

CR 714 Wayside Horn Project Update



City Council

March 4, 2024

Public Works & Engineering

Background

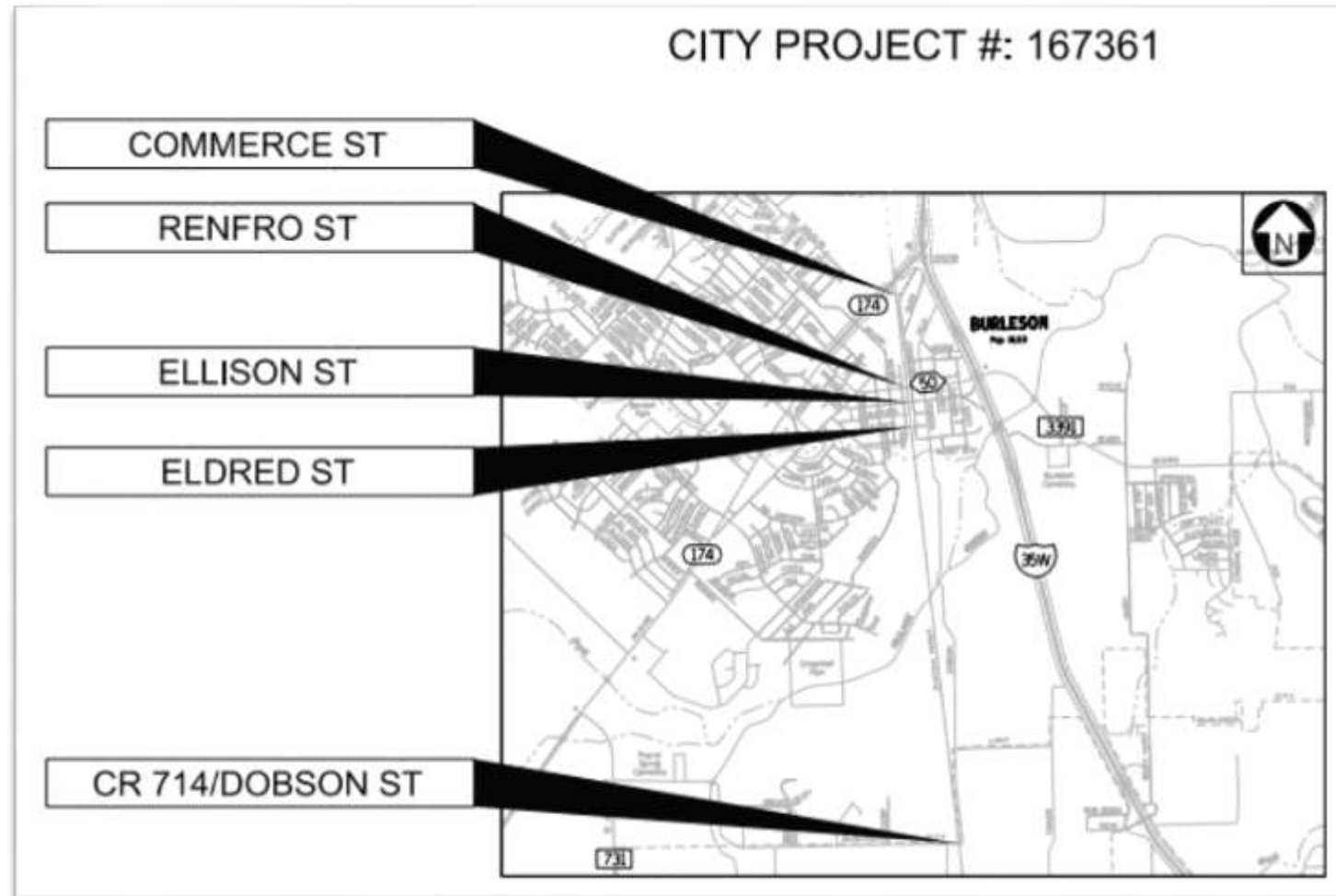
- Federal Railroad Administration (FRA) statistics for 2022 indicate there were 2,202 collisions across the U.S. including 269 crossing fatalities and 827 crossing injuries
- Texas had more collisions than any other state as illustrated by FRA data on the right
- Train horns are a primary component of broader at-grade crossing risk mitigation
- Railway safety regulations (“the Train Horn Rule”) require locomotive engineers to sound horns starting approximately one-quarter mile before each at-grade crossing

