This is an Association of Equipment Manufacturers (AEM) Webinar Presentation
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AEM Webinar:
ANSI/ASAE S279
Lighting and Marking of Agricultural Equipment on Highways
A Requirements Review
Purpose

• Review the change in status of ANSI/ASAE S279, “Lighting and Marking of Agricultural Equipment on Highways” from a voluntary standard to a regulatory requirement

• Explain the requirements in the standard that are now part of 49 CFR 562

• Highlight alignment of this webinar with AEM document: Illustrative Guide to: ASAE S279.17
Sections

- Users, regulatory requirements, AEM tools, review approach
- Components and common requirements
- Detailed requirements
  - Marking,
  - Lighting
Information Users

- Farmers
- Retailers
- Distributors
- Educators
- Trainers
- Safety Professionals
- Compliance Officers
- Law Enforcement
- Transportation Officials
- Standards Developer
- Designers
- Manufacturers
- Suppliers
You will understand the standard:

• for your intended use, and,
• how it alerts vehicle drivers of an implement or implement train’s:
  • width,
  • length,
  • velocity, change in velocity,
  • direction, change in direction and
  • position and change in position on roadways

... in a consist manner across the nation.
The National Highway Traffic Safety Administration (NHTSA) has amended 49 CFR Chapter IV, Subchapter B by adding part 562, \textit{Lighting and Marking on Agricultural Equipment}. (Commonly referred to as AMISA)

ASAE/ANSI S279.14 has been adopted by reference* into this new federal regulation


* By reference means the regulation references the standard by number and name, and, requires that its clauses be followed
Stated Need – Federal Regulation

• “This new regulation sets forth for the first time requirements for lighting and marking on agricultural equipment across the nation”

• “The intent is to improve daytime and nighttime visibility as required by the 2012 Moving Ahead for Progress in the 21st Century Act (Sec. 31601, Pub. L. 112–141)”

• New agricultural equipment manufactured on or after June 22, 2017 must be compliant to this rule

Reference AEM Article: Ag Lighting & Marking: Collaboration Becomes Law
Stated Need – Federal Regulation

Significant Parts of 562—Lighting and Marking of Agricultural Equipment

- **49 CFR Part 562.7**, Lighting and marking requirements for new agricultural equipment
  - New agricultural equipment that may be operated on a public road must meet the lighting and marking standards set forth in ANSI/ASAE 279.14 JUL2008, “Lighting and Marking of Agricultural Equipment on Highways”

- **49 CFR Part 562.9**, Compliance not affected by addition of certain materials and equipment
  - Equipment … that complies with a revision of ANSI/ASAE Standard 279 … does not affect compliance with the requirements of this part.
  - Allows for future standard revisions*

* Meeting the requirements of the most current revision to ANSI/ASAE Standard S279 at time of manufacture does not affect compliance to the regulation.

Sometimes language used in standards can be hard to understand.

Example – ASAE S279.17 - 4.1.6 - Stop Lamps

4.1.6.3 These (stop) lamps may be combined with the tail lamps specified in clause 4.1.3 of this standard or they may be additional lamps.

In the case of additional lamps, they shall be symmetrically mounted and positioned as close as practicable to the outer edges of the machine and between 0.4 and 3 m (1.3 and 10 ft) high or 3.7 m (12 ft) if bodywork dictates.

If these lamps are used to meet the additional turn indicator provisions of clause 4.1.5 of this standard, the turn indicator function shall have priority over the stop lamp function in the direction of turn.

The opposite side stop lamp shall continue to function as a stop lamp as in clause 4.1.6.1.

Guidance may be needed to execute or validate the use of this clause and others in the standard.
AEM Tools To Support Status Change

• AEM Guidance Document: Lighting and Marking of Agriculture Equipment on Highways - **Illustrative Guide to:**
  ASAE S279.17 (Available for download)

• AEM Webinar: ASAE S279.17 Lighting and Marking of Agricultural Equipment on Highways - A Requirements Review
This webinar serves as a resource for use with;

**Lighting and Marking of Agriculture Equipment on Highways - Illustrative Guide to: ASAE S279.17**

**Purpose**
- reduce confusion,
- improve understanding
- easier and faster implementation of and compliance to the standard’s requirements
The Guide

- Provides layout information by machine type
- Provides detailed component placement dimensioning on each layout
- Provides reference notes for special cases
Webinar Approach

