EAST KENOSHA CORRIDOR STUDY

CITY OF BROKEN ARROW
Where opportunity lives

PREPARED BY TSW FOR THE CITY OF BROKEN ARROW

MARCH 9, 2023

Image courtesy Chris Lo (Livability.com)

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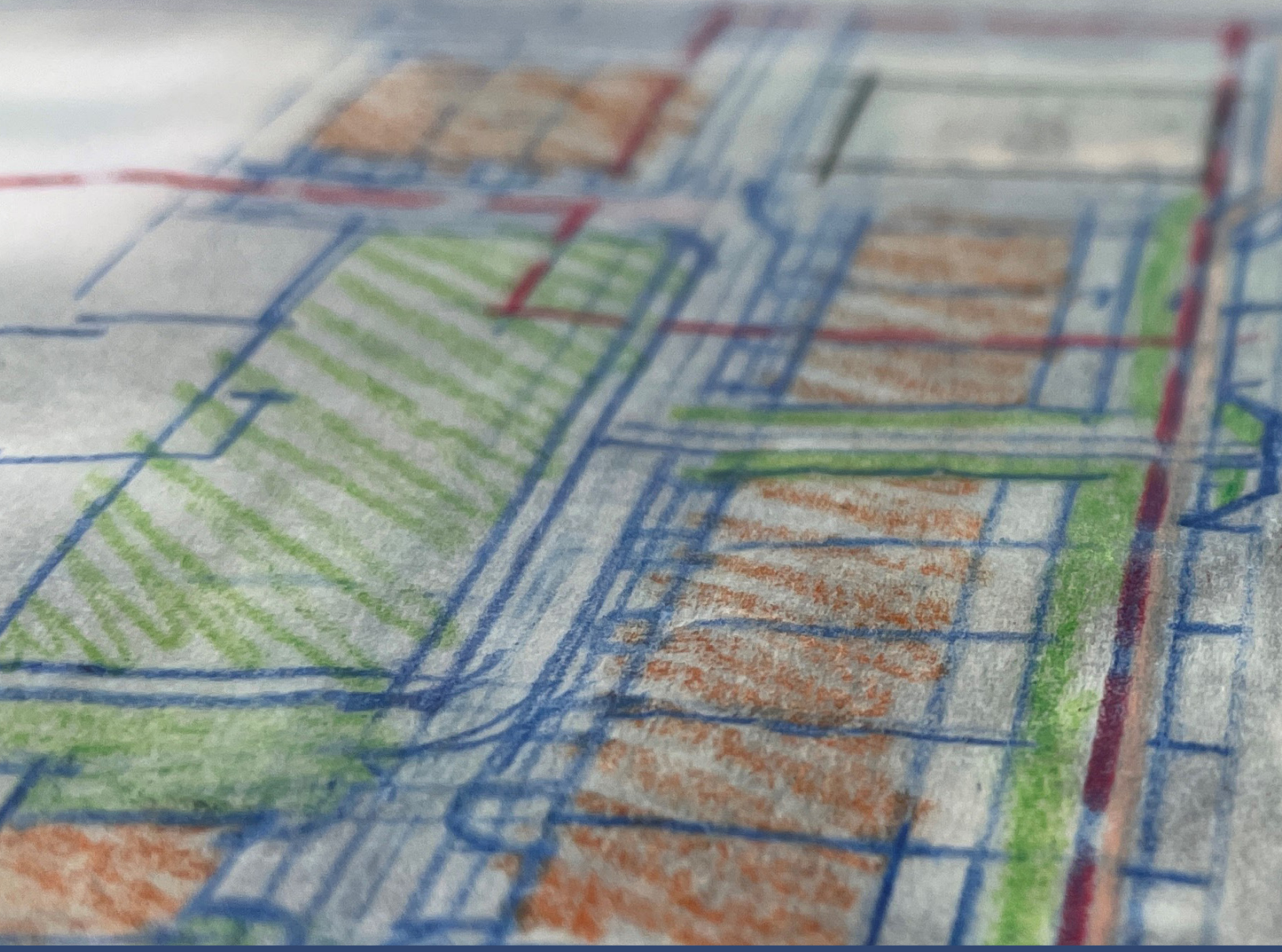
BROKEN ARROW
37th STREET PARK
SPLASH PAD RULES:
PLAYGROUND RULES:



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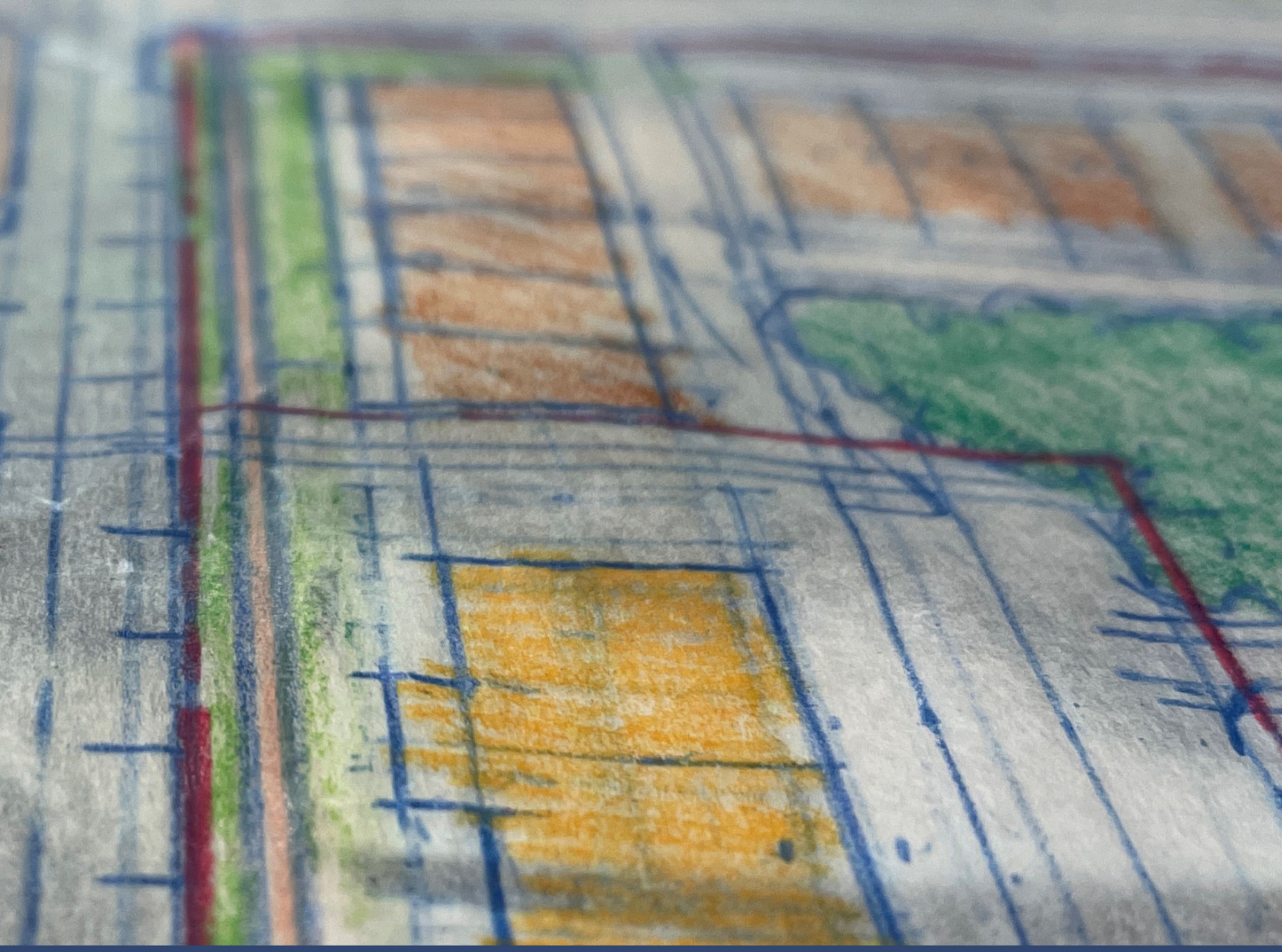


INTRODUCTION

PROJECT PURPOSE

The purpose of this report is to review and update the 2009 Eastside Study and prepare land use and design guidelines that is keeping with the vision of the Broken Arrow NEXT Comprehensive Plan that was adopted in 2019.

PROJECT CONTEXT

Broken Arrow is the fourth largest city in the state of Oklahoma. It has a growth rate of almost 15% in the past ten years according to U.S. Census Bureau numbers.

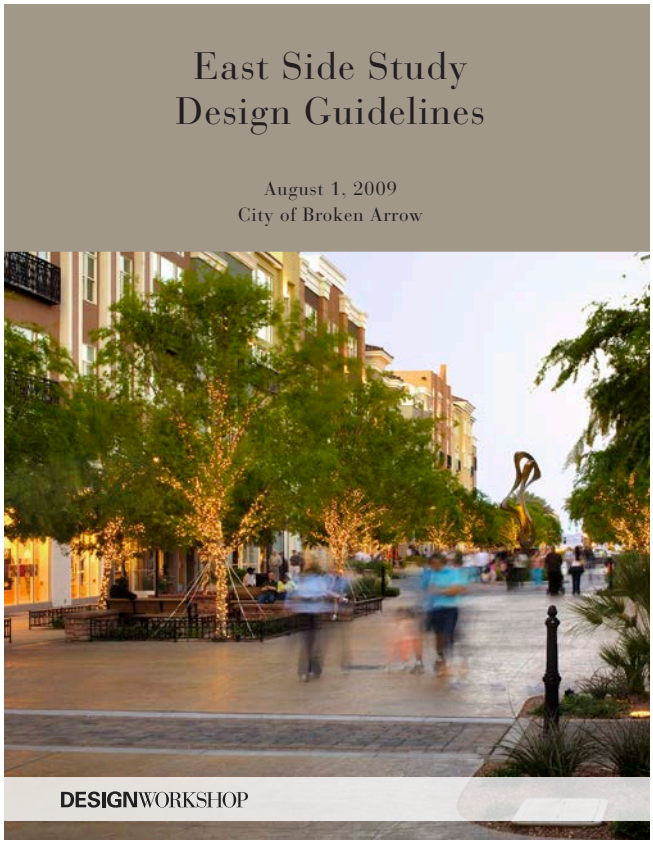
The East Kenosha corridor is a significant growth area on the east side of the City. A study was conducted for this area and design guidelines were created in 2009, as an effort to guide development for this area, however the plan was never officially adopted by the city council. Since 2009, the study area has seen significant growth and new development, leaving on a handful of opportunity areas for future development.

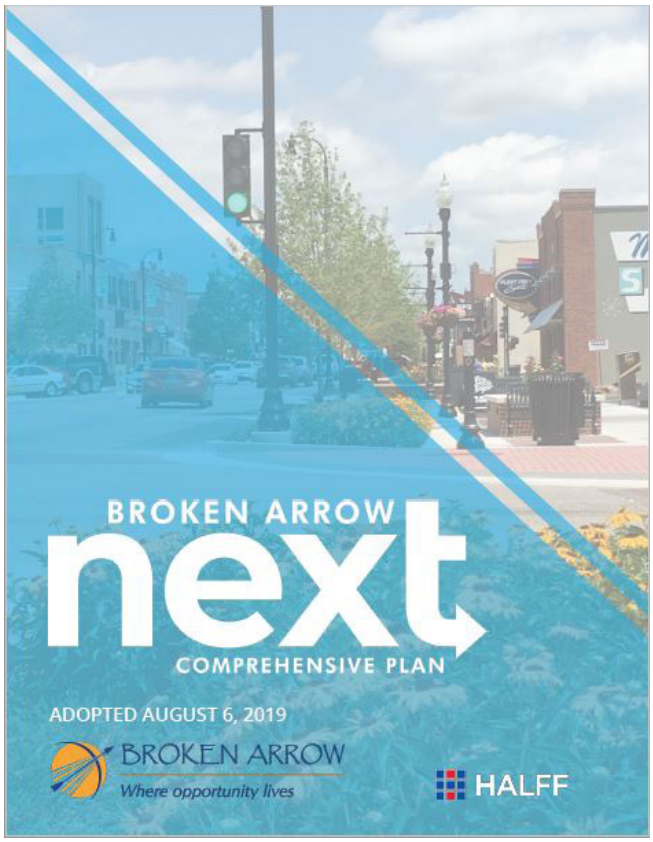
In August 2019, the City adopted the Broken Arrow NEXT Comprehensive Plan, which set a brand new vision to improve quality of life for the Broken Arrow community. This plan seeks to align area that are susceptible for change and growth with that long term vision .

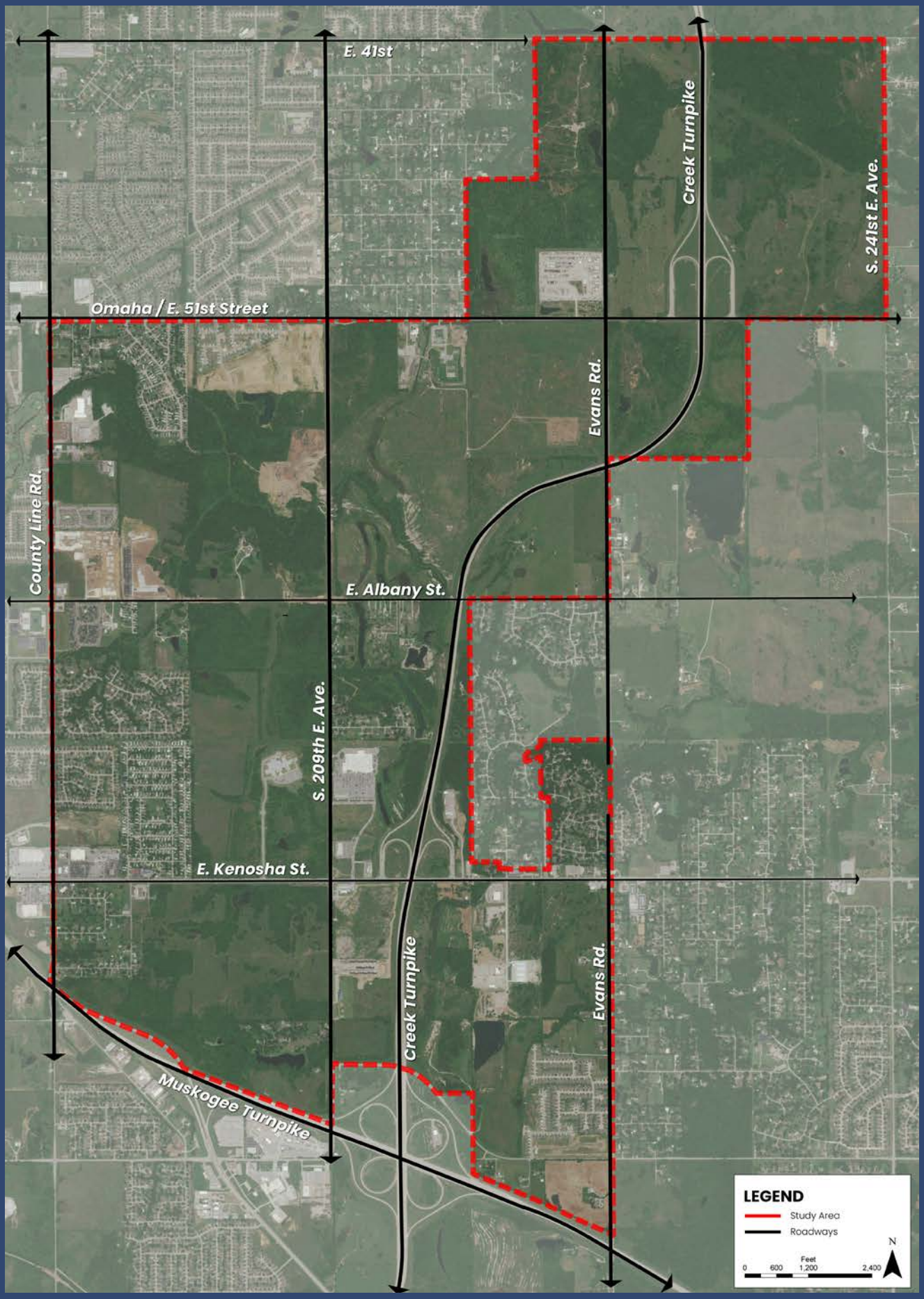
With the above context, it is the city's goal to revisit this area and update the land use and design guidelines to better accommodate development and growth in a proactive manner.

PROJECT BOUNDARY

The study area shown is based on the boundaries of the previous Eastside Study with the northern expansion of additional land area along the Creek Turnpike. The study area is roughly bounded by East 51st Street and East 41st Street on the north, Evans Road and South 241st E Avenue on the east, Muskogee Turnpike on the south, and County Line Road on the west. The total acreage for the Study Area is 4,371 acres (6.83 square miles).






E. 41st
Creek Turnpike
S. 241st E. Ave.
Omaha / E. 51st Street
Evans Rd.
County Line Rd.
E. Albany St.
S. 209th E. Ave.
E. Kenosha St.
Creek Turnpike
Evans Rd.
Muskogee Turnpike
LEGEND
Study Area
Roadways
N
0
600
1,200
2,400
Feet

CONSTRAINTS

1. Old Landfill Areas

Two closed landfills are located in the study area in the block framed by S. 209th Street, Omaha Street, Creek Turnpike, and E. Albany Street. They are limited to open space or recreations uses in the future.

2. Strip Mining Pit Areas

Strip pits left from previous mining activities have a major presence along the Creek Turnpike. They have potential environmental issues, which made them hard to develop.

3. Floodplains, Streams, and Wetland Areas

Adams Creek and its tributaries run through the central portion of the study area. Floodplains and wetlands along the creek pose both opportunities and challenges to development in areas adjacent to them.