New
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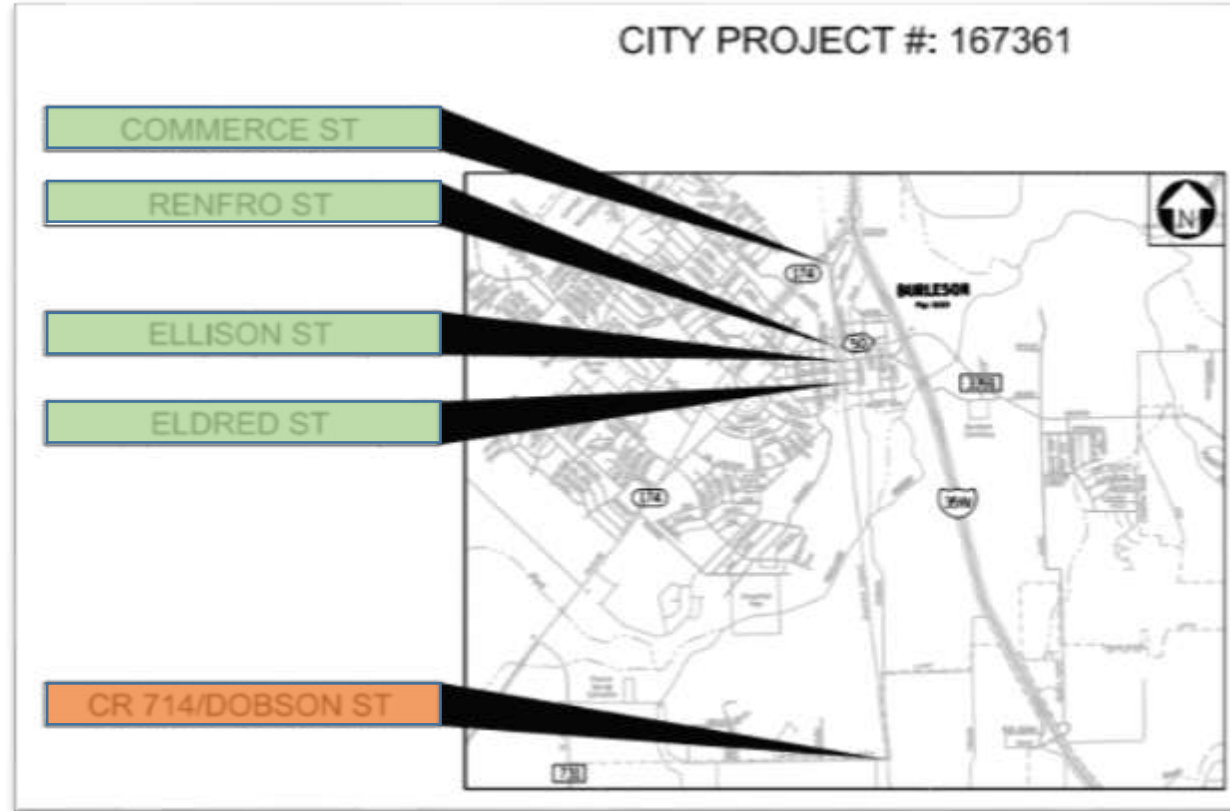
Rank	State	Collisions	Deaths	Injuries	Total At-Grade Crossings
1	Texas	241	31	82	16,113
2	California	172	40	38	10,583
3	Illinois	148	25	46	14,126
4	Florida	117	19	50	5,331
5	Indiana	101	20	27	8,576
6	Georgia	99	2	24	8,312
7	Louisiana	93	4	47	5,535
8	Alabama	88	8	38	5,014
9	Ohio	68	4	13	10,770
10	North Carolina	59	6	14	7,986

Background - Burleson Quiet Zones

- Summer 2016: City Council approved a contract with TranSystems Corporation for design and permitting of quiet zones
- Fall 2018: Construction plans completed and submitted to UPRR for them to design and provide cost estimates for corresponding railroad infrastructure modifications required



