

TRACKS ARE FOR TRAINS



Many of our communities in the Puget Sound are located near train tracks. Maybe you've seen a Sounder train bringing commuters from Everett or Lakewood to Seattle, or have taken Amtrak to Portland. These passenger trains share the tracks with freight trains, and if you see tracks, always think train.

Trains can run on any track, in either direction, at any time day or night. Tracks are designed to handle heavy trains moving at high speeds, and to minimize the amount of friction for the train. **Friction** is the force that holds back a sliding object. Without friction or other forces, a sliding object would continue to slide forever. Minimizing friction means that the train can travel very fast, and needs brakes to create friction in order to slow down. Not having very much friction also means that a train can be hard to hear as it approaches.

As a train travels along, it also starts to gather **momentum**. The faster and bigger an object is (the more velocity and mass it has) the more momentum it will have. The more momentum something has, the harder it is for it to stop. Think about being hit by a small ball. Now think about being hit by either a bigger or faster ball. Which one takes more force to stop? This same thinking can be applied to trains, which is why it takes a train a lot longer to stop than a car. The average train travels at speeds up to 79 mph and can take over a mile (5,280 feet) to stop completely. In contrast, an average car can stop in about 200 feet. The ability of a train to stop depends on a variety of factors including weather, humidity and the length of the train.

Did you know? Air moves a lot like water. Even if you do not directly touch a train, standing too close can be dangerous. Trains are going so fast that they can create a **slipstream**, which is similar to the wake created by a boat in water. The slipstream created by a train is strong enough to pull you under the train if you are standing too close to the tracks or platform when it goes by.

If momentum = velocity x mass, calculate the momentum of the following:

A train traveling at a velocity of 55 mph, with a mass of 654 tons (there are 2,000 lbs in one ton)

A car traveling at a velocity of 35 mph, with a mass of 3,680 lbs



The difference in momentum between a train and a car is similar to the difference in momentum between a car and a soda can. Just like the sudden force of a car rolling over a soda can, a train will crush a car when the two collide. It is important to always stop your car behind the crossing gate, and wait until the gate is completely raised before proceeding across tracks. Trains overhang the tracks by about three feet, so even if there's not a gate, stop at the stop line. Pedestrians need to stop behind the line and wait until the gate goes up before crossing. Even if the train has passed, another train could be coming from the other direction. You may not see the train until it is too late.

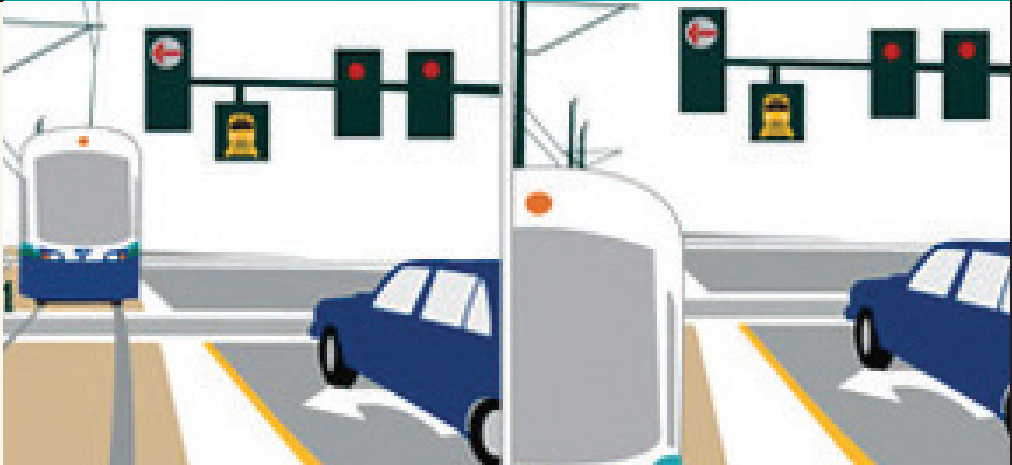


Did you know? Because trains are so large, they seem to be moving slower than they actually are. This happens with a lot of faraway objects, such as clouds and planes. Trains can also be hard to hear because their movement creates overlapping ripples of sound waves. This is known as the **Doppler effect**, and it is why police car or ambulance sirens sound different as they move closer or farther away from you. So no matter how far away a train looks or sounds, do not try to race it.

Every year, across Washington state, there are fatal collisions involving trains and drivers or pedestrians. There are also countless close calls.

In 35 years as a railroad engineer, John Cox has had plenty of close calls with people who walk around the gates or take a shortcut across the tracks. The same people who think it's insane to walk down the middle of I-5 or on an airport runway feel nothing about walking on the tracks, he said.

For example, one morning after a heavy snowfall, Cox was bringing a Sounder train into the Kent Station when he saw a woman running from the other side of the main lines. "She ducked under the gate, ran across the first track then slipped on the black ice and fell on her hands and knees on the track I was on," Cox said. "I put the brakes into emergency and she started crawling across the track on her hands and knees, just clearing the main line as I went past."



Just by making a few easy choices, you can stay safe around tracks and train.

1. Don't take shortcuts across the tracks- always cross at designated crossings
2. Don't use tracks as a pathway- stay on the sidewalk
3. Never pose for photos or selfies on the tracks
4. Never go around crossing gates or ignore horns/ flashing lights

REMEMBER

Railroad tracks are always private property, and can be patrolled in person or remotely. Tracks are typically patrolled by track inspectors in hi-rail vehicles. Dispatchers operate switches remotely from Ft. Worth at Sound Transit's Network Ops Center. It's not just dangerous to be on tracks, it's also illegal, and you can be fined for trespassing.

