,600
SS-10	State Highway 51	1	29302.00	458	$22,900
SS-80	State Highway 51	3	26019.00	85	$4,250
SS-84	State Highway 51	4	26009.00	73	$3,650
SS-83	State Highway 51	5	20709.00	73	$3,650
SS-24	W Wekiwa Rd	6	20701.00	2,202	$110,100
SS-37	Wekiwa Rd	7	20701.00	147	$7,350
SS-63	Wekiwa Rd	8	20700.00	350	$17,500
SS-18	State Highway 97	9	16009.00	1,309	$65,450
SS-5	State Highway 97	10	16006.00	1,981	$99,050
SS-12	State Highway 97	11	16005.00	1,987	$99,350
SS-6	State Highway 97	13	16003.00	2,050	$102,500
SS-11	State Highway 97	12	16003.00	2,041	$102,050
SS-29	W Morrow Rd	14	15235.00	2,464	$123,200
SS-68	S Adams Rd	15	14144.00	195	$9,750
SS-69	S Adams Rd	16	14142.00	164	$8,200
SS-13	State Highway 97	17	13809.00	1,311	$65,550
SS-4	State Highway 97	19	13710.00	5,134	$256,700
SS-14	State Highway 97	18	13710.00	5,252	$262,600
SS-28	W Morrow Rd	20	13058.00	741	$37,050
SS-50	W 41st St S	21	12708.00	1,015	$50,750
SS-27	Charles Page Blvd	22	10886.00	5,442	$272,100
SS-74	Broad St	23	10872.00	456	$22,800
SS-7	State Highway 51	24	10004.00	3,274	$163,700
SS-9	State Highway 51	25	9104.00	6,713	$335,650
SS-8	State Highway 51	26	9102.00	2,717	$135,850
SS-72	W 2nd St	27	8706.00	161	$8,050
SS-71	W 2nd St	28	8705.00	182	$9,100
SS-54	W Wekiwa Rd	29	8697.00	2,649	$132,450
SS-79	State Highway 51	30	8319.00	85	$4,250
SS-82	State Highway 51	31	8309.00	73	$3,650
SS-89	S Adams Rd	32	7624.00	87	$4,350
SS-88	S Adams Rd	33	6539.00	87	$4,350

Table 20, Continued: Sand Springs Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
SS-36	S 81st West Ave	34	6165.00	1,821	$91,050
SS-58	W 51st St S	35	5483.00	302	$15,100
SS-1	Avery Dr	36	5142.00	10,033	$501,650
SS-26	Charles Page Blvd	37	4919.00	1,022	$51,100
SS-57	W 41st St S	38	4651.00	812	$40,600
SS-40	N Adams Rd	39	4181.00	1,119	$55,950
SS-38	Connector	40	3806.00	336	$16,800
SS-31	Old Sapulpa Rd	41	3272.00	5,619	$280,950
SS-16	State Highway 97T	42	3263.00	570	$28,500
SS-42	N Wilson Ave	43	3117.00	2,179	$108,950
SS-60	Willow St	44	3070.00	1,709	$85,450
SS-39	S 129th West Ave	45	2915.00	5,296	$264,800
SS-47	E 10th St	46	2903.00	2,796	$139,800
SS-62	E 10th St	47	2720.00	2,498	$124,900
SS-34	E 10th St	48	2263.00	2,431	$121,550
SS-25	W 21st St S	49	2186.00	5,571	$278,550
SS-15	State Highway 97	50	2108.00	4,727	$236,350
SS-56	W 10th St	51	1998.00	1,120	$56,000
SS-61	E 12th St	52	1472.00	2,267	$113,350
SS-32	S 81st West Ave	53	1394.00	2,433	$121,650
SS-41	N Franklin Ave	54	1337.00	3,555	$177,750
SS-87	S Adams Rd	55	1331.00	87	$4,350
SS-78	W 10th St	56	1327.00	681	$34,050
SS-46	Old Sapulpa Rd	57	1325.00	5,733	$286,650
SS-86	S Adams Rd	58	1234.00	87	$4,350
SS-49	N Sand Springs Rd	59	1134.00	1,029	$51,450
SS-59	S 129th West Ave	60	1090.00	2,559	$127,950
SS-76	S 129th West Ave	61	1090.00	26	$1,300
SS-45	S 129th West Ave	62	1089.00	194	$9,700
SS-51	S 129th West Ave	63	1089.00	9	$450
SS-75	S 129th West Ave	64	1089.00	26	$1,300
SS-48	Old North Rd	65	975.00	6,495	$324,750
SS-23	Willow St	66	870.00	3,893	$194,650
SS-44	Shell Creek Rd	67	820.00	119	$5,950
SS-70	W 7th St	68	778.00	536	$26,800
SS-30	W Wekiwa Rd	69	676.00	2,865	$143,250
SS-21	Willow St	70	652.00	954	$47,700
SS-35	N Sand Springs Rd	71	626.00	676	$33,800
SS-43	Shell Creek Rd	72	370.00	6,463	$323,150
SS-77	W 10th St	73	331.00	681	$34,050
SS-73	Broad St	74	321.00	456	$22,800
SS-22	129th West Ave	75	320.00	2,092	$104,600
SS-52	W 56th St S	76	320.00	3,049	$152,450
SS-53	W Wekiwa Rd	77	320.00	619	$30,950
SS-33	S 145th West Ave	78	319.00	692	$34,600

Table 21: Skiatook Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
SK-10	State Highway 20	1	12000.00	2,067	$103,350
SK-5	State Highway 20	2	11800.00	4,054	$202,700
SK-9	State Highway 20	3	11701.00	195	$9,750
SK-4	State Highway 20	4	11501.00	177	$8,850
SK-1	State Highway 20	5	6300.00	656	$32,800
SK-2	State Highway 20	6	6300.00	4,960	$248,000
SK-6	State Highway 11	7	5800.00	3,162	$158,100
SK-12	State Highway 20	8	5700.00	230	$11,500
SK-11	State Highway 20	9	5600.00	222	$11,100
SK-7	State Highway 11	10	4802.00	5,260	$263,000
SK-8	State Highway 11	11	4801.00	676	$33,800
SK-23	N Cincinnati Ave	12	2701.00	186	$9,300
SK-3	State Highway 11	13	2501.00	195	$9,750
SK-38	E 136th St N	14	1811.00	2,302	$115,100
SK-27	N Javine Hill	15	1531.00	1,498	$74,900
SK-45	E 136th St N	16	1155.00	8	$400
SK-22	W 133rd St N	17	1139.00	3,494	$174,700
SK-40	S Osage St	18	1139.00	933	$46,650
SK-39	W 133rd St N	19	1138.00	1,307	$65,350
SK-35	E 126th St N	20	1025.00	2,754	$137,700
SK-34	E 126th St N	21	972.00	1,415	$70,750
SK-37	W Oak St	22	899.00	2,426	$121,300
SK-18	S Lombard Ln	23	896.00	724	$36,200
SK-36	N Lombard Ln	24	896.00	2,597	$129,850
SK-28	N 52nd West Ave	25	705.00	274	$13,700
SK-15	E 5th St	26	603.00	512	$25,600
SK-44	S C St	27	603.00	1,042	$52,100
SK-47	E 5th St	28	603.00	1,487	$74,350
SK-14	W 136th St N	29	600.00	624	$31,200
SK-48	S Osage St	30	381.00	421	$21,050
SK-50	S Osage St	31	381.00	1,492	$74,600
SK-43	N C St	32	322.00	1,335	$66,750
SK-49	S Osage St	33	321.00	1,492	$74,600
SK-19	E 179th St N	34	319.00	2,057	$102,850
SK-20	E 181st St N	35	319.00	933	$46,650
SK-21	N Lousiville Ave	36	319.00	180	$9,000
SK-42	N Urbana Ave	37	319.00	1,417	$70,850
SK-46	N Lewis Ave	38	160.00	27	$1,350
SK-26	Lennapah St	39	105.00	621	$31,050
SK-25	W Oak St	40	104.00	1,290	$64,500
SK-30	W Oak St	41	104.00	1,784	$89,200
SK-33	Lennapah St	42	104.00	2,620	$131,000
SK-32	S Lombard Ln	43	103.00	5,230	$261,500
SK-17	N Lenapah Ave	44	102.00	2,605	$130,250
SK-24	W Country Rd	45	102.00	1,822	$91,100
SK-31	W Country Rd	46	102.00	3,323	$166,150

Table 21, Continued: Skiatook Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
SK-16	N Harvard Ave	47	98.00	1,861	$93,050
SK-13	E 176th St N	48	90.00	1,348	$67,400
SK-41	S Lombard Ln	49	86.00	245	$12,250
SK-29	N Lombard Ln	50	85.00	500	$25,000

Table 22: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-506	S Lewis Ave	1	126.79	3,397	$169,850
TU-449	S Memorial Dr	2	118.69	1,869	$93,450
TU-217	E Skelly Dr	3	114.77	2,661	$133,050
TU-400	S Lewis Ave	4	113.76	2,610	$130,500
TU-431	E 13 Pl	5	111.95	2,505	$125,250
TU-77	W Easton St	6	106.59	377	$18,850
TU-548	Riverside Dr	7	103.74	2,336	$116,800
TU-8	S Cincinnati Ave	8	101.29	796	$39,800
TU-226	E Skelly Dr	9	101.12	1,765	$88,250
TU-377	S Memorial Dr	10	101.01	1,810	$90,500
TU-295	N Lewis Ave	11	100.54	4,380	$219,000
TU-221	E 51st St S	12	99.97	4,163	$208,150
TU-413	E Skelly Dr	13	97.94	2,264	$113,200
TU-392	S Cincinnati Ave	14	97.88	1,910	$95,500
TU-249	S Boulder Ave	15	97.70	371	$18,550
TU-434	E Skelly Dr	16	97.51	2,807	$140,350
TU-364	S Lawton Ave	17	96.91	95	$4,750
TU-483	S Lansing Ave	18	96.02	179	$8,950
TU-497	E 31st St S	19	95.83	1,602	$80,100
TU-382	E 31st St S	20	95.42	4,730	$236,500
TU-213	S Carson Ave	21	95.00	103	$5,150
TU-73	W 12th St	22	94.49	358	$17,900
TU-209	W 12th St	23	94.30	140	$7,000
TU-267	S Elwood Ave	24	93.57	237	$11,850
TU-187	E Skelly Dr	25	93.39	5,812	$290,600
TU-273	E Skelly Dr	26	93.18	3,059	$152,950
TU-194	E John Hope Franklin Blvd	27	93.07	569	$28,450
TU-394	E 5th St	28	91.97	357	$17,850
TU-340	State Highway 11	29	91.90	5,111	$255,550
TU-444	E Skelly Dr	30	91.44	5,292	$264,600
TU-369	E Skelly Dr	31	91.04	5,301	$265,050
TU-179	E 21st St S	32	90.86	1,897	$94,850
TU-62	S Hartford Ave	33	90.58	381	$19,050
TU-345	S Sheridan Rd	34	90.55	218	$10,900
TU-519	W 4th St	35	90.47	344	$17,200
TU-282	State Highway 11	36	90.18	1,093	$54,650
TU-216	E 1st St	37	89.66	138	$6,900

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-367	S Hartford Ave	38	89.53	174	$8,700
TU-1	E Admiral Blvd	39	89.24	409	$20,450
TU-286	S Iroquois Ave	40	88.83	160	$8,000
TU-21	S Jackson Ave	41	88.51	354	$17,700
TU-318	N Guthrie Ave	42	88.45	510	$25,500
TU-196	W Easton St	43	88.25	380	$19,000
TU-408	N Boulder Ave W	44	88.09	375	$18,750
TU-223	W 1st St	45	88.04	558	$27,900
TU-103	N Iroquois Ave	46	87.58	128	$6,400
TU-135	W Easton St	47	86.93	369	$18,450
TU-306	E Skelly Dr	48	85.96	1,873	$93,650
TU-419	E Skelly Dr	49	85.17	5,152	$257,600
TU-97	N Frankfort Ave	50	84.41	323	$16,150
TU-20	S Jackson Ave	51	84.38	392	$19,600
TU-129	S Memorial Dr	52	84.14	3,729	$186,450
TU-410	S Memorial Dr	53	84.13	4,371	$218,550
TU-418	E Skelly Dr	54	83.91	1,712	$85,600
TU-222	N Union Ave	55	83.32	5,528	$276,400
TU-198	S Harvard Ave	56	83.04	852	$42,600
TU-350	Riverside Dr	57	82.89	6,208	$310,400
TU-478	S Denver Ave	58	82.71	162	$8,100
TU-215	E 1st St	59	82.69	226	$11,300
TU-263	S Denver Ave	60	82.50	162	$8,100
TU-414	S Lansing Ave	61	82.38	364	$18,200
TU-533	E 46th St N	62	82.34	4,413	$220,650
TU-357	S Utica Ave	63	82.28	360	$18,000
TU-378	N Lewis Ave	64	81.83	591	$29,550
TU-337	E 41st St S	65	81.67	350	$17,500
TU-26	E 1st Pl	66	81.02	67	$3,350
TU-457	E 1st Pl	67	80.86	67	$3,350
TU-80	N Guthrie Ave	68	80.82	255	$12,750
TU-417	E 51st St S	69	80.75	847	$42,350
TU-347	E 1st Pl	70	80.60	51	$2,550
TU-455	S Lansing Ave	71	80.53	211	$10,550
TU-331	E 91st St S	72	80.52	450	$22,500
TU-536	Dawson Rd	73	80.50	5,870	$293,500
TU-426	E Admiral Pl	74	80.48	3,407	$170,350
TU-121	E 1st Pl	75	80.45	51	$2,550
TU-416	N Lawton Ave	76	80.40	514	$25,700
TU-301	N Union Ave	77	80.19	1,615	$80,750
TU-520	E Skelly Dr	78	80.16	1,821	$91,050
TU-387	S Lawton Ave	79	79.84	316	$15,800
TU-323	E 1st St	80	79.79	179	$8,950
TU-204	Riverside Dr	81	79.59	4,975	$248,750
TU-454	S Heavy Traffic Way	82	79.59	308	$15,400
TU-225	N Lewis Ave	83	79.19	1,380	$69,000
TU-373	E Skelly Dr	84	79.18	1,741	$87,050

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-544	S Memorial Dr	85	79.00	3,989	$199,450
TU-172	E Admiral Blvd	86	78.82	1,218	$60,900
TU-24	E 36th St N	87	78.74	4,289	$214,450
TU-395	E 41st St S	88	78.48	2,775	$138,750
TU-175	S Guthrie Ave	89	78.43	78	$3,900
TU-465	S Guthrie Ave	89	78.43	26	$1,300
TU-521	E 91st St S	91	78.05	509	$25,450
TU-51	S Guthrie Ave	92	78.01	38	$1,900
TU-281	E 71st St S	93	78.00	232	$11,600
TU-299	I- 44 Access Rd	94	77.98	953	$47,650
TU-461	W Edison St	95	77.78	1,837	$91,850
TU-151	E 11th St S	96	77.25	1,329	$66,450
TU-344	W 1st St	97	77.15	75	$3,750
TU-334	E 51st St S	98	77.08	1,110	$55,500
TU-297	S Mingo Rd	99	76.76	4,184	$209,200
TU-193	E Apache St	100	76.51	4,368	$218,400
TU-274	E 11th St S	101	75.83	5,282	$264,100
TU-253	Mohawk Blvd	102	75.50	2,829	$141,450
TU-219	S Lansing Ave	103	75.36	366	$18,300
TU-348	Riverside Pkwy	104	75.05	6,303	$315,150
TU-108	E Admiral Blvd	105	74.86	604	$30,200
TU-115	S Boston Ave	106	74.75	272	$13,600
TU-22	E 71st St S	107	74.48	167	$8,350
TU-368	W 15th St S	108	74.19	300	$15,000
TU-383	S Lawton Ave	109	74.17	367	$18,350
TU-52	S Harvard Ave	110	73.83	2,392	$119,600
TU-477	E Apache St	111	73.55	266	$13,300
TU-492	Martin Luther King Jr Blvd	112	73.50	4,682	$234,100
TU-145	Riverside Dr	113	73.45	3,830	$191,500
TU-462	Riverside Dr	114	73.36	2,686	$134,300
TU-147	E 41st St S	115	72.91	2,921	$146,050
TU-79	E 21st St S	116	72.79	2,298	$114,900
TU-91	E 31st St S	117	72.65	535	$26,750
TU-396	S Pittsburg Ave	118	72.53	397	$19,850
TU-466	S Lewis Ave	119	72.43	1,092	$54,600
TU-188	S Delaware Ave	120	72.28	4,033	$201,650
TU-166	E 14th St	121	72.25	603	$30,150
TU-104	E Broken Arrow Expy	122	72.16	2,974	$148,700
TU-43	E John Hope Franklin Blvd	123	72.11	34	$1,700
TU-218	E John Hope Franklin Blvd	124	72.08	34	$1,700
TU-447	E John Hope Franklin Blvd	125	72.02	34	$1,700
TU-269	E John Hope Franklin Blvd	126	71.96	34	$1,700
TU-54	State Highway 11	127	71.56	2,194	$109,700
TU-120	Riverside Dr	128	71.54	719	$35,950
TU-526	S 91st East Ave	129	71.43	1,636	$81,800
TU-420	E 1st St	130	71.40	94	$4,700
TU-549	E Admiral Blvd	131	71.34	347	$17,350

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-257	N Lewis Ave	132	71.30	482	$24,100
TU-389	I- 44 Access Rd	133	70.89	5,332	$266,600
TU-116	E 21st St S	134	70.86	1,897	$94,850
TU-289	E 31st St S	135	70.76	2,314	$115,700
TU-338	E 11th St S	136	69.91	996	$49,800
TU-245	S Hartford Ave	137	69.43	194	$9,700
TU-37	W 13th St	138	69.34	172	$8,600
TU-200	E 36th St S	139	69.13	5,280	$264,000
TU-312	S Peoria Ave	140	69.12	432	$21,600
TU-233	W Skelly Dr	141	69.11	1,323	$66,150
TU-162	E Skelly Dr	142	68.89	921	$46,050
TU-485	E 11th St S	143	68.41	1,182	$59,100
TU-168	S Sheridan Rd	144	68.19	803	$40,150
TU-443	S Boulder Ave	145	67.81	43	$2,150
TU-270	E Skelly Dr	146	67.78	6,060	$303,000
TU-352	S Memorial Dr	147	67.72	721	$36,050
TU-154	S Peoria Ave	148	67.60	610	$30,500
TU-503	W 71st St S	149	67.56	4,398	$219,900
TU-439	E Skelly Dr	150	67.42	1,354	$67,700
TU-75	E 21st St S	151	67.42	1,017	$50,850
TU-432	S Memorial Dr	152	67.28	5,003	$250,150
TU-504	W 41st St S	153	67.03	4,559	$227,950
TU-241	E Skelly Dr	154	66.49	796	$39,800
TU-214	W Skelly Dr	155	66.47	5,042	$252,100
TU-6	S Memorial Dr	156	66.43	992	$49,600
TU-212	S Memorial Dr	157	66.41	2,655	$132,750
TU-473	S Union Ave	158	66.39	4,007	$200,350
TU-351	E Skelly Dr	159	66.11	2,834	$141,700
TU-89	E 56th St N	160	65.96	3,871	$193,550
TU-427	N Lewis Ave	161	65.92	1,561	$78,050
TU-88	E 1st St	162	65.83	94	$4,700
TU-507	E 51st St S	163	65.75	489	$24,450
TU-464	E Skelly Dr	164	65.47	3,619	$180,950
TU-11	S Columbia Ave	165	65.43	345	$17,250
TU-149	Mohawk Blvd	166	65.37	5,244	$262,200
TU-317	S Lewis Ave	167	64.90	1,140	$57,000
TU-78	W Skelly Dr	168	64.65	824	$41,200
TU-429	E Pine St	169	64.58	4,521	$226,050
TU-346	S 33rd West Ave	170	64.45	2,269	$113,450
TU-437	E 4th Pl	171	64.38	5,277	$263,850
TU-438	S Memorial Dr	172	64.31	1,841	$92,050
TU-303	S Guthrie Ave	173	64.13	39	$1,950
TU-453	W 71st St S	174	64.06	1,132	$56,600
TU-199	S Guthrie Ave	175	63.91	39	$1,950
TU-265	N New Haven Ave	176	63.15	470	$23,500
TU-94	E Apache St	177	63.10	1,464	$73,200
TU-525	W 11th St	178	63.05	1,270	$63,500

