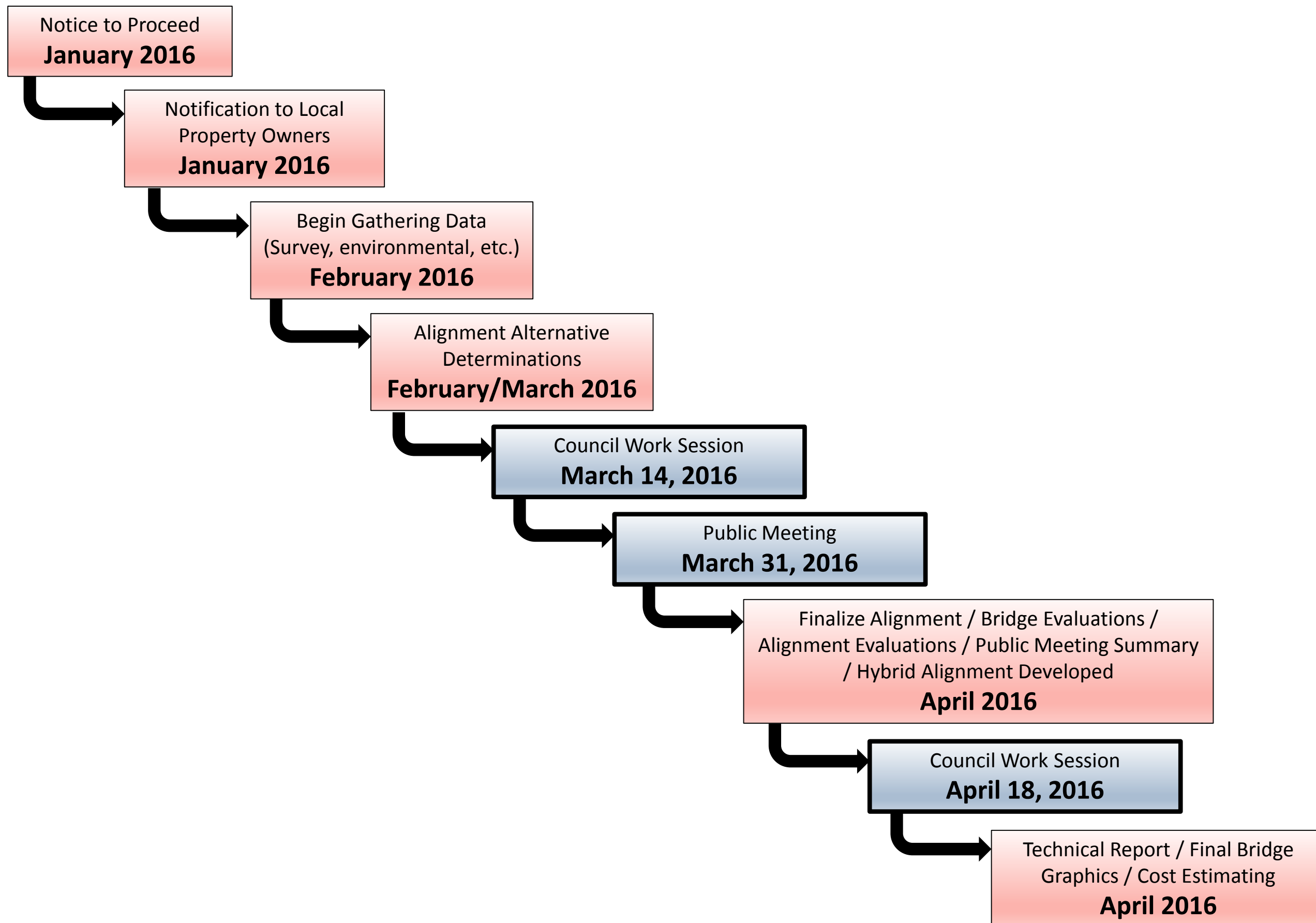


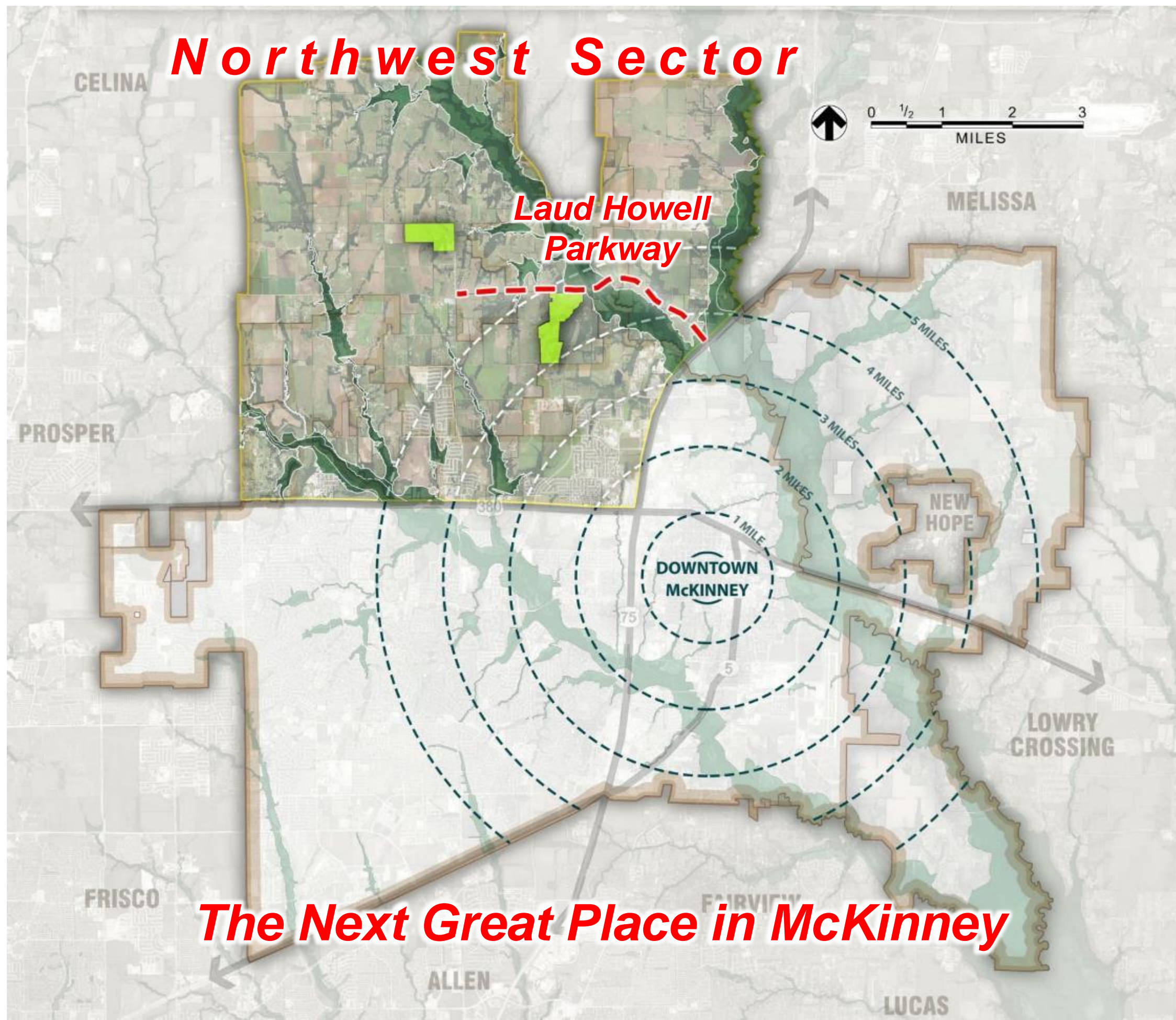
The background of the entire page is a photograph of a stream flowing through a dense forest. The water is clear, reflecting the surrounding green trees and foliage. The scene is peaceful and natural. A white rectangular border is superimposed over the image, framing the text.

