Rider 49 - Grade Separations Project Study

Lockwood Drive south of Harrisburg Boulevard (DOT #859523F) and north of Clinton Drive (DOT #755646C)

December 2024

Texas Department of Transportation

Contents

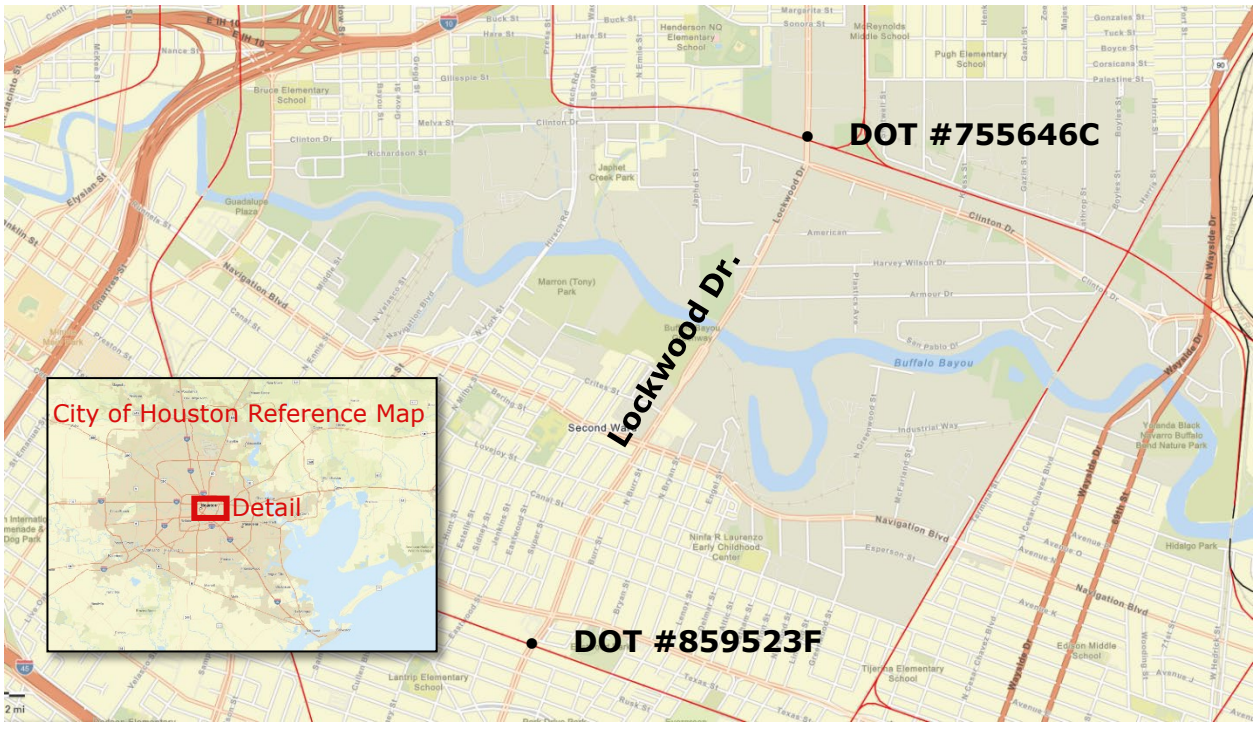
Executive Summary

The Texas Department of Transportation (TxDOT) was tasked to conduct a study to determine the feasibility, costs, and benefits of constructing roadway-railroad grade separation at two crossings in the vicinity of Lockwood Drive in Houston:

- Lockwood Drive at Union Pacific Railroad (UPRR) Galveston Subdivision (south of Harrisburg Boulevard) – DOT #859523F
- Lockwood Drive at UPRR Bell Line (north of Clinton Drive) – DOT #755646C

The possibility for a Lockwood Drive/UPRR Galveston Subdivision grade separation was thoroughly reviewed by METRO as part of its METRONext University Corridor Bus Rapid Transit (BRT) line. A grade separation is feasible at this location; however, stakeholder and public input identified a preference for a roadway underpass under the railroad, which adds significant cost and drainage challenges for the grade separation.

A review was conducted for a possible roadway overpass for a Lockwood Drive/UPRR Bell Line grade separation. Some different options were explored, with each option having different combinations of impacts related to access to Clinton Drive, driveway access, and potential right-of-way (ROW) acquisition. It was determined that a grade separation over the railroad but ending north of Clinton Drive was not feasible, but a grade separation over both the railroad and Clinton Drive was feasible with additional impacts.



Lockwood Drive at UPRR Galveston Subdivision

The grade crossing at Lockwood Drive at the UPRR Galveston Subdivision (DOT #859523F) is located south of Harrisburg Boulevard. The following subsections detail existing conditions at the crossing, previous work to date through the METRONext University Corridor BRT efforts, and findings from that effort for a possible grade separation at the crossing.

Existing Conditions

Located in the Eastwood neighborhood, the grade crossing at Lockwood Drive and the UPRR Galveston Subdivision (Figure 1) posts a roadway speed limit of 35 miles per hour for the four-lane, median-separated, principal arterial. The Greater Eastwood neighborhood was identified by the Texas Historical Commission as a National Register of Historic Places eligible historic district. The district also features an esplanade of trees along Lockwood, considered a neighborhood feature by the Eastwood Civic Association (ECA).

Figure 1: Grade Crossing at Lockwood Drive/UPRR Galveston Subdivision (Google Maps)

General train volumes per day for the single-track railroad are included within the Federal Railroad Administration's (FRA) 2019 Crossing Inventory Report and Train Count Database, which are summarized in Table 1. See **Appendix B** for the FRA Crossing Inventory Form for this crossing.

