

Lighting Requirements for Your RV Hauler

What's the Goal?

- To give you a basic understanding of what lighting is required to put your truck (or future truck) on the road.
- This presentation will introduce the required elements, the follow-on presentation will discuss how to get them installed and in good working order.

Who cares?

- We all do.
- Properly lighting your truck is necessary for safe and legal operation.
- Seeing and being seen makes travel less stressful, and helps to avoid close calls.

Worry about lights, but not length?

- Every required lighting element serves a specific safety function.
 - The standard may be incomplete, or insufficiently address a particular function, but there's not an element required that doesn't serve a specific purpose.
- Length regulations are often arbitrary, and state regulated
 - A stinger-steered car hauler can be 75' carrying cars, but only 65' if you put a box of oranges on board.
 - An RV trailer can only be 45' in some states, where a 53' trailer is allowed in commercial service
 - Most that would apply to RVers are untested in court. The only vehicle length limit challenge to reach the US Supreme Court was struck down for failing to address a safety need.

Who regulates automotive lighting?

- Automotive safety standards are part of the Code of Federal Regulations, 49 CFR 571, the Federal Motor Vehicle Safety Standards (FMVSS)
 - Canada's standards (CMVSS) are virtually identical; the rest of the world uses Economic Commission of Europe (ECE) standards.
- Within the standard, there are a couple of relevant sections regarding applicability:
 - *A manufacturer, distributor, dealer, or motor vehicle repair business may not knowingly make inoperative any part of a device or element of design installed on or in a motor vehicle or motor vehicle equipment in compliance with an applicable motor vehicle safety standard prescribed under this chapter*
 - *When a motor vehicle safety standard is in effect under this chapter, a State or a political subdivision of a State may prescribe or continue in effect a standard applicable to the same aspect of performance of a motor vehicle or motor vehicle equipment only if the standard is identical to the standard prescribed under this chapter.*
 - *Compliance with a motor vehicle safety standard prescribed under this chapter does not exempt a person from liability at common law.*
- FMVSS 108 addresses lighting and conspicuity markings.
- Many “letters of interpretation” have been published addressing specific questions regarding the standard.

It's not optional.

- If you hire someone to install a bed, all required elements must be installed as part of that bed build. You **cannot** “do it yourself” unless it is prior to that vehicle being returned to you.
- Your bed builder, RV manufacturer, etc., cannot give you parts, such as reflectors, to install yourself, if the omission of those parts would leave the vehicle without required elements.
- If there is an omission on the part of your bed builder, RV manufacturer, etc., it is their responsibility to correct.
- Most states have a “catch-all” provision that requires the vehicle to meet federal safety standards.

“Stuff” Added to Truck Can Affect Lighting

S5.1.3 No additional lamp, reflective device or other motor vehicle equipment shall be installed that impairs the effectiveness of lighting equipment required by the standard.

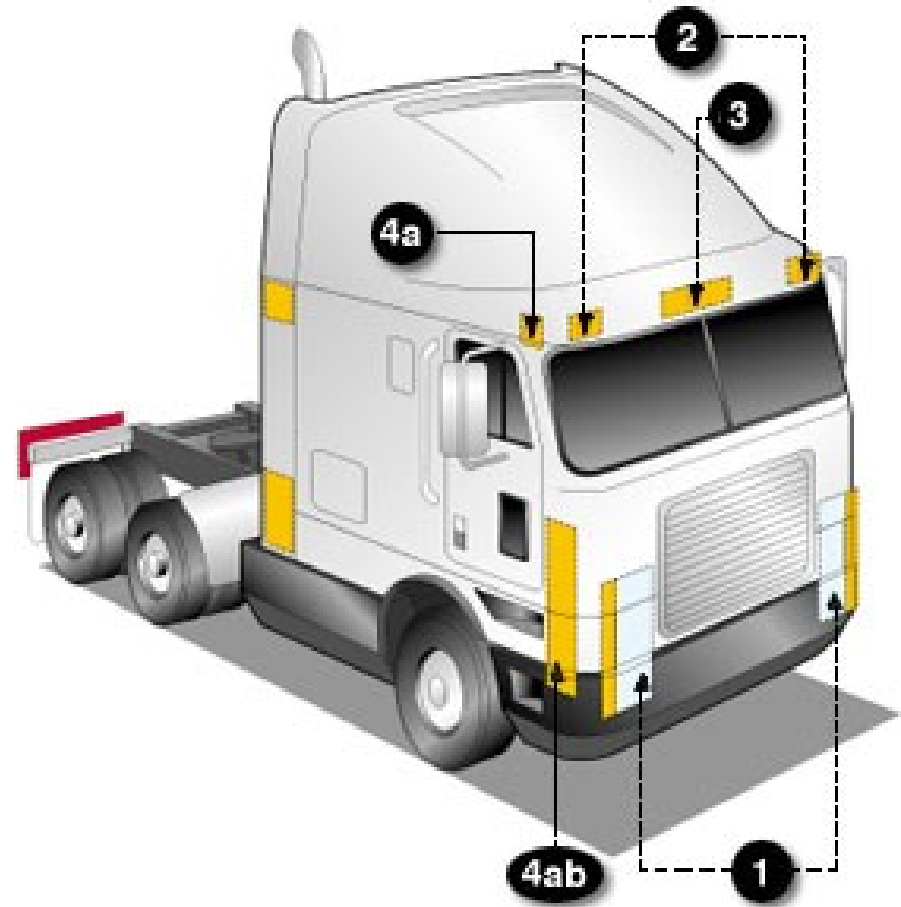
- Anything sold for your truck, or installed on it, must be designed/installed so that it doesn't affect any lighting elements.
- Deer/moose bumpers
 - Can easily interfere with headlights and turn signals
 - Light output is regulated over a 30-degree width, and from 4 below to 90 above the light (for a headlight). Obstructions within, or reflections casting additional light into that region can result in noncompliance.
- Auxiliary lights
 - Particularly bright lights (e.g. LED bars) reduce the visibility of required lights (e.g. turn signals) and are illegal. Regardless of how they are used, installation on the vehicle triggers the standard—you can't just say it's for off road use.
- Cargo racks
 - Can often interfere with rear lighting, especially with larger loads (including bicycles)

