

CR 714 Wayside Horn Project Update



City Council

February 20, 2023

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

RANK	STATE	COLLISIONS	DEATHS	INJURIES
1.	Texas	241	31	82
2.	California	172	40	38
3.	Illinois	148	25	46
4.	Florida	117	19	50
5.	Indiana	101	20	27
6.	Georgia	99	2	24
7.	Louisiana	93	4	47
8.	Alabama	88	8	38
9.	Ohio	68	4	13
10.	North Carolina	59	6	14

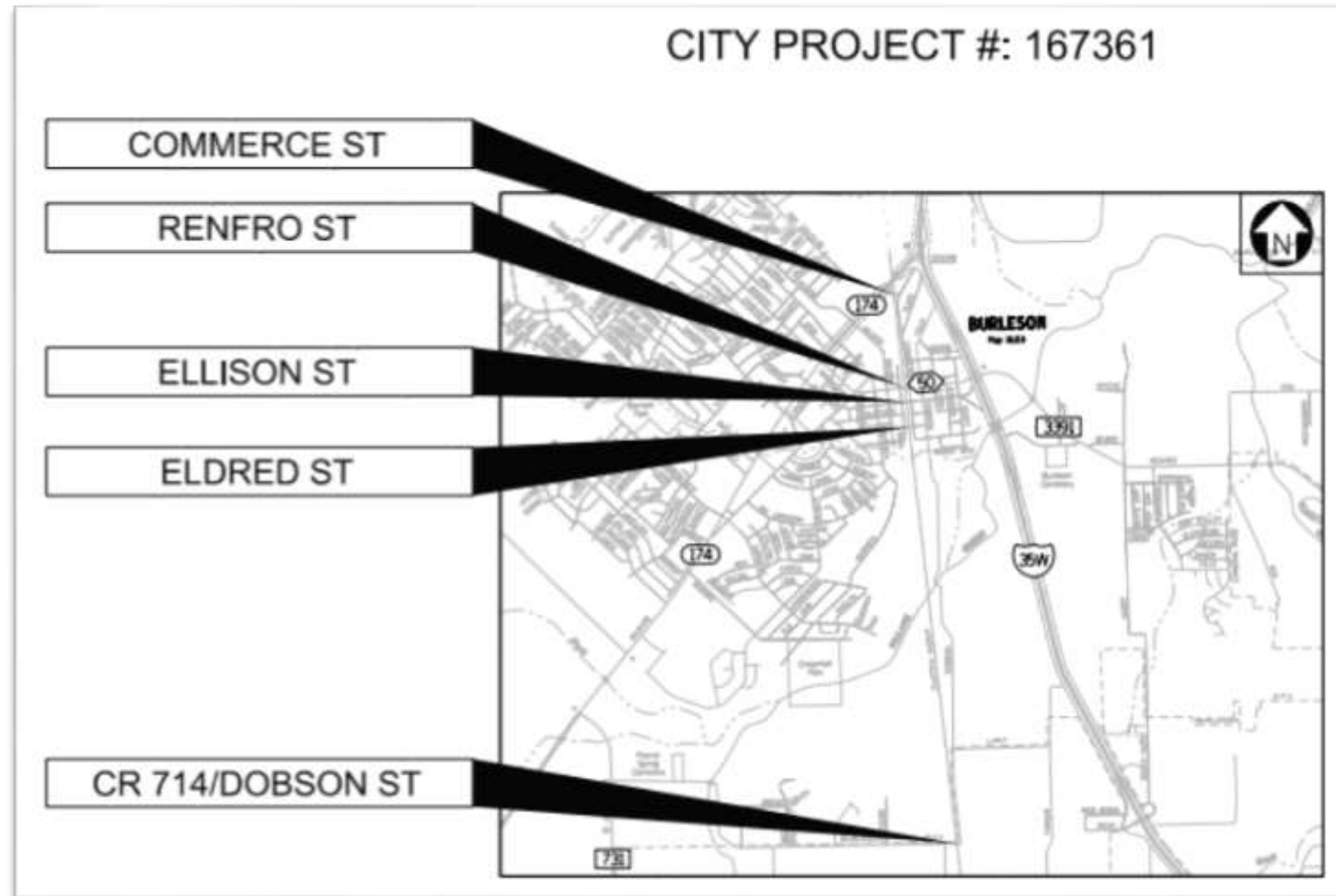
Background

- Union Pacific Railroad (UPRR) tracks run north/south through Burleson roughly parallel to IH-35W with four (4) at-grade crossings locations in Old Town (Commerce, Renfro, Ellison, and Eldred) and another at CR 714
- On average, 26 trains use the UPRR tracks through Burleson daily
- Train Horn Rule allows communities to establish “Quiet Zones” for relief from the routine sounding of train horns by meeting specific requirements at each crossing to mitigate risk