4. Utility and Capacity Constraints

The entire study area is located within the Adams Creek sewershed basin. The existing sewer flows within the basin are currently pumped, in some cases several times, to be treated at the Lynn Lane Wastewater Treatment Plant (WWTP). Two large lift stations that are responsible for much of the flow in the Adams Creek Sewershed Basin are also in need of significant repairs. The feasibility of a new WWTP located in the Adams Creek Sewershed is in need of evaluation to determine if wastewater could be treated more efficiently and economically at a new in-basin WWTP compared to continued pumping and then treatment at the LLWWTP. It is desired that the Adams Creek collection system also be evaluated for optimization of treatment and conveyance. To assist in this effort, flow monitoring and water quality discharge modeling will be included. This evaluation will provide an overview of concepts, regulatory, technical, and cost implications associated with these concepts and will be summarized in the Adams Creek Sewershed Feasibility Report. The study in anticipated to be finished in early 2023 and could propose future infrastructure projects within the Kenosha Study area. The areas shown with yellow outlines on the map to the right highlights the area with current sewer constraints.

SUSCEPTIBILITY TO CHANGE

The map on the right highlights areas with existing or planned development in pink. The green areas include the landfills and strip mining pits which are not suitable for development. The rest of the areas are susceptible to change.

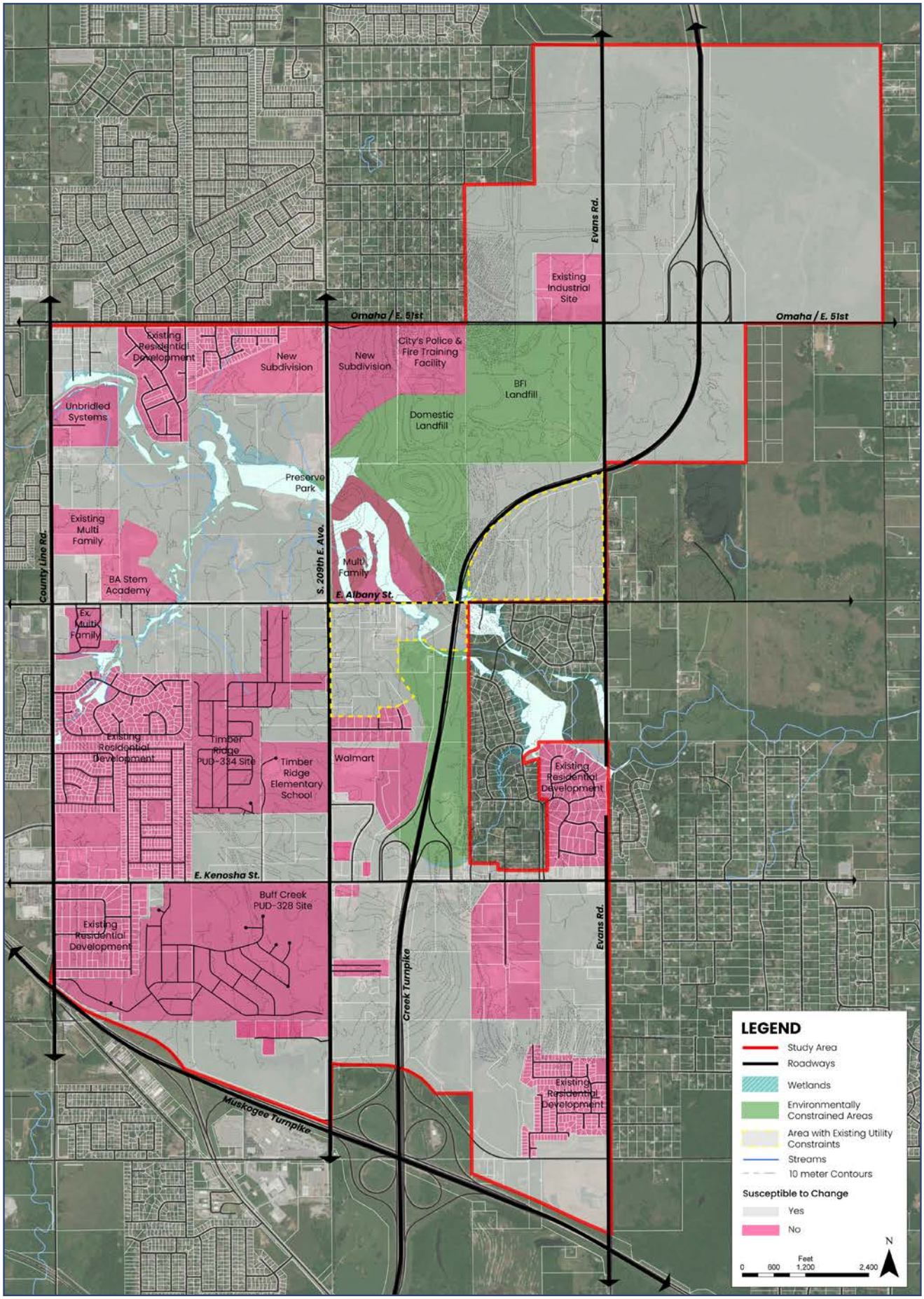
Near term development potential are more likely to be at the intersections of S. 209th Avenue with Kenosha Street and Albany Street, since they are close to the new Walmart and elementary school.

Currently there is an ongoing Fair Oaks Plan involving the properties on the northeast of the study area, which has potential to become a mixed-use community in the future.

In the long term, areas along Creek Turnpike has the potential for commercial and employment center development. The rest of the area will likely to provide housing opportunities.

Closed Landfills

Strip Mining Pit


Omaha / E. 51st
Omaha / E. 51st
Evans Rd.
Existing Industrial Site
Existing Residential Development
New Subdivision
New Subdivision
City's Police & Fire Training Facility
BFI Landfill
Domestic Landfill
Unbridled Systems
Preserve Park
Existing Multi Family
BA Stem Academy
County Line Rd.
S. 209th E. Ave.
Multi Family
E. Albany St.
Ex. Multi Family
Existing Residential Development
Timber Ridge PUD-334 Site
Timber Ridge Elementary School
Walmart
Existing Residential Development
E. Kenosha St.
Buff Creek PUD-328 Site
Existing Residential Development
Creek Turnpike
Evans Rd.
Existing Residential Development
Muskogee Turnpike
LEGEND
Study Area
Roadways
Wetlands
Environmentally Constrained Areas
Area with Existing Utility Constraints
Streams
10 meter Contours
Susceptible to Change
Yes
No
N
0
600
1,200
2,400
Feet

Existing 6-lane, arterial County Line Road (looking north)

Existing shopping center on the north side of E. Kenosha Road close to County Line Road

E. Kenosha Road between 209th Avenue and Creek Turnpike (Looking east)

EXISTING DEVELOPMENT PATTERNS

Development begins on the eastern edge the study area, with the first concentration of development around the intersection of County Line Road and E. Kenosha Street. The development pattern is typical suburban commercial strips centers that are vehicular focused with vast amounts of surface parking lots that front the arterial corridors. Behind the shopping areas are a couple of single family subdivisions, including a large mobile home park.

There are two existing apartment complexes close to the intersection of County Line Road and E. Albany Street.

A new elementary school and Walmart have been built in recent years, but both are located in isolated areas only accessible by cars.

The City has received several development proposals for single-family subdivisions and one apartment

complexes in the study area. One of the Planned Unit Developments (PUD) proposes commercial development along the E. Kenosha Road frontage.

There are only two parks in the study area, one is Camino Villa Park in the center of the mobile home park community, the other one is the newly constructed Preserve Park off 209th E. Ave. Preserve Park is not in close proximity to any existing neighborhoods, but will likely attract development around it. The park adjacent to Adams Creek and provides opportunity to extend trails along the creek corridor in the future.

The eastern and most northern portion of the study is mostly open farm land and/or woodland and presents the most opportunity for future growth and development to occur.

The recent completed Preserve Park located off 209th E. Ave.

The new elementary school is located in an isolated area and only accessible by cars and school buses

The Walmart is also located in an isolated area

FUTURE LAND USE

The map on the right shows the Broken Arrow NEXT Comprehensive Plan vision for this area.

The areas around the two Creek Turnpike exits are envisioned to be regional employment and commercial centers. Intersections of major roads are poised to be commercial and employment nodes surrounded by transition area which is intended mostly for higher density residential uses. The rest of the area located away from the major arterials and close to Adam's Creek environmental sensitive area are targeted for typical residential subdivision development.

The future land use vision mainly includes the following four levels of development patterns according to the Comprehensive Plan:

Level 2: Urban Residential

This is standard residential subdivision land use. The primary use is single family detached homes. It does allow two-family units and neighborhood office parks adjacent to arterial streets.

Level 3: Transitional Area

This level is to transition from strictly residential development to strictly non-residential development. Principal uses in this district are higher density single-family detached, single-family attached, multi-family apartments, neighborhood offices and planned office parks.

Level 4: Commercial/Employment Nodes

This level represents the typical local commercial and office land use developed in nodes around arterial streets intersections. Principle uses include free-standing commercial buildings, small-scale shopping centers and offices.

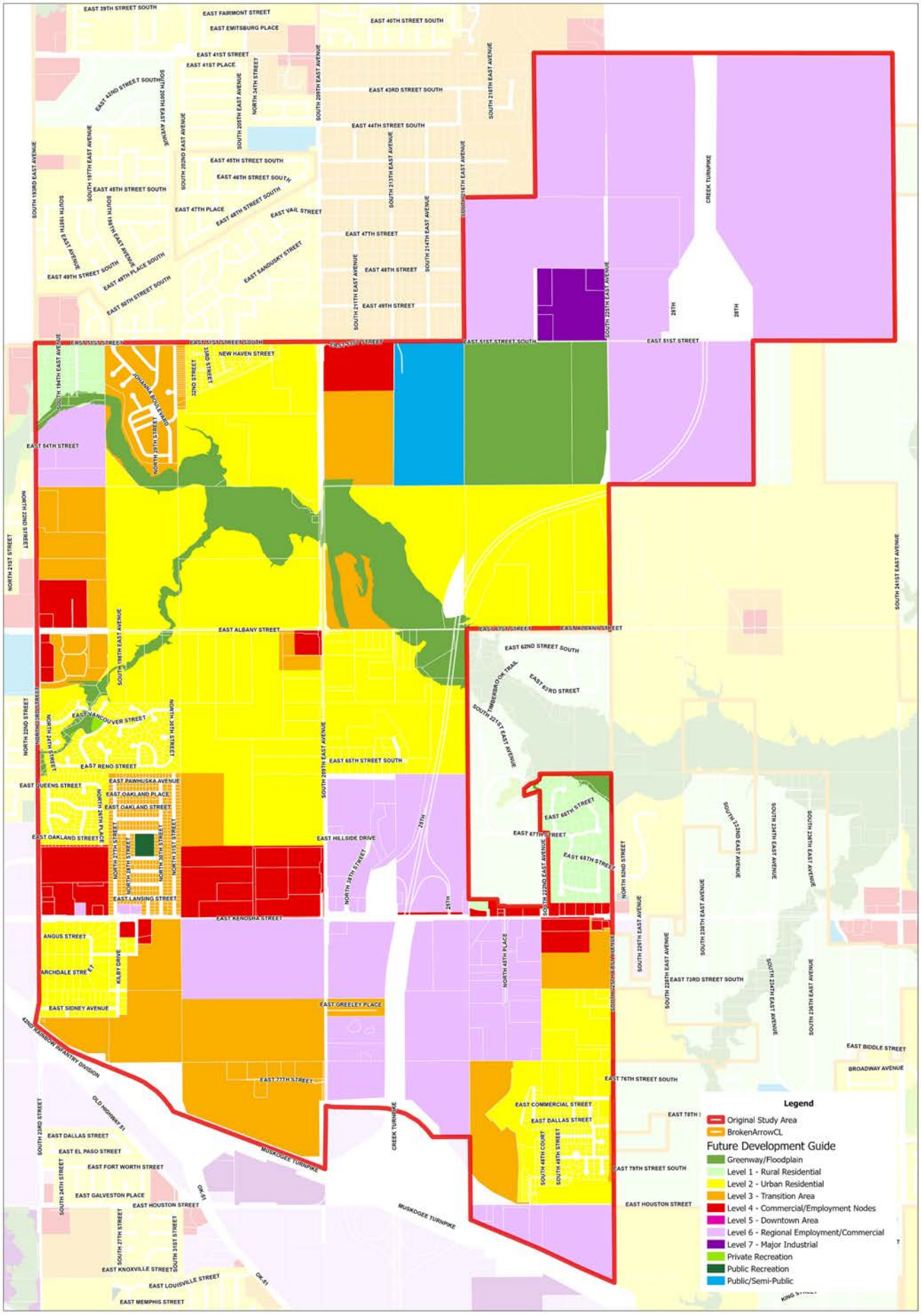
Level 6: Regional Employment/Commercial

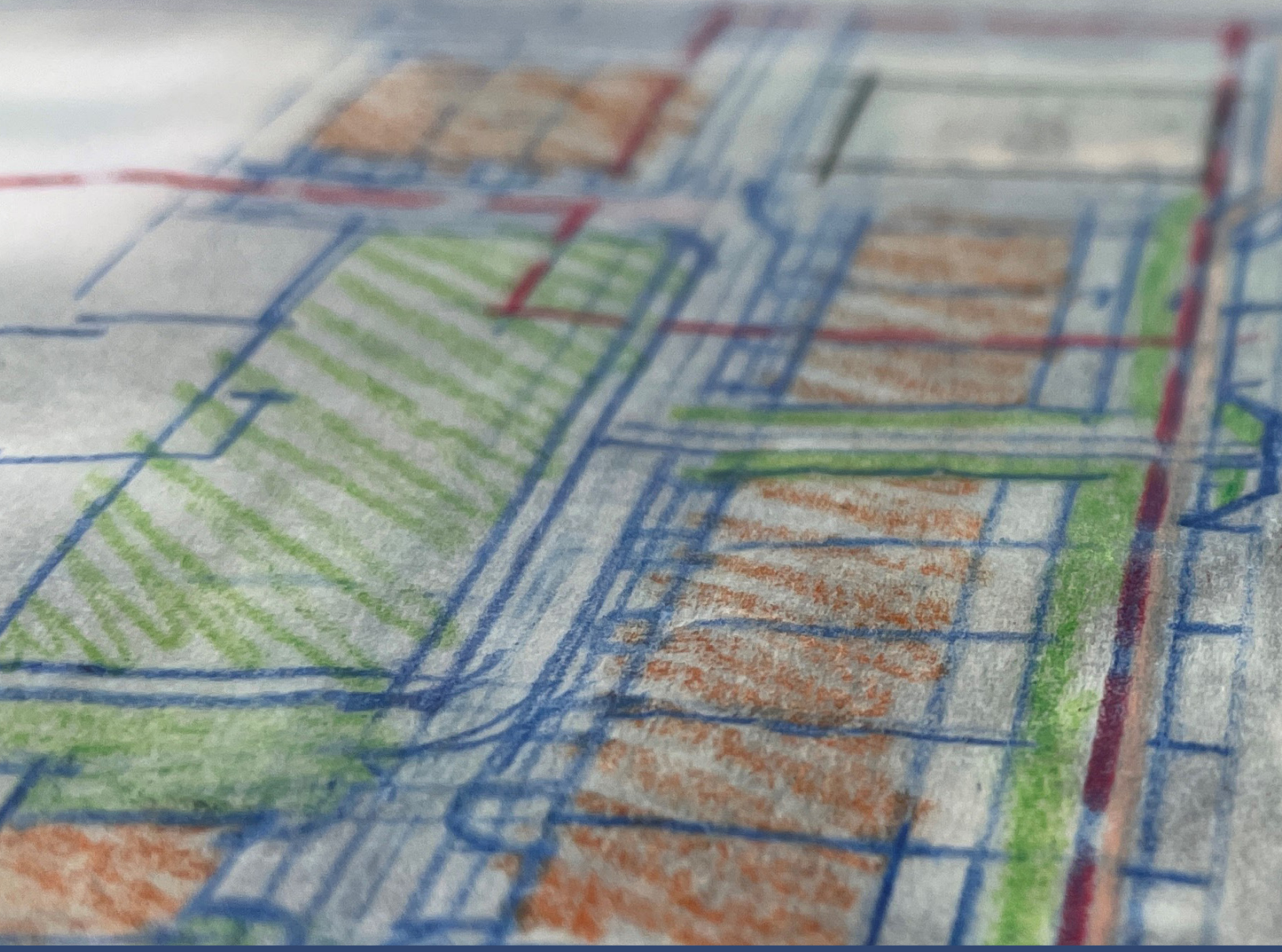
This classification is for a mixture of medium to high intensity commercial and employment uses in the vicinity of major transportation corridors. They suppose to form regionally significant and highway oriented activity nodes with large shopping centers, big box retailers, and office/light industrial employment centers.

The following table shows zoning classifications allowed for each land use level from the Comprehensive Plan.

