PREPARED BY:

MacArthur Associated Consultants

IN ASSOCIATION WITH:

STANDARD TESTING AND ENGINEERING COMPANY Since 1951

HALFF

PREPARED FOR:

MARCH 5, 2020

FINAL ALIGNMENT REPORT FOR:

MP-0487

GREENWAY ON OKLAHOMA RIVER TRAIL

SUBMITTED TO:
THE CITY OF OKLAHOMA CITY
DEPARTMENT PF PUBLIC WORKS
420 WEST MAIN STREET, SUITE 700
OKLAHOMA CITY, OKLAHOMA 73102

SUBMITTED BY:
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OKLAHOMA CITY, OKLAHOMA 73013

THE CITY OF OKLAHOMA CITY APPROVAL SHEET

FINAL ALIGNMENT REPORT
FOR
GREENWAY ON OKLAHOMA RIVER TRAIL
Project No. MP-0487

Prepared by:

MacArthur Associated Consultants, LLC

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Eric J. Wenger, P.E., Director

Public Works/City Engineer

APPROVED by the Council of the City of Oklahoma City this _____ day of _____, 2020.

ATTEST: **THE CITY OF OKLAHOMA CITY**

City Clerk

Mayor

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FINAL ALIGNMENT REPORT

FOR

GREENWAY ON OKLAHOMA RIVER TRAIL

Project No. MP-0487

Along the Oklahoma River from S Lincoln Blvd to NE 4th St and along NE 4th St from the Oklahoma River to just west of I-35

1 Executive Summary

1.1 Scope

The proposed Greenway Trail intends to provide connectivity between the Oklahoma River Trail-North, the Oklahoma River Trail-South the Eagle Lake Trail, the Grand Trail, and the Katy Trail. The design will include trailheads, trail amenities, lighting and wayfinding. The project will be funded by the City of Oklahoma City general obligation bond (GO Bond) of 2007 with potential funding from Oklahoma Department of Transportation (ODOT). When complete, the new trail will provide a dedicated multi-purpose trail connection between the existing Katy Trail and the Oklahoma River Trail, which may include a connection to the existing S. Grand Blvd Trail and the Eagle Lake Trail of Midwest City.

Due to the proximity of the new trail to the Oklahoma River and other features, including but not limited to trails, parks, lakes, the First Americans Museum, FAM, (formally known as the American Indian Cultural Center and Museum) and the River Sport Adventures, stakeholder involvement and feedback is essential during preliminary design. Several meetings were held between the City of Oklahoma City, MacArthur Associated Consultants (MAC) and stakeholders to ensure all concerns and opinions were reviewed and addressed, including future development on stakeholder property and the trail alignment options to follow the north or south side of the Oklahoma River once past 4th St. In addition to stakeholder suggestions, the high visibility of the proposed trail alignment requires landscaping and trail amenities to be an important design consideration. Halff Associates, Inc. (Halff) participated in stakeholder and City meetings to assure the proposed trail amenities were included in discussion. In addition to landscaping and amenities, one percent (1%) of the budget will be utilized for the display of public art. MAC and Halff make up the design team.

The recommended trail will include construction along the north and south sides of the Oklahoma River and along the bridge on NE 4th Street. As such, the trail will incorporate aspects of rural and urban trail design. The trail design will be based on the standards outlined in the Oklahoma City Trails Master Plan (TMP) and BikeWalkOKC. It will also be designed to ensure an effortless and safe transition when connecting to existing trails.

1.2 Budget

The construction budget for this project identified by the City is $**4.2 million** with potential funding of $2 million from ODOT. All costs outside of the City's $4.2 million budget will be considered add-alternatives. A more detailed cost estimate can be found in section 3.7 of this report or within the Construction Cost Estimate in Appendix C.

1.3 Schedule

The following schedule is a summary of the projected timeline for the completion of the Greenway Trail on the Oklahoma River:

Design Completion	Summer 2020
Construction Commencement	Fall 2020
Construction Completion	Summer 2021

A more detailed schedule can be found in Section 3.8 of this report.

1.4 Recommendation

With the exception of the alignment east of S. Eastern Avenue, the recommended trail alignment follows the described trail placement in the RFP conceptual drawings, which was based on recommendations from the 2005 study conducted by MAC, to link the South Grand Boulevard Trail and the Katy Trail. The recommended alignment can be viewed in in Section 2 of this report and is described as follows:

The Greenway Trail will tie into the Oklahoma River Trail-North on the west side of the Riversport Rapids OKC where trailhead parking is already established. The trail follows S. Lincoln Ave., crossing SE 5th St. with an at-grade crossing. The trail then heads north through the Boathouse District, where there is the add-alternative option for a constructed pedestrian bridge over the tributary east of the RiverSport Rapids OKC. The trail goes under the I-35 bridges and follows the river east to S. Eastern Ave. The trail then splits,

giving users the option to continue along the north banks of the Oklahoma River or head south over the Canadian River on S. Eastern Ave.

Once Crossing the river on S. Eastern, the Greenway will connect to the Eagle Lake Trail. Users have the option to travel the Eagle Lake Trail or continue west along the banks of the Oklahoma River towards the First Americans Museum (FAM, formally known as the American Indian Cultural Center and Museum), where the trail will go under the I-35 bridges and connect to the Oklahoma River Trail-South.

At the divide near S. Eastern Ave., trail users may continue east along the north bank of the Oklahoma River where the trail passes beneath the E. Reno Ave. bridge, I-40 bridges and an existing Union Pacific Railroad bridge, continuing northeast until reaching NE 4th St. The trail then follows NE 4th St. west, crossing overutilizing the existing bridge over Interstate 35 before connecting to the Katy Trail. If funding is not available for a standalone trail option along NE 4th St., a share-the-road option will be utilized. The option for additional trailhead parking and amenities will be near the junction of NE 4th St. and the Oklahoma River. The proposed Fire and Police Training Center near the intersection of NE 4th St. and Bryant Ave. will be considered during the trail design.

The preliminary construction cost estimate for the recommended trail alignment is as follows:

- Base Items = **$4.16 Million**
    - Trail construction (including potential share-the-road on N.E. 4th Street)
    - Traffic and lighting improvements at intersections
    - 173 LF pedestrian bridge over water channel
    - Mobilization
    - Permitting and Fees
    - Trail Lighting and Signage
- Add-Alternative Items = **$3.44 Million**
    - Standalone trail (in lieu of share-the-road) on N.E. 4th Street
    - New trailhead parking at N.E 4th Street
    - Site furnishings/rest areas
    - Bridge reconfigurations of S. Eastern Avenue over the OK River and N.E. 4th St. over I-35
    - Pedestrian bridges (excluding 173 LF pedestrian bridge in base items)
    - Trail widening near the First American Museum

- Landscaping
- Littoral plantings and boardwalk area
- Scenic overlooks
- Various amenities, art displays and facilities

This proposed alignment guides trail users along several points of interest along the Oklahoma River while providing a cost efficient, practical and safe route between existing trails, creating effective connectivity for the Oklahoma City Trails system.

2 Project Location/Site Map

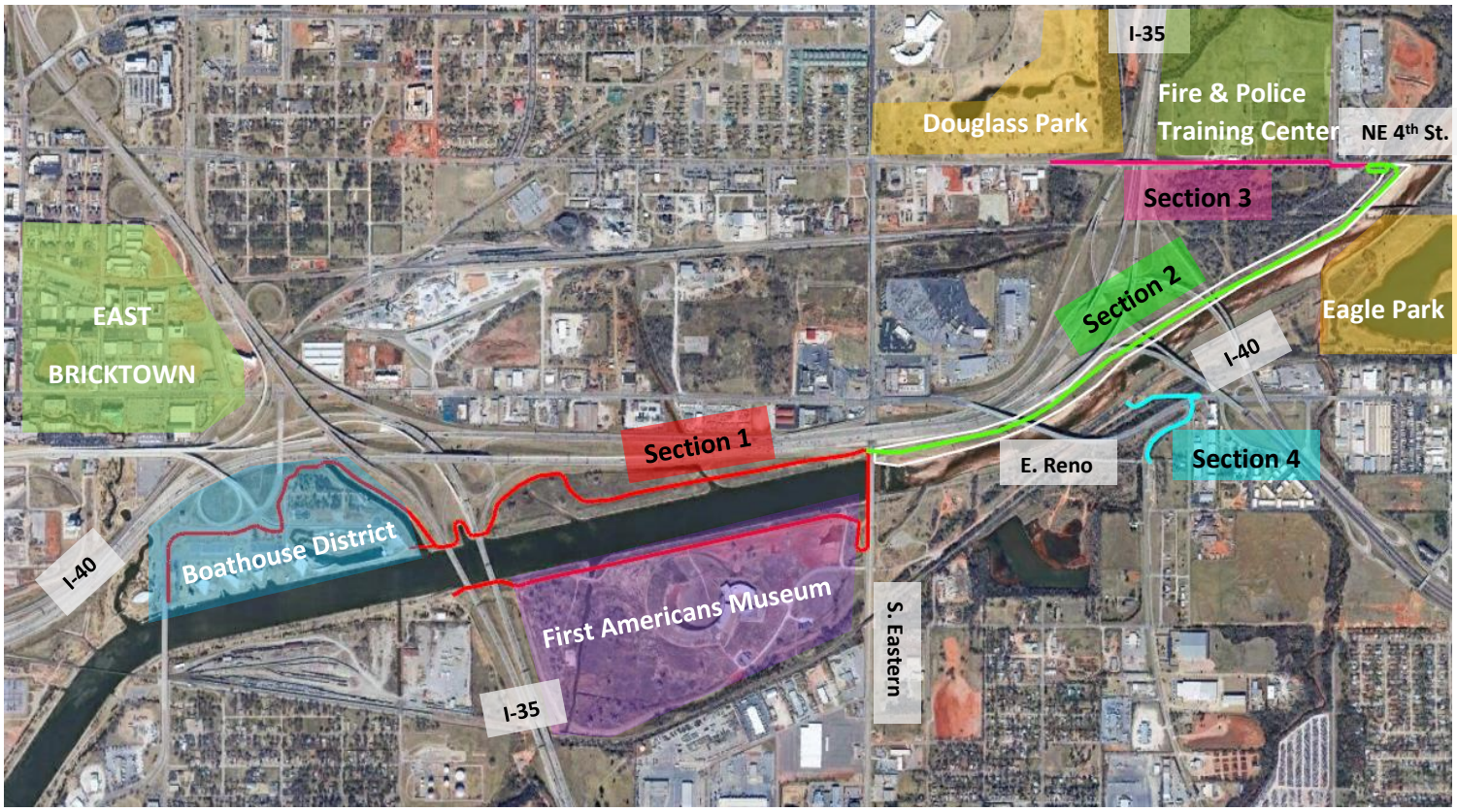


Figure 1 – Recommended Trail Alignment

3 Report Content

3.1 Project Background

The Greenway Trail is based on recommendations detailed in the "Trails Master Plan" (TMP), created in 1997. The TMP included recommendations for over 200 miles of trail across the City. The TMP states: "The North Canadian Central Greenway would extend through downtown Oklahoma City from I-44 to Grand Boulevard. Part of this greenway segment, west of Eastern Avenue, is currently funded under the MAPS program. It will include trails on both sides of the North Canadian River with trail bridges at Robinson Avenue and Eastern Avenue. Demand for trails along the wide, grassy banks of the river can be evidenced by several 'goat paths.' Several parks can be accessed from this corridor, including River Park, Elm Grove Park, Tolan Park, Wheeler Park, Wiley Post Park and Rotary Playground. The Stockyards, a popular retail and dining locale, will also be accessible from the corridor, as well as area motels and the Downtown Air Park. The Downtown will be linked to this greenway by the Bricktown Canal. An extension from Eastern to I-40 will enable a linkage to the Tinker/Draper Trail. This corridor is ideal for both typical paved trails and 'natural surface' trails to the existing local natural environment".

As with all city trails, the TMP states that the intent of the Greenway is to "provide safe and convenient facilities for walkers, joggers, bicyclists, roller-skaters, people with strollers and those confined to wheelchairs. It will serve to connect residential areas to significant outdoor recreation areas, such as the city lakes, waterways and parks. It will also offer citizens a choice in transportation, improving conditions for bicycling and walking to popular destinations, such as employment centers, retail establishments, tourist attractions, medical facilities and schools". When considering potential alignments, it was understood that this trail is a lot more than simply a direct connection of two points; it is intended to maximize connectivity along the corridor without compromising the safety of trail users or neighboring property owners.

In 2005, MacArthur Associated Consultants, LLC (MAC) referred to the TMP while conducting the conceptual study to link the South Grand Boulevard Trail and the Katy Trail. That study evaluated costs, right-of-way requirements, continuity of tails and user safety. This conceptual study was the launch of the Greenway on the Oklahoma River Trail, though funding was still undetermined.

In 2007, a $835.5 million General Obligation Bond (GO Bond) was passed. The purpose of this bond was to fund construction and maintenance of streets, bridges, drainage structures, parks, police and fire

departments, libraries, facilities, transit, and other economic development opportunities across the City. As can be seen around the Oklahoma City metro, much of this money has been effectively utilized to improve the facilities in which it was intended to help. However, some funds from that bond remain, and it is the intent of the City to use them to fund the completion of the OKC trail system. The 2007 GO Bond approved the connection of the existing Oklahoma River Trails – North and South to the Eagle Lake and Katy Trails. This multi-use connection, the Greenway on the Oklahoma River, will substantially increase the distance trail users can safely travel along the Oklahoma River and beyond (Figure 2). Since the 2007 GO Bond approval, ODOT has offered an additional $2 million for the Greenway Trail design and construction.

Once funding was secured, the design phase of the project began. Based upon the TMP, 2005 conceptual study and the proposed trail location in the Request for Proposals (RFP) (Figure 3), the design team began trail alignment development. Standard Testing and Engineering Company (Standard Testing) will provide Geotechnical investigations depending on the recommended trail configuration and optional bridge installments. Conceptual Alignment Drawings submitted to the City can be found in **Appendix A**.

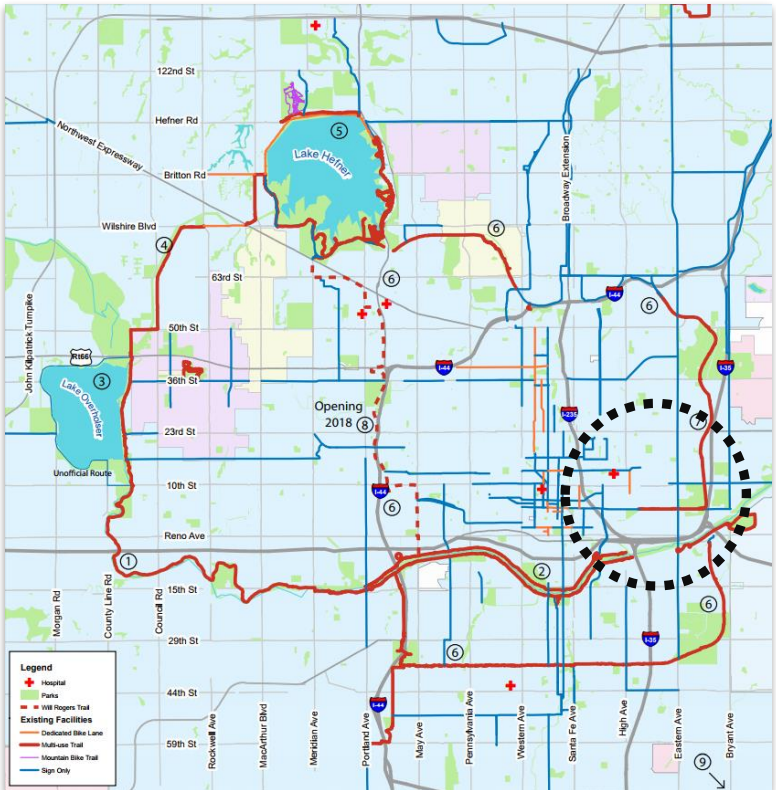


Figure 2 – Existing Oklahoma City Trails with the Proposed Greenway Connection

Figure 3 – Proposed Trail Alignment for the Greenway on the Oklahoma River from the Request for Proposals issued by the City of Oklahoma City

3.2 Project Scope

The project will provide a new trail connection to the South Grand Blvd. Trail/Tinker-Draper Trail to Oklahoma River Trail/Katy Trail. The design will include trailhead parking, trail amenities, lighting and wayfinding. When complete, the new trail will provide a dedicated trail connection between the existing Katy Trail and the existing Oklahoma River Trail, which will include a connection to the existing S. Grand Blvd. Trail. Ultimately, users will be able to travel between Lake Hefner and Lake Stanley Draper completely by trail.

The new trail will include construction along the Oklahoma River (north and south sides) with utilization of the bridge over the Oklahoma river at S. Eastern Ave. and over Interstate 35 (I-35) at NE 4th Street. The recommended trail will incorporate aspects of rural and urban trail design. Trail design will be based on the standards outlined in the Oklahoma City Trails Master Plan (TMP) and BikeWalkOKC. Design will also ensure an effortless and safe transition when connecting to existing trails. Due to the proximity of the trail to the Oklahoma River and other features, including but not limited to parks, lakes, First Americans Museum (formerly known as the American Indian Cultural Center and Museum) and the RiverSport Adventures, landscaping and trail amenities will be an important design consideration. These features will be considered add-alternative amenities based upon budgetary limits.

Trail alignment options included varying paths through the boathouse district, optional pedestrian bridges over Oklahoma River tributaries, north and south shoreline trails past I-35, and alternatives through the First Americans Museum property. Those alignment options were refined for presentation to the City and affected stakeholders.

