

Accident Reconstruction Engineers

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12 July 2018

Mr. Larry Black
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Dear Mr. Black:

Pursuant to your request, I have examined the aerial images in the vicinity of Sandy Creek and Highway 71 in Llano County. Having property and many ties to Burnet County, I am familiar with the area. My goal was to perform calculations regarding the acceleration characteristics of loaded tractor trailer units leaving the Nash Ranch.

Using the acceleration data published by Northwestern University in their text, *Traffic Accident Reconstruction Manual*, I have calculated the time and distance required to accelerate a loaded unit from a stop to 60 and 65 mph. The published acceleration rates are as follows:

0 to 20 mph	0.05 g's
20 to 40 mph	0.03 g's
40 + mph	0.01 g's

To accelerate a loaded tractor trailer from a stop to 60 mph using the above data will take 2 minutes 13 seconds and cover 8,267 feet. To accelerate to 65 mph will take 2 minutes 35 seconds and 10,350 feet.

The east end of the Sandy Creek bridge is approximately 1,100 feet from the Nash Ranch gate. To preserve the emergency shoulder, an additional lane would have to be added to the bridge to accommodate the west bound trucks. Beyond the bridge the road would have to be widened as well.

The accommodation of eastbound trucks leaving the ranch is more complex. To avoid an expensive multi-grade structure, a centerline acceleration lane would need to be constructed. To fully accommodate a 60 or 65 mph transition it would have to be at least 8,200 feet long. Again, the road would have to be widened to preserve the emergency shoulders.

Another aspect of this entrance / exit from the Nash Ranch is the safe accommodation of empty units turning into the facility. In that slowing to make a right turn is an accepted and legal use of a shoulder this approach could be resolved by simply striping a right turn lane. Modification of the roadbed might be required to implement this plan.

The resolution of eastbound units turning into the ranch would require additional widening of the roadway at the east end of the bridge and construction of a left turn lane.

If you have any questions, please contact me at any time.

Sincerely,



William B. Nalle, P. E.