Table 1: Lockwood Drive/UPRR Galveston Subdivision 2019 Train Volumes (FRA)

Name	Total Number
Total Day Thru Trains 6am-6pm	2
Total Night Thru Train 6pm-6am	2
Total Switching Trains	16
Number of Tracks	1
Typical Train Speed of Crossing (Miles Per Hour)	10 to 20

FRA lists public roadway information within its Crossing Inventory database. The data shown in Table 2 shows the existing traffic conditions of Lockwood Drive, reported by the state agency and the U.S. Department of Transportation (USDOT). The FRA Crossing Inventory Form is included in **Appendix B**.

Table 2: Lockwood Drive 2019 Crossing Roadway Information (FRA)

Functional Classification of Roadway	Annual Average Daily Truck Traffic (2021)	Estimated Percentage of Traffic as Trucks
Urban, Other Principal Arterial	9,362	3

Previous Work – METRONext University Corridor BRT

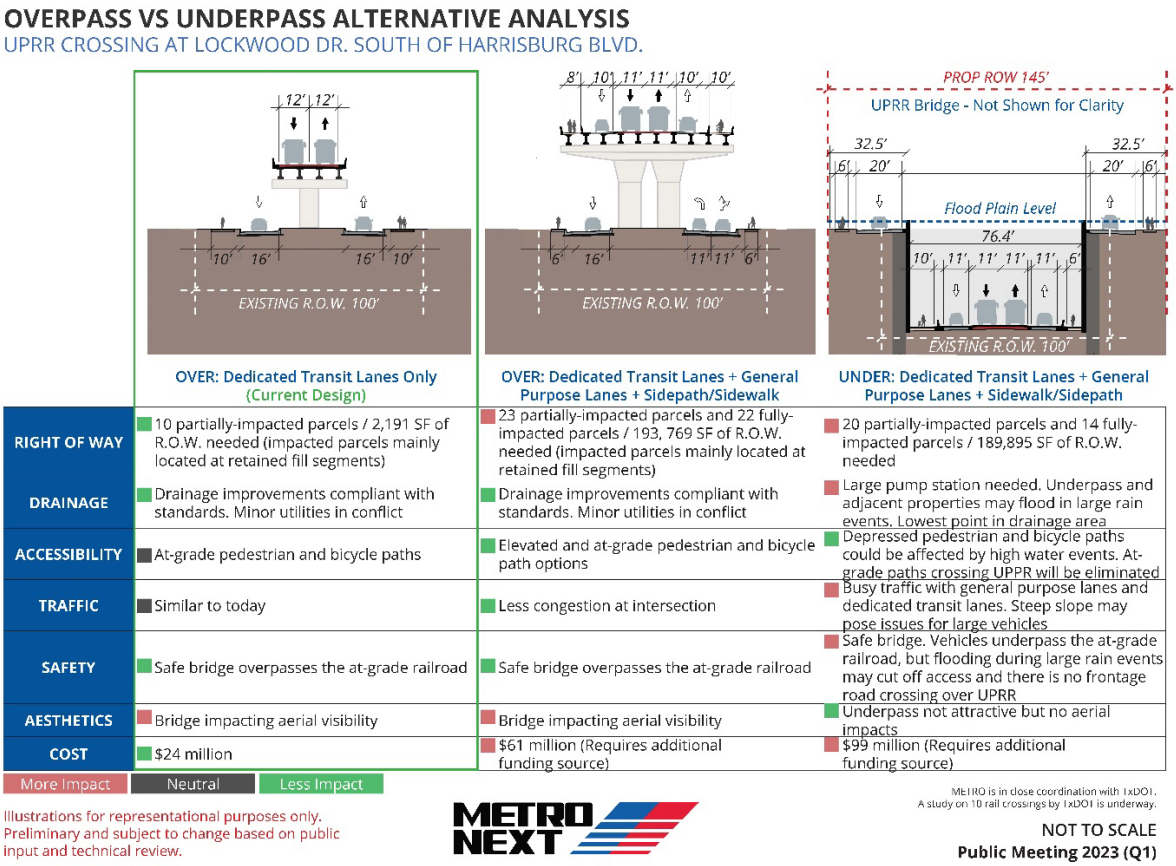
METRO, the regional transit authority, serves the project boundary and its facilities. In 2019, the transit authority received voter approval for the METRONext Bond Referendum program. Part of the projects selected under the new referendum include BRT facilities. The largest proposed BRT guideway in the nation, the University Corridor BRT, was selected to traverse Lockwood Drive between Spur 5 and Tidwell Drive. The fixed guideway would send BRT service from one side of the railroad grade crossing to another in a transit system.

Initially, the planning phase of the BRT line incorporated a roadway overpass in its designs, allowing vehicle traffic to travel above the UPRR railroad. As part of METRO's public engagement with Eastwood residents, the Eastwood Civic Association, and area stakeholders, the design at the Lockwood/UPRR Galveston Subdivision underwent an Overpass and Underpass Feasibility Analysis in 2023. Design challenges identified by METRO in the Underpass Feasibility Analysis include:

- 100-Year flood plain risks south of the UPRR,
- Substantial property acquisition/right-of-way impacts along Lockwood Drive, and
- Drainage challenges associated with significant rain event and complex infrastructure system requirements.

Figure 2 provides a summary of reviewed options, including the overpass and underpass options for both BRT and general traffic and a BRT-only grade-separated option. It is important to note that all options utilize at-grade crossings UPRR track to maintain local connections.