Land Use Intensity Classification System per Zoning Ordinance

Zoning Districts	Level 1	Level 2	Level 3	Level 4	Level 5	Level 6	Level 7
A-1 Agricultural District	**Allowed**						
RE: Residential Estate District	**Allowed**						
RS-1; Single-Family Residential District	**Allowed**						
R-2: Single-Family Residential District	Possible	**Allowed**	Possible				
RS-2; Single-Family Residential District	Possible	**Allowed**	Possible				
RS-3; Single-Family Residential District	Possible	**Allowed**	Possible				
RD: Residential Duplex District		Possible	**Allowed**				
RM: Residential Multi-Family District			**Allowed**		Possible		
RMH: Residential Mobile Home District			**Allowed**				
NM: Neighborhood Mixed-Use District			**Allowed**	**Allowed**			
CM: Community Mixed-Use District				**Allowed**			
DM: Downtown Mixed-Use Core District					**Allowed**		
DF: Downtown Fringe District			Possible		**Allowed**		
ON: Office Neighborhood District		Possible	**Allowed**	**Allowed**	Possible		
CN: Commercial Neighborhood District				**Allowed**	Possible	**Allowed**	
CG: Commercial General District				**Allowed**	Possible	**Allowed**	
CH: Commercial Heavy District						**Allowed**	Possible
IL: Industrial Light District						Possible	**Allowed**
IH: Industrial Heavy District							**Allowed**


Legend
Original Study Area
BrokenArrowCL
Future Development Guide
Greenway/Floodplain
Level 1 - Rural Residential
Level 2 - Urban Residential
Level 3 - Transition Area
Level 4 - Commercial/Employment Nodes
Level 5 - Downtown Area
Level 6 - Regional Employment/Commercial
Level 7 - Major Industrial
Private Recreation
Public Recreation
Public/Semi-Public



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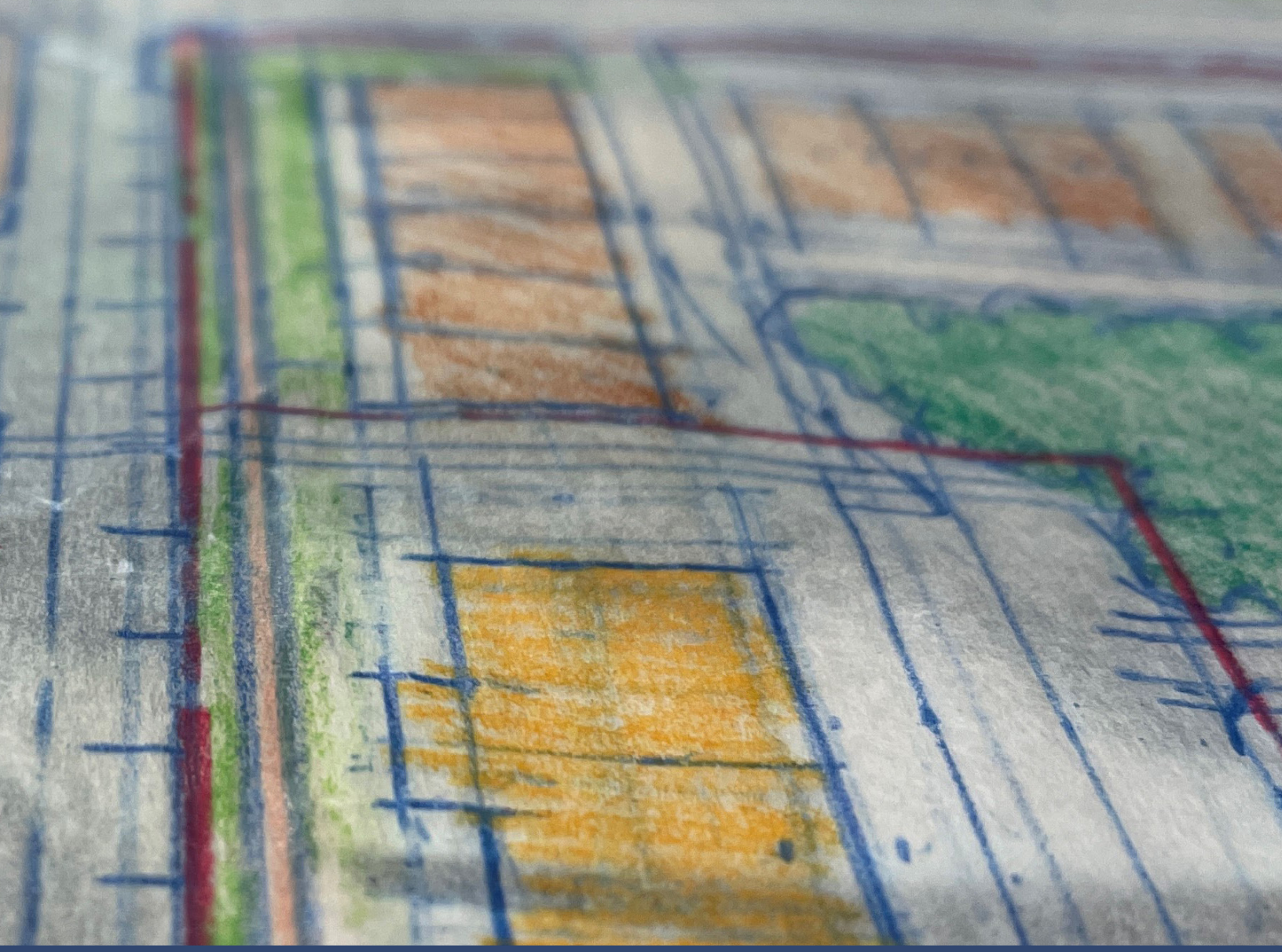


LAND USE

LAND USE

The guiding principle of the Broken Arrow NEXT Comprehensive Plan for land use and development is to manage growth in a sustainable manner to preserve and enhance community character. With this principle and vision in mind, the following land use character districts are recommended for the E. Kenosha Corridor Area to help guide future growth. They generally fall within the Comprehensive Plan land use classifications.

a. Commercial/Office - Similar to Level 6 with emphasis on commercial and office uses

b. Mixed Use - similar to Level 4 with an emphasis on mixture of uses

c. Mixed Residential - Similar to Level 3 and concentrates on a variety of residential uses

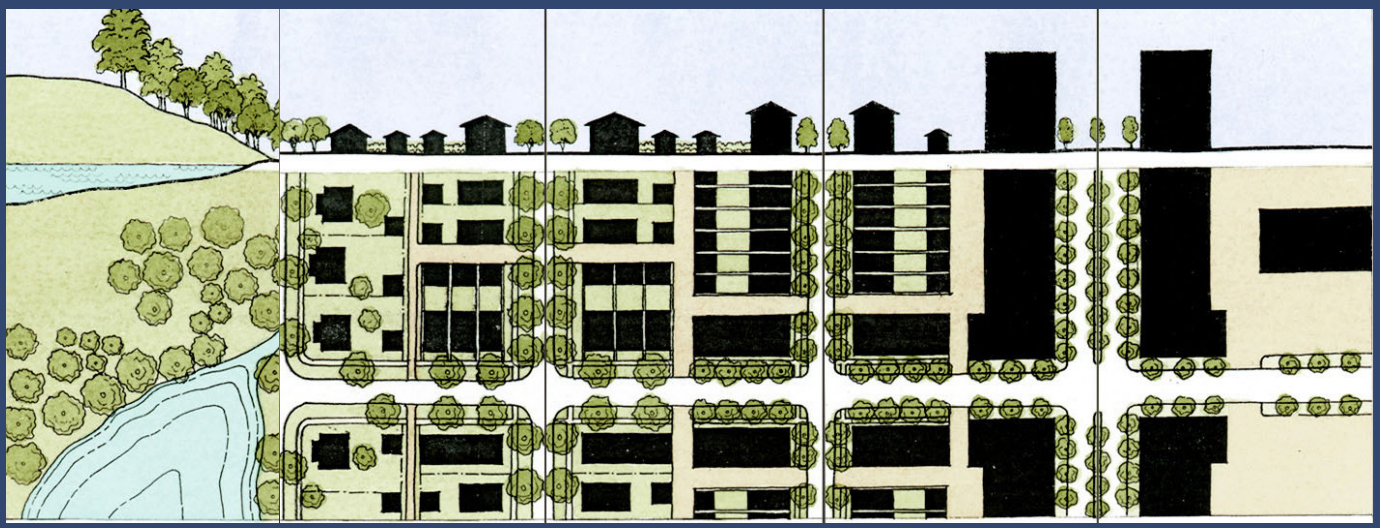
d. Single Family Residential - Similar to Level 2 which is targeted towards single-family residential development

e. Light Industrial/Employment Centers - Similar to Level 6 with an emphasis on light industrial parks

f. Open Space - Ranges from natural open space to parks and plazas

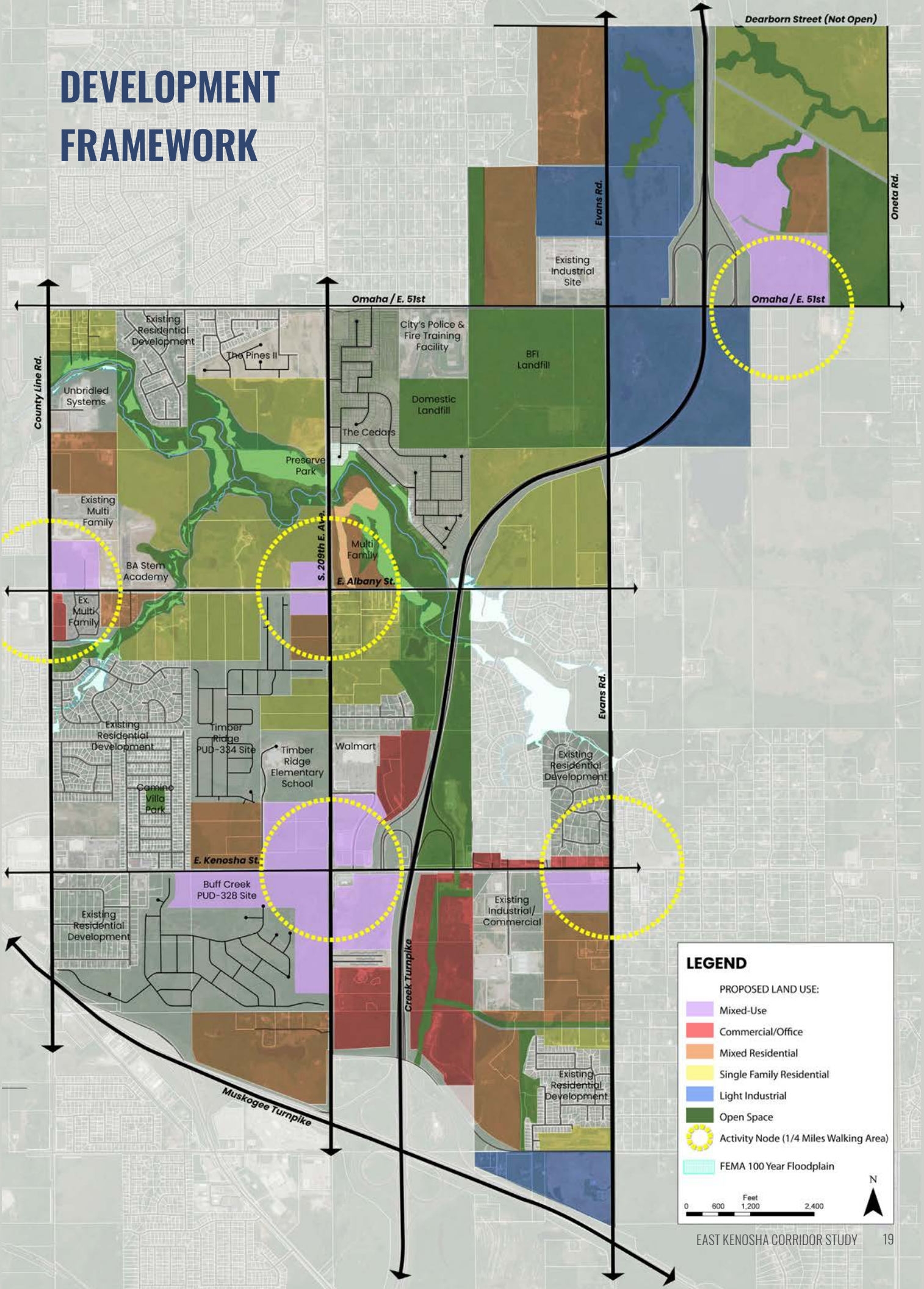
g. Activity Nodes - These areas are major arterial intersections that will become regional or neighborhood activity centers.

Rose District in downtown Broken Arrow sets great example for commercial/mixed-use development pattern



Open Space | *Single Family Residential (Level 2)* | *Mixed Residential (Level 3)* | *Mixed Use (Level 4)* | *Commercial/Office/Light Industrial/Employment Center (Level 6)*

DEVELOPMENT FRAMEWORK



A. Commercial/Office

This category is intended for commercial and office development with the opportunity to attract a diverse mix of local, regional, and national retailers and companies that serve the broader Broken Arrow community, not just the study area itself. The proposed land use framework plan encourages both regional centers and neighborhood centers at different locations.

Big box anchor retail

Regional retail centers should be located close to the Highway and have a variety of tenants - from national chain anchors to local businesses, from retailers, to entertainment and restaurants.

Example of regional commercial center

Two-story main street commercial building that sets a good example for liner retail in a regional commercial center.

Smaller scale commercial buildings are appropriate for a neighborhood commercial center

Commercial development should address both vehicular and pedestrian needs.

Pedestrian friendly entertainment use can be part of regional commercial center.

Smaller scale office buildings are more compatible with residential development nearby.

Office building with ground floor retail uses

B. Mixed Use

This category of uses are located at major intersections of existing arterial streets or along an arterial corridor. It is intended for that both residential and non-residential development occur on one site. Non-residential or vertical mixed-use buildings should be locate on the exterior along arterial streets, while residential uses should be located in the back away from the thoroughfares. When a site faces two arterials, at least one side should have this arrangement, the other side can be residential only. (See examples on the right). Vertical mixed use typically means residential or office over commercial. Residential can range from multifamily, townhouse, duplex, to small lot single families. (See next page for built examples of different building types).

Below is a built example of a mixed-use project that has a variety of building types including: pure commercial, office, vertical mixed residential/commercial, townhouse, and single-family. It also has an integrated small pocket park/ plaza.

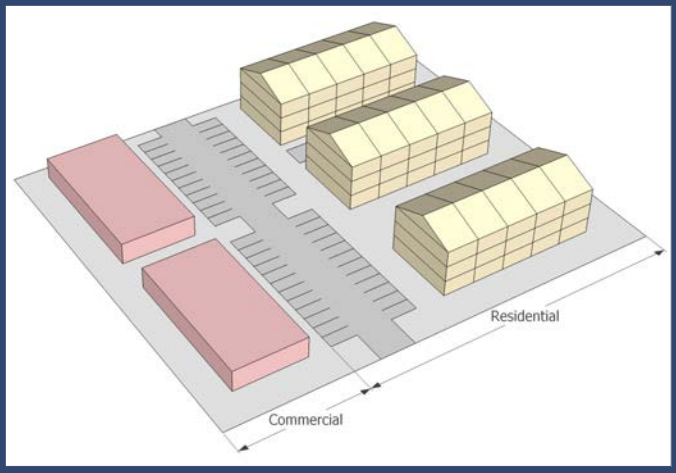


Illustration of Horizontal Mixed-Use

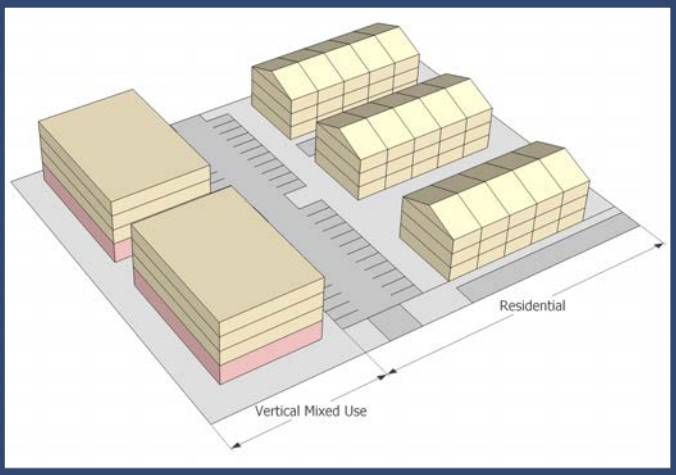
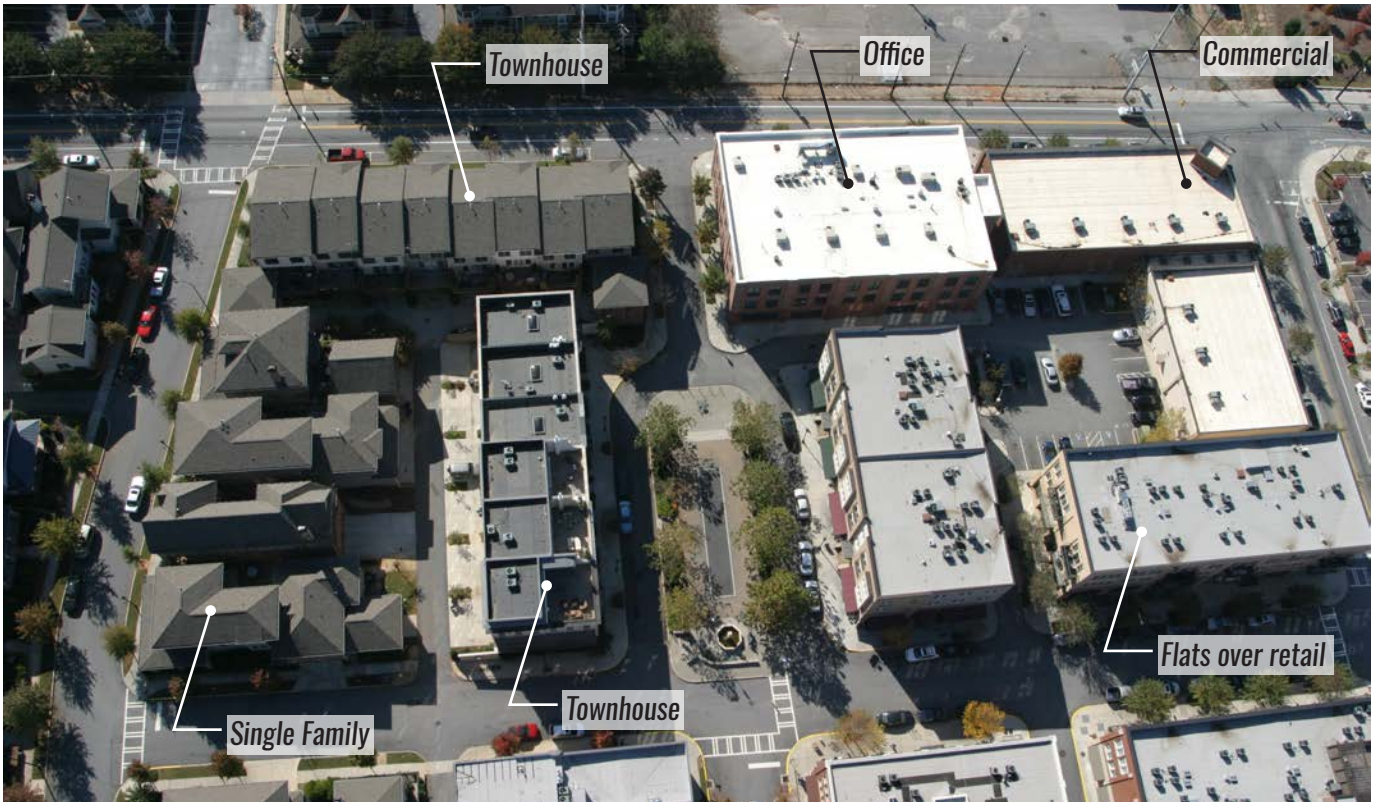


