



NORTH CAROLINA
Department of Transportation

Piedmont Transportation Professionals Forum

Rail Division

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Connecting people, products and places safely and efficiently with customer focus, accountability and environmental sensitivity to enhance the economy and vitality of North Carolina

BeRailSafe Lunch and Learn Preview

- Course Introduction
- Who is at Risk for Rail Related Injury?
- Trespasser Demographics
- Perception vs Reality
- Scope of the Issue
- Treatments and Preemptive Solutions

Course Introduction

- Pedestrian (trespasser) Perceptions and Risks
- Crossing Mitigation
- NC Statistics
- Case Study Examples
- Resources and Potential Solutions

Course Objective

Conduct outreach with community stakeholders to better relay rail safety issues related to pedestrians (trespassers) in the right-of-way and highway-rail grade crossings providing low-cost resources that can help “close the gap”.

Who is Walking in the ROW?

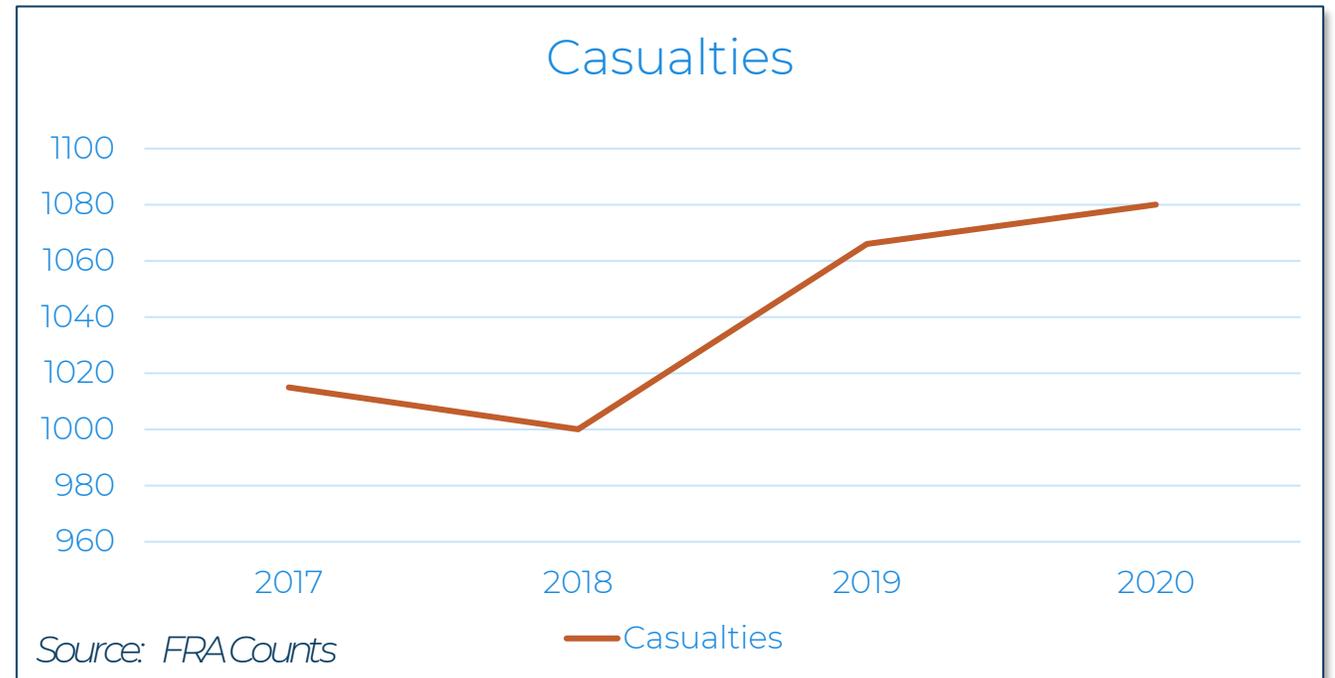
Many diverse groups with single and multiple users