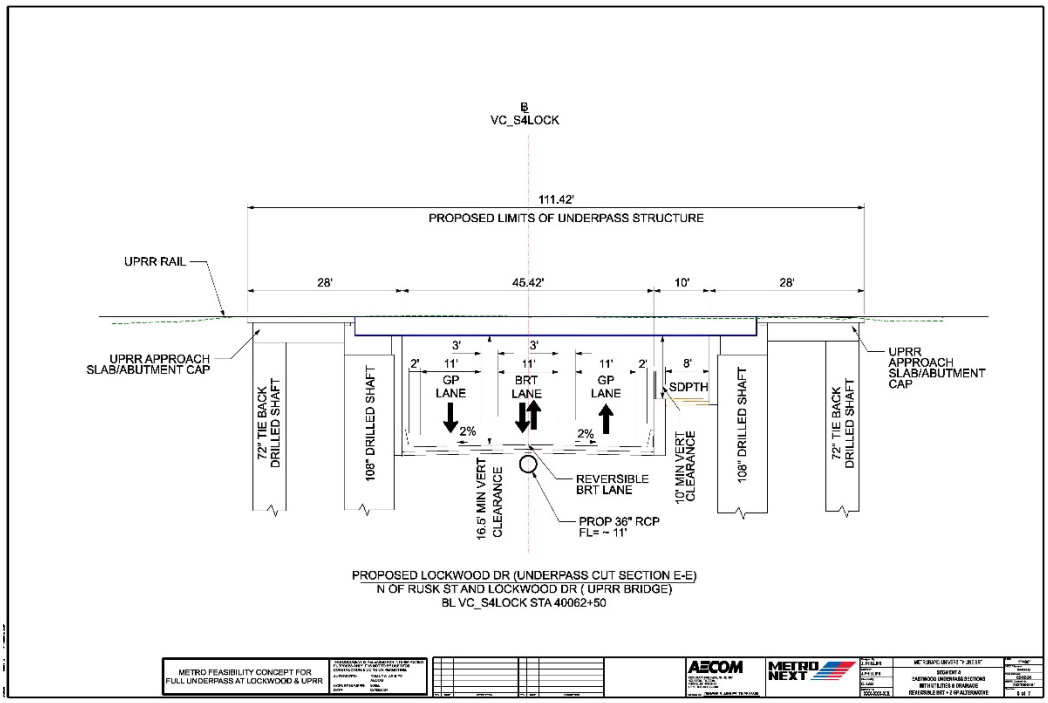
Figure 2: Overpass and Underpass Alternative Analysis (METRO)



Further public engagement and communication with stakeholders saw justification to change the design from an overpass to an alternative design. The Eastwood Civic Association (ECA) provided a detailed conditional approval letter for BRT guideway along the UPRR railroad citing several design changes, including a desire for an underpass similar in size and scale to the facility at Polk Street and Milby Street, multi-use paths for bike/pedestrian travel, and protection of the esplanade. Several alternatives were discussed, and a BRT-only underpass was chosen to alleviate crossing queues.

In the fall of 2023, METRO began looking at the feasibility of taking all traffic into the underpass rather than the BRT-only lanes. This was based on stakeholder concerns that general purpose traffic being at-grade would not fully alleviate the challenges at the crossing. The response from METRO was to evaluate taking all traffic lanes to below grade. The full underpass contains two general purpose lanes and one reversible BRT lane under the UPRR track. Figure 3 shows a conceptual design image of the full underpass.

Figure 3: Proposed Full Underpass Conceptual Design at UPRR Galveston Subdivision (METRO)



The underpass would be protected from the 100-year sheet flow Water Surface Elevation (WSEL) on three sides to meet drainage requirements. Additionally, needs such as a mile-long force main outfall and a pump station with multiple pumps would be required for the full underpass. In its analysis, METRO also provided evaluation of traffic and ROW impacts, current and future utility impacts, constructability challenges and cost for the project. See **Appendix A** for a more detailed typical section and an approach section for this underpass option.

METRO designed a full underpass at Lockwood Drive/UPRR Galveston Subdivision to a 30-pecent completion. This level of design advances a preferred alternative for environmental clearances and reasonable estimates of infrastructure needs and costs. The cost estimate was $166M in 2023 dollars. The design change resulted in an increase of $5 million from the 30-percent BRT-only underpass.

Summary of Findings

Benefits of a roadway-railroad grade separation at this location would include travel time savings, increased safety and reduction of crashes, and environmental benefits from a reduction of emissions. Based on previous work from METRO on its University Corridor BRT line a roadway-railroad grade separation is feasible at the Lockwood Drive/UPRR Galveston Subdivision crossing. Public and stakeholder feedback preferred a roadway underpass at the crossing, but this option has challenges and additional costs to alleviate those challenges.

Lockwood Drive at UPRR Bell Line

The grade crossing at Lockwood Drive at the UPRR Bell Line (DOT #755646C) is located north of Clinton Drive. The following subsections detail existing conditions at the crossing, previous work to date through the METRONext University Corridor BRT efforts, additional feasibility review, and findings from those efforts for a possible grade separation at the crossing.

Existing Conditions

The grade crossing at Lockwood Drive and the UPRR Bell Line posts a roadway speed limit of 35 miles per hour for the four-lane, median-separated, principal arterial. Figure 4 details the existing crossing details.

Figure 4: Grade Crossing at Lockwood Drive/UPRR Bell Line (Google Maps)

General train volumes per day for the single-track railroad are included within the Federal Railroad Administration's (FRA) 2022 Crossing Inventory Report and Train Count Database, which are summarized in Table 3. See **Appendix B** for the FRA Crossing Inventory Form for this crossing.