CITY OF MCKINNEY LAUD HOWELL PARKWAY EXTENSION

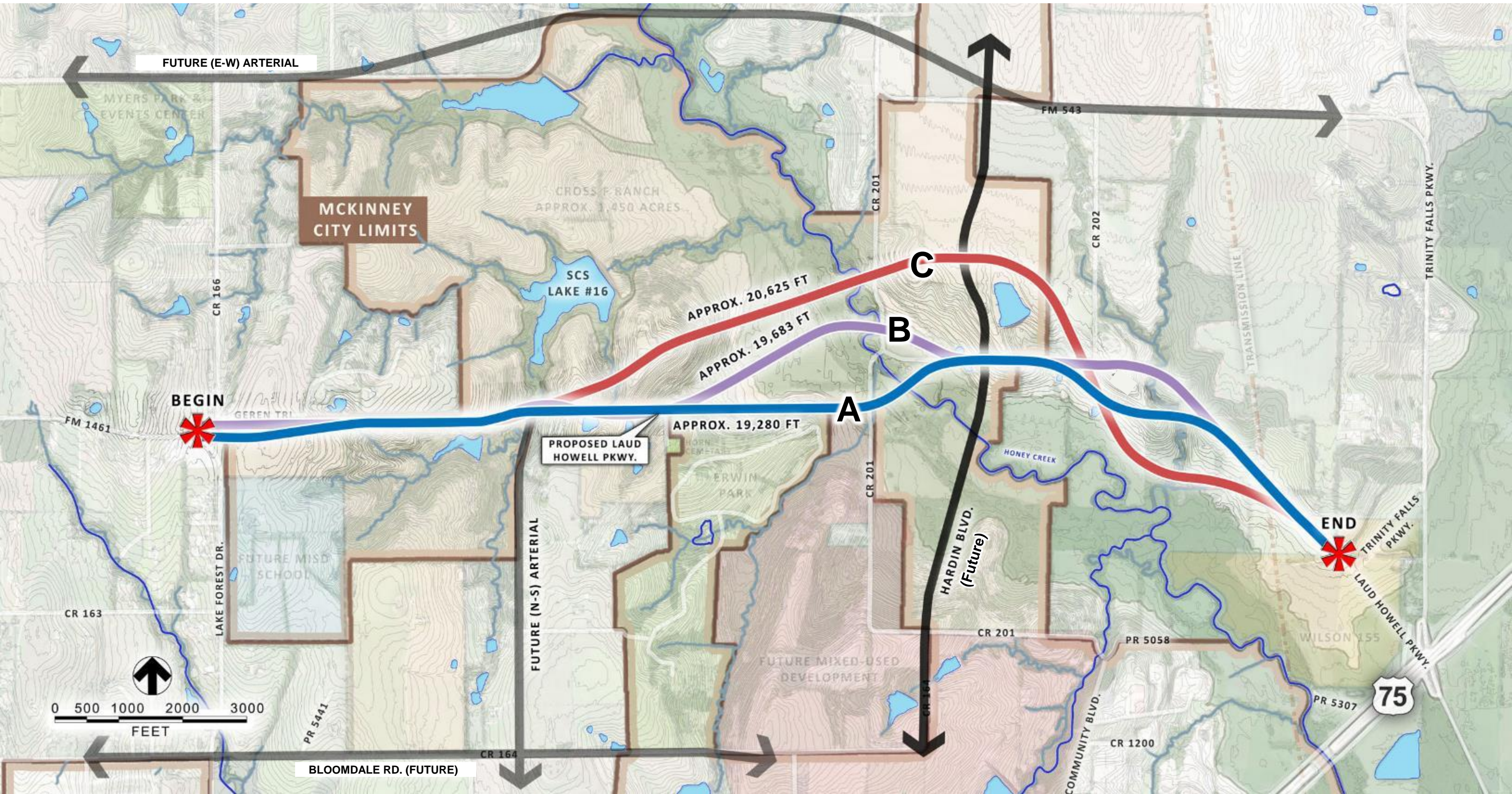
ALIGNMENT STUDY SUMMARY AND
RECOMMENDATIONS

WORK ACCOMPLISHED TO DATE

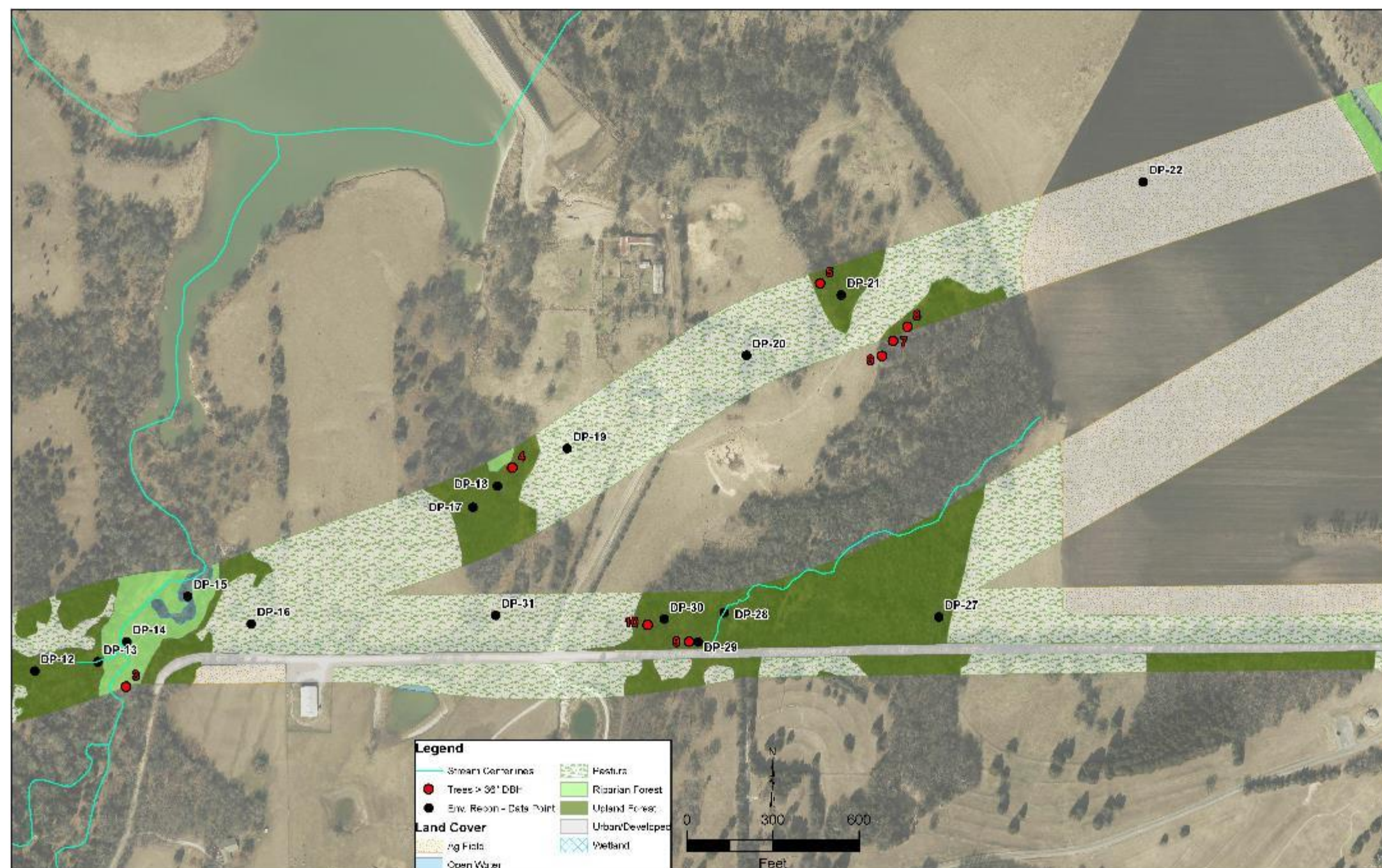




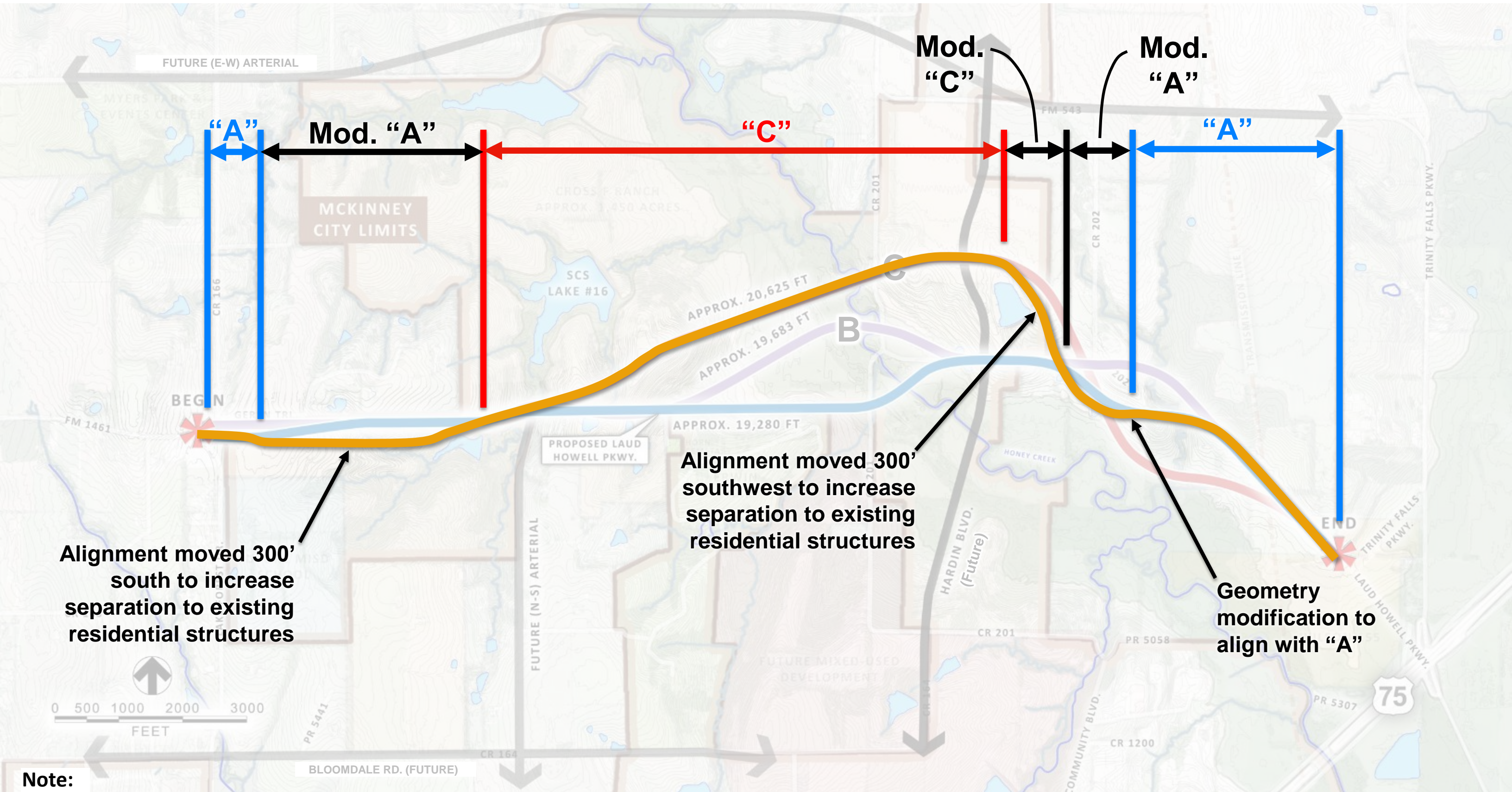
ALIGNMENT ALTERNATIVES CONSIDERED



Environmental Inventory and Assessment



HYBRID ALIGNMENT



Alignment moved 300' south to increase separation to existing residential structures

Alignment moved 300' southwest to increase separation to existing residential structures

Geometry modification to align with "A"

Note:
The Hybrid Alignment was determined after the March 31, 2016 public meeting and coordinated with property owners individually immediately following the April 18, 2016 Council presentation.

Technical Evaluation

Alignment Evaluation Criteria:

- **Engineering / Design Features**
- **Community and Socioeconomic Impacts**
- **Environmental Impacts**
- **Other Impacts**
- **Project Costs**



Evaluation Matrix

ALIGNMENT EVALUATION CRITERIA		LAUD HOWELL PARKWAY ALTERNATIVE ALIGNMENTS					Remarks
		Lake Forest/CR166 to Existing Laud Howell Pavement End					
		All alignments are subject to future refinements.					
See the notes for an explanation of the terms and basis for impacts used in this table. →	Note #	A	B	C	Hybrid		
ENGINEERING / DESIGN FEATURES							
Alignment Length (miles)	1	3.577	3.643	3.823	3.836	Hybrid Alignment is 0.26 miles longer than A (+7%)	
Estimated Proposed ROW Need (ac)	2	59.731	60.856	63.910	64.135	No deductions are taken for existing County Road ROW. Proposed ROW comparison is based on constant 140' width. Additional ROW and/or easements will be necessary for intersection and drainage improvements.	
Frontage along the Alignment with a minimum Developable Acreage lot depth of 400'.	3	20,200	21,900	23,100	23,000	Hybrid alignment has 14% more roadway frontage than Alignment "A" with 400' minimum lot depth (26 acres at 400')	
COMMUNITY AND SOCIO-ECONOMIC IMPACTS							
# of Displaced Residences	4	1	2	2	0		
# Residences within 200' of ROW	5	4	6	2	1	Includes displaced residences.	
# Residences within 500' of ROW	5	9	11	8	3	Includes displaced residences.	
# of Displaced Auxiliary Bldgs/Barns	6	1	4	3	0		
# of Auxiliary Bldgs/Barns within 200' of ROW	7	8	7	3	2	Includes displaced auxiliary buildings/barns.	
# of Property Owners Impacted by ROW take	8	6	9	8	7	Numbers do not include properties immediately adjacent to proposed ROW.	
# of Listed Historic Property/Landmark Impacts	9	0	0	0	0		
# of Potentially Historic Property Impacts	10	0	0	0	0		
Proposed ROW Impact to Public School Properties (ac)	11	0	0	0	0	MISD site located approximately 550' south of the Hybrid Alignment.	