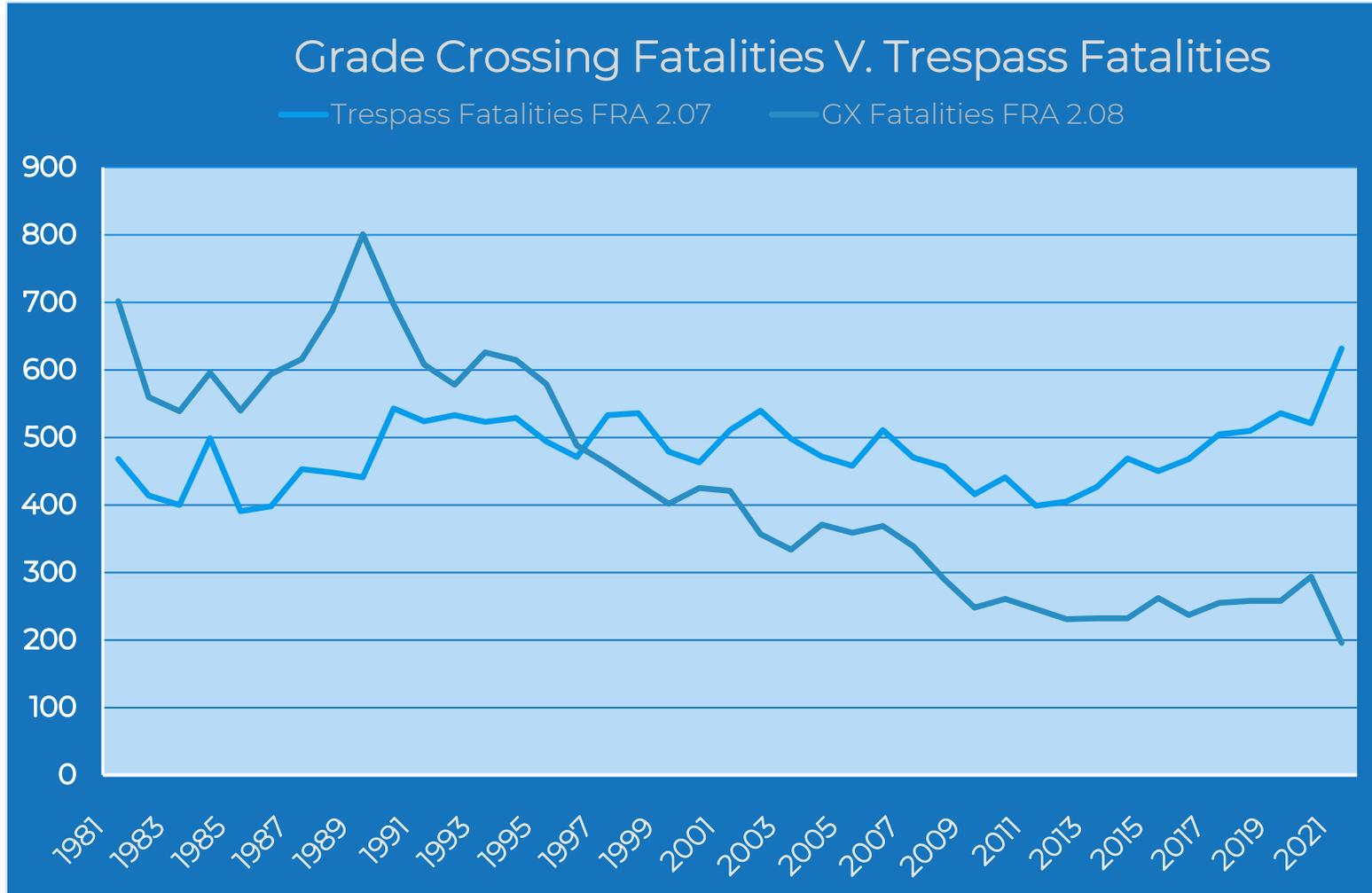
How many people are hurt/killed?

More than 1,000 people a year are reported killed or injured walking in the ROW.