Table 3: Lockwood Drive/UPRR Bell Line 2022 Train Volumes (FRA)

Name	Total Number
Total Day Thru Trains 6am-6pm	0
Total Night Thru Train 6pm-6am	0
Total Switching Trains	3
Number of Tracks	1
Typical Train Speed of Crossing (Miles Per Hour)	5 to 10

FRA lists public roadway information within its Crossing Inventory database. The data shown in Table 4 shows the existing traffic conditions of Lockwood Drive, reported by the state agency and U.S. Department of Transportation (USDOT). The FRA Crossing Inventory Form is included in **Appendix B**.

Table 4: Lockwood Drive 2019 Crossing Roadway Information (FRA)

Functional Classification of Roadway	Annual Average Daily Truck Traffic (2021)	Estimated Percentage of Traffic as Trucks
Urban, Other Principal Arterial	14,521	3

Previous Work – METRONext University Corridor BRT

METRO, the regional transit authority, serves the project boundary and its facilities. In 2019, the transit authority received voter approval for the METRONext Bond Referendum program. Part of the projects selected under the new referendum include BRT facilities. The largest proposed BRT guideway in the nation, the University Corridor BRT, was selected to traverse Lockwood Drive between Spur 5 and Tidwell Drive. The fixed guideway would send BRT service from one side of the railroad grade crossing to another in a transit system.

The University Corridor BRT line was proposed to be elevated over Clinton Drive and the UPRR Bell Line while leaving other general purpose lanes at grade. The University Corridor BRT efforts did not review the possibility of a grade separation starting north of Clinton Drive over the UPRR Bell Line.

Additional Feasibility Review

HNTB Corporation performed a high-level review for a potential grade separation over the UPRR Bell Line to not impact Clinton Drive. Assumptions used to determine potential feasibility of the roadway overpass include:

- The crossing is 330 feet from the track with an assumed UPRR ROW width of 50 feet.

- UPRR requires 23’-4” vertical clearance from top of rail to bottom of bridge structure throughout UPRR ROW. An assumed structure depth of 6 feet would require 29’-4” over the UPRR ROW.
- A 7% maximum vertical grade is assumed based on the 35 mph roadway speed and roadway designation as an urban arterial per the TxDOT *Roadway Design Manual*.

The above assumptions and vertical curve requirements add up to a distance for a possible grade separation from the UPRR Bell Line track to edge of overpass is 717 feet, which would push the grade separation retained section within the Clinton Drive/Lockwood Drive intersection. This particular option would not appear to be feasible due to that impact.

Another reviewed option was a grade separation over both the UPRR Bell Line and Clinton Drive. While the retained fill for this option would not impact Clinton Drive, it would not provide connectivity from Lockwood Drive to Clinton Drive. Further, this would remove access for at least a couple businesses along Lockwood Drive south of Clinton Drive. A probable construction cost in 2024 dollars for this option is estimated at around $68 million.

A third option incorporating the grade separation over both the UPRR Bell Line and Clinton Drive but providing at-grade access roads for connectivity to Clinton Drive was also considered. However, this option would:

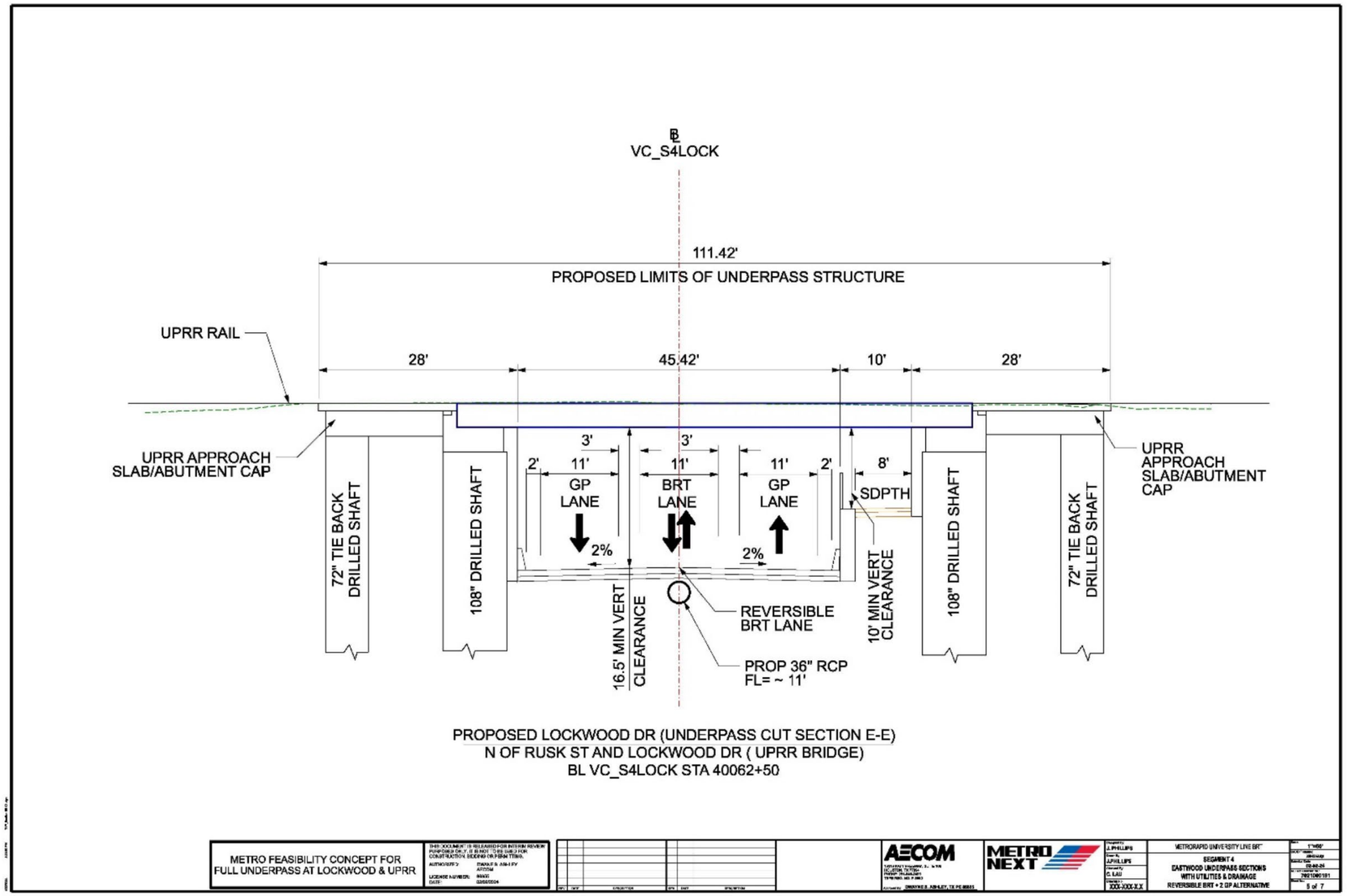
- Require two grade crossings at the UPRR Bell Line (one for each access road) and
- Require ROW acquisition to accommodate the overpass, access roads, and other bike/pedestrian elements.