- Provides consolidated view of roadway lighting and marking requirements by functional area
  - Groups such as retroreflective markings, warning lights, turn indicators, extremity markings
- Provides *pictorial and graphic examples* of components and lighting and marking systems
- Provides *cross-reference* from guidance document to sections and clauses of the standard
- Provides *industry generated pictures* and graphics to support interpretations and understanding
Order of Component Review

**Equipment Marking**
- SMV Signs and Red Retroreflective Materials (Rear)
- Yellow Retroreflective Materials (Front & Side)
- Red-Orange Fluorescent Materials (Rear)

**Equipment Lighting**
- Tail Lights
- Stop Lights
- Warning Lights
- Turn Indicators
- Head Lamps and Beacons
Machines
• Tractors and Self-Propelled Implements
• Front Carried Implements
• Rear Towed and Carried Implements

Requirements
• General
• Machines wider than 12 Ft (3.7m)

Additional Requirements will be highlighted
• Obscured lighting and marking
• Lighting and marking for width
• Lighting and marking for length
• Lighting for speed
Components and Common Requirements
Slow-Moving Vehicle Emblem
- SMV Emblem (ANSI/ASAE S276.7)
- Use on implements of husbandry (and other vehicles)
- Speeds of 25 mile/h or less
- With Speed Information Symbol (SIS) for speeds between 25 and 40 miles/hr ANSI/ASAE S584.3
  - Tractors & SP Implements (4.1.9) (4.1.8.1-width)
  - Non-SP Implements (4.2.1) (4.2.3.3.1-width) (4.2.4.2-length)

Speed Identification Symbol (SIS)
- Self-propelled and towed equipment
  - > 25 mile/h (40 km/h),
  - < 40 mile/h (64 km/h)
- With a SMV
- Agricultural equipment (implements of husbandry)
  - ANSI/ASAE S584.3
  - (4.1.10) (4.2.2)
Retroreflective Devices

Retroreflective Material
- Color - Red (rear) and yellow (front and side) (3.5.3)
- Visible at night from 1000 to 100 feet (305 and 30 m) (3.5.1)
- 2 in. wide by 9 in. long  > 6.7 ft (2 m) Width (3.3.1)
- 2 in. wide by 4.5 in. long  ≤ 6.7 ft (2 m) Width (3.3.1)
  - Red (4.1.7) (4.1.8.1-width) (4.2.3.2-width) (4.2.3.3.1-width) (4.2.3.4.2-width) (4.2.4.1-length)
  - Yellow (4.1.8.2) (4.2.3.1-width) (4.2.3.3.2-width) (4.2.3.4.1-width) (4.2.4.2-length)

Retroreflective Reflectors
- Reflex Reflectors  SAE J2041  ≥ 6.7 ft (2 m) Width (3.3.2)
- As part of tail lamp (4.1.3-lighting) (4.1.7) (4.1.8)
- Reflex Reflectors  SAE J594  (3.3.2) (4.2.4.2)
Nonreflective Red-Orange Fluorescent Material

Fluorescent Material

- 2 in. (50 mm) wide by 9 in. (115 mm) long (3.6.2)
- Visible in the daylight from 1000 to 100 feet (305 and 30 m) (3.6.1)
- (4.1.8.1)(4.2.3.3.1)(4.2.3.4.2)
Flashing Warning Lamp

• Flash in-unison across machine
• 60 to 85 flashes per minute
  • SAE J974
• In turn
• Minimum + 20 increase flash rate per minute
Tail Lamps  Stop Lamps  Turn Signal Lamps

≥ 6.7 ft (2 m) Width

• Tail Lamps (Rear Position Lamps) SAE J2040 (4.1.3)
  • Meets red reflective requirements of 4.1.7 when include requirements of 3.3.2 Reflectors
• Stop Lamps and Front- and Rear-Turn Signal Lamps
  • ≥ 2032 mm in Width, SAE J2261 201001
  • Red or Amber

< 6.7 ft (2 m) Width

• Tail Lamps (Rear Position Lamps) SAE J585 (4.1.3.1) (4.3.1.1.1)
  • Meets reflective requirements of 4.1.7 when include requirements of 3.3.2 Reflectors
• Stop Lamps SAE J586
  • Machines less than 4 ft wide - one lamp is required. Mounted as close as practicable to the center
• Turn Signal Lamps SAE J588
Head Lamp and Beacons

Head Lamps
• ASABE S608, Headlamps for Agricultural Equipment
  • At least two headlamps generally conforming to ASABE S608