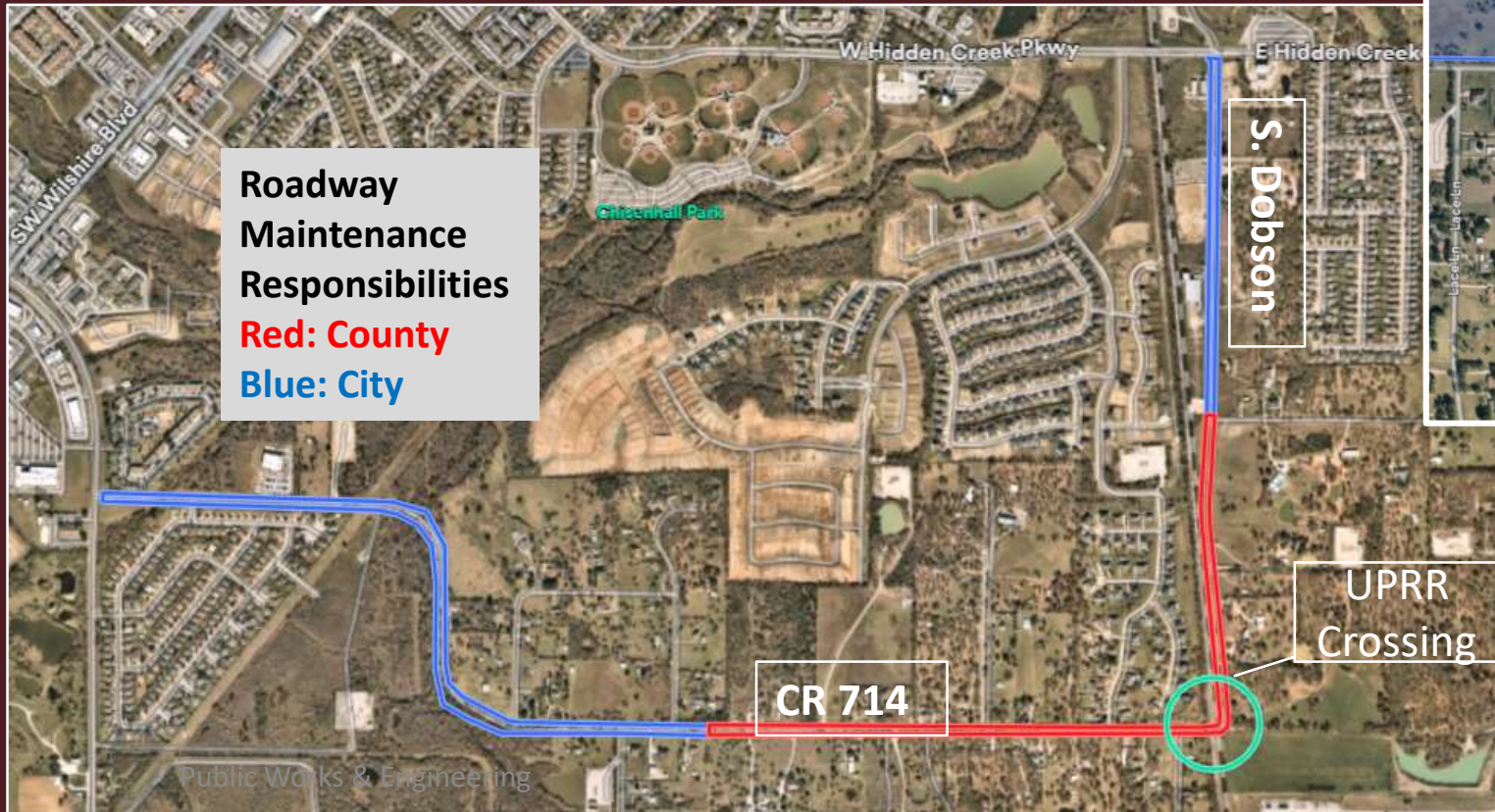
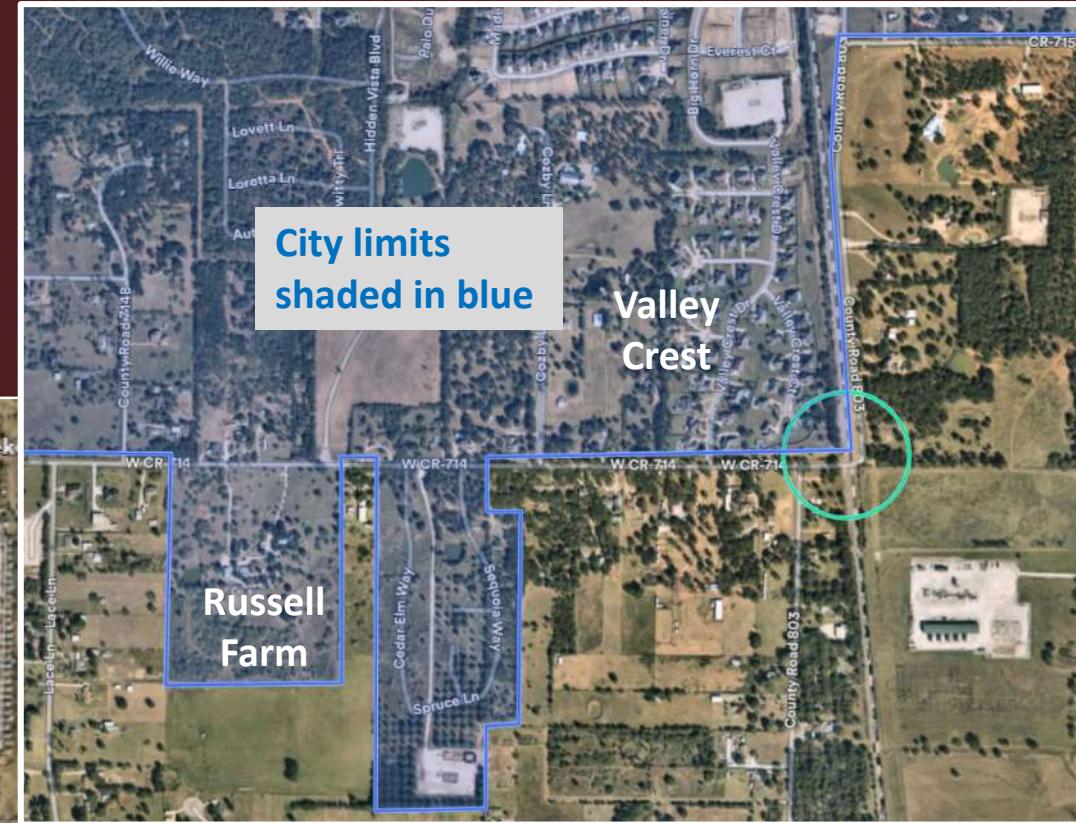
Quiet Zones Summary



Design	UPRR Improvements	Construction	Total Quiet Zone Expenditures
\$238,940 (Including CR 714 Quiet Zone)	\$404,645	\$506,197	\$1,149,782 (spent 2016-2020)