Proposed ROW Impact to Parks (ac)	12	0	0	0	0	Erwin Park located more than 800' from the Hybrid Alignment.	
Proposed ROW Impact to Cemeteries (ac)	13	0	0	0	0	Horn Hill Cemetery located more than 1,100 feet from Hybrid Alignment.	
ENVIRONMENTAL IMPACTS							
Proposed ROW Impact within 100 YR Floodplain (ac)	14	7.649	12.020	7.489	6.203	Approximate area based on FEMA mapping limit.	
Proposed ROW Impact to Open Water (Ponds & Lakes) (ac)	15	0.048	0.341	0.000	0.000	Represents area of non-jurisdictional waters.	
Proposed ROW Impact to Wetlands (ac)	16	0.174	0.492	0.306	0.259	Areas based on national inventory maps and preliminary field evaluation of jurisdictional waters.	
Proposed ROW Impact to Streams (lf)	17	1,408	1,598	1,379	1492	Linear feet based on national inventory maps and preliminary field evaluation of jurisdictional waters.	
Proposed ROW Impacts to Large Trees 36" dia or greater (ea)	18	8	10	4	4	Portions of Hybrid Alignment are outside inventory area.	
Proposed ROW Impacts to Riparian Forested Areas (ac)	19	2.457	3.121	3.212	2.402	Wetter soil areas along water courses. Dominant location for cottonwood, bur oak, american elm	
Proposed ROW Impact to Upland Forested Areas (ac)	20	15.286	19.783	13.449	16.266	Mature canopy and juniper. Dominant location for pecan, cedar elm, red oak, hackberry.	
OTHER IMPACTS							
Effect on Regional Mobility	21	++	++	++	++		
Effect on Local Access	22	--	-	O	O		
Effect on Operations/Safety	23	++	++	++	++		
Construction Difficulty or Traffic Disruption	24	--	-	O	+	Alternatives that require construction overlapping existing County roads receive lower ratings.	
Effect on Existing Use of Park/Open Spaces	25	-	O	++	++	Ratings based on separation from Erwin Park	
Public Acceptance	26	+	--	-	NA	See map for preferred alignment submitted on public comment forms. Hybrid alignment not included in public meeting documents.	
PROJECT COSTS (IN \$ MILLIONS)							
Estimated Construction Costs (\$M)	27	\$ 37.8	\$ 38.7	\$ 37.2	\$ 37.9	Includes 4-lanes from Lake Forest to Honey Creek Bridge and 6-lanes from Honey Creek Bridge to Trinity Falls.	
Estimated Right-of-Way Costs (\$M)	28	\$ 3.9	\$ 4.0	\$ 4.2	\$ 4.2	Assumes no ROW donations.	
Estimated Utility Costs (\$M)	29	\$ -	\$ -	\$ -	\$ -	None anticipated at this time	
Engineering, Surveying, Geotech & Inspection at 20% (\$M)	30	\$ 7.6	\$ 7.7	\$ 7.4	\$ 7.6		
Estimated Total Costs (\$M)	31	\$ 49.2	\$ 50.4	\$ 48.8	\$ 49.6		