Beacon
• Optical Warning Devices SAE J845 200712,
• When a rotating beacon or strobe beacon is installed on a machine, it shall conform to SAE J845 (4.1.4.2)
Symmetry

• Materials and lights shall be;
  o Horizontal (a)
  o In-line (b)
  o Evenly spaced (c)
• As practicable
Common Requirements: Heights

Height
Marking (Conspicuity)
• SMV 2 ft (0.6 m) minimum - 10 ft (3 m) maximum (a)
• Other materials not limited

Lighting
• All: minimum 1.3 ft (0.4 m)
• Warning and Turn: maximum 12 ft (3.7 m) (b)
• Stop: maximum 10 ft (3 m) – 12 ft (3.7 m) allowed (c)
• Tail: maximum 10 ft (3 m) (c)
Common Requirements: Spacing and Extremity Marking

Spacing
- Machines > 12 ft (3.7 m) wide*
- Materials (red, orange, yellow) – 6 Ft or less (a)
- Includes like material on SMV

Extremity Marking
Machines > 12 ft (3.7 m) wide*
- Retroreflective Materials / Warning lights / Turn indicators (b)
  - 16 In. or less to machine edge
- Fluorescent Materials (c)
  - 25 In. or less to machine edge

Machines ≤ 12 ft (3.7 m) width
- As widely spaced (close) as practicable

* or, in some clauses, extending more than 6 ft (1.8) to right or left of center
Detailed Requirements
Marking
Requirements

SMV

Rear Retroreflective Material

Front & Side Retroreflective Material

Red Orange Fluorescent Material
Tractor & SP implements

SMV

- One emblem shall be installed *(4.1.9)* *(S276.7)*
- 2-ft Minimum, 10-ft Maximum *(S276.7)*
Retroreflective Material

Tractor & SP implements

Retroreflective Material or Reflectors (Devices)
• 2 devices viewable from rear (4.1.7)
• Indicate the extreme left and extreme right projections, as widely spaced as practicable
(Reflective material shown)
Tractor & SP implements

Reflex Reflectors

• May be incorporated into the lens of the tail lamps (SAE J594) (4.1.7)

• Must indicate as nearly as practicable the extreme left and extreme right projections (4.1.7)

• Symmetrically mounted, widely spaced, but no greater than 5 ft (1.5 m) to the left and right of the machine center and between 1.3 and 10 ft (0.4 and 3 m) high (3.3.2) (4.1.3)

Rear
Tractor & Self Propelled
Retroreflective Material

Tractor & SP implements

• SMV - One emblem shall be installed on the machine (4.1.9) (S276.7)

• 2 devices from rear (4.1.7)

• indicate the extreme left and extreme right projections, as widely spaced as practicable

• Reflex reflectors (3.3.2) (4.1.3) may be incorporated into the lens of the tail lamps (SAE J594)
Rear
Towed & Carried

Rear- Towed and Carried

- At least two strips of red retroreflective material
- Indicating, as nearly as practicable, extreme left and right projections
- Are required ...
Rear- Towed and Carried

- At least two strips of red retroreflective material
- Indicating, as nearly as practicable, extreme left and right projections
- Are required …
- If equipment extends more than 4 ft (1.2 m) to the right or left of the centerline (4.2.3.2)
Rear-Towed and Carried

- **At least** two strips of red retroreflective material
- Indicating, as nearly as practicable, extreme left and right projections
- Required …
- If equipment extends more than 4 ft (1.2 m) to the **right or left** of the centerline (4.2.3.2)
- Or, if equipment extends more than 4 ft (1.2 m) to the **rear** of the hitch point (4.2.4.1)
Rear Towed & Carried

- An SMV is required ...
Rear- Towed and Carried

- An SMV is also required...
- If equipment including combinations extending more than 16.4 ft (5 m) to the rear of the hitch point (4.2.4.2)
Rear- Towed and Carried

- An SMV is also required...
- If equipment including combinations extends more than 16.4 ft (5 m) to the rear of the hitch point (4.2.4.2)
- Or, if equipment obscures the SMV emblem on the propelling implement (4.2.1)
Retroreflective Material

Tractor & SP Implements 4.1.7
Towed and Carried - Rear (4.2.3.3.1)
Carried – Front (4.2.3.4.2)*

• Equipment more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8 m) to right or left of center

Rear
> 12 Ft Width
**Retroreflective Material**

Tractor & SP implements 4.1.7
Towed and Carried - Rear (4.2.3.3.1)
Carried - Front (4.2.3.4.2)