Background - CR 714 & S. Dobson

CR 714 on both sides of UPRR crossing is maintained by Johnson County



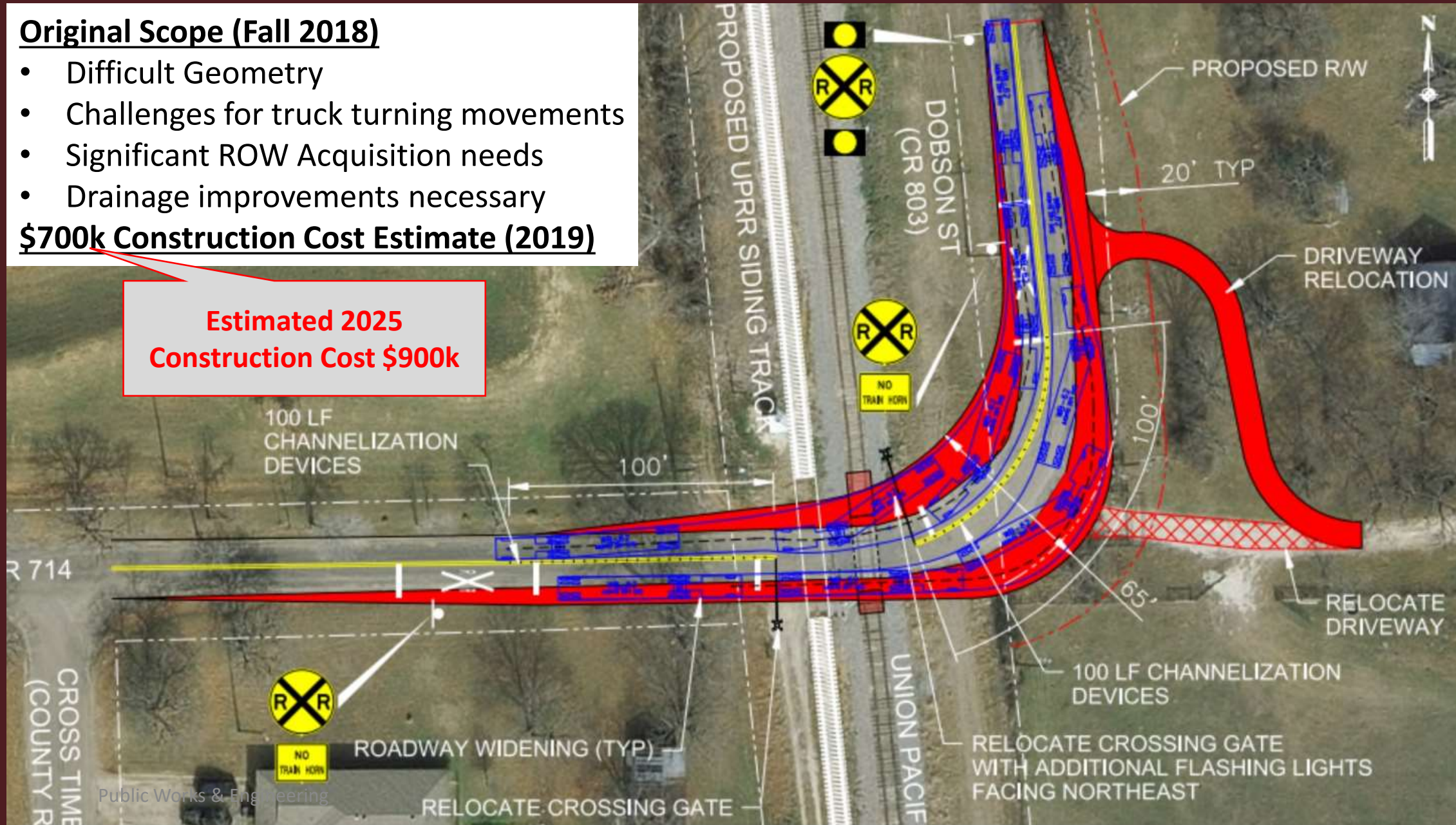
CR 714 Quiet Zone Design

Original Scope (Fall 2018)

- Difficult Geometry
- Challenges for truck turning movements
- Significant ROW Acquisition needs
- Drainage improvements necessary

\$700k Construction Cost Estimate (2019)

**Estimated 2025
Construction Cost \$900k**



CR 714 Quiet Zone to Wayside Horn

- TruHorizon contracted Spring 2021 to conduct noise study of potential alternatives for this crossing
- Summer 2021 – Residents agreed that the wayside horn was much quieter and preferred over the train horn; however, their original expectation was for a quiet zone (no horns)
- Fall 2021 - Staff presented wayside horn option with estimated construction cost of \$250k to City Council; direction to move forward



Wayside horns are stationary horns mounted on poles at active railroad crossings to provide audible warnings directed toward the roadway, alerting motorists, pedestrians, and bicyclists of approaching train

Title 49 of the Code of Federal Regulations (49 CFR) provides requirements for directional audible warning at highway-rail grade crossings equipped with active traffic control devices consisting of, at a minimum, flashing lights and gates

Background - Measurement of Sound

Train horns are blown in all directions approximately ¼ mile away both north and south of crossing


(moving sound source of approximately 106 dB)



Wayside horns direct consistent audible warnings toward the roadway

(stationary sound source of approximately 90-95 dB within 100 ft. of the horn and less than 80 dB at a distance of 500 ft. away from the horns)



140 dB		Jet Take-Off
125 dB		Firecrackers
110 dB		Rock Group
95 dB		Noisy Workplace
80 dB		Street Traffic
65 dB		Business Office
60 dB		Conversational Speech
40 dB		Living Room
35 dB		Library
20 dB		Bedroom
15 dB		Woods
10 dB		Breathing
0 dB		Weakest Sound