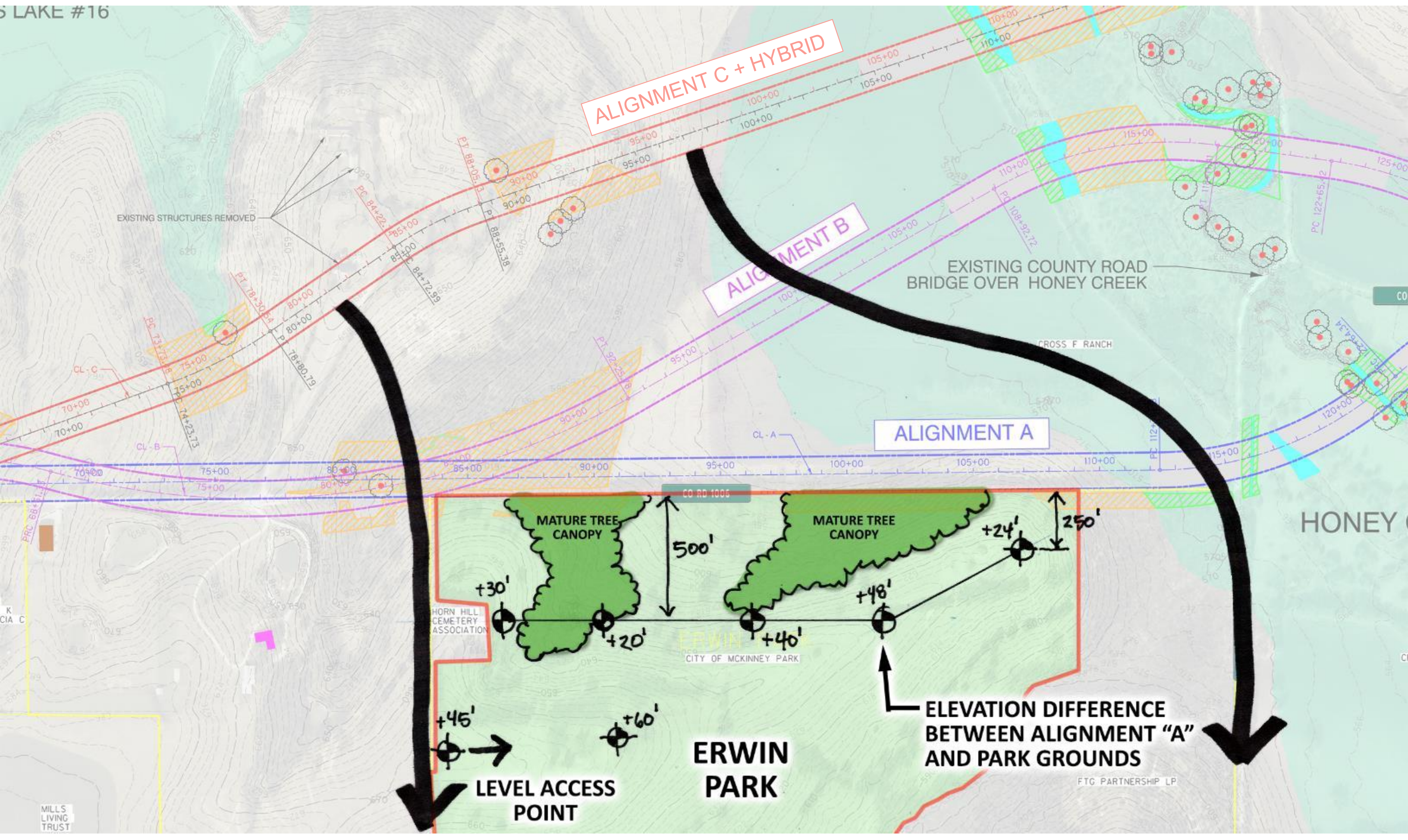
LEGEND FOR QUALITATIVE SCORING				
Major Negative Effect	Some Negative Effect	No Effect, Neutral	Some Positive Effect	Major Positive Effect
--	-	O	+	++