3.3 Stakeholder Involvement

Due to the proximity of the new trail to the Oklahoma River and other features, stakeholder involvement and input has been essential for developing the recommended trail alignment. Several alignment and amenity options were refined and presented to the involved stakeholders during October and early November of 2019. The following notes are the result of those conversations. While many issues where discussed, the following notes are a summary of each stakeholder meeting:

October 10, 2019 – Meeting at the City with Mike Knopp of the Boathouse District

- Need to check status of oil well to the west of FAM
- Mr. Knopp wants the trail to wind through the Boathouse District to bring cyclists through the district to utilizes facilities, restaurants, etc.
    - OKC had concerns with conflicts with pedestrians crossing the trail during busy events
    - OKC doesn't want any part of the trail closed during future development of Boathouse District
- OKC wants the trail to act as a "bypass" around the Boathouse District that mitigates risks involving cyclists and pedestrians
    - Boathouse District may incorporate a "business route" of trail section into their master plan
- MAC to put alignment on paper, assemble cost estimate and complete report for the City
- MAC to acquire as-builts for bridges and send to Halff

October 11, 2019 – Meeting with Bill Elliot of OKC Bicycle Society

- Bill Elliot's responses to the alignment were very positive.
    - Agreed that taking the trail on the N. side of the river near Eagle Lake would be a better solution

October 14, 2019 – Meeting at The City w/ Laura Griggs of the Downtown Design District and David Burch of the Oklahoma City Riverfront Redevelopment Authority

- Tie into BikewalkOKC- Tier 1 Facility; show connectivity in report
- Connectivity on 4th Street to Washington Park (TAP Grant)
- Laura Griggs supports OKC's preferred alignment around Boathouse District
    - Need an application

        - Submit about 65% plans
        - $500 fee (because it's a bond project)
        - MAC is applicant and COKC is owner
        - One application can cover the whole thing
    - Presentation to the Downtown Design Review Committee
    - Send notice to property owners within 150' of trail

October 16, 2019 – Meeting at Chickasaw Building with Alan Marcum, representative of the First Americans Museum (FAM)

- Check space under northbound I-235 bridge on north side of Oklahoma River (might be tight)
- FAM responses and concerns
    - Supports trail running alongside and as close to the river as possible
    - Plans to develop the entire area to the west and north of the existing FAM
    - Lightning Creek- future development may include a marina
    - Possible amphitheater on the north side of the Oklahoma River where the trail bows up towards the north
        - FAM proposes to provide funding for a potential pedestrian bridge over tributaries
    - Oil well on western end of site is not being used
    - Wider concrete section of trail on south side of Oklahoma River around FAM area similar to the East Warf at Lake Hefner

November 4, 2019 – Phone Call with Tum Huya, BNSF Manager of Public Projects

- Check clearance of BNSF bridge underpass for 25' containment and vertical clearance
- Review and incorporate BNSF pedestrian guidelines and System Design & Construction Manual
- Permit Applications for trail license and/or maintenance

In addition to stakeholder meetings, alignment options were presented to the Oklahoma City Trails Advisory Committee on December 13, 2019, The Oklahoma Riverfront Redevelopment Authority on January 21, 2020, and The Scenic River Overlay Design District on February 6, 2020. If needed or requested by the City, additional meetings will be coordinated with Oklahoma City committees and the surrounding Neighborhood Associations of Akers Park and Urban Neighbors.

3.4 Technical Analysis

3.4.1 Alignment Selection Methodology

Several sources of input were considered when developing the trail alignment. The initial scope of the project called for connectivity between the Oklahoma River Trail-North, the Oklahoma River Trail-South, the South Grand Trail, the Eagle Lake Trail, and the Katy Trail, while providing trail users accessibility to the Boathouse District, the First Americans' Museum (FAM), and access points along the Oklahoma River. Other factors that helped dictate the final alignment include:

- Field investigation
- Aerial examination
- Instructions in the RFP
- Stakeholder input
- Initial cost estimates
- Right-of-Way acquisition
- Design and construction schedule
- Existing utilities

The trail is divided into four different sections, they are outlined below.

Section 1 – OK River Trail-North (north side of OK river) to S. Eastern Ave. to OK River Trail-South (south side of OK river)

Section 1 of the trail connects the Oklahoma River Trail-North to the Oklahoma River Trail-South. It begins at the west end of the Boathouse District at Oklahoma River Trail-North and runs along the north side of the Boathouse District. Discussions between the City and the Boathouse District yielded interest from both parties in accessibility to the Boathouse District. The original alignment in the RFP showed the trail alignment running through the middle of the Boathouse district. One of the priorities of the City is to provide a trail that has the least amount of obstructions, such as pedestrian cross-traffic, to accommodate the users who are using the trail for transportation or fitness purposes. The

Figure 4 – Section 1 of the Greenway Trail

Boathouse District will continue to develop and hold events, attracting, at times, large volumes of pedestrians to the area. Therefore, the trail runs along the west and north sides of the extent of the Boathouse District because it provides easy access to the Boathouse District while allowing other users to pass through the area with the least amount of obstructions. There are a few portions of Section 1 of the trail that lie in the 100-year flood plain. A Floodplain Activity Permit will need to be acquired and the trail will need to be raised above the base flood elevation or moved outside the floodplain.

To avoid the costs associated with pedestrian bridges, the trail runs around the north side of several water areas on the north side of the river. Should additional funds become available, some of these areas may be replaced with a pedestrian bridge. The trail will run close to the river in areas where it is possible and practical to enhance the users' trail experience. With respect to the vicinity of the trail and the FAM, the Chickasaw Nation expressed interest in the trail being an integral part of future development.

Section 2 – S. Eastern Ave. to N.E. 4th Street (north side of OK River)

Connectivity to the Katy Trail was a core objective of the Greenway Trail when it was originally envisioned. Section 2, the east/west alignment that ultimately reaches N.E. 4th Street, could be one of two different routes that required investigation and study. The original route connected the Eagle Lake Trail to the N.E. 4th Street on the south side of the Oklahoma River (Section 2B). This alignment crossed several properties that would require right-of-way acquisition. It would also require trail users to cross the N.E. 4th Street bridge over the Oklahoma River. Reconfiguring this bridge to accommodate the trail is difficult, as the driving lanes would narrow and the trail section through the bridge would be tight. To avoid costs associated with acquiring right-of-way and safely reconfiguring the bridge, an alignment on the north side of the river was considered (Section 2A). It would be constructed exclusively on City of Oklahoma City property and connect to N.E. 4th Street on the west side of the bridge over the Oklahoma River,

Figure 5 - Sections 2, 3 and 4 of the Greenway Trail

eliminating the need to cross the bridge to access the Katy Trail. Given these benefits and the lower estimated cost, the northern alignment (Section 2A) was selected as the final alignment for Section 2.

The following table compares the estimated costs of the alternative Section 2 alignments.

Section 2 Comparison						
			Section 2A (North)		Section 2B (South)	
Item	Unit	Unit Price	Quantity	Cost	Quantity	Cost
Construction Items						
Asphalt Removal	SY	$10.00	42.00	$420.00	N/A	N/A
6" P.C. Concrete Trail Section	SY	$65.00	10036.00	$652,340.00	4364.00	$283,660.00
Trail Striping	Mile	$2,485.00	1.43	$3,542.54	0.62	$1,540.70
City Road Crossing	EA	$6,400.00	2.00	$12,800.00	2.00	$12,800.00
Private Drive Crossing	EA	$10,400.00	1.00	$10,400.00	1.00	$10,400.00
Culvert	EA	$10,000.00	3.00	$30,000.00	1.00	$10,000.00
Sodding	SY	$5.00	9635.00	$48,175.00	5909.00	$29,545.00
Miscellaneous Items						
Clearing and Grubbing	Per mile	$15,000.00	1.43	$21,383.52	0.62	$9,298.30
Traffic Control (Signage + Striping)	Per St Xing	$1,000.00	2.00	$2,000.00	2.00	$2,000.00
Temp Construction Traffic Control	LS	$10,000.00	1.00	$10,000.00	1.00	$10,000.00
Private Property Land Acquisition	SF	$12.00	N/A	N/A	23897.00	$286,764.00
Bridge Reconfiguration (NE 4th St over OK River)	LS	$199,000.00	N/A	N/A	1.00	$199,000.00
Construction Staking	Per Mile	$7,500.00	1.43	$10,691.76	0.62	$4,649.15
Temp Erosion Control	Per Mile	$15,000.00	1.43	$21,383.52	0.62	$9,298.30
Combined Subtotal				**$823,136.34**		**$868,955.44**

Private Property

Owner	Land Area Needed (SF)
Owens Corning Roofing & Asphalt	4,710
Burns E L Trust	19,187

Notes

- "6" P.C. Conc. Pavement Trail Section" includes a 12'-wide trail, doweled joints, a 6" stabilized subgrade, and earthwork
- "City Road Crossing" includes bollards, tactile warning devices, and P.C. concrete placement
- "Private Drive Crossing" includes pavement removal, P.C. concrete placement, bollards, and tactile warning devices
- "Sodding" is based on 6' of sodding on either side of trail (where applicable)

Section 3 – N. Bryant Ave. to Katy Trail

Section 3 of the trail consists of the stretch of trail along NE 4th Street that connects Section 2 of the trail to the Katy Trail. Section 3 of the trail will cross to the north side of N.E. 4th Street with an at-grade crossing. To reduce costs, share-the-road signage and striping will be utilized along NE 4th Street from the proposed parking lot to the Katy Trail connection as the base-option. A stand-alone 12-ft paved trail on the north side of this stretch of road is proposed as an add-alternate. The reconfiguration of the bridge over I-35 to accommodate a wider pedestrian section, is also considered an add-alternate item. Upon reaching the Katy Trail, a crosswalk will aid trail users in crossing the street to safely access the Katy Trail. As an option,

a new trailhead parking lot is proposed at the junction of Section 2 and Section 3 on the south side of N.E. 4th Street just west of the Oklahoma River and a stand-alone P.C. concrete trail will be constructed along N.E. 4th Street.

Section 4 – South Grand Trail to Eagle Lake Trail

Section 4 of the trail will connect the existing parking lot at the South Grand Trail on E. Grand Blvd. to the Eagle Lake Trail. The trail will follow E. Grand Blvd. north, crossing S. Eckroat with an at-grade crossing. The trail will then cross E. Reno Ave. with an at-grade crossing, heading northwest, under passing an existing BNSF bridge, and eventually connecting to the Eagle Lake Trail adjacent to the Oklahoma River. Overhead protection will be constructed to protect trail users from falling debris from the railroad. See Section 3.4.8 of this report for more details of the trail overpass protection and BNSF coordination.

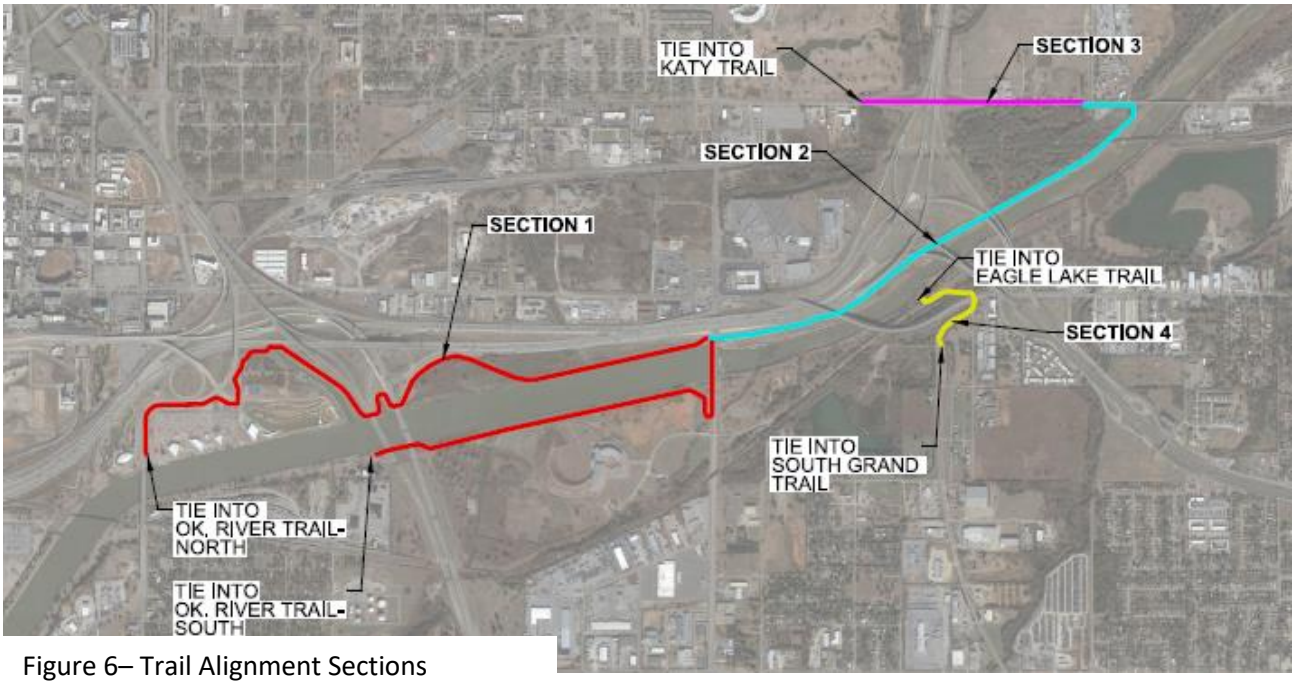


Figure 6– Trail Alignment Sections

3.4.2 Pavement

Previous trails in the city have been constructed from both concrete and asphalt, with a preference for asphalt pavement. The edges of the trails would deteriorate over time, demanding a solution to contain the asphalt pavement. The proposed solutions including an aluminum edge strip or a 6-inch wide P.C. concrete strip on both sides of the asphalt. The latter was found to be more effective and will be utilized in any asphalt sections of the Greenway Trail.

The City preference is for the use of P.C. concrete throughout for the new trail, as such the 6" concreted edging noted above will not be required, which based on preliminary estimates will reduce the unit cost of the trail. A 6" P.C. concrete pavement section with a 6" aggregate base and a compacted subgrade will be used at all locations. The trail design is based on City standards for trail construction. It will be 12 feet wide with 6-foot unpaved shoulders where space allows. Solid slab sodding will be placed on all disturbed ground on either side of the trail.

Subgrade stabilization/modification will be used if required/recommended by geotechnical investigations based on ground conditions. Isolated areas of the subgrade that fail a proof roll prior to compaction may require repair before construction.

3.4.3 Traffic

The Greenway Trail will require traffic control and construction sequencing as the recommended alignment trail will cross several streets, interstates and bridges. The alignment will navigate the following roads:

- Unsignalized at-grade crossing at S. Lincoln Ave. and SE 6th St.
- Unsignalized at-grade crossing at SE 5th St.
- Signalized at-grade crossing at S. Eastern Ave.
- Signalized at-grade crossing at E. Reno Blvd.
- Unsignalized at-grade crossing at S. Eckroat St.
- Unsignalized at-grade crossing at NE 4th St.
- Unsignalized at-grade crossing at N. Bryant Ave.

All street crossings are labeled in the Conceptual Alignment Plans in **Appendix A**.

The alignment will utilize existing bridges over the Oklahoma River at S. Eastern Ave. and NE 4th St. Traffic management will be necessary during construction. Proposed improvements to these existing bridges can be found in **Appendix B** and traffic control and construction sequencing is as follows:

- The traffic control and construction sequencing for construction of the widened multiway path on the west side of S. Eastern Avenue is proposed as follows:
    - PHASE 1**:** The construction phase on Eastern Avenue will begin placement of advanced warning and work zone construction signs, the southbound traffic lanes will be reduced

to one lane and transitioned to the east for the placement of temporary positive concrete construction barriers on the existing inside southbound lane. This will allow for the demolition of the existing concrete traffic rail and the construction of new traffic rail. Approximately 1,100 LF of temporary concrete barrier will be required for this phase.

- PHASE 2a (optional): If the Alternate E.3 with the traffic rail on both sides of Eastern Avenue is the selected alternative, then the 1,100 LF of temporary concrete barrier will be placed on the east side of the bridge and the traffic will be moved to the west side. The outside northbound lane on the bridge will not be available during this phase and traffic will be reduced to one lane (northbound) south of the westbound frontage road.
- PHASE 2**:** The temporary positive construction concrete traffic barrier will be removed and traffic will be moved to the west in order to provide room for the removal of some of the existing concrete barrier wall on the SE corner of the intersection at the eastbound frontage road and Eastern Avenue. Traffic cones with an impact attenuator truck could be used to protect the construction crews from northbound traffic during this short duration operation. This new opening in the concrete barrier will allow for east-west pedestrian and bicycle traffic to cross Eastern Avenue to the proposed trail.
- Phase 3: Following the completion of the new pedestrian push buttons at the south side of the intersection, the restriping of this section of Eastern Avenue, the restriping of the stop bars and the continental crosswalks, traffic shall resume as normal.

- The traffic control and construction sequencing for construction of the widened multiway path on the north side of NE 4th Street is proposed as follows:
  - PHASE 1: The traffic control and construction sequencing for the east and westbound vehicles on NE 4th Street will begin placement of advanced warning, detour and work zone construction signs.
  - PHASE 2: The traffic will be detoured 6 blocks north to NE 10th Street for the duration of the demolition and construction of the proposed construction of new traffic rail as the ADT on this facility is less than 2,000 ADT. The detour will use N. Bryant Avenue, N. MLK Avenue and NE 10th Street.
  - PHASE 3: Once the proposed new traffic rail is built and the restriping operations for NE 4th Street are completed, the detour will be removed and traffic will be placed on NE 10th Street.

3.4.4 Parking

The proposed trail alignment will utilize two existing parking lots to act as trailhead parking lots. An add-alternate item to the project is a new trailhead parking lot at N.E. 4th Street and the Oklahoma River.

The Greenway will tie into the Oklahoma River Trail – North on the west side of Riversport Rapids OKC, utilizing the existing 54-space parking lot directly west of the Devon Boathouse as trailhead parking. The large parking lots north of the boathouses are paid parking. Coordination with the Boathouse District will be required should these lots be needed for trailhead parking.

Section 4 of the trail begins at the existing trailhead parking at the northern extent of the South Grand Trail. This parking lot contains 21 parking spaces. The proposed trailhead parking lot will be constructed on the south side of N.E. 4th Street west of the Oklahoma River. The proposed lot holds up to 25 spaces and provides the option for additional amenities such as landscaping, art installations, and an event lawn space. The locations of the existing and proposed parking lots can be found in the Conceptual Amenities and Art Elements exhibit located in **Appendix C**.

3.4.5 Hydrology and Hydraulics

Direct surface runoff will be graded away from paved areas. Existing drainage patterns will be maintained where possible and existing street drainage systems will not be impacted by the proposed trail. Drainage improvements will be constructed where necessary, and may include flumes, existing underground storm drainage structures, and culverts at existing creeks or channels.

The trail alignments are contained in FEMA flood map panels 40109C0285H and 40109C0305H (**Appendix D**). They are located in Zone AE and Zone X areas. An area in Zone AE is subject to flooding during a 100-year (1% chance) storm. An area in Zone X is subject to flooding during a 500-year (0.2%) storm. The City of Oklahoma City Drainage and Flood Control ordinances require that development within a 100-year floodplain must have the lowest floor elevated to one foot above the 100-year flood level or floodproofed to one foot above the 100-year flood level. City ordinance also requires the low chord of any new bridge must be above the urbanized 50-year WSEL and not be overtopped by the 100-year WSEL. Bridges will require a HEC-RAS study to confirm these elevations and ensure the bridges are constructed correctly. An HY-8 analysis will be required for the existing and proposed culverts to confirm capacity and overtopping

elevations. An existing hydraulic study of the area will be used to aid in the grading and elevation design. A floodplain permit will be required for any development within the floodplain.