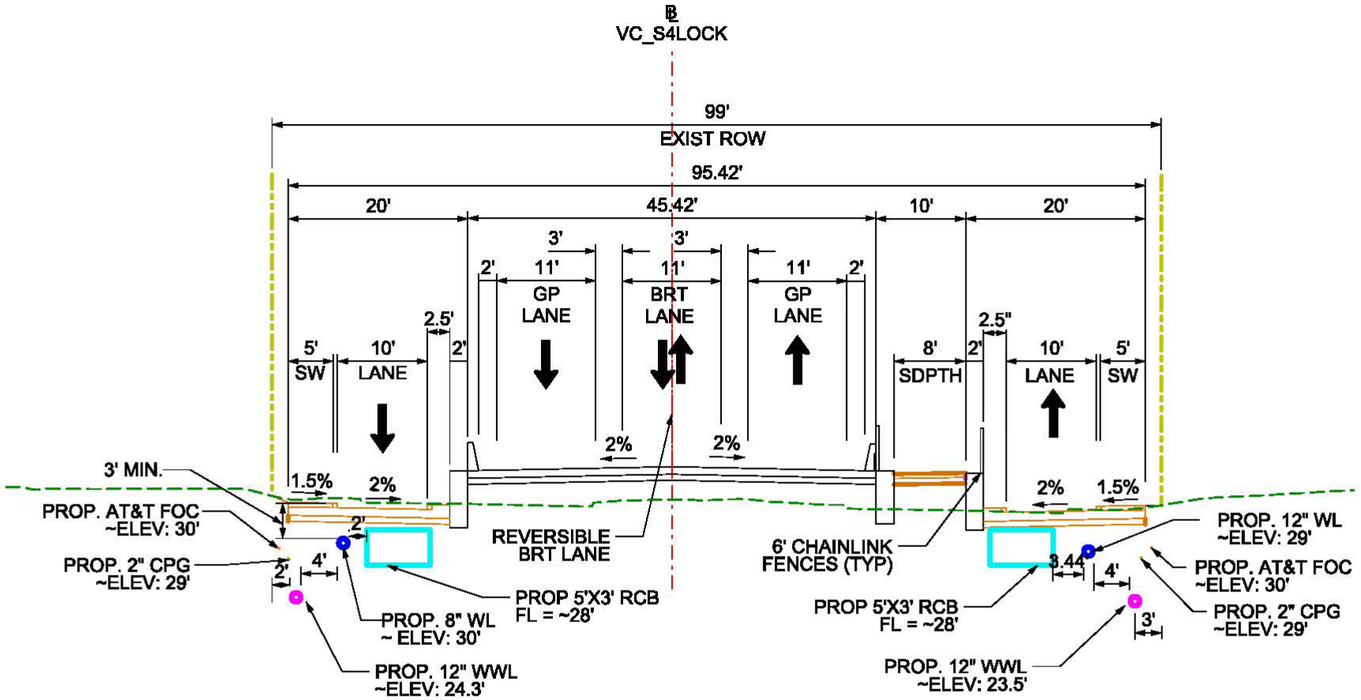
Summary of Findings

Benefits of a roadway-railroad grade separation at this location would include travel time savings, increased safety and reduction of crashes, and environmental benefits from a reduction of emissions. A possible grade separation (roadway overpass) at the Lockwood Drive/UPRR Bell Line crossing is not feasible if connecting the grade separation prior to the Clinton Drive/Lockwood Drive intersection. A grade separation is feasible over both the UPRR Bell Line and Clinton Drive but has impacts related to roadway/vehicle access, property access, and ROW acquisition based on the option.

Appendix A: METRONext University Corridor BRT Full Underpass Typical Section

This appendix contains the typical section for the Full Underpass, prepared for the METRONext BRT system. Figure 3 contains a section cut reference from the Appendix.