= MOST FAVORABLE EVALUATION SCORE

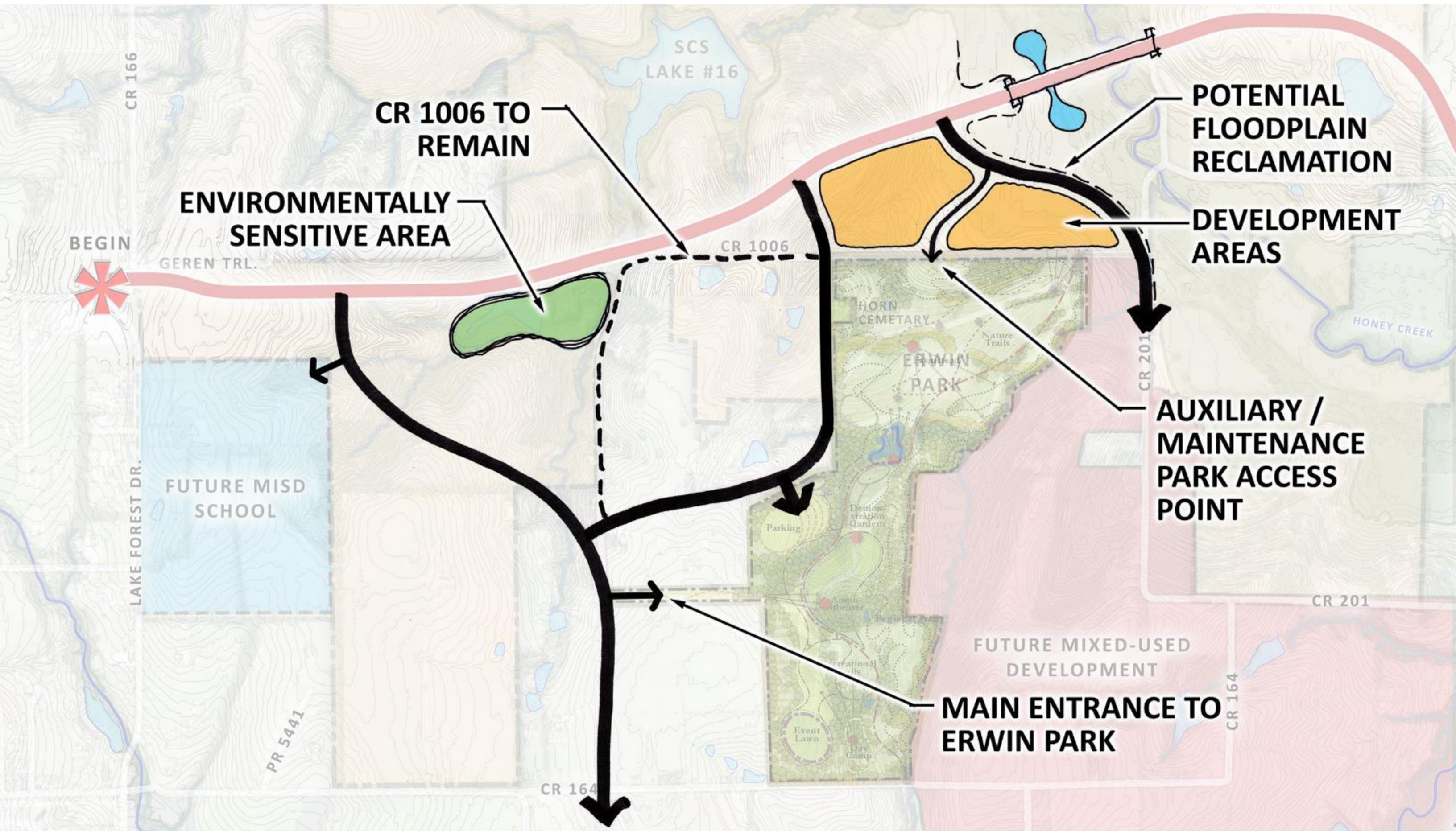
ALTERNATIVES ANALYSIS MATRIX - NOTES

ID #	Alignment Evaluation Criteria	Explanation of Data Entries in the Preceding Tables
ENGINEERING / DESIGN FEATURES		
1	Alignment Length (miles)	The linear distance between the east and west limits of each segment along the centerline of the alignment.
2	Estimated Proposed ROW Need (ac)	The approximate amount of ROW area each alignment will require. Includes all fee property dedications without deductions for prescriptive ROW in existing County roads and future Hardin Blvd.
3	Estimated Alignment frontage with Developable Acreage of not less than a minimum depth adjacent to proposed alignment (lf)	The approximate amount of property along each alignment that meets a minimum depth dimension. Items restricting available depth include floodplains, property with residential structure improvements and Erwin Park. Property that is 100% agriculture use is included.
COMMUNITY AND SOCIO-ECONOMIC IMPACTS		
4	# of Displaced Residences	The number of potential residential displacements as a result of the implementation of each alternative alignment. Impacts of the alternatives may be refined resulting in reduction of Displacements as approved by the City of McKinney.
5	# Residences with a distance of ROW	Measurement is taken from ROW to approximate near edge of existing residential structure and is based on using typical mid-block ROW width.
6	# of Displaced Auxiliary Bldgs/Barns	This is similar to "# of Displaced Residences" in the evaluation process used to rate alternatives. This applies to all buildings that are not part of the primary residence. Buildings that appear to be less than 500 SF in size are not included.
7	# of Auxiliary Bldgs/Barns within a distance of ROW	Measurement is taken from ROW to approximate center of existing auxiliary structure and is based on using typical mid-block ROW width. Auxiliary structures that are closer to future Hardin Blvd than all Laud Howell Parkway Alignments are not included.
8	# of Property Owners Impacted by ROW take	The number of property owners crossed within the ROW of each alternative. Cross F Ranch is considered as one property owner.
9	# of Listed Historic Property/Landmark Impacts	This reflects the number of listed historic properties and historic landmarks within the ROW of each alternative.
10	# of Potentially Historic Property Impacts	This reflects the number of potentially historic properties and historic landmarks within the ROW of each alternative.
11	Proposed ROW Impact to Public School Properties (ac)	The total amount of school properties crossed by the alignment's proposed ROW.
12	Proposed ROW Impact to Parks (ac)	This reflects the amount of public parks within the ROW of each alternative.
13	Proposed ROW Impact to Cemeteries (ac)	This reflects the amount of cemeteries within the ROW of each alternative.
ENVIRONMENTAL IMPACTS		
14	Proposed ROW Impact within 100 YR Floodplain (ac)	This accounts for the amount of ROW located within 100-year floodplains, and is approximately based on the FEMA Flood Insurance Rate Maps.
15	Proposed ROW Impact to Open Waters (Ponds & Lakes) (ac)	This accounts for non-jurisdictional ponds and lakes that are impacted by the proposed alignment's ROW.
16	Proposed ROW Impact to Wetlands (ac)	This accounts for the amount of ROW located within potential wetlands, and is based on the National Wetland Inventory Maps and preliminary site investigations. Wetland areas under proposed bridge length are not impacted.
17	Proposed ROW Impact to Streams (ac)	This accounts for the amount of jurisdictional stream length within ROW plus 20' offset from ROW and is based on National Wetland Inventory Maps and preliminary site investigations. Stream length under proposed bridge length are assumed to be not impacted.
18	Proposed ROW Impact to Trees (ea)	This reflects the number of trees 36" DBH and greater that fall within the proposed ROW plus a 20' offset from the proposed ROW.
19	Proposed ROW Impact to Riparian Forested Areas (ac)	This accounts for riparian forested areas that are impacted by the proposed ROW.
20	Proposed ROW Impact to Upland Forested Areas (ac)	This accounts for upland forested areas that are impacted by the proposed ROW.
OTHER IMPACTS		
21	Effect on Regional Mobility	Rating of regional mobility throughout the area as compared to existing thoroughfare plan for City of McKinney.
22	Effect on Local Access	Rating of local access along local streets and at intersections as compared to existing conditions.
23	Effect on Operations/Safety	Rating of operations/safety improvements as compared to the existing roadway
24	Construction Difficulty or Traffic Disruption	This is a rating of the potential impacts of constructing each alternative on neighboring residential areas and local access. Construction impacts can be reduced with a well-managed sequence of work. Nevertheless, those alternatives that require significant work in existing roadway ROW receive lower ratings.
25	Effect on Existing Use of Park/Open Spaces	Rating represents the impact of the alignment on Erwin Park.
26	Public Acceptance	Measures the support of the public for the alignment of each alternative.
PROJECT COSTS (IN \$ MILLIONS)		
27	Estimated Construction Costs (\$M)	This is the estimated cost of construction for each alternative.
28	Estimated Right-of-Way Costs (\$M)	The estimated cost for the purchase of Right-of-Way of each alternative.
29	Estimated Utility Costs (\$M)	The estimated cost for the purchase and installation of utilities.
30	Estimate Engineering Costs (\$M)	The cost associated with the design and construction management of the proposed alignments.
31	Estimated Total Costs (\$M)	The sum of all costs above.