Illustration of Vertical Mixed-Use



Example of Mixed-Use Development

Townhouse over flats

Townhouse over retail

Townhouse

Urban, small lot single family

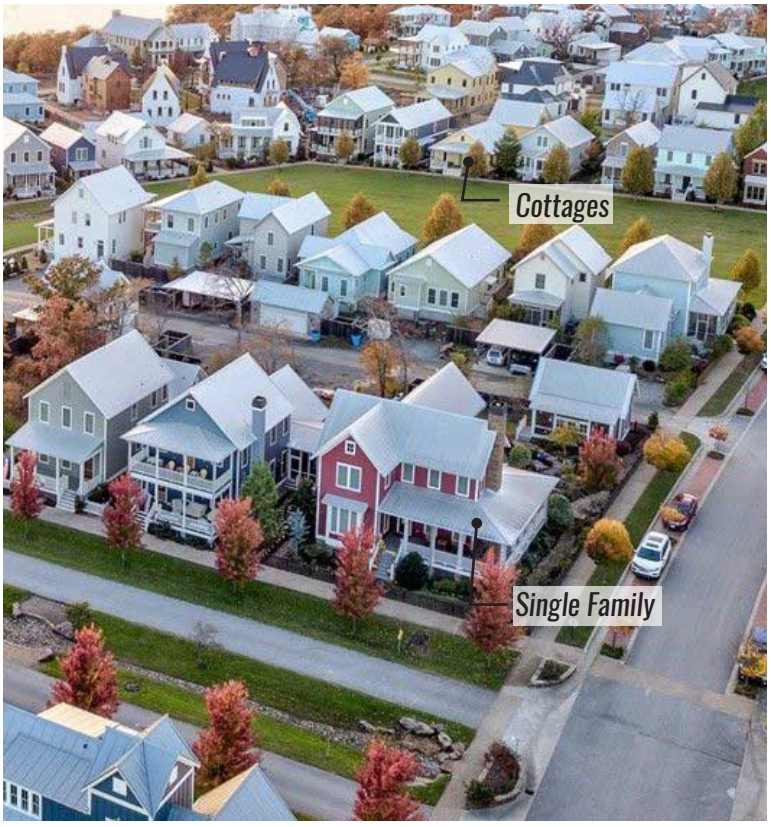
Flats over retail

C. Mixed Residential

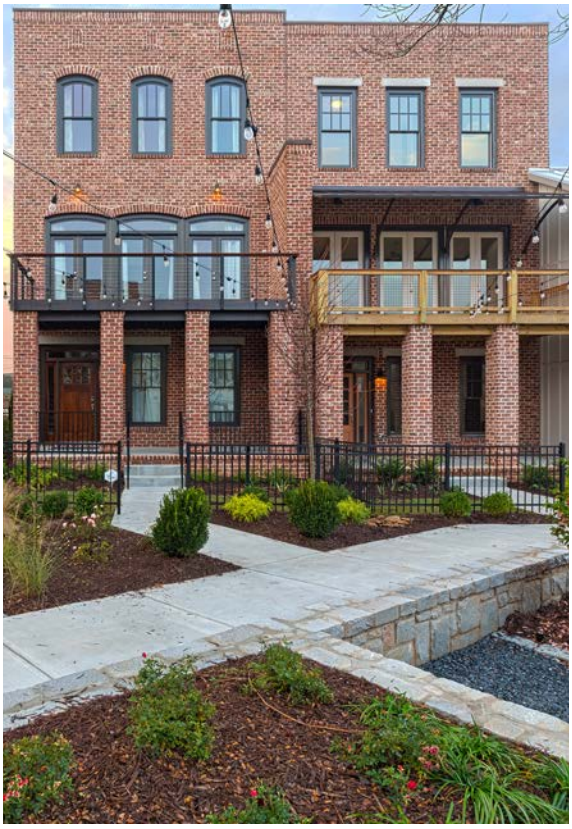
This category is intended for urban residential development ranging from multifamily, townhouse and duplex to small lot single family. High intensity development should be closer to arterial streets and transition into a lower intensity of residential in the back.

Duplex

Multi-Family



Example of mixed-residential development



Townhouse

D. Single Family Residential

Most of the single family residential will be located close to the Adam's Creek Area. These new neighborhoods should be developed with good accessibility and connectivity. Single family development within this category can have a variety of sizes to meet broader needs.

It is recommended that smaller single family lots (less than 50' wide) have parking access from rear alleys.

Small Lot Single Family

Single Family Cottage

Large Lot Single Family

Cottage Facing Green

Large lot Single Family

E. Light Industrial and Employment Centers

This area is intended for office and light industrial uses that will provide employment opportunities.

F. Open Space

This category is intended for parks and recreational uses. Open space types range from nature parks, community parks and neighborhood parks to pocket parks and community gardens. Chapter 4 of this report outlines the overall parks and open space framework, and design guidelines are provided in Chapter 5.

Office

Wetland nature park

Light industrial park

Pocket park

Office park

Community garden

G. Activity Nodes

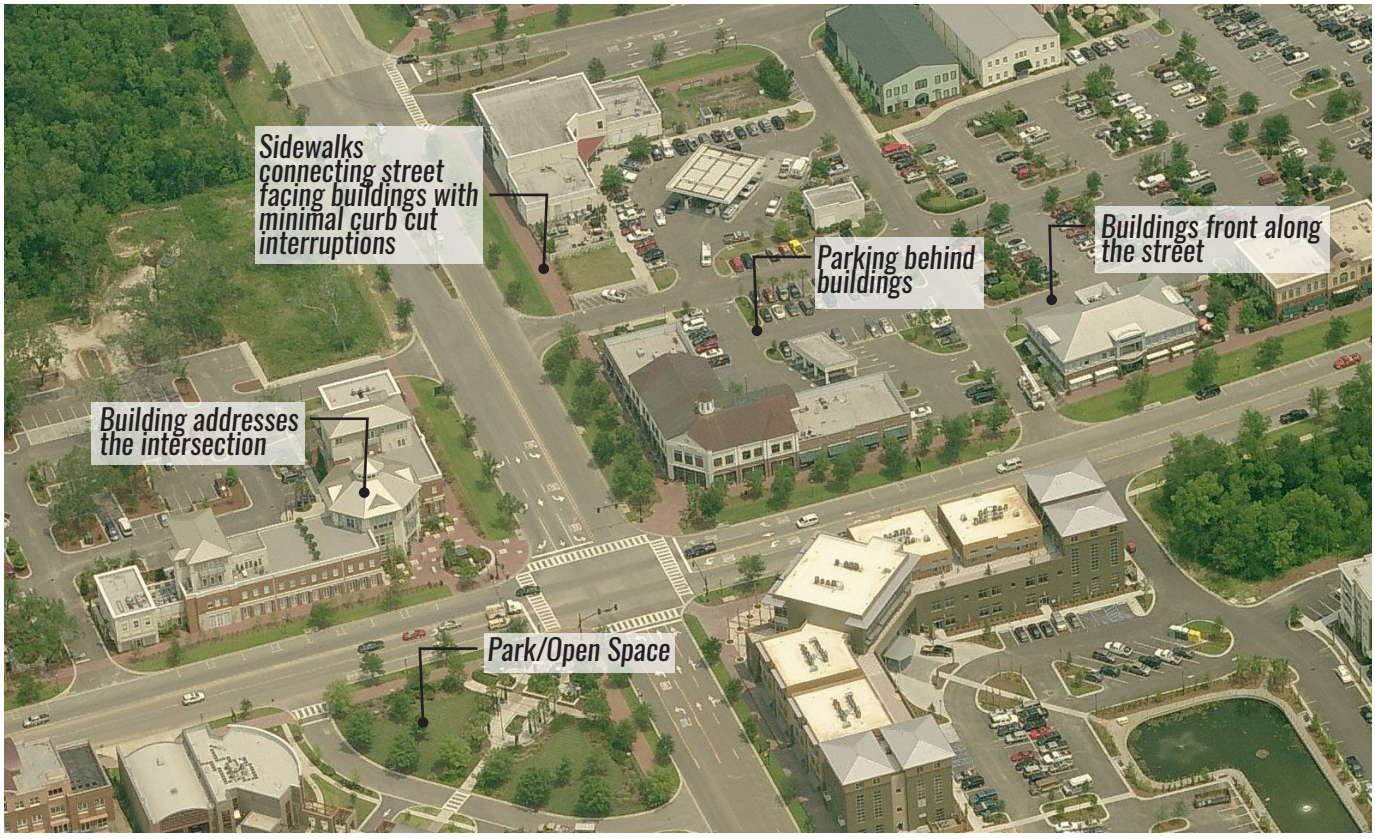
Activity nodes are major intersections on arterial streets where a mix of uses will serve the surrounding or broader communities. There are five activity nodes in the study area. Among them, two are envisioned to be regional nodes with higher intensity commercial/office development, they are:

- E. Kenosha Street and South 209th E. Avenue
- Omaha/E. 51st Street west of the Creek Turnpike

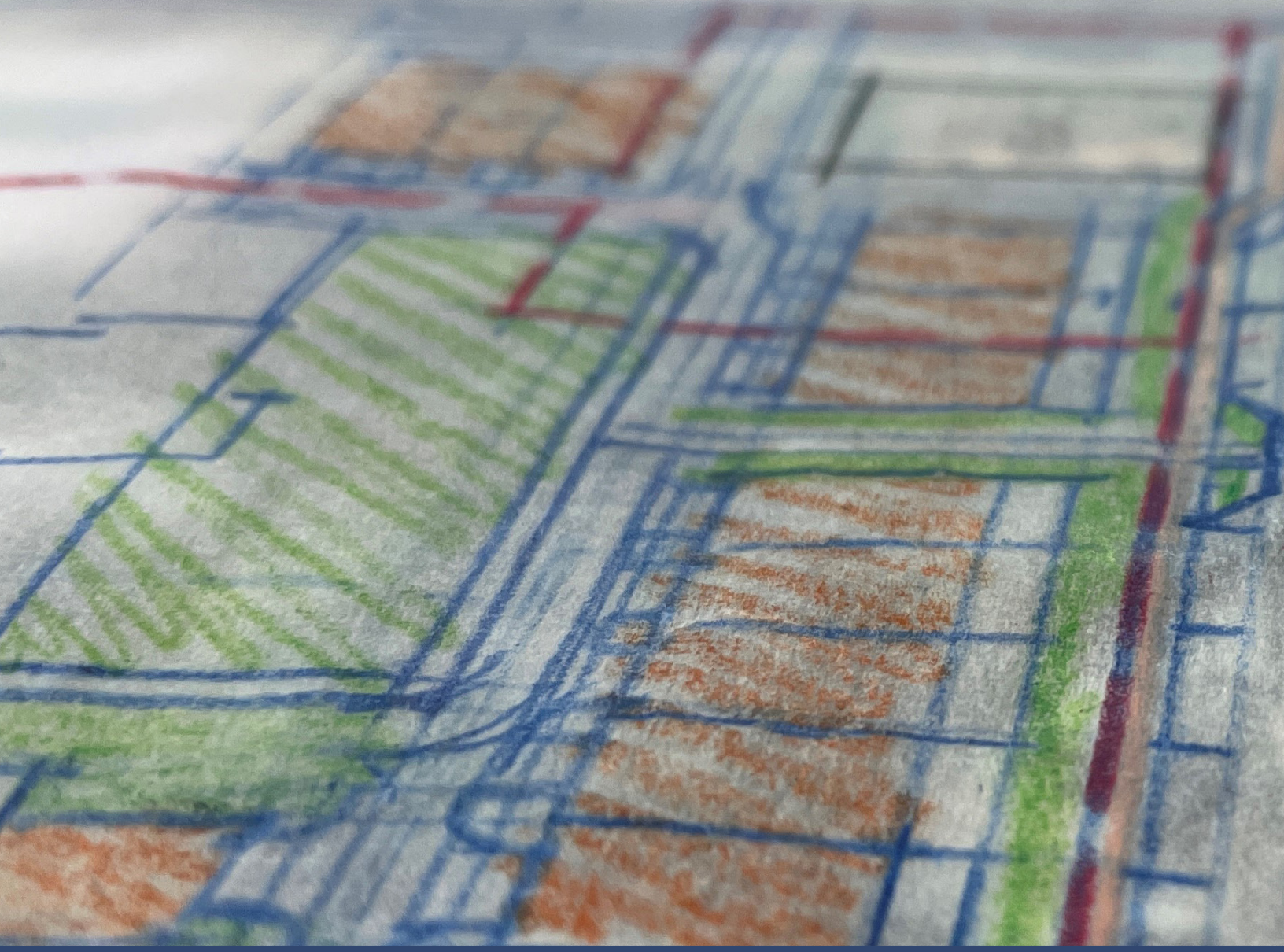
The other three will be neighborhood commercial nodes:

- E. Albany Street and County Line Road
- E. Kenosha Street and Evans Road
- E. Albany Street and South 209th E. Avenue

Neighborhood activity node with main street character and scale



To create an active and walkable activity node, buildings should embrace intersection with parking tucked behind.



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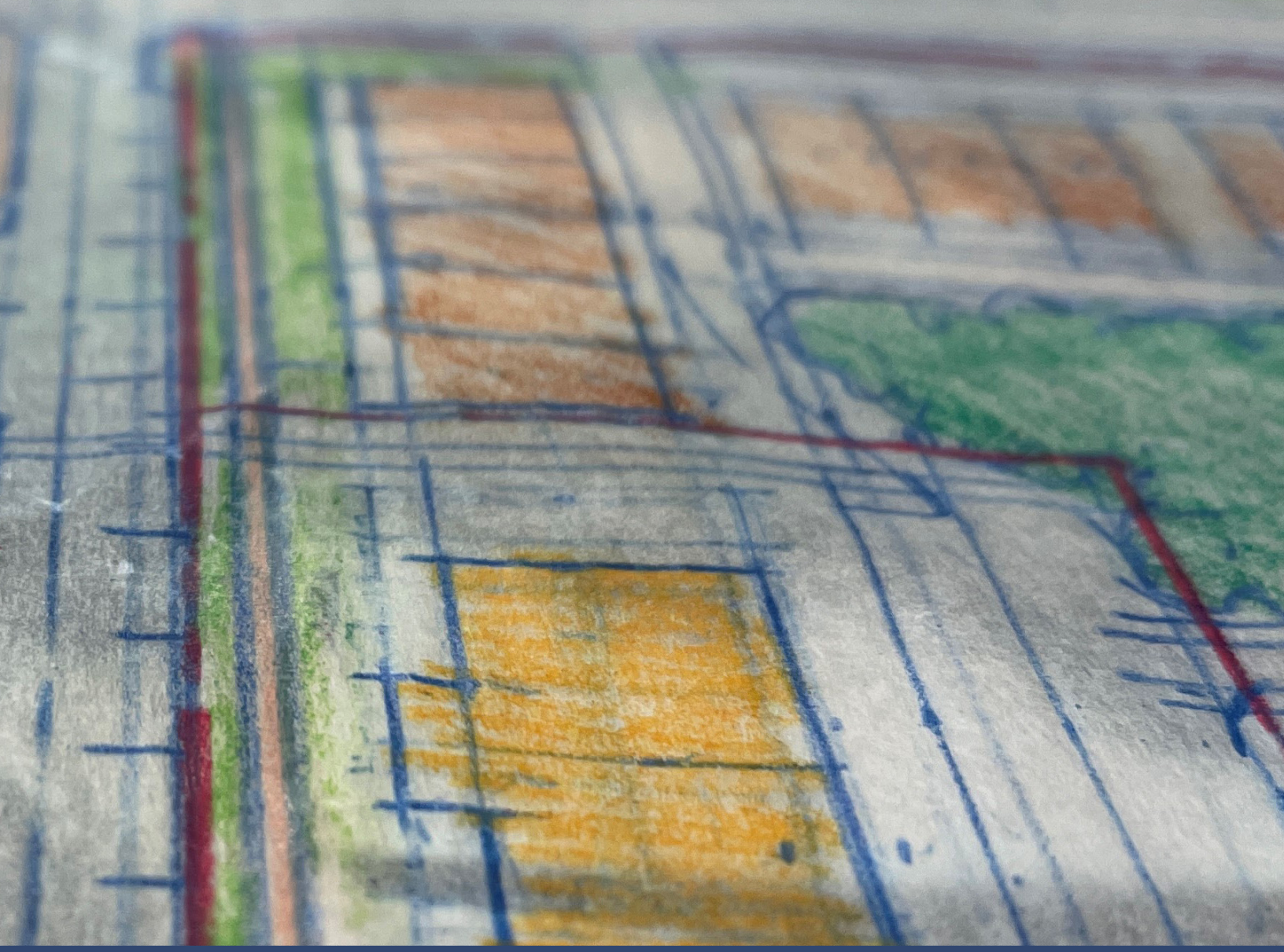


CONNECTIVITY

CONNECTIVITY & ACTIVE TRANSPORTATION

The Broken Arrow NEXT Comprehensive Plan's guiding principle for improving mobility is to create a connected, balanced, and sustainable multi-modal transportation system that is safe and efficient.

Following this guiding principle, the following general guidelines are recommended to improve connectivity of the E. Kenosha Corridor Study Area, both within and with the surrounding areas, and the rest of the city.

- Improve existing arterials to be multi-modal transportation corridors which will accommodate a variety of transportation modes from vehicular, bicycle, to pedestrian activities.
- Encourage news streets to connect with existing streets and to form an interconnected grid network. Dead-end streets should be avoided wherever possible.
- Expand the Go Plan trail network - In addition to the sidepaths along arterial streets and multi-use trail along the Creek Turnpike, build multi-use trails along Adams Creek and other potential greenway corridors and nature trails in environmental sensitive areas should be developed.

The framework plan on the right shows the proposed multi-modal transportation network. The following pages are guidelines for major roadways and pedestrian/bicycle facilities. It should be noted that the city has started the "Streets for All Study" which will provide recommendations and details for all streets. They will prevail the recommendations and standards in this section.