Train / Wayside Horn Noise Study – CR 714 Crossing

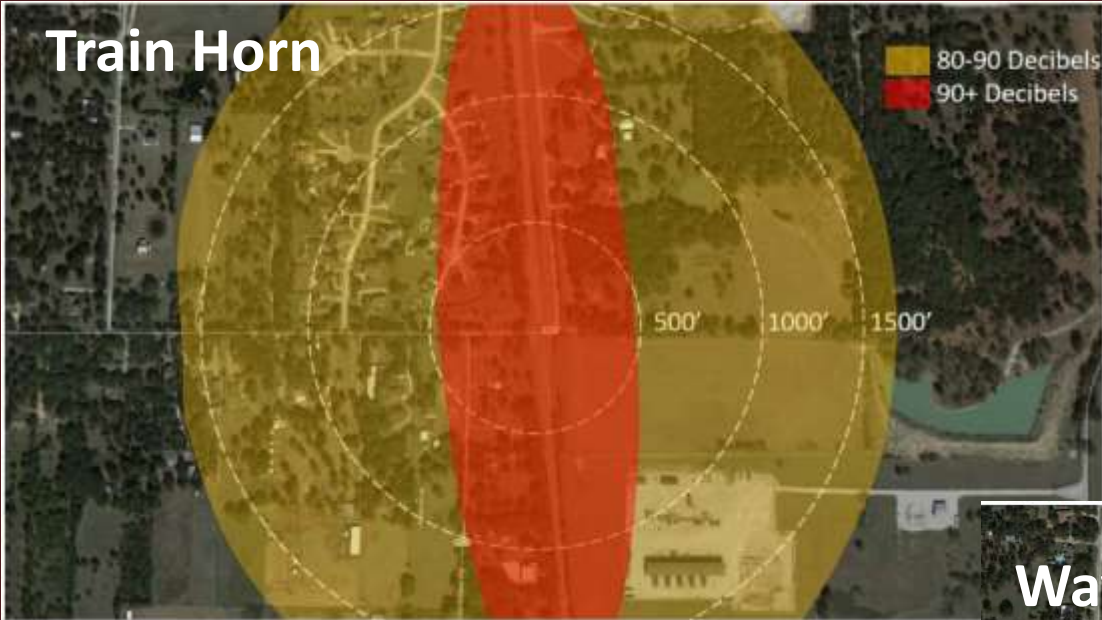


Figure 1 – Approximate Sound Levels with Train Horn

110 dB		Rock Group
95 dB		Noisy Workplace



Figure 2 – Approximate Sound Levels with Wayside Horn (No Train Horn)

CR 714 Wayside Horn



Figure 4. Color coded representation of measured level near Dobson Street wayside horn.

Wayside horn system was shown to provide a significant reduction in noise level compared to traditional train horns

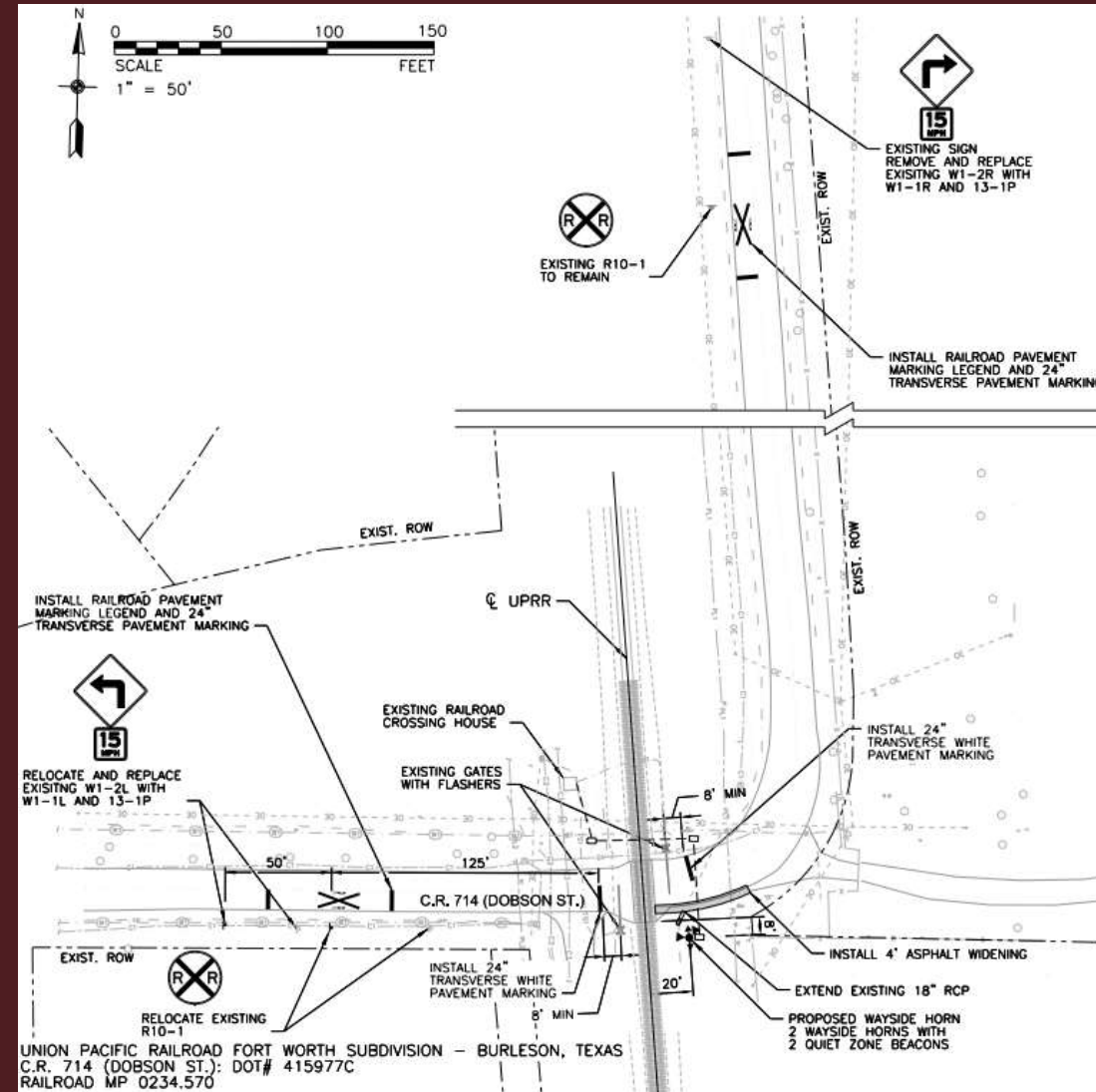
Noise study also modeled two different sound wall options, but neither was deemed cost-effective based on negligible sound reduction at significant additional cost

