

Common Infractions for Lighting Requirements on Trailers

Junior Agricultural Mechanics – JAM

As we strive to continue helping the youth of Texas participating in the San Antonio Junior Agricultural Mechanics show, there are infractions that continue to happen year after year. In the show years 2019 and 2020, the San Antonio DOT inspecting committee conducted research and collected data to see what the reasons were for trailers to “not” pass inspecting. The results are explained below:

The most common infraction observed by the inspection committee was not displaying proper red rear clearance lamps/reflectors. DOT requirements mandate red clearance lamps be located as far to the rear of the trailer as possible and be independent of stop/turn signals.

Providing correct front clearance lights and reflectors for trailers over 80” wide was the second most common infraction. The front clearance lights must be as far forward as practical, at the widest point, and facing FORWARD.

The required 3-light cluster displayed on the rear of trailers was missing or out of compliance was the third most common infraction. The three lights of the cluster must be between 6” and 12” apart. These lights are to indicate the presence of a wide vehicle and must be as high as practical.

All of the said infractions are if the trailer is 80" or wider, these are expressed in the following table:

If trailer is 80" or wider						
DESCRIPTION			MANDATORY REQUIREMENTS			
Equipment	SAE lens coding	Functional Purpose	Quantity	Color	Location	Height in inches from the ground
Rear clearance lamps	P2, PC, or P3, PC2	Show vehicle's width - MAY NOT be combined with tail lamps width	Minimum 2	Red	At widest point - symmetrical - on the rear or near the rear - facing REARWARD	As high as practical - may be lower only if ID lamps are at the top
Front clearance lamps	P2, PC, or P3, PC2	Show vehicle's width	Minimum 2	Yellow	At widest point - symmetrical - as far forward as practicable - facing FORWARD	As high as practical
Rear identification lamps	P2 or P3	Indicate presence of a wide vehicle	Exactly 3	Red	On the rear center – facing REARWARD – horizontally spaced 6-12" apart	As high as practical

SAE Lens Coding	
P2	Clearance, sidemarker, and identification lamps
PC	Combination clearance and sidemarker lamps
P3	Clearance, sidemarker, and identification lamps for use on vehicles 80in or more in overall width
PC2	Combination clearance and sidemarker lamps for use on vehicles 80in or more in overall width

Other infractions that the DOT inspecting committee have noticed over the years are the rear side marker lamps on the sides of the trailer. The law states the rear side marker lamps are to be at each side at rear, as far back as practicable to indicate the side of the trailer. The only light that should be red on the side of the trailer is the farthest one back. This means if you are putting any lights directly behind the axle and any farther back facing sideward, they are meant to be yellow.

DESCRIPTION			MANDATORY REQUIREMENTS			
Equipment	SAE lens coding	Functional Purpose	Quantity	Color	Location	Height in inches from the ground
Rear side marker lamps	P2, PC, or P3, PC2	Front and rear side marker lamps / side reflex reflectors indicate vehicle's presence and length	Minimum 2	Red	Each side at rear - as far back as practicable	15-60 no max. for vehicle under 80" wide

SAE Lens Coding	
P2	Clearance, sidemarker, and identification lamps
PC	Combination clearance and sidemarker lamps
P3	Clearance, sidemarker, and identification lamps for use on vehicles 80in or more in overall width
PC2	Combination clearance and sidemarker lamps for use on vehicles 80in or more in overall width

When a trailer is 80" or wider AND has a Gross Vehicle Weight Rating (GVWR) of 10,000lbs or more it is required to have conspicuity tape markings. The DOT committee has noticed the infraction of conspicuity tape along the sides of the trailer. The conspicuity tape is to start and end as close to the front and rear as practical and cover at least 50% of the length of the trailer.

80" or wider AND GVWR 10,000lbs or more				
DESCRIPTION			MANDATORY REQUIREMENTS	
Conspicuity Tape	Quantity	Color	Location	Height in inches from the ground
Side Marking		Red/white	Each side- facing sideward- continuous or evenly spaced over minimum of 50% of length, starts and ends as close to the front and rear as practical	Horizontal as practicable - as close as practicable as 14.8-60in

Safety chains are another infraction that the DOT committee have noticed because they are not installed properly. Safety chains should NOT be welded directly to trailer frames, nor should the two safety chains originate from a single location. Use of pins or bolts are acceptable according to current DOT code.

