



Driver Behavior at Highway Rail Grade Crossings



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Highway Rail Grade Crossing (HRGC) – Automobiles

- Driver behavior at HRGC's.
- What causes poor behavior?
- Solutions?





Vehicle Drivers vs. HRGC

HRGC's are among the top locations for fatal crashes and continue to be of concern, despite ever increasing HRGC engineering design improvements.

Numerous studies have been produced over many years to try and understand why motor vehicle drivers react in behaviors that often lead to fatal decisions. There is no simple explanation.

The best solution to prevent HRGC risks to drivers and pedestrians is to build grade separations and eliminate crossings altogether...but that is costly and won't work in every situation.

A HRGC cannot be built to fully protect vehicle drivers or trespassers who decide to act in an erratic manner when "inconvenienced" by the passage of a train.

First things first...what is the responsibility of the driver?





Driver Responsibilities

It is the driver's responsibility to take appropriate actions at a HRGC:

- **Always** approach a HRGC being prepared to stop.
- **Never** drive through flashing warning signals without stopping first.
- **Stop** 15 feet from track at the stop bar white line.
- **Never** go around lowered warning gates or under warning gates that are descending.
- **Look** both ways before proceeding.
- **Simple** – right?





Not so simple.

HRGC violations are associated with a driver's decision-making behavior. That is, the driver's decision to stop or proceed when faced with a crossing activation or an oncoming train.

Despite numerous studies focusing on **improving HRGC safety**, the performance of the rail level crossing and crashes due to driver behaviors, such as driver error and situational awareness, **remain ambiguous.**

*This is largely because many factors contribute to a driver's behavior and these are **difficult to measure.**

Studies have identified this can be due to:

- Driver failure to detect HRGC warning signals;
- Poor driver comprehension of meaning of signs and signals;
- Lack of situational awareness.

**Information from USDOT Research and Innovation Technology Administration; and John A. Volpe National Transportation Systems Center studies.*





Factors Influencing Driver Behaviors

***Driving skill:** Behavior characteristics of human information processing that limit driver performance.

- Driving skill is impaired by aging;
- lack of experience;
- internal or external distractions, or
- driver impairment

***Driving style:** Biases and attitudes that affects how one chooses to drive by influencing one's perception of the situation.

- Driver doesn't expect a train;
- Some drivers are risk takers;
- Driver attitudes moderated by gender and age differences:
Males committed more violations than females;
Younger drivers more aggressive than older drivers.

**Information from USDOT Research and Innovation Technology Administration; and John A. Volpe National Transportation Systems Center studies.*





Other Problems

- Distractions;
- Loss of situational awareness;
- Obliviousness.



May 2016 - Amtrak vs. farm truck in Madera, CA.

Photo Credit - ABC Channel 30 News – Fresno.





Queueing on a Crossing



Poor driver behavior - stopping on top of the tracks...unaware or uncaring?





Solutions: Signs?

Railroad Crossing Signs and Signals

LOOK FOR and OBEY all railroad crossing signs and signals

REPORT PROBLEM
OR EMERGENCY
1-800-555-5555
X-ING 836 597 H
XYZ RAILROAD



Advance warning signs – a round, yellow sign with a black “RR” tells you that a highway-rail crossing is ahead--be prepared to stop.

Pavement markings – when you see the “RR” painted on the pavement, be prepared to stop.

STOP signs at railroad crossings – the same laws apply here as for any other intersection regulated by a **STOP** sign. You must come to a complete stop. If no trains are coming, you may proceed.



Crossbuck signs are like yield signs – You must **YIELD** to trains.

- Slow down and be prepared to stop when you see the crossbuck sign.
- A sign below the crossbuck indicates the number of tracks.