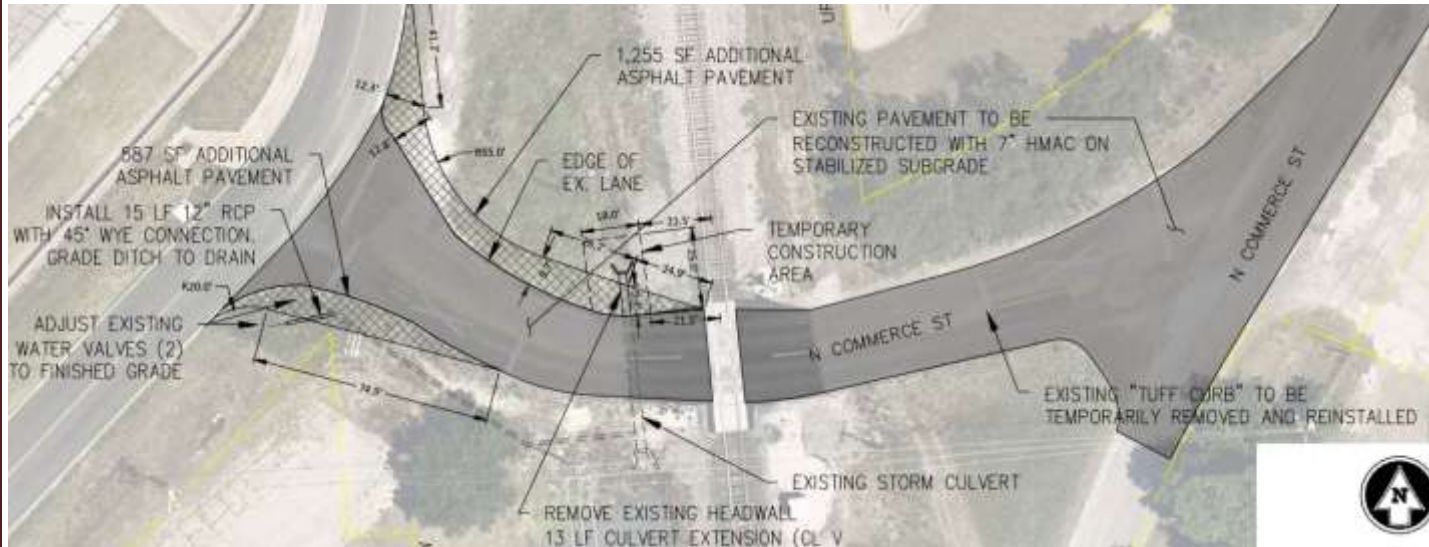
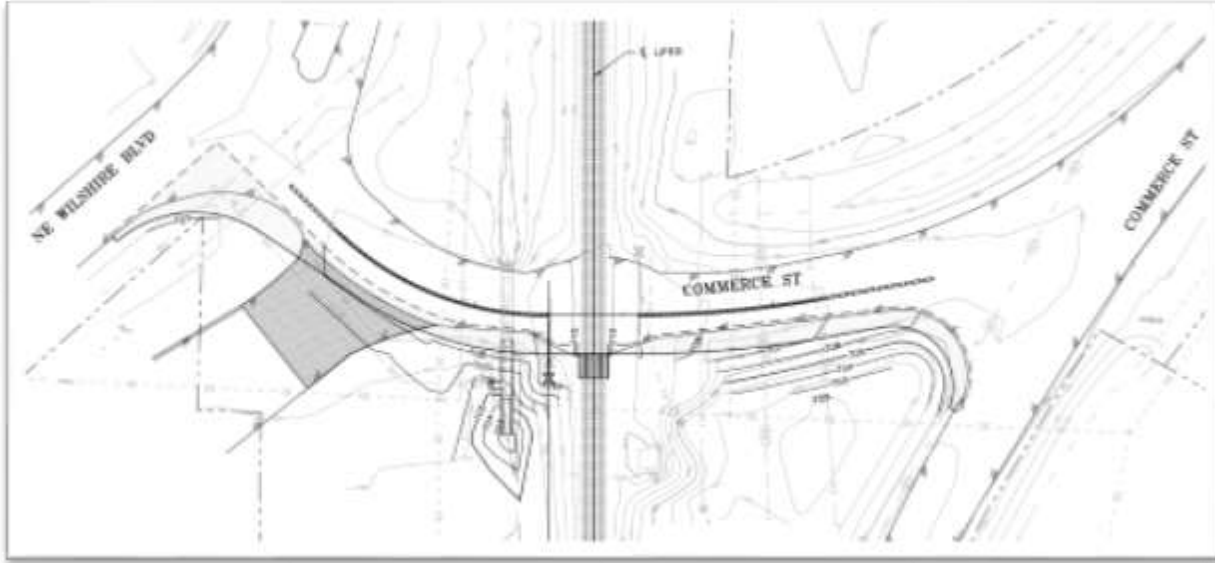