- Equipment more than 3.7 m (12 ft) wide or extending more than 1.8 m (6 ft) to right or left of center
- Material shall be as horizontal - in line and evenly spaced as practicable

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**Rear > 12 Ft Width**

![Diagram](attachment:image.png)

- Tractor & SP
- Rear - Towed and Carried
- Front - Carried

More than 3.7m (12-ft) or more than 1.8m (6-ft) to right or left

Horizontal - in-line - evenly spaced
Retroreflective Material

Tractor & SP implements 4.1.7
Towed and Carried - Rear (4.2.3.3.1)
Carried - Front (4.2.3.4.2)

- Equipment more than 3.7 m (12 ft) wide or extending more than 1.8 m (6 ft) to right or left of center
- Material shall be as horizontal - in line and evenly spaced as practicable
- Horizontal distance between strips of retroreflective material shall not exceed 6 ft (1.8 m) (The retroreflective material on the SMV may be included to meet these requirements)

Rear
> 12 Ft Width
Retroreflective Material

Tractor & SP implements 4.1.7
Towed and Carried - Rear (4.2.3.3.1)
Carried - Front (4.2.3.4.2)

- Equipment more than 3.7 m (12 ft) wide or extending more than 1.8 m (6 ft) to right or left of center
- Material shall be as horizontal - in line and evenly spaced as practicable
- Horizontal distance between strips of retroreflective material shall not exceed 1.8 m (6 ft) (The retroreflective material on the SMV may be included to meet these requirements.)
- Outer edge of the outermost strips of retroreflective material shall be within 16 in (400 mm) of the left and right extremities

Rear

> 12 Ft Width

[Diagram showing requirements for retroreflective material placement]
Tractor & SP implements 4.1.7

- Equipment **more than 12 ft (3.7 m) wide** or extending more than 6 ft (1.8 m) **to right or left of center**
- material shall be as horizontal - in line and evenly spaced as practicable
- horizontal distance between strips of retroreflective material shall not exceed 6 ft (1.8 m) (**The retroreflective material on the SMV may be included to meet these requirements.**)  
- outer edge of the outermost strips of retroreflective material shall be within 16 in (400 mm) of the left and right extremities
Retroreflective Material

**Carried - Front (4.2.3.4.2)**

- Equipment **more than 3.7 m (12 ft)** wide or extending more than **1.8 m (6 ft)** to right or left of center
- Material shall be as horizontal - in line and evenly spaced as practicable
- Horizontal distance between strips of retroreflective material shall not exceed **1.8 m (6 ft)**
- The retroreflective material on the SMV may be included to meet these requirements.
- Outer edge of the outermost strips of retroreflective material shall be within **400 mm (16 in.)** of the left and right extremities
- **No conspicuity material is required** for a horizontal distance of **4 ft (1.2 m)** on either side of the propelling machine centerline
Retroreflective Material

Towed and Carried - Rear (4.2.3.3.1)

- Equipment **more than 12 ft (3.7 m)** wide or extending more than **6 ft (1.8 m) to right or left of center**

- material shall be as horizontal - in line and evenly spaced as practicable

- horizontal distance between strips of retroreflective material shall not exceed **6 ft (1.8 m)**

- The retroreflective material on the SMV may be included to meet these requirements.

- outer edge of the outermost strips of retroreflective material shall be within **16 in (400 mm) of the left and right extremities**

- **Equipment that obscures the SMV emblem on the propelling machine shall be equipped with one SMV** (4.2.1)
Retroreflective Material

Front - Towed and Carried

• Equipment > 4 ft (1.2 m) to left of the centerline of the propelling machine (4.2.3.1)
• at least one strip of yellow retroreflective material
• indicate, as nearly as practicable, the extreme side projections

Front Markings Retroreflective
Retroreflective Material

Front - Towed and Carried

- Equipment > 4 ft (1.2 m) to left of the centerline of the propelling machine (4.2.3.1)
- at least one strip of yellow retroreflective material
- indicate, as nearly as practicable, the extreme side projections
Retroreflective Material

Tractor & SP implements (4.1.8.2)
Towed and Carried - Rear (4.2.3.3.2)
Carried - Front (4.2.3.4.1)

- Equipment more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8 m) to right or left of center

Front Markings

> 12 Ft Width

Tractor & SP

Rear - Towed and Carried

Front - Carried

More than 3.7m (12-ft) or more than 1.8m (6-ft) to right or left
Retroreflective Material