PROPOSED LOCKWOOD DR (UNDERPASS CUT SECTION B-B)
BETWEEN MCKINNEY ST TO WALKER ST ALONG LOCKWOOD
BL VC_S4LOCK STA 40056+50

FOR HORIZONTAL SEPARATIONS BETWEEN WWL AND WL LESS THAN 9',

1. *EITHER THE WWL OR WL IS CONSTRUCTED WITH APPROVED RESTRAINED JOINTS IN AN APPROVED CONTINUOUS CASING WITH AT LEAST TWO NOMINAL SIZES LARGER THAN THE CARRIER PIPE*
2. *EXISTING SS SHALL REPLACED WITH LINED DUCTILE IRON PIPE OR PVC PIPE MEETING ASTM SPECIFICATIONS, HAVING A MINIMUM WORKING PRESSURE RATING OF 150 PSI OR GREATER, AND EQUIPPED WITH PRESSURE TYPE JOINTS*
3. *ALL EXISTING AND PROPOSED MHS ARE TO BE MADE WATERTIGHT AND TESTED FOR NO LEAKAGE.*

METRO FEASIBILITY CONCEPT FOR FULL UNDERPASS AT LOCKWOOD & UPRR

AECOM

METRO NEXT

METRORAPID UNIVERSITY LINE BRT
SEGMENT 4
EASTWOOD UNDERPASS SECTIONS
WITH UTILITIES AND DRAINAGE
REVERSIBLE BRT + 2 GP ALTERNATIVE

Appendix B: USDOT FRA Crossing Inventory Forms

Lockwood Drive at UPRR Galveston Subdivision (DOT #859523F)

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

A. Revision Date (MM/DD/YYYY)	B. Reporting Agency	C. Reason for Update (Select only one)	D. DOT Crossing Inventory Number
09 / 24 / 2021	☐ Railroad ☐ Transit ☒ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	859523F

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
Union Pacific Railroad Company [UP]	TEXAS	HARRIS

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☒ In ☐ Near HOUSTON	LOCKWOOD STREET (Street/Road Name) | * (Block Number)	ST 0000

7. Do Other Railroads Operate a Separate Track at Crossing? ☐ Yes ☒ No	8. Do Other Railroads Operate Over Your Track at Crossing? ☐ Yes ☒ No
If Yes, Specify RR	If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None HOUSTON	☐ None GALVESTON SUB	☒ None	(prefix) | 0001.150 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
		☒ N/A	☐ N/A UP

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Intercity Passenger ☐ Commuter ☐ Transit ☐ Shared Use Transit ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☒ Commercial ☐ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 29.7421389	(WGS84 std: -nnn.nnnnnnn) -95.3296355	☒ Actual ☐ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use * State Phone# updated - date updated: 2018-08-16
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-848-8715	402-544-3721	512-416-2635

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
2	2	16	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2019	3.A. Maximum Timetable Speed (mph) 20 3.B. Typical Speed Range Over Crossing (mph) From 10 to 20

4. Type and Count of Tracks
Main 1 Siding 0 Yard 0 Transit 0 Industry 0

5. Train Detection (Main Track only)
☒ Constant Warning Time ☐ Motion Detection ☐ AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No

FORM FRA F 6180.71 (Rev. 3/15) OMB approval expires 01/31/2026 Page 1 OF 2

U. S. DOT CROSSING INVENTORY FORM

A. Revision Date *(MM/DD/YYYY)*	PAGE 2	D. Crossing Inventory Number *(7 char.)*
09/24/2021		859523F

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies *(count)*	2.B. STOP Signs *(R1-1) (count)*	2.C. YIELD Signs *(R1-2) (count)*	2.D. Advance Warning Signs *(Check all that apply; include count)* ☐ None
0	0	0	☒ W10-1 2 ☐ W10-3 ☐ W10-11 ☐ W10-2 ☐ W10-4 ☐ W10-12

2.E. Low Ground Clearance Sign *(W10-5)*	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign *(R15-3)*	2.I. ENS Sign *(I-13)* Displayed
☐ Yes *(count)* ☒ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☒ All Approaches ☒ Median ☐ One Approach ☐ None	☐ Yes ☒ No	☒ Yes ☐ No

2.J. Other MUTCD Signs ☐ Yes ☒ No	2.K. Private Crossing Signs *(if private)*	2.L. LED Enhanced Signs *(List types)*
Specify Type / Count	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing *(specify count of each device for all that apply)*

3.A. Gate Arms *(count)*	3.B. Gate Configuration	3.C. Cantilevered *(or Bridged)* Flashing Light Structures *(count)*	3.D. Mast Mounted Flashing Lights *(count of masts)* 4	3.E. Total Count of Flashing Light Pairs
Roadway 2 Pedestrian	☒ 2 Quad ☐ Full *(Barrier)* Resistance ☐ 3 Quad ☐ 4 Quad ☐ Median Gates	Over Traffic Lane 2 ☐ Incandescent Not Over Traffic Lane 0 ☒ LED	☐ Incandescent ☒ LED ☐ Back Lights Included ☐ Side Lights Included	6

3.F. Installation Date of Current Active Warning Devices: *(MM/YYYY)*	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells *(count)*
☒ Not Required	☐ Yes Installed on *(MM/YYYY)* ☒ No	☐ Yes ☒ No	2

3.J. Non-Train Active Warning ☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None

3.K. Other Flashing Lights or Warning Devices Count 0 Specify type

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices *(Check all that apply)*
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☒ No Storage Distance * Stop Line Distance *	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? *(Street lights within approx. 50 feet from nearest rail)*
☐ One-way Traffic ☒ Two-way Traffic ☐ Divided Traffic Number of Lanes 4	☒ Yes ☐ No	☐ Yes ☒ No	☒ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * *(MM/YYYY)* Width * 10 Length * 104

☒ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal ☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)*

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☐ Yes ☒ No If Yes, Approximate Distance *(feet)*	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☒ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☐ (08) Non-Federal Aid	☐ (0) Rural ☒ (1) Urban ☐ (1) Interstate ☐ (5) Major Collector ☐ (2) Other Freeways and Expressways ☒ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	35 MPH ☒ Posted ☐ Statutory
		5. Linear Referencing System *(LRS Route ID)* *	
		6. LRS Milepost *	