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-411	E Skelly Dr	179	62.96	1,134	$56,700
TU-490	Mohawk Blvd	180	62.86	4,743	$237,150
TU-501	E Skelly Dr	181	62.84	2,696	$134,800
TU-159	W Pine St	182	62.31	2,629	$131,450
TU-530	S Cincinnati Ave	183	62.03	3,472	$173,600
TU-514	E Skelly Dr	184	62.02	1,169	$58,450
TU-309	E 41st St S	185	61.92	253	$12,650
TU-136	E Apache St	186	61.75	821	$41,050
TU-84	E 21st St S	187	61.69	491	$24,550
TU-542	Southwest Blvd	188	61.65	298	$14,900
TU-153	Southwest Blvd	189	61.50	2,140	$107,000
TU-550	E Pine St	190	61.32	2,960	$148,000
TU-313	E 41st St S	191	61.25	323	$16,150
TU-349	E 33rd Ct	192	60.88	420	$21,000
TU-287	E 11th St S	193	60.81	2,642	$132,100
TU-343	E Admiral Pl	194	60.33	315	$15,750
TU-72	E Admiral Pl	195	60.22	822	$41,100
TU-545	E 1st St	196	60.15	354	$17,700
TU-244	N Memorial Dr	197	60.10	4,634	$231,700
TU-320	E Admiral Pl	198	59.95	1,689	$84,450
TU-155	S Yale Ave	199	59.91	4,592	$229,600
TU-157	Riverside Dr	200	59.74	1,754	$87,700
TU-415	E 91st St S	201	59.47	1,642	$82,100
TU-236	W 71st St S	202	59.35	277	$13,850
TU-391	W 41st St S	203	59.19	1,186	$59,300
TU-58	N Mingo Traffic Ci	204	59.15	1,043	$52,150
TU-141	E 38th St	205	59.14	381	$19,050
TU-422	E 61st St S	206	59.12	5,009	$250,450
TU-412	S Mingo Rd	207	59.01	1,108	$55,400
TU-242	N Mingo Rd	208	58.94	266	$13,300
TU-210	S Utica Ave	209	58.86	5,287	$264,350
TU-314	E 15th St S	210	58.77	1,325	$66,250
TU-355	E Admiral Pl	211	58.59	1,529	$76,450
TU-460	E Admiral Blvd	212	58.58	1,084	$54,200
TU-476	N 33rd West Ave	213	58.15	9,478	$473,900
TU-446	S Peoria Ave	214	58.10	371	$18,550
TU-537	S 33rd West Ave	215	57.88	1,629	$81,450
TU-158	N Lewis Ave	216	57.70	810	$40,500
TU-484	E Admiral Pl	217	57.15	345	$17,250
TU-524	E 41st St S	218	57.12	4,251	$212,550
TU-510	S Mingo Rd	219	56.98	2,284	$114,200
TU-74	E Admiral Pl	220	56.89	285	$14,250
TU-131	S Sheridan Rd	221	56.87	4,344	$217,200
TU-182	E 15th St	222	56.85	835	$41,750
TU-393	W 51st St S	223	56.52	2,789	$139,450
TU-170	W 41st St S	224	56.49	382	$19,100
TU-511	E 81st St S	225	56.21	4,736	$236,800

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-491	S 129th East Ave	226	56.16	3,642	$182,100
TU-451	S Harvard Ave	227	56.03	1,245	$62,250
TU-118	N Union Ave	228	55.87	561	$28,050
TU-144	N 33rd West Ave	229	55.83	858	$42,900
TU-122	E Skelly Dr	230	55.80	1,779	$88,950
TU-81	N Aspen Ave	231	55.73	1,069	$53,450
TU-71	S Lewis Ave	232	55.73	354	$17,700
TU-12	N 23rd St	233	55.53	110	$5,500
TU-55	S Mingo Rd	234	55.45	288	$14,400
TU-211	E Admiral Pl	236	55.07	288	$14,400
TU-150	E 41st St S	237	54.98	1	$50
TU-255	S Yale Ave	238	54.95	241	$12,050
TU-305	E 41st St S	239	54.95	1,054	$52,700
TU-130	Southwest Blvd	240	54.64	3,192	$159,600
TU-296	S Memorial Dr	241	54.62	2,671	$133,550
TU-46	S Elwood Ave	242	54.59	5,286	$264,300
TU-488	N Mingo Rd	243	54.46	251	$12,550
TU-2	E 46th St N	244	54.29	1,958	$97,900
TU-87	S 33rd West Ave	245	54.25	837	$41,850
TU-228	W 41st St S	246	54.09	2,408	$120,400
TU-229	E 41st St S	247	54.07	844	$42,200
TU-336	E 46th St N	248	53.91	1,954	$97,700
TU-110	N Aspen Ave	249	53.87	2,159	$107,950
TU-85	W 41st St S	250	53.67	1	$50
TU-424	S Delaware Ave	251	53.65	2,553	$127,650
TU-86	S Union Ave	252	53.64	3,685	$184,250
TU-541	State Highway 11	253	53.46	2,198	$109,900
TU-518	S Memorial Dr	254	53.43	880	$44,000
TU-546	S Union Ave	255	53.40	5,288	$264,400
TU-271	N Gilcrease Museum Rd	256	53.31	68	$3,400
TU-480	E 41st St S	258	53.29	7,555	$377,750
TU-515	Martin Luther King Jr Blvd	259	53.13	926	$46,300
TU-362	Riverside Dr	260	53.06	581	$29,050
TU-300	S 145th East Ave	261	52.88	1,648	$82,400
TU-146	E Omaha St	262	52.68	1,886	$94,300
TU-260	E 36th St N	263	52.66	1,399	$69,950
TU-509	N 23rd St	264	52.56	3,996	$199,800
TU-445	E 36th St N	265	52.51	705	$35,250
TU-126	S Memorial Dr	266	52.39	1,067	$53,350
TU-248	E 81st St	267	52.37	272	$13,600
TU-183	N 49th West Ave	268	52.31	612	$30,600
TU-98	S Atlanta Pl	269	52.27	568	$28,400
TU-5	State Highway 11	270	52.21	1,691	$84,550
TU-311	S Yale Ave	271	52.02	3,162	$158,100
TU-4	N Union Ave	272	51.82	3,627	$181,350
TU-127	Martin Luther King Jr Blvd	273	51.80	78	$3,900
TU-48	S 33rd West Ave	274	51.78	491	$24,550

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-208	Charles Page Blvd	275	51.63	1,108	$55,400
TU-14	S Harvard Ave	276	51.58	4,400	$220,000
TU-41	S Memorial Dr	277	51.50	1,290	$64,500
TU-341	S Memorial Dr	277	51.50	1,290	$64,500
TU-472	E 41st St S	279	51.47	377	$18,850
TU-65	Riverside Dr	280	51.39	5,677	$283,850
TU-93	S 145th East Ave	281	51.26	5,282	$264,100
TU-247	S Elwood Ave	282	51.25	5,896	$294,800
TU-375	N Lewis Ave	283	51.07	2,584	$129,200
TU-186	N 23rd St	284	50.98	765	$38,250
TU-57	S Mingo Rd	285	50.97	285	$14,250
TU-258	E Admiral Pl	286	50.94	674	$33,700
TU-359	S Harvard Ave	289	50.87	4,567	$228,350
TU-529	E 81st St S	290	50.83	1,601	$80,050
TU-63	S Cincinnati Ave	291	50.79	215	$10,750
TU-278	Martin Luther King Jr Blvd	292	50.78	2,654	$132,700
TU-133	E 51st St S	293	50.69	1,658	$82,900
TU-185	S Union Ave	294	50.61	4,415	$220,750
TU-353	S Memorial Dr	295	50.58	1,227	$61,350
TU-448	E 11th St S	296	50.44	684	$34,200
TU-173	E Skelly Dr	297	50.34	2,349	$117,450
TU-177	Charles Page Blvd	298	50.13	1,367	$68,350
TU-328	E 36th St S	299	50.06	2,407	$120,350
TU-540	Riverside Dr	300	49.96	2,016	$100,800
TU-64	S 33rd West Ave	301	49.91	657	$32,850
TU-69	E 91st St S	302	49.82	4,189	$209,450
TU-235	E Skelly Dr	303	49.70	2,689	$134,450
TU-254	W 46th St N	304	49.68	1,633	$81,650
TU-252	E 21st St S	306	49.44	5,287	$264,350
TU-539	E 51st St S	307	49.44	993	$49,650
TU-134	S Lynn Lane Rd	308	49.25	5,283	$264,150
TU-474	Dawson Rd	309	49.13	2,090	$104,500
TU-384	E 41st St S	310	49.09	1,436	$71,800
TU-559	State Highway 11	311	48.87	44	$2,200
TU-169	E 61st St S	312	48.83	235	$11,750
TU-502	E 61st St S	312	48.83	235	$11,750
TU-259	S Union Ave	314	48.76	201	$10,050
TU-246	N 77th East Ave	315	48.69	973	$48,650
TU-441	S Mingo Rd	317	48.42	151	$7,550
TU-47	W 71st St S	318	48.38	1,085	$54,250
TU-268	E 41st St S	319	48.33	761	$38,050
TU-380	Mohawk Blvd	320	48.29	873	$43,650
TU-13	S Lynn Lane Rd	321	48.24	5,275	$263,750
TU-470	S Lynn Lane Rd	322	48.24	144	$7,200
TU-105	N Sheridan Rd	323	47.91	5,734	$286,700
TU-468	S Harvard Ave	324	47.80	3,085	$154,250
TU-178	E 31st St S	325	47.46	284	$14,200

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-527	S Lynn Lane Rd	326	47.33	755	$37,750
TU-176	E 61st St S	327	47.29	1,497	$74,850
TU-112	S Garnett Rd	328	47.10	2,918	$145,900
TU-456	N Mingo Rd	329	47.03	419	$20,950
TU-325	S Mingo Rd	330	46.86	4,267	$213,350
TU-404	State Highway 11	331	46.77	404	$20,200
TU-90	N Yale Ave	332	46.45	1,872	$93,600
TU-399	S Memorial Dr	333	46.44	1,206	$60,300
TU-555	E 4th Pl	334	46.25	5,292	$264,600
TU-552	E Pine St	335	46.19	5,269	$263,450
TU-436	N Memorial Dr	336	46.18	1,011	$50,550
TU-381	Riverside Pky	338	46.02	2,474	$123,700
TU-288	S 193rd East Ave	339	45.97	445	$22,250
TU-276	E 21st St S	341	45.79	5,283	$264,150
TU-280	N Garnett Rd	342	45.75	417	$20,850
TU-307	E 41st St S	343	45.40	303	$15,150
TU-70	N 129th East Ave	344	45.31	168	$8,400
TU-192	N 129th East Ave	344	45.31	5,392	$269,600
TU-390	S 161st East Ave	346	45.30	5,265	$263,250
TU-113	E Apache St	347	45.20	1,190	$59,500
TU-261	E 31st St S	348	45.19	1,295	$64,750
TU-523	E 56th St N	349	45.14	642	$32,100
TU-101	N Yale Ave	350	44.86	3,624	$181,200
TU-327	S Delaware Ave	351	44.84	263	$13,150
TU-535	E 91st St S	352	44.72	216	$10,800
TU-40	W Apache St	353	44.48	419	$20,950
TU-164	E 36th St S	354	44.21	5,267	$263,350
TU-442	E 36th St N	355	44.20	5,247	$262,350
TU-205	State Highway 266	356	44.06	3,855	$192,750
TU-291	N Mingo Rd	357	43.97	4,124	$206,200
TU-469	S 101st East Ave	358	43.66	3,825	$191,250
TU-335	E Admiral Pl	359	43.44	1,871	$93,550
TU-238	W 41st St S	360	43.39	600	$30,000
TU-206	E Admiral Pl	361	43.33	2,559	$127,950
TU-279	S Harvard Ave	362	43.31	2,474	$123,700
TU-498	E Admiral Pl	364	43.23	274	$13,700
TU-557	E Admiral Pl	364	43.23	274	$13,700
TU-513	S Utica Ave	366	43.17	218	$10,900
TU-237	W 46th St N	367	43.05	28	$1,400
TU-398	E Pine St	368	43.03	2,864	$143,200
TU-9	S Lewis Ave	369	43.02	238	$11,900
TU-207	E 111th St S	370	42.79	3,933	$196,650
TU-356	Dawson Rd	371	42.33	501	$25,050
TU-354	S 33rd West Ave	373	42.14	552	$27,600
TU-106	S Union Ave	374	42.00	2,684	$134,200
TU-83	E 31st St S	375	41.99	1,549	$77,450
TU-319	W Main St	376	41.91	505	$25,250

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-330	W Main St	376	41.91	7	$350
TU-109	N Osage Dr	378	41.33	4,102	$205,100
TU-283	N Memorial Dr	379	41.31	1,004	$50,200
TU-114	S Hudson Ave	381	41.19	776	$38,800
TU-262	S Union Ave	383	41.06	1,274	$63,700
TU-315	E 31st St S	384	40.98	2,615	$130,750
TU-342	E Admiral Pl	385	40.96	395	$19,750
TU-517	E 21st St S	386	40.71	2,414	$120,700
TU-543	W 71st St S	387	40.53	495	$24,750
TU-379	Southwest Blvd	388	40.45	833	$41,650
TU-68	N Gilcrease Museum Rd	389	40.43	878	$43,900
TU-23	W 51st St S	391	40.40	827	$41,350
TU-553	E Admiral Pl	392	40.18	366	$18,300
TU-28	E Skelly Dr	393	40.08	3,174	$158,700
TU-66	S 225th East Ave	394	40.07	4,257	$212,850
TU-16	State Highway 266	396	39.49	3,854	$192,700
TU-44	S Mingo Rd	397	39.31	334	$16,700
TU-496	E 4th St	398	39.27	1,725	$86,250
TU-407	E 38th St	399	39.25	1,970	$98,500
TU-230	N Gilcrease Museum Rd	400	39.22	1,198	$59,900
TU-231	E Virgin St	401	39.22	878	$43,900
TU-475	W 51st St S	402	39.18	323	$16,150
TU-493	S Union Ave	403	39.12	1,142	$57,100
TU-92	N Garnett Rd	404	38.97	394	$19,700
TU-277	N Yale Ave	405	38.94	1,147	$57,350
TU-324	S Delaware Ave	406	38.93	1,194	$59,700
TU-61	E 56th St N	408	38.66	135	$6,750
TU-142	Gilcrease Museum Rd	409	38.63	5,596	$279,800
TU-332	E Virgin St	410	38.37	1,595	$79,750
TU-495	S 79th East Ave	411	38.32	1,277	$63,850
TU-425	E 101st St S	412	38.30	3,961	$198,050
TU-534	E 46th St N	413	38.29	5,068	$253,400
TU-99	S Mingo Rd	414	38.28	4,535	$226,750
TU-360	N Memorial Dr	415	38.20	93	$4,650
TU-152	E 38th St	416	38.04	1,904	$95,200
TU-452	N Garnett Rd	417	37.95	3,227	$161,350
TU-167	E 46th St N	419	37.73	5,069	$253,450
TU-32	S Union Pl	420	37.55	962	$48,100
TU-467	S Mingo Rd	421	37.46	955	$47,750
TU-463	S Utica Ave	422	37.26	2,190	$109,500
TU-388	E 36th St S	423	37.23	2,638	$131,900
TU-123	E Pine St	424	36.84	4,932	$246,600
TU-38	W Edison St	425	36.67	1,506	$75,300
TU-290	S Union Ave	426	36.61	785	$39,250
TU-489	E 51st St S	427	36.51	1,360	$68,000
TU-49	N 49th West Ave	429	36.37	2,284	$114,200
TU-272	E 121st St S	430	36.23	242	$12,100

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-137	N Mingo Rd	431	36.19	3,638	$181,900
TU-7	S 145th East Ave	432	36.18	5,277	$263,850
TU-95	E Pine St	433	36.12	1,971	$98,550
TU-25	State Highway 266	434	36.11	1,578	$78,900
TU-376	N 49th West Ave	435	36.08	2	$100
TU-538	S Yale Ave	436	36.06	2,361	$118,050
TU-440	N Mingo Rd	437	36.00	4,412	$220,600
TU-264	Gilcrease Museum Rd	439	35.94	3,915	$195,750
TU-180	W Edison St	440	35.74	773	$38,650
TU-298	N Aspen Ave	441	35.73	926	$46,300
TU-35	E Pine St	444	35.38	1,003	$50,150
TU-304	E Pine St	444	35.38	1,157	$57,850
TU-160	N 129th East Ave	446	35.36	4,868	$243,400
TU-117	N Mingo Rd	447	35.14	299	$14,950
TU-165	N Mingo Rd	447	35.14	526	$26,300
TU-386	E 31st St S	450	35.08	4,773	$238,650
TU-531	E Pine St	452	34.96	532	$26,600
TU-250	S Memorial Dr	453	34.91	223	$11,150
TU-339	N Mingo Rd	454	34.86	6,753	$337,650
TU-53	E 36th St N	456	34.79	3,172	$158,600
TU-50	N 41st W Ave	457	34.59	2,592	$129,600
TU-82	E 51st St S	458	34.51	2,765	$138,250
TU-321	Mohawk Blvd	459	34.50	821	$41,050
TU-358	State Highway 266	461	34.39	5,491	$274,550
TU-532	E 36th St N	462	34.36	2,464	$123,200
TU-174	N 53rd W Ave	463	34.32	7,841	$392,050
TU-156	W 61st St S	464	34.31	2,852	$142,600
TU-34	W 81st St S	465	34.30	1,587	$79,350
TU-308	S Union Ave	466	34.15	677	$33,850
TU-30	Riverside Dr	467	34.13	1,761	$88,050
TU-56	E 21st St S	468	33.89	5,290	$264,500
TU-224	W Newton St	469	33.86	878	$43,900
TU-163	S Elwood Ave	470	33.78	1,058	$52,900
TU-234	Martin Luther King Jr Blvd	471	33.69	1,047	$52,350
TU-397	W 81st St S	472	33.69	5,910	$295,500
TU-482	W 41st St S	473	33.67	144	$7,200
TU-36	S Sheridan Rd	474	33.64	1,289	$64,450
TU-161	E Pine St	475	33.52	5,270	$263,500
TU-202	W Apache St	476	33.46	2,482	$124,100
TU-294	E 31st St S	477	33.46	2,456	$122,800
TU-371	N Garnett Rd	478	33.35	5,275	$263,750
TU-293	W 51st St S	479	33.32	1,314	$65,700
TU-406	E 101st St S	480	33.19	2,247	$112,350
TU-560	N 49th West Ave	481	32.84	515	$25,750
TU-558	N Gilcrease Museum Rd	482	32.74	352	$17,600
TU-481	S 145th East Ave	484	32.60	3,638	$181,900
TU-125	E 121st St S	485	32.59	5,006	$250,300