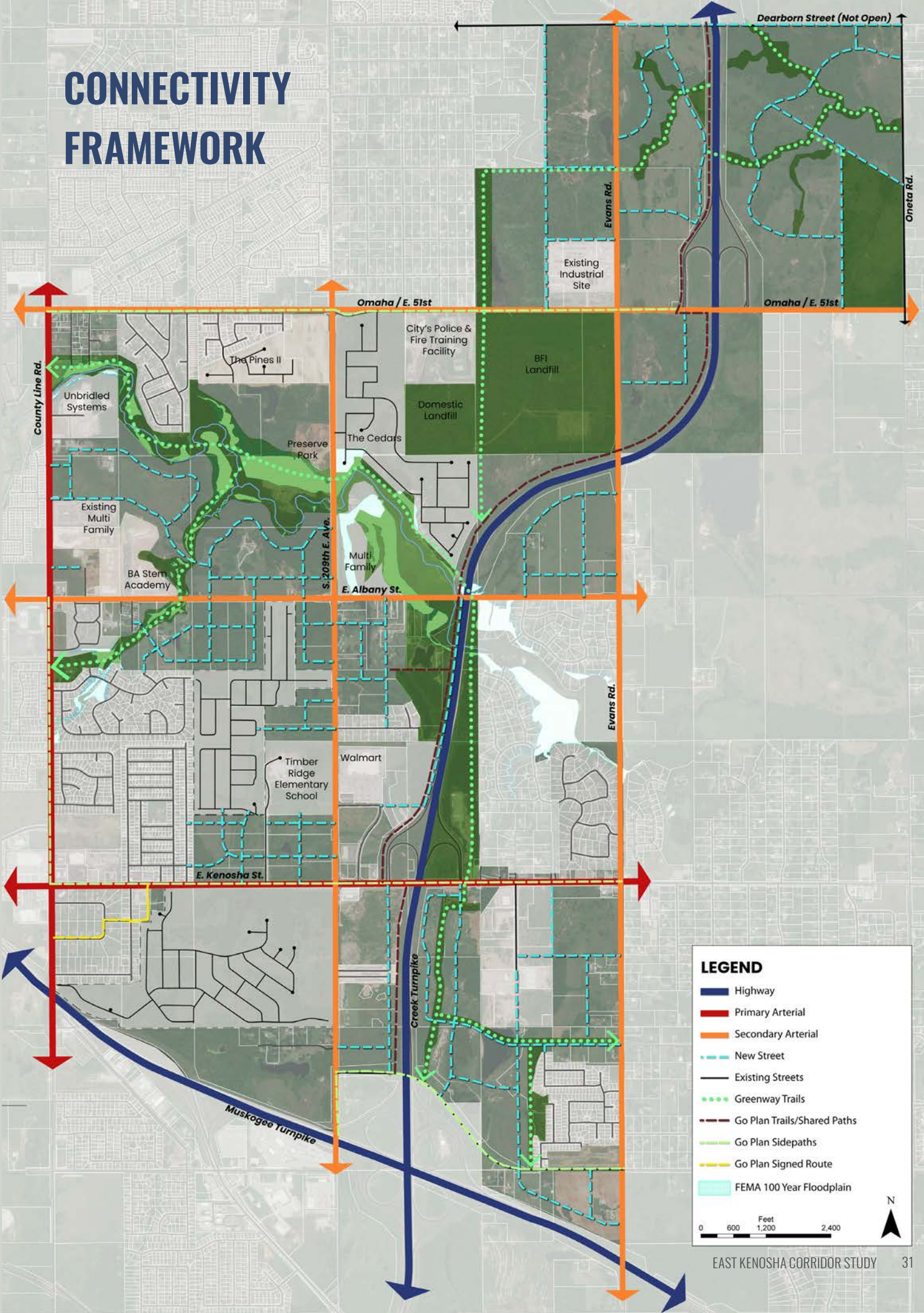
Multi-modal transportation corridors will incorporate multi-use trails

Trails provide connectivity throughout the neighborhoods

Interconnected street network is encouraged

Quality sidewalk connectivity is also important

CONNECTIVITY FRAMEWORK



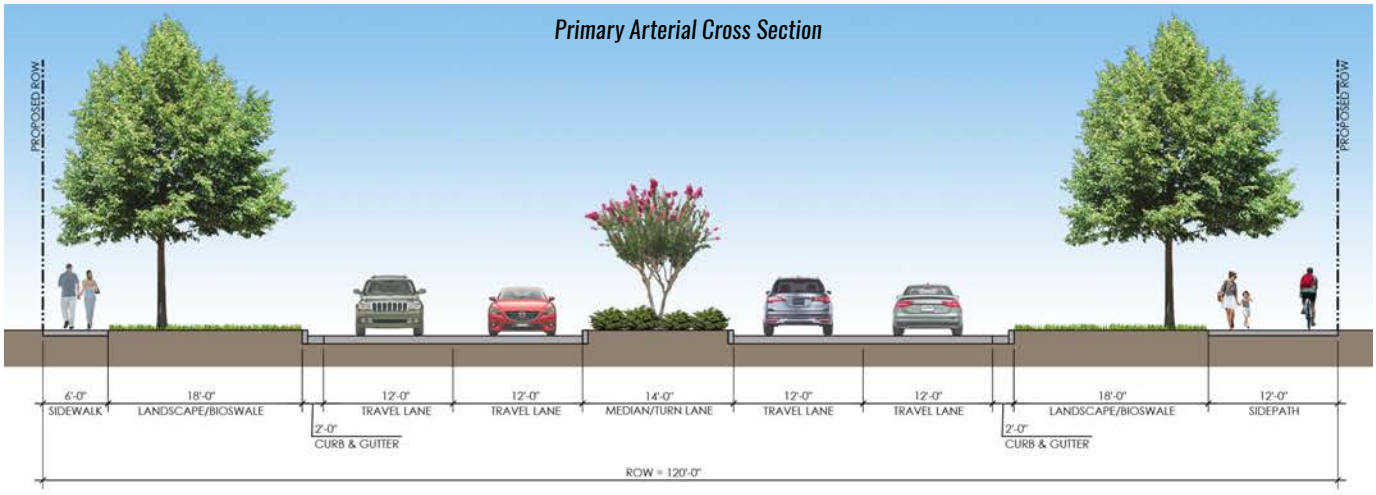
STREET NETWORK

A. Primary Arterials

According to the Broken Arrow NEXT Comprehensive Plan, E. Kenosha Street and County Line Road are primary arterials with 120' right-of way. E. Kenosha Street currently has 5 lanes west of Creek Turnpike and 4 lanes east of it. County Line Road has 5 lanes between E. Albany Street and E. Kenosha Street, the rest is mostly two lanes, except at the intersections.

Below is a recommended cross section for retrofitting these two primary arterials in order to create a better contextual environment for pedestrians, bicyclists, and automobiles. It accommodates a multi-use sidepath on one side (north side of E. Kenosha Street and east side of County Line Road) as recommended in the Go Plan. The section differs from the City's Comprehensive Plan in terms of number of lanes, but is flexible to accommodate additional ones within the landscape areas on both sides.

Primary Arterial Cross Section

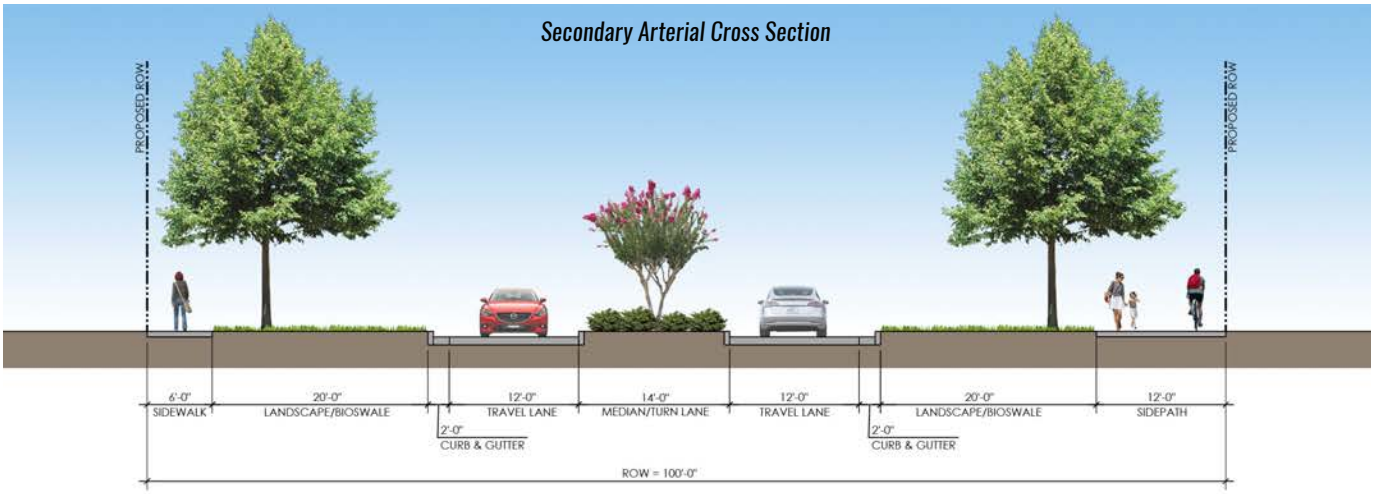


B. Secondary Arterials

The Broken Arrow NEXT Comprehensive Plan lists the following secondary arterials in the E. Kenosha Corridor Area: Omaha Street, E. Albany Street, 37th/S. 209th Street, and Evans Road.

All the above streets currently have two lanes with additional turn lanes at major intersections. Below is a recommended cross section that shows how these arterials can be retrofitted with a multi-use sidepath on one side. Again, the number of lanes shown is different from the City's Comprehensive Plan, but there is room to accommodate additional ones in the landscape areas if there is need.

Secondary Arterial Cross Section



The city has started a Streets for All Study which may result in additional or alternative recommendations.

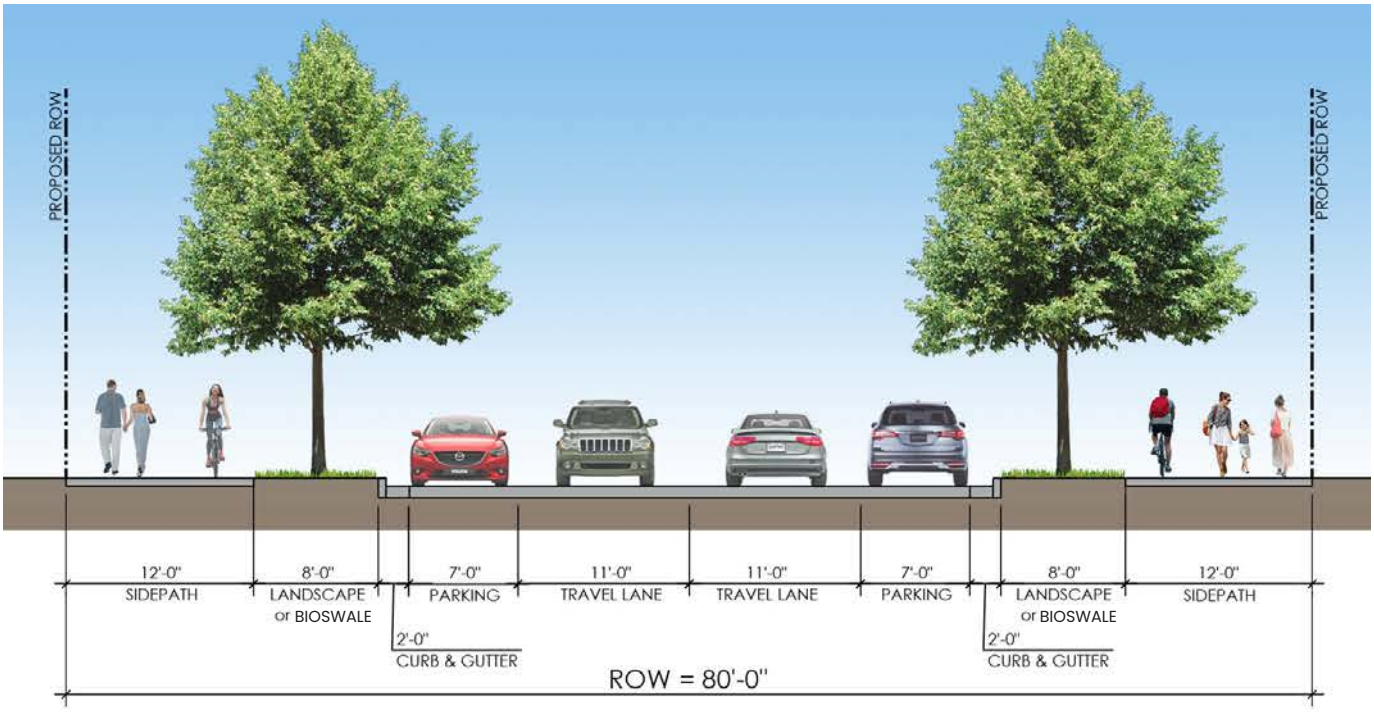
Potential look of four-lane arterial with median

Potential look of two-lane arterial with median

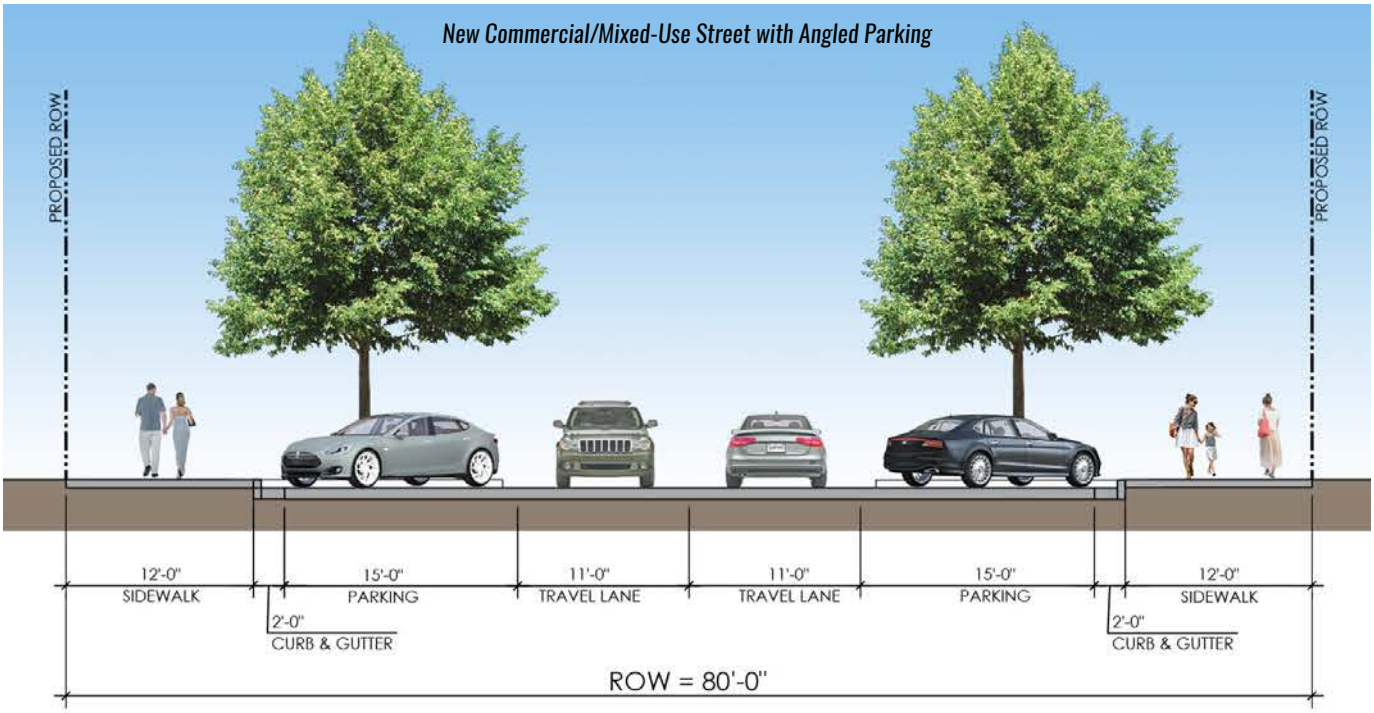
C. New Connector Streets

To improve connectivity and avoid dead-end streets in the study area, new streets should try to form grids and connect with adjacent existing streets when possible.

The plan on page 31 shows potential new street connections with future development. New streets do not need to be constructed at the exact locations shown on the plan as long as they meet the intent of improving connectivity.