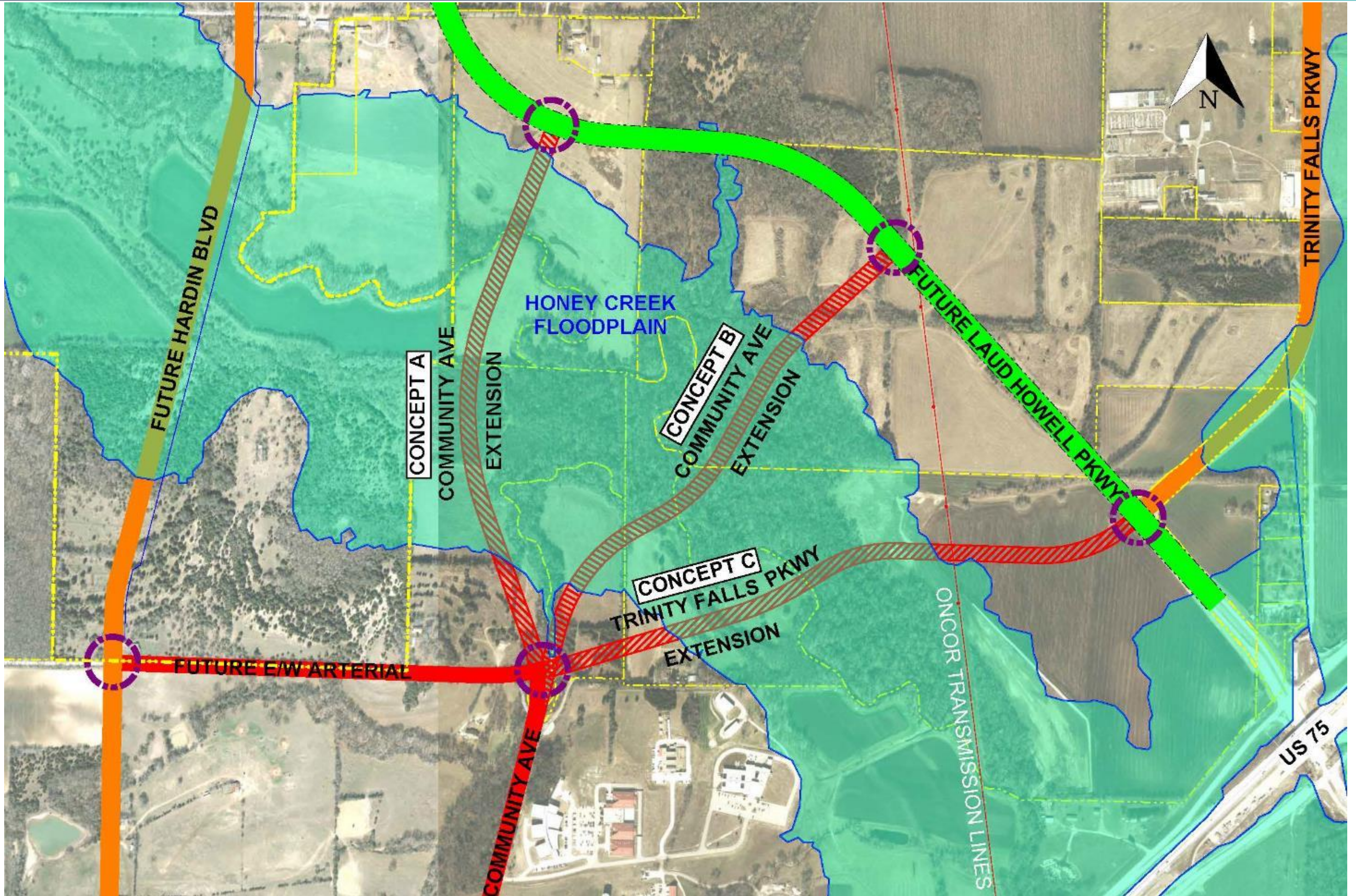
CONNECTIVITY TO ERWIN PARK

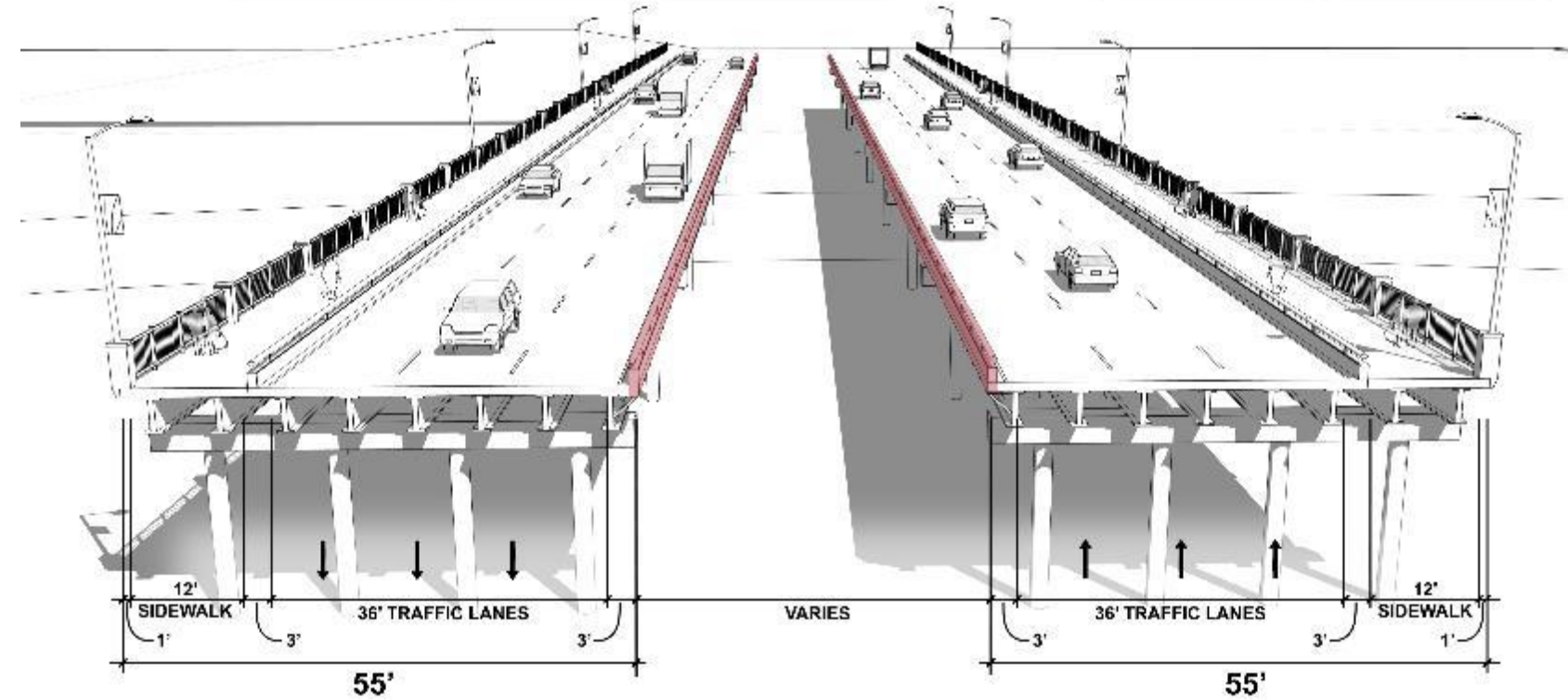
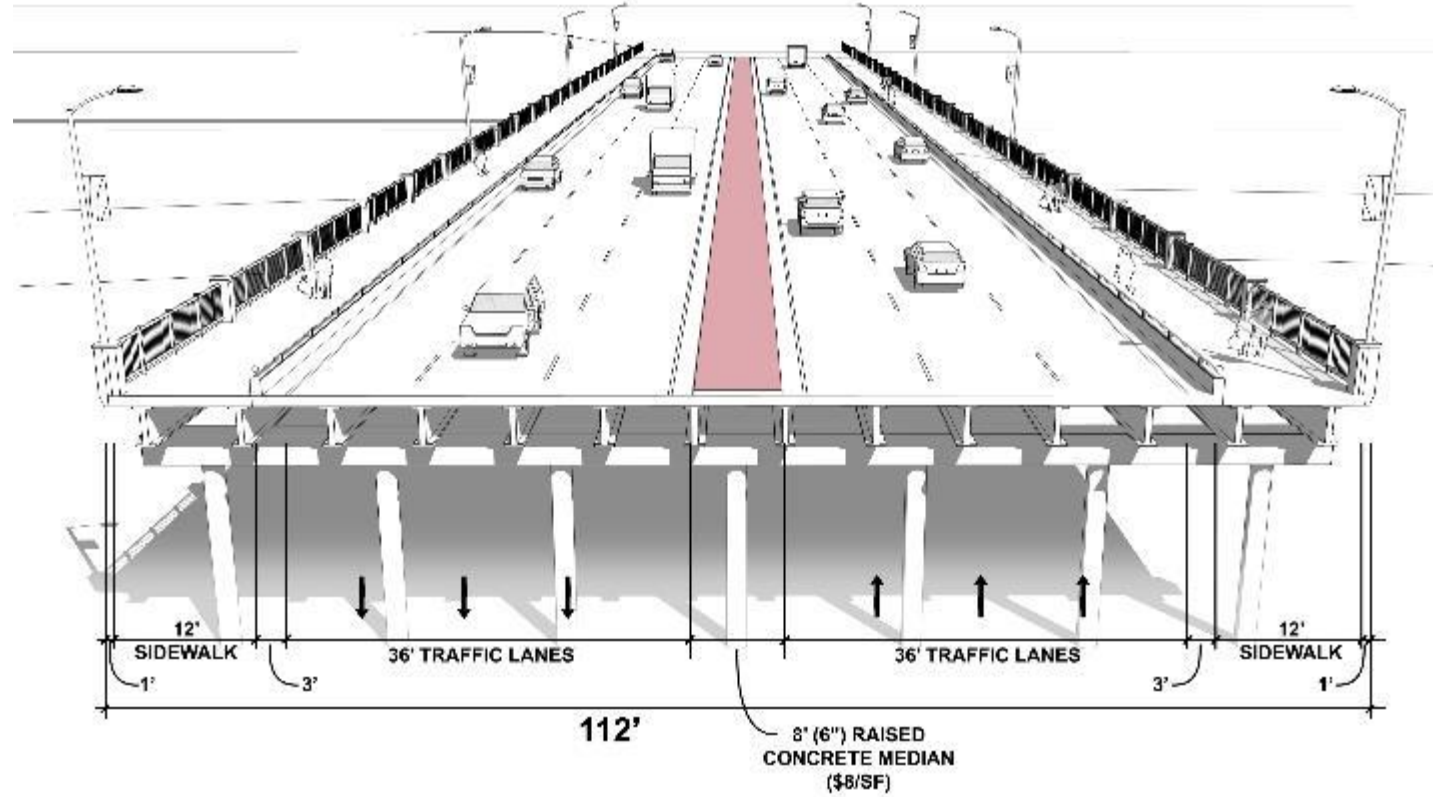