Facilities in the proposed trailhead parking lot at the intersection of N.E. 4th Street and the Oklahoma River will be constructed with their base floor elevations above the 100-year flood level. There are several portions of the trail that are within the FEMA-defined floodplain, so a floodplain activity permit is needed. The FEMA 100-year flood elevation is shown in the drawings in Appendix A. There is a significant amount of development within the 100-year floodplain, including the Boathouse District parking lots and large sections of the Eagle Lake Trail. In some locations, it is not possible to avoid locating the proposed Greenway trail at or above the 100-year flood elevation. Therefore, either adding fill to ensure the trail elevation does not overtop during the 100-year flood elevation or constructing the trail at existing grades to ensure the floodplain's ability to contain flood water is not impacted will be required.

3.4.6 Survey and Mapping

Survey along the alignment is necessary to provide complete design. The extent of the survey was based on the alignment identified in the RFP provided by the City (Figure 3). A plan was made for the topographic survey limits needed in order to collect the appropriate data. The MAC survey team conducted work as follows:

- In Office Processing – Prior to Fieldwork
    - Review of existing aerial maps
    - Review of existing OKC GIS Data
    - Review of Oklahoma County Assessor data
- Field Topographic Survey
    - Control was set for use in ground and Aerial LiDAR Survey to be collected.
    - Land Corners were located for use in calculating and creating property and right of way extents.
    - Aerial LiDAR was performed using a helicopter to cover the limits if the alignment and adjacent areas.
    - Ground Topographic Survey was performed
        - Obscure areas not located well by Aerial LiDAR are surveyed to fill in missing or skewed areas.
- In Office Processing – After Fieldwork

- Aerial LiDAR and ground survey process and combined to create the necessary topographic surface and to show topographic features along and adjacent to the alignment.
- Legal descriptions and existing highway right of way plans were gathered and used to recreate ownership lines and limits.
- Owners of parcels, public and private, are listed for the respective tracts.

Based on the trail alignment recommended in this report, additional topographic survey will be required on the north bank of the River between Eastern Ave and NE 4th St. Once approved by the City, additional survey will be obtained prior to beginning design.

3.4.7 Existing Utilities

While the utilities included with the trail construction are minimal, consideration of the existing utilities in the area of the trail was required. Existing utilities in the area of the proposed trail include:

- Storm sewer
- Overhead/underground electrical
- Sanitary sewer
- Domestic water lines
- Communication lines
- Gas lines
- Oil well

The major utility that impacted the final alignment of the trail is the storm sewer system, namely, the earthen channels around the Oklahoma River. The trail weaves around the extents of four of these channels to avoid constructing pedestrian bridges over the channels. However, there is one channel on the north side of the Oklahoma River that extends north to the south side of Interstate 40, requiring a pedestrian bridge to cross. Options to construct pedestrian bridges over the other channels are included in the add-alternate portions of the cost estimate.

There exists an unknown utility structure on the south side of the Oklahoma River just east of Interstate 235. The proposed alignment runs directly next to this structure. Discussions with the City and the Chickasaw Nation have not yielded a firm identification of this structure. There is a gas line aerial crossing

just west of E. Reno Avenue over the Oklahoma River. The trail will run around the north end of this gas line to avoid interfering with it.

There is an oil well on the western side of the property that the FAM exists on. The well itself does not interfere with the trail, but accessibility to the well may be impacted by the trail. It is not clear if the well is in operation. Should the well be deemed inoperable, accessibility to the well will not need to be maintained.

The trail will be designed to avoid utility conflicts where possible and 3 feet of cover will be maintained or created over any existing utility that the trail must cross.

Information about the other existing utilities in the area is noted on existing as-builts, this information will be incorporated into the final construction plans.

3.4.8 BNSF Railroad Coordination

Coordination with the Burlington Northern Santa Fe Railroad (BNSF) is necessary for design and construction of Section 4 of the Greenway Trail. Section 4 passes under an existing BNSF 2-span bridge just northwest of E. Reno Avenue and E. Grand Boulevard. Telephone meetings and email exchanges between the design team and BNSF have documented BNSF requirements and concerns.

BNSF has requested the trail design incorporate nonstructural additions to any underpasses to keep debris from falling on the trail and trail users. Similar structures have been used throughout the trail systems in Oklahoma City, as seen on the Will Rogers Trail in **Figure 7**.

Figure 7 – Non-structural underpass covering for BNSF Crossing on the Will Rogers Trail

BNSF plans to construct a 12-ft maintenance and access road that connects E. Reno Avenue to the proposed BNSF railroad northeast of the existing railroad. This access road will pass under the southwest span of the existing BNSF bridge and the trail will pass under the northeast span of the bridge (**Figure 8**). Because this is a narrow area, Section 4 of the trail will be 10’ wide. The trail will be constructed before and with consideration given to the access road, constructing the trail in a way that leaves adequate space for a 12’ railway access road and a positive barrier/fence is a consideration. See **Appendix H** for the BNSF Utility Access Road location. Additionally, all required BNSF permits will be obtained prior to construction of the trail.

The trail will run from the bridge north to connect to the Eagle Lake Trail. The trail will cross the existing BNSF right-of-way where the future section of the BNSF railroad spur will be constructed. The intent is that a future crossing will be required but is not a part of this contract. However, the trail will be designed (i.e. graded) to allow for construction of the future crossing (bridge/tunnel) with minimal impact to the trail. Trail construction plans will reference the proposed elevation of the railroad.

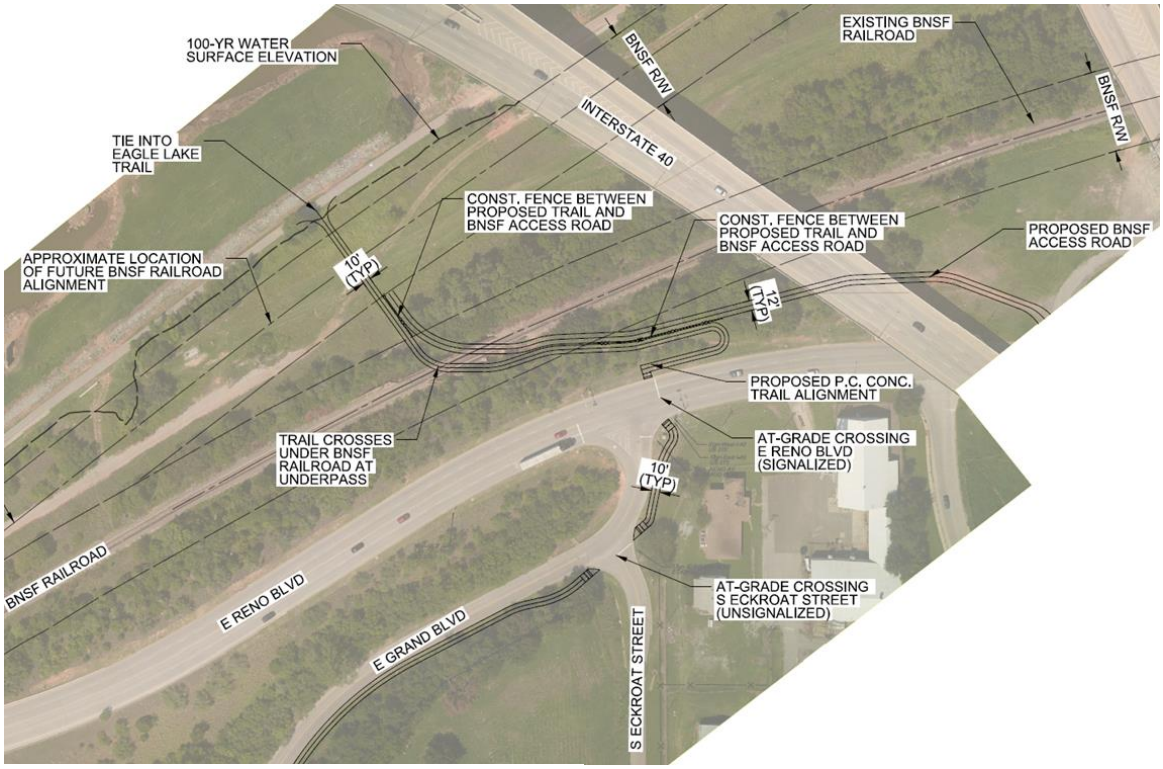


Figure 8 – BNSF Bridge and Trail Exhibit

3.5 Amenities

3.5.1 Lighting

Gateway signage lighting will be provided by solar power lights. Lighting will be provided at Trail Heads, Plazas and Scenic Overlooks for safety. Select bridges will have lighting on the underside for safety and provide potential opportunities for art lighting displays. Solar-powered lighting may be added to the trail in the future to mitigate the electrical load and cost associated with trail lighting.

3.5.2 Pedestrian Bridges

As mentioned earlier in this report, existing storm sewer channels around the Oklahoma River present challenges for continuing the trail through these areas. One solution for this is constructing pedestrian bridges over the channels. The bridges will be premanufactured and will be ADA compliant. One (1) pedestrian bridge over a tributary of the Oklahoma River is included in the base cost estimate and will be required:

- Section 1 over water immediately west of S. Eastern Ave. on the north side of the Oklahoma River.

Figure 9 – Base Bid Pedestrian Bridge Location

Three pedestrian bridges are included as add-alternatives. Two of these bridges are along the trail alignment and will be considered before the third bridge, which is significantly more expensive and would not be used for primary alignment use, is considered.

- Primary add-alternative pedestrian bridges:
    - Section 1 route over water immediately east of I-235 on the north side of the Oklahoma River.
    - Section 1 over water immediately east of I-35 on the south side of the Oklahoma River.
- Secondary add-alternative pedestrian bridge:
    - Section 1 route at the southeast corner of Riversport Rapids OKC over water to connect to the trail immediate west of I-35.

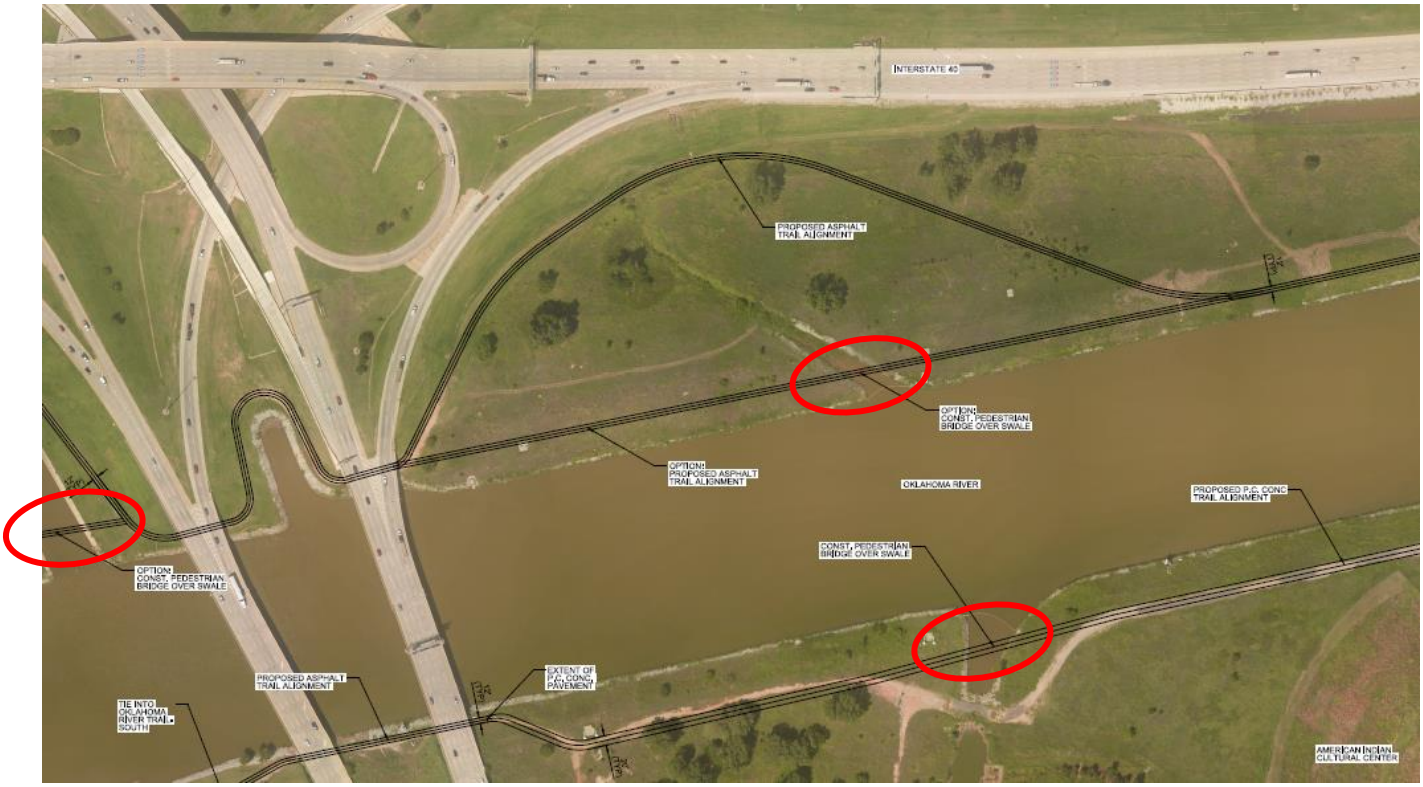


Figure 10 – Primary and Secondary Add-alternative Pedestrian Bridge Locations

Additionally, the proposed pedestrian bridge crossings are outlined in the Conceptual Alignment Plans in **Appendix A**.

3.5.3 Trail Signage and Wayfinding

Trail Signage and Wayfinding proposed for the River Greenway Trail will use the standards established in the 2015 *Wayfinding Master Plan for Oklahoma City Trails* document as well as design documents and specifications currently being completed for the Oklahoma City Trail System. They signage and wayfinding component of this project will:

- Define trail access with clear identification of entry points for users.
- Identify and direct to parking for trails.
- Create a clear, recognizable and seamless wayfinding system from existing trail segments to the River Greenway Trail.
- Create signage that blends into the riverfront environment. A user should see and respond to information, while having the signage be a natural part of the landscape and trail system.
- Incorporate universally recognized symbols or icons to capture a variety of audiences, both international and domestic.
- Increase awareness of the trails with both visitors and residents alike and educate users on etiquette and best practices.
- Encourage users to stay and explore longer by cross promoting the trail system and nearby points of interest.
- Connect visitors to destinations and multimodal options.
- Foster a safe environment by developing clear, concise trail markers that provide critical information, such as orientation and position, to emergency services.

Signs anticipated to be included on River Greenway Trail include:

- Gateway signage – large monument signs with the trail name will be constructed at high-profile locations where visible from major arterials or thoroughfares to alert users they are near an access point to the trail.
- Vehicular directional signage – simple direction signs will be installed on the adjacent public streets directing users arriving to a trail access point by vehicle to trail parking areas and trail heads.
- Pedestrian direction signage – signs located on the trail at intervals and decision-making locations and include overall trail system map, detailed location maps, nearby destination information, trail mile marker, trail etiquette information and other supplemental wayfinding tools such as websites or mobile apps.

- Mile Marker – in more remote areas of the trail where a pedestrian sign may not be necessary, in-trail mile markers constructed as part of the trail surface will be used to notify users of their location and distance from nearby points of interest for their own reference or if emergency assistance is needed.
- Interpretive Signage – where the opportunity exists, these signs will include historical, environmental and other educational information to provide additional points of interest along the trail.

3.5.4 Public Art

The City of Oklahoma City art policy states, "One Percent (1%) of the budgeted construction cost of any new building or park development or major renovation thereof, to be constructed or erected on public right-of-way or on property owned by the City utilizing public funds shall be allocated for works of art, with such funding subject to appropriation and encumbrance of revenues as provided for by the Oklahoma law applicable to municipal corporations."

The use of public art provides an opportunity to have iconic elements associated with the Greenway Trails. Public art installations will be located along the trail to create a sense of place and continue with the standard Oklahoma City has placed on the importance of art. The style of art could take many forms that include static, interactive elements or natural elements such as wind, sound, motion, visual displays, kinetic movement, water, color and lighting displays.

The iconic element carried over into theming within the signage and wayfinding elements creating an overall story for the project. Some potential areas for art installations are under bridges, plazas, scenic overlooks, trail heads and within littoral planting and boardwalk areas. The design team will work with the City and the selected artists for the best location for the art installations.

3.5.5 Add-Alternative Amenities

The following amenities are proposed as add-alternatives based upon budgetary restrictions.

3.5.5.1 Landscape

New landscape planting will consist mainly of trees with more intense planting in strategic locations to get the most impact for the budget. A mix of native shade and flowering trees will be used to provide

ease of maintenance for City staff and be budget conscious in sourcing from local plant nurseries. With high public exposure of the project, the City may consider partnering with OKC Community Foundation or Up With Trees to assist with providing trees and tree planting. New tree planting will be placed along the trails, plazas, scenic overlooks and signage areas to provide shade and pockets of color while maintaining scenic views to the river.

Shrub planting will be focused around plazas, scenic overlooks and signage to minimize maintenance and provide a sense of importance in key areas. The project landscape and irrigation will meet the requirements for the Oklahoma City landscape ordinance, such as parking lots.

Irrigation will be provided using gator bags for trees along the trail for a minimum of two years and automatic sprinkler system will be provided around plazas, scenic overlooks and signage. With the use of Gator Bags the City can either provide water for irrigation or a maintenance contract to be added for contractors to bid during construction.

3.5.5.2 Trail Heads, Plazas, and Scenic Overlooks

The project has several opportunities to create pedestrian spaces throughout the trails to engage the water and celebrate the relationship to the Boat House District. Trail heads will be the first experience users have as they access the trails. Trail Heads will be located adjacent to new and existing parking areas. Select trail heads will provide public spaces that can accommodate larger groups of people. This provides the opportunity for users to have a designated meeting point for group activities and an outdoor space for people who want to access portions of the trail. New trail heads will provide covered seating areas, event lawn space and overlook plaza to the water with ADA access to the trail. These areas will allow for staging areas for events along the trails.