Basic Lighting Principles

- The lighting standards are intended to make sure a consistent message regarding the size, orientation, and operation of a vehicle is presented
- Even though most drivers don't know the details of the standard, we all use lights required by it to discern what other vehicles are doing and how big they are (especially at night)
- Red should only be on or at the back, white should only be on front (except reverse lights).

Starting with a truck

- If you've bought a run-of-the-mill over-the-road truck, it likely already meets the requirements of a truck tractor
- It's not a vehicle designed to carry any cargo—only for towing trailers, and only rarely operated without a trailer
- It is required to meet all lighting requirements except:
 - Rear clearance and ID lights
 - Rear side reflex reflectors
 - Rear side marker lamps
- It is also required to have conspicuity tape 2 places:
 - Rear upper body marking (L-shape on back of cab)
 - Rear marking (strip across top of mud flaps)



Truck Tractor

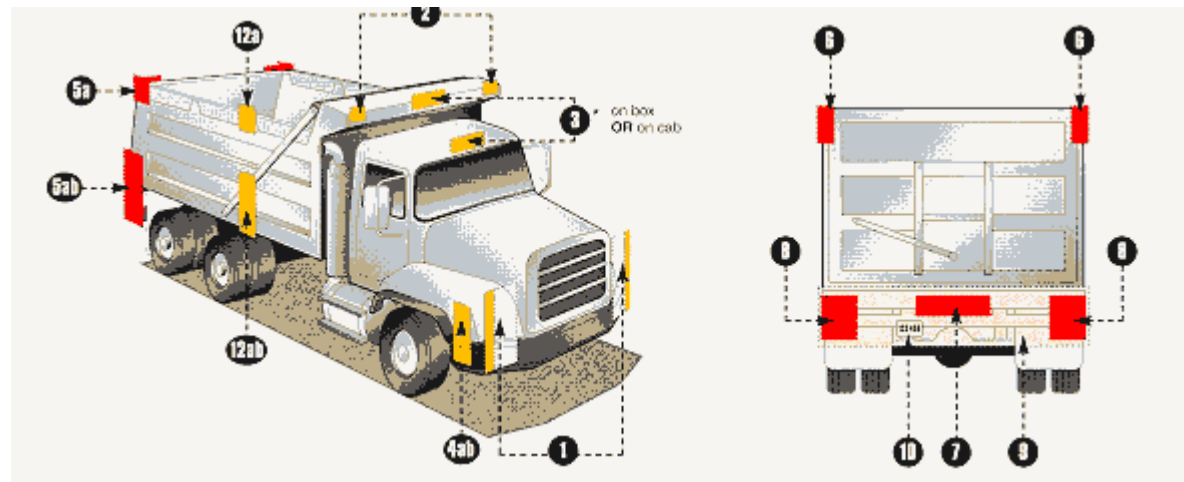
Exemptions are Outdated

- Exemptions have not been updated since STAA of 1982 was passed.
- Prior to STAA, most trucks were cabovers whose bodies were ~5' in length, not 18' or more.
- The rest of the world requires truck tractors to meet the same requirements (stop, tail, turn, etc.) as any other vehicle



What changes by adding a bed?

- It's no longer just a vehicle for pulling a trailer
- More practical places for mounting lights now exist
- It's much more likely to be driven without pulling a trailer (regardless of how you personally intend to use it)
- The truck may become longer, possibly exceeding 30' in length



What lights does my bed need?