7. Annual Average Daily Traffic *(AADT)*	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 2021 AADT 009362	03 %	☐ Yes ☒ No Average Number per Day	☐ Yes ☒ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by Organization Phone Date

U. S. DOT CROSSING INVENTORY FORM

DEPARTMENT OF TRANSPORTATION
FEDERAL RAILROAD ADMINISTRATION

OMB No. 2130-0017

Instructions for the initial reporting of the following types of new or previously unreported crossings: For public highway-rail grade crossings, complete the entire inventory Form. For private highway-rail grade crossings, complete the Header, Parts I and II, and the Submission Information section. For public pathway grade crossings (including pedestrian station grade crossings), complete the Header, Parts I and II, and the Submission Information section. For Private pathway grade crossings, complete the Header, Parts I and II, and the Submission Information section. For grade-separated highway-rail or pathway crossings (including pedestrian station crossings), complete the Header, Part I, and the Submission Information section. For changes to existing data, complete the Header, Part I Items 1-3, and the Submission Information section, in addition to the updated data fields. Note: For private crossings only, Part I Item 20 and Part III Item 2.K. are required unless otherwise noted. An asterisk * denotes an optional field.

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10 / 14 / 2022	☐ Railroad ☐ Transit ☒ State ☐ Other	☒ Change in Data ☐ New Crossing ☐ Closed ☐ No Train Traffic ☐ Quiet Zone Update ☐ Re-Open ☐ Date Change Only ☐ Change in Primary Operating RR ☐ Admin. Correction	755646C

Part I: Location and Classification Information

1. Primary Operating Railroad	2. State	3. County
Union Pacific Railroad Company [UP]	TEXAS	HARRIS

4. City / Municipality	5. Street/Road Name & Block Number	6. Highway Type & No.
☒ In ☐ Near HOUSTON	Lockwood Drive (Street/Road Name) | * (Block Number)	ST 0000

7. Do Other Railroads Operate a Separate Track at Crossing?	8. Do Other Railroads Operate Over Your Track at Crossing?
☐ Yes ☒ No If Yes, Specify RR	☐ Yes ☒ No If Yes, Specify RR

9. Railroad Division or Region	10. Railroad Subdivision or District	11. Branch or Line Name	12. RR Milepost
☐ None HOUSTON	☐ None Bell Line @Houston	☒ None	(prefix) | 0001.920 (nnnn.nnn) | (suffix)

13. Line Segment *	14. Nearest RR Timetable Station *	15. Parent RR (if applicable)	16. Crossing Owner (if applicable)
		☒ N/A	☐ N/A UP

17. Crossing Type	18. Crossing Purpose	19. Crossing Position	20. Public Access (if Private Crossing)	21. Type of Train	22. Average Passenger Train Count Per Day
☒ Public ☐ Private	☒ Highway ☐ Pathway, Ped. ☐ Station, Ped.	☒ At Grade ☐ RR Under ☐ RR Over	☐ Yes ☐ No	☒ Freight ☐ Transit ☐ Intercity Passenger ☐ Shared Use Transit ☐ Commuter ☐ Tourist/Other	☐ Less Than One Per Day ☐ Number Per Day 0

23. Type of Land Use
☐ Open Space ☐ Farm ☐ Residential ☐ Commercial ☒ Industrial ☐ Institutional ☐ Recreational ☐ RR Yard

24. Is there an Adjacent Crossing with a Separate Number?	25. Quiet Zone (FRA provided)
☐ Yes ☒ No If Yes, Provide Crossing Number	☒ No ☐ 24 Hr ☐ Partial ☐ Chicago Excused Date Established

26. HSR Corridor ID	27. Latitude in decimal degrees	28. Longitude in decimal degrees	29. Lat/Long Source
☒ N/A	(WGS84 std: nn.nnnnnnn) 29.7646921	(WGS84 std: -nnn.nnnnnnn) -95.3155325	☒ Actual ☐ Estimated

30.A. Railroad Use *	31.A. State Use *
30.B. Railroad Use *	31.B. State Use *
30.C. Railroad Use *	31.C. State Use * State Phone# updated - date updated: 2018-08-16
30.D. Railroad Use *	31.D. State Use *
32.A. Narrative (Railroad Use) *	32.B. Narrative (State Use) *

33. Emergency Notification Telephone No. (posted)	34. Railroad Contact (Telephone No.)	35. State Contact (Telephone No.)
800-848-8715	402-544-3721	512-416-2635

Part II: Railroad Information

1. Estimated Number of Daily Train Movements

1.A. Total Day Thru Trains (6 AM to 6 PM)	1.B. Total Night Thru Trains (6 PM to 6 AM)	1.C. Total Switching Trains	1.D. Total Transit Trains	1.E. Check if Less Than One Movement Per Day ☐ How many trains per week?
0	0	3	0	

2. Year of Train Count Data (YYYY)	3. Speed of Train at Crossing
2019	3.A. Maximum Timetable Speed (mph) 10 3.B. Typical Speed Range Over Crossing (mph) From 5 to 10

4. Type and Count of Tracks
Main 0 Siding 0 Yard 0 Transit 0 Industry 1

5. Train Detection (Main Track only)
☒ Constant Warning Time ☐ Motion Detection ☐ AFO ☐ PTC ☐ DC ☐ Other ☐ None

6. Is Track Signaled?	7.A. Event Recorder	7.B. Remote Health Monitoring
☐ Yes ☒ No	☐ Yes ☒ No	☐ Yes ☒ No

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U. S. DOT CROSSING INVENTORY FORM