Likely underrepresented sample



U.S. Grade Crossing & Trespassing Fatality Counts 1981-2021



1981-2021

NOTE: Section 130 program began 1987

Trespass fatalities
35% * increase

GX fatalities
82%*
reduction

* 2021 FRA data incomplete

Summary NC Rail Incident Costs from 2010-2021 (in \$2022)

Casualty, Delay, Rerouting, Supply Chain, Emergency Responder, Emissions, +

Year	Casualty Costs ¹	Equipment Damage ²	Delay, Rerouting & Supply Chain ³	Emissions Costs ⁴	Operating Costs ⁵	Emergency Responder Costs ⁶	Total Costs
2010	\$238,390,000	\$9,137,000	\$892,000	\$117,000	\$68,000	\$72,000	\$248,677,000
2011	\$201,890,000	\$4,176,000	\$1,235,000	\$129,000	\$74,000	\$164,000	\$207,667,000
2012	\$203,629,000	\$3,018,000	\$757,000	\$109,000	\$63,000	\$85,000	\$207,661,000
2013	\$310,758,000	\$3,674,000	\$1,761,000	\$168,000	\$95,000	\$85,000	\$316,542,000
2014	\$296,430,000	\$4,033,000	\$1,666,000	\$162,000	\$93,000	\$184,000	\$302,569,000
2015	\$285,010,000	\$5,576,000	\$1,707,000	\$161,000	\$92,000	\$103,000	\$292,650,000
2016	\$328,820,000	\$3,357,000	\$1,405,000	\$135,000	\$77,000	\$78,000	\$333,871,000
2017	\$203,629,000	\$3,062,000	\$1,244,000	\$139,000	\$79,000	\$71,000	\$208,226,000
2018	\$373,481,000	\$12,137,000	\$2,973,000	\$194,000	\$110,000	\$189,000	\$389,084,000
2019	\$290,738,000	\$4,199,000	\$1,808,000	\$151,000	\$84,000	\$69,000	\$297,048,000
2020	\$170,587,000	\$3,273,000	\$944,000	\$93,000	\$53,000	\$70,000	\$175,020,000
2021	\$341,175,000	\$6,546,000	\$1,888,000	\$185,000	\$106,000	\$141,000	\$350,041,000
Total	\$3,244,537,000	\$62,188,000	\$18,280,000	\$1,743,000	\$994,000	\$1,311,000	\$3,329,056,000

¹Monetized cost of injuries using the KABCO injury scale at unknown injury severity and the USDOT value of statistical life for fatalities (see "Monetized Casualty Costs" for methodology)

²Equipment damage reported on FRA form 6180.54 and 6180.57 (Train Accidents and Highway-Rail Accidents) from 2010-2019, converted to \$2020 (see "Property Damage Costs" for methodology)

³Includes value of time for passengers and workers, opportunity, spoilage, useful life, and replacement costs for cargo, and up/downstream delay effects (see "Delay, Rerouting, and Supply Chain Costs" for methodology)

⁴Includes emissions costs resulting from additional locomotive runtime (see "Additional Emissions Costs" for methodology)

⁵Includes fuel and ownership costs resulting from additional locomotive runtime (see "Additional Operating Costs" for methodology)

⁶Includes first responder and emergency personnel and equipment costs resulting from an incident (see "First Responder and Emergency Management Costs" for methodology)

Myths

Right of Way

- *Perception*
“Walking across or down the railroad tracks or in the right-of-way is legal.”
- *Reality*
Railroads are privately owned and cannot be used by pedestrians or any other modality

Event Types

- *Perception*
“Most casualties on the tracks are from homeless camps or suicide attempts!”
- *Reality*
All kinds of people use rail lines for various reasons. Most just want to get somewhere using the quickest route

Myths Continued

Train Noise

- *Perception*
“Trains are loud! You should have PLENTY of time to get out of the way!”
- *Reality*
By the time a pedestrian hears an oncoming train, it may already be too late.

Reaction Time

- *Perception*
“If I hear or see a train, there is PLENTY of time to get out of the way!”
- *Reality*
You may not actually see the train until it is too late.