Tractor & SP implements (4.1.8.2)
Towed and Carried - Rear (4.2.3.3.2)
Carried - Front (4.2.3.4.1)

• Equipment more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8 m) to right or left of center
• Outer edge of the outermost strips of retroreflective material shall be within 16 in (400 mm) of the left and right extremities

Front Markings
> 12 Ft Width

Tractor & SP  Rear - Towed and Carried  Front - Carried

More than 3.7m (12-ft) or more than 1.8m (6-ft) to right or left

16-in or less
Tractor & SP implements (4.1.8.2)

- Equipment *more than 12 ft (3.7 m) wide* or extending more than 6 ft (1.8 m) *to right or left of center*

- Outer edge of the outermost strips of retroreflective material shall be within 16 in (400 mm) of the left and right extremities
Retroreflective Material

Towed and Carried - Rear (4.2.3.3.2)

• Equipment more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8 m) to right or left of center

• Outer edge of the outermost strips of retroreflective material shall be within 16 in (400 mm) of the left and right extremities
Side Markings
Retroreflective

Side - Towed and Carried

- Equipment including combinations extending more than 16.4 ft (5 m) to the rear of the hitch point shall be equipped with yellow retroreflective material (4.2.4.2)
- Spaced at intervals of 16.4 ft (5 m) maximum on both sides measuring from the tractor or self-propelled machine hitch point (4.2.4.2)
- Rear most reflector positioned as far rearward as practicable
Tractor & SP implements
Towed and Carried - Rear
Carried - Front

- For equipment other than equipment wider than 12 ft (3.7 m)
- There are no stated requirements for Red-Orange Fluorescent materials
Tractor & Self-Propelled implements (4.1.8)

Towed and Carried - Rear (4.2.3.3.1)

Carried - Front (4.2.3.4.2)*

- Equipment more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8) to right or left of center

- Conspicuity material shall be visible from the rear
Tractor & Self-Propelled implements (4.1.8)

Towed and Carried - Rear (4.2.3.3.1)

Carried - Front (4.2.3.4.2)*

- Equipment **more than 12 ft (3.7 m)** wide or extending more than **6 ft (1.8)** to right or left of center
- Conspicuity material shall be visible from the rear
- Material shall be as horizontal - in line and evenly spaced as practicable

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Rear

> 12 Ft Width
Nonreflective Red-Orange Fluorescent Material

Tractor & Self-Propelled implements (4.1.8)

Towed and Carried - Rear (4.2.3.3.1)

Carried - Front (4.2.3.4.2)*

- Equipment more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8) to right or left of center
- Conspicuity material shall be visible from the rear
- Material shall be as horizontal - in line and evenly spaced as practicable
- Horizontal distance between strips of retroreflective material shall not exceed 6 ft (1.8 m) (The nonreflective red-orange fluorescent material and retroreflective material on the SMV may be included to meet these requirements.)
Nonreflective Red-Orange Fluorescent Material

Tractor & Self-Propelled implements (4.1.8)

Towed and Carried - Rear (4.2.3.3.1)

Carried - Front (4.2.3.4.2)

• Equipment more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8) to right or left of center
• Conspicuity material shall be visible from the rear
• Material shall be as horizontal - in line and evenly spaced as practicable
• Horizontal distance between strips of retroreflective material shall not exceed 6 ft (1.8 m) (The nonreflective red-orange fluorescent material and retroreflective material on the SMV may be included to meet these requirements.)
• Outer edge of the outermost strips of retroreflective material shall be within 25 in (635 mm) of the left and right extremities

Rear > 12 Ft Width

Return to Webinar Approach
Nonreflective Red-Orange Fluorescent Material

Tractor & Self-Propelled implements (4.1.8)

- Equipment **more than 12 ft (3.7 m) wide** or extending more than **6 ft (1.8) to right or left of center**
- Conspicuity material shall be visible from the rear
- Material shall be as horizontal - in line and evenly spaced as practicable
- Horizontal distance between strips of retroreflective material shall not exceed 6 ft (1.8 m)
- Outer edge of the outermost strips of retroreflective material shall be within 25 in (635 mm) of the left and right extremities
Nonreflective Red-Orange Fluorescent Material

Carried - Front *(4.2.3.4.2)*

- Equipment more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8) to right or left of center
- Conspicuity material shall be visible from the rear
- Material shall be as horizontal - in line and evenly spaced as practicable
- Horizontal distance between strips of retroreflective material shall not exceed 6 ft (1.8 m)
- Outer edge of the outermost strips of retroreflective material shall be within 25 in (635 mm) of the left and right extremities
- No conspicuity material is required for a horizontal distance of 4 ft (1.2 m) on either side of the propelling machine centerline
Towed and Carried - Rear