95 dB		Noisy Workplace
80 dB		Street Traffic
65 dB		Business Office
60 dB		Conversational Speech

CR 714 Wayside Horn

- Spring 2022 - City entered into a contract with TranSystems to design CR 714 Wayside Horn (\$36,969)
- December 2022 - 100% plans submitted to UPRR for their review and cost estimating for corresponding railroad infrastructure improvements required

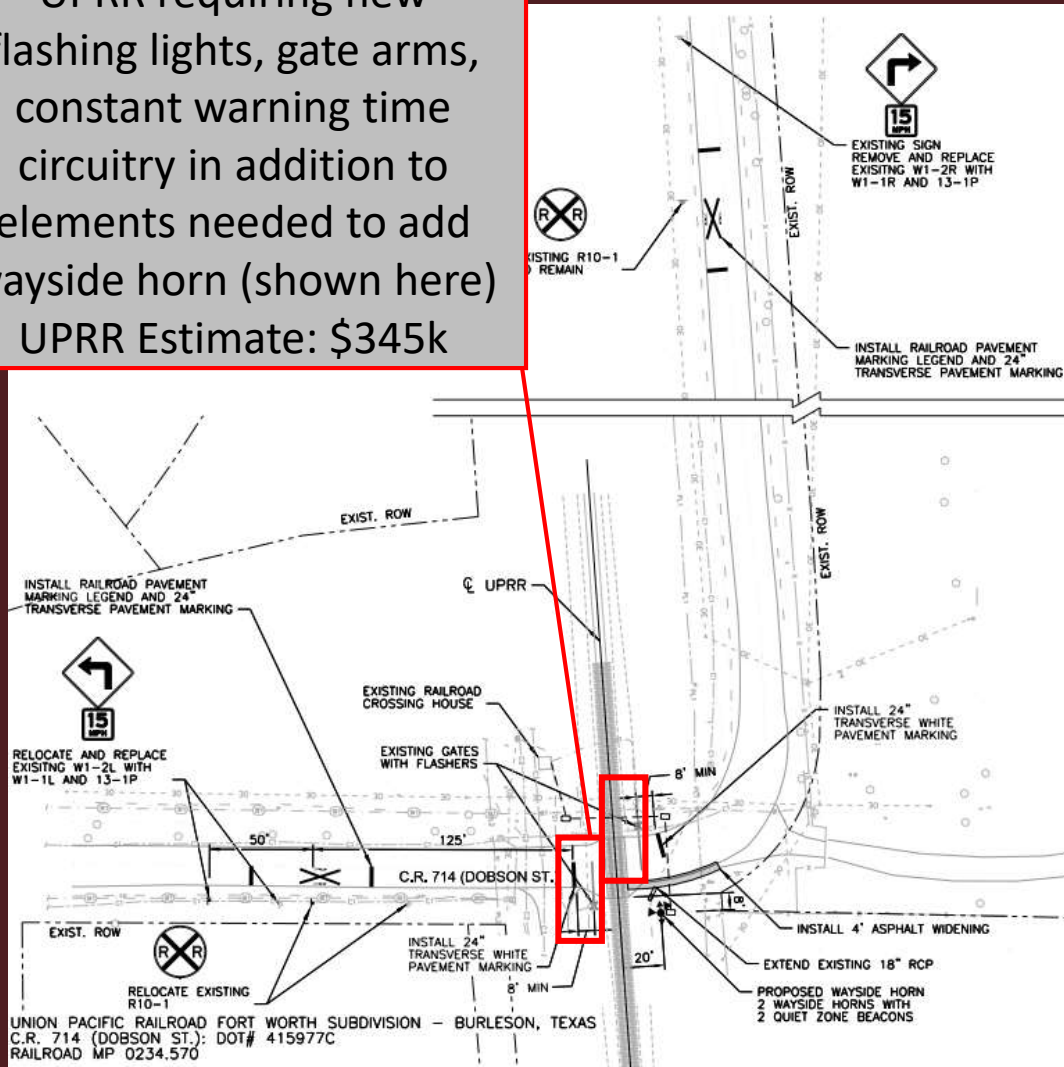
City's estimated construction costs for roadway and wayside horn work to be approximately \$150k excluding UPRR improvements



Background- CR 714 (Wayside Horn)

- January 2023 - Benesch (local UPRR design consultant) provided initial comments that were addressed and resubmitted back to UPRR (expected four – six-month review timeline)
- August 2023 - UPRR provided estimate of \$345k for infrastructure modifications required for integration of the wayside horn system into their track controls
- December 2023 – UPRR confirmed that the City would be responsible for the full cost estimate

UPRR requiring new flashing lights, gate arms, constant warning time circuitry in addition to elements needed to add wayside horn (shown here)
 UPRR Estimate: \$345k



Roadway / Wayside Horn (\$112,470)	+	UPRR Improvements (\$345,881)	=	Total Construction Cost (\$458,351)
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Estimated Annual
 Maintenance Cost \$11,408