Another opportunity to create pedestrian spaces and scenic overlook is the Starting Line Plaza. The plaza is located at the starting point for the regatta's events along the Oklahoma River. The Plaza will provide a rest point along the trail and have a tiered viewing area overlooking the 2000m starting line of the regatta events. An iconic element, such as a viewing tower with lighting, can be placed in the plaza; aligned with the starting line and visible from the interstate. The plaza will have enhanced tree planting for shade and large lawn panels for event space.

A more natural approach to a scenic overlook is creating a natural wetland basin, intercepting drainage with littoral planting and boardwalks. Boardwalks will meander through the wetlands providing another experience allowing trail users to experience the wetlands that will empty into the Oklahoma River. The wetlands would provide a sustainable opportunity within the project with an educational component and a unique public art experience.

The Conceptual Amenities and Art Elements exhibit can be found in **Appendix C** of this document.

3.6 Property and Right-of-Way Acquisition

The proposed Greenway Trail alignment traverses several public properties, as shown on the map in **Appendix E**. The trail will be constructed on property owned by the following entities:

- City of Oklahoma City
- State of Oklahoma
- Oklahoma Department of Transportation
- BNSF Railway Company
- AICCM Land Development

With the exception of the City and BNSF properties, a joint-use agreement will be utilized to allow trail construction and use without the need for property acquisition. An easement and necessary permits will be required for the trail that crosses the BNSF property. Private property acquisition is not required.

Additionally, the trail design will incorporate any future development plans adjacent to the proposed trail alignment. Future development information gathered during Stakeholder meetings and The City of Oklahoma City's Request for Proposals (RFP) will be considered; specifically, development within the Boathouse District, First American Museum and the City of Oklahoma City's proposal of the Fire and Police Training Center near the intersection of NE 4th Street and Bryant Ave.

3.7 Preliminary Construction Cost Estimate

The construction budget for this project identified by the City is $4.2 million with a potential of additional ODOT funding of up to $2 million. All costs outside of the proposed City budget will be considered add-alternate options. Currently, the construction cost estimate of the base option is $4.16 million. The 1% of funds that may be dedicated to the public art portion of the project is not included in the final cost of the base option estimate. Items considered in the base option are those that are required to complete the trail alignment and can be found in the detailed construction cost estimate in **Appendix F.**

Several add-alternate options may be considered should funding allow. The preferred add-alternate items are summarized in the cost estimate below. These are items that were discussed as being a part of the base option but were separated due to insufficient funds. Should the essential items in the base option be constructed and sufficient funds remain, the following items, listed in prioritized order by the City of Oklahoma City's Parks Department, may be constructed:

- Stand-alone trail section along N.E. 4th Street
- New trailhead parking
- Site furnishings/rest areas
- Bridge reconfigurations of S. Eastern Avenue over the OK River and N.E. 4th Street over I-35
- Pedestrian bridges
- Trail widening near the First American Museum
- Landscaping
- Littoral plantings and boardwalk area
- Various scenic overlooks
- Various amenities, art displays, and facilities

The following tables summarize the preliminary construction cost estimates associated with each section of trail for both the base option and the add-alternate options. Refer to the detailed construction cost estimate in **Appendix F** for more information.

Summary of Preliminary Construction Cost Estimate - Base Option		
Alignment		**Base Option**
Section 1 - OK River Trail-North to S Eastern Ave to OK River Trail-South		$1,894,047.98
Section 2 - S Eastern Ave to Katy Trail (north side of OK River)		$823,136.34
Section 3 - N Bryant Ave to Katy trail		$27,736.55
Section 4 - South Grand to Eagle Lake Trail		$235,039.13
Misc. Items		
Mobilization		$200,000.00
Permitting and Fees		$10,000.00
Trail Lighting		$40,000.00
Trail Signage		$100,000.00
Subtotal		**$3,329,960.00**
Design Contingency	10%	$332,996.00
Contractor Overhead + Markup	15%	$499,494.00
Combined Total		**$4,162,450.00**

Summary of Preliminary Construction Cost Estimtae - Add-Alternate Options		
Alignment		**Add-Alternate Option**
Section 1 (Ped. Bridge, Widened Trail, Littoral Plants/Boardwalk, Plaza/Tower, Bridge Reconf.)		$1,842,237.50
Section 3 (Trailhead Improvements, Bridge Reconfiguration)		$907,498.24
Misc. Items		
Site Furnishings		$50,000.00
Monument Signs and Lighting		$359,375.00
Landscaping and Irrigation		$187,500.00
New Trailhead Parking at N.E. 4th Street		$91,555.00
Combined Total		**$3,438,165.74**

There are two items that were originally discussed as add-alternate items. They are now considered secondary add-alternate items which may be considered for construction after the add-alternate items listed above are constructed. They are not included in the cost estimate, but an estimated construction cost is listed with them below:

- Pedestrian bridge in the Section 1 route over water immediately east of I-235 on the north side of the Oklahoma River (additional cost = $166,000)
- Pedestrian bridge from southeast corner of Riversport Rapids OKC over water to connect to the trail (additional cost = $504,000)

3.8 Detailed Schedule

Topographic survey began on August 30, 2019 and an internal kick-off meeting at MacArthur's Edmond office was held shortly thereafter. The original scope for topographic survey was completed on October 31, 2019. Additional survey is required for the recommended trail alignment option following the north banks of the Oklahoma River past Eastern Ave. Therefore, survey is in progress. All stakeholder meetings were completed within the months of October and November, with additional presentations to the Trails Committee, The Oklahoma Riverfront Redevelopment Authority and the Scenic River Overlay Design District. Meetings were also held with the City to discuss trail alignment and add-on amenities based upon the budget. MAC has submitted the 15% Conceptual Design and the exhibits for potential art and landscaping for review by the City. The proposed submittal schedule for the remaining deadlines is as follows:

Event	Proposed Date
Kickoff Meeting with COKC	9/13/2019
Draft Submittal of Conceptual Alignments	10/3/2019
Topographic Survey Complete	10/31/2019
15% Design Submittal	11/6/2019
Stakeholder meetings completed	11/15/2019
City Review of 15% Design	11/20/2019
Alignment Review Meeting	12/10/2019
Update at Trails & Pathways Advisory Committee	12/13/2019
Submittal of potential public art exhibits	12/18/2019
Submittal of Preliminary Alignment Report	1/8/2020
Update at OK Riverfront Development Authority Meeting	1/21/2020
Update at Scenic River Overlay Design District Meeting	2/6/2020
Submittal of Final Alignment Report	2/28/2020
City Council Meeting for Approval	4/28/2020
65% Design Submittal*	5/8/2020
95% Design Submittal*	6/19/2020
100% Design Submittal*	7/17/2020
Bid Documents Submitted*	Aug. 2020
Potential Bid Opening*	Sept. 2020
Potential Construction Contract NTP*	Oct. 2020
**Submittal dates may vary based on approval by City Council*	

3.9 Summary of Recommendations

After discussions with the City and the involved stakeholders, MAC has concluded the alignment below best suits the desired use of the trail outlined in the scope of the project.

Figure 11 – Greenway Trail Alignment

This alignment ensures:

- Maximizes connectivity to surrounding OKC trails
- Maximizes access prominent locations alongside the Oklahoma River
- Minimizes traffic conflicts
- Minimizes interference with future development at the FAM, Boathouse District and BNSF properties
- Avoids private property right-of-way acquisition
- Avoids use of the existing narrow bridge across the Oklahoma River on NE 4th St.
- Utilizes existing parking facilities along the corridor
- Utilizes existing BNSF underpass

The recommended alignment will tie into the Oklahoma River Trail-North on the west side of the Riversport Rapids OKC where trailhead parking is already established. The trail follows S. Lincoln Ave, crossing SE 5th St with an at-grade crossing. The trail then heads north through the Boathouse District, where there is the option for a constructed pedestrian bridge over the tributary. The trail goes under the I-35 bridges and follows the river east to S. Eastern Ave. The trail then splits, giving users the option to continue along the north banks of the Oklahoma River or head south over the River on S. Eastern Ave.
On the south side of the river, the Greenway will connect to the Eagle Lake Trail. Users have the option to travel the Eagle Lake Trail or continue west on the Greenway Trail towards the First Americans Museum where the trail will connect to the Oklahoma River Trail-South.

At the divide near S. Eastern Ave., trail users may continue east along the north bank of the Oklahoma River where the trail passes beneath the E. Reno Ave. bridge, I-40 bridges and an existing Union Pacific Railroad bridge, continuing northeast until reaching NE 4th St. The trail then follows NE 4th St. west, eventually connecting to the Katy Trail. The option for additional trailhead parking will be near the junction of NE 4th St. and the Oklahoma River. Photographs of the recommended trail alignment can be found in **Appendix G**.

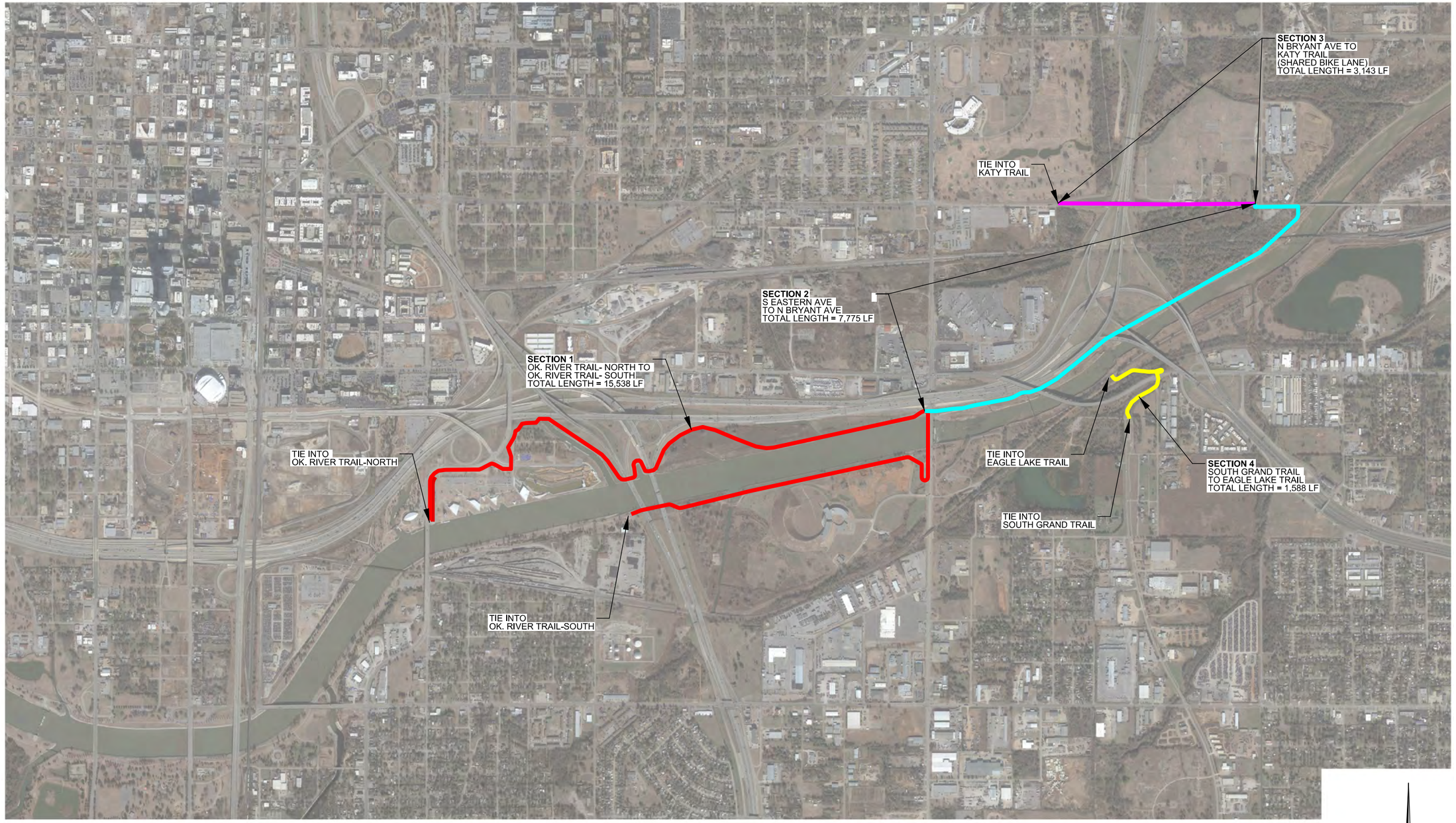
The recommended base option alignment includes:

- Stand-alone multi-use trail throughout the entirety of the trail (with the exception of a possible share-the-road along N.E. 4th Street)
- Total alignment length of 28,044 linear feet (LF)
- Includes 22,825 LF of new paved trail
- Western most connection on the north side of the river is the OK River Trail – North at the underpass at S. Byers Ave. between the Chesapeake Boathouse and the Chesapeake Finish Line Tower.
- Western most connection on the south side of the River is the OK River Trail – South just west of the I-235 bridge.
- Provides connection to the Katy Trail on the north side of N.E. 4th Street at the southern end of James E. Stewart Golf Course.
- Provides connection to the Eagle Lake Trail on the west side at the south end of the S. Eastern Avenue bridge. The proposed trail will also provide access between the South Grand Trail and the Eagle Lake Trail.

- Provides connectivity to Boathouse District, FAM, and existing trails
- Provides water crossings at SE Eastern Ave. and across Oklahoma River tributaries
- Total preliminary construction cost estimate of:
    - Base Items: $4.16 Million
    - Add-alternative Items: up to $3.44 Million

This proposed alignment guides trail users along several points of interest along the Oklahoma River while providing a cost efficient, practical and safe route between existing trails.

Appendix A – Conceptual Alignment Drawings



MacArthur Associated Consultants
23 N.W. 148th Street - Edmond OK 73013 - 405.848.2471
C.O.A. No. 6959 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc:: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

OVERALL CONCEPTUAL TRAIL ALIGNMENT

Project No.:	
Designed By:	
Drawn By:	
Checked By:	

C200

PLOTTED ON: 2/25/2020 T:\1903\Drawings\1903-C200.dgn

INTERSTATE 40

12' TRAIL ABUTS EXIST. CONCRETE SIDEWALK (EXTENT)

S LINCOLN AVENUE

AT-GRADE CROSSING SE 6TH STREET (UNSIGNALIZED)

SE 6TH STREET

TRAILHEAD PARKING

RETAINING WALL

TIE INTO OKLAHOMA RIVER TRAIL- NORTH

PROPOSED P.C. CONC. TRAIL ALIGNMENT

AT-GRADE CROSSING SE 5TH STREET (UNSIGNALIZED)

12' (TYP.)

SE 4TH STREET

PROPOSED DEVELOPMENT

PUMP TRACK

SE 5TH STREET

S PHILLIPS STREET

BOATHOUSE DISTRICT

UTILIZE EXIST. MAINTENANCE ROAD

100-YR WATER SURFACE ELEVATION

PROPOSED P.C. CONC. TRAIL ALIGNMENT

12' (TYP.)

RIVERSPORT RAPIDS OKC

100-YR WATER SURFACE ELEVATION

OKLAHOMA RIVER

MATCHLINE: SEE SHEET C202

100 0 100 200

SCALE: 1" = 100'

PLOTTED ON: 2/25/2020 T:\1903\Drawings\1903-C201.dgn

MacArthur Associated Consultants
23 N.W. 149th Street – Edmond, OK 73013 – 405.848.2471
C.O.A. No. 0959 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc.: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

CONCEPTUAL TRAIL ALIGNMENT (1 OF 7)

Project No.:
Designed By:
Drawn By:
Checked By:

C201

MATCHLINE: SEE SHEET C201

INTERSTATE 40

PROPOSED ASPHALT TRAIL ALIGNMENT

TRAIL CROSSES UNDER BRIDGE

12' (TYP)

ADD-ALTERNATE OPTION: CONST. PEDESTRIAN BRIDGE OVER WATER (APPROX. 125 L.F. SPAN)

100-YEAR WATER SURFACE ELEVATION

OKLAHOMA RIVER

PROPOSED P.C. CONC TRAIL ALIGNMENT

ADD-ALTERNATE OPTION: CONST. PEDESTRIAN BRIDGE OVER WATER (APPROX. 300 L.F. SPAN)

ADD-ALTERNATE OPTION: CONST. PEDESTRIAN BRIDGE OVER WATER (APPROX. 150 L.F. SPAN)

100-YEAR WATER SURFACE ELEVATION

MAINTAIN ACCESS TO EX. CITY UTILITY EQUIPMENT

PROPOSED P.C. CONC. TRAIL ALIGNMENT

TIE INTO OKLAHOMA RIVER TRAIL-SOUTH

TRAIL CROSSES UNDER BRIDGE

INTERSTATE 35

AMERICAN INDIAN CULTURAL CENTER

100 0 100 200

SCALE: 1" = 100'

MATCHLINE: SEE SHEET C203

PLOTTED ON: 2/25/2020 T:\19903\Drawings\19903-C202.dgn

MacArthur Associated Consultants
25 N.W. 146th Street – Edmond, OK 73013 – 405.848.2471
C.O.A. No. 6959 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc.: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

CONCEPTUAL TRAIL ALIGNMENT (2 OF 7)

Project No.:
Designed By:
Drawn By:
Checked By:

C202

MATCHLINE: SEE SHEET C202

MATCHLINE: SEE SHEET C204

INTERSTATE 40

12' (TYP)

PROPOSED P.C. CONC. TRAIL ALIGNMENT

100-YEAR WATER SURFACE ELEVATION

CONST. PEDESTRIAN BRIDGE OVER WATER (APPROX. 175 L.F. SPAN)

OKLAHOMA RIVER

AT-GRADE CROSSING S EASTERN AVE (SIGNALIZED)

CONST. CULVERT THROUGH SWALE

TRAIL CROSSES OVER OKLAHOMA RIVER ON S EASTERN AVENUE ALTERNATE: BRIDGE RECONFIGURATION

S EASTERN AVENUE

PROPOSED P.C. CONC. TRAIL ALIGNMENT FAM FRONTAGE: 3,815 LF BASE: 12'-WIDE (TYP) ALTERNATE: 20'-WIDE (TYP)

TIE INTO EAGLE LAKE TRAIL

EAGLE LAKE TRAIL

PROPOSED P.C. CONC. TRAIL ALIGNMENT

FIRST AMERICANS MUSEUM

100 0 100 200

SCALE: 1" = 100'

MacArthur Associated Consultants
23 N.W. 149th Street – Edmond OK 73013 – 405.948.2471
C.O.A. No. 6959 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc:: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

CONCEPTUAL TRAIL ALIGNMENT (3 OF 7)