- On back:
 - Tail lamps
 - Stop lamps, turn signals
 - Clearance lamps
 - Identification lamps
 - License plate lamp
 - Reverse lamp(s)
 - Rear reflex reflectors
- On side:
 - Rear side marker lamp
 - Rear side reflex reflector
 - Intermediate side marker lamp
 - Intermediate side reflex reflector
 - Intermediate turn signal*

Tail (T2), stop (S2), and turn (I6) lamps

- **Purpose:**
- To signal the presence and width of a vehicle, and to indicate when it is braking, turning, or disabled.
- **How many:** 2 minimum
- **Where:** On the rear - symmetrical - as far apart as practicable - facing rearward, 15-60" above the ground
- These lights should not be combined with any other functions.
- Turn signals should be mounted outboard of brake lights (if separate, which is recommended)

Reflex Reflectors (A)

- **Purpose:**
- To signal the presence and size of a vehicle, particularly when parked or otherwise disabled
- **How many:** 2 rear, 2 rear side, 2 intermediate side (required over 30', recommended if shorter)
- **Where:**
 - (2 red) On the rear - symmetrical - as far apart as practicable - facing rearward, 15-60" above the ground
 - (2 red) On the side at the rear, 15-60" above the ground
 - (2 amber) On the side near center - roughly front of bed side for most

Side Marker Lamps (P3)

- **Purpose:**
- To indicate presence and length
- **How many:** 2 rear, 2 intermediate
- **Where:** Each side at rear, and each side near center, as far back as practicable, at least 15" above ground
- Intermediate side markers can be repeated along vehicle's length. At least one for every 12-15 feet of length recommended.

Rear Clearance Lamps (P2)

- **Purpose:**
- To show the width of a vehicle

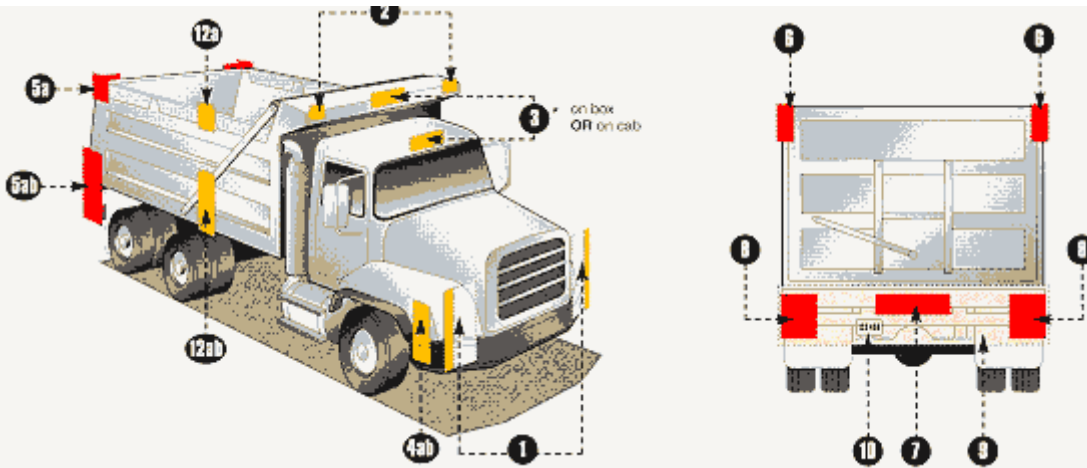


- How many: 2 minimum
- Where: At widest point, on the rear or near the rear, symmetrical, facing rearward, as high as practicable. May be lower only if ID lamps are at top.
- May not be combined with tail lamps.
- Top of rear side of bed, ~~and/or top corners of sleeper/drom box~~

Rear Identification Lamps (P2)

- **Purpose:**
- To indicate presence of a wide vehicle
- How many: Exactly 3
- **Where:** Rear - center - horizontally spaced 6-12 inches apart, facing rearward
 - US: As high as practicable
 - Canada: At the top
- May not be combined center brake light. No lights in between each of these lights.

Either top of rear side of bed, ~~or~~
~~top of sleeper/drom box~~



Backup and License Plate Lights

- *License Plate Light (L)*
 - **How many:** Minimum 1, white
 - **Where:** On the rear, above or beside license plate. No mounting height or left-right position requirement.
- *Backup Light (R)*
 - **How many:** Minimum 1, white
 - **Where:** On rear

Practicable

- It's a word used quite a bit in the standard, but may seem ambiguous.
- You have the “responsibility to choose the best mounting location”
- In the case of clearance and marker lights, not more than 6” from edge
- “On the rear” includes 12” from rear extremity, but not 27”

Other Required Items

- **On Front:**
- Low and high beam headlamps
- Turn signals
- Side marker lamp (194 bulb on 2nd-gen Volkswagens)
- Side reflex reflector

- **Optional:**
- Parking lights, daytime running lights (required in Canada)

Which truck should I look at?

- It's a short list.
 - Wagner (red Volvo in site 330)
 - Henegar (blue Kenworth in site 305)
 - Different approaches, but both work.
- Every bed manufacturer represented here (Herrin, 2L, RVH Lifestyles, etc.) has beds at this campground not in compliance.
 - Most common issues are mounting stop/turn lights out of "square", missing rear clearance lights, and missing reflex reflectors.

Questions?

Next seminar will discuss parts sourcing, connection methods, and installation.