Background - Burleson Quiet Zones

- 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

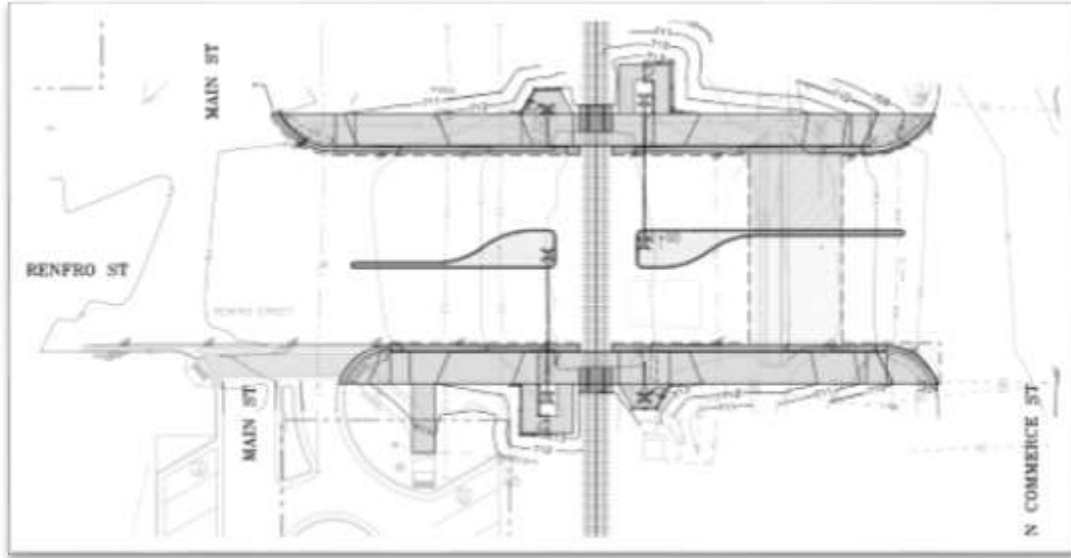


Commerce Quiet Zone – Completed Fall 2019

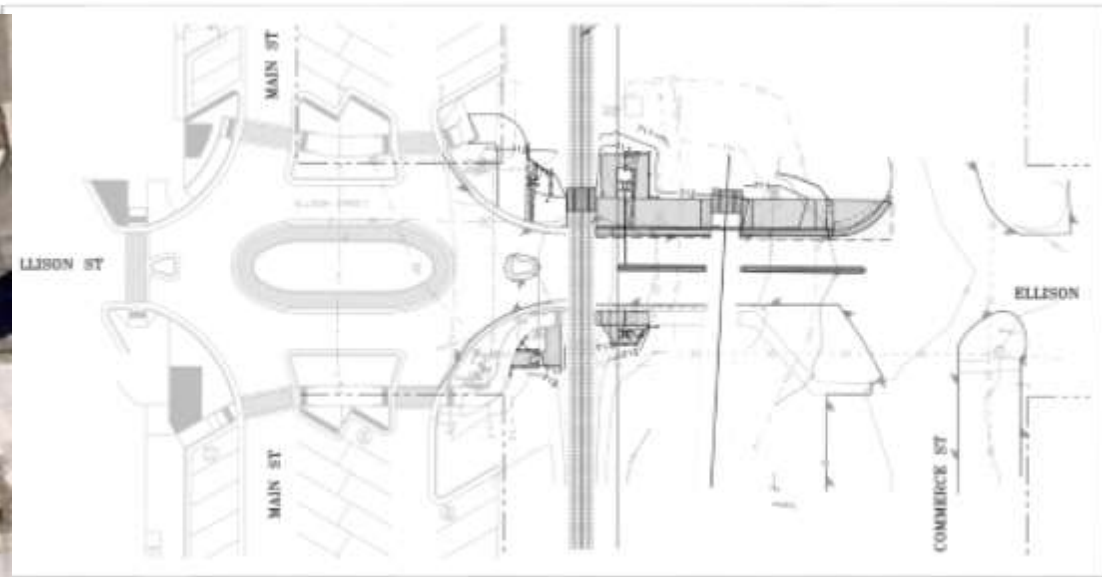


- Crossing to be revised as part of an ongoing Neighborhood Street Rehabilitation project
- Revisions include widening the pavement on each side of the tracks to facilitate large truck and trailer traffic
- UPRR revising crossing agreement that will come back to City Council for approval