(4.2.3.3.1)

- Equipment **more than 12 ft (3.7 m)**
  **wide** or extending more than 6 ft
  (**1.8**) **to right or left of center**

- Conspicuity material shall be visible from the rear

- Material shall be as horizontal - in line and evenly spaced as practicable

- Horizontal distance between strips of retroreflective material shall not exceed 6 ft (**1.8 m**)

- Outer edge of the outermost strips of retroreflective material shall be within 25 in (**635 mm**) of the left and right extremities

- **Equipment that obscures the SMV emblem on the propelling machine shall be equipped with one SMV**
  (4.2.1)
Detailed Requirements
Lighting
Requirements

Tail Lamps
Stop Lamps
Flashing Warning Lamps
Turn Indicators
Tail Lamps

Lighting Requirements

Red Tail Lamps – Common Requirements
• Two required
• Symmetrically mounted, to the rear of the machine
• Widely spaced laterally as practicable
• Between 1.3 and 10 ft (0.4 – 3 m) high

Tractor & Self-Propelled
• Positioned no greater than 5 ft (1.5 m) to the left and right of center (4.1.3)

Non-Self-Propelled
• Positioned between 2 and 5 ft (0.6 and 1.5 m) from the left and right of center (4.3.1.1.1) (4.3.2.1.2)
• Required if tail lamps obscured on the propelling machine (4.3.1.1.1)
• Required if equipment is more than 12 ft (3.7 m) wide or extending more than 6 ft (1.8) to right or left of center (4.3.2.1.2)
• Required for equipment that extends more than 25 ft (7.6 m) to the rear of the hitch point (4.3.3.1)
**Tail Lamps**

**Rear Towed or Carried > 12 Ft Wide**

**Lighting Requirements**

**Non-Self-Propelled**

- For equipment more than 12 ft (3.7 m) wide
- If the tail lamps on the propelling machine are **not** obscured
- Tail lamps may be positioned **more than 5 ft (1.5 m)** to the left and right center (4.3.2.1.2)

![Diagram of tail lamps positioning](image)
Stop Lamps

Stop Lamps – Common Requirements

- Required on machines designed for speeds above 25 miles/h (40 km/h) (4.1.6.1)
- At least two red rear-facing lamps required (unless < 4 ft (1.2 m) wide - then one)
- 1.3 and 10 ft high (0.4 and 3 m) / 12 ft (3.7 m) allowed (4.1.6.3)
- Positioned as close as practicable to the outer edges (4.1.6.3)
- Symmetrically located toward rear (4.1.6.3)
- Optional ≤ 25 miles/h (4.1.6.5)

Tractor & SP implements

- Activated by the service brake or deceleration rate is greater than 2 mile/h/s (3.2 km/h/sec) (4.1.6.1)
Stop Lamps

Rear Towed or Carried Requirements

- Required if implement is designed for and travels at speeds greater than 25 mile/h (40 km/h) (4.3.4.1)
- Required where vehicle stop lamps are obscured on towed or semi-mounted implements designed for speeds greater than 25 mile/h (40 km/h), and, on any carried implement (4.3.1.1)
- Required if width is more than 12 ft (3.7 m) or extends more than 6 ft (1.8 m) to the left or right of the centerline and beyond extremity of the propelling machine (4.3.2.1 by reference to 4.3.4)
- Required if length is more than 25 ft (7.6 m) to the rear of the hitch point (4.3.3.1)
- Activated by service brake or another primary control used to slow the towing machine (4.3.4.1)
- Optional ≤ 25 miles/h (4.1.6.5)
Stop Lamps

Stop Lamps

• May be combined with the tail lamps (4.1.6.3) (tail light clause 4.1.3)

• Must meet tail lamp requirements (see Red Tail Lamp segment) (4.1.3)

• Note – see turn indicator section below for additional functions

Tractor & SP implements
Rear Towed and Carried

Tractor & Self Propelled
Rear Towed or Carried
Lighting Requirements

**Flash Lighting**

**Flash Warning Lamps**
- **Common**
  - At least two amber lamps required
  - Flash in unison - 60 to 85 flashes per minute
  - Symmetrically mounted
  - Widely spaced laterally as practicable

**Tractor & Self Propelled**