CR 714 Wayside Horn - Moving Forward

Funds needed to complete project

- UPRR Estimated Construction Cost \$345,881
- City's Construction Contract (roadway & wayside horn) \$112,470
- 10% Construction Contingency \$45,835
- 10% Testing, RR Insurance, Flaggers, Construction Project Management \$45,835

Total \$550,021

Existing funding

\$334,713

(Previous Street Bonds)

Additional funding needed

\$215,308

(Source: TBD)

Estimated annual maintenance cost for the CR 714 (Wayside Horn) is \$11,408 - for comparison, the annual maintenance for the two most recently completed quiet zones (Ellison and Renfro) are \$10,370 and \$3,740, respectively

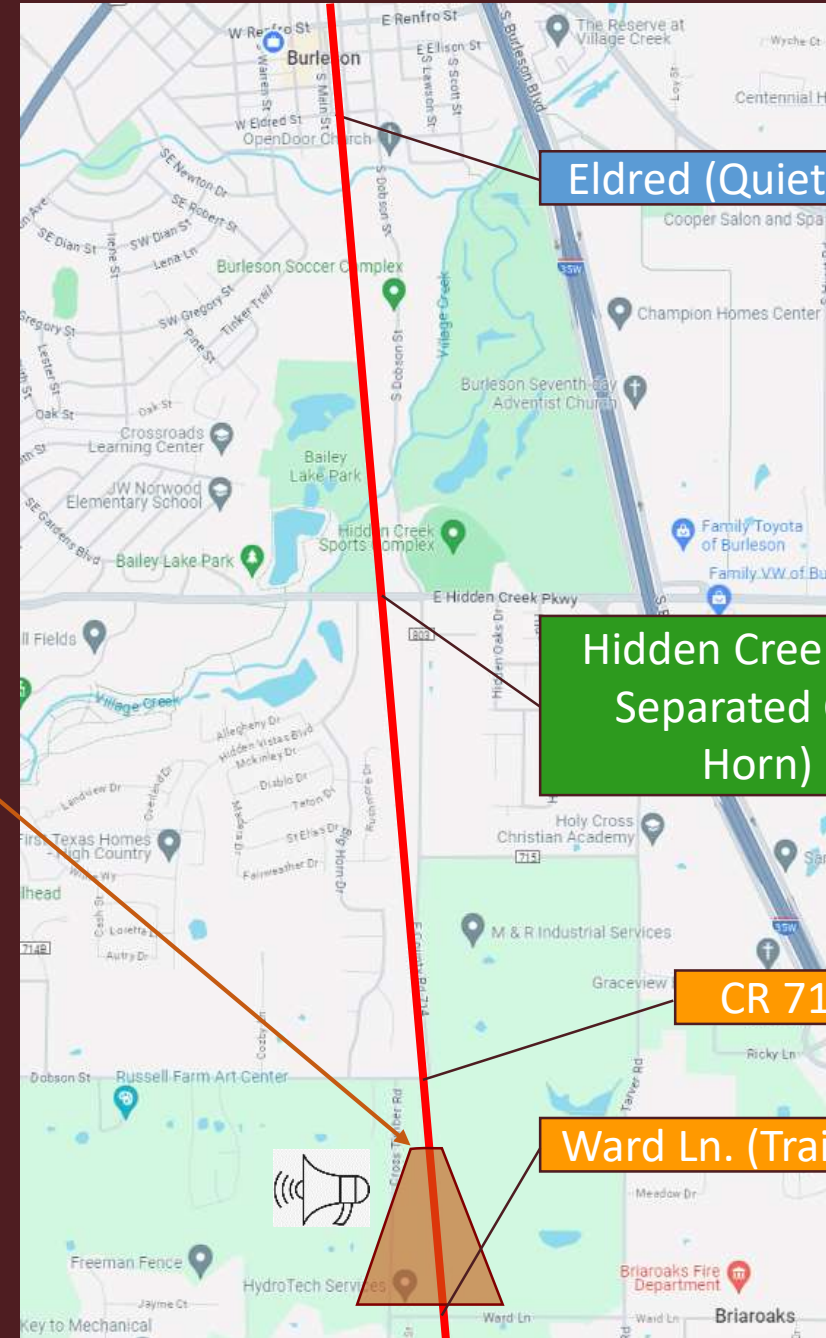
Follow-Up from February 20th Meeting

- Surrounding railroad crossings near Valley Crest
- Recent Johnson County Communication
- Timeline for Quiet Zone

At-grade Crossings Near the CR 714 Crossing

- Closest at-grade crossing with train horns is approximately 0.5 mile to the south at Ward Ln.
- Southbound trains sound their horns approximately 880 ft. south of CR 714 (per US DOT FRA guidance assuming 60 mph speed, sounding horn 20 seconds prior to crossing or about 0.33 mile before the Ward Ln. crossing)
- Both the CR 714 and Ward Ln. crossings (both county roads) would need to be converted to quiet zones to eliminate train horns near CR 714 crossing

The vast majority of *southbound* train traffic from Fort Worth uses tracks to Midlothian and currently on average, one southbound train uses this line through Burleson daily



Eldred (Quiet Zone) 2.05 mi.

Hidden Creek Pkwy (Grade Separated Crossing- No Horn) 1.02 mi.