A. Revision Date (MM/DD/YYYY)	PAGE 2	D. Crossing Inventory Number (7 char.)
10/14/2022		755646C

Part III: Highway or Pathway Traffic Control Device Information

1. Are there Signs or Signals? ☒ Yes ☐ No

2. Types of Passive Traffic Control Devices associated with the Crossing

2.A. Crossbuck Assemblies (count)	2.B. STOP Signs (R1-1) (count)	2.C. YIELD Signs (R1-2) (count)	2.D. Advance Warning Signs (Check all that apply; include count) ☐ None
0	0		☒ W10-1 1 ☐ W10-3 ☐ W10-11 ☐ W10-2 ☐ W10-4 ☐ W10-12

2.E. Low Ground Clearance Sign (W10-5)	2.F. Pavement Markings	2.G. Channelization Devices/Medians	2.H. EXEMPT Sign (R15-3)	2.I. ENS Sign (I-13) Displayed
☐ Yes (count 0) ☒ No	☒ Stop Lines ☐ Dynamic Envelope ☒ RR Xing Symbols ☐ None	☒ All Approaches ☒ Median ☐ One Approach ☐ None	☐ Yes ☒ No	☒ Yes ☐ No

2.J. Other MUTCD Signs	2.K. Private Crossing Signs (if private)	2.L. LED Enhanced Signs (List types)
☐ Yes ☒ No Specify Type ____ Count 0 Specify Type ____ Count 0 Specify Type ____ Count ____	☐ Yes ☐ No	

3. Types of Train Activated Warning Devices at the Grade Crossing ***(specify count of each device for all that apply)***

3.A. Gate Arms (count)	3.B. Gate Configuration	3.C. Cantilevered (or Bridged) Flashing Light Structures (count)	3.D. Mast Mounted Flashing Lights (count of masts) 4	3.E. Total Count of Flashing Light Pairs
Roadway 4 Pedestrian ____	☒ 2 Quad ☐ Full (Barrier) Resistance ☐ 3 Quad ☐ 4 Quad ☐ Median Gates	Over Traffic Lane 0 ☐ Incandescent Not Over Traffic Lane 0 ☐ LED	☐ Incandescent ☒ LED ☒ Back Lights Included ☐ Side Lights Included	8

3.F. Installation Date of Current Active Warning Devices: (MM/YYYY)	3.G. Wayside Horn	3.H. Highway Traffic Signals Controlling Crossing	3.I. Bells (count)
____/____ ☒ Not Required	☐ Yes Installed on (MM/YYYY) ____/____ ☒ No	☐ Yes ☒ No	2

3.J. Non-Train Active Warning	3.K. Other Flashing Lights or Warning Devices
☐ Flagging/Flagman ☐ Manually Operated Signals ☐ Watchman ☐ Floodlighting ☐ None	Count 0 Specify type ____

4.A. Does nearby Hwy Intersection have Traffic Signals?	4.B. Hwy Traffic Signal Interconnection	4.C. Hwy Traffic Signal Preemption	5. Highway Traffic Pre-Signals	6. Highway Monitoring Devices (Check all that apply)
☐ Yes ☐ No	☐ Not Interconnected ☐ For Traffic Signals ☐ For Warning Signs	☐ Simultaneous ☐ Advance	☐ Yes ☒ No Storage Distance * ____ Stop Line Distance * ____	☐ Yes - Photo/Video Recording ☐ Yes – Vehicle Presence Detection ☐ None

Part IV: Physical Characteristics

1. Traffic Lanes Crossing Railroad	2. Is Roadway/Pathway Paved?	3. Does Track Run Down a Street?	4. Is Crossing Illuminated? (Street lights within approx. 50 feet from nearest rail)
☐ One-way Traffic ☒ Two-way Traffic ☐ Divided Traffic Number of Lanes 6	☒ Yes ☐ No	☐ Yes ☒ No	☒ Yes ☐ No

5. Crossing Surface *(on Main Track, multiple types allowed)* Installation Date * (MM/YYYY) ____/____ Width * ____ Length * 104
☐ 1 Timber ☐ 2 Asphalt ☐ 3 Asphalt and Timber ☒ 4 Concrete ☐ 5 Concrete and Rubber ☐ 6 Rubber ☐ 7 Metal
☐ 8 Unconsolidated ☐ 9 Composite ☐ 10 Other *(specify)* ____

6. Intersecting Roadway within 500 feet?	7. Smallest Crossing Angle	8. Is Commercial Power Available? *
☐ Yes ☒ No If Yes, Approximate Distance *(feet)* ____	☐ 0° – 29° ☐ 30° – 59° ☒ 60° - 90°	☒ Yes ☐ No

Part V: Public Highway Information

1. Highway System	2. Functional Classification of Road at Crossing	3. Is Crossing on State Highway System?	4. Highway Speed Limit
☐ (01) Interstate Highway System ☒ (02) Other Nat Hwy System (NHS) ☐ (03) Federal AID, Not NHS ☐ (08) Non-Federal Aid	☐ (0) Rural ☒ (1) Urban ☐ (1) Interstate ☐ (5) Major Collector ☐ (2) Other Freeways and Expressways ☒ (3) Other Principal Arterial ☐ (6) Minor Collector ☐ (4) Minor Arterial ☐ (7) Local	☐ Yes ☒ No	30 MPH ☒ Posted ☐ Statutory
		5. Linear Referencing System *(LRS Route ID)* *	
		6. LRS Milepost *	

7. Annual Average Daily Traffic (AADT)	8. Estimated Percent Trucks	9. Regularly Used by School Buses?	10. Emergency Services Route
Year 2019 AADT 14521	3 %	☐ Yes ☒ No Average Number per Day 0	☐ Yes ☐ No

Submission Information - *This information is used for administrative purposes and is not available on the public website.*

Submitted by ____ Organization ____ Phone ____ Date ____