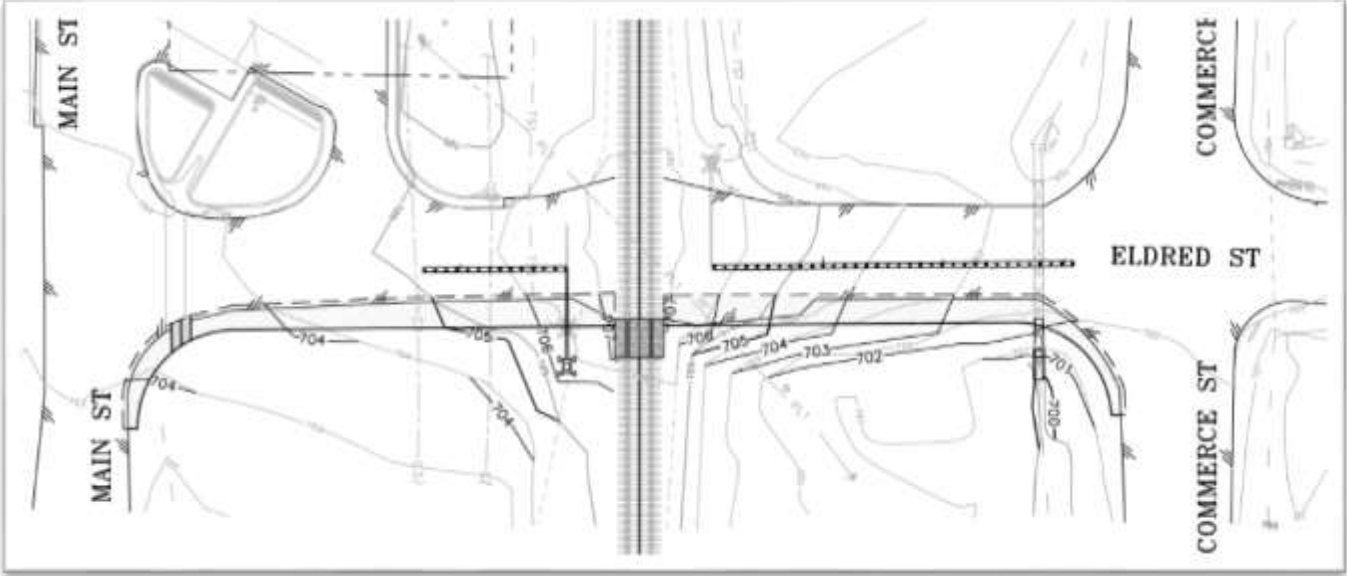
Renfro Quiet Zone – Completed Fall 2020



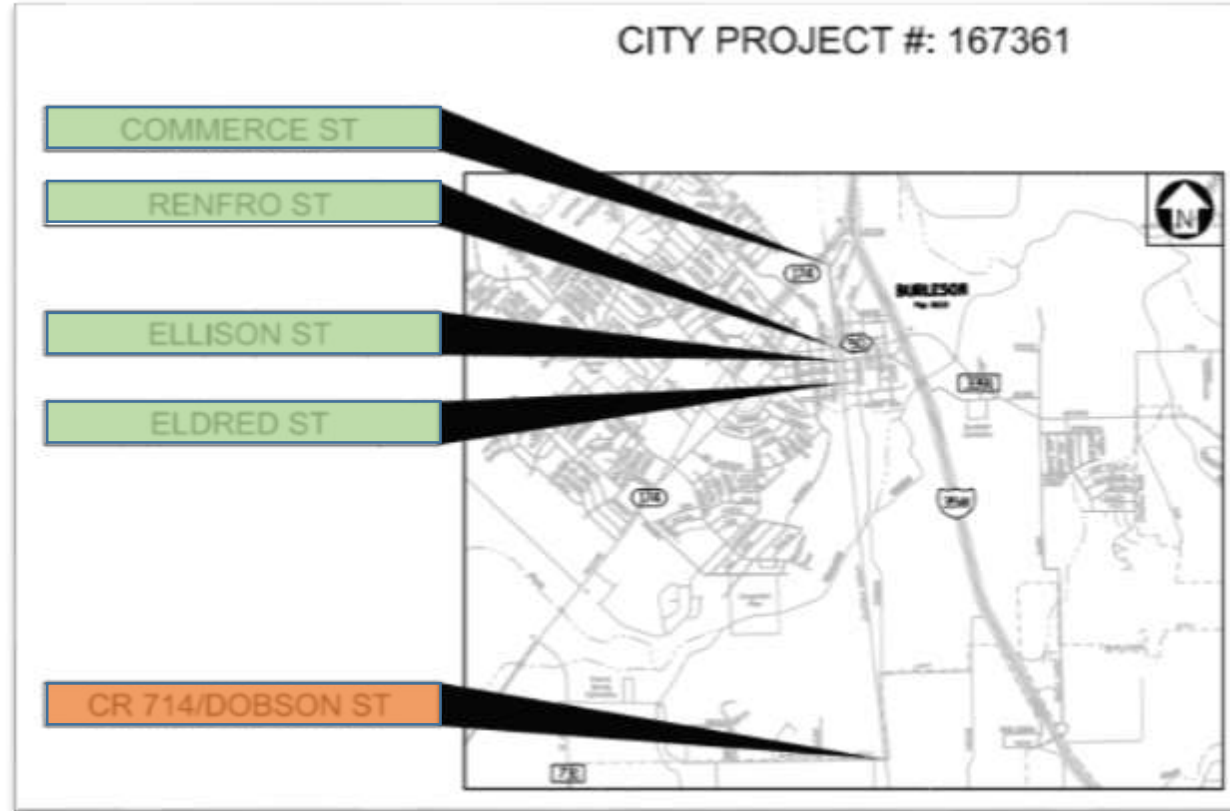
Ellison Quiet Zone – Completed Winter 2020



