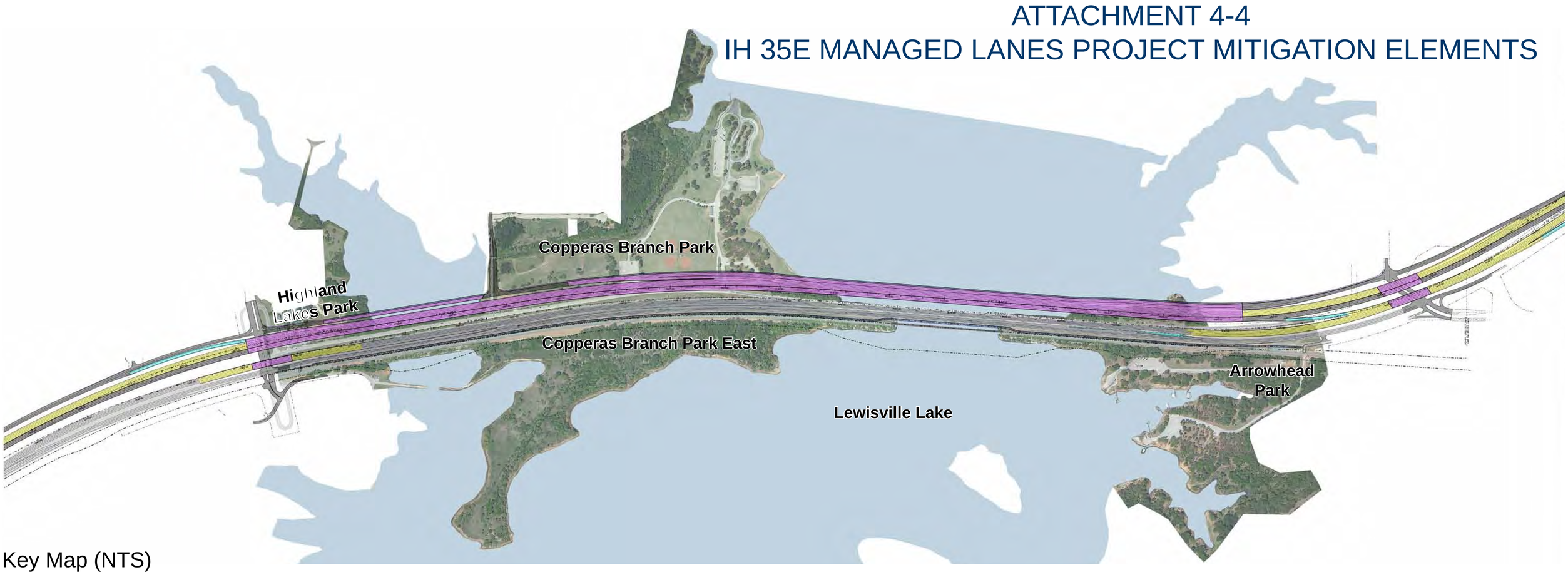
Texas Department of Transportation
Book 2 - Technical Provisions

IH 35E Managed Lanes Project

Attachment 4-4

Section 4(f) Mitigation Master Plan

ATTACHMENT 4-4
IH 35E MANAGED LANES PROJECT MITIGATION ELEMENTS



Key Map (NTS)

Mitigation Elements Key

Color Key

Design-Build

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* 2.b1 Highland Village Road and Copperas Branch Park Vehicular Entry/Park Road
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Arrowhead Park

Attachment 4-4
IH 35E Managed Lanes Project

Mitigation Elements Report

Copperas Branch Park

2.a Gatehouse

A gatehouse shall be provided at the entry to Copperas Branch Park. The structure shall be Americans with Disabilities Act (ADA) compliant and programmed/sized according to the operational needs of the City of Highland Village. A building footprint of 260 square feet (sq ft) is shown on the master plan. The building exterior shall have a limestone veneer in a random ashlar pattern to coordinate with the other stone clad park features. Refer to the master plan document for the approximate location of the gatehouse.