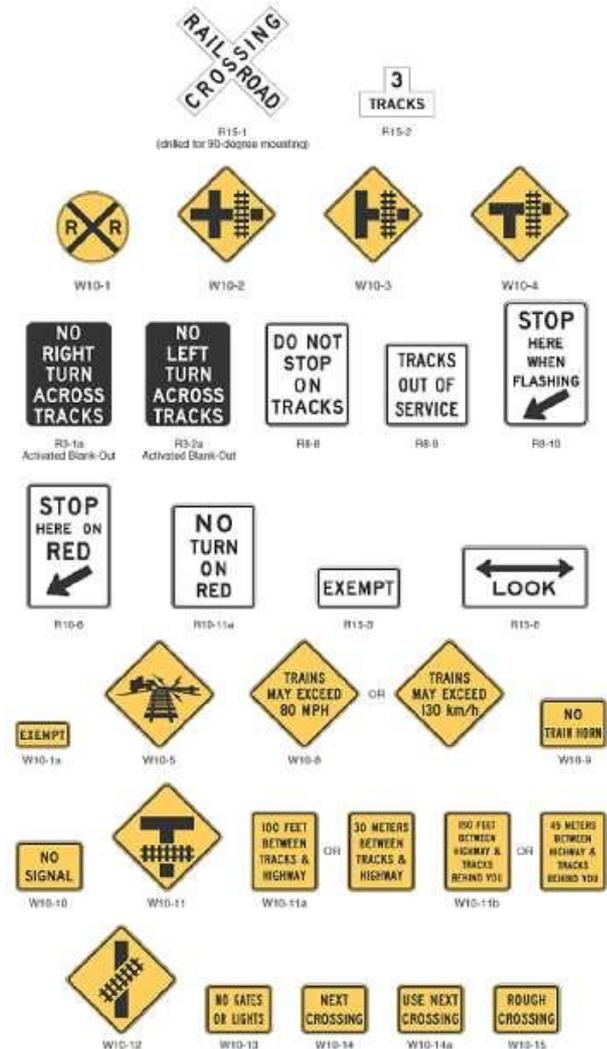


Sign, sign...

While railroad approach warning signs are certainly necessary, Railroad signage may, in certain cases, contribute to driver confusion.

That's arguable.

It can depend on how a driver processes the information one views as one approaches the **grade crossing environment.**





Sign, sign...

Even when signage is clear in its meaning, there may still exist some confusion by drivers as to what conditions they are encountering.





All improvements are costly





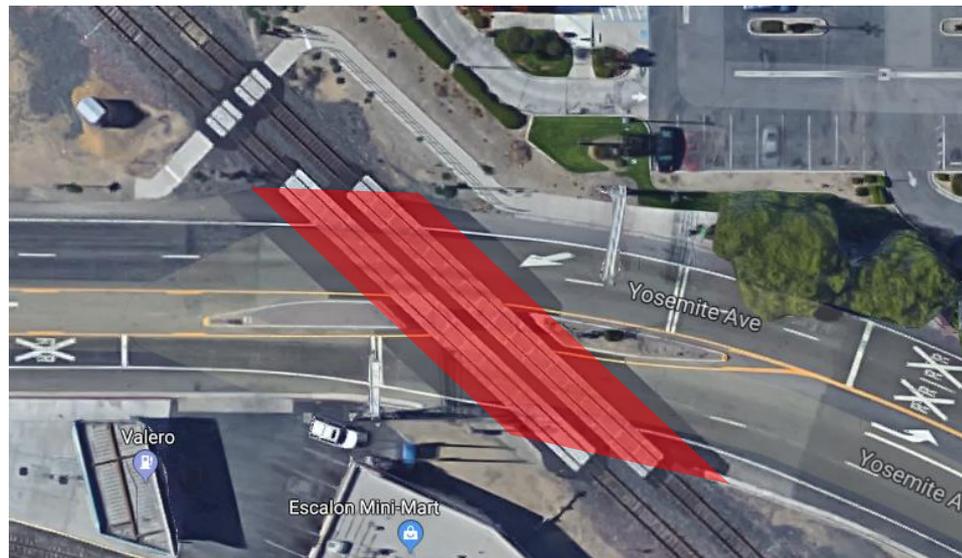
Operation Lifesaver





Other Possible Solutions?

- A **different** visual awareness concept may have a more immediate impact on driver awareness, such as track dynamic envelope pavement painting. And...the cost is **low**.
- The CPUC's **Office of Rail Safety**, in cooperation with **Caltrans**, is moving forward on such a project, which was presented to the Commission in April, 2016.



SR 120 in Escalon, CA





Pavement Painting Project - status

- Caltrans' Division of Research, Innovation and Systems Information (DRISI) are working with CPUC in this effort.
- The **California Traffic Control Device Committee (CTCDC)** approved the project in August 2018.
- The city of **Escalon** and **BNSF Railway** are also on board with the concept.
- We are awaiting approval from **Federal Highway Administration (FHWA)**.
- The project will hopefully come to fruition in 2019 – 20.





Questions?

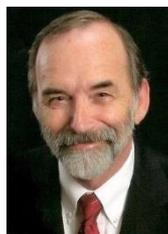




Thank you!

For Additional Information please contact me or visit our webpage:

<http://www.cpuc.ca.gov/rail/>



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Regular Agenda – Management Reports and Resolutions

Item # 33 [16968]

**Report and Discussion on Recent Consumer Protection
and Safety Activities**