Eldred Quiet Zone - Completed Fall 2019



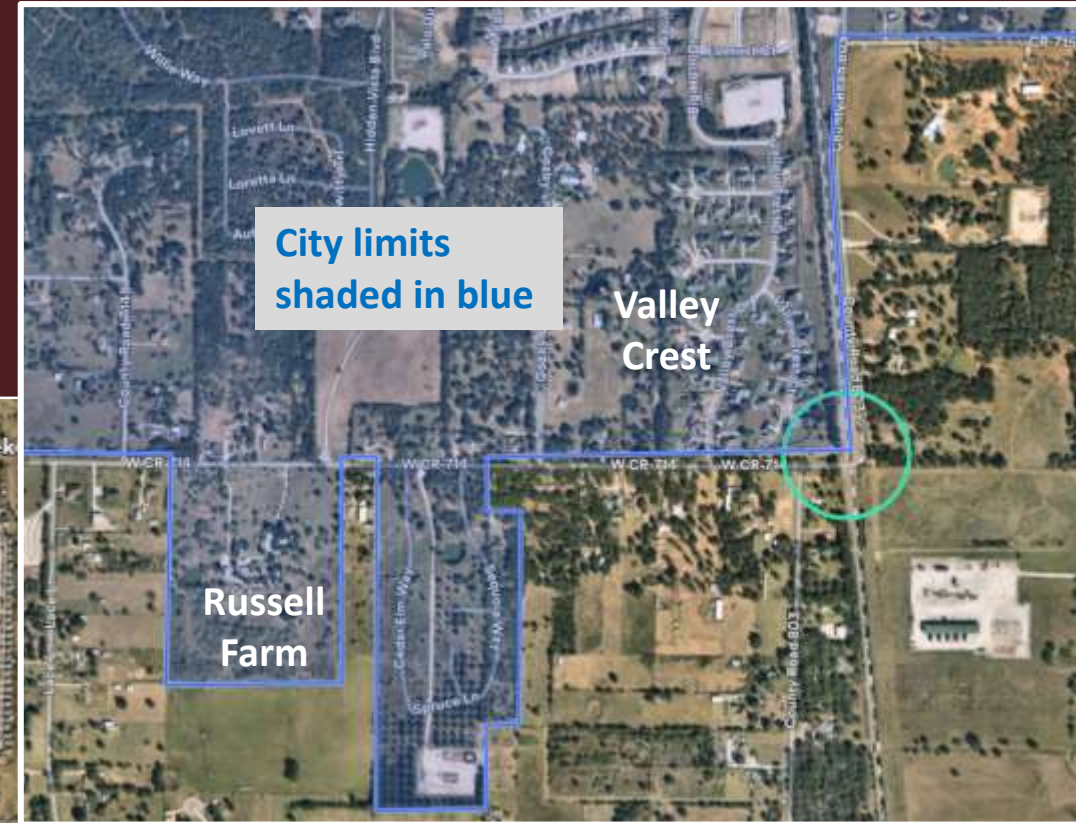
Quiet Zones Summary



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



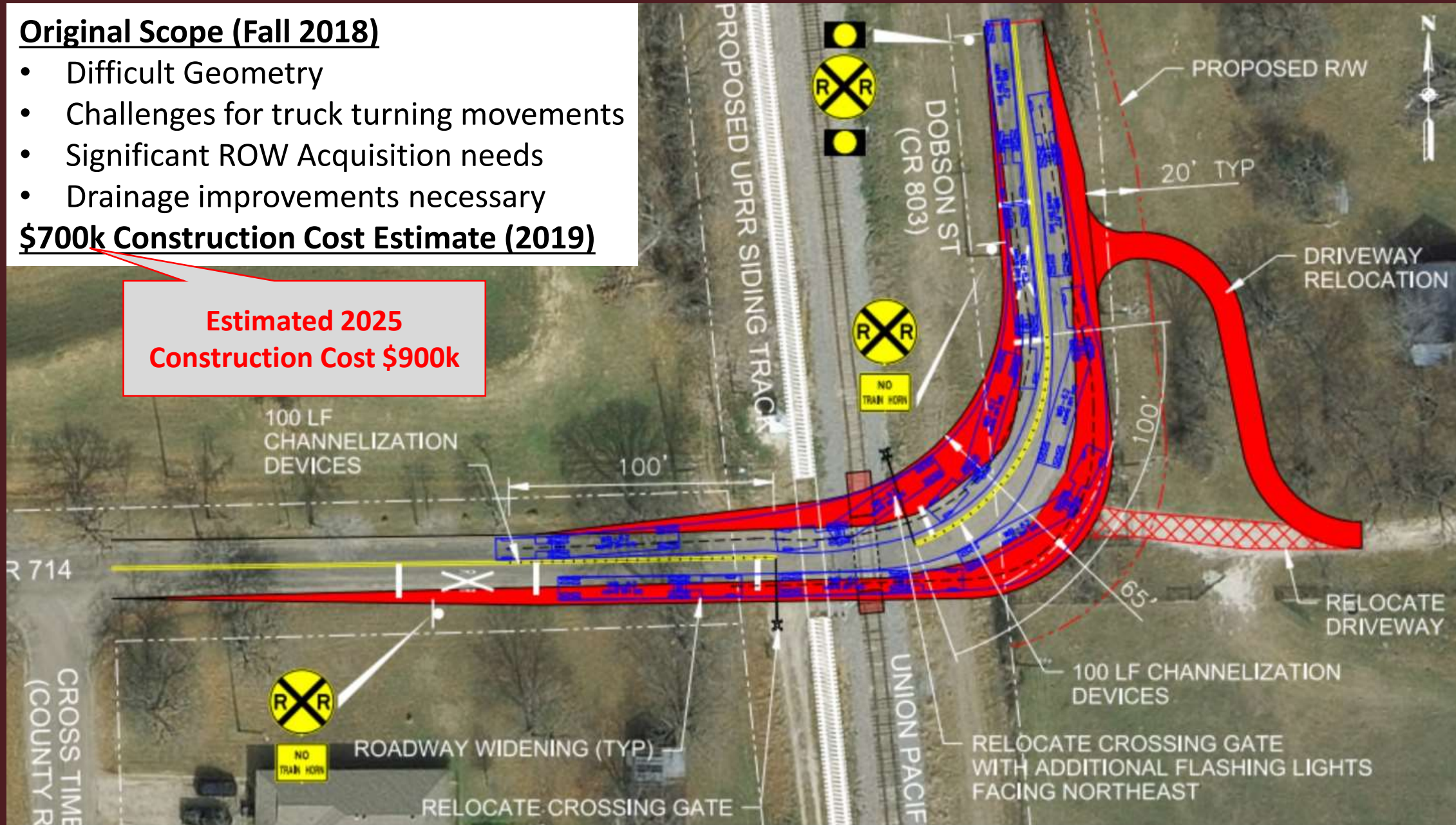
CR 714 Quiet Zone Design

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