2.b$_1$ Highland Village Road and Copperas Branch Park Vehicular Entry/Park Road

Copperas Branch Park Vehicular Entry

The vehicular entry to Copperas Branch Park is to be located as indicated on the master plan, off of Highland Village Road on the west side of the proposed 300' temporary construction easement. Improvements to Highland Village Road including replacement of the existing culverts with a larger precast arch section and associated end walls is anticipated. The park entry drive shall begin at Highland Village Road and extend approximately 1,200 linear feet (LF), ending just beyond the gatehouse at the main park gate. The park entry initially parallels the existing canal/ditch to avoid the existing pond areas. If designed at grade, a 10 – 12 feet (ft) tall retaining wall along the west side of the drive is anticipated to terrace the existing slope and to transition grades in fill and cut locations along this portion of the park drive. The new entry turns and crosses over the existing canal/ditch that runs parallel to Copperas Creek Court. A drainage structure shall be installed at the canal crossing and shall be designed per the requirements contained in the technical provisions for new drainage structures. Retaining walls should be constructed at the ends of the proposed drainage structure to support both sides of the embankment. The crossing shall accommodate a 24 ft wide concrete drive with curbs. If designed at grade, the retaining walls shall parallel both sides of the drive and continue to the vicinity of the new gatehouse. The retaining wall design is anticipated to be constructed using Mechanically Stabilized Earth (MSE) or big-block retaining wall units with a finish compatible to the other park elements. The retaining wall may also be cast in place concrete with a stone veneer. The tops of the retaining walls are to have a coping and an approved combination traffic rail. Refer to the master plan document for layout.

Park Road

Approximately 1,100 LF of primary park access road shall be constructed within Copperas Branch Park connecting from the gatehouse to the proposed parking lot area under the proposed southbound IH 35E bridge structure and continuing around to the approximate limits of the 300' construction easement. This access road shall be comprised of a 24 ft wide concrete section with curb/gutter per TxDOT standard. An open section without curbs shall be considered, but must include shoulders and barrier fencing acceptable to the City of Highland Village. Refer to the master plan document for layout of these park roads.

Highland Village Road
Highland Village Road shall be improved per the IH 35E interim schematic. Improvements to the road extend from the IH 35E frontage west to the park road entry. An existing culvert under Highland Village Road shall be replaced. The new culvert shall be designed per the requirements contained in the technical provisions for new drainage structures.

2.b$_2$ Copperas Branch Park Pedestrian Entry
The pedestrian entry to the park is indicated off of Copperas Creek Court. The pedestrian entry shall begin at the existing cul-de-sac. The proposed pedestrian bridge is anticipated to be a pre-fabricated truss style with two (2) 120 ft spans, a 14 ft clear width, and concrete deck. The edge treatment is anticipated to be a prefabricated railing system with rub rail and vertical pickets spaced 4 inches apart. Bridge construction includes reinforced concrete abutments, piers, riprap and associated retaining walls where needed. The 240 ft long bridge may be engineered to have fewer, longer spans than the two (2) 120 ft spans anticipated. The final bridge location must be coordinated after confirming field conditions. Refer to the master plan document for approximate location and layout of the pedestrian bridge.

2.c Signage
Two (2) entry signs are to be constructed. The City of Highland Village sign shall be located at the northwest corner of Highland Village Road and the proposed southbound frontage road for IH 35E. The Copperas Branch Park entry sign shall be located at the northeast corner of Highland Village Road and the park entry road. Both shall be double sided cast stone panels supported by a concrete foundation with limestone veneer in a random ashlar pattern. The desired architectural style shall match the City of Highland Village park signage in aesthetics and character. Refer to the master plan document for approximate locations.

2.d Parking
A minimum of one hundred and eighty (180) parking spaces shall be provided under the proposed southbound IH 35E bridge structure. Standard spaces shall be a minimum of 9 ft x 18 ft with 24 ft wide two-directional drives in between bays. The parking facility shall comply with ADA requirements. Oversized spaces for buses, recreational vehicles (RVs) or boat trailers should also be included. The layout of the parking facility is to be coordinated with the bridge column layout of the IH 35E bridge structure. All parking areas shall be concrete section that is adequate to support the anticipated types of vehicular traffic utilizing the parking lot with curb/gutter per Texas Department of Transportation (TxDOT) standards. An open section without curbs shall be considered, but must include shoulders and barrier fencing acceptable to USACE and the City of Highland Village. Refer to the master plan document for generalized layout of the parking area.

2.g Precast Picnic Tables with Grills
Impacts to existing picnic tables and grills are anticipated. Approximately nine (9) precast concrete picnic tables with reinforced concrete pads, two (2) metal awnings and six (6) ground mounted metal grills are anticipated to be replaced. The picnic tables shall be ADA compliant. Refer to the master plan document for approximate location.

2.h Metal Rail Fencing, Barrier Posts and Gates
Approximately 1,300 LF of post and cable barriers shall be provided around the perimeter of the park to prevent vehicular access to the site where it is not desired. Included in this requirement is providing an access gate at the gatehouse and a maintenance access gate near the IH 35E

frontage road. The extent of barriers may be reduced where highway traffic barriers such as metal beam guard fence shall be provided as part of the frontage road construction. Refer to the master plan document for approximate layout.