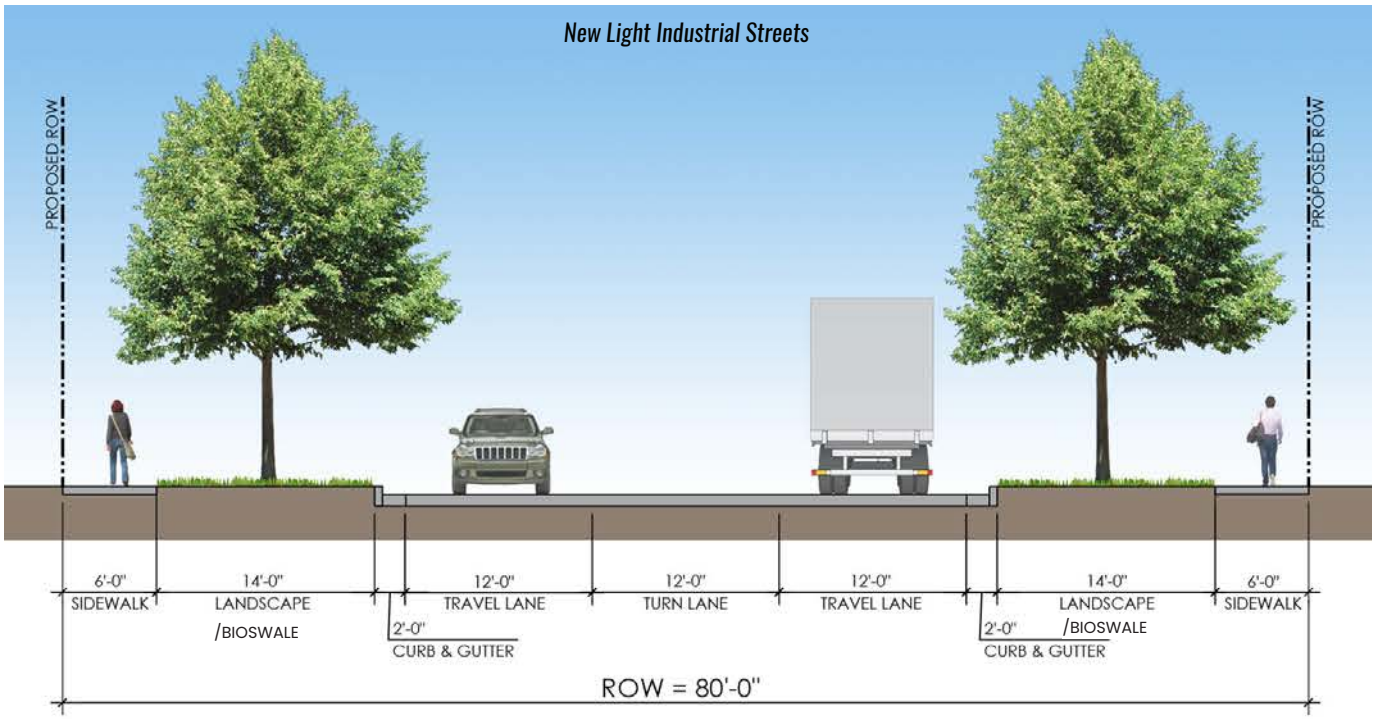


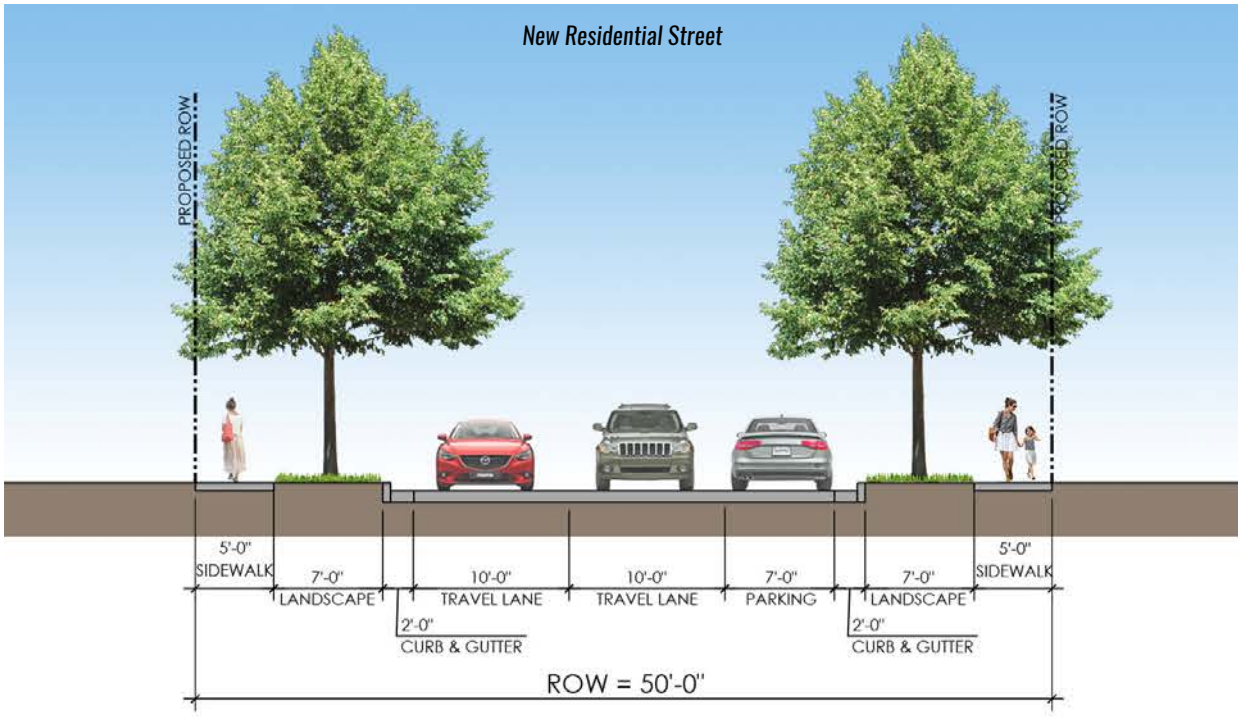
New Commercial/Mixed-Use Street with Angled Parking



The following are typical cross sections for three types of street:

- Commercial/Mixed-Use Street: on-street parking on both sides with wide sidewalks to promote activities.
- Industrial Street: 3-lane service street in light industrial areas with wide landscape areas and basic sidewalks.
- Residential Street: Two lane street with on-street parking on one side or a give-way street.





City has started a Streets for All Study which may result in additional or alternative recommendations.

Potential look of commercial/mixed-use street with parallel parking

Potential look of commercial/mixed-use street with angled parking

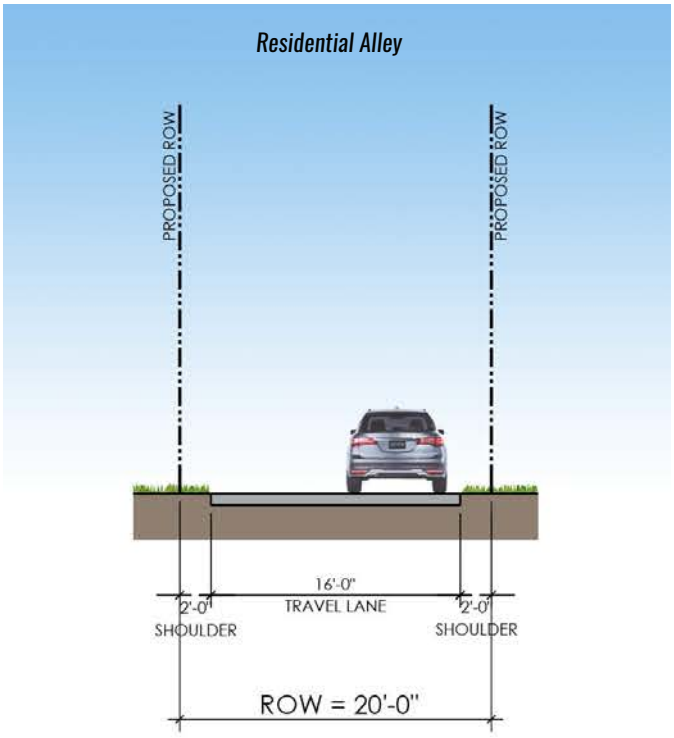
Landscaped median can also be integrated in commercial/mixed-use streets

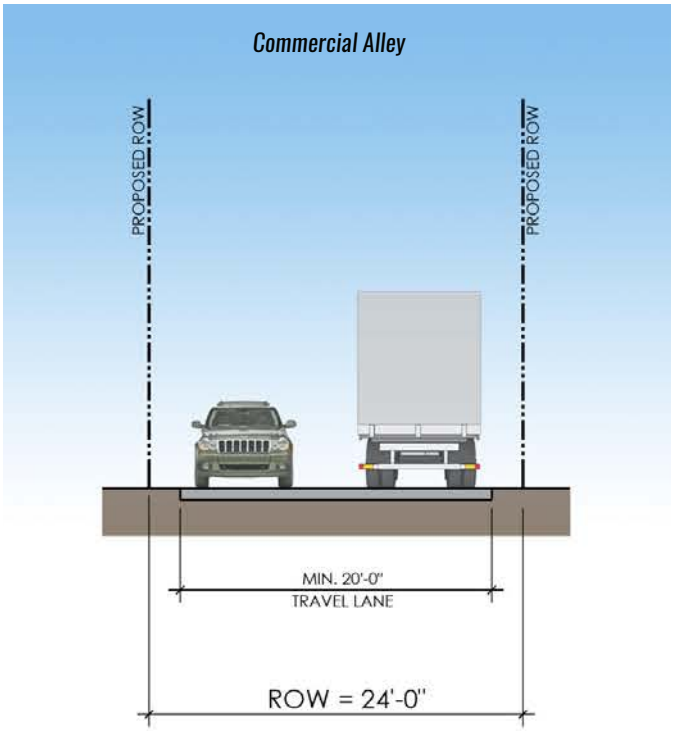
Residential street with parking on one side

STREET NETWORK

D. Alleys

Alleys provide access to parking, utilities, and trash from the rear of properties, which frees up street frontage for a more pedestrian friendly environment by eliminating curb cuts. Currently there are no alleys in the study area. Future development is encouraged to use alley ways, especially in more intensive urban areas with mixed uses and small lot single-family. The following is a recommended cross section for a typical residential and commercial alley:





Residential Alley

Commercial Alley

PEDESTRIAN AND BICYCLE FACILITIES

The City's "Streets for All Study" will set standards for pedestrian and bicycle facilities. Until adoption of that study, this plan is recommending the following:

A. Go Plan Future Connections

The Go Plan has recommended three types of bike facilities in this area: a sidepath, trails, and signed routes. Sidepaths and trails are shared paths that provide off-street space intended for use by bicyclists and pedestrians. The minimum recommended width in the plan is 10 feet for two-way traffic. In the Kenosha Study Area, a sidepath is recommended along the existing arterials and a trail is recommended along the Creek Turnpike. Signed routes provide a local street route that is an alternative to traveling on a high-volume, high-speed arterial. The following is a detailed list of where these connections are recommended in the Go Plan. They can be found on the Connectivity Framework plan on page 32.

- Sidepath along the north side of E. Kenosha Street.
- Sidepath along County Line Road between of E. Kenosha Street and E. Albany Street
- Sidepath along the E. Omaha Street
- Trail along Creek Turnpike
- Signed Route on existing neighborhood streets

B. Shared Paths

Based on the Go Plan recommendations, the E. Kenosha Corridor area will expand and apply shared paths on all arterial street within the road right-of way. Please refer to cross sections on page 32 for details. Generally, the shared path is 12' wide for two-way traffic.

Sidepath along a street

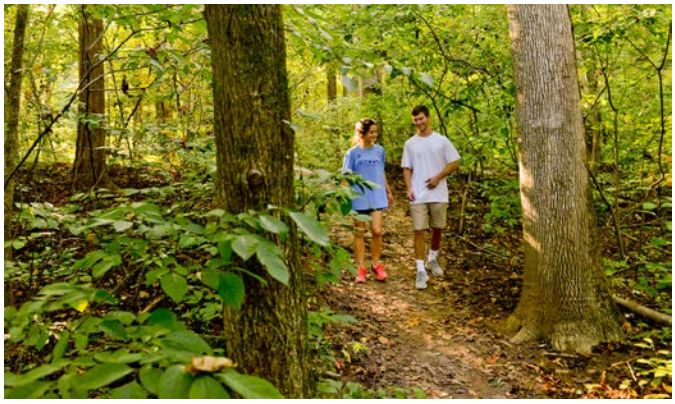
C. Greenway Trails

A greenway and open space network is recommended for implementation throughout the study area and is generally located in areas with existing environmental factors like creeks, floodplains, wetland and view corridors. Trails are recommended in these greenway and open space areas to provide off street connectivity There are two types of trails recommended:

1. Nature trail: 5' wide soft, impervious surface trails in environmentally sensitive areas (floodplains, wetlands and creek buffer areas).
2. Shared path: minimum 10' wide multi-use trail for pedestrian and bicyclist in non-impact park and open-space areas.

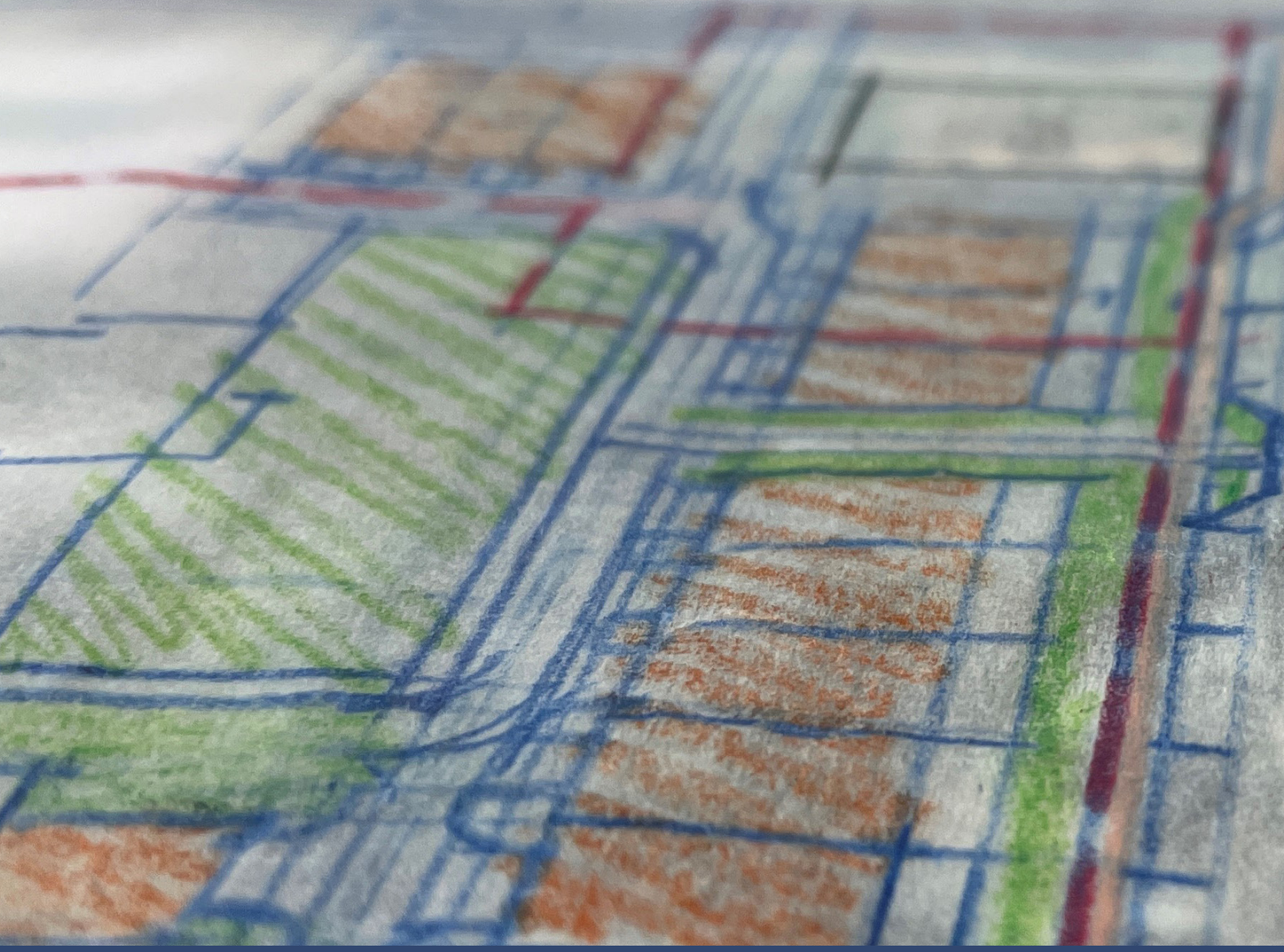
D. Sidewalks

Any future streets built within the study area should provide a minimum 5' wide sidewalk on both sides.



Nature trail

Shared path in greenway corridors and parks



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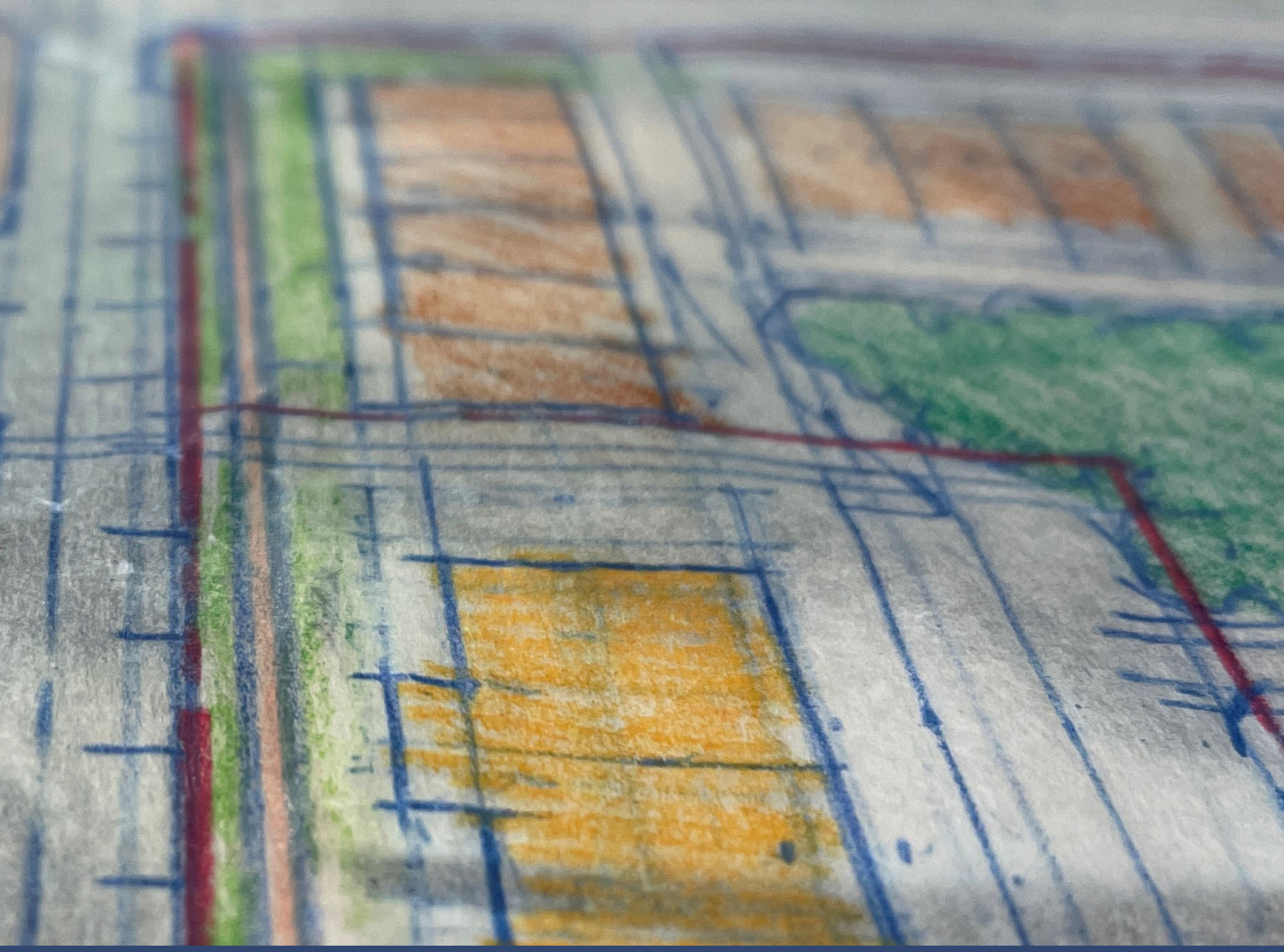


PARKS & OPEN SPACE

PARKS & OPEN SPACE FRAMEWORK

The creation of parks and open space, whether publicly or privately owned, must remain a focus as development occurs in the study area. It will enhance the public realm and elevate the quality of life for residents and visitors, as well as preserve open or natural areas that might otherwise be lost. The following are three major types of open space in the East Kenosha Corridor Study Area as referenced in Parks and Open Space Master Plan:

A. Potential Landfill Reclamation

There are two closed landfills within the study area that present reclamation opportunities for recreational use, which include but are not limited to golf courses, sports fields, nature parks, and multi-use trails. These types of open space development are relatively easy to construct and maintain because differential settlements due to waste decomposition do not adversely affect recreational facilities like they buildings. However, settlement is still an issue that must be accounted for. Along with settlement and other issues ubiquitous to landfills, design elements such as capping, trees, and landscaping are critical features that must be designed and maintained carefully.[1]

B. Stream, Wetland, and Floodplains

Development should respect and stay away from these environmentally sensitive areas. To minimize adverse impact on streams and wetlands, a 50-foot buffer is recommended from the top of the stream banks and the edge of wetlands as a no-build zone except for trails with impervious materials. Development in floodplain areas should be prohibited. These areas should be kept as greenway corridor or nature parks, which are accessible through trails from the rest of the study area.