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



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

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

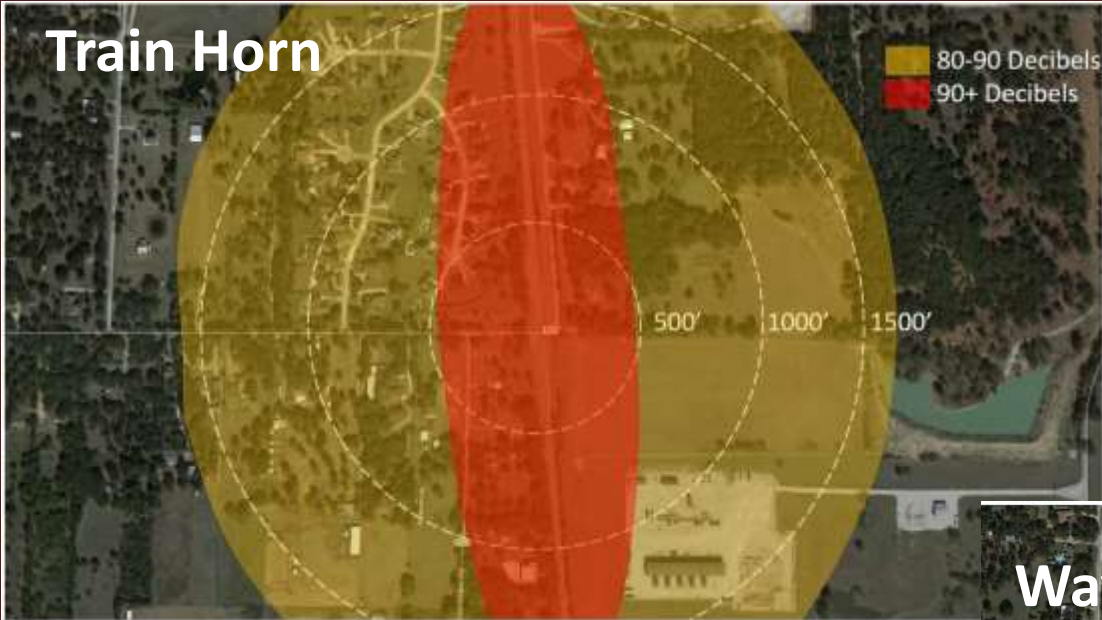


Figure 1 – Approximate Sound Levels with Train Horn

110 dB		Rock Group