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-522	E 101st St S	486	32.53	5,292	$264,600
TU-39	E 91st St S	487	32.44	4,415	$220,750
TU-10	E Admiral Pl	488	32.44	5,194	$259,700
TU-486	E 101st St S	489	32.40	3,322	$166,100
TU-385	N Aspen Ave	490	32.11	692	$34,600
TU-243	State Highway 11	492	31.66	1,747	$87,350
TU-111	E Port Rd	494	31.34	10,253	$512,650
TU-562	N Lewis Ave	495	31.22	50	$2,500
TU-333	57th West Ave	496	30.94	4,283	$214,150
TU-450	E 81st St S	498	30.78	1,679	$83,950
TU-322	W 81st St S	499	30.67	687	$34,350
TU-285	E Port Rd	500	30.64	10,251	$512,550
TU-189	S Elwood Ave	501	30.55	5,271	$263,550
TU-190	E 41st St S	502	30.45	4,773	$238,650
TU-403	E Apache St	503	30.29	2,649	$132,450
TU-76	S Lynn Lane Rd	504	30.27	756	$37,800
TU-138	E 36th St N	505	30.01	4,840	$242,000
TU-19	S Peoria Ave W	506	29.90	97	$4,850
TU-42	S Peoria Ave W	506	29.90	1,236	$61,800
TU-29	S Lynn Lane Rd	508	29.88	4,604	$230,200
TU-459	E Admiral Pl	509	29.86	5,278	$263,900
TU-119	E 91st St S	510	29.86	4,798	$239,900
TU-374	E 36th St N	511	29.84	2,702	$135,100
TU-3	N Garnett Rd	513	29.79	5,434	$271,700
TU-240	S Yale Ave	514	29.68	736	$36,800
TU-326	N 129th East Ave	515	29.64	5,185	$259,250
TU-363	E 31st St S	516	29.51	2,538	$126,900
TU-266	S Sheridan Rd	517	29.40	289	$14,450
TU-27	E Apache St	518	29.35	2,797	$139,850
TU-310	W 71st St S	520	28.96	4,778	$238,900
TU-561	State Highway 11	521	28.78	5	$250
TU-423	N 177th East Ave	522	28.65	517	$25,850
TU-251	S Delaware Ave	524	28.63	7,033	$351,650
TU-435	S Sheridan Rd	525	28.42	5,158	$257,900
TU-17	S 193rd East Ave	526	28.10	1,970	$98,500
TU-171	N Mingo Rd	527	27.93	2,124	$106,200
TU-232	S 145th East Ave	528	27.92	3,752	$187,600
TU-275	S Sheridan Rd	529	27.69	96	$4,800
TU-284	E 121st St S	530	27.67	1,834	$91,700
TU-195	Southwest Blvd	531	27.67	558	$27,900
TU-67	E Port Rd	532	27.66	1,005	$50,250
TU-433	E Port Rd	532	27.66	1,030	$51,500
TU-201	S Lynn Lane Rd	534	27.62	5,275	$263,750
TU-421	N 23rd St	535	27.48	4,919	$245,950
TU-203	E 31st St S	536	27.45	2,648	$132,400
TU-220	E 111th St S	537	27.41	5,282	$264,100
TU-554	E 31st St S	539	27.29	5,280	$264,000

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-516	W Apache St	540	27.15	2,580	$129,000
TU-148	S Delaware Ave	541	27.08	2,081	$104,050
TU-458	N 177th East Ave	542	27.02	39	$1,950
TU-316	N Harvard Ave	543	26.71	2,576	$128,800
TU-494	S Yale Ave	544	26.67	5,279	$263,950
TU-100	E 11th St S	545	26.66	5,287	$264,350
TU-45	W 81st St S	548	26.58	166	$8,300
TU-96	N 141st E Ave	549	26.07	5,642	$282,100
TU-128	E Port Rd	550	26.01	252	$12,600
TU-181	E Port Rd	550	26.01	252	$12,600
TU-430	S Elwood Ave	552	25.87	4,928	$246,400
TU-528	W 51st St S	553	25.84	3,258	$162,900
TU-505	E 31st St S	554	25.45	3,962	$198,100
TU-471	Riverside Dr	555	25.32	3,315	$165,750
TU-197	N 129th East Ave	557	25.20	4,651	$232,550
TU-60	E Apache St	558	24.94	3,472	$173,600
TU-512	E 11th St S	559	24.61	5,273	$263,650
TU-329	S 161st East Ave	560	24.50	4,554	$227,700
TU-405	S 145th East Ave	561	24.50	855	$42,750
TU-227	Mohawk Blvd	562	24.44	4,714	$235,700
TU-132	S 193rd East Ave	563	24.41	4,823	$241,150
TU-139	E 11th St S	564	24.37	8	$400
TU-500	E 11th St S	565	24.28	5,296	$264,800
TU-143	S 193rd East Ave	566	24.26	5,283	$264,150
TU-361	E 11th St S	568	24.06	10,117	$505,850
TU-487	S Elwood Ave	569	23.90	1,313	$65,650
TU-15	W 81st St S	570	23.89	5,269	$263,450
TU-302	E Admiral Pl	571	23.81	5,289	$264,450
TU-401	W Apache St	572	23.63	2,901	$145,050
TU-184	S Utica Ave	573	23.59	207	$10,350
TU-366	W 31st St N	574	23.43	4,011	$200,550
TU-556	E 31st St S	576	23.17	5,212	$260,600
TU-31	S 161st East Ave	578	23.13	92	$4,600
TU-33	S 161st East Ave	578	23.13	83	$4,150
TU-59	S 161st East Ave	578	23.13	83	$4,150
TU-102	S 161st East Ave	578	23.13	83	$4,150
TU-239	S 161st East Ave	578	23.13	92	$4,600
TU-499	S 161st East Ave	578	23.13	92	$4,600
TU-547	S 225th East Ave	584	23.11	4,686	$234,300
TU-292	S Lewis Ave	585	23.02	238	$11,900
TU-107	N 145th E Ave	586	22.82	12	$600
TU-256	N 145th E Ave	586	22.82	594	$29,700
TU-402	N Osage Dr	588	22.22	6	$300
TU-409	N Osage Dr	588	22.22	27	$1,350
TU-551	E 101st St S	591	22.16	1,729	$86,450
TU-140	E 21st St S	594	21.89	24	$1,200
TU-18	Mohawk Blvd	595	21.71	39	$1,950

Table 22, Continued: Tulsa Prioritized Sidewalk Gaps

Project number	Street	Prioritization Rank	Prioritization Score	Length (Feet)	Estimated Project Cost
TU-372	E Admiral Pl	596	21.44	5,756	$287,800
TU-479	S 257th East Ave	597	21.10	5,265	$263,250
TU-124	N 41st W Ave	598	20.75	882	$44,100
TU-508	E Admiral Pl	599	20.63	10,244	$512,200
TU-365	N 225th E Ave	600	20.39	567	$28,350
TU-428	S Louisville Ave	601	18.93	5,284	$264,200
TU-370	W Apache St	602	18.12	399	$19,950
TU-191	N 41st W Ave	603	17.11	518	$25,900

D COST ESTIMATE DETAILS

Cost estimates for construction of recommendations were developed to complement the Plan. They were developed by identifying pay items and establishing rough per-mile quantities. Unit costs are based on 2015 dollars and were assigned based on historical cost data from Oklahoma Department of Transportation bid prices and the estimator's experience and judgement.

The costs shown reflect only the cost associated with construction of the particular bicycle facility indicated and do not reflect other costs that may be associated with a larger project such as signal timing assessment and design. Costs considered in the estimate include pavement markings, standard signage for the facility type, pavement, curb and gutter, limited grading, and sidewalk as appropriate. Landscaping, drainage improvements, maintenance of traffic, and utility adjustments were also considered as percentages of the calculated project cost, as appropriate. The costs are intended to be general and used for planning purposes. A 10 to 30 percent contingency is applied to the cost for each item based on the type of project. The component unit costs for each facility type are detailed in the first set of tables in this appendix.

It is worth noting a number of assumptions for particular facility types:

- Urban Signed Route v. Rural Signed Route: sign frequency for urban signed routes is assumed to be greater than rural ones owing to a greater density of turns and greater number of streets involved. Most rural signed routes in this Plan are along county roads and have a significantly lower density of turns.

- Trail v. Sidepath:
    - Both of these facilities are assume to be 10-foot asphalt paths.
    - Both facility costs include earthwork and excavation (sidewalk removal for sidepath), but the trail cost also includes grading and fill to account for a 20-foot wide disturbance in open land.
    - Both costs incorporate curb ramps and crosswalks at intersections, with a greater frequency assumed for the sidepath. The sidepath cost also includes driveway adjustments and raised crossings.
- Urban Signed Route, Shared Lane Marking, Priority Shared Lane Marking, Bike Lane and Buffered Bike Lane costs all include replacement of storm grates with bicycle-safe grates to ensure bicyclists' safety when riding along the road edge.
- The Cycle Track cost assumes a street-level facility separated from traffic by flexible delineators.
- Bike Lane, Buffered Bike Lane and Cycle Track costs include the cost for eradication of existing pavement markings. In many cases, the recommended facilities will be implemented as part of resurfacing programs, and this cost will not be applicable, but the goal was to provide a conservative (high) estimate.

It is also worth noting what is NOT included in these bicycle facility cost estimates:

- Signal adjustments including changes to signal timing or installation of new signals
- Intersection crossing treatments that may be necessary where a Signed Route on a local street crosses a major arterial at an unsignalized location
- Surveying, engineering design, right-of-way acquisition, addition of closed drainage systems, mobilization or future maintenance.

Construction costs will vary based on the ultimate project scope (i.e. combination with other projects) and economic conditions at the time of construction.

Live Excel files of these cost estimates have been provided to INCOG so costs may be scaled in future years and so elements may be altered as local designers see fit once a project moves to implementation.

Signed Route (Rural)

Includes: sign and post.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Sign Panel (Class I)	EA	3	$150.00	$396	1 Sign every 4000 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	3	$100.00	$264	
Subtotal				**$660**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$66.00	$66	
			Subtotal	**$726**	
			10% Contingency	$73	
			Total Estimated Cost	**$800**	

→ **$0.15** **Per Linear Foot**

Signed Route (Urban)

Includes: sign and post.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Sign Panel (Class I)	EA	13	$150.00	$1,980	1 Sign every 800 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	13	$100.00	$1,320	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$15,268**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$1,527.00	$1,527	
			Subtotal	**$16,795**	
			10% Contingency	$1,680	
			Total Estimated Cost	**$18,500**	

→ **$3.50** **Per Linear Foot**

Shared Lane Markings (Sharrows)

Includes: shared lane pavement marking at 250 foot spacing. No markings on existing roadway require removal.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Symbol	EA	42	$250.00	$10,560	1 Symbol every 250 feet per side of the road
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$27,528**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$2,753.00	$2,753	
			Subtotal	**$30,281**	
			10% Contingency	$3,028	
			Total Estimated Cost	**$33,400**	

→ **$6.33** **Per Foot**

Priority Shared Lane Markings

Includes: shared lane pavement marking at 125 foot spacing with green color bracketing symbol. No markings on existing roadway require removal.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Symbol	EA	84	$250.00	$21,120	1 Symbol every 125 feet per side of the road
Green Bike Lane Paint	SF	5,069	$4.00	$20,275	6'x10' color at $325 per gal./100sf per gal. rounded to $4/sf
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$58,363**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$5,836.00	$5,836	
			Subtotal	**$64,199**	
			20% Contingency	$12,840	
			Total Estimated Cost	**$77,100**	

→ **$14.60** **Per Foot**

Bike Lanes

Includes: bicycle lane markings in both directions with bicycle lane signs. Up to 2 traffic lane lines removed.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	21,120	$0.75	$15,840	4 solid lines entire length
Thermoplastic Pavement Marking Symbol	EA	53	$250.00	$13,200	1 Symbol every 200 feet, each side of road
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Eradication (Skip Lines)	LF	2,640	$0.50	$1,320	eradicate 2 skip lines
Replace Skip Lines	LF	2,640	$2.60	$6,864	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$54,192**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$5,419.00	$5,419	
			Subtotal	**$59,611**	
			20% Contingency	$11,922	
			Total Estimated Cost	**$71,600**	→ **$13.56** **Per Linear Foot**

Buffered Bike Lane

Includes: add buffer markings to existing roadway in both directions with bicycle lane signs. Eradicate and reinstall lane lines on road.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	25,608	$0.75	$19,206	2 solid lines entire length, each side of road, and gore for buffer
Thermoplastic Pavement Marking Buffer Lines (6")	LF	1,056	$1.00	$1,056	1 solid line, 4 feet long, every 40 feet
Thermoplastic Pavement Marking Symbol	EA	53	$250.00	$13,200	1 Symbol every 200 feet, each side of road
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Eradication (Skip Lines)	LF	2,640	$0.50	$1,320	eradicate 2 skip lines
Replace Skip Lines	LF	2,640	$0.75	$1,980	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Subtotal				**$53,730**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$5,373.00	$5,373	
			Subtotal	**$59,103**	
			20% Contingency	$11,821	
			Total Estimated Cost	**$71,000**	→ **$13.45** **Per Foot**

Cycle Track - Retrofit with Flexible Delineators

Includes: Cycle Track with no widening.Note: Cost may be adjusted for some cycle track recommendations where design is intended to be two-way on one side of street.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	25,608	$0.75	$19,206	2 solid lines entire length, each side of road, and gore for buffer
Thermoplastic Pavement Marking Buffer Lines (6")	LF	1,056	$1.00	$1,056	1 solid line, 4 feet long, every 40 feet
Thermoplastic Pavement Marking Symbol	EA	53	$250.00	$13,200	1 Symbol every 200 feet, each side of road
Sign Panel (Class I)	EA	20	$150.00	$3,000	1 Sign every 500 feet, each side of road
Steel Sign Post (2x2 Inch Tubing)	EA	20	$100.00	$2,000	
Eradication (Skip Lines)	LF	2,640	$0.50	$1,320	eradicate 2 skip lines
Replace Skip Lines	LF	2,640	$0.75	$1,980	
Bicycle Safe Grate	EA	18	$680.00	$11,968	Every 600', each side of road
Flexible Delineators	EA	528	$58.00	$30,624	1 every 20' each side
Subtotal				**$84,354**	
Lump Sum Items					
Maintenance of Traffic (10%)	LS	1.00	$8,435.00	$8,435	
			Subtotal	**$92,789**	
			30% Contingency	$27,837	
			Total Estimated Cost	**$120,700**	→ **$22.86** **Per Foot**

Sidepath

Includes: Removal of existing sidewalk for a 10' wide curb-side path with markings,signage, and intersection crosswalk/curb ramp improvements.

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	1,320	$0.75	$990	1 dashed lines entire length
Sign Panel (Class I)	EA	18	$150.00	$2,640	2 Sign every 600 feet (back-to-back on one post)
Steel Sign Post (2x2 Inch Tubing)	EA	9	$100.00	$900	
Earthwork, Excavation	CY	3,911	$20.00	$78,222	10 wide disturbance / 2 feet depth (incl. sidewalk removal)
Aggregate Base Course	CY	1,956	$40.00	$78,222	10 feet width, 1 feet depth
Asphalt Surface Course	TON	587	$85.00	$49,867	10 feet width and 2" depth, 1.8 Ton/CY
Asphalt Base Course	TON	1,760	$70.00	$123,200	10 feet width and 0.5 feet depth, 1.8 Ton/CY
Geotextile Filter Cloth	SY	5867	$3.00	$17,600	
Intersection Treatments	EA	9	$4,000.00	$36,000	Assumed every 600' w/ curb ramps, raised crossings, & crosswalk markings
Driveway Adjustments	EA	10	$2,200.00	$22,000	Assumed every 500' w/ raised driveway crossings
Subtotal				**$409,641**	Note: Does not include signal upgrades
Lump Sum Items					
Landscaping (5%)	LS	1.00	$20,482.00	$20,482	
Drainage and E&S (10%)	LS	1.00	$40,964.00	$40,964	
Maintenance of Traffic (10%)	LS	1.00	$40,964.00	$40,964	
Utility Adjustments (10%)	LS	1.00	$40,964.00	$40,964	
			Subtotal	**$553,015**	
			30% Contingency	$165,905	
			Total Estimated Cost	**$719,000**	→ **$136.17** **Per Foot**

Trail

Includes: New path with markings and signage

Item	Unit	Quantity	Unit Cost	Total Cost	Assumptions
Thermoplastic Pavement Marking Lines (4")	LF	1,320	$0.75	$990	1 dashed lines entire length
Sign Panel (Class I)	EA	10	$150.00	$1,500	1 Sign every 1000 feet, each side of path
Steel Sign Post (2x2 Inch Tubing)	EA	10	$100.00	$1,000	
Earthwork, Excavation, Grading, Fill	CY	7,822	$25.00	$195,556	20 wide disturbance / 2 feet depth
Aggregate Base Course	CY	2,347	$40.00	$93,867	12 feet width, 1 feet depth
Asphalt Surface Course	TON	704	$85.00	$59,840	12 feet width and 2" depth, 1.8 Ton/CY
Asphalt Base Course	TON	2,112	$70.00	$147,840	12 feet width and 0.5 feet depth, 1.8 Ton/CY
Geotextile Filter Cloth	SY	7040	$3.00	$21,120	
Intersection Treatments	EA	3	$1,250.00	$3,750	Assumed 3 every 1-mile segment. Curb ramps & crosswalk markings
Subtotal				**$525,462**	
Lump Sum Items					
Landscaping (5%)	LS	1.00	$26,273.00	$26,273	
Drainage and E&S (10%)	LS	1.00	$52,546.00	$52,546	
Maintenance of Traffic (5%)	LS	1.00	$26,273.00	$26,273	
Utility Adjustments (10%)	LS	1.00	$52,546.00	$52,546	
			Subtotal	**$683,100**	
			30% Contingency	$204,930	
			Total Estimated Cost	**$888,100**	→ **$168.20** **Per Foot**

