



AEX-596.7-09

Lighting and Marking Recommendations for Animal-Drawn Carriages

S. Dee Jepsen

Assistant Professor

State Safety Leader, Agricultural Safety and Health

Theresa Calip

Program Coordinator

Agricultural Safety and Health

Introduction

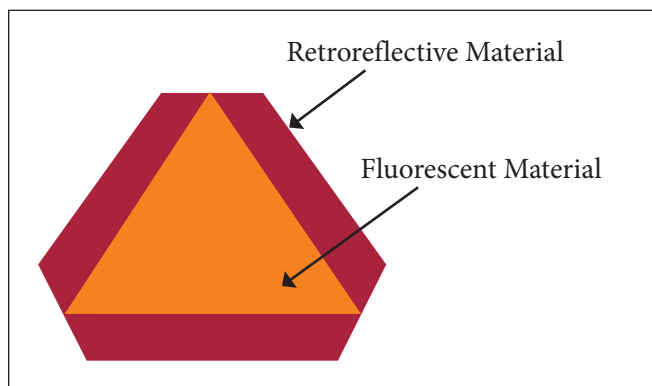
As an equestrian sport and a commercial business enterprise, the popularity of horse-drawn carriage driving is growing. In urban areas, the increase in carriages on the roads has resulted in the rise of motor vehicle interactions. In addition to horses, other animals can be used to pull carts and carriages. This calls for improved safety awareness on the part of cart and carriage drivers when operating on public roads.

In 2008, the American Society of Agricultural and Biological Engineers (ASABE) proposed an engineering practice for lighting and marking of animal-drawn vehicles. The purpose of this engineering practice is to provide a unique and consistent marking pattern for use by carriage drivers. The recommendations are presented on the following page.

The Slow Moving Vehicle (SMV) Emblem

The SMV emblem is a unique identifying marker indicating a vehicle traveling slower than 25 mph. Studies show that two out of three highway

crashes involving slow-moving vehicles are rear-end collisions. Of these rear-end collisions, nine out of ten occur during daylight hours. During the day, the bright, fluorescent orange triangle of the SMV emblem gains the attention of approaching motorists from more than 1,000 feet. This provides motorists ample time to slow down before it is too late. At night, the reflective border of the SMV emblem glows brilliantly in the path of approaching headlights. The distinctive, retroreflective red triangle surrounding the fluorescent orange center immediately identifies a slow-moving vehicle.