2.i Landscaping

Every reasonable effort should be made to preserve the existing trees in the park. Impacts to existing trees outside of the 300' temporary easement shall be replaced with native hardwood trees planted and established in accordance with USACE and City of Highland Village requirements. These canopy trees that are replaced must be maintained and warrantied for a period of time in accordance with USACE and the City of Highland Village. If any individual tree expires during this period, it must be replaced immediately and the warranty resets for that tree.

2.k Beach

Impacts to the beach complex shall be restored along the north shore of the park in accordance with United States Army Corps of Engineers (USACE) *Design Guidelines* document Section 6B & 6C for Beach Checklist and Beach Calculations.

2.l Buoys

A buoy system shall be installed and maintained throughout the duration of the developer contract. Buoys shall be placed no more than 300 ft apart along the full extent of the outside east and west edge of the IH 35E bridge structure within Lewisville Lake. The buoy system selected must satisfy USACE and US Coast Guard requirements. The system is expected to include a 12-inch diameter x 53-inch long Ionomer Foam Spar Buoy, white in color, with "SLOW NO WAKE" in black lettering and orange reflective bands and circle. Install buoy with pyramid anchor and chain assembly (or approved equivalent) that allows the top 33-inches of the buoy to float above the water line. Buoy maintenance shall become the responsibility of the owner at the conclusion of the project construction.

Copperas Branch Park East

2.o Parking Access at Trailhead

Parking for twenty (20) spaces shall be provided at the trailhead for access to Copperas Branch Park East. Standard spaces shall be 9 ft x 18 ft with a 24 ft wide two-directional drive. The parking facility shall comply with ADA requirements. All parking areas shall be concrete section that is adequate to support the anticipated types of vehicular traffic utilizing the parking lot with curb/gutter per TxDOT standard. An open section without curbs shall be considered, but must include shoulders and barrier fencing acceptable to the City of Lewisville. Retaining walls are anticipated to address grading and cross slope requirements. The retaining wall heights are variable but are generally 5 ft to 10 ft. Refer to the master plan document for layout of the parking area.

2.p Copperas Branch Park East Trail

Approximately one (1) mile of 10 ft wide, 6 inch thick, concrete trail shall be provided as a loop around Copperas Branch Park East. ADA compliance is required. The trail shall have a 4 ft clear buffer on each side for maintenance and security. Refer to the master plan document for layout.

2.q Primary Trailhead
Near the parking area, there shall be a trailhead to consist of a small concrete plaza, a precast concrete bench and a stone monument sign with the name of the park/trail. A concrete walk from the parking and trailhead to the existing pier area has been indicated. Refer to the master plan document for approximate location.

2.r Minimum Sanitary Facilities
A self-contained, precast concrete restroom facility shall be provided with connecting trails that allow for routine maintenance activities. The restroom shall be a double vault, fully accessible building approximately 175 sq ft with a drinking fountain. ADA compliance is required. Water supply shall be provided to support these elements. Refer to the master plan document for approximate location.

2.s Buoys
See 2.l Buoys.

2.v Connector Trail
A 2,350 LF, 12 ft wide concrete trail shall be provided to connect the primary trailhead to the loop trail at Copperas Branch Park East. This trail shall be installed along the embankment between the Denton County Transportation Authority (DCTA) tracks and Lewisville Lake. The existing DCTA embankment along the waterfront does not appear to provide a "shelf" to accommodate the trail. Construction of elevated structure and/or retaining walls is anticipated for most of the length of the connector trail. The connector trail, including elevated structures, is to be designed and constructed to support emergency and maintenance vehicles in addition to the pedestrian users. ADA compliance is required. Refer to the master plan document for layout.

Highland Lakes Park
Picnic Benches
Four (4) ground mounted picnic benches and tables shall be installed within Highland Lakes Park. Bench and table selection shall be perforated and coated table and bench tops to resist rotting, warping and chipping. The bench layout shall comply with ADA requirements. Refer to the master plan document for approximate location.

Trash Receptacles
Three (3) ground mounted trash receptacles shall be installed within Highland Lakes Park. Refer to the master plan document for approximate location.

Parking Lot
Parking for five (5) spaces shall be provided within Highland Lakes Park. Standard spaces shall be 9 ft x 18 ft. The parking facility shall comply with ADA requirements. All parking areas shall be concrete section that is adequate to support the anticipated types of vehicular traffic utilizing the parking lot with curb/gutter per TxDOT standard. Sidewalks shall be provided to connect parking spaces to the trail system. Refer to the master plan document for layout of the parking area.