CR 714 (Train Horn)

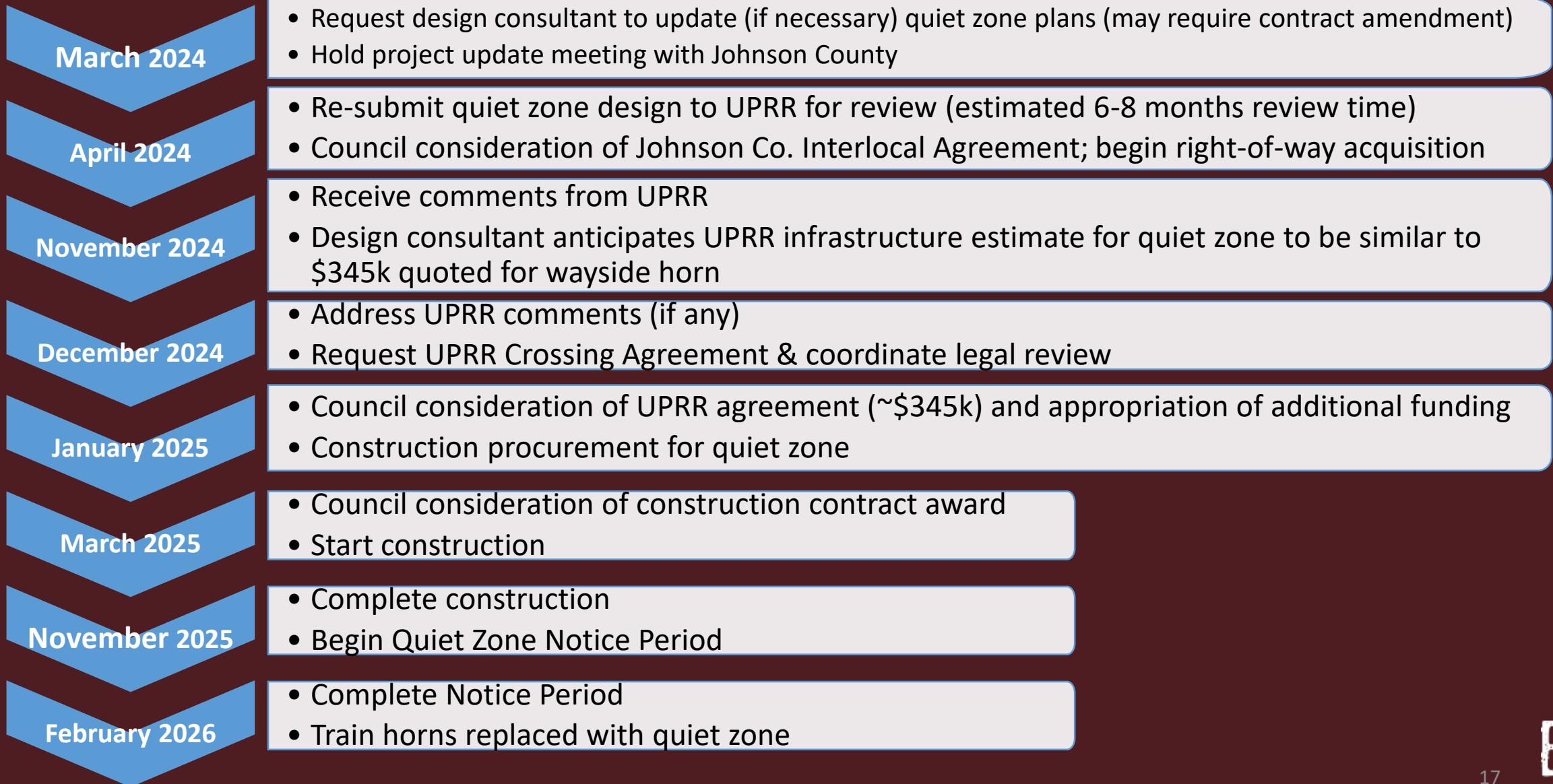
Ward Ln. (Train Horn) 0.5 mi.

Recent Johnson County Communication

- Precinct 2 Commissioner Kenny Howell indicated willingness to explore an interlocal agreement for the City's quiet zone project at this location
- Agreement could address authority for right-of-way acquisition by the City, construction funding, and maintenance obligations
- Johnson County is not considering contributing to initial construction costs, but may consider assuming maintenance responsibility for the quiet zone elements in their right-of-way after construction if the decision is to move forward with a quiet zone (currently the County maintains up to the railroad right-of-way)

Next Steps: Quiet Zone

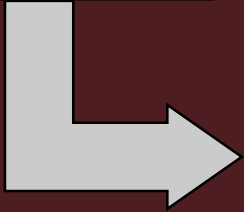
*Schedule dependent upon UPRR response times



Next Steps: **Wayside Horn**

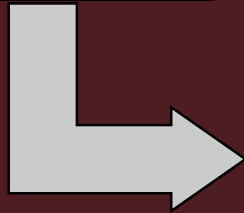
March
2024

- Request UPRR Crossing Agreement & coordinate legal review
- Hold project update meeting with Johnson County



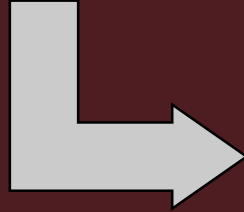
April
2024

- Council consideration of UPRR agreement (\$345k initial construction costs & \$11k annual maintenance) and appropriation of additional funding
- Construction procurement for roadway & wayside horn



June
2024

- Council consideration of construction contract award
- Start construction



January
2025

- Complete construction
- Train horns replaced by wayside horns

*Schedule dependent upon UPRR response times

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