C. Establish New Parks and Open Space

New parks and open space should be created to form a continuous park system, which is easy to access for the community. Proposed park locations are shown on the framework plan to the right and are based on existing site features and provide guidance for future major park development. In addition, as future development happens, neighborhood and pocket parks should be created.

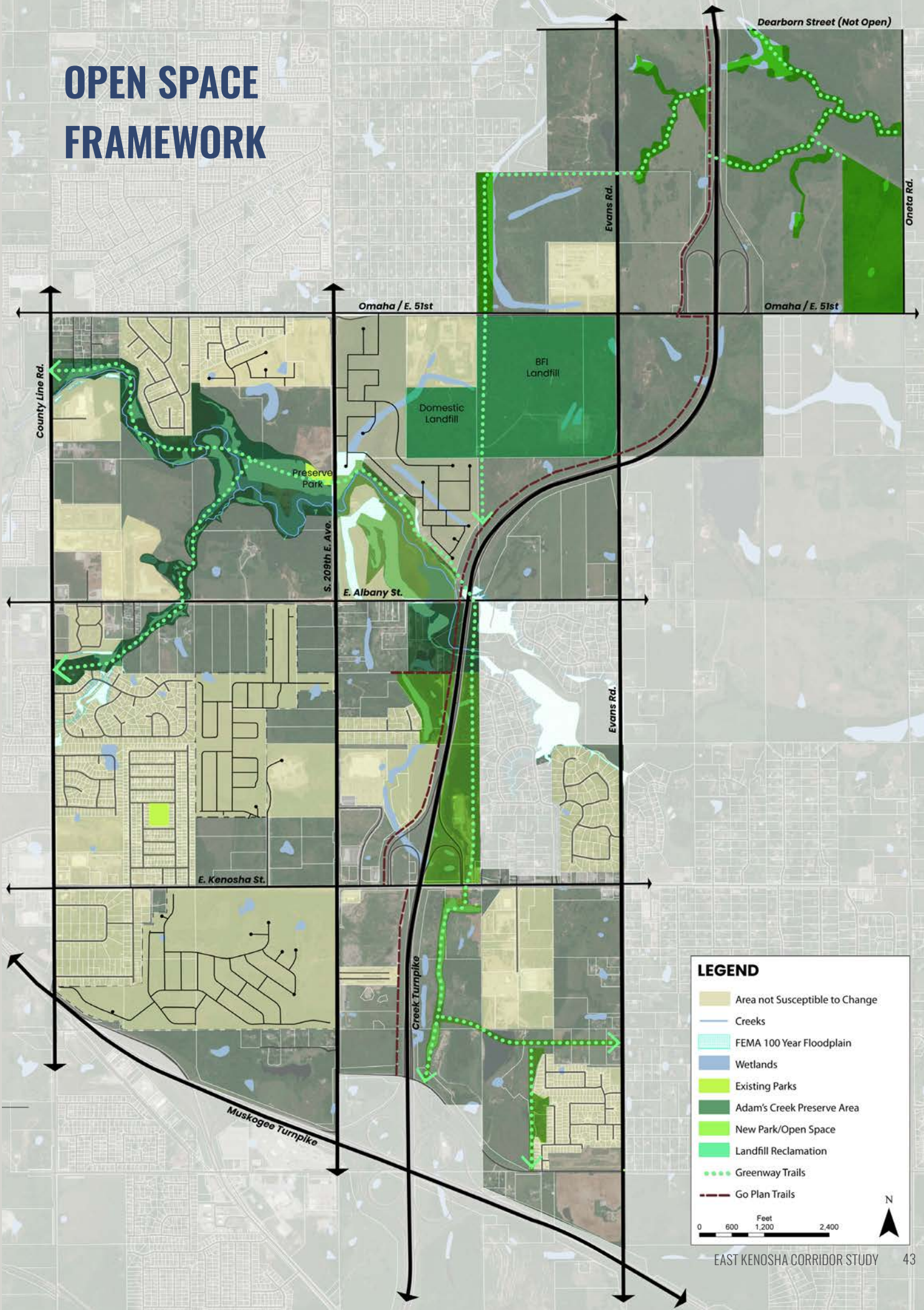
Precedent of park built on landfill

The Adams Creek corridor needs to be preserved as major open space

Preserve Park is a newly constructed park in the study area. More parks like this will be needed as the area grows.

1. https://www.geoengineer.org/education/web-class-projects/cee-549-geoenvironmental-engineering-fall-2017/assignments/end-uses-of-landfills

OPEN SPACE FRAMEWORK



OPEN SPACE TYPES

The following are typical types of open space specified in the Broken Arrow NEXT Comprehensive Plan (except community gardens) that will contribute to the quality of life in the community.

Community Parks include at least ten acres of land and a combination of structured and unstructured recreational opportunities that attract both local and regional visitors. If reclaimed, the landfills and adjacent areas can become such a park with both passive and active amenities.

Community parks should be owned, operated and maintained by the city. It should have direct access to a major collector street or higher.

Neighborhood Parks are generally between half an acre and ten acres; they typically provide neighborhood active and passive amenities such as playgrounds, multi-purpose fields, trails, benches, and pavilions to serve the immediate neighborhood within walking distance.

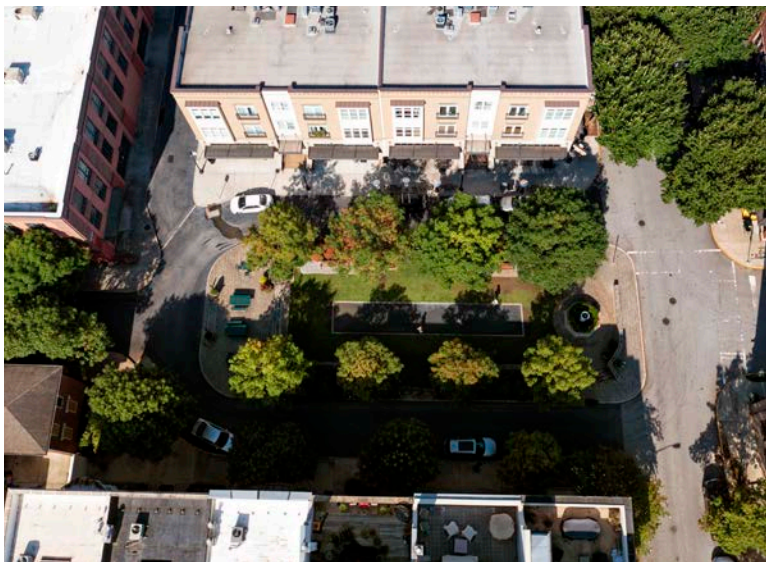
Currently there are two neighborhood parks in the study area - Camino Villa Park and Preserve Park.

Pocket Parks add green space to an area that is otherwise under served by parks. Typically under 2 acres in size, pocket parks contain basic amenities such as playgrounds, seating, landscaping, and water fountains. Pocket parks serve only the immediately adjacent population but tend to be located near denser areas of development with a high concentration of residential and retail uses. Pocket parks can also take the form of a plaza ,which can be completely or partially paved areas of up to two acres.

Pocket parks provide places for exercise, meeting neighbors, and can be critical in making mid-rise living attractive for families.

Community Park

Neighborhood Park



Pocket Park

Nature Park

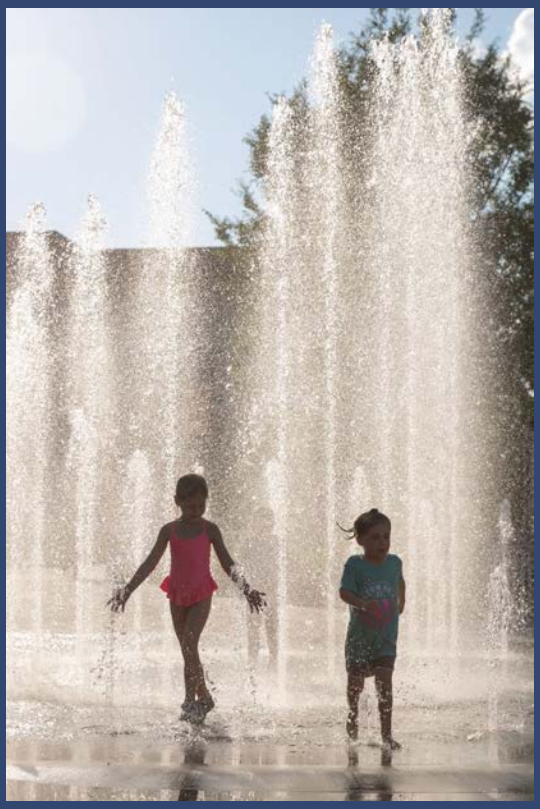
Community Garden

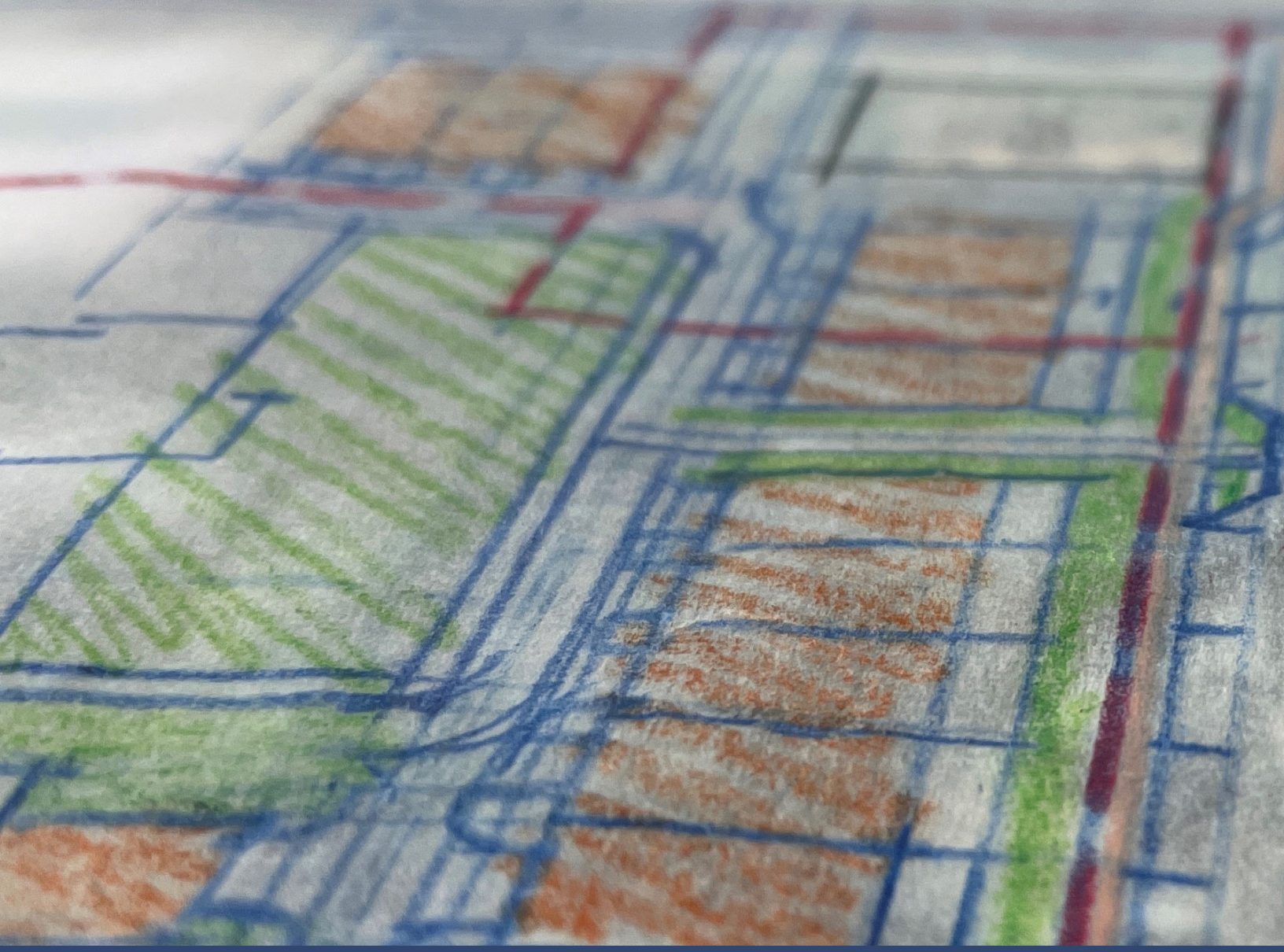
Parks provide a variety of opportunities for people to come out and be active.

Nature Parks are created to preserve natural amenities and contain mostly passive recreation amenities such as bicycling, hiking, walking, and jogging. The Adams Creek corridor is an ideal location for a nature park, which can connect with the Tiger Creek Nature Park planned by the City.

Community Gardens are becoming an important component in many communities. They can range in size from a few hundred square feet within a larger open space to thousands of square feet. In addition to providing locally grown vegetables, herbs, and flowers, they provide opportunities for residents to work together to help beautify their community.

Trails should connect parks, open space, and form a transportation network for pedestrians and cyclists.





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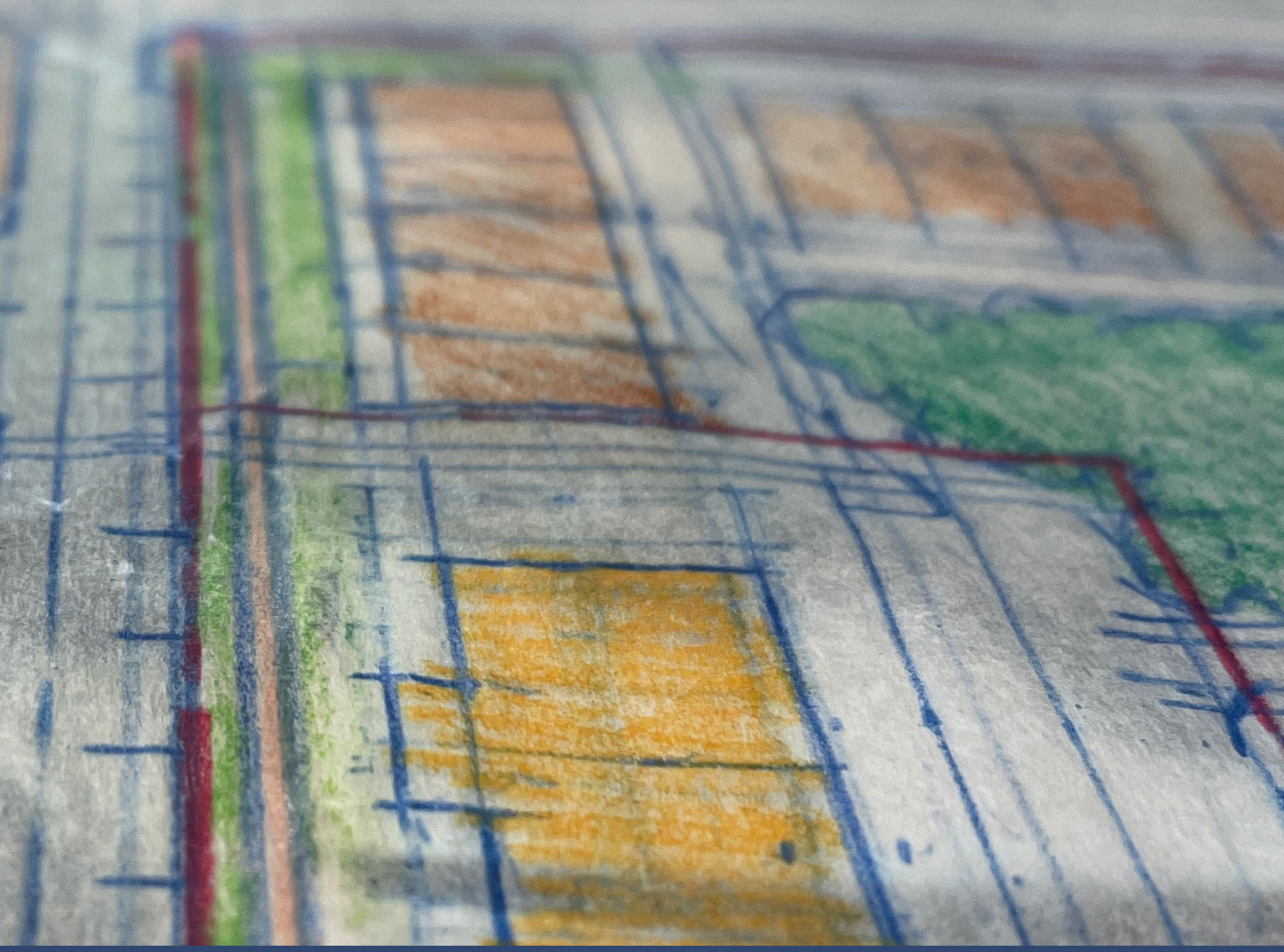


SITE DESIGN

SITE DESIGN

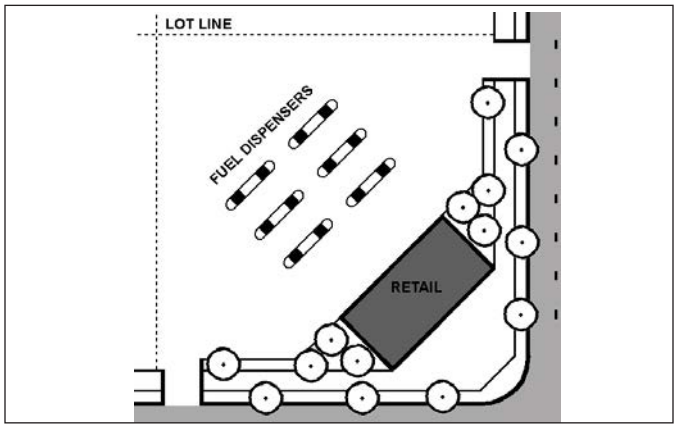
A. Building Siting Standards

The following standards will help ensure that new building locations properly address the street in order to enhance the public realm and provide convenient and pleasant access for pedestrians.