95 dB		Noisy Workplace



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

CR 714 Wayside Horn

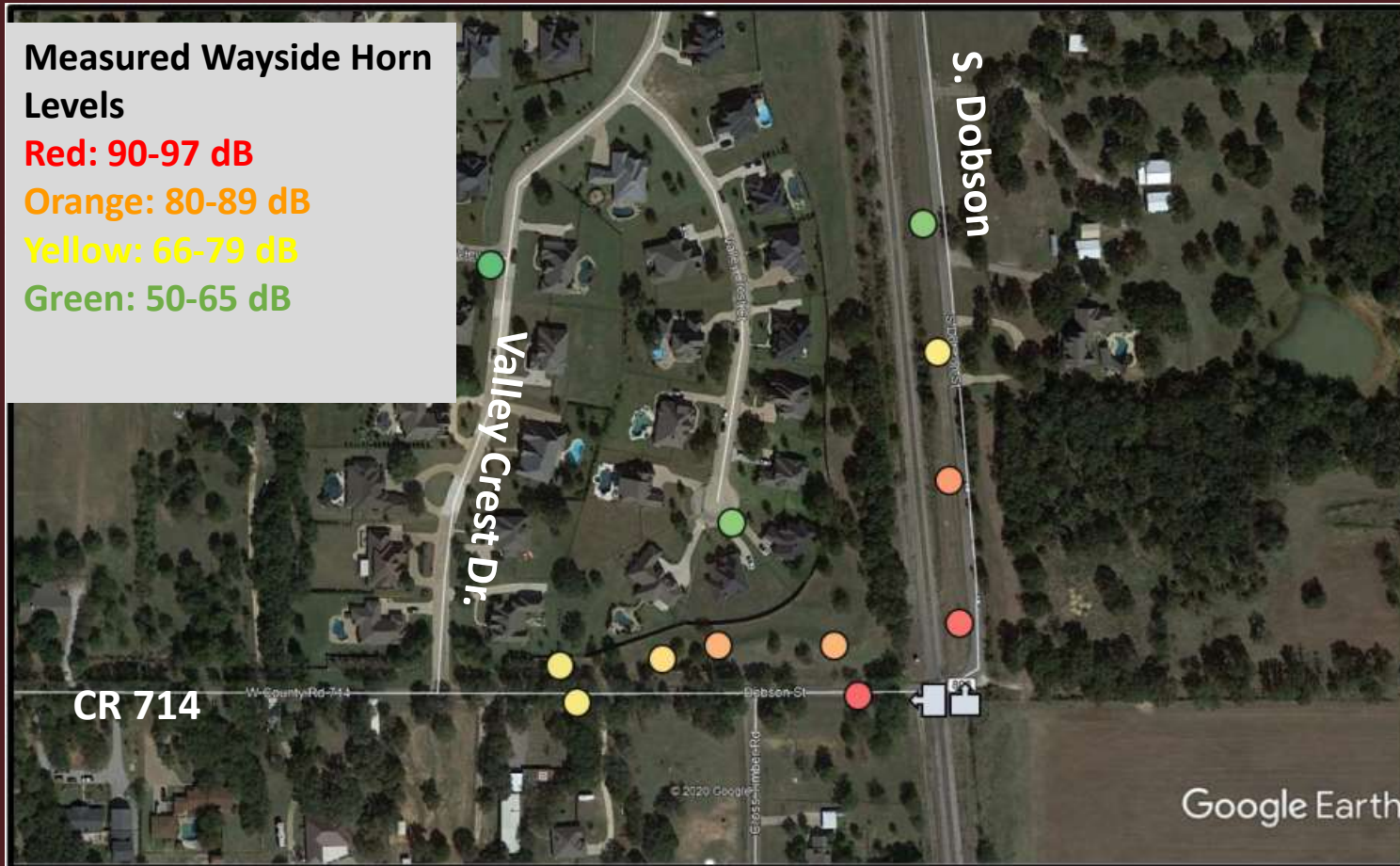


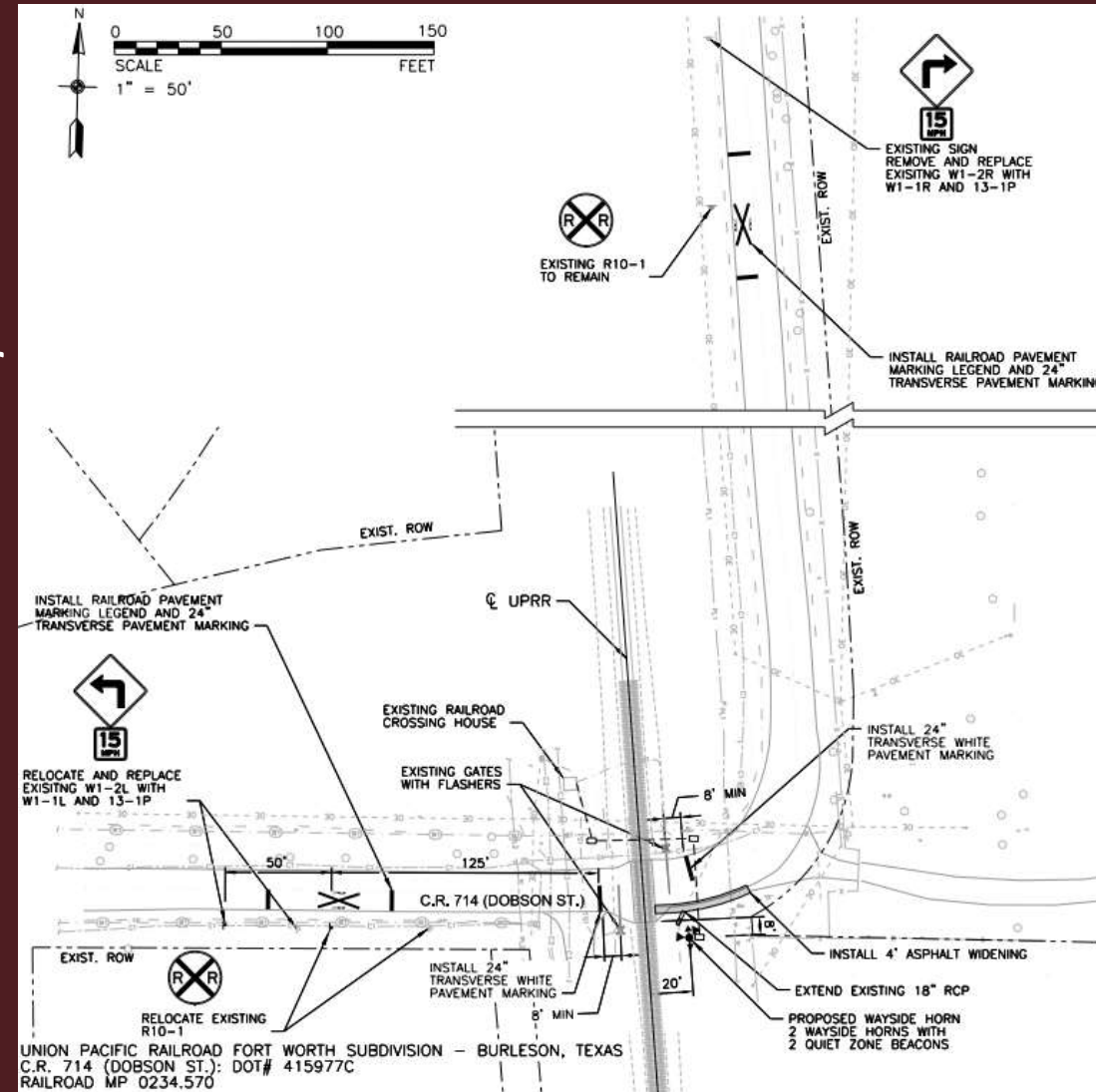
Figure 4. Color coded representation of measured level near Dobson Street wayside horn.