Light Poles & Fixtures
Security lighting shall be provided for the parking area and the new play structure. The fixtures shall be full cutoff and the poles shall be sized appropriately for the neighborhood context. Refer to the master plan document for approximate locations.

Drinking Fountain
A drinking fountain shall be installed near the play structure in a location that is fully accessible. The fountain shall be ADA compliant with multilevel bowl heights. Refer to the master plan document for approximate location.

Park Entry Sign
A park entry sign shall be constructed within Highland Lakes Park. The desired architectural style shall be similar to what currently exists and shall be coordinated with the City of Lewisville. Refer to the master plan document for approximate location.

Concrete Sidewalk and Native Plantings
Provide approximately 1,025 LF of 10 ft wide concrete sidewalk to connect the parking area, trails and play structure area. The proposed thickness of the sidewalk shall meet TxDOT sidewalk standards. Native canopy, understory, shrubs, perennials and buffalo grass shall be installed adjacent to the sidewalk as a part of this item. Refer to the master plan document for approximate location.

Visual Screening Wall
A 10 ft tall visual screening wall shall be constructed along the east side of the park property. This wall shall be a precast concrete panel wall supported by concrete foundations and shall include aesthetic textures and color integral to the panel. Refer to the master plan document for approximate location.

Play Structure
A play structure shall be provided from a manufacturer acceptable to the City of Lewisville. Play structure location on the master plan document is approximate and final location shall be coordinated with the City of Lewisville. The structure shall contain a minimum of two (2) elevated play components and five (5) ground level components and shall be accessible by transfer, similar to the Landscape Structures Playbooster Model No. 3498. The play structure shall be manufactured and installed in accordance with applicable safety and ADA standards. An accessible protective surfacing shall be provided within the entire play structure use zone. Locate concrete mow strips and sidewalks at the perimeter of the surfacing for ease of maintenance.

NOTE: Further coordination with the City of Lewisville is required in order to finalize the layout and details of Highland Lakes Park elements before final design can proceed to construction.

Arrowhead Park
Trailhead
Near the parking area, there shall be a trailhead to consist of a small concrete plaza, a precast concrete bench and a stone monument sign with the name of the park/trail. Refer to the master plan document for approximate location.

Trail Connection

Approximately 2,155~~A 1,500~~ LF of~~, 10 ft wide~~ concrete trail shall be provided to connect the trailhead to the shared use path on the reconfigured IH 35E northbound bridge and approaches. The proposed thickness of the trail shall meet TxDOT sidewalk standards. The trail connection would begin~~begins~~ at the shared use path terminus, extends toward ~~at~~ Kelton Avenue and follows Kelton Avenue east across~~crosses over~~ the DCTA tracks~~, then south~~ to the trailhead location as indicated on the Master Plan document. This trail connection shall be 8 ft wide and transition to a 5 ft wide concrete sidewalk connection from the existing park restroom to the existing pavilion. ~~. A separate trail The proposed thickness of the trail shall meet TxDOT sidewalk standards.~~ The trail crossing shall include ~~with~~ pedestrian gates at the DCTA tracks~~. is anticipated.~~ Developer shall coordinate with TxDOT and DCTA for specific rail crossing requirements. A pedestrian crossing at Kelton Avenue~~The trail within Arrowhead Park must cross a swale area which shall require one (1) pedestrian bridge. The proposed bridge is anticipated to be a pre-fabricated truss style with one (1) 120 ft span, a 14 ft clear width, and concrete deck. The edge treatment is anticipated to be a prefabricated railing system with rub rail~~ and Arrowhead Leg 1 shall be provided. This trail runs west~~vertical pickets spaced 4 inches apart. Bridge construction includes reinforced concrete abutments, piers, riprap~~ and stops on the east side of the DCTA to provide a tie-in for a future connection by others.~~associated retaining walls where needed. ADA compliance is required.~~ Refer to the master plan document for layout.

* The Draft Master Plan and Mitigation Elements Report indicates design intent. Location of all elements is approximate and subject to change based on detailed engineering and final design and approval. All take-offs and quantities are best estimation. Existing site conditions may require design modification and quantity adjustment. Coordination with the U.S. Army Corps of Engineers and the cities of Highland Village and Lewisville, Town of Hickory Creek, and Denton County Transportation Authority, as well as TxDOT and FHWA shall be required in order to confirm and finalize design elements before construction.