Myths Continued

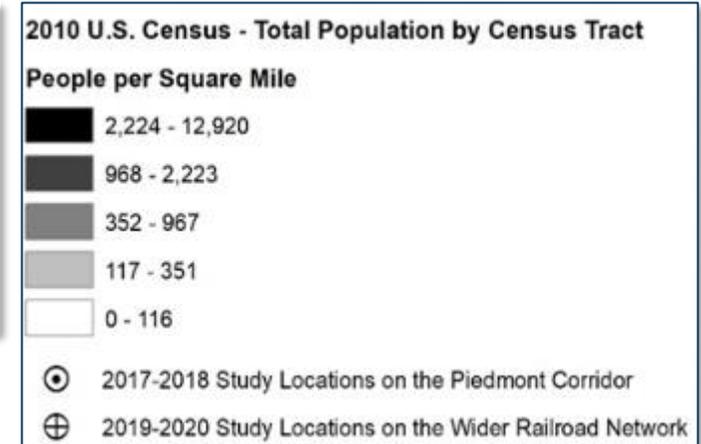
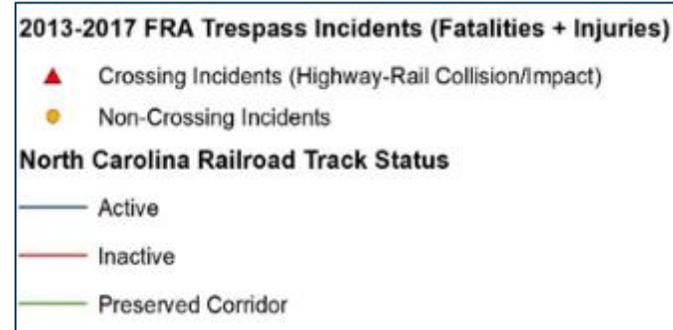
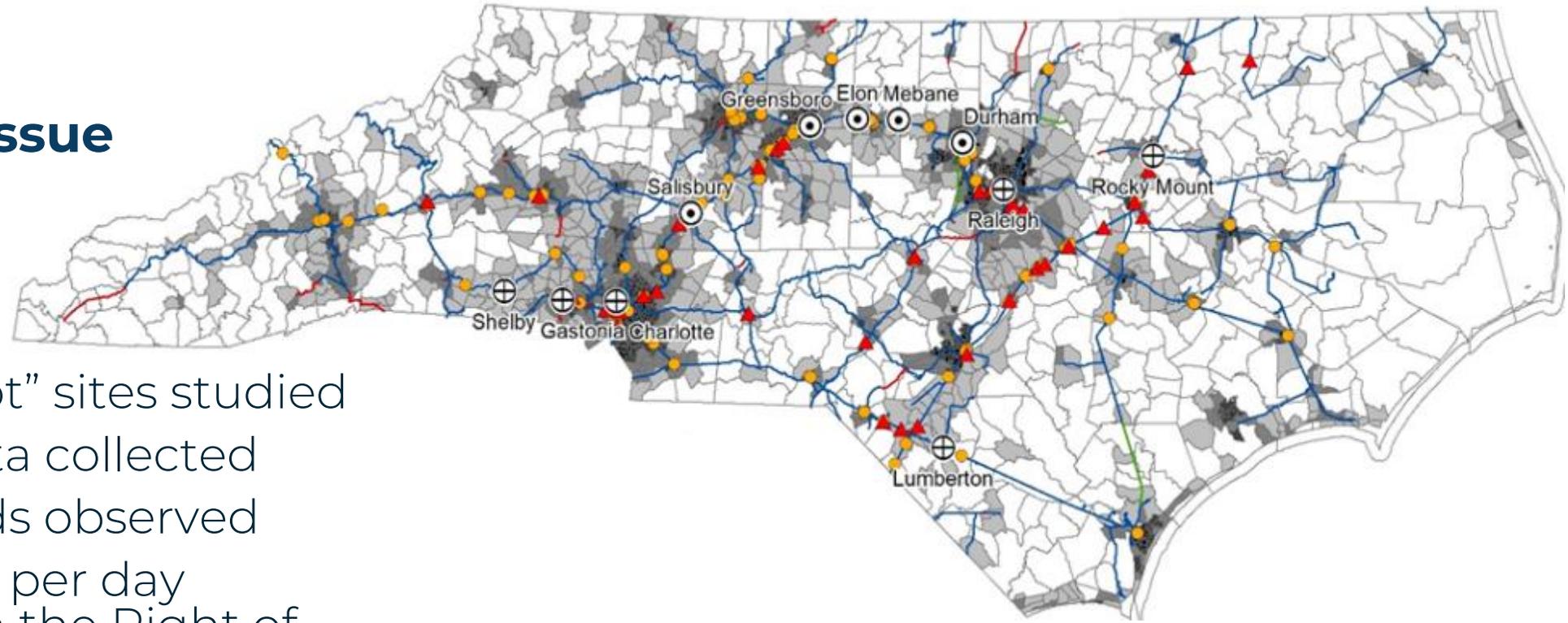
Rail Emergency Response