Project No.:
Designed By:
Drawn By:
Checked By:

C203

PLOTTED ON: 2/25/2020 T:\1903\Drawings\1903-C203.dgn

ADDITIONAL SURVEY FOR NORTH SIDE OF RIVER IS IN PROCESS AND WILL BE COMPLETED FOR USE IN FINAL CONSTRUCTION PLANS

12' (TYP)

100-YEAR WATER SURFACE ELEVATION

EAGLE LAKE TRAIL

E RENO AVE

TRAIL PASSES UNDER BRIDGE

PROPOSED P.C. CONC. TRAIL ALIGNMENT

APPROXIMATE LOCATION OF FUTURE BNSF RAILROAD ALIGNMENT

OKLAHOMA RIVER

BNSF RAILROAD

AT-GRADE CROSSING S EASTERN AVE (SIGNALIZED)

EAGLE LAKE TRAIL

S EASTERN AVE

MATCHLINE: SEE SHEET C203

MATCHLINE: SEE SHEET C205

100 0 100 200

SCALE: 1" = 100'

MacArthur Associated Consultants
25 N.W. 149th Street – Edmond, OK 73013 – 405.848.2471
C.O.A. No. 6959 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc:: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

CONCEPTUAL TRAIL ALIGNMENT (4 OF 7)

Project No.:	
Designed By:	
Drawn By:	
Checked By:	

C204

PLOTTED ON: 2/25/2020 T:\1903\Drawings\1903-C204.dgn

MATCHLINE: SEE SHEET C206

ADDITIONAL SURVEY FOR NORTH SIDE OF RIVER IS IN PROCESS AND WILL BE COMPLETED FOR USE IN FINAL CONSTRUCTION PLANS

MATCHLINE: SEE SHEET C204

100 0 100 200

SCALE: 1" = 100'

PLOTTED ON: 2/25/2020 T:\19031\Drawings\19031-C205.dgn

MacArthur Associated Consultants
25 N.W. 149th Street – Edmond, OK 73013 – 405.848.2471
C.O.A. No. 6959 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc.: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

CONCEPTUAL TRAIL ALIGNMENT (5 OF 7)

Project No.:	
Designed By:	
Drawn By:	
Checked By:	

C205

MATCHLINE: SEE SHEET C207

ALTERNATE:
AT-GRADE CROSSING
PRIVATE DRIVE
(UNSIGNALIZED)

ALTERNATE:
AT-GRADE CROSSING
PRIVATE DRIVE
(UNSIGNALIZED)

ALTERNATE:
P.C. CONC. TRAIL

ALTERNATE 8'
OVER BRIDGE

NE 4TH STREET

ALTERNATE:
12'
(TYP)

ALTERNATE:
AT-GRADE RAILROAD
CROSSING
(UNSIGNALIZED)

ALTERNATE:
PROPOSED TRAILHEAD
PARKING

PROPOSED
SHARED BIKE LANE

AT-GRADE CROSSING
NE 4TH STREET
(UNSIGNALIZED)

ALTERNATE:
AT-GRADE CROSSING
PRIVATE DRIVE
(UNSIGNALIZED)

PRIVATE RAILROAD

UNION PACIFIC RAILROAD

TRAIL CROSSES
UNDER UNION
PACIFIC RAILROAD

ADDITIONAL SURVEY FOR NORTH SIDE OF RIVER IS IN PROCESS AND WILL BE COMPLETED FOR USE IN FINAL CONSTRUCTION PLANS

12'
(TYP)

OKLAHOMA RIVER

EAGLE LAKE TRAIL

PROPOSED P.C. CONC.
TRAIL ALIGNMENT

MATCHLINE: SEE SHEET C205

100 0 100 200
SCALE: 1" = 100'

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Associated Consultants
23 N.W. 148th Street – Edmond, OK 73013 – 405.848.2471
C.O.A. No. 8269 Renewal Date: 06-30-21

SEAL OF THE CITY OF OKLAHOMA CITY

MARK	DATE	DESCRIPTION

Client: CITY OF OKLAHOMA CITY
Proj. Loc.: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

CONCEPTUAL TRAIL ALIGNMENT (6 OF 7)

Project No.:	
Designed By:	
Drawn By:	
Checked By:	

C206

PLOTTED ON: 2/25/2020 T:\11903\Drawings\11903-C206.dgn

MATCHLINE- SEE SHEET C206

100 0 100 200

SCALE: 1" = 100'

MacArthur
Associated Consultants
25 N.W. 149th Street – Edmond, OK 73013 – 405.848.2471
C.O.A. No. 0959 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc.: DOWNTOWN OKLAHOMA CITY

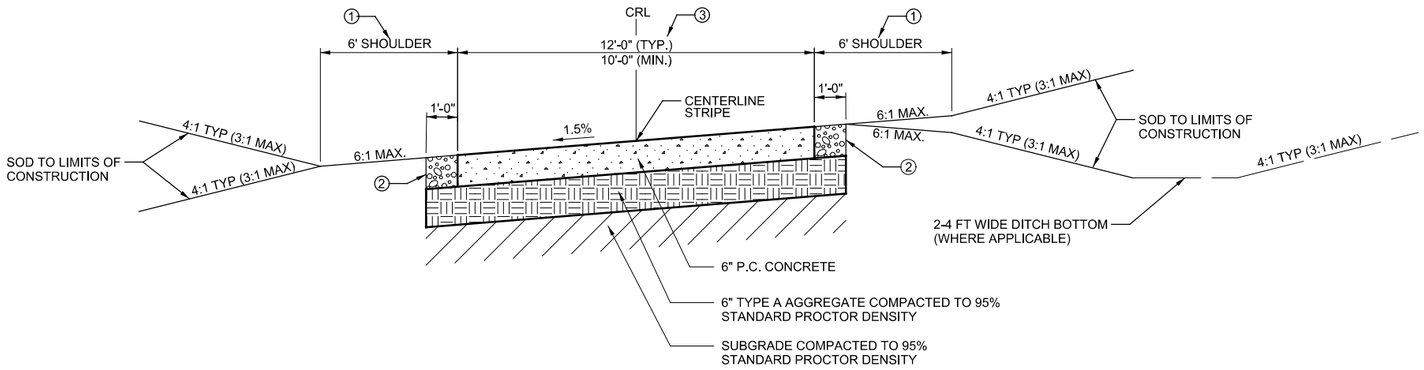
GREENWAY TRAIL ON OKLAHOMA RIVER

CONCEPTUAL TRAIL ALIGNMENT (7 OF 7)

Project No.:
Designed By:
Drawn By:
Checked By:

C207

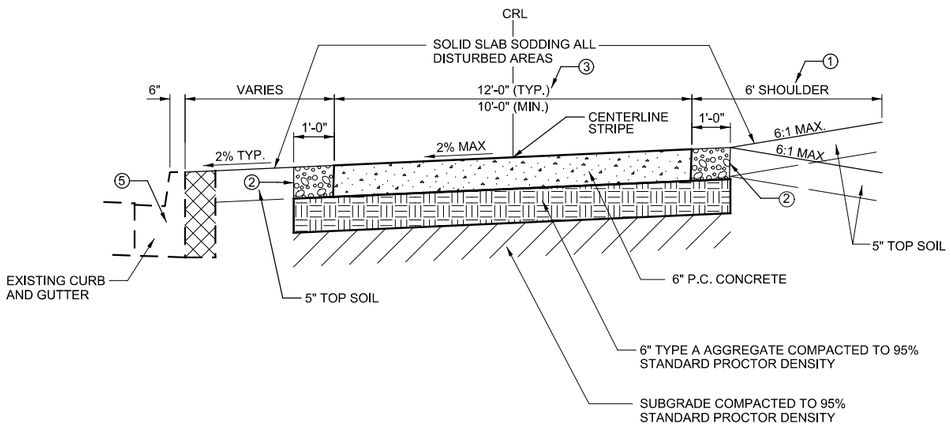
PLOTTED ON: 2/25/2020 T:\11903\Drawings\11903-C207.dgn



1 C-300 **TYPICAL SECTION - CONCRETE PAVEMENT**

NOT TO SCALE

TRAIL WIDTH WILL VARY BY LOCATION



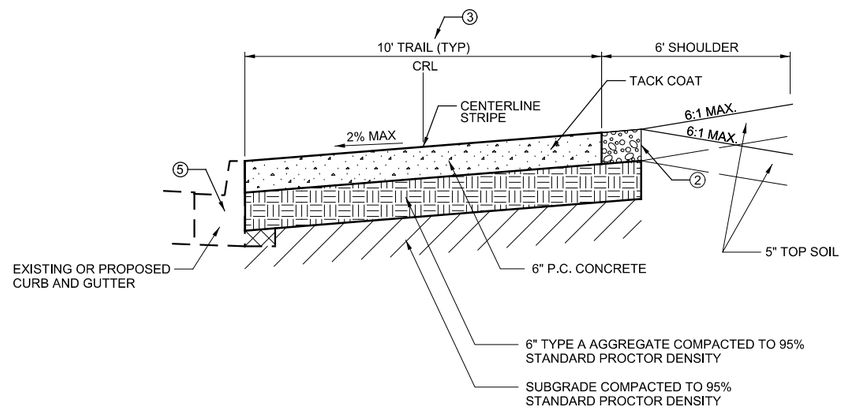
2 C-300 **TYPICAL SECTION - TRAIL OFFSET FROM CURB**

NOT TO SCALE

TRAIL WILL VARY BY LOCATION
APPLIES TO TYPICAL CONCRETE TRAIL SECTION

NOTES:

1. WHEN CONDITIONS IN THE FIELD DO NOT ALLOW FOR A 6'-0" WIDE SHOULDER THE SHOULDER MAY BE REDUCED TO AS LITTLE AS 2'-0" WIDE WITH PERMISSION FROM THE ENGINEER
2. THIS AREA TO BE BACKFILLED AND COMPACTED AS A PART OF THE FINISHING OPERATIONS. COST TO BE INCLUDED IN OTHER ITEMS OF WORK.
3. REFER TO PLAN AND PROFILE SHEETS FOR EXTENTS OF TRAIL AND TRAIL WIDTHS.
4. ALL DISTURBED AREAS TO BE SODDED AND WATERED IN ACCORDANCE WITH CITY OF OKLAHOMA CITY STANDARD SPECIFICATION SECTION 840. SODDED AREAS SHALL BE REPAIRED AND MAINTAINED UNTIL ALL PORTIONS OF THE PROJECT ARE COMPLETE AND APPROVED FOR FINAL ACCEPTANCE.
5. PROTECT EXISTING CURBS FROM STABILIZATION. ENSURE TRAIL FINISHED GRADE IS ABOVE TOP OF CURB PRIOR TO ASPHALT ROLLING.
6. SUBSURFACE CONDITIONS MAY REQUIRE TREATMENT OF THE SUBGRADE PRIOR TO COMPACTION.



3 C-300 **TYPICAL SECTION 3 - TRAIL ABUTTING CURB**

NOT TO SCALE

TRAIL WIDTH WILL VARY BY LOCATION
APPLIES TO TYPICAL CONCRETE TRAIL SECTION

MacArthur Associated Consultants
23 N.W. 148th Street – Edmond OK 73013 – 405.848.2471
C.O.A. No. 6959 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc.: DOWNTOWN OKLAHOMA CITY

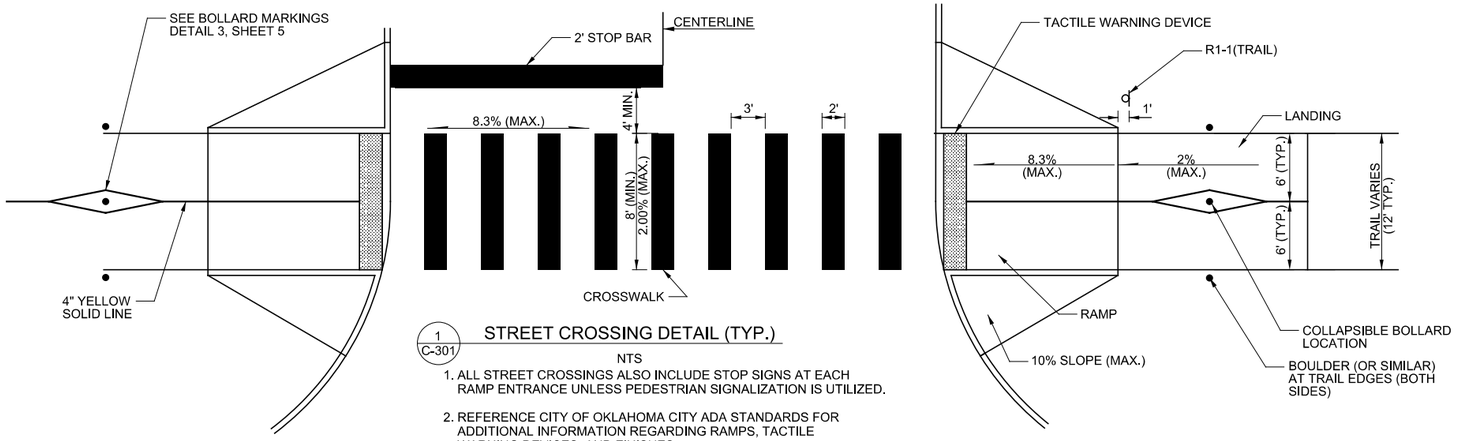
GREENWAY TRAIL ON OKLAHOMA RIVER

TYPICAL SECTIONS

Project No.:
Designed By:
Drawn By:
Checked By:

C300

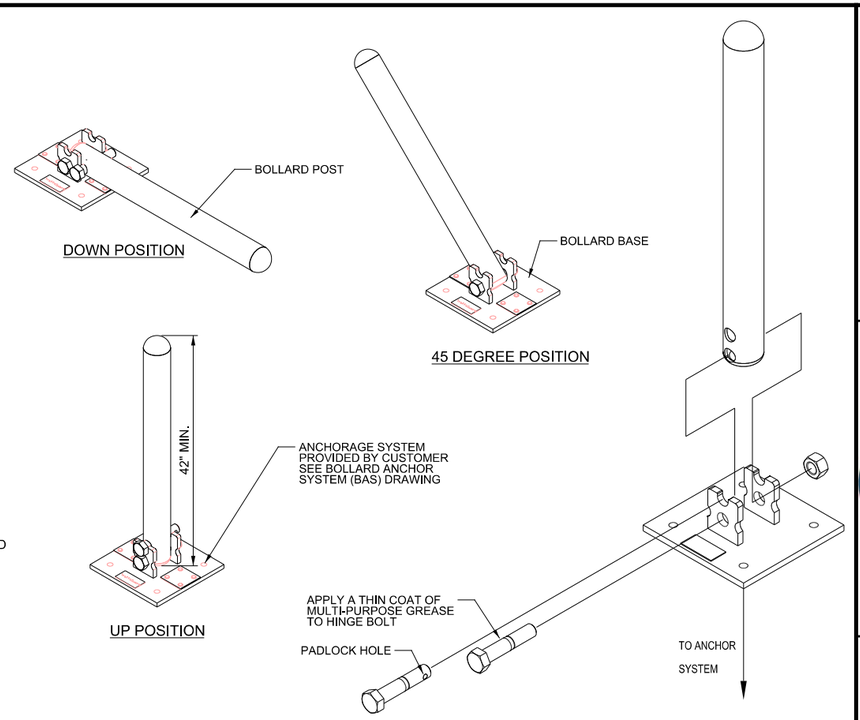
PLOTTED ON: 2/25/2020 T:\19031Drawings\19031-C300.dgn



1 C-301 STREET CROSSING DETAIL (TYP.)

NTS

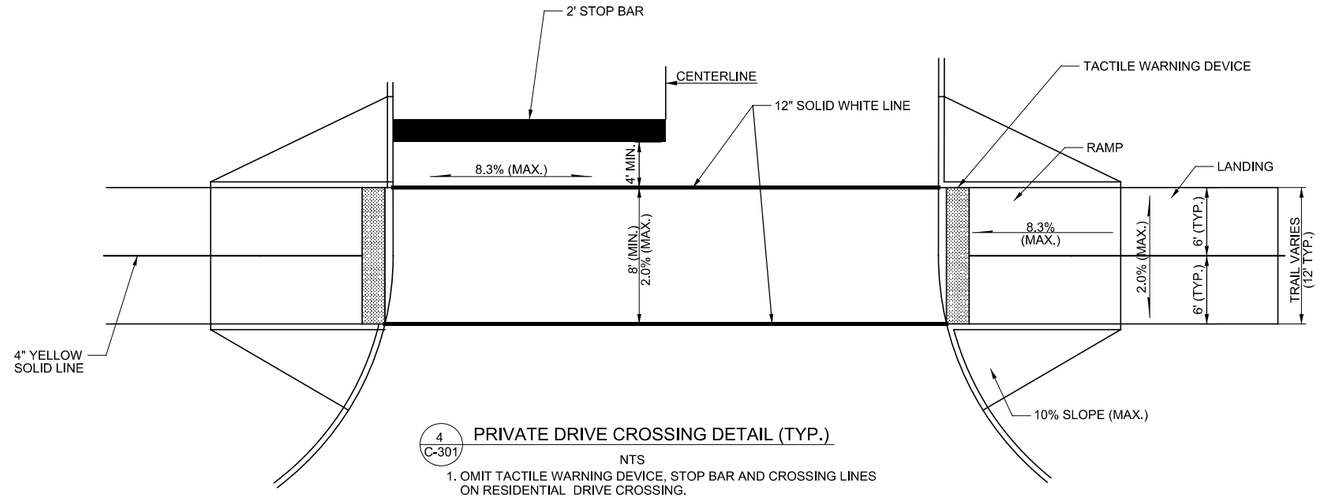
1. ALL STREET CROSSINGS ALSO INCLUDE STOP SIGNS AT EACH RAMP ENTRANCE UNLESS PEDESTRIAN SIGNALIZATION IS UTILIZED.
2. REFERENCE CITY OF OKLAHOMA CITY ADA STANDARDS FOR ADDITIONAL INFORMATION REGARDING RAMPS, TACTILE WARNING DEVICES, AND FINISHES.



