

# You are Not Down Yet!

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Phoenix, AZ: Five hours after concluding a meeting with a client discussing field trial results for a new driving aid for truckers on steep grades and sharp curves, tragedy struck on I70 eastbound into Denver. A driver from Houston who may have been driving I 70 for the first time, suffered a brake failure and missed the emergency exit ramp. Hitting speeds of 80 mph, the driver entered the western edge of Denver where there was a long traffic tailback caused by a previous non-fatal crash several miles ahead. With nowhere to go and no way to stop his rig the driver plowed into the stalled traffic. The results were four deaths, six or more injured, twenty-eight vehicles damaged or destroyed and one driver who will likely spend years in prison and experience a lifetime of regret. What a tragic outcome for a truck driver who was simply trying to do his job but forgot some key portions of his CDL training.



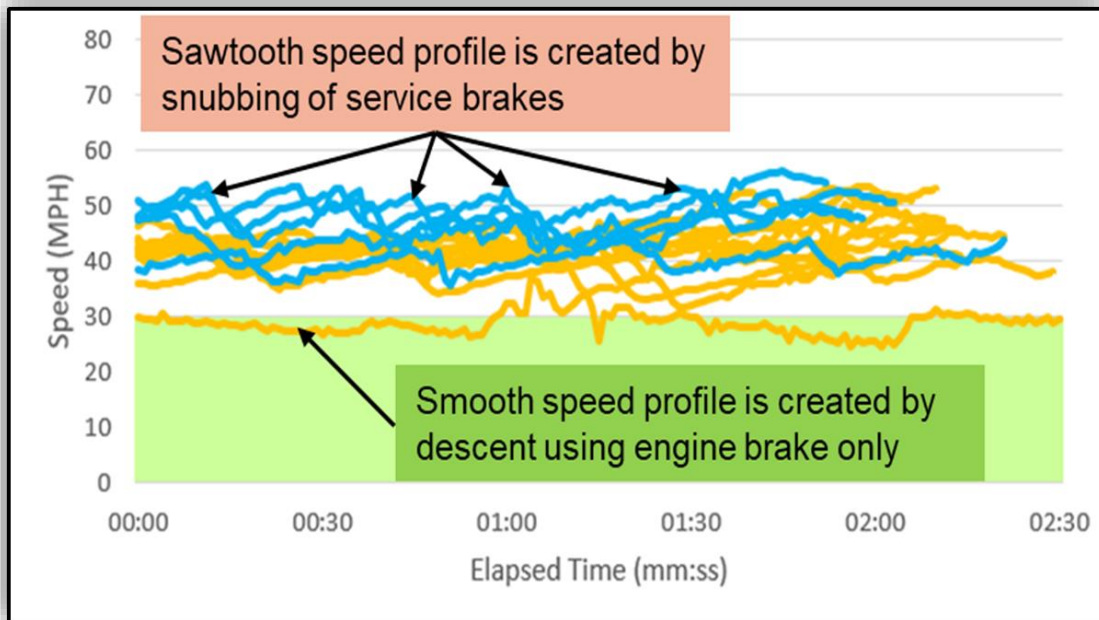
In fact, many if not most truck drivers are taking descents too fast as was proven in a field trial carried out in Arizona over the past 6 months. Working with a bulk hauler client, ten tractors were equipped with tablet computers featuring a software product that provided alerts and safe speeds to the drivers for descents and curves. The system also recorded truck location, direction and speed every second of the trip. During the trial, data was recovered from 199 trips on 3 long descents. The following graph

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shows typical speed profiles on one of the most difficult descents. Note that most drivers are using their service brakes for the descent even though CDL training and the operator's manuals for the tractors used in this trial recommend descending on engine braking only.



The recommended safe descent speed for this segment of the descent is 30 mph for a truck with a GVW of 80,000 lbs. and engine braking capacity of 350 hp. As can be seen in the charts above most drivers are doing the descent at 40 to 50 mph.

Obviously descending using service brakes works out most of the time but that is because the driver is not required to stop at the bottom of the descent. As the driver on I70 discovered when he approached a tail back on the freeway from a previous crash, over heated brakes have very little braking authority. Unable to stop or even slow down his rig, the driver crashed into multiple vehicles causing loss of life, injuries, and property destruction.

In defense of truck drivers, they are not given much help in managing the huge release of energy that occurs when an 80,000 lb. vehicle is lowered 1,000 ft. or more. There are some excellent sources of information about the major descents in the western US published on line and in print. John Glennon has a description of the east bound descent into Denver at:

<http://www.crashforensics.com/mtvernoncanyon.cfm>

The posted speed for trucks over 30,000 lb. GVW is 35 mph. Recommended speed from the Grade Severity Rating System is 30 mph. The reader is cautioned that the recommended speed is based on average slope and a slower speed may be required for the steepest section. There is another publication covering all descents in the US available for purchase online at:

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<https://www.mountaindirectory.com/>

To help all drivers here is a speed card that can be used for the descent into Denver. This speed table is specific to the east bound descent into Denver on I70 commonly known as the Genesee Hill. The speeds are calculated using the maximum grade of 6% and rounded to the nearest whole number. Speed cards are available for all the descents on I70 in Colorado both east and west bound on this web site

[www.road-aware.com](http://www.road-aware.com)

## Descent Speed Table for Genesee Hill – I70 Eastbound

Braking HP – driveline drag plus engine braking if equipped vs. GVW (Speeds are in mph)

Braking HP	30,000 lbs	40,000 lbs	50,000 lbs	60,000 lbs	70,000 lbs	80,000 lbs
120 hp	25	19	15	12	11	10
150 hp	32	24	21	15	13	12
200 hp	35	31	26	21	18	15
250 hp	35	35	31	26	22	19
300 hp	35	35	35	31	27	23
350 hp	35	35	35	35	31	28

A typical loaded semi-truck with 80,000 lbs. has driveline & rolling resistance equal to about 120 hp.

A typical engine brake might have 3 settings – low, medium and high that would add 100, 200 or 300 hp of engine braking. Speeds in table shown to nearest mile per hour (mph) with a cap at the posted speed of 35 mph.

Other information:

Driver - Rogel Lazaro Aguilera-Mederos, 23

Dash Cam video - The video was filmed by Pedro Olvera

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