- Buildings should be constructed near the side-walk, with parking to the side or rear.
- On corner lots, buildings should be located adjacent to the street intersection.
- Large stores, such as supermarkets, should be designed so that small buildings are located close to the street to screen parking and provide a pedestrian-friendly presence and scale.
- Ground floor commercial space adjacent to a street should have a primary pedestrian entrance which faces, is visible from, and is immediately accessible from the adjacent side-walk. This entrance should be at grade and remain unlocked during business hours.
- Uses not adjacent to a street should be connected to the closest sidewalk with a paved walkway at least 4 feet wide.
- Drive-through windows and vehicular waiting areas should be placed to the rear or side of the building and should not be located within 25 feet of the back of the sidewalk.
- Gasoline stations should place fuel dispensing, service canopies, and entry doors to the rear of the building and away from the street. These facilities and their queuing should not be visible from any public right-of-way or located within 25 feet of the back of the sidewalk.
- Landscaping should be provided between the sidewalk and ground floor dwellings, except where there are porches, stoops, or walkways.

Building on corner lots should be located adjacent to the street intersection

Drive thru windows and all vehicular queuing should be placed to the rear or side of the building facade



Gas stations should place fuel dispensing and service canopies to the rear of the building and away from the street

B. Building Setbacks

To create vibrant streets, buildings should always front streets and sidewalks with appropriate setbacks. Setbacks for different building types are recommended:

Single-Family Detached

- Front setback: 10'-25'
- Side setback (Street corner lot): 10'-20'
- Side setback (Internal lot): 5' minimum

Single-Family attached (Townhouse)

- Front setback: 5'-15'
- Side setback (Street corner lot): 5' minimum
- Side setback (Internal lot): 0' or 10' minimum

Multi-Family Residential

- Front setback: 5'-15'
- Side setback (Street corner lot): 5' minimum
- Side setback (Internal lot): 0' or 10' minimum

For all the residential buildings, porches or stoops are allowed in the setback area.

Single family with a shallow setback

Single family with deeper setbacks but still embrace the sidewalk

Townhouse close to the sidewalk

Townhouse with deeper setback to accommodate grade changes

B. Building Setbacks Continued

Mixed Use/Commercial

- Front setback: 0'- 10'
- Side setback (Street corner lot): 0' - 10'
- Side setback (Internal lot): 0' or 5' minimum

The building setback area should always be treated with proper landscaping to screen ground-floor residential uses. For ground floor commercial uses, the setback area can be used for outdoor seating and dining, merchant display, landscaping, or building entrance articulation.

Mixed use/commercial buildings are encouraged to build right next to sidewalk

Multi-family building that sits close to sidewalk

Mixed use/commercial buildings may have a maximum 10' setback from the sidewalk that can be used for outdoor dining or other pedestrian activities

Multi-family building with a deeper setback to accommodate building articulation and landscaping

Ground floor commercial uses can take advantage of the setback area for seating, landscaping, and building entrance articulation

C. Access and Circulation

Vehicular access and circulation significantly affect the character and function of development, especially in commercial and mixed-use areas. They should be designed to minimize adverse impacts on urban character and interruption with the public sidewalk space.

The number and width of curb cuts should be limited according to the following guidelines:

- The use of rear alleys and driveways is encouraged to reduce the need for front yard curb cuts.
- Parcels should have a maximum of one drive-way curb cut per street or one per 1,300 feet of linear frontage, whichever is less. When a property abuts multiple streets, the total number of curb cuts may be located on a single street.
- Two curb cuts serving two one-way driveways may count as one curb cut.
- Driveways for single-family houses:
  - » Should not exceed 12 feet in width.
  - » Should not be designed to allow parking in the front yard.
- Driveways for other buildings should not exceed 12 feet in width for one-way or 24 feet for two-way drives.
- Wherever possible, curb cuts and driveways shall be shared between multiple buildings

Loading and service areas should meet the following standards:

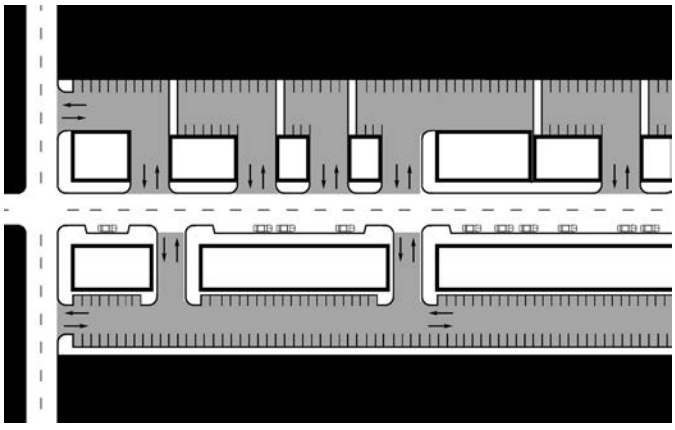
- Loading and unloading docks should be separated from areas of heavy circulation and screened to minimize visual impact.
- Service and delivery areas should be inconspicuous from streets, public areas, or adjacent properties while providing efficient access and screened from public view by:
  - » Locating internal to structures;
  - » Providing walls, fences and/or landscaping of sufficient height and density;
  - » Covered by roofs if the area is over viewed by residential uses.

Internal thru-streets as part of a commercial district should be pedestrian friendly and include sidewalks, street trees, landscaping, and/or special lighting. Where possible, parking lots should be screened.

Pedestrian paths should meet ADA requirements, be clearly defined, and provide the following elements:

- Landscaping, such as row of trees and shrubs, flower beds, planters
- Pedestrian-scale lighting, such as lighted bollards
- Small, color-coded way–finding signs, or a directory
- Vertical architectural elements.
- Seating and resting spots
- Special paving

Alleys are encouraged for single family and townhouse development to eliminate front street curb cut.

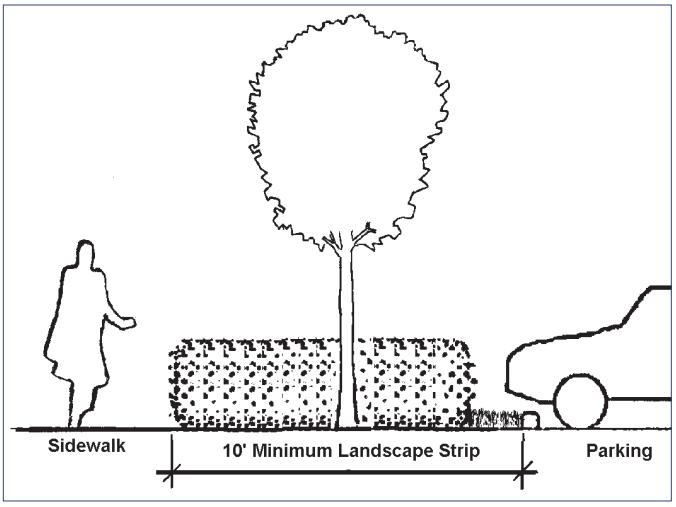


Use shared curb cuts and rear driveways instead of multiple individual curb cuts will improve pedestrian safety and streetscape environment.

D. Parking

Parking areas, with the exception of on-street parking, should be discouraged between any building and the street.

- When a parking area is directly adjacent to a street right-of-way, the parking area should be screened with a minimum landscape buffer of 10 feet in width. The landscape buffer can be reduced to 5 feet if a 30-42 inch screening wall is built along the sidewalk or edge of parking area. Surface parking and structured parking should be designed so that neighboring buildings cannot see headlights.
- Landscaped areas should be provided to break up parking isles and bays and to provide trees for shade and locations for light poles and screen planting.
- Where parking structures or lots are adjacent to buildings, a landscape buffer of at least 10 feet wide is required. A sidewalk (maximum of 6 feet) may be provided within this landscape buffer.
- Uses with large parking needs, such as large retailers, office buildings, and churches, are encouraged to provide a portion of their parking as grasscrete or grass. These areas can be used for overflow parking, but can serve as open space when not needed.
- Shared parking should be encouraged so that activities with parking needs at different times of the day or week (such as offices, restaurants, and churches) can make use of the same parking spaces and thereby conserve land and promote compact development.
- Interconnected parking lots should be encouraged to facilitate off-street automobile movements and promote shared parking.
- The parking entry should be clearly marked with the use of signage.



Landscape buffer when parking is directly adjacent to street

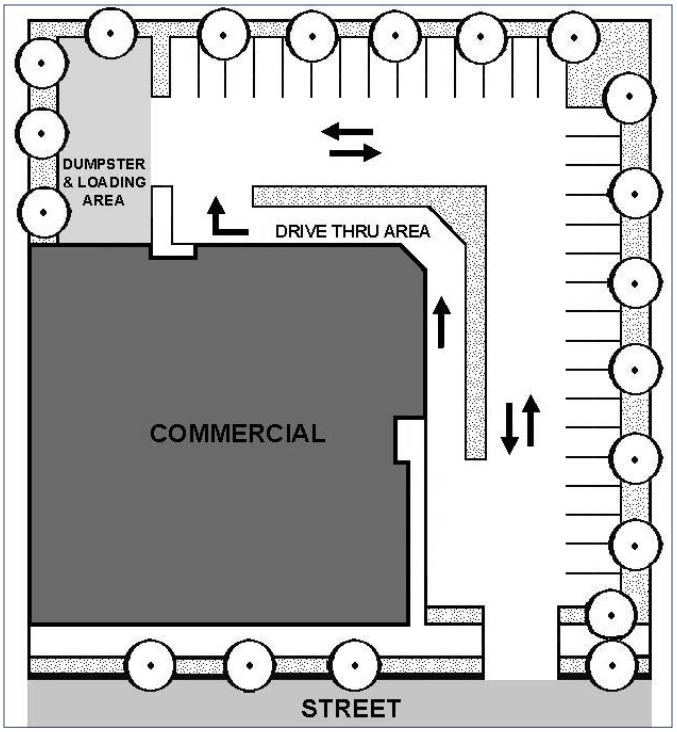
Landscape islands in parking lots for planting, trees, lights, and pedestrian walkways

Grasscrete parking to help reduce impervious surface

E. Utility and Service Area

Utilities are a necessary part of all modern buildings, but should be constructed and located to minimize their visual impact.

- Where overhead utility lines exist, new development is encouraged to relocate those lines behind buildings, in alleys, or underground. If alleys are provided, utilities and associated boxes are strongly encouraged to be located in this corridor.
- Dumpsters and trash compactors should not be located between a building and an adjacent street. They should be screened by a permanent wall of material compatible with the building exterior and should not be visible from any public right-of-way or other pedestrian area.
- Outdoor storage areas should not be located between a building and an adjacent street.
- Service areas should not be located adjacent to residential units, hotel rooms, and usable open space to minimize the impacts of notice from delivery and trash trucks.
- At-grade air conditioning units, meters, transformer boxes, and similar equipment should be located to the side or rear of buildings and screened with a wall or evergreen plant material so they aren't visible from any street.
- Roof-mounted mechanical equipment should be located or screened so they aren't visible from any street. Screening, which may include parapet walls, should be compatible with the surrounding building materials.
- Roof mounted antennas and satellite dishes are allowed, but should not be visible from the street.



Service areas and dumpsters should be in the rear or side yard of a building

This dumpster is located to the rear of the building and is screened from view along the side street.

F. Park and Open Space

The creation of open space, whether publicly or privately owned, must remain a focus as development occurs in the study area. It will enhance the public realm and better the quality of life for residents and visitors, as well as preserve open or natural areas that might otherwise be lost.

Open space does not necessarily constitute undisturbed public land or civic space; it can include any public or privately owned areas that are open to the general public.

Chapter 4 outlines the different types of open space. Among these types, they may take the form of nature preserves, wetlands, woodlands, athletic fields, multi-use trails, community gardens, orchards, or any civic space. Even small areas such as courtyards and outdoor dining areas can contribute as public open space.

The following are general guidelines for providing open space:

- New development larger than 10 acres should provide publicly accessible open space areas equal to at least 10 percent of the site area. Park and/or plazas should be included in this open space.
- Maintenance of privately owned open spaces should be the responsibility of the property owner or homeowner's association.
- All parks and open space should have at least one edge facing a public or private street and have direct access to such street.
- Open spaces should be at grade with adjacent streets for at least 15 feet of their depth to ensure maximum visibility into the space.
- Open space provides a great venue for the installation of a variety of art projects to enliven local culture and promote tourism, in addition to documenting the history of the area. Developers are encouraged to provide public art in a variety of media within each development.

Public art should be incorporated into park and open space design

Public open space should be provided as part of every new development

G. Stormwater

The following stormwater management best practices should be implemented to protect water quality:

- Maintain existing topography and associated drainage to encourage dispersed flow paths. Use drainage/hydrology as a design element.
- Provide a tree canopy, whether preserved during construction or planted afterward, which can slow runoff, reduce erosion, and retain water in the soil.
- Provide bioswales along streets to remove silt and pollution from runoff before releasing it into the watershed or storm sewer. Bioswales also beautify neighborhoods with vegetation.
- Encourage rooftop gardens or green roofs to retain stormwater, reduce the heat island effect associated with development, increase usable outdoor space, decrease heating and cooling costs, beautify the built environment, and even provide food.
- Use rain gardens or other infiltration areas to provide small-scale detention and opportunities for plantings.
- Utilize cisterns to capture rain water and release it later for irrigation.
- Provide drainage pathways lined with rock between the gutter and the stormwater inlet. These pathways aerate, disperse, and slow the flow of water, while allowing sediments and some pollutants to drop out of the water. Lightweight materials that might shift during flooding are discouraged.
- Encourage erosion control and sedimentary plans with new development.
- Label storm drains to prevent any materials that could diminish water quality from being poured into them.
- Protect storm drains during construction by a curb and gutter inlet filter.
- Encourage porous pavement or open grid pavers in parking lots, driveways, and alleys to decrease stormwater runoff. Maintenance is relatively minimal.

Bioswale in relatively suburban and rural area

Bioswale along urban street

Porous pavement helps decrease stormwater runoff

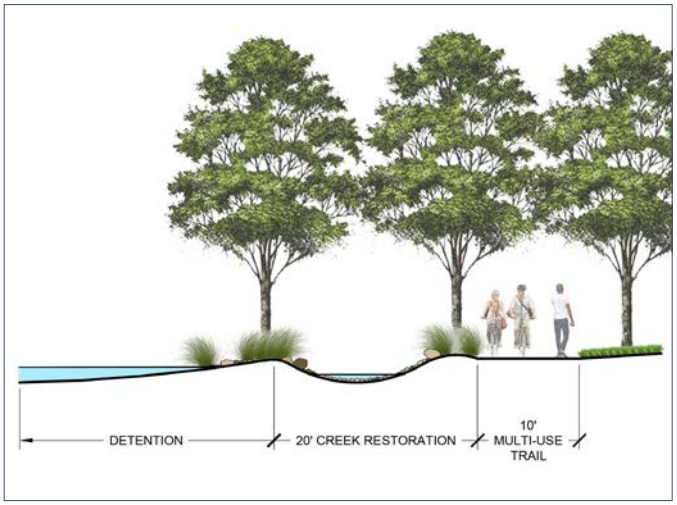
H. Stream and Wetland Buffers

Providing buffers along streams and around wetlands can minimize risk of damage from flooding, maintain the natural water infiltration and cleansing cycle, stabilize soils to control erosion, protect wildlife habitat, and support cultural and recreational activities such as hiking and wildlife viewing.

- Buffer streams and tributaries of any size including, ephemeral and intermittent streams to the extent of the 100-year floodplain or 100 feet from the edge of the stream bank of the active channel as defined by the EPA, whichever is greater. Active Channel is the area of the stream channel that is subject to frequent flows (approximately once per one and a half years) and that includes the portion of the channel below the floodplain.
- Buffer wetlands by 50 feet from the natural edge of wetlands as defined by United States Code of Federal Regulations (CFR) 40, Parts 230-233 and Part 22. Wetlands consist of areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions.
- Structures may be built within the buffer protection zone as long as the structure maintains or enhances the functionality of the floodplain. Suitable structures allowed in this zone shall enhance the functions of a floodplain including water cleansing, flood storage, flood conveyance, infiltration, maintenance of base flow and peak flow, wildlife habitat, and opportunities for cultural and recreational uses.
- Restore streams and wetlands that have been buried, piped, drained, channelized, or otherwise degraded by planting appropriate native vegetation and regrading.
- Protect (and restore) native riparian and wetland vegetation.
- Ensure trails and other uses in the setbacks do not cause erosion and sedimentation.

Boardwalks can be constructed in wetland areas

Preserved stream corridor can efficiently disperse stormwater with appropriate cleansing measure



Restored creek corridor can also provide opportunities for multi-use trail connections

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CITY OF
BROKEN ARROW

Where opportunity lives