2 C301 COLLAPSIBLE POST BOLLARD DETAIL

COLLAPSIBLE BOLLARD NOTES:

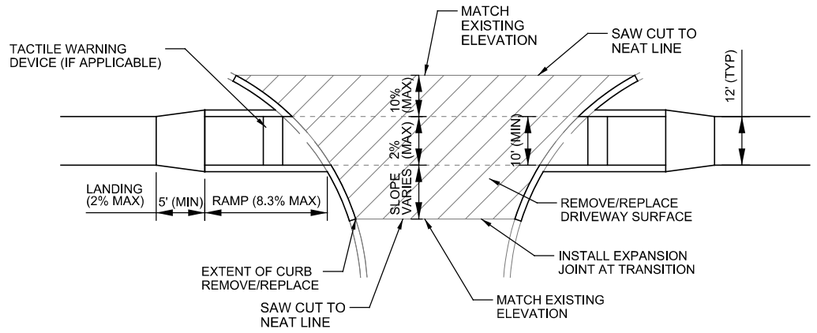
1. DETAIL SHOWN TAKEN FROM "TRAFFIC GUARD". APPROVED EQUAL MAY BE USED
2. INSTALLATION TO BE COMPLETED IN ACCORDANCE WITH MANUFACTURER'S SPECIFICATIONS.
3. ALL DIMENSIONS ARE CONSIDERED TRUE AND REFLECT MANUFACTURER'S SPECIFICATIONS.
4. DO NOT SCALE DRAWING.
5. CONTRACTOR'S NOTE: FOR PRODUCT AND COMPANY INFORMATION VISIT www.CADdetails.com/info REFERENCE NUMBER 4209-005.



4 C-301 PRIVATE DRIVE CROSSING DETAIL (TYP.)

NTS

1. OMIT TACTILE WARNING DEVICE, STOP BAR AND CROSSING LINES ON RESIDENTIAL DRIVE CROSSING.
2. ALL NON-RESIDENTIAL DRIVEWAY CROSSINGS ALSO INCLUDE STOP SIGNS AT EACH RAMP ENTRANCE UNLESS PEDESTRIAN SIGNALIZATION IS UTILIZED.
3. REFERENCE CITY OF OKLAHOMA CITY ADA STANDARDS FOR ADDITIONAL INFORMATION REGARDING RAMPS, TACTILE WARNING DEVICES, AND FINISHES.
4. DRIVEWAY CROSSINGS MAY REQUIRE THE REPLACEMENT OF A SECTION OF DRIVE TO ENSURE SLOPE RESTRICTIONS ACROSS CROSS WALK ARE NOT VIOLATED.



4 C-301 DRIVE REPLACEMENT DETAIL (TYP.)

NTS

1. DIAGRAM REPRESENTS A STANDARD DRIVE CROSSING. ACTUAL DRIVES MAY VARY SEE OKC DETAIL DRAWING D-800 "DRIVEWAY DETAIL" FOR ADDITIONAL INFORMATION.
2. USE P.C. CONCRETE PAVEMENT FOR ALL DRIVEWAY REPLACEMENT
3. REMOVE / REPLACE DRIVEWAY TO INCLUDE ALL ASSOCIATED PAVEMENT AND CURB REMOVAL AND CONSTRUCTION.

CONTRACTOR TO ENSURE ADA COMPLIANCE AT ALL DRIVES

MacArthur Associated Consultants
25 N.W. 149th Street – Edmond, OK 73013 – 405.848.2471
C.O.A. No. 8099 Renewal Date: 06-30-21

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc.: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

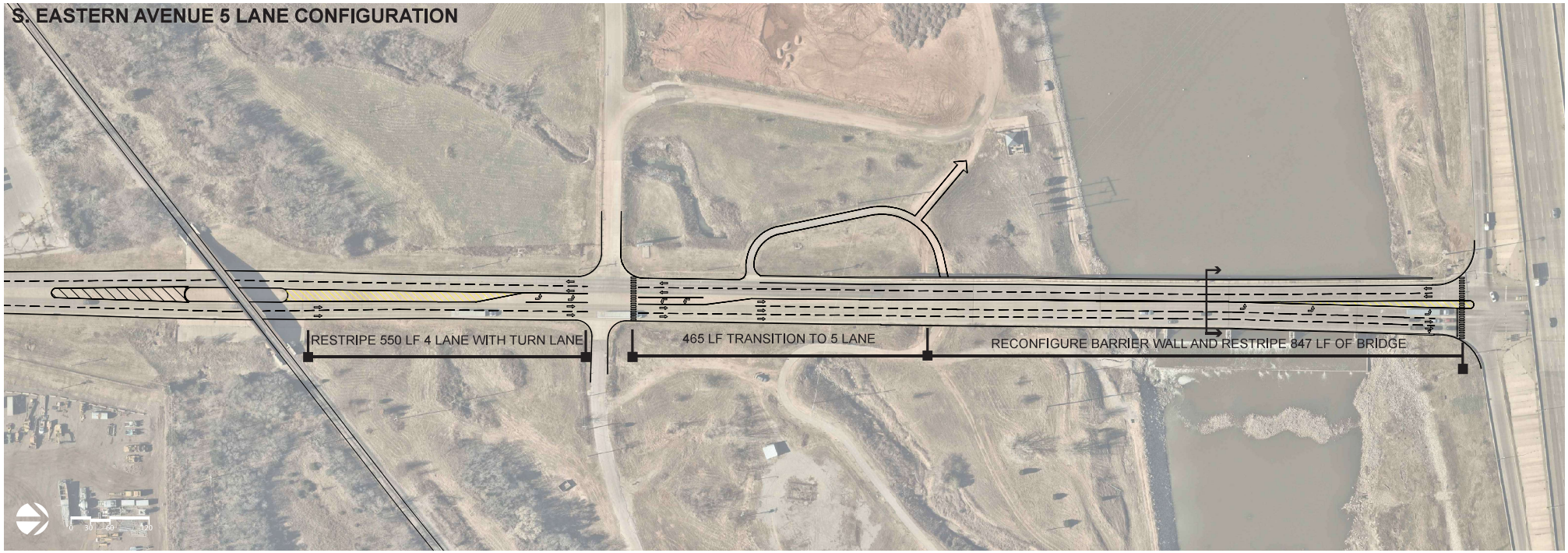
MISCELLANEOUS DETAILS

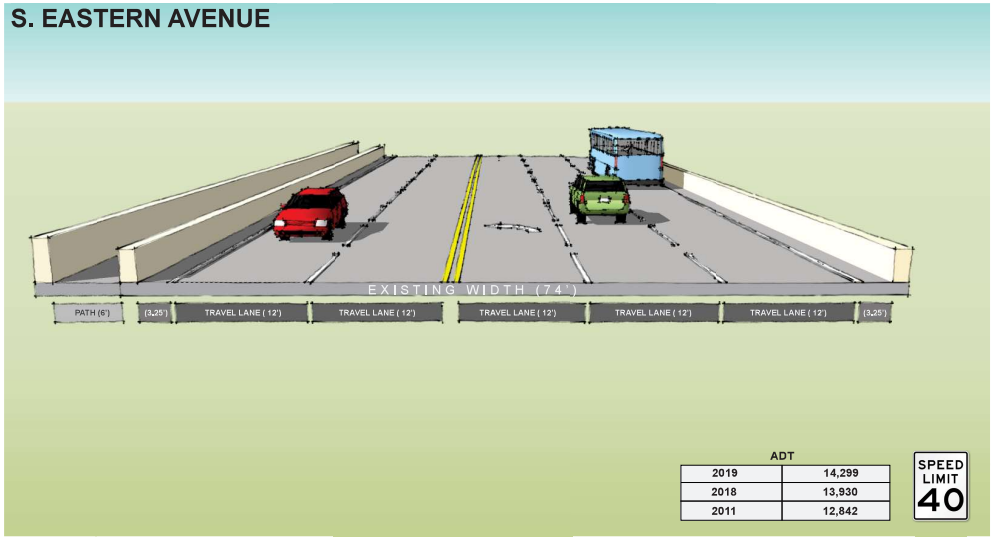
Project No.:
Designed By:
Drawn By:
Checked By:

C301

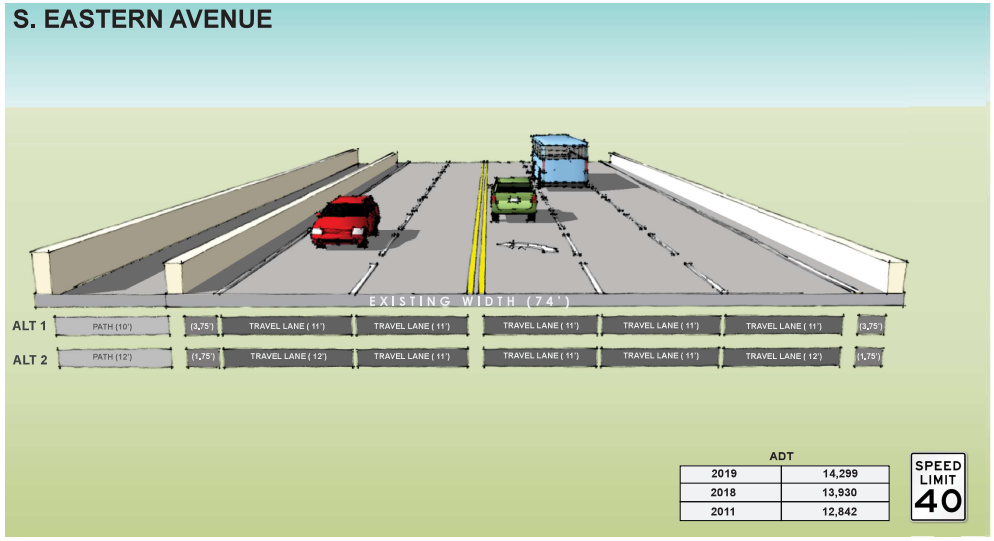
PLOTTED ON: 2/25/2020 T:\1903\Drawings\1903-C301.dgn

Appendix B – Conceptual Bridge Plans



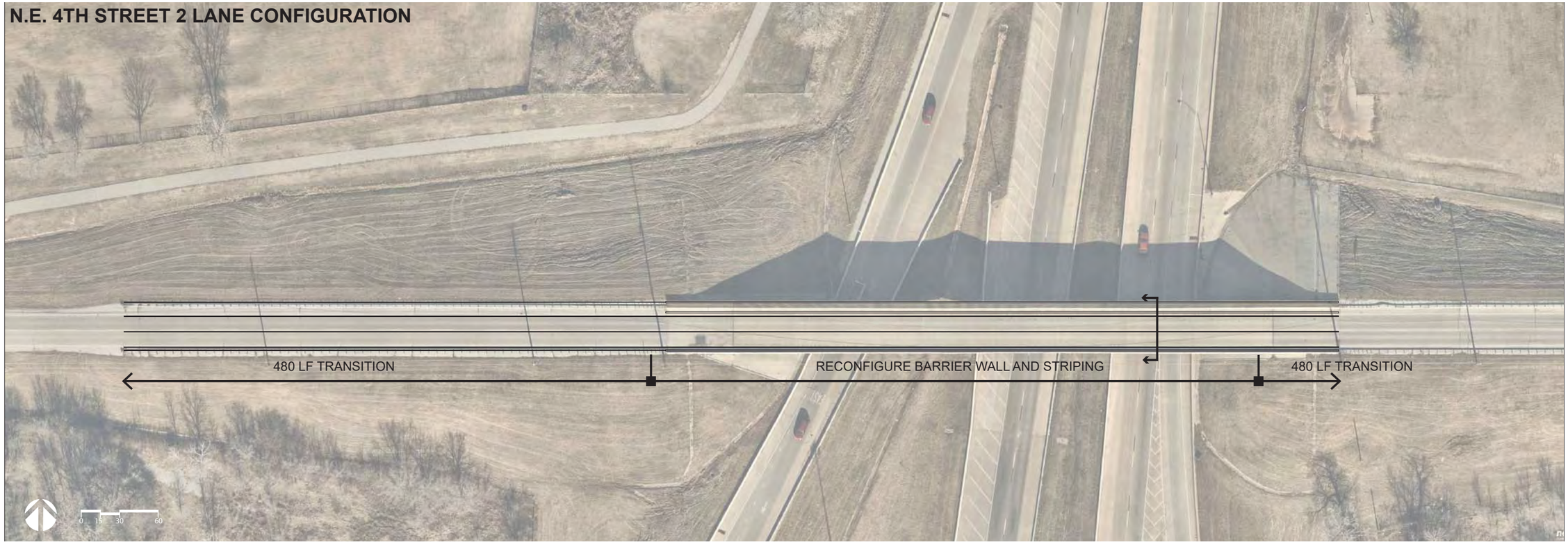


EXISTING LANE CONFIGURATION

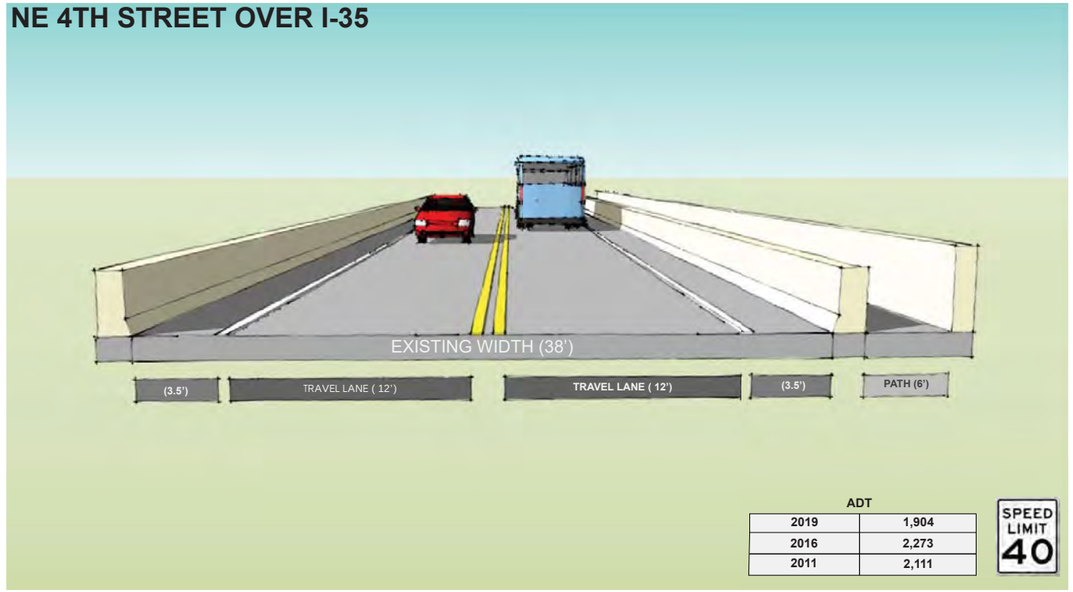


PROPOSED LANE CONFIGURATION- WEST CYCLE TRACK

N.E. 4TH STREET 2 LANE CONFIGURATION

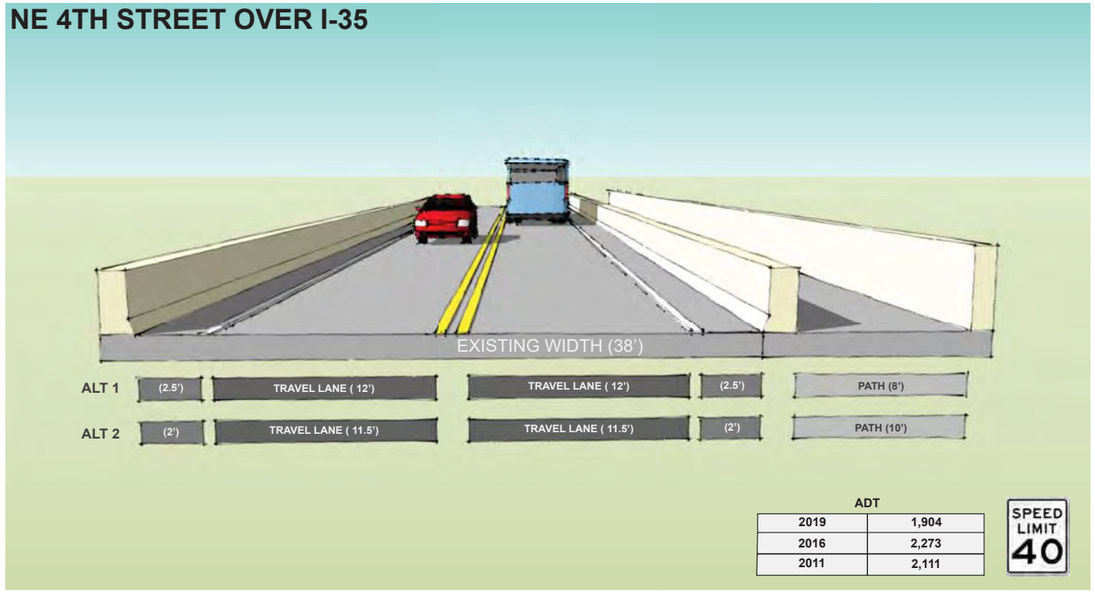


NE 4TH STREET OVER I-35



EXISTING LANE CONFIGURATION

NE 4TH STREET OVER I-35



PROPOSED LANE CONFIGURATION

Appendix C – Conceptual Amenities and Art Elements

LEGEND

- TRAILHEAD/GATEWAY SIGNAGE
- OVERLOOK OPPORTUNITIES
- EXISTING PARKING
- PROPOSED PARKING
- PEDESTRIAN BRIDGE
- 2000M STARTING LINE
- PROPOSED TRAIL ALIGNMENT
- EXISTING TRAIL
- LIGHTING UNDERSIDE OF BRIDGE/PUBLIC ART
- FUTURE DAM & LOW WATER CROSSING
- LITTORAL PLANTINGS & BOARDWALK
- POTENTIAL PUBLIC ART OPPORTUNITIES
- BOARDWALKS

P1 363 SPACES P2 21 SPACES P 25 SPACES

STARTING LINE PLAZA LEGEND:

- TRAIL A
- STARTING LINE PLAZA B
- TIERED SEATING C
- VIEWING TOWER D
- START LINE E

STARTING LINE PLAZA SITE PLAN SCALE 1"=60'