49 CFR 393.71 (h)(10)(i-iii) Federal Motor Carrier Safety Administration, DOT 49 CFR Ch. III (10-1-19 Edition)

(10) Safety devices in case of tow-bar failure or disconnection.

(i) The towed vehicle shall be connected to the towing vehicle by a safety device to prevent the towed vehicle from breaking loose in the event the tow-bar fails or becomes disconnected. When safety chains or cables are used as the safety device for that vehicle, at least two safety chains or cables meeting the requirements of paragraph (h)(10)(ii) of this section shall be used. The tensile strength of the safety device and the means of attachment to the vehicles shall be at least equivalent to the corresponding longitudinal strength for tow-bars required in the table of paragraph (h)(1) of this section. If safety chains or cables are used as the safety device, the required strength shall be the combined strength of the combination of chains and cables.

(ii) If chains or cables are used as the safety device, they shall be crossed and attached to the vehicles near the points of bumper attachments to the chassis of the vehicles. The length of chain used shall be no more than necessary to permit free turning of the vehicles. The chains shall be attached to the tow-bar at the point of crossing or as close to that point as is practicable.

(iii) A safety device other than safety chains or cables must provide strength, security of attachment, and directional stability equal to, or greater than, that provided by safety chains or cables installed in accordance with paragraph (h)(10)(ii) of this section. A safety device other than safety chains or cables must be designed, constructed, and installed so that, if the tow-bar fails or becomes disconnected, the tow-bar will not drop to the ground.

37.1.21.5 (d) (1-4) Texas Administrative Code

(d) Specifications for safety chains.

(1) Two separate and individual safety chains shall be used simultaneously in all situations where safety chains are required.

(2) The two safety chains will be of equal length, long enough to permit free turning of the vehicles without placing stress on the chains, and attached to the towing vehicle equidistant right and left of the point at which the vehicles are connected. The safety chains must be connected to the towed and towing vehicles and to the tow-bar in a manner which prevents the tow-bar from dropping to the ground in the event it fails or becomes disconnected. In no event will the safety chains be allowed to contact the road surface during movement of the vehicles.

(3) Safety chains shall be of sufficient strength to prevent the vehicles from separating in the event the towed vehicle disengages from the towing vehicle under ordinary towing conditions.

(4) Safety chains must be attached to either side of the tongue or connecting apparatus of the towed vehicle, equidistant forward and aft of the hitch or connector. They shall not be directly welded to the towed vehicle, but rather shall be connected by means of bolts, pins, or other secure connecting methods, that meet necessary strength requirements.

The last common infraction is incorrect placement or inadequate reflectors, either on the front or rear clearance lamps. The reflectors must be as close to the lamp as possible, the reasoning for this is if the lamp happens to go out, there is still a reflector indicating there is a trailer present.

DESCRIPTION			MANDATORY REQUIREMENTS			
Equipment	SAE lens coding	Functional Purpose	Quantity	Color	Location	Height in inches from the ground
Rear Reflectors	A	Indicate vehicle's presence and width	Minimum 2	Red	On the rear - symmetrical - as far apart as practicable-facing REARWARD	15-60
Rear Side Reflectors	A	Front and rear side marker lamps / side reflex reflectors indicate vehicle's presence and length	Minimum 2	Red	Each side at rear - as far back as practicable facing SIDEWARD	15-60
Front Side Reflectors	A	Front and rear side marker lamps / side reflex reflectors indicate vehicle's presence and length	Minimum 2	Yellow	Each side at front - as far forward as practicable facing SIDEWARD	15-60

References:

Ford, R.K., Lund, Randy (2019) A summary of DOT inspection results for student constructed SAE projects intended for exhibition at a junior agricultural mechanics project show. Published in the 2019 National Agricultural Mechanics Professional Development Blue Ribbon Conference Proceedings. Indianapolis, IN.

Contributors:

2020-2021 DOT inspection committee