- *Perception*
“If my vehicle gets stuck on the tracks, I should call a tow truck and 911”
- *Reality*
 - Get yourself and anyone with you off the tracks
 - Locate the Emergency Notification Sign (Blue Sign)
 - Call the phone number on the sign
 - Give the dispatcher the Crossing ID (6 numbers 1 letter)

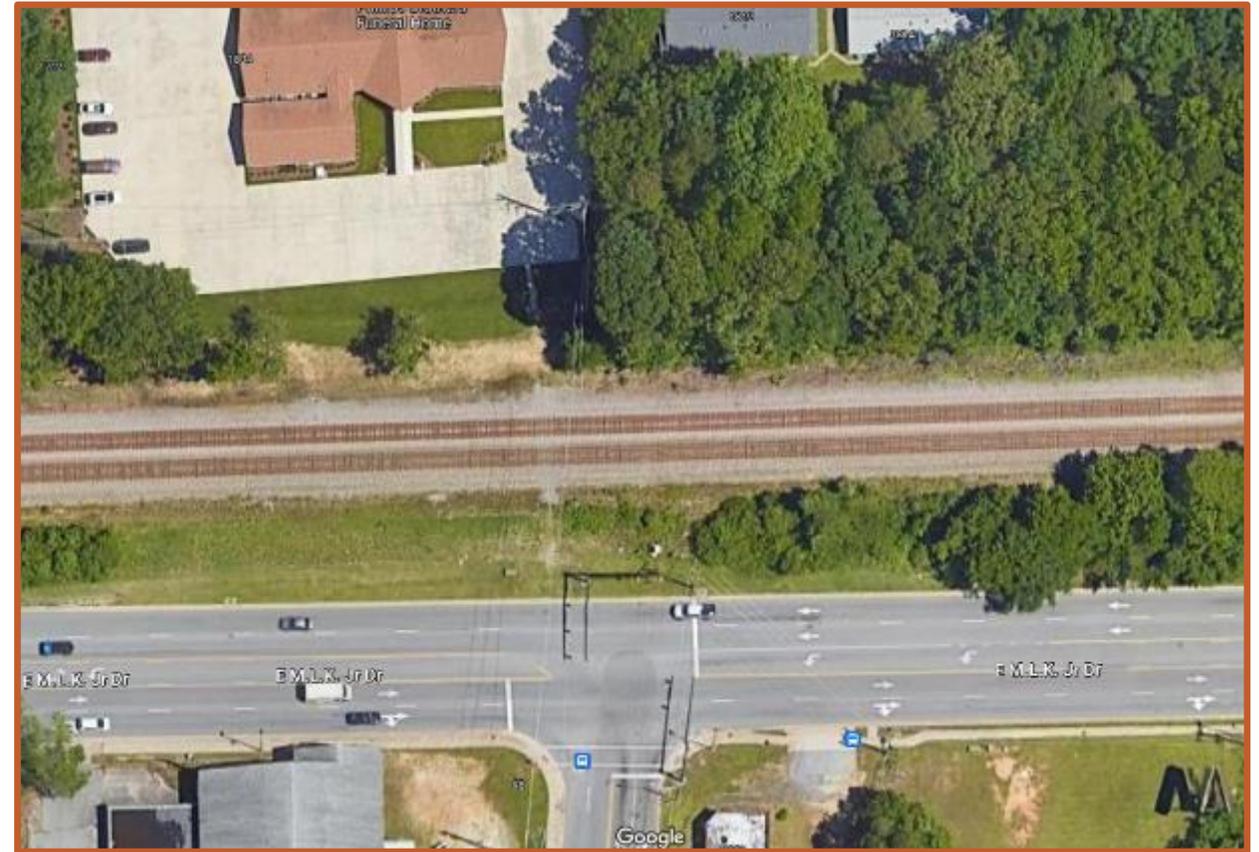


Depth of the Issue

- 11 total “hot spot” sites studied
- 680 days of data collected
- 15,570 total peds observed
- Avg. of 23 peds per day interacted with the Right of Way
- Median time for peds in the path of a train = 3 secs
- 100 near miss Interactions
- 65% single ped. events