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E POLICY REVIEW SUMMARY

The project team reviewed planning and design standards for each community in the region. The following tables summarize the relevant code in these documents that pertains to the pedestrian and bicycling environment.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Bixby	Engineering Design Criteria Manual Sidewalk Design Standards Criteria	Design Standards * Minor Streets (25 mph) – 4 ft with a 6 ft setback * Collector Streets (35 mph) – 4 ft min with a 10 ft setback * Arterial Streets (40-60 mph) – 4 ft min with 10 ft min setback. All sidewalks need to be 4 inches thick	Provides minimum construction standards on all types of roadways. Includes setback widths to provide more comfortable pedestrian facilities.
Bixby	Engineering Design Criteria Manual Sidewalk Design Standards Criteria	No less than 3 ft from the outside curb line	Calls for the construction of buffers on sidewalks to provide at least 3 ft separation between pedestrians and adjacent traffic, making a more comfortable walking environment.
Bixby	Subdivision Regulations TITLE 12.3-2M	No pedestrian scale lighting required. Only requirements include: Lights shall be provided at each street intersection within or abutting the subdivision in accordance with the engineering design standards of the city.	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting
Bixby	Engineering Design Criteria Manual Sidewalk Design Standards Criteria	Property owners along sidewalk are responsible for maintenance.	Implies that property owners are required to clear their sidewalks of snow or other debris.
Bixby	Zoning Regulations SECTION 12.3-3	To be located along rear and side lot lines, underground unless topography doesn't allow it. * Utility - 17.5 ft perimeter around subdivision * Drainage - 100 year flow	Policy may help facilitate the implementation of a safe, continuous, and connected network of bicycle and pedestrian facilities.
Broken Arrow	Subdivision Code	Concrete sidewalks shall be constructed along both sides of every arterial street, collector street or minor street provided that there is no commercial activity (only 1 side) or there are industrial subdivisions	Requires the construction of sidewalks on both sides of all street types, resulting in a more connected sidewalk network.
Broken Arrow	Zoning Ordinance - Pedestrian Facilities Ordinance SECTION 5.5.4.C	Sidewalks shall be installed on both sides of all arterials, collector streets, and local streets (including loop streets and cul-de-sacs), and within and along the frontage of all new development or redevelopment.	Requires the construction of sidewalks on both sides of all street types, resulting in a more connected sidewalk network.
Broken Arrow	Engineering Design Criteria Manual	Design Standards: 1. Residential Streets – 4 feet 2. Industrial Streets – not required 3. Commercial Streets – not required 4. Arterial Streets - 5 feet	Provides minimum construction standards in different types of roadways, however does not require the construction of sidewalks on industrial or commercial streets, making pedestrian connectivity difficult in these areas.
Broken Arrow	Zoning Ordinance - Pedestrian Facilities Ordinance SECTION 5.5.4.C	Ped access and connections required if trail is located within one-quarter (1/4) mile of the site.	Requires that new developments provide pedestrian access/connection if located within 1/4 mile from existing trails.
Broken Arrow	Zoning Ordinance - Pedestrian Facilities Ordinance SECTION 5.3	At least two (2) points of access shall be provided per half mile.	Helps increase pedestrian/bicycle access to a development.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Broken Arrow	Engineering Design Criteria Manual	Design Standards: Locally Funded - 8 ft Federally funded - 10 Ft or as dictated by funding source	Locally funded trails will be a substandard width based on national guidance, whereas federally funded trails will provide adequate width.
Catoosa	Subdivision Ordinance	Sidewalks shall be required on both sides of all primary arterial, secondary arterial and residential collector streets, except where Residential Estates zoning has been approved.	Requires the construction of sidewalks along both sides of most street types.
Catoosa	Design Criteria for Stormwater, Erosion Control, Streets, Water and Sewer	Sidewalks may be required on both sides of local and collector streets except where Residential Single Family Estate District zoning has been approved. Design Standards include: Minimum 4 ft wide and 3.5 inches deep	Requires the construction of sidewalks along various street types. Provides minimum design standards for the construction of sidewalks.
Catoosa	Design Criteria for Stormwater, Erosion Control, Streets, Water and Sewer	ADA requirements rule. Ramps shall be constructed in accordance with standard details provided by the City	Requires the construction of curb ramps to be compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.
Catoosa	Subdivision Ordinance SECTION 4.1.4.B	Residential streets, excluding collector streets, shall be laid out so that their use by through-traffic is discouraged	Lack of through streets may help calm automobile traffic but also decreases access and connectivity for pedestrian and bicyclist travel.
Catoosa	Subdivision Ordinance SECTION 4.4-2	Performance bond in favor of the City in the amount of 150% of the estimated construction costs	Construction of sidewalks might not be required and in-lieu fees may be accepted. Sidewalk connectivity may be affected.
Collinsville	Zoning Code SECTION 1140 C	Pedestrian access to buildings shall be provided from rights-of-way and parking areas by means of a pathway leading to at least one public entrance.	Calls for the provision of pedestrian facilities to easily connect between different sites.
Coweta	Subdivision Regulations CHAPTER 4	Sidewalks shall be required on both sides of local and collector streets serving a residential subdivision, except where zoned Agricultural.	Does not require sidewalk construction on arterial streets serving a subdivision, which may impact access to destinations outside the development.
Coweta	Subdivision Regulations CHAPTER 4	No less than 3 ft from the outside curb line. A green belt of no less than 2 feet between the street pavement and the sidewalk.	Calls for the construction of buffers on sidewalks to provide at least 3 ft separation between motorists and pedestrians.
Coweta	Subdivision Regulations CHAPTER 4	Sidewalks must provide personal access for safe and convenient movement across curbs of physically handicapped persons, including those persons in wheelchairs. All sidewalks must conform to the Americans with Disabilities Act (ADA) requirements.	Requires the construction of sidewalks and curb ramps to be compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Coweta	Subdivision Regulations SECTION 4.3.11	Minor streets shall be arranged so that their use by through traffic will be discouraged. Industrial and commercial streets shall not inject non-residential traffic into residential area. The arrangement of streets within a subdivision shall, except for cul-de-sacs, connect with streets already dedicated in adjoining subdivision or provide for future connections to adjoining unplatted tracts	Lack of through streets may help calm automobile traffic but also decreases access and connectivity for pedestrian and bicyclist travel.
Coweta	Subdivision Regulations CHAPTER 5	No pedestrian oriented lighting is required. Subdivider shall provide adequate street lighting in the subdivision to the specifications of the City Engineer and Technical Advisory Committee.	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting.
Coweta	Subdivision Regulations CHAPTER 5	Design speed shall be 25 miles per hour on all residential streets and 30 miles per hour on all collector streets.	Policy may help reduce the number of crashes resulting in injury and fatality for motorists, pedestrian, and bicyclists.
Glenpool	Engineering Design Criteria	Public sidewalks shall be required on both sides of local and collector streets serving a single family or multifamily residential subdivision, except on projects where Residential Estate (RE) zoning has been granted. Individual homebuilders shall be required to construct sidewalks as part of any residential building project fronting onto a public street. In general, public sidewalks in residential subdivisions shall be constructed within the dedicated street right-of-way, parallel to, and not less than one (1) foot from the outside right-of-way line, or no less than three (3) feet from the back of curb line on the adjacent street. Design Standards: Minimum 4ft wide and 4 inches deep	Requires the construction of sidewalks along various street types. Provides minimum design standards for the construction of sidewalks.
Glenpool	Zoning Ordinance	All sidewalks shall conform to and be in compliance with the Americans with Disabilities Act (ADA) requirements and standards.	Requires the construction of sidewalks to be compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.
Glenpool	Engineering Design Criteria	No required pedestrian scale lighting. Installation should be done by developer and submitted for review to the City. City does not accept maintenance responsibility or the cost of operation along PRIVATE streets	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting
Glenpool	Engineering Design Criteria ARTICLE 5.5.1.B	The subdivider shall be allowed to submit to the City Engineer certified Performance Bonds or a Letter-of-Credit issued to the City of Glenpool by a banking institution acceptable to the City. Any such Performance Bonds or Letters-of-Credit shall guarantee such installation of improvements in amounts equal to one hundred (100) percent of the Engineers Estimate of Cost.	Construction of sidewalks might not be required and in-lieu fees may be accepted. Sidewalk connectivity may be affected.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Jenks	Zoning Code SECTION 940.3.E.b	Where pedestrian routes cross driveways or vehicular access aisles, a continuous raised crossing composed of a different paving material shall be provided. Pedestrian circulation routes shall be a minimum of eight feet in width.	Provides for the construction of continuous pedestrian facilities across vehicle access alerting drivers to pedestrians' presences and potentially helping avoid conflicts.
Jenks	Zoning Code SECTION 940.3.E.a; SECTION 1160.B.2.c	Pedestrian linkages shall be designed with development to connect to the public infrastructure. Linkages shall be a continuation of the public infrastructure to reduce dead-end paths and encourage users to directly access the development. Consideration shall be given to off-site destinations in the design of the on-site pedestrian system. Locations along or near to the proposed routes of the Jenks Trail System should be encouraged to provide for pedestrian, bicycle access to the System.	Calls for the provision of pedestrian facilities to easily connect between different sites. Encourages developers to provide for pedestrian and bicycle access to the Jenks Trail System when new development is close to the existing facility.
Jenks	Zoning Code SECTION 940.3.B.c.3	Pedestrian-scale elements such as canopies, awnings, porches, building overhangs and arcades, and outdoor seating are required along pedestrian-oriented streets.	Calls for the provision of comfortable and amenable pedestrian related facilities along pedestrian-oriented streets.
Jenks	Zoning Code (Town of Jenks) SECTION 940.3.E.d	Pedestrian facilities along building frontages and developments shall incorporate rain protection and boulevard landscaping whenever possible. When such facilities are provided, special attention shall be given to ensure pedestrian safety, security and convenience by not creating enclosed spaces that may shelter potential criminal activity.	Requires amenities where possible that will make pedestrian experience more comfortable.
Jenks	Zoning Code SECTION 940.3.E.d	Appropriate lighting shall be incorporated whenever possible	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting.
Jenks	Zoning Code SECTION 940.3.F	Site Design Requirements - the intent of this subsection is to promote a high level of accessibility for pedestrians to structures within a development and to create a welcoming streetscape; to provide spaces for civic interaction; to increase the pedestrian accessibility of developments from the street; and to foster a sense of community identity and arrival within developments.	May help increase street connectivity and encourage more people walking and biking.
Jenks	Zoning Code SECTION 1260.B.3.d	Any of the following conditions may be imposed as conditions of approval to assure compatibility of the proposed development with the surrounding area... Street dedication and improvements or bonds in lieu of improvements.	Construction of sidewalks might not be required and in-lieu fees may be accepted. Sidewalk connectivity may be affected.
Owasso	Subdivision Regulations SECTION 3.2.5	Minor streets shall be arranged so that their use by through traffic will be discouraged. Industrial and commercial streets shall not inject non-residential traffic into residential areas. The arrangement of streets within a subdivision shall, except for cul-de-sacs, connect with streets already dedicated in adjoining subdivisions or provide for future connections to adjoining unplatted tracts.	Lack of through streets may help calm automobile traffic but also decreases access and connectivity for pedestrian and bicyclist travel.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Owasso	Zoning Code SECTION 9.2.1.E	Bicycle parking shall be provided as shown in Table 9.1. Bicycle parking shall be provided in a bike rack or other structure affixed to the ground that holds a bicycle vertical and allows a lock or chain to be connected from the bike to the rack. A minimum of two (2) bicycle spaces shall be provided for any business requiring bicycle parking.	When applied in new development, will result in provision of bicycle parking, but no design standards are provided. The minimum may be too little if bicycling grows.
Owasso	Zoning Code SECTION 860.4.9.G	All buildings, parking areas, public spaces, amenity features, and adjoining developments of similar use, shall be linked with sidewalks. Sidewalks shall be provided along public streets that provide access to the development. Sidewalks shall be constructed in accordance with the standards for sidewalks as set forth in City of Owasso Engineering Standards.	Requires developers to construct and provide adequate pedestrian friendly facilities throughout new developments and alongside public streets linking to the development. Links construction standards to local Engineering requirements.
Owasso	Subdivision Regulations SECTION 3.4	Sidewalks shall be installed along both sides of all streets in all zoning categories except industrial. The design and location shall be in accordance with the Owasso Design Criteria. Subdivisions shall include sidewalks located in such a manner that pedestrian access is provided to adjacent land. Subdivisions in RE Residential and AG Agricultural zoning districts are not required to have sidewalks if the development contains a pedestrian trail in a common area or reserve area connecting the development with adjacent properties.	Requires developers to construct sidewalks on both sides of all streets except in industrial areas, resulting in a more connected pedestrian network.
Owasso	Construction and Engineering Standards STR-07	Construction Standards for sidewalk varies 4' TO 5' (Curb, Gutter and Sidewalk)	Provides minimum standards on the construction of sidewalks. To increase ADA accessibility, standard should be raised to 5' minimum.
Owasso	Construction and Engineering Standards SECTION 2403.6	All sidewalk construction shall conform to the American's with Disabilities Act (ADA) Sidewalk cross slopes at driveways shall not exceed 2%	Existing policy helps increase accessibility for people with disabilities.
Owasso	Zoning Code SECTION 20.4.4	All buildings, parking areas, public spaces, amenity features, and adjoining developments of similar use, shall be linked with sidewalks. Sidewalks shall be provided along public streets that provide access to the development. Sidewalks shall be constructed in accordance with the standards for sidewalks as set forth in City of Owasso Engineering Standards.For parking lots in excess of 250 spaces a pedestrian landscape island (see Figure 20-6) containing a sidewalk shall be installed for the entire length of a parking aisle. Said island shall align with the main entrance to the building, shall be bounded on both ends by perpendicular landscape islands, shall be a minimum of at least sixteen (16) feet wide with a five (5) foot sidewalk in the middle OR twelve (12) feet wide with a five (5) foot sidewalk along one side.	By requiring standards for sidewalks and pedestrian landscape islands, policy is helping provide safe and continuous pedestrian facilities.
Owasso	Subdivision Regulations SECTION 3.7.1	Blocks for residential use shall normally not exceed one thousand three hundred twenty (1320) feet in length. When such a block exceeds eight hundred (800) feet, the City of Owasso may require a dedicated easement not less than fifteen (15) feet in width and a paved crosswalk according to ANSI standards to provide pedestrian access across the block.	Encourages the development of short blocks. By reducing the block length, the existing policy might help encourage people to walk and bike throughout the city.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Owasso	Zoning Code SECTION 20.10.4.4	Within residential subdivisions, the maintenance of street trees in planting strips between curbs and sidewalks which are within the street right-of-way shall be the responsibility of the respective homeowners association, or the abutting homeowner, in the absence of a homeowners association.	Including landscaping is an important element to providing a safe and pleasant bike/pedestrian experience along corridors. As it is written, the code is not clear on who is responsible for clearing out debris or dead vegetation along the right of way, which may create difficult conditions for people on bicycles and walking.
Owasso	Subdivision Regulations SECTION 3.5.1	In the dedication of easements and rights-of-way, the developer shall stipulate that no building, structure, or other above or below ground obstruction shall be placed, constructed, installed or permitted on sucheasement or rights-of-way shown in such a manner that will interfere with the installation,	Policy may help facilitate the implementation of a safe, continuous, and connected network of bicycle and pedestrian facilities.
Regulations	Subdivision Regulations TITLE 12.3-2N	Concrete sidewalks shall be constructed along both sides of every arterial street, collector street or minor street provided that there is no commercial activity (only 1 side) or there are industrial subdivisions	Requires the construction of sidewalks along some street types, but specifically does not require sidewalks on both sides in commercial areas, which will result in a disconnected network in areas needing pedestrian access.
Sand Springs	Subdivision Regulations SECTION 16.20.030.D	Sidewalks shall provide for safe and convenient access for persons with disabilities, including those persons in a wheelchair. Curb ramps shall be constructed in accordance with standard details provided by the City Engineer;	Requires the construction of sidewalks and curb ramps to be compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.
Sand Springs	Subdivision Regulations SECTION 16.20.010.D	Residential streets shall be laid out so that their use by through traffic will be discouraged.	Lack of through streets may help calm automobile traffic, but also decreases access and connectivity for pedestrian and bicyclist travel.
Sand Springs	Subdivision Regulations SECTION 16.20.050	Length. Block lengths in residential areas shall not be greater than fifteen hundred (1,500) feet. In those cases where length of the block exceeds one thousand (1,000) feet, the planning commission may require easements for pedestrian ways through the block which shall have a minimum width of ten (10) feet and a paved sidewalk constructed in accordance with the engineering design criteria and these regulations.	Encourages the development of short blocks. By reducing the block length, the existing policy might help encourage people to walk and bike throughout the city.
Sand Springs	Subdivision Regulations SECTION 16.20.030.E	The planning commission may require (in order to facilitate pedestrian access to schools, parks, playgrounds) perpetual unobstructed easements of not more than ten (10) feet wide to provide adequate pedestrian circulation. Such easements shall be shown on the plat. (Subdivision Regulations § 4.3)	Policy may help facilitate the implementation of a safe, continuous, and connected network of bicycle and pedestrian facilities.

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Sand Springs	Subdivision Regulations SECTION 16.20.030; SECTION 16.20.010.D	All sidewalk layouts and designs for primary and secondary arterial streets, the central business district and other commercial and industrial areas shall be furnished by the City Engineer; Sidewalks shall be required on both sides of all primary and secondaryarterial streets, commercial and industrial collectors and on both sides of minor andcollector streets serving a residential subdivision except where the typical pavement section provides for a shoulder and borrow ditch (no curb) or where residential estates (RE) zoning has been allowedThe street and sidewalk system of a subdivision shall be appropriately designed and related to the proposed land use.	Requires the construction of sidewalks along both sides of various street types. Requires the City Engineer to provide sidewalks on different street types.
Skiatook	Zoning Regulations (2011 Code) TITLE 7.5.6; TITTLE 8.2.4.D AND F	No bicycle parking requirements. No person shall park a bicycle upon a street or upon the sidewalk in such manner as to impede pedestrian or vehicular traffic. It shall be unlawful for any person in a public park or recreation area to: D. Leave a bicycle in a place other than a bicycle rack when such is provided and there is space available. F. Leave a bicycle lying on the ground or paving or set against trees or in any place or position where other persons may trip over or be injured by it.	As code is currently written, it might discourage the use of bicycling by preventing people from parking their bicycle on various places throughout the City.
Skiatook	Zoning Regulations ORDINANCE 2003-14, 10-14-2003 (TITLE 12.7.G.2-5)	Sidewalks shall be required on both sides of local and collector streets serving a residential subdivision, except where agriculture (AG), and residential estate (RE) zoning has been allowed. Design Requirements/Standards: The finished thickness of portland cement concrete sidewalks shall not be less than four inches (4") and the width shall not be less than four feet (4'). (TITLE 12.7.G.4) Sidewalks shall be no less than six feet (6') from the outside curb line of the street pavements. (TITLE 12.7.G.5)	Requires the construction of sidewalks along both sides of local and collector street types but not arterials. Provides minimum design standards for the construction of sidewalks, including a wide buffer area.
Skiatook	Zoning Regulations TITLE 12.7.G.6	Sidewalks must provide personable access for the safe and convenient movement across curbs of physically handicapped persons, including those persons in wheelchairs. Wheelchair ramps shall be constructed in accordance with standard details provided by the city engineer's office.	Calls for the construction of sidewalks that are compliant with ADA accessibility requirements to provide comfortable and accessible connections for people with disabilities.
Skiatook	Zoning Regulations (City of Skiatook) ORDINANCE 99-01, 1-26-1999; TITLE 12.7.6.I.I; AND TITLE 12.7.6.1.2	No lighting requirements. The city shall not assume maintenance and operation costs of streetlights installed as a part of the original subdivision for security purposes, should status change occur (i.e., annexation). 2. The city shall plan the location of streetlights in all new subdivisions upon receiving an official "preliminary" plat of the subdivision for review.	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting

Overview of Subdivision, Zoning and Design Policies

Jurisdiction	Document Title/Source	Relevant Code Text	Implication for Bike/Pedestrian Travel
Tulsa	Zoning Code SECTION 55.060; SECTION 55.060-C.1: SECTION 55.060-2	Bicycle parking requirements are included in TABLE 55.3 (Bicycle Parking) DESIGN: Required short-term bicycle parking spaces must: (1) consist of bike racks or lockers that are anchored so that they cannot be easily removed; (2) be of solid construction, resistant to rust, corrosion, hammers, and saws; (3) allow both the bicycle frame and the wheels to be locked with the bicycle in an upright position using a standard U-lock; (4) be designed so as not to cause damage to the bicycle; (5) facilitate easy locking without interference from or to adjacent bicycles; and (6) have minimum dimensions of 2 feet in width by 6 feet in length, with a minimum overhead vertical clearance of 7 feet.	Provides model guidelines for the design of bicycle parking facilities. Could have implications on private development and their parking requirements and the way people park their bicycles.
Tulsa	Complete Streets Manual Appendix A.2.3	The minimum width for a bicycle lane next to a parked car is 5 feet, with a recommended width of 6 feet.	Provides good minimum standards for bike lanes. Aligns local standards to federal standards (AASHTO Bike Guide).
Tulsa	Infrastructure Development Process Manual SECTION 502.8.1	The design of sidewalk includes all required infrastructure such as water, sanitary sewer, stormwater drainage structures, streets and sidewalks, and other facilities as required.	Provides for the construction of sidewalks in relation to stormwater drainage and other facilities.
Tulsa	Zoning Code SECTION 65.030-C.2.b	No requirements on pedestrian scale lighting. Allowable heights of light fixtures must be measured from the light-emitting sur-face to finished grade at the base of the pole. Maximum allowed light fixture heights are based on the (ground-level) horizontal distance between the light pole and any agricultural or residential zoning district or public right-of-way, as established in Table 65-1.	Policy doesn't encourage installation of pedestrian scale lighting. By installing lighting focused on motorists, pedestrians on the sidewalk may feel unsafe due to lack of appropriate lighting.