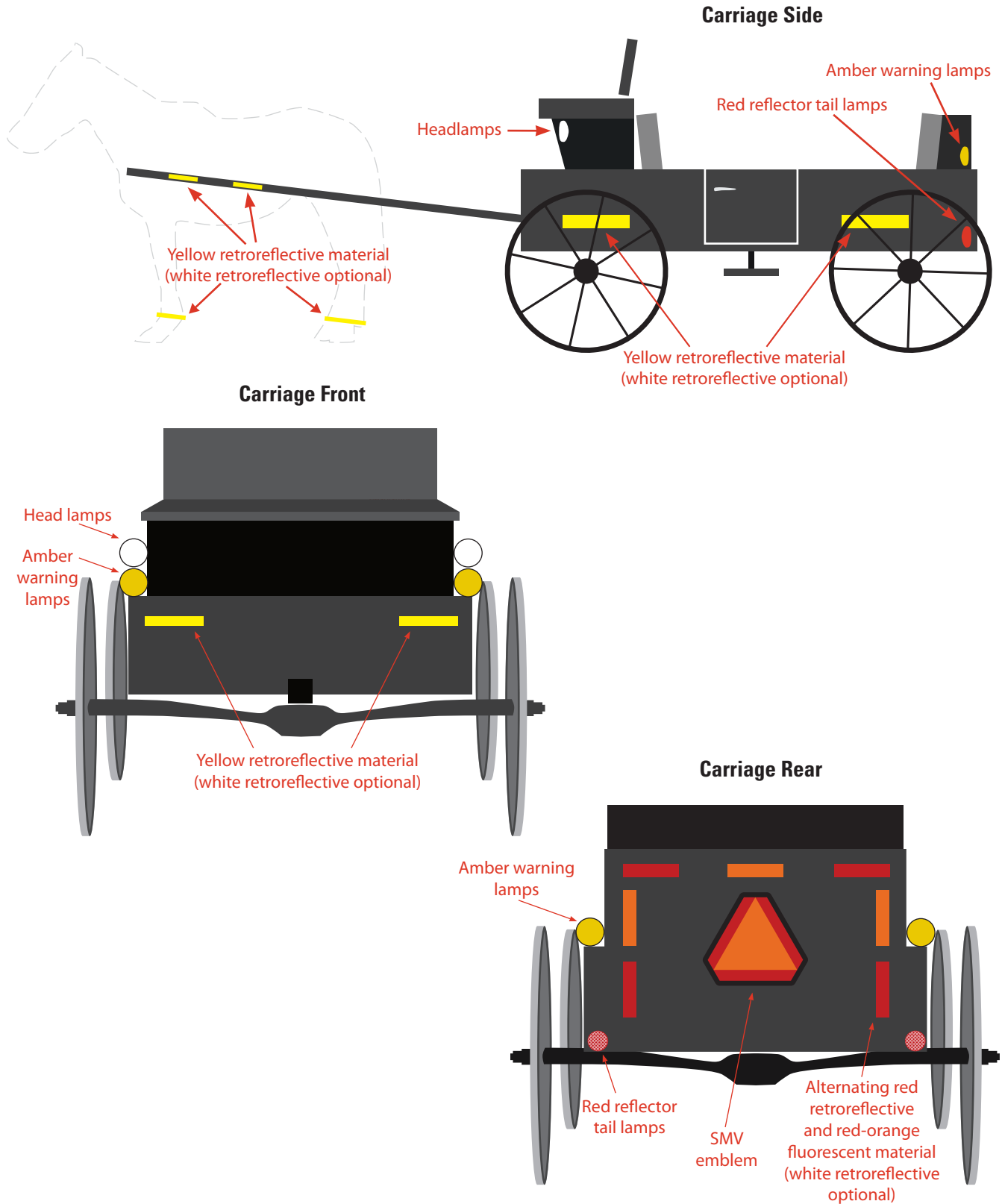


An outline of the ASABE recommendations is presented here.

Animal-Drawn Carriage Lighting and Marking				
Item	2008 ASABE Recommendations			Options
	Number	Color	Mounting	
SMV Emblem (Rear)	1	RED retroreflective border surrounding fluorescent ORANGE center	Rear center, 2 to 6 feet from the surface of the road.	No alternative options exist for an SMV emblem.
Headlights¹ (Front)	At least 2	WHITE	Symmetrically around centerline, mounted between 2.5 and 12 feet high, visible to the front and the rear.	As an alternative to headlamps and taillamps, at least two double-faced lamps protruding from the sides at the widest point can be used. The lamps will have a CLEAR lens to the front and a RED lens to the rear.
Tail Lights¹ (Rear)	At least 2	RED	Symmetrically as widely spaced as possible, between 2.5 and 12 feet high.	A turn signal system may be incorporated into the rear RED tail lamps or the flashing AMBER lamps. In that case, the lamp that is positioned on the side of the turn should flash and the lamp on the side away from the turn should go to steady burn.
Hazard Flashers¹ (Front and Rear)	At least 2	AMBER	Symmetrically, visible to front and rear, between 2.5 and 12 feet high.	No other options exist for AMBER flashing lights.
Retroreflective Material (Rear)	2 inch x 9 inch strips	Alternating RED retroreflective and ORANGE RED fluorescent material	Outlining the sides and top of the rear of the vehicle.	Where local culture uses WHITE retroreflective material, it should be at least 1 inch wide. If this option is chosen, two red reflex reflectors or red retroreflective material should be mounted symmetrically around centerline, as widely spaced as possible.
Retroreflective Material (Front)	At least two 2 inch x 9 inch strips	YELLOW retroreflective material	Symmetrically as widely spaced as possible.	Where local culture uses WHITE retroreflective material, it should be at least 1 inch wide.
Retroreflective Material (Side)	At least two 2 inch x 9 inch strips	YELLOW retroreflective material	Symmetrically along each side of vehicle frame. If vehicle has a tongue or shaft visible on the outside of the animal, at least one additional yellow strip should be placed on outside of the tongue or shaft.	Where local culture uses WHITE retroreflective material, it should be at least 1 inch wide.
				YELLOW or WHITE retroreflective material may be attached to the harness, to the animal's legs, or both.

¹Animal-drawn vehicles with a lighting system should be equipped with a battery operated or generator powered system. Batteries may be typical storage, deep cycle or gel cell conforming to SAE J537.

Animal-Drawn Carriage Lighting and Marking



Reference

ANSI/ASAE, EP576.1 July 2008, Lighting and Marking of Animal-Drawn Equipment, ASAE Standards, American Society of Agricultural Engineers (ASAE), St. Joseph, MI 49085.

Resources

Retroreflective Material, American Society of Agricultural Engineers (ASAE), S279.11, April 2001.

Lighting and Marking of Agricultural Equipment on Highways, ASAE S279.13, DEC 2005.

Slow-Moving Vehicle Identification Emblem, ASAE, S276.6, JAN 2005.

Headlamps for Agricultural Equipment, SAE J975, JUN93.

Tail Lamps (Rear Position Lamps) for Use on Motor Vehicles Less Than 2032 mm in Overall Width, SAE J585, MAR 2000.

Storage Batteries, SAE J537, SEPT 2000.

Flashing Warning Lamp for Agricultural Equipment, SAE J974, AUG 2002.

Reflex Reflectors, SAE J594, DEC 2003.

For additional information, visit the following web site at <http://www.agsafety.osu.edu> or request a listing of the available fact sheets from your local OSU Extension office.

Acknowledgments

Reviewed by Thomas Bean, Ph.D., and Aletha Reshan, Department of Food, Agricultural and Biological Engineering.

Funded in part by the National Highway Traffic Safety Administration (NHTSA), Ohio Department of Public Safety (ODPS), and the Ohio Traffic Safety Office (OTSO).

EMPOWERMENT THROUGH EDUCATION

Visit Ohio State University Extension's web site "Ohioline" at: <http://ohioline.osu.edu>

Ohio State University Extension embraces human diversity and is committed to ensuring that all research and related educational programs are available to clientele on a nondiscriminatory basis without regard to race, color, religion, sex, age, national origin, sexual orientation, gender identity or expression, disability, or veteran status. This statement is in accordance with United States Civil Rights Laws and the USDA.

Keith L. Smith, Ph.D., Associate Vice President for Agricultural Administration and Director, Ohio State University Extension

TDD No. 800-589-8292 (Ohio only) or 614-292-1868