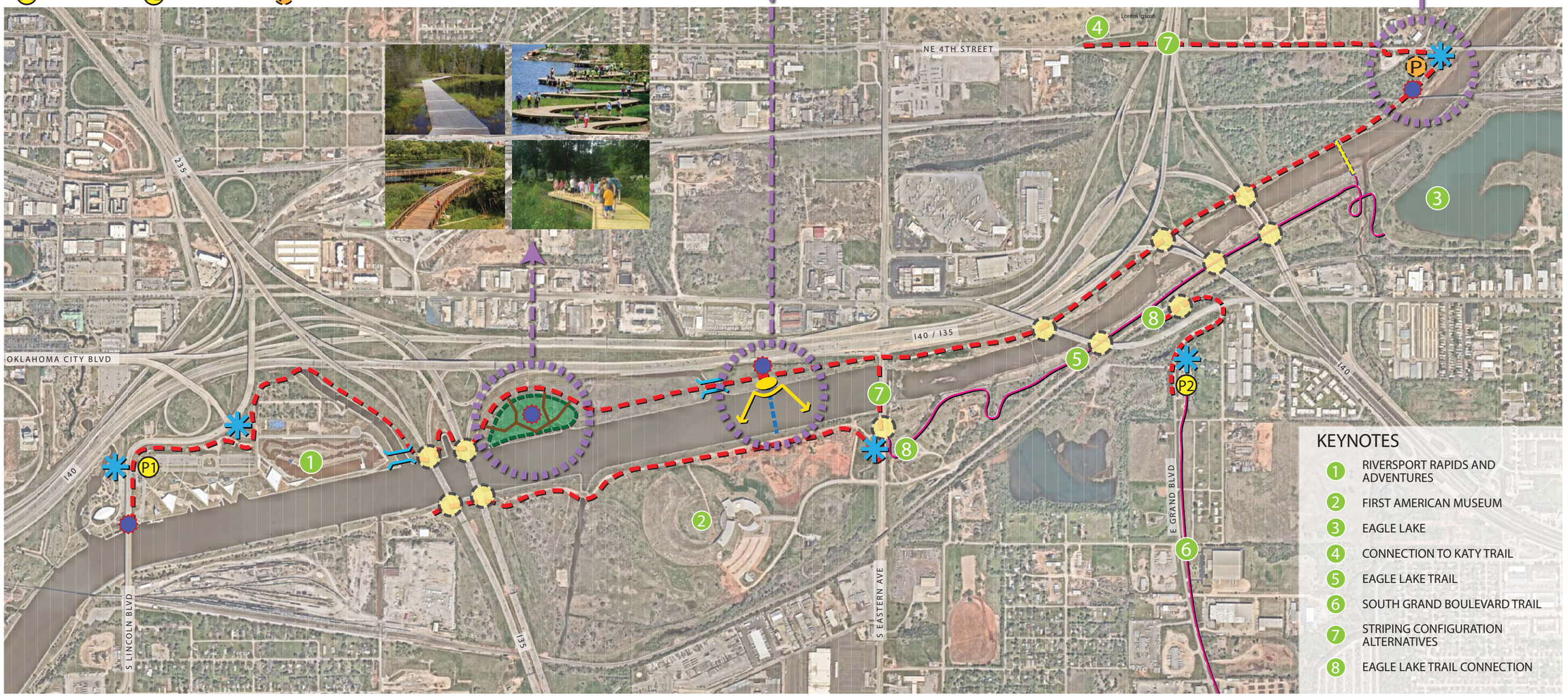
VIEWING TOWER CHARACTER IMAGES

TRAILHEAD LEGEND:

- PRIVATE RAILWAY A
- ENTRY GATEWAY SIGN B
- PARKING LOT (25 SPACES) C
- EVENT LAWN D
- PAVILION/TRELLIS E
- OVERLOOK PLAZA F
- STONE STEPS/PAVING TO THE MAIN TRAIL G
- EXISTING RIVER BANK H
- ADA RAMP I
- FUTURE PARKING EXPANSION J
- SEATING AREA ALONG THE SIDEWALK K

STONE STEPS/PAVING TO MAIN TRAIL

TRAILHEAD SITE PLAN SCALE 1"=60'



KEYNOTES

1. RIVERSPORT RAPIDS AND ADVENTURES
2. FIRST AMERICAN MUSEUM
3. EAGLE LAKE
4. CONNECTION TO KATY TRAIL
5. EAGLE LAKE TRAIL
6. SOUTH GRAND BOULEVARD TRAIL
7. STRIPING CONFIGURATION ALTERNATIVES
8. EAGLE LAKE TRAIL CONNECTION

OKC PARKS

PROPOSED TRAIL ALIGNMENT & CONCEPTUAL AMENITIES - 01

12. 16. 2019

0 200 400 800

CITY OF OKLAHOMA CITY, OKLAHOMA

MacArthur Associated Consultants HALFF

RIVER GREENWAY TRAILS








photo SeeCalifornia.com

WWW.NEWS.CN

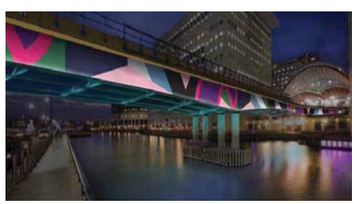




Sculptural
Sound
Wind
Playful
Water
Motion
Visual
Educational
Light
Interpretative
Kinetic
Organic
Color
Sensory
Interactive
Movement







Appendix D – FIRM Panels

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Lambert Conformal Conic State Plane Oklahoma North Zone FIPS 3501. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, NINGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Geo Information Systems department of the University of Oklahoma, and by the local communities of Oklahoma County.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables in *the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

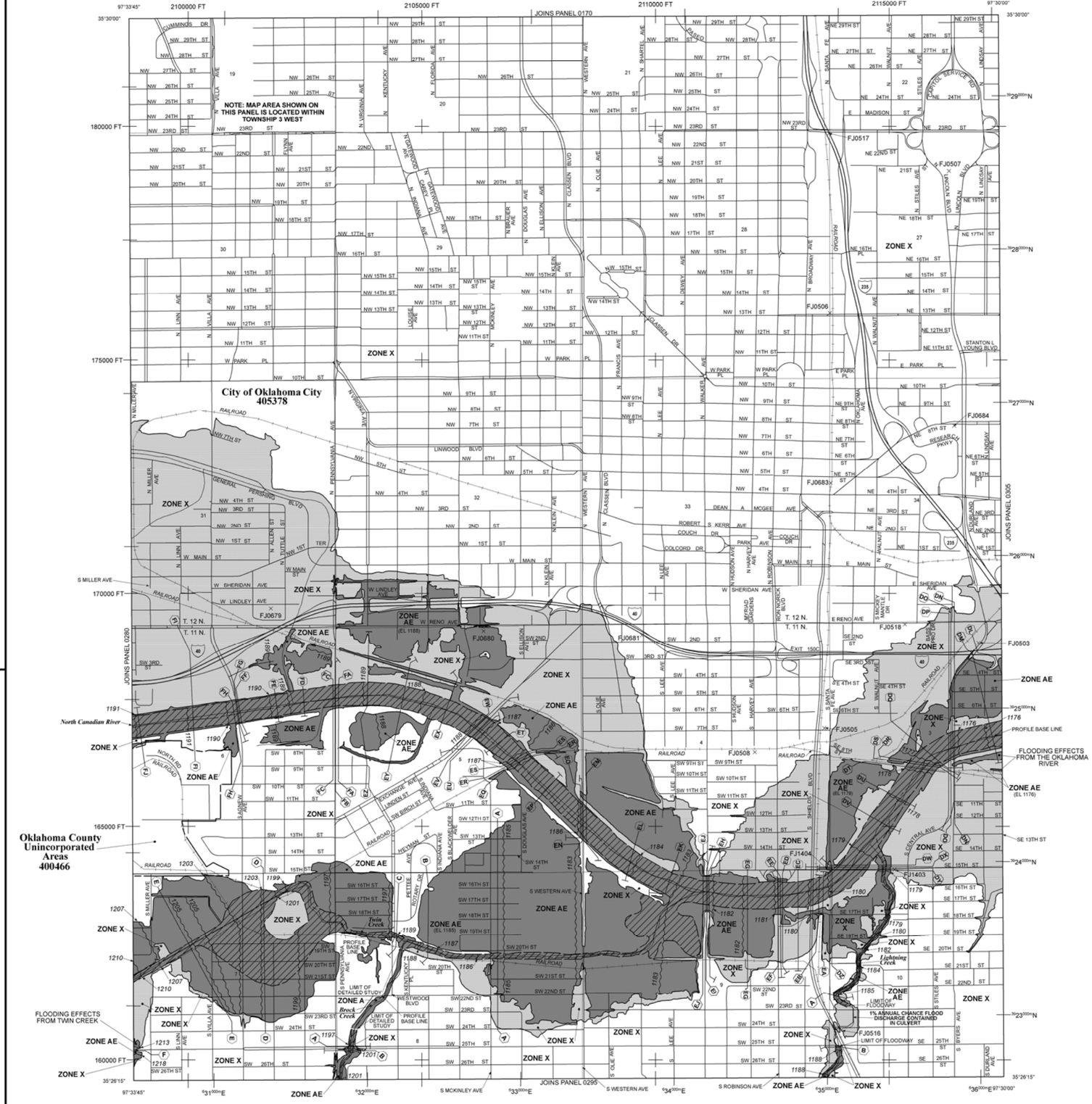
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD EVENT

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevation determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Area of special flood hazard formerly protected from the 1% annual chance flood event by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- Floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 (EL 987) — Base Flood Elevation line and value; elevation in feet* / Base Flood Elevation value where uniform within zone; elevation in feet*
- * Referenced to the North American Vertical Datum of 1988 (NAVD 88)
- A–A — Cross section line
- 23–23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
- 4775000mE — 1000-meter Universal Transverse Mercator grid ticks, zone 14
- 6000000 FT — 5000-foot grid values: Oklahoma State Plane coordinate system, North Zone (FIPSZONE = 3501), Lambert projection
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP:
July 2, 2002

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:
December 18, 2009

December 18, 2009 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to revise vertical datum, to update roads and road names, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
300 0 300 600 METERS

NFIP NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0285H

FIRM

FLOOD INSURANCE RATE MAP
OKLAHOMA COUNTY
OKLAHOMA
AND INCORPORATED AREAS

PANEL 285 OF 370
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
OKLAHOMA CITY, CITY OF	405378	0285	H
OKLAHOMA COUNTY, UNINCORPORATED AREAS	400466	0285	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
40109C0285H

REVISED DATE
DECEMBER 18, 2009

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations (BFEs) shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Lambert Conformal Conic State Plane Oklahoma North Zone FIPS 3501. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3282
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242** or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Geo Information Systems department of the University of Oklahoma, and by the local communities of Oklahoma County.

This map reflects more detailed and up-to-date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

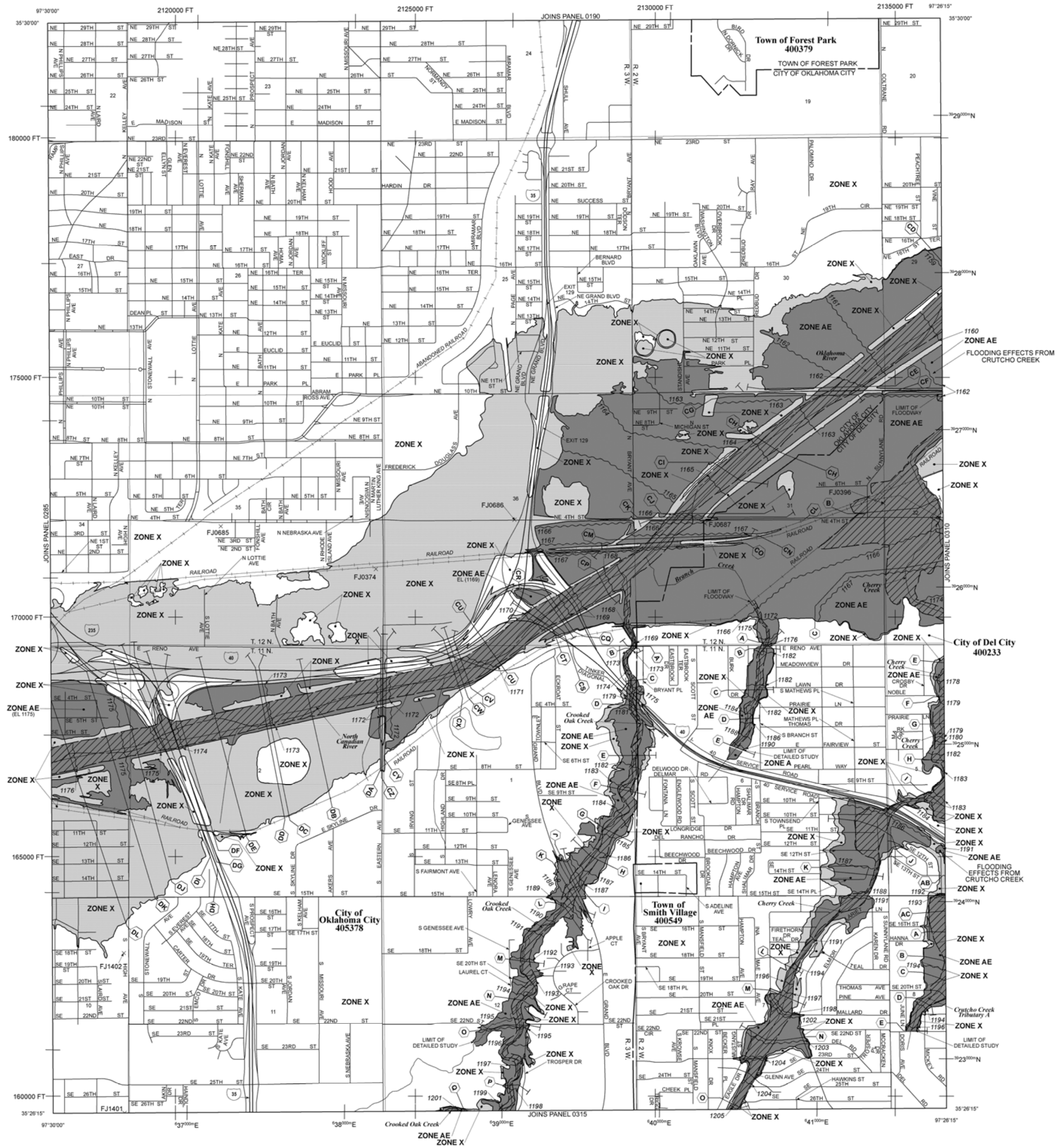
Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/business/nfip/.

The "profile base lines" depicted on this map represent the hydraulic modeling baselines that match the flood profiles in the FIS report. As a result of improved topographic data, the "profile base line", in some cases, may deviate significantly from the channel centerline or appear outside the SFHA.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Areas to be protected from 1% annual chance flood event by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	Floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths, or flood velocities
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)——(A)	Cross section line
(23)- - - -(23)	Transect line
97°07'30", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
4275000mE	1000-meter Universal Transverse Mercator grid ticks, zone 14
6000000 FT	5000-foot grid values: Oklahoma State Plane coordinate system, North Zone (FIPSZONE = 3501), Lambert projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
• M1.5	River Mile

MAP REPOSITORIES
Refer to Repository Listing on Map Index

EFFECTIVE DATE OF
COUNTYWIDE FLOOD INSURANCE RATE MAP:
July 2, 2002

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:
December 18, 2009

December 18, 2009 - to update corporate limits, to change Base Flood Elevations and Special Flood Hazard Areas, to revise vertical datum, to update roads and road names, to incorporate previously issued Letters of Map Revision, and to reflect updated topographic information.

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MAP SCALE 1" = 1000'

500 0 500 1,000 1,500 2,000 FEET
300 0 300 600 METERS

NFIP
NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0305H

FIRM
FLOOD INSURANCE RATE MAP
OKLAHOMA COUNTY OKLAHOMA
AND INCORPORATED AREAS

PANEL 305 OF 370

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
DEL CITY, CITY OF	400233	0305	H
FOREST PARK, TOWN OF	400379	0305	H
OKLAHOMA CITY, CITY OF	405378	0305	H
SMITH VILLAGE, TOWN OF	400549	0305	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

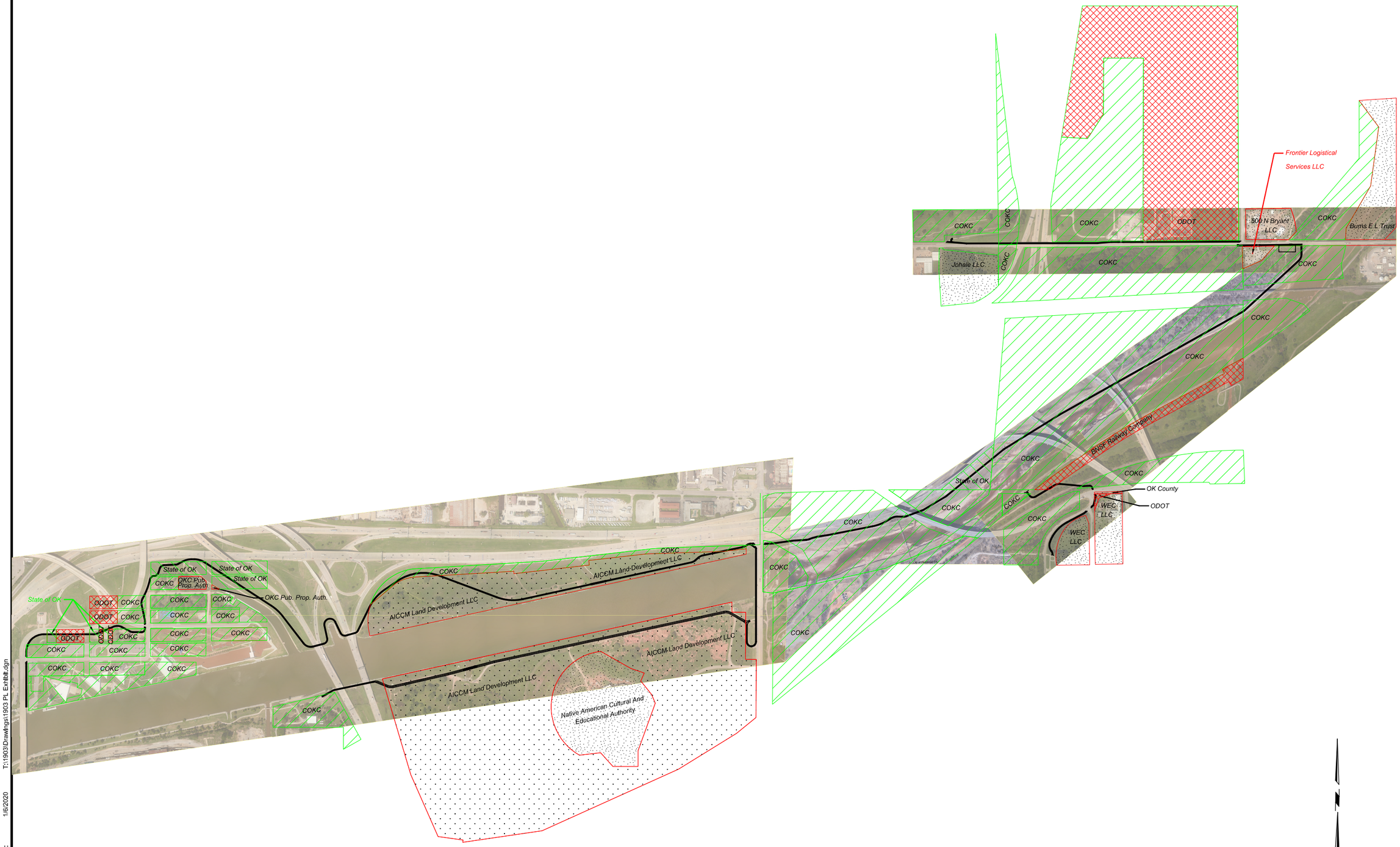
MAP NUMBER
40109C0305H

REVISED DATE
DECEMBER 18, 2009

Federal Emergency Management Agency

Appendix E – Property Line Exhibit

MacArthur
Associated Consultants
25 N.W. 146th Street – Edmond, OK 73013 – 405.848.2471
C.O.A. No. 0959 Renewal Date: 06-30-21