Trespass Evidence – Greensboro & High Point



Treatments and Preemptive Solutions

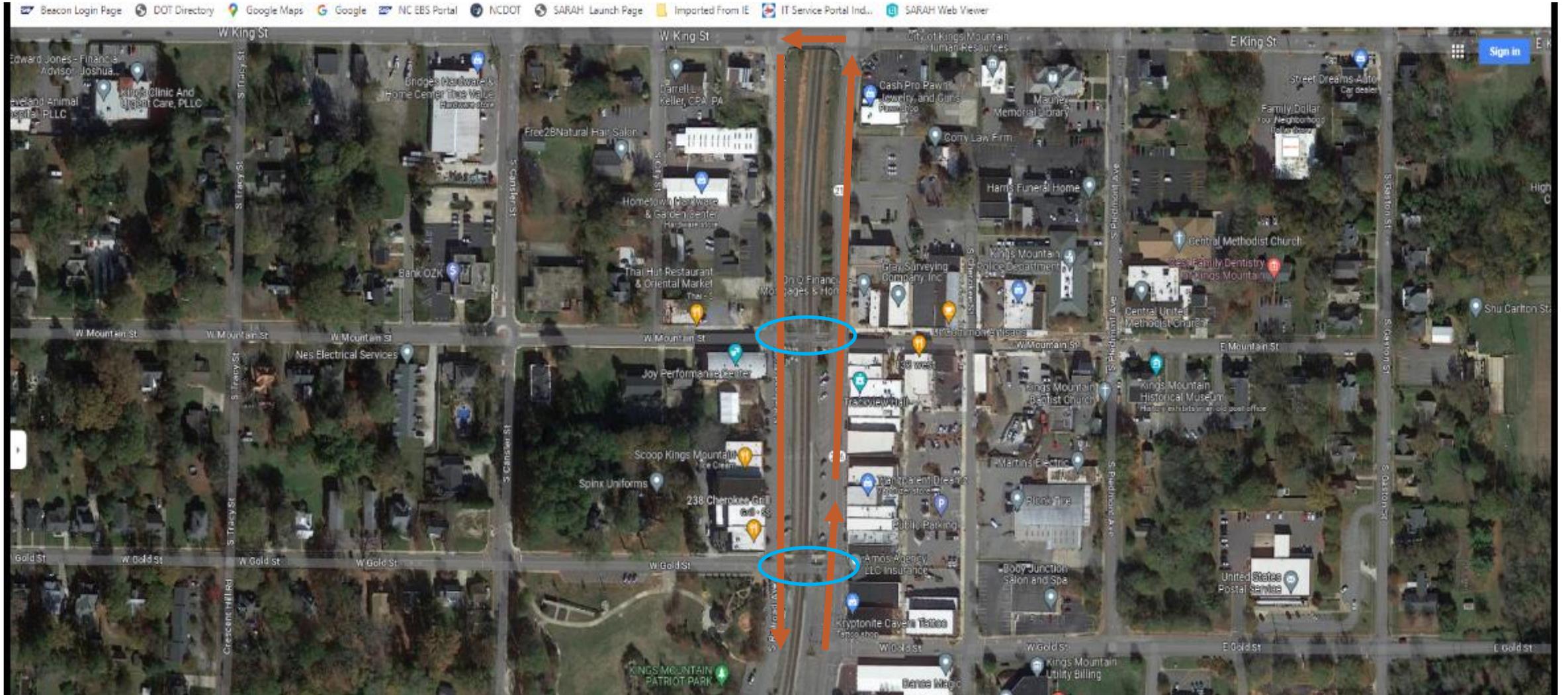
- Be involved in future planning efforts (zoning and construction, highways, rail, etc.)
- Contact NCDOT, rail owners, adjacent property owners, law enforcement
- Consider treatments
 - Be mindful of rail adjacent pedestrian attractors
 - Fencing not a blanket solution
 - May be other possible treatments
 - Rip Rap/ steep embankment
 - Enhanced natural environments i.e. geography and plants as deterrents
- Education
- “Eduforcement” campaigns