CONNECTIVITY TO ERWIN PARK



COMMUNITY AVENUE CONNECTION





3% Cost Increase

Option A

Single Bridge (1,500 Linear Feet)

- 8' Median
- **Total: \$10,800,000**

Aesthetics

- **\$1,500,000**

Grand Total

- **\$12,300,000**

Option B

Split Bridge (1,500 Linear Feet)

- Two Combination Traffic Rails
- **Total: \$11,130,000**

Aesthetics

- **\$1,500,000**

Grand Total

- **\$12,630,000**

HONEY CREEK BRIDGE



HONEY CREEK BRIDGE



HONEY CREEK BRIDGE



HONEY CREEK BRIDGE

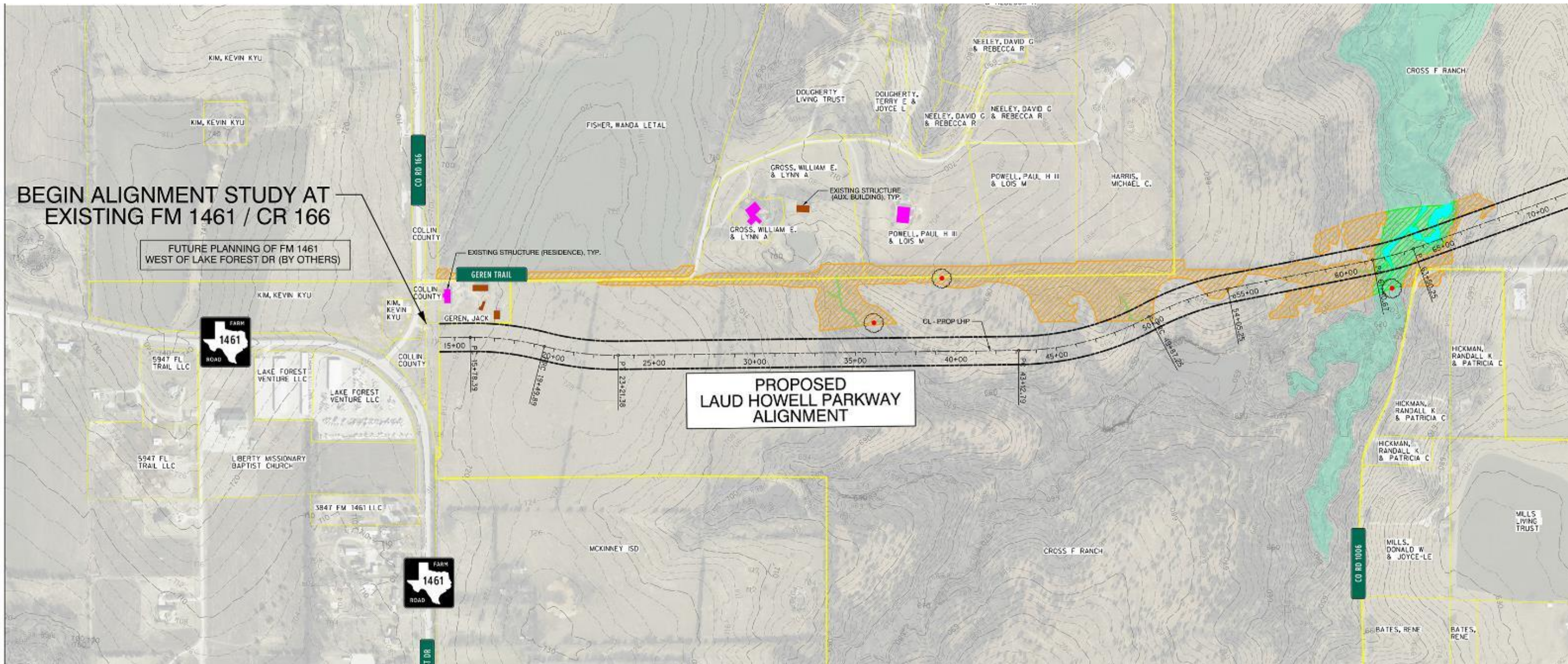


HONEY CREEK BRIDGE



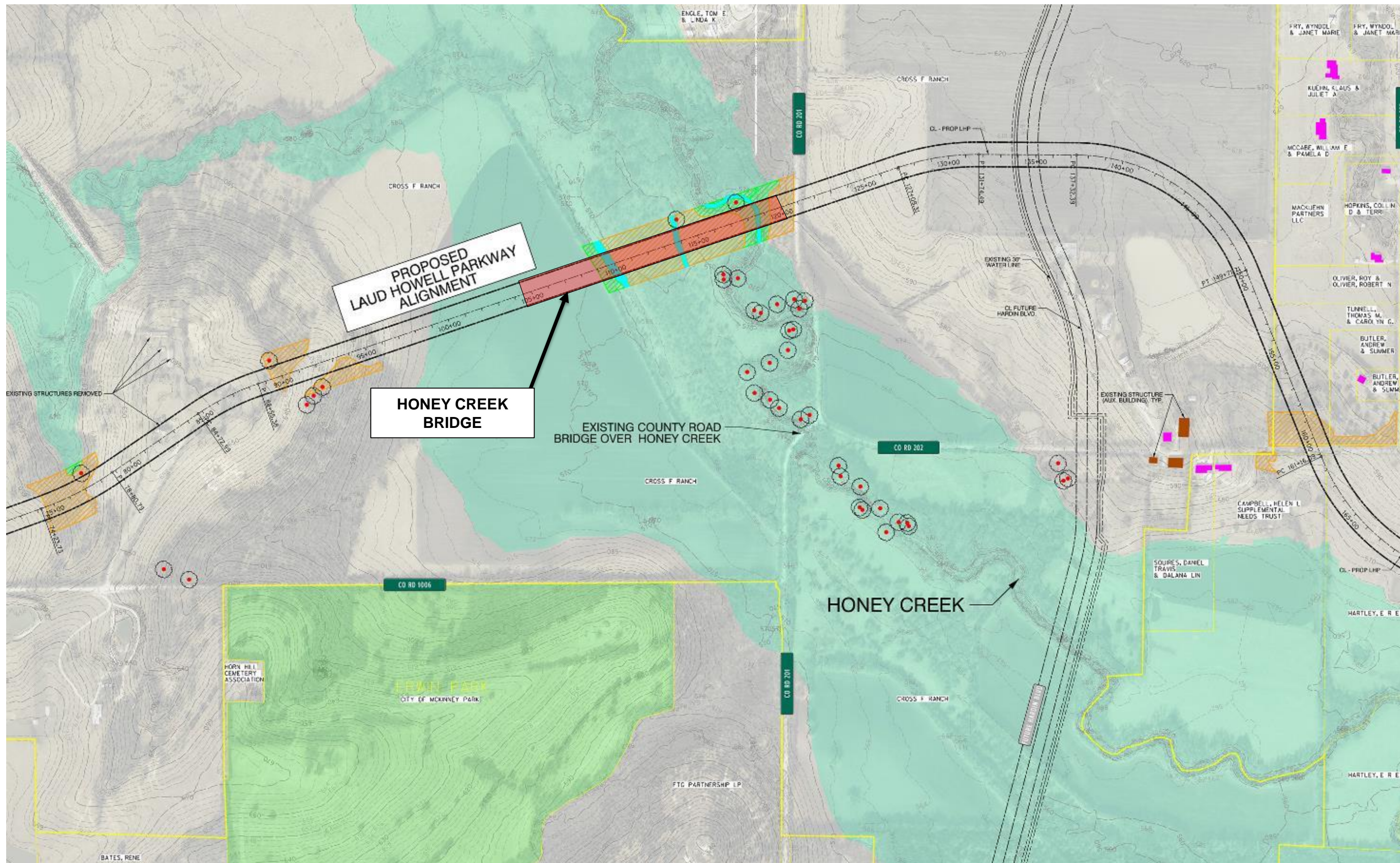
RECOMMENDED ALIGNMENT

Hybrid Alignment – West Section



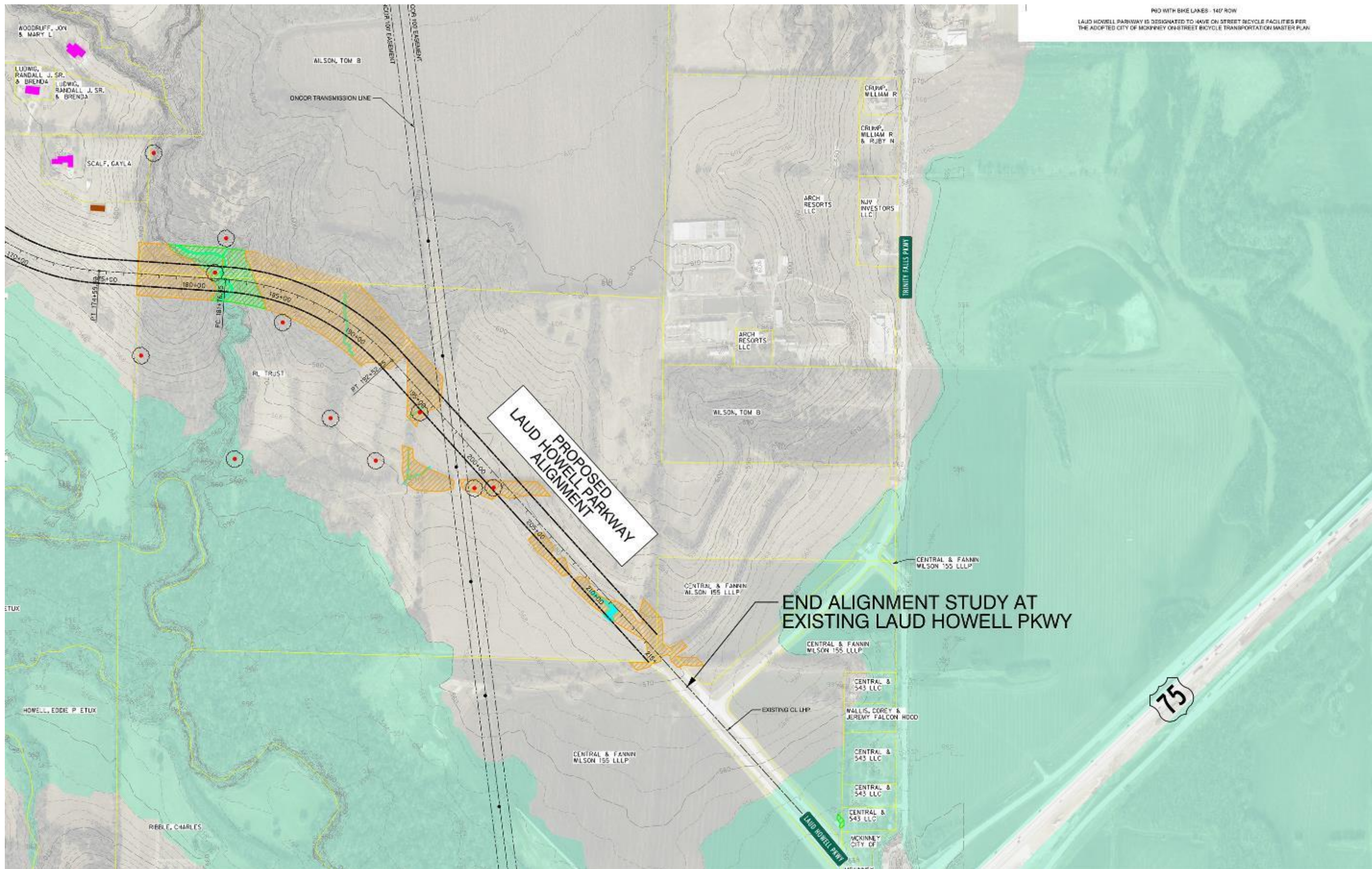
RECOMMENDED ALIGNMENT

Hybrid Alignment – Middle Section



RECOMMENDED ALIGNMENT

Hybrid Alignment – East Section



Questions?