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

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

CR 714 Wayside Horn

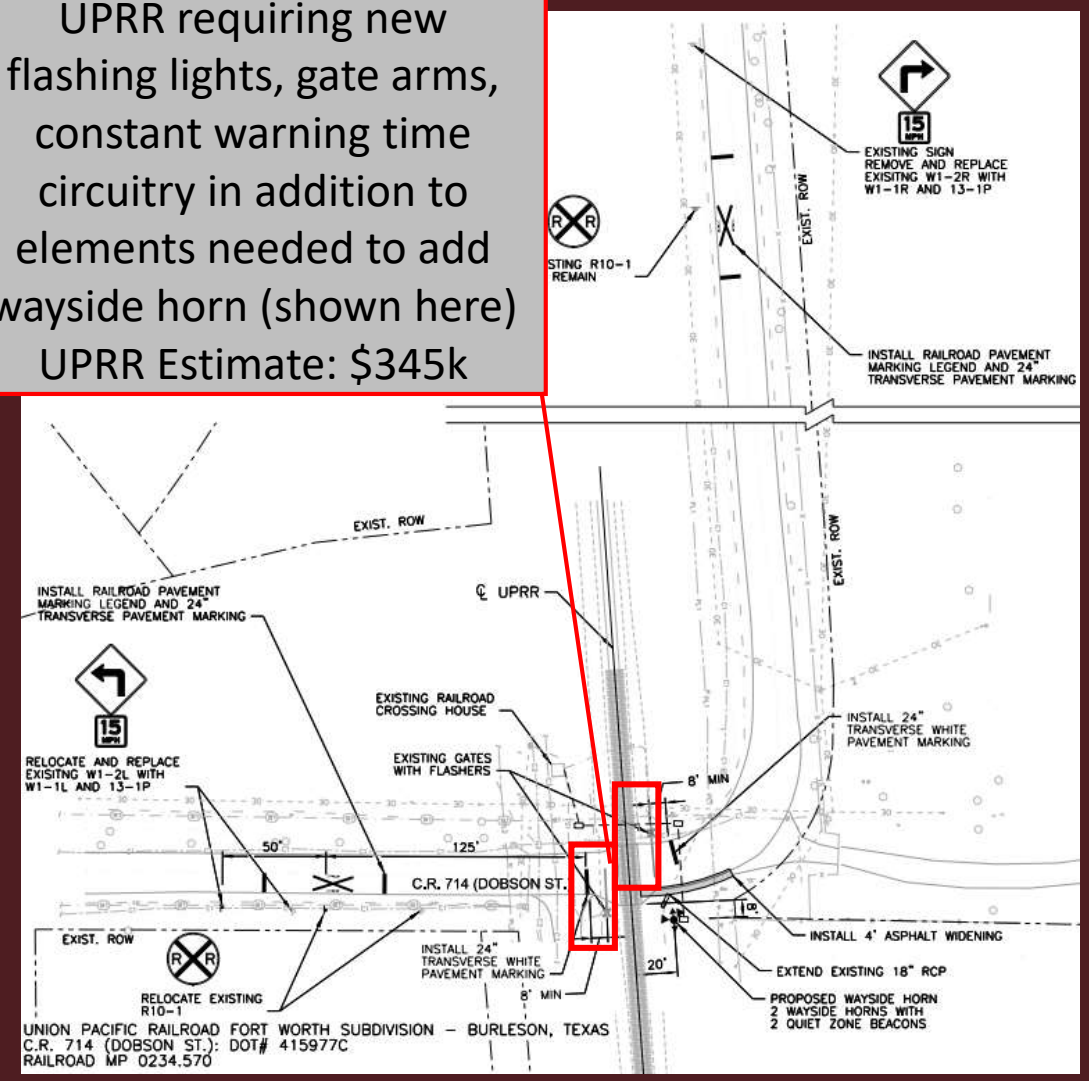
- Spring 2022 - City entered into contract with TranSystems to design CR 714 Wayside Horn (\$36,969)
- December 2022 - 100% plans submitted to UPRR for their review and for them to provide cost estimate for corresponding railroad infrastructure improvements required (City's estimated construction costs 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 4 – 6 month review timeline)
- August 2023 - City staff received UPRR estimate of \$345k for infrastructure modifications required for integration of the wayside horn system into their track controls
- December 2023 – UPRR confirmation 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



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

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)

Next Steps

February
2024

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

April
2024

- Council consideration of UPRR agreement (\$345k) 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

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