Pedestrians Climbing Newly Installed Fence (Elon, NC)

Low-Cost Safety Improvements

Kings Mountain – Truck Route









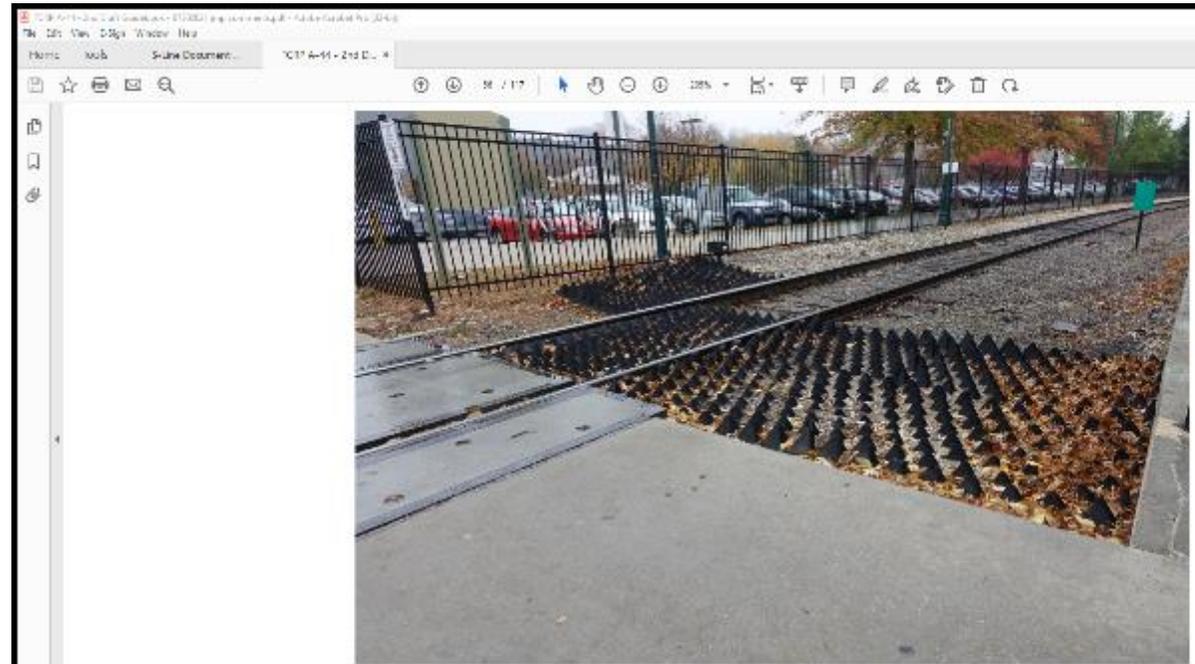


Other Pedestrian Safety Measures



Source: Jeffery Warner, TIL

Figure 22. Hedges Used in Combination with Poles with Wire Delimiters to Deter Unauthorized Crossing



Source: Carolyn Cook, FRA. Permission provided by the owner.

Figure 23. Example Anti-Trespass Guard Panel Application at a Grade Crossing.

Additional Resources

- Operation Lifesaver - <https://oli.org/>
 - Operation Lifesaver in NC - <https://community.oli.org/state/nc#about>
- Rail Trespass Prevention F.R.A. - <https://railroads.dot.gov/highway-rail-crossing-and-trespasser-programs/trespassing-prevention/trespass-prevention>
- BeRailSafe - <http://berailsafe.org/>
- Comprehensive Cost of Rail Incidents in North Carolina research & Cost Tool Calculator
 - <https://connect.ncdot.gov/projects/research/pages/ProjDetails.aspx?ProjectID=2020-44>
- USDOT Volpe Center- Preventing Rail Trespass Fatalities (Tool Kit)
 - <https://www.volpe.dot.gov/news/preventing-rail-trespass-fatalities>

Or use Google to search USDOT Volpe Rail for numerous resources

Acknowledgments

- FRA
- ITRE
- Operation Lifesaver
- BeRailSafe

Contact Us

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Thank you!