500 0 500 1000
SCALE: 1" = 500'

MARK	DATE	DESCRIPTION	BY

Client: CITY OF OKLAHOMA CITY
Proj. Loc.: DOWNTOWN OKLAHOMA CITY

GREENWAY TRAIL ON OKLAHOMA RIVER

PROPERTY LINE EXHIBIT

Project No.:	
Designed By:	
Drawn By:	
Checked By:	

EX. 01

PLOTTED ON: 1/6/2020 T:\19031Drawings\1903 PL Exhibit.dgn

Appendix F – Construction Cost Estimate

25 NW 146th Street • Edmond, OK 73013
(405) 848-2471• www.macokc.com

MacArthur Associated Consultants

Greenway Trail on the Oklahoma River		
Preliminary Construction Cost Estimate		
February 2020		
Summary of Preliminary Construction Cost Estimate - Base Option		
Alignment		**Base Option**
Section 1 - OK River Trail-North to S Eastern Ave to OK River Trail-South		$1,894,047.98
Section 2 - S Eastern Ave to Katy Trail (north side of OK River)		$823,136.34
Section 3 - N Bryant Ave to Katy trail		$27,736.55
Section 4 - South Grand to Eagle Lake Trail		$235,039.13
Misc. Items		
Mobilization		$200,000.00
Permitting and Fees		$10,000.00
Trail Lighting		$40,000.00
Trail Signage		$100,000.00
Subtotal		**$3,329,960.00**
Design Contingency	10%	$332,996.00
Contractor Overhead + Markup	15%	$499,494.00
Combined Total		**$4,162,450.00**

Summary of Preliminary Construction Cost Estimtae - Add-Alternate Options		
Alignment		**Add-Alternate Option**
Section 1 (Ped. Bridge, Widened Trail, Littoral Plants/Boardwalk, Plaza/Tower, Bridge Reconf.)		$1,842,237.50
Section 3 (Trailhead Improvements, Bridge Reconfiguration)		$907,498.24
Misc. Items		
Site Furnishings		$50,000.00
Monument Signs and Lighting		$359,375.00
Landscaping and Irrigation		$187,500.00
New Trailhead Parking at N.E. 4th Street		$91,555.00
Combined Total		**$3,438,165.74**

Notes:

- The entirety of Section 4 of the trail is considered an add-alternate
- The estimated cost does not include the 1% of funding dedicated to public art

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MacArthur Associated Consultants

Greenway Trail on the Oklahoma River
Preliminary Construction Cost Estimate
February 2020
Section 1 - Beginning at OK River Trail-North, around north side of Riversport Rapids OKC, east along north side of OK River to S Eastern Ave, south across S Eastern Ave bridge over OK River, west along south side of OK River, ending at OK River Trail- South
Total Section Alignment Length = 15,538 LF

Item	Unit	Unit Price	Quantity	Cost	Note
Construction Items					
Removal of Curb & Gutter	LF	$5.00	40.00	$200.00	
Asphalt Removal	SY	$10.00	460.00	$4,600.00	
Sawcut Pavement	LF	$20.00	55.00	$1,100.00	
6" P.C. Concrete Pavement Trail Section	SY	$65.00	20284.00	$1,318,460.00	12'-wide trail; includes doweled joints and a 6" stabilized subgrade; includes earthwork
Trail Striping	Mile	$2,485.00	2.94	$7,312.87	
City Road Crossing	EA	$6,400.00	2.00	$12,800.00	Includes bollards, tactile warning device, and PC concrete placement
Pedestrian Bridge	SF	$140.00	2100.00	$294,000.00	Based on 12' wide bridge deck
Culvert	EA	$10,000.00	2.00	$20,000.00	
Sodding	SY	$5.00	19314.00	$96,570.00	Based on 6' on either side of trail (where applicable)
Traffic Signal Pedestrian Poles	LS	$16,650.00	1.00	$16,650.00	Two at Eastern and I-40
Miscellaneous Items					
Clearing and Grubbing	Per mile	$15,000.00	2.94	$44,142.05	
Traffic Control (Signage + Striping)	Per St Xing	$1,000.00	2.00	$2,000.00	
Temp Construction Traffic Control	LS	$10,000.00	1.00	$10,000.00	
Construction Staking	Per Mile	$7,500.00	2.94	$22,071.02	
Temp Erosion Control	Per Mile	$15,000.00	2.94	$44,142.05	
Combined Subtotal				**$1,894,047.98**	

Add-Alternate Options					
Pedestrian Bridge	SF	$140.00	3000.00	$525,000.00	Bridge over water south of OK River and west of FAM; based on 12' wide bridge deck
6" P.C. Conc. Pave. Trail Section (8 feet wider) (1)	SY	$65.00	3656.00	$297,050.00	Makes it 20'-wide trail; includes doweled joints and a 6" stabilized subgrade; includes earthwork
Littoral Plantings and Boardwalk	LS	$110,000.00	1.00	$137,500.00	
Bridge Reconfiguration (S Eastern Ave over OK River)	LS	$197,000.00	1.00	$197,000.00	Includes removal/adjustment of traffic rail and restriping
Starting Line Plaza And Observation Tower	LS	$548,550.00	1.00	$685,687.50	
Total Cost of Add-Alternate Options				**$1,842,237.50**	

Notes:

(1) Trail on south side of OK River around FAM would be 20'-wide instead of the typical 12'-wide section

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MacArthur Associated Consultants

Greenway Trail on the Oklahoma River					
Preliminary Construction Cost Estimate					
February 2020					
Section 2A - Beginning at S Eastern Ave, east along north side of OK River to NE 4th St, west along NE 4th St, ending at N Bryant Ave					
Total Section Alignment Length = 7,775 LF					
Item	**Unit**	**Unit Price**	**Quantity**	**Cost**	**Note**
Construction Items					
Asphalt Removal	SY	$10.00	42.00	$420.00	
6" P.C. Concrete Pavement Trail Section	SY	$65.00	10036.00	$652,340.00	12'-wide trail; includes doweled joints and a 6" stabilized subgrade; includes earthwork
Trail Striping	Mile	$2,485.00	1.43	$3,542.54	
City Road Crossing	EA	$6,400.00	2.00	$12,800.00	Includes bollards, tactile warning device, and PC concrete placement
Private Drive Crossing	EA	$10,400.00	1.00	$10,400.00	Includes pavement removal, PC concrete placement, bollards, and tactile warning device
Culvert	EA	$10,000.00	3.00	$30,000.00	
Sodding	SY	$5.00	9635.00	$48,175.00	Based on 6' on either side of trail (where applicable)
Miscellaneous Items					
Clearing and Grubbing	Per mile	$15,000.00	1.43	$21,383.52	
Traffic Control (Signage + Striping)	Per St Xing	$1,000.00	2.00	$2,000.00	
Temp Construction Traffic Control	LS	$10,000.00	1.00	$10,000.00	
Construction Staking	Per Mile	$7,500.00	1.43	$10,691.76	
Temp Erosion Control	Per Mile	$15,000.00	1.43	$21,383.52	
Combined Subtotal				**$823,136.34**	

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MacArthur Associated Consultants

Greenway Trail on the Oklahoma River					
Preliminary Construction Cost Estimate					
February 2020					
Section 3 - Beginning at N Bryant Ave, west along the north side of NE 4th St, ending at Katy Trail					
Total Section Alignment Length = 3,143 LF					
Item	**Unit**	**Unit Price**	**Quantity**	**Cost**	**Note**
Construction Items					
City Road Crossing	EA	$6,400.00	2.00	$12,800.00	Includes bollards, tactile warning device, and PC concrete placement
Road Share Signage	Per Mile	$5,000.00	0.59	$2,936.55	Includes signage and striping to establish shared bike lane
Miscellaneous Items					
Traffic Control (Signage + Striping)	Per St Xing	$1,000.00	2.00	$2,000.00	
Temp Construction Traffic Control	LS	$10,000.00	1.00	$10,000.00	
Combined Subtotal				**$27,736.55**	

Add-Alternate Options					
Trailhead Improvements for Proposed Parking Lot	LS	$411,355.00	1.00	$514,193.75	
6" P.C. Concrete Pavement Trail Section	SY	$65.00	2186.67	$142,133.33	12'-wide trail; includes doweled joints and a 6" stabilized subgrade; includes earthwork
Trail Striping	Mile	$2,485.00	0.00	$0.00	
Private Drive Crossing	EA	$10,400.00	2.00	$20,800.00	Includes pavement removal, PC concrete placement, bollards, and tactile warning device
Sodding	SY	$5.00	1181.33	$5,906.67	Based on 6' on either side of trail (where applicable)
Clearing and Grubbing	Per mile	$15,000.00	0.59	$8,809.66	
Temp Erosion Control	Per Mile	$15,000.00	1.00	$15,000.00	
Construction Staking	Per Mile	$7,500.00	0.59	$4,404.83	
Bridge Reconfiguration (NE 4th St over I-35)	LS	$157,000.00	1.00	$196,250.00	Includes removal/adjustment of traffic rail and restriping
Total Cost of Add-Alternate Options				**$907,498.24**	

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MacArthur Associated Consultants

Greenway Trail on the Oklahoma River					
Preliminary Construction Cost Estimate					
February 2020					
Add-Alternate - Section 4 - South Grand Trail to Eagle Lake Trail					
Total Section Alignment Length = 1,588 LF					
Item	**Unit**	**Unit Price**	**Quantity**	**Cost**	**Note**
Construction Items					
6" P.C. Concrete Pavement Trail Section	SY	$65.00	2117.33	$137,626.67	12'-wide trail; includes doweled joints and a 6" stabilized subgrade; includes earthwork
Trail Striping	Mile	$2,485.00	0.30	$747.38	
City Road Crossing	EA	$6,400.00	2.00	$12,800.00	Includes pavement removal, PC concrete placement, bollards, and tactile warning device
Sodding	SY	$5.00	2117.33	$10,586.67	Based on 6' on either side of trail (where applicable)
Railroad Bridge Protection	LS	$50,000.00	1.00	$50,000.00	Includes overhead protection from railroad debris
Miscellaneous Items					
Clearing and Grubbing	Per mile	$15,000.00	0.30	$4,511.36	
Traffic Control (Signage + Striping)	Per St Xing	$1,000.00	2.00	$2,000.00	
Temp Construction Traffic Control	LS	$10,000.00	1.00	$10,000.00	
Construction Staking	Per Mile	$7,500.00	0.30	$2,255.68	
Temp Erosion Control	Per Mile	$15,000.00	0.30	$4,511.36	
Combined Subtotal				**$235,039.13**	

Appendix G – Trail Corridor Photos

APPENDIX F: TRAIL CORRIDOR PHOTOS

X INDICATES LOCATION AND DIRECTION OF PHOTO.
REFER TO THE FOLLOWING PAGES FOR THE NUMBERED PHOTOS.

Location 1 – Western extent of the Greenway Trail that ties into the Oklahoma River Trail - North

Location 2 – Aerial view looking southwest towards the western extent of the Greenway Trail

Location 3 – Aerial view looking east over the Boathouse District parking area.

Location 4 – Looking north along S. Phillips Street towards S. Lincoln Avenue.

Location 5 – The Greenway Trail will pass between I-40 and the water that extends north on the east side of Riversport Rapids OKC

Location 6 – Aerial view looking southeast over Riversport Rapids OKC

Location 7 – The Greenway Trail will pass under I-235 on the north side of the Oklahoma River

Location 8 – The Greenway Trail will cross over water via a pedestrian bridge on the north side of the Oklahoma River between I-235 and S. Eastern Avenue.

Location 9 – The S. Eastern Avenue bridge over the Oklahoma River will be reconfigured to accommodate the trail passing on the west side

Location 10 – Aerial view of the south side of the Oklahoma River looking west. The Greenway Trail will run north of the First Americans' Museum

Location 11 – The Greenway Trail will run west on the south side of the Oklahoma River to connect to the Oklahoma River Trail – South

Location 12 – The Greenway Trail will connect the Eagle Lake Trail to the Oklahoma River Trail – South and the Oklahoma River Trail - North

Location 13 – The Greenway Trail will connect the existing trailhead parking at the South Grand Trail to the Eagle Lake Trail

Location 14 – The Greenway Trail will cross E. Reno Avenue to connect the South Grand Trail to the Eagle Lake Trail

Location 15 – The Greenway Trail will pass under the BNSF Railroad bridge

Location 16 – The Greenway Trail will connect the South Grand Trail to the Eagle Lake Trail

Location 17 – Aerial view of the north side of the Oklahoma River at N.E. 4th Street looking southwest.

Location 18 – The Greenway Trail transitions from the north side of the Oklahoma River to the south side of N.E. 4th Street with views of local structures.

Location 19 – Proposed site of the potential trailhead parking at N.E. 4th Street

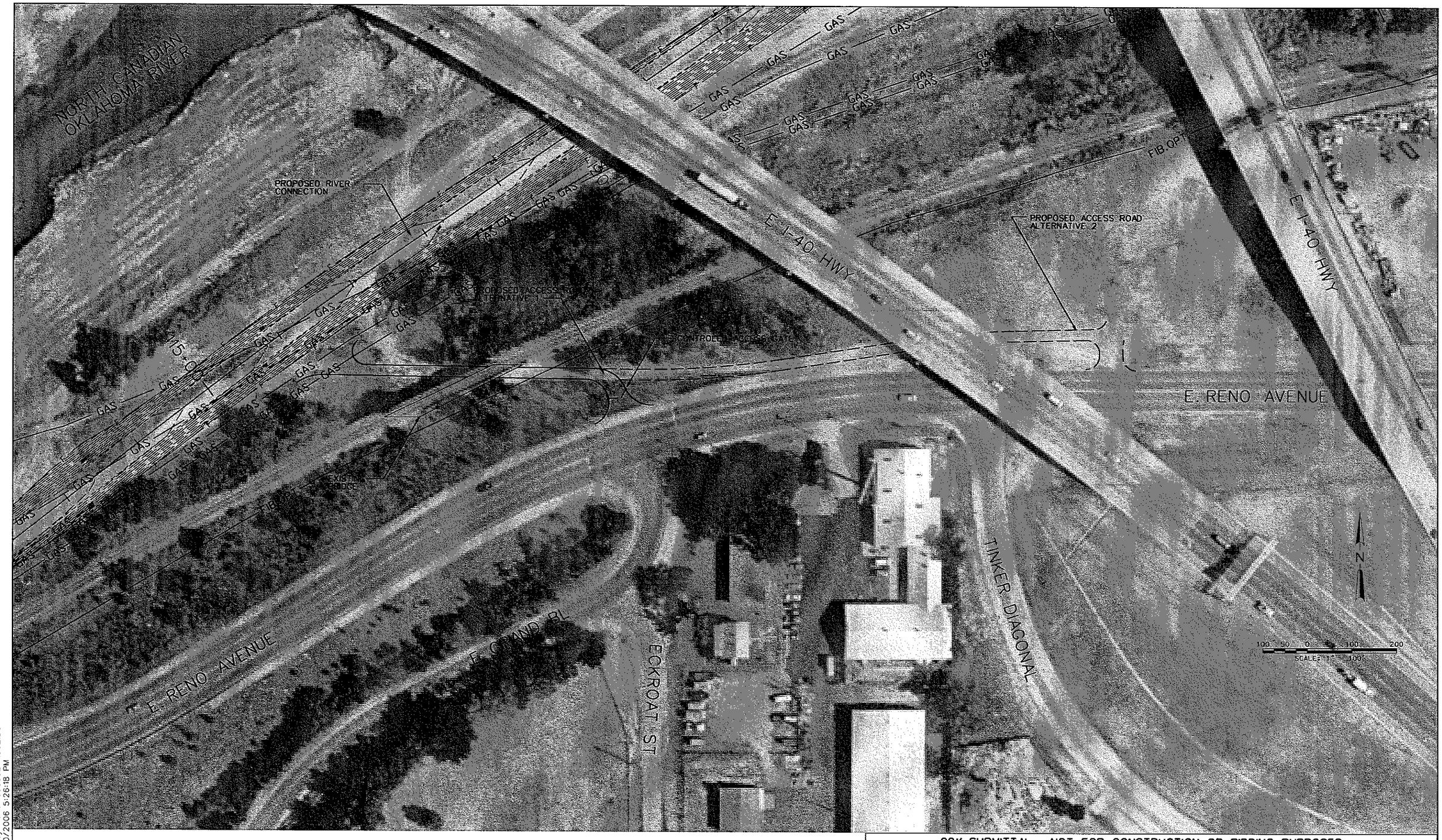
Location 20 – The Greenway Trail will cross a service railroad track

Location 21 – The Greenway Trail will cross N.E. 4th Street and run to the west on the north side of N.E. 4th Street

Location 22 – The N.E. 4th Street bridge over I-35 will have to be reconfigured to accommodate the trail

Location 23 – The Greenway Trail will tie into the Katy Trail at the southeast corner of the James E. Stewart Golf Course

Appendix H – 90% HDR Drawings – BNSF Railroad Access Road Layout



90% SUBMITTAL - NOT FOR CONSTRUCTION OR BIDDING PURPOSES

DES: KFN	DRW: GRH	CHK: KFN	
DATE: _/2006	AUTH: -	LINE SEG.: -	
	REVISIONS:		

HDR
HDR ENGINEERING, INC.

BNSF RAILWAY

I-40 OKLAHOMA CITY
RIVER CONNECTION
UTILITY ACCESS ROAD
PLAN

PLAN NO: R002

SHEET: 11 OF 41

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Date plotted: 7/10/2006 5:26:18 PM