INCOG Regional Partners — Regional Solutions
2 West Second Street Suite 800 | Tulsa, OK 74103 | 918.584.7526 | www.INCOG.org

March 29th, 2017

Matt Liechti
P.E., CFM | Planning and Coordination Manager
City of Tulsa Engineering Services Department
2317 S. Jackson Ave.
Tulsa, OK 74107

RE: GO Plan Modification for the City of Tulsa

Dear Matt,

In response to your request for a GO Plan modification, INCOG presented the change request to both the Technical Advisory and Transportation Policy committee for consideration to change the regional GO plan.

Both committees have approved the submitted request. The request is for a signed route that connects neighborhoods spread from LaFortune Park to the South of the Creek Turnpike.

The map is attached for reference.

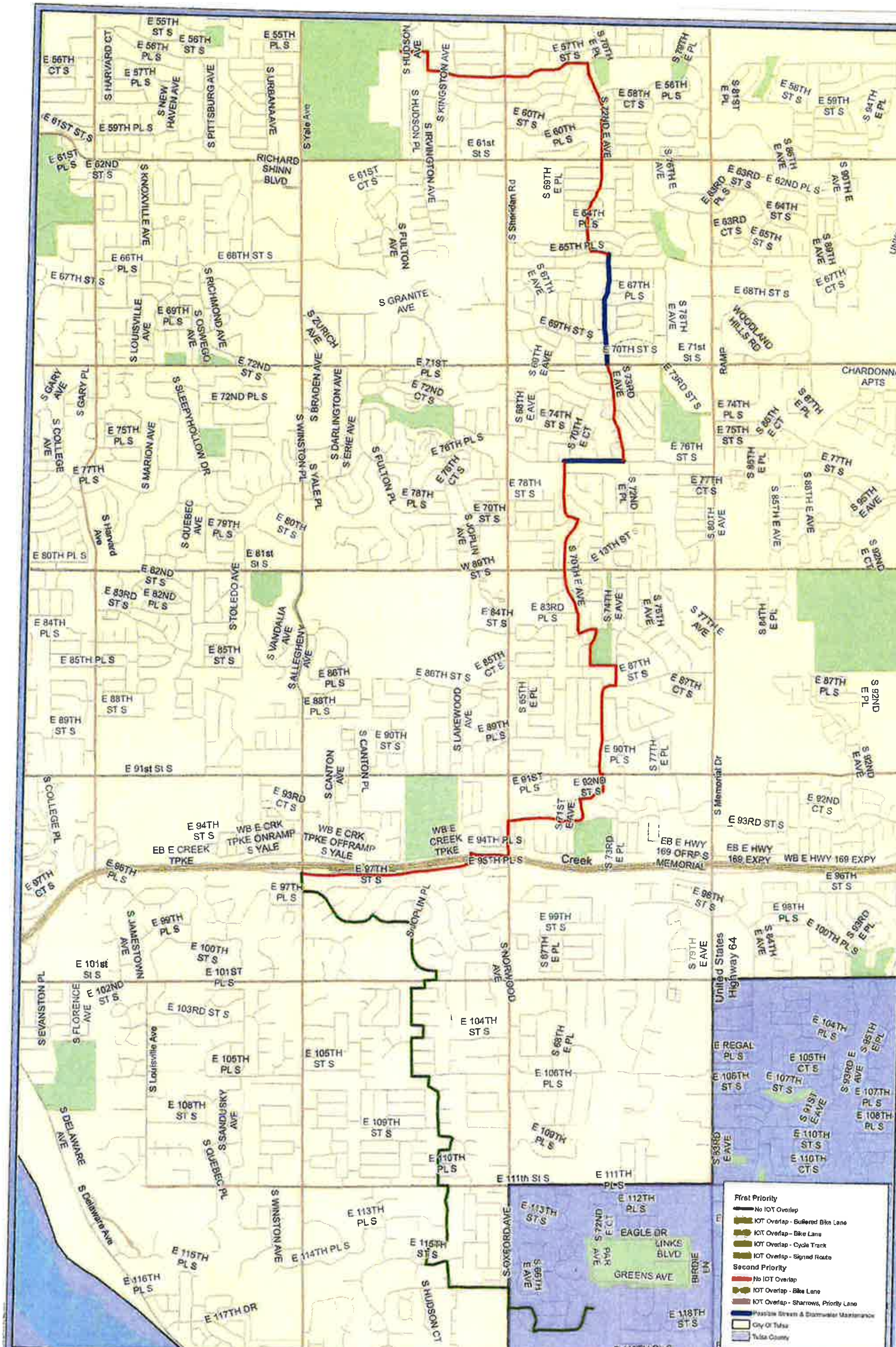
If you need any further assistance let us know.

Sincerely,

Viplava Putta
Transportation Manager

CC: Jennifer Haddaway

9-33



Bicycle and Pedestrian Master Plan Implementation
South Tulsa - GO Plan with IOT Projects

TMAPC
August 16, 2017
2017 Comprehensive Plan Housekeeping Map Amendments

A. Item: Annual Housekeeping Amendments to the Comprehensive Plan.

B. Background: The Tulsa Comprehensive Plan was adopted in July, 2010 and the first housekeeping amendments were adopted in 2013. There has been a substantial amount of amendments adopted, since that time - relating to the *Land Use Map*, *Areas of Stability and Growth Map* and the text of the Comprehensive Plan. This year, staff is proposing five map amendments.

As the Plan is used on a daily basis to guide development decisions in Tulsa (both public and private), a consequence of implementation is finding certain areas and/or parcels of land do not have the most appropriate map designations. Some of these are discovered through review of development applications, some by the need to proactively designate lands for future activity and some areas or parcels simply did not receive the most appropriate map designation when the Plan was adopted.

The Comprehensive Plan states that the Land Use Plan and Areas of Stability and Growth Map "should be updated at five year intervals with projections toward the future. Housekeeping updates and maintenance to reflect development approvals should be made annually." (p. LU-77)

The Policies and Procedures and Code of Ethics of the Tulsa Metropolitan Area Planning Commission include a specific process regarding how to proceed with housekeeping amendments. The document states: "TMAPC staff will establish a system to track all housekeeping amendments needed to reflect development approvals and present a comprehensive plan amendment to TMAPC annually, generally in July. These annual amendments will include updates to the Land Use Plan and, if necessary, changes to the Growth and Stability Maps."

There are five areas and/or parcels that have been identified as proposed map amendments to the Comprehensive Plan. The attachments to this report contain information on each of these, including general information, justification for the change, and supporting maps. This information was presented at a TMAPC Work Session on July 19, 2017.

C. Staff Recommendation: Approval of Comprehensive Plan housekeeping amendments (CPA-64 through CPA-68) as requested

ATTACHMENT 1

Comprehensive Plan Amendment CPA-64

Change of Land Use and Area of Stability & Growth Designations

Location: East of the NE corner of East 32nd Street South and South Yale Avenue.

Size: +1.78 Acres **Zoning District:** RS-2/RS-3/PUD-130 **Existing Use:** Residential

	Land Use Designation	Stability & Growth Designation
Existing	*New Neighborhood*	*Area of Growth*
Proposed	*Existing Neighborhood*	*Area of Stability*

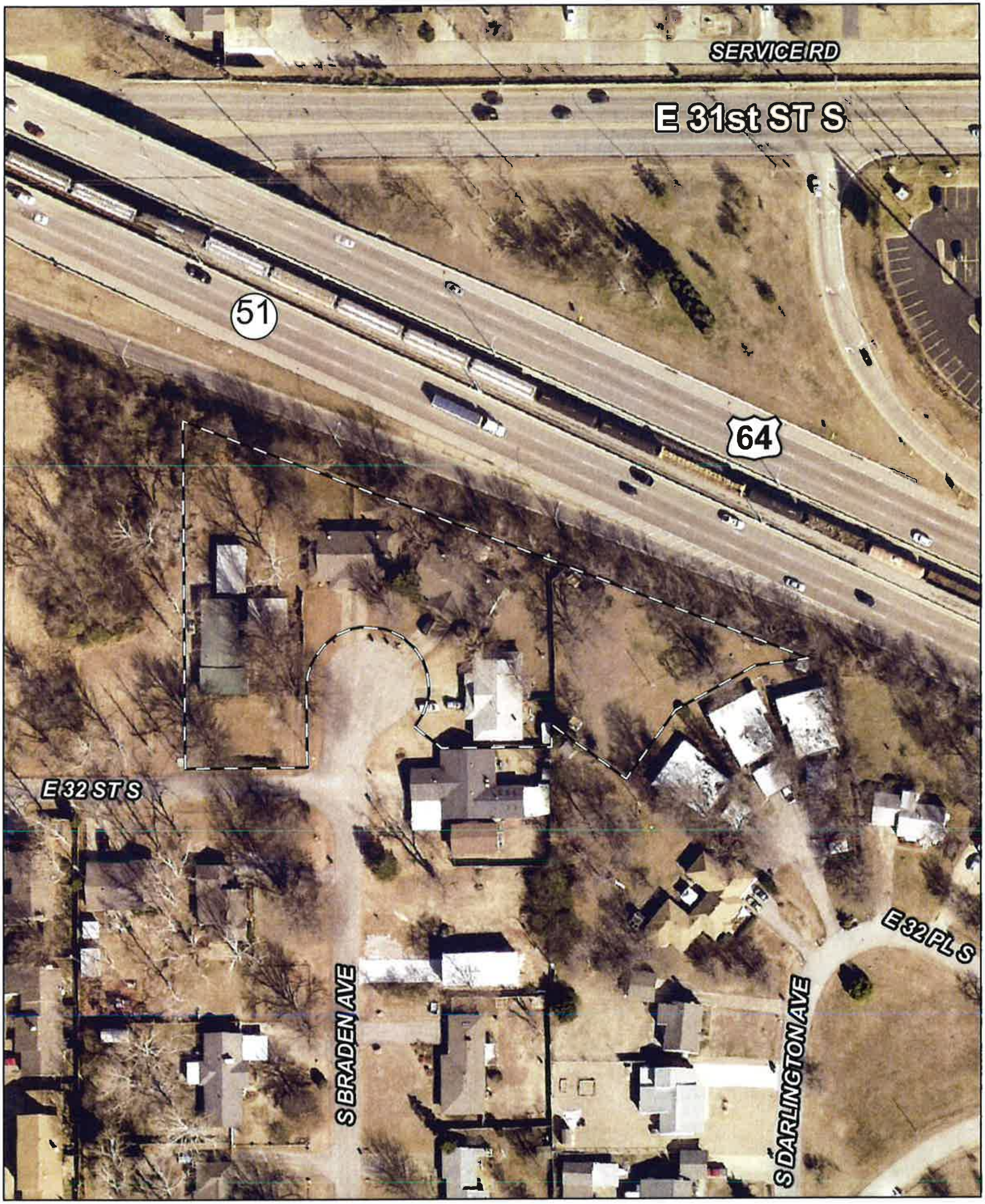
Development Approval History:

- **2017: CPA 55** - The TMAPC approved a Comprehensive Plan Amendment from *New Neighborhood* to *Mixed-Use Corridor* to accompany a rezoning application (Z-7359) to accommodate a gym/recreational facility for the property to the west of the subject lots.
- **2017: CPA 57**- The TMAPC approved a Comprehensive Plan Amendment from *New Neighborhood* to *Mixed-Use Corridor* to accompany a rezoning application (Z-7374) to allow for the expansion of the gym/recreational facility immediately west of the subject lots.

Justification: At the time of adoption of the Comprehensive Plan in 2010, the Land Use designation was identified as *New Neighborhood* and an *Area of Growth.* On two parcels immediately west of the subject area to the amendment request, TMAPC approved a request to change zoning from Single-Family Residential (RS-2) to Commercial General (CG) with an optional development plan (Z-7359) and from Residential Duplex (RD) to Commercial General (CG) with an optional development plan (Z-7374) to allow a gym/recreational facility and adjacent parking.

While considering this request and in response to feedback from neighborhood residents and property owners at the public hearing, TMAPC expressed concerns about the Comprehensive Plan's land use designation of *New Neighborhood* and *Area of Growth* for the adjacent properties. It is part of an existing neighborhood. The current Land Use and Growth and Stability designation assigned to the properties do not adequately reflect the existing residential single family use. An *Existing Neighborhood* and *Area of Stability* land use designation will more appropriately do that.

Staff Recommendation: Staff recommends changing the subject site to the *Existing Neighborhood* land use designation and an *Area of Stability*.



Feet
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Subject Tract

CPA-64

19-13 22

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

153

Feet
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Subject Tract

CPA-64

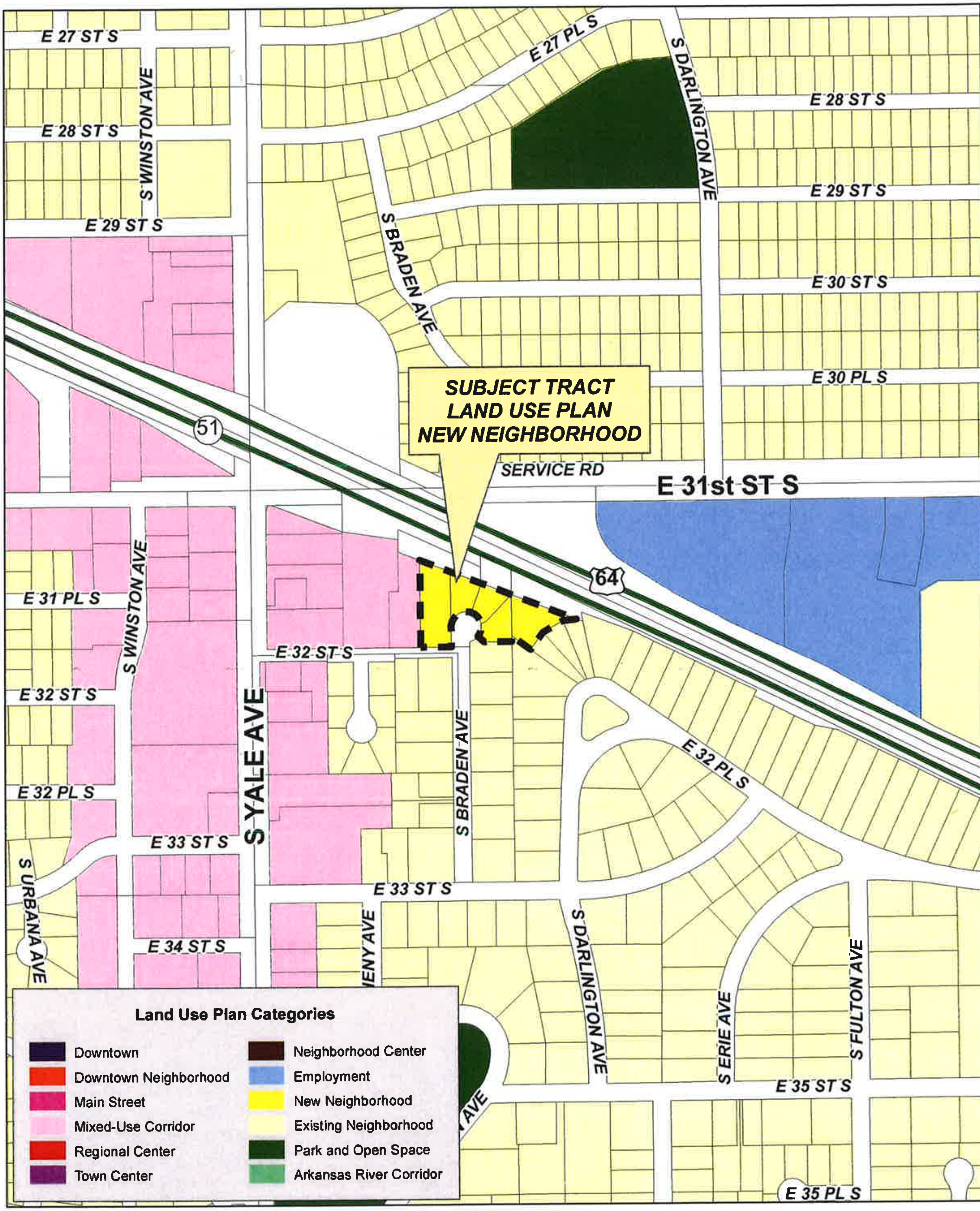
19-13 22

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

154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SUBJECT TRACT
LAND USE PLAN
NEW NEIGHBORHOOD
51
SERVICE RD
E 31st ST S
64
E 31 PL S
S WINSTON AVE
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E 32 ST S
S YALE AVE
S BRADEN AVE
E 32 PL S
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E 33 ST S
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S DARLINGTON AVE
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S ERIE AVE
S FULTON AVE
E 35 ST S
E 35 PL S
Land Use Plan Categories
Downtown
Downtown Neighborhood
Main Street
Mixed-Use Corridor
Regional Center
Town Center
Neighborhood Center
Employment
New Neighborhood
Existing Neighborhood
Park and Open Space
Arkansas River Corridor
Feet
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CPA-64

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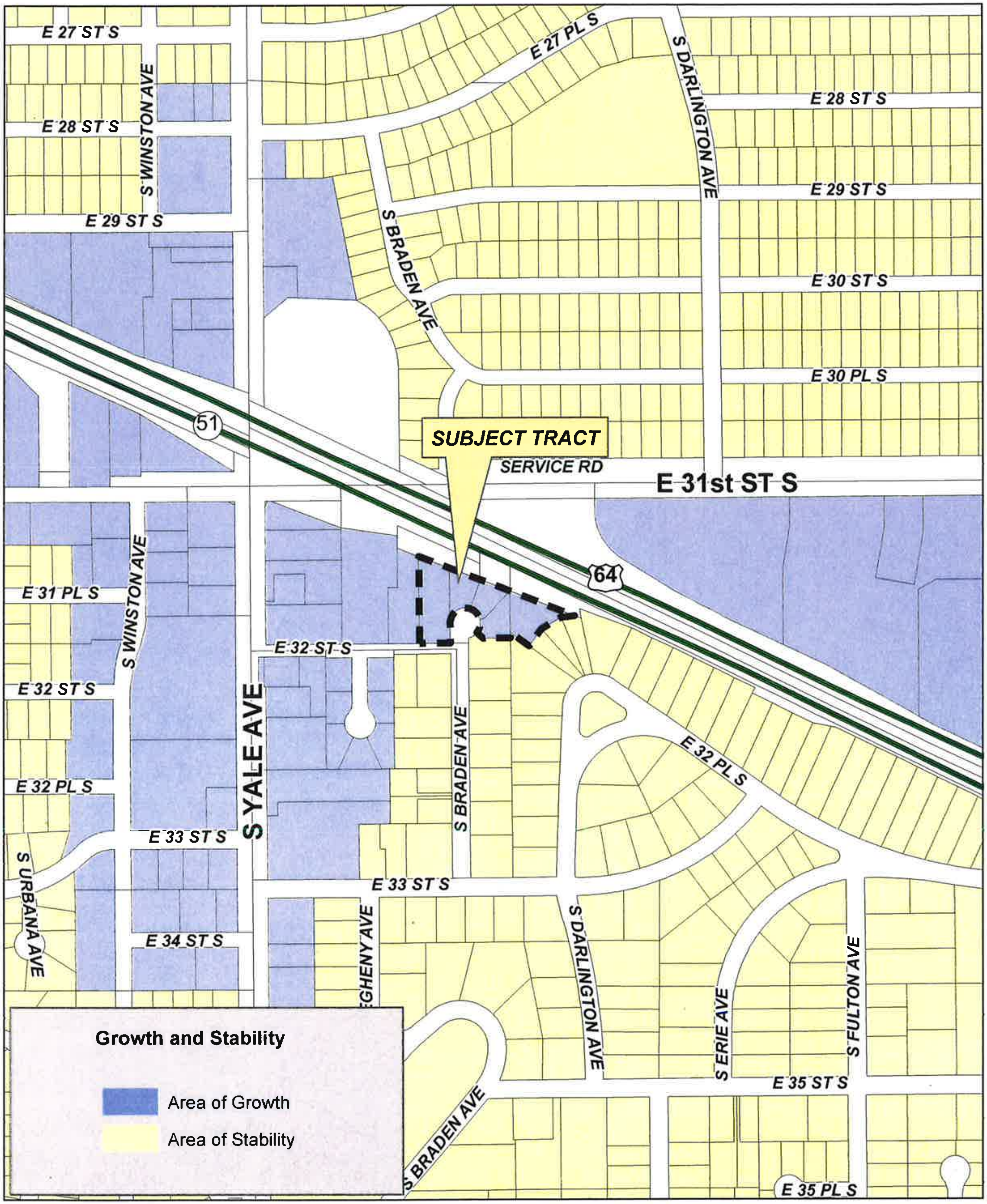

CPA-64

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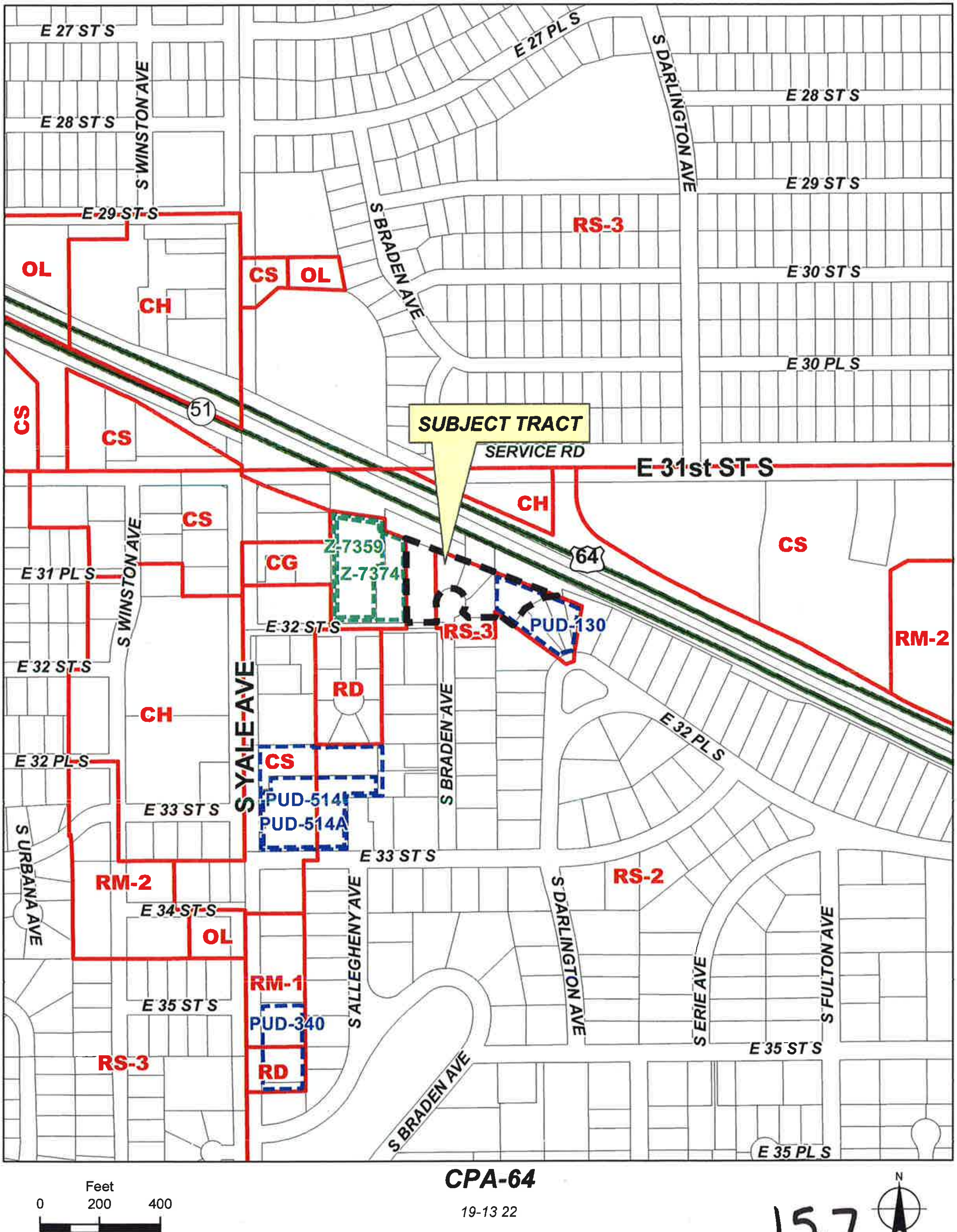
19-13 22



CPA-64

19-13 22

15.7

ATTACHMENT 2
Comprehensive Plan Amendment CPA-65
Change of Land Use and Area of Stability & Growth Designations

Location: North of NE corner of South Lewis Ave. and East Skelly Drive

Size:	±1.59 Acres	**Zoning District:**	RS-1	**Existing Use:**	Vacant Lots and Access Road

	Land Use Designation	Stability & Growth Designation
Existing	*Existing Neighborhood*	*Area of Stability*
Proposed	*Mixed Use Corridor*	*Areas of Growth*

Development Approval History:

- **2017: CPA-56**- The TMAPC approved a Comprehensive Plan Amendment from *Existing Neighborhood* to *Mixed-Use Corridor* to accompany a rezoning application (Z-7373) to accommodate a parking area for the property immediately west of the subject lots.

Justification: The subject area is designated as an *Existing Neighborhood* and *Area of Stability*. On the parcel immediately east of the subject area to the amendment request, TMAPC approved a request to change zoning from Single-Family Residential (RS-1) to Office-Light (OL) with an optional development plan (Z-7373) and a Comprehensive Plan Amendment (CPA-56) to expand *Mixed-Use Corridor* land use *and Areas of Growth* designations to provide additional parking relief for the Twenty-Sixe Oaks office complex immediately south of the lot. As sited in the original staff report for CPA- 56, staff found it would be appropriate, based on approval, to recommend the same designations to the current subject site in the 2017 Housekeeping Amendments Report.

The character of the subject site has changed as I-44 was widened. The southernmost parcel of the subject site serves as the new entrance to the office complex that was designed and constructed by ODOT. Although the two parcel included in the overall subject area are designated *Existing Neighborhood* and *Area of Stability*, both are currently owned by ODOT and are unlikely to be developed residentially. The current Land Use and Growth and Stability designation assigned to the properties do not adequately reflect the existing and future potential use.

Staff Recommendation: Staff recommends changing the subject site to the *Mixed-Use Corridor* land use designation and an *Area of Growth*.

Feet

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Subject Tract

CPA-65

19-13 29

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

15.9

Feet
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Subject Tract

CPA-65

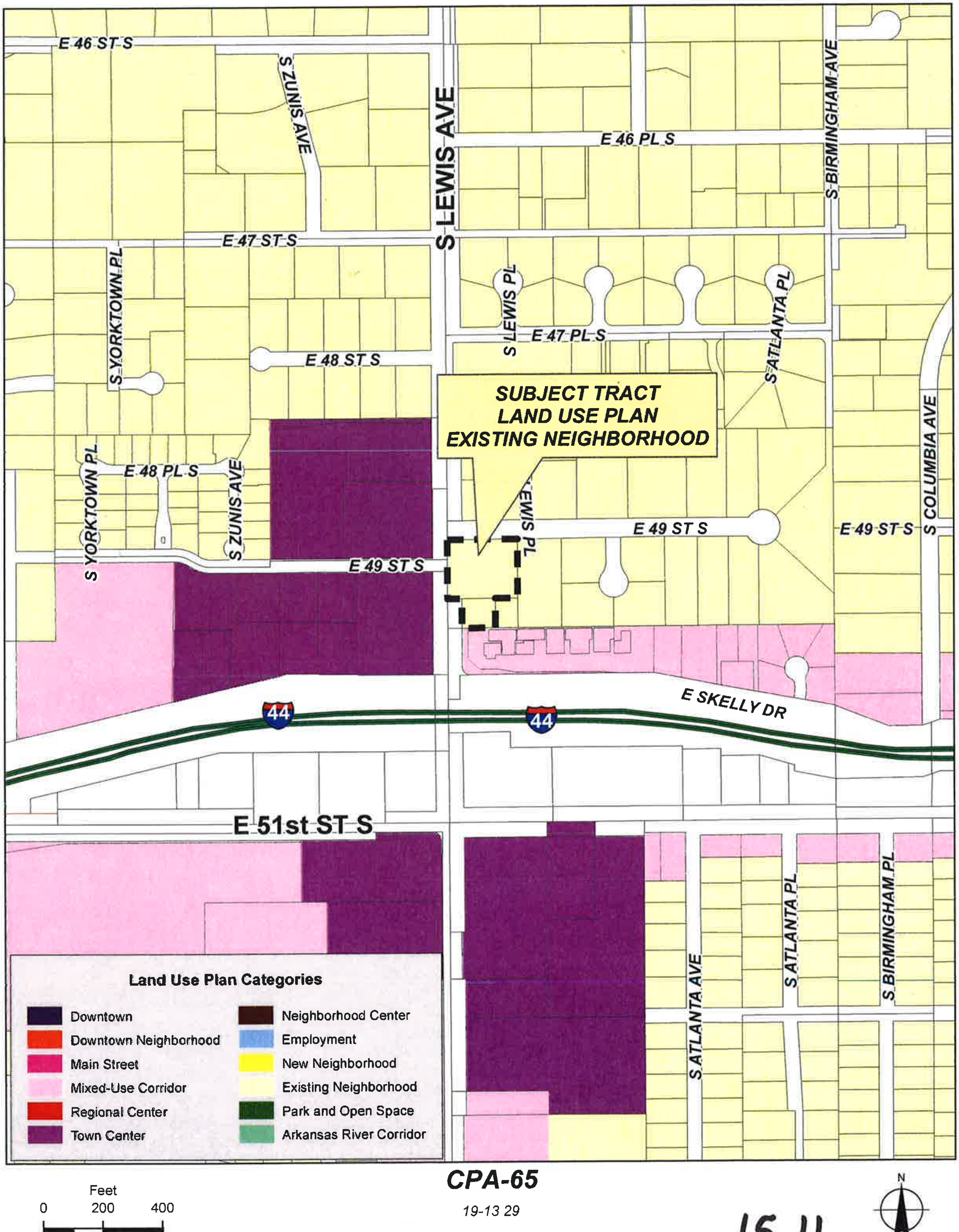
19-13 29

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

15.10



CPA-65

19-13 29

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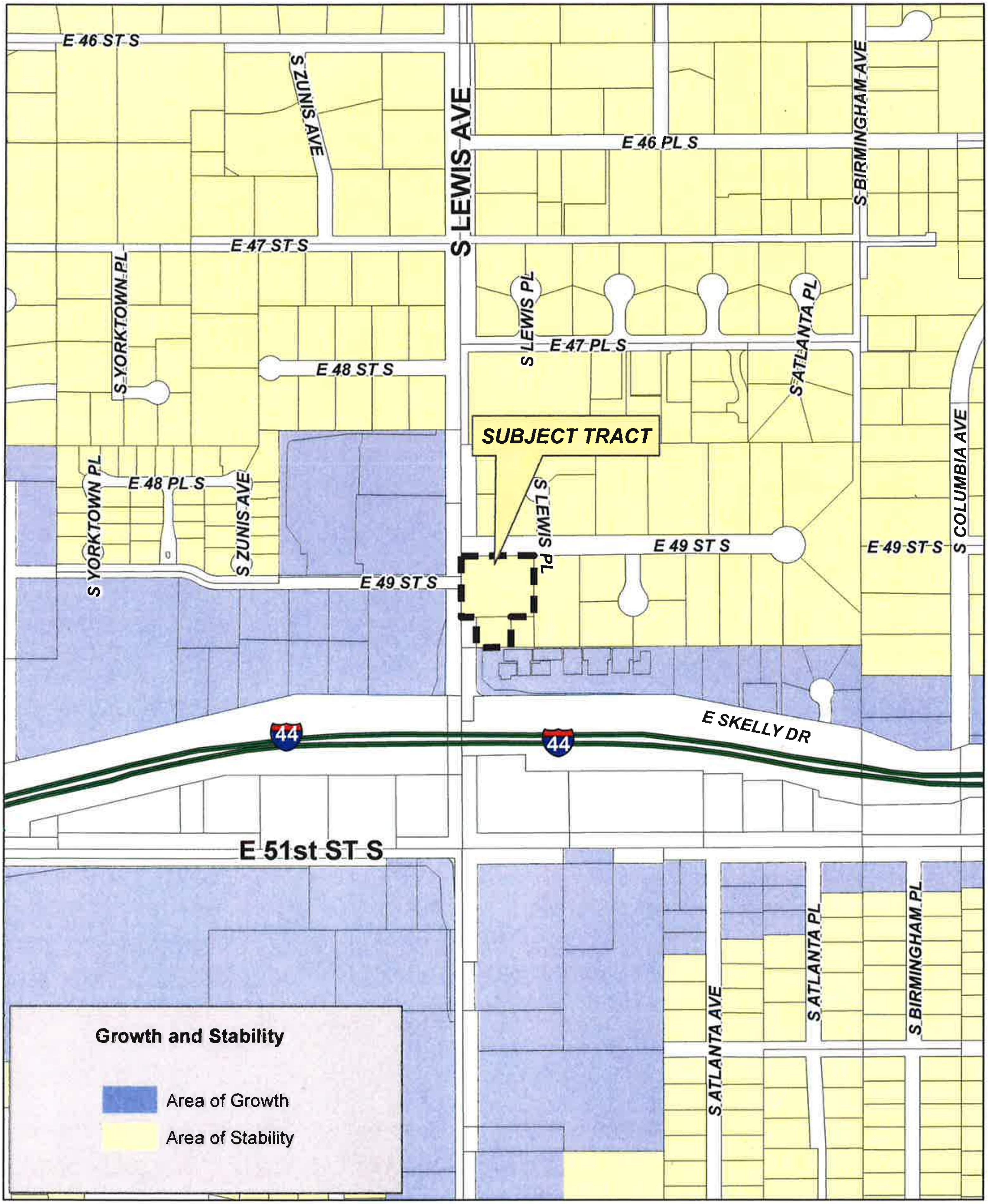

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CPA-65

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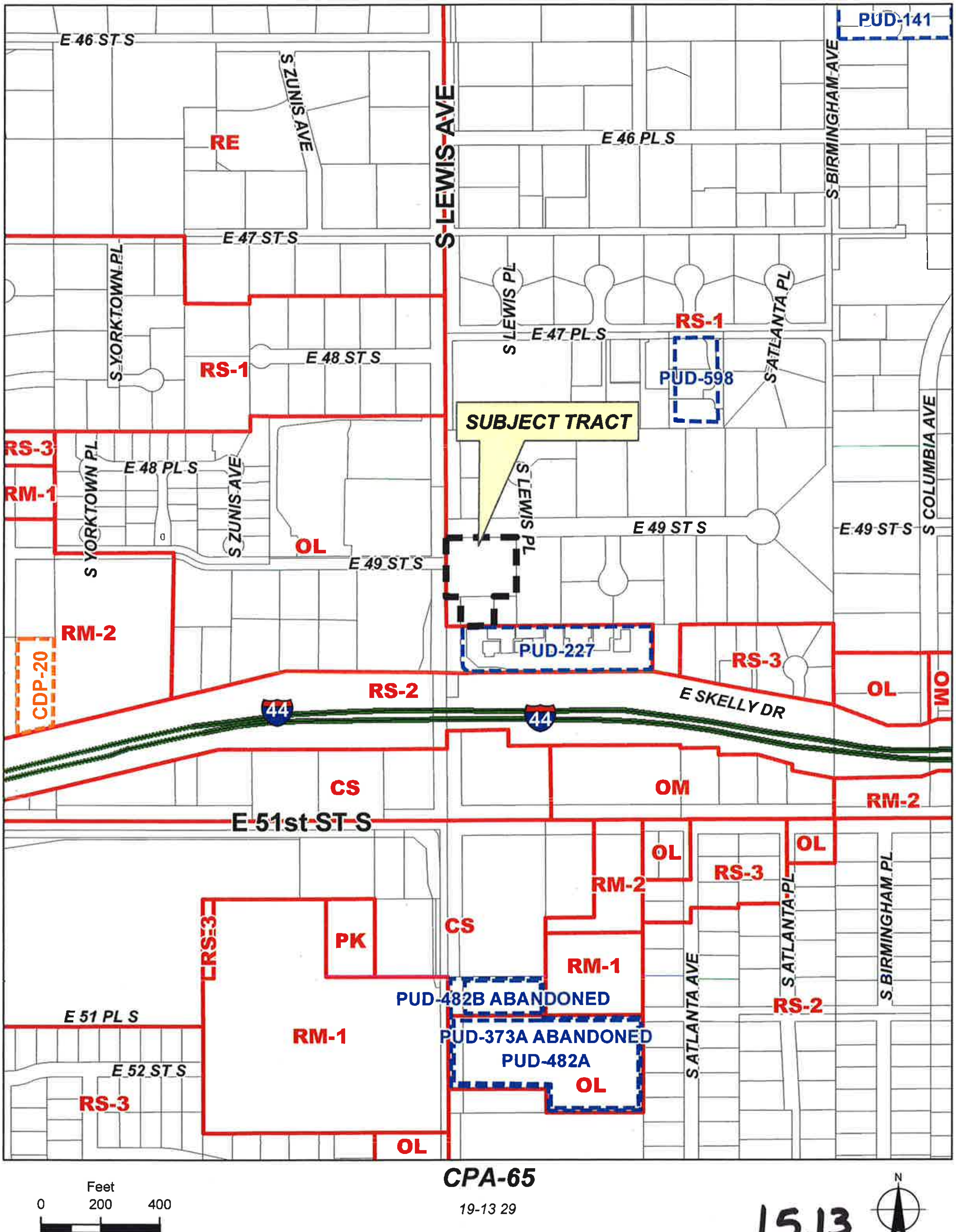


CPA-65

19-13 29

15.13

ATTACHMENT 3

Comprehensive Plan Amendment CPA-66

Change of Land Use and Area of Stability & Growth Designations

Location: South of the SE corner of East 67th Street South and South Peoria Avenue
Size: ±.9 Acres **Zoning District:** RM-2/PUD-183 **Existing Use:** Multi-Family Residential

	Land Use Designation	Stability & Growth Designation
Existing	*Existing Neighborhood*	*Area of Stability*
Proposed	*Main Street*	*Area of Growth*

Development Approval History:

- **1976:** PUD-183- The PUD designates the subject area as Development Area-Block 1, and the standards permit townhouses, cluster patio homes or garden apartments, to include customary accessory uses such as clubhouse, pools, tennis courts, etc.

Justification: The subject site is part of a larger multi-family housing complex that consists of three parcels in total. The two parcels to the west of the subject site are designated as *Main Street* and *Areas of Growth*. This Comprehensive Plan Amendment would allow the site to be consistent with the entire condo development. The current Land Use and Growth and Stability designation assigned to the properties do not adequately reflect the existing residential multi-family use. A *Main Street* and *Area of Growth* land use designation will more appropriately do that.

Staff Recommendation: Staff recommends changing the subject site to the *Main Street* land use designation and an *Area of Growth*.

Feet
0 200 400

Subject Tract

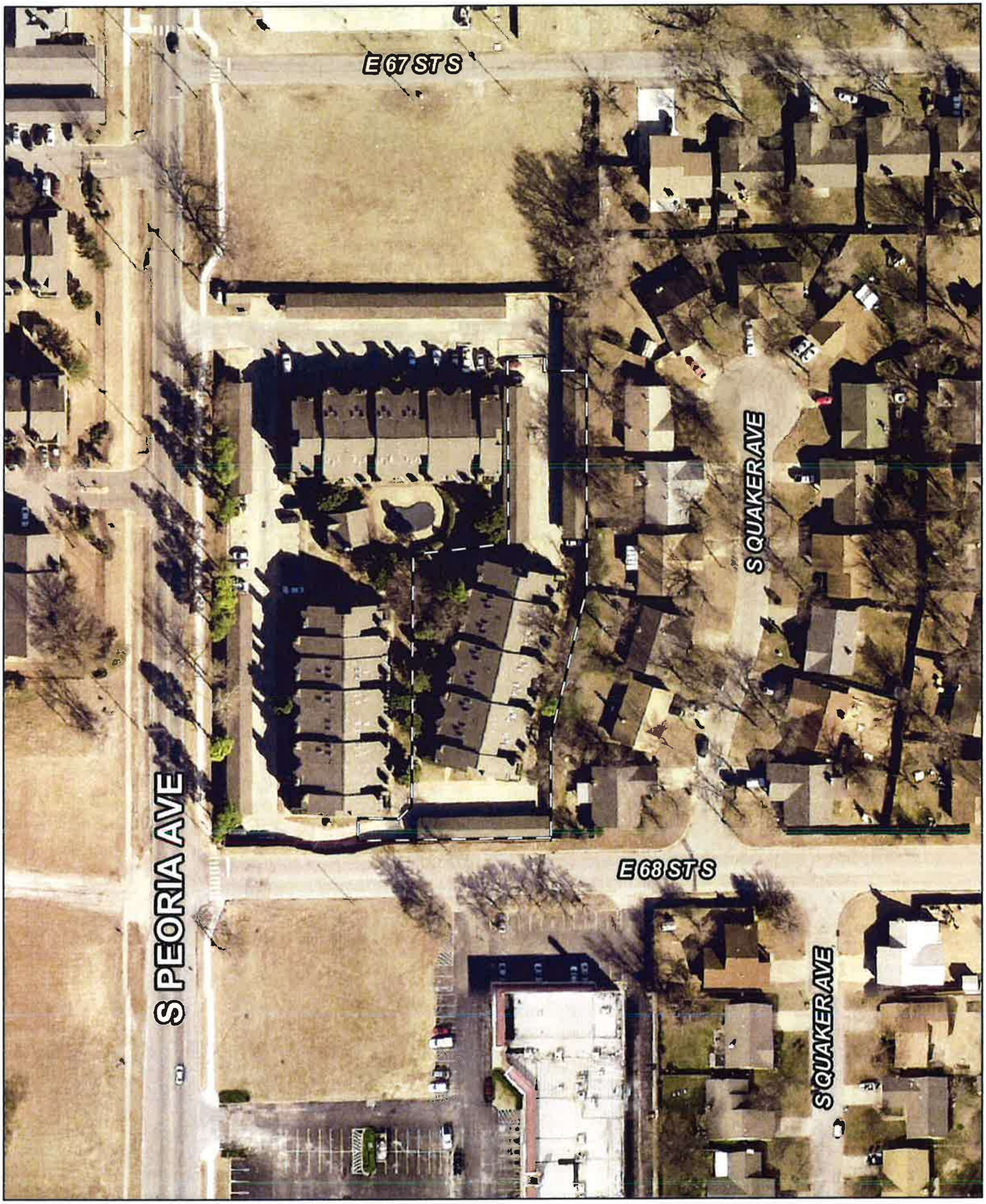
CPA-66

18-13 06

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

15.15



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Subject Tract

CPA-66

18-13 06

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

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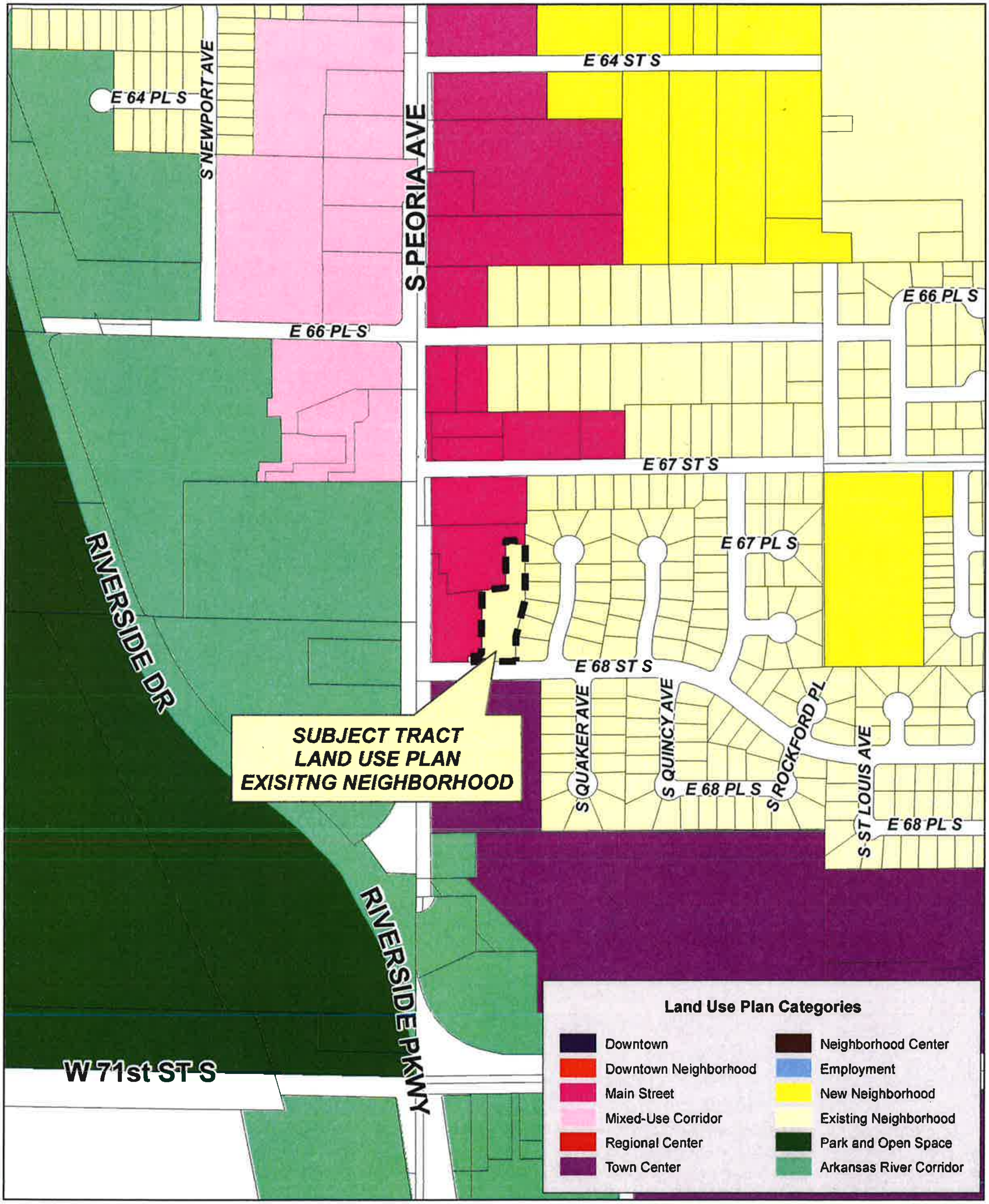
1516



CPA-66

18-13 06

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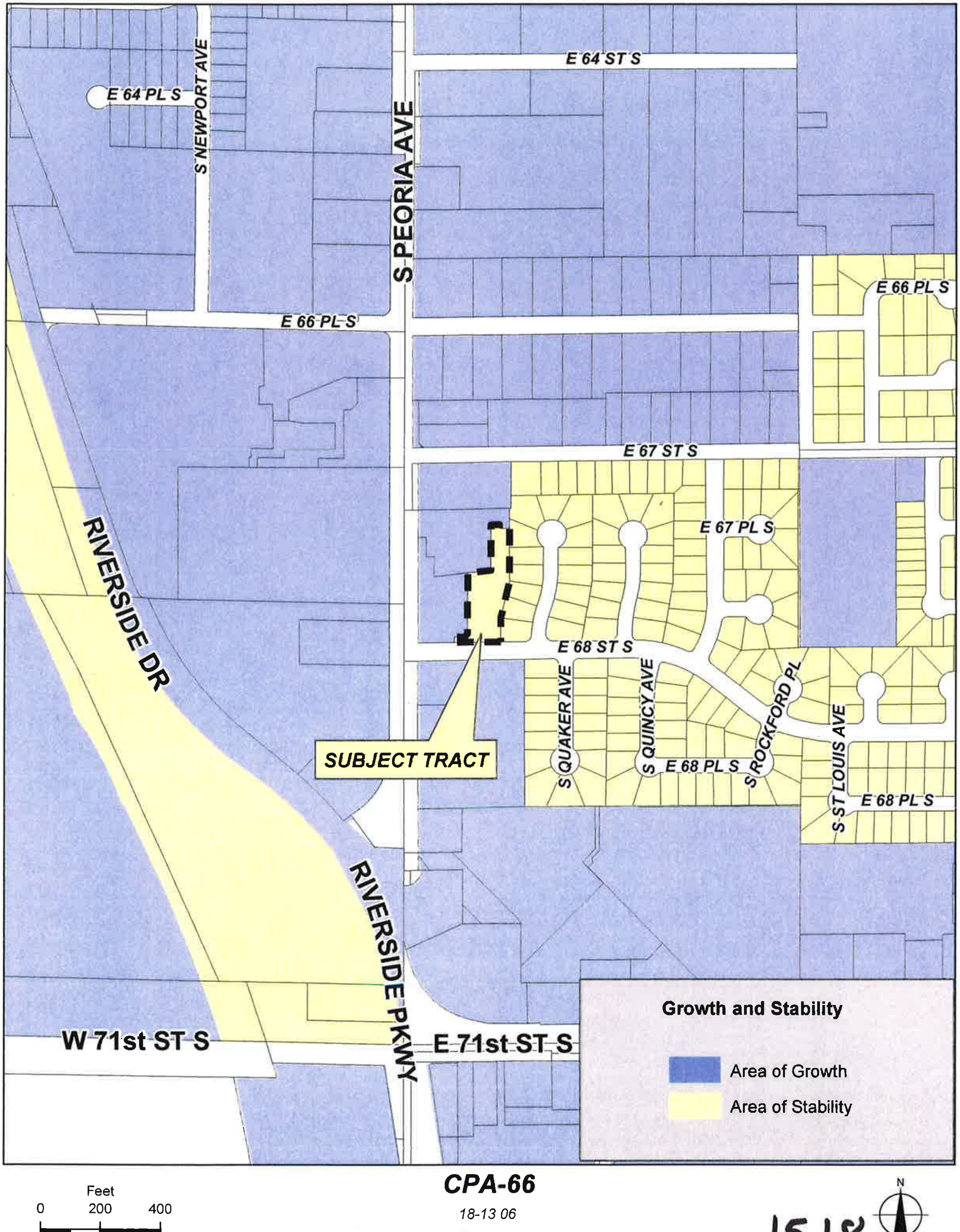

CPA-66

18-13 06

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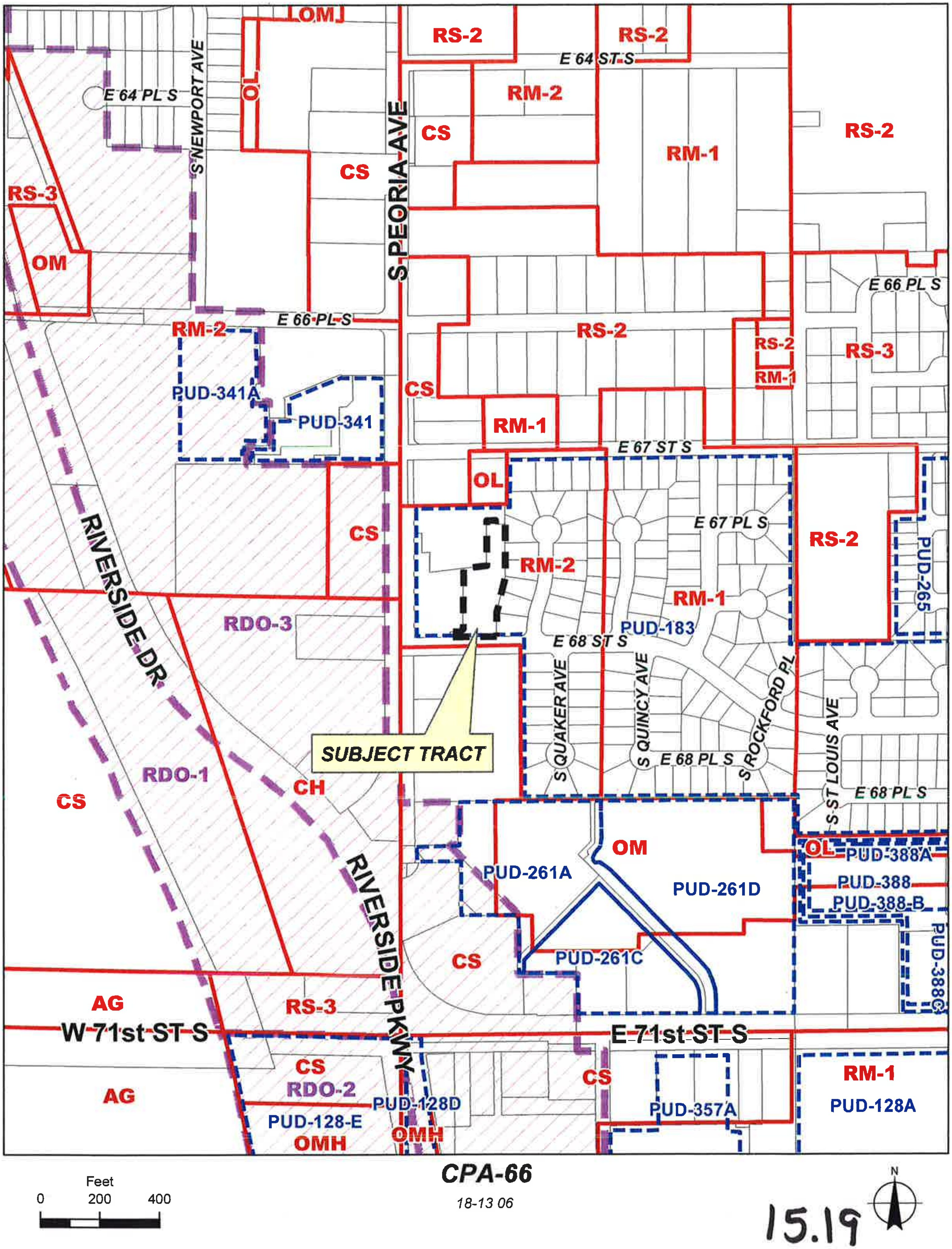


CPA-66

18-13 06

15.19

ATTACHMENT 4
Comprehensive Plan Amendment CPA-67
Change of Land Use and Area of Stability & Growth Designations

Location: 1,242 feet south of southwest corner of S. Riverside Dr. and E. 71st St. S
Size: ± 25 Acres **Zoning District:** AG **Existing Use:** Park and Open Space

	Land Use Designation	Stability & Growth Designation
Existing	*Arkansas River Corridor*	*Area of Growth*
Proposed	*Park and Open Space*	*Area of Stability*

Development Approval History:
- **2015: PUD-128-I**- Abandoned to remove the park approval for Helmerich Park, leaving the site as a legally nonconforming use.
- **2016: CPA-43**- The TMAPC approved a Comprehensive Plan Amendment to establish and define an *Arkansas River Corridor* Land Use category; and amendments to Land Use and Stability and Growth maps in support of the proposed River Design Overlay District.
- **2017: SA-2**- The TMAPC approved a City Council initiated proposal to apply RDO-1 (River Design Overlay) zoning to the approximately 25 acre subject site.

Justification: During the map amendment process (SA-1) to assign RDO-1, RDO-2, and RDO-3 to certain properties along the river, several members of the public voiced concern regarding the proposed RDO-2 zoning designation for Helmerich Park. The City Council removed this 25 acre portion (the subject site) of Helmerich Park from the area being considered for the initial zoning map amendment (SA-1) and voted to initiate applying supplement zoning of RDO-1.

Concurrently with the adoption of the RDO in the Zoning Code in 2016, the Comprehensive Plan was amended to include a new land use category, *Arkansas River Corridor* and was given an *Area of Growth* map designation (CPA-43). The Land Use and Areas of Stability and Growth Maps were changed to align with proposed RDO designations. At the time, the site was originally proposed for RDO-2, therefore the land use designation was assigned *Arkansas River Corridor* and the Area of Stability and Growth designation as *Area of Growth*. The staff found that the Land Use and Area of Growth map designations were not significantly incompatible and could be resolved through the 2017 housekeeping amendment process.

In 2017, the RDO-1 zoning designation (SA-2) was adopted for this 25 acre site. With the approval of the supplemental zoning of RDO-1 (SA-2) for the subject site, the current Land Use and Growth and Stability designation assigned to the property do not adequately reflect the existing zoning. The *Park and Open Space* Land Use designation and *Area of Stability* will be consistent with the supplemental zoning of RDO-1.

<u>Staff Recommendation</u>: Staff recommends changing the subject site to the *Park and Open Space* land use designation and an *Area of Stability*.

Feet
0 250 500

Subject Tract

CPA-67

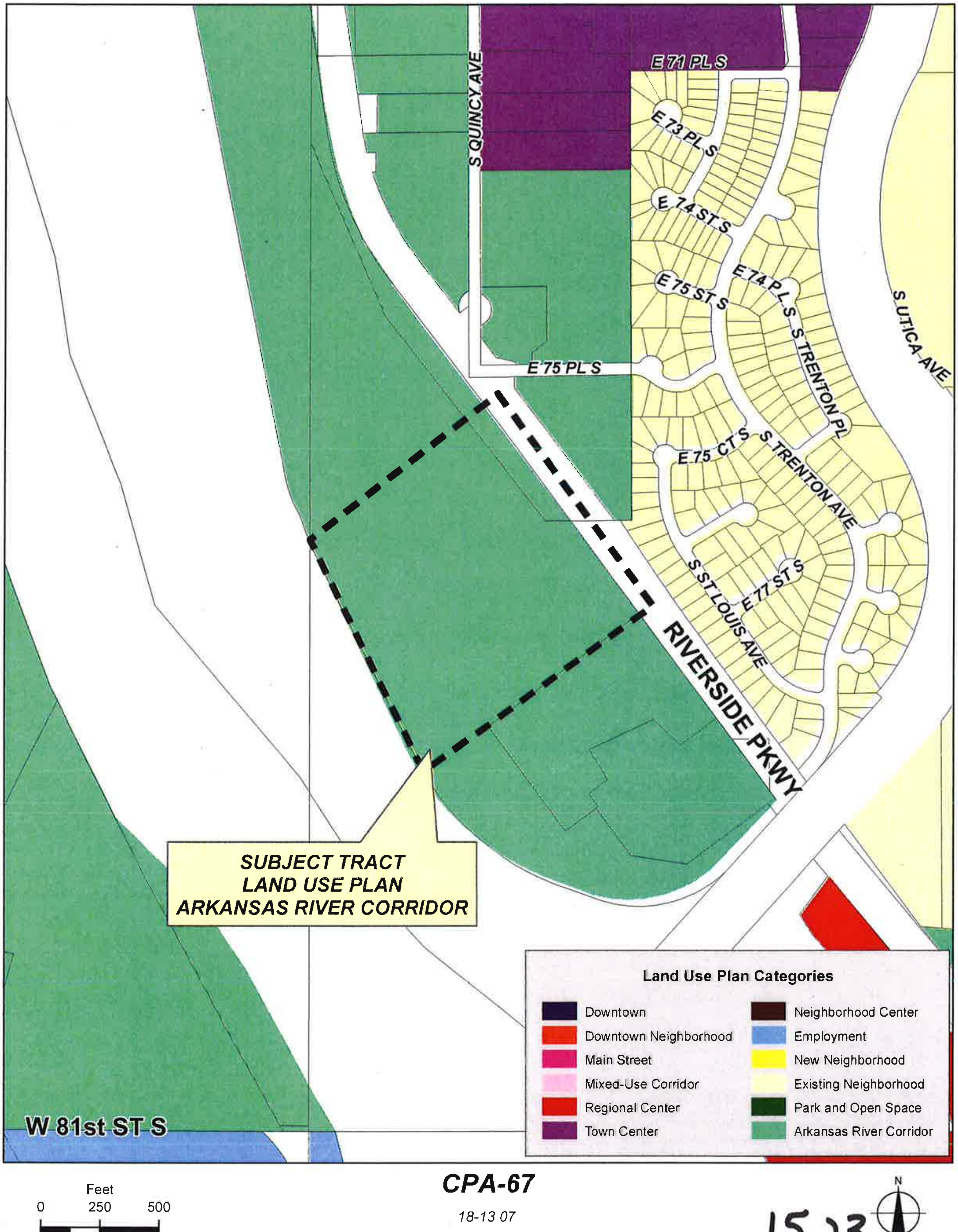
18-13 07

Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

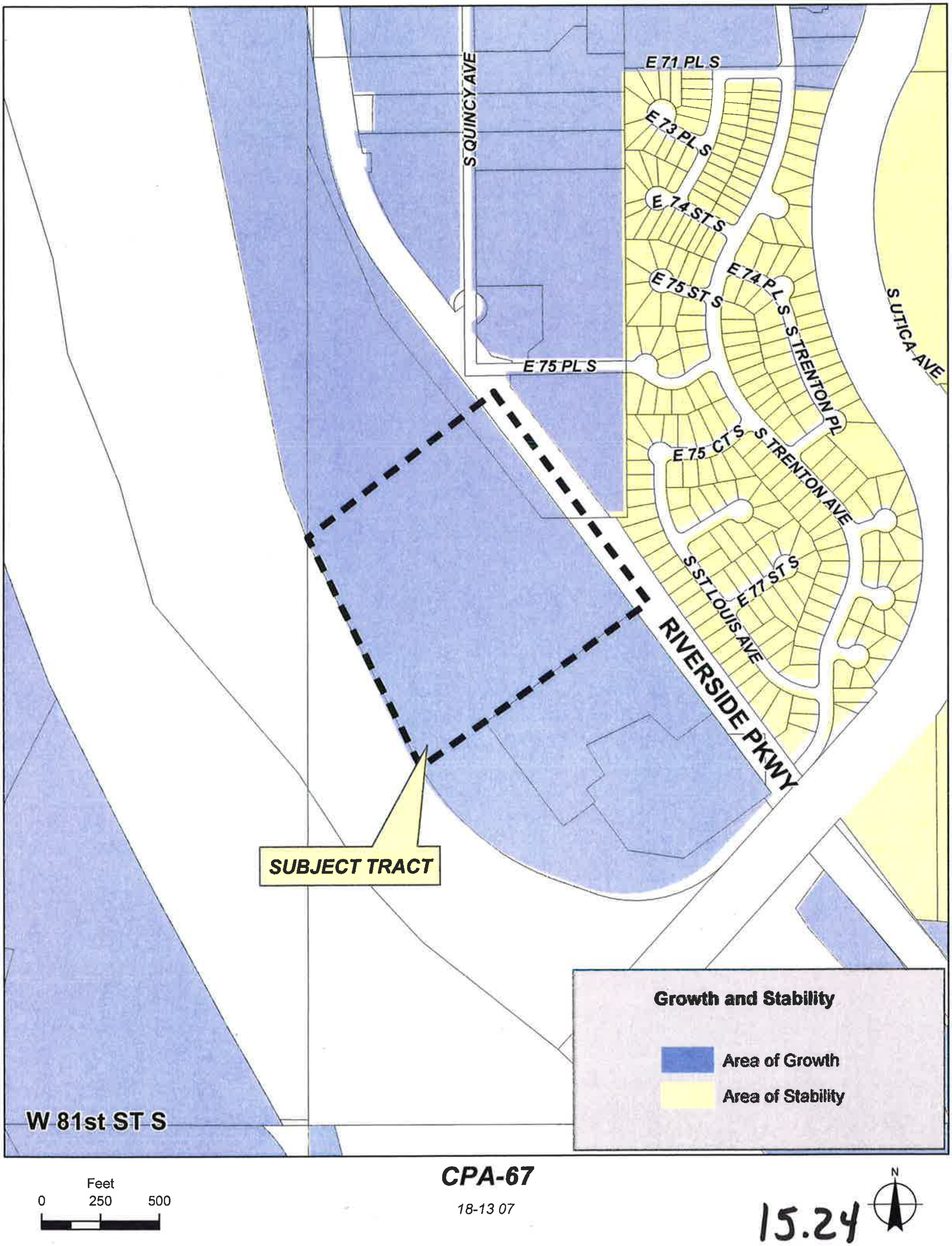
15.22



CPA-67

18-13 07

15.23



CPA-67

18-13 07

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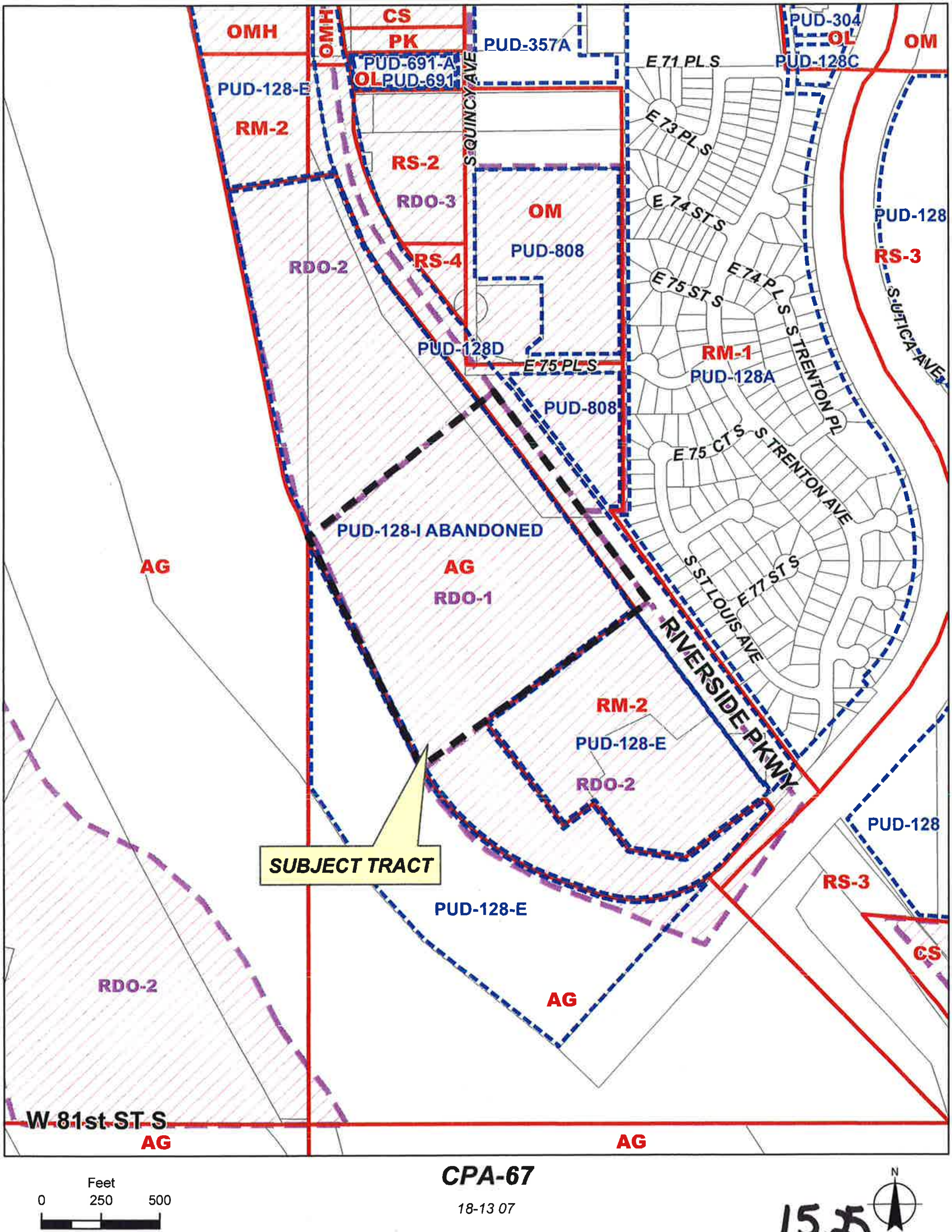


CPA-67

18-13 07

15.25

ATTACHMENT 5
Comprehensive Plan Amendment CPA-68
Change of Land Use Designation

Location: West side of River, south of W. 71st Street South – between levee and RR tracks
Size: ± 42 Acres **Zoning District:** IL **Existing Use:** Vacant

	Land Use Designation	Stability & Growth Designation
Existing	*Arkansas River Corridor*	*Area of Growth*
Proposed	*Employment*	*N/A*

Development Approval History:
- **2016: CPA-43**- The TMAPC approved a Comprehensive Plan Amendment to establish and define an *Arkansas River Corridor* Land Use category; and amendments to Land Use and Stability and Growth maps in support of the proposed River Design Overlay District.
- **2017: SA-1**- The TMAPC approved supplemental rezoning to RDO-1, RDO-2, and RDO-3 of properties located generally east and west of the Arkansas River extending from West 11th Street South to East 121st Street South.

Justification: In 2016, the TMAPC approved a Comprehensive Plan Amendment to establish and define an *Arkansas River Corridor* Land Use category; and amendments to Land Use and Stability and Growth maps in support of the proposed River Design Overlay District (CPA-43). During that time, the subject area was designated as *Arkansas River Corridor* and an *Area of Growth.*

The subject site was originally proposed to be rezoned to RDO-2 to align with the *Arkansas River Corridor* land use designation. At the end of the River Design Overlay zoning process staff found that the underlying IL zoning was more appropriate for the site and was removed from the final RDO zoning proposal (SA-1) approved in 2017. The *Arkansas River Corridor* land use designation should align with RDO-2 or RDO-3 zoning. The *Employment* land use designation will eliminate inconsistencies with the *Area of Growth* map desgination.

Staff Recommendation: Staff recommends changing the subject area to an *Employment* land use designation.

Feet
0 300 600

Subject Tract

CPA-68

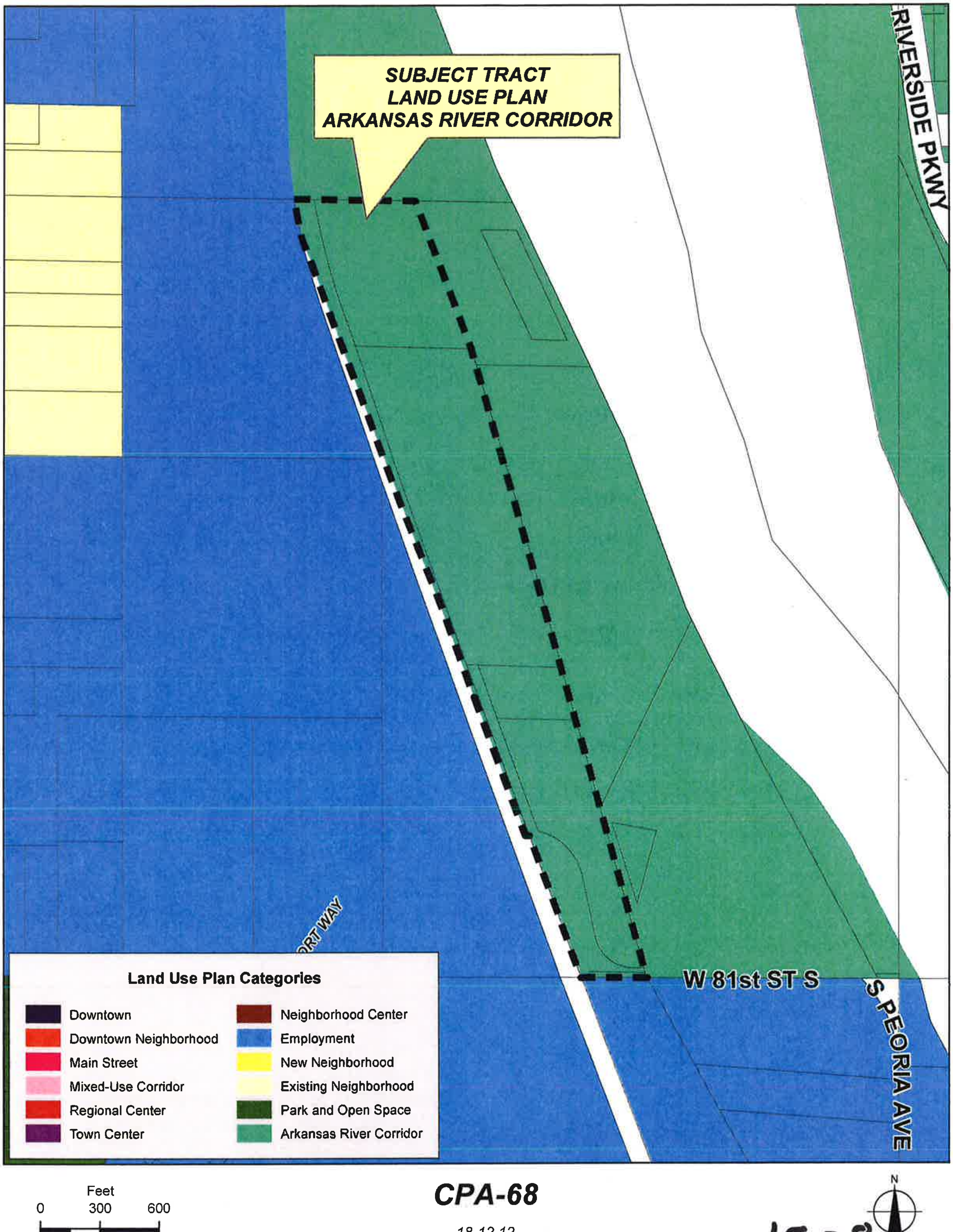
Note: Graphic overlays may not precisely align with physical features on the ground.

Aerial Photo Date: February 2016

N

18-12 12

15.27



CPA-68

18-12 12

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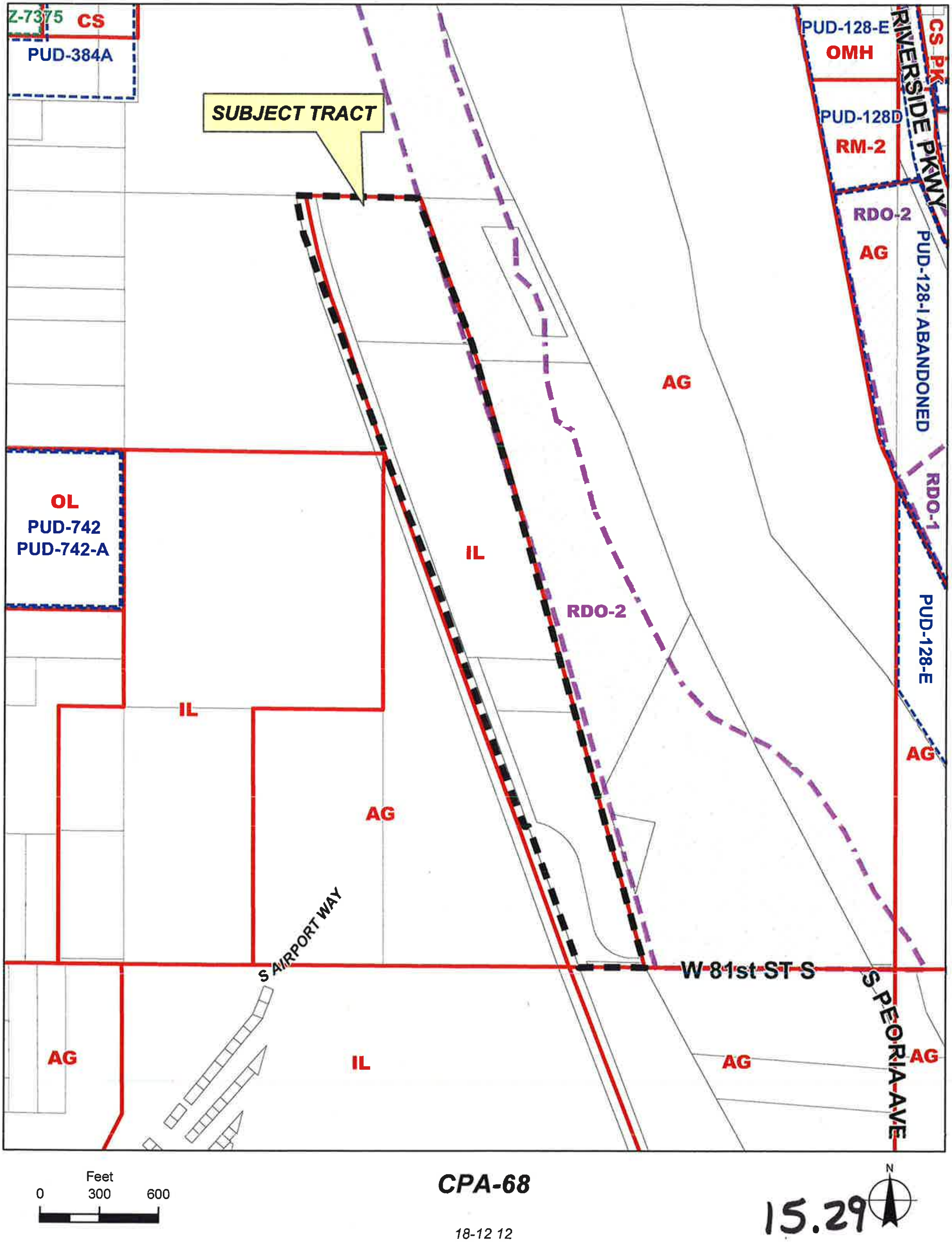

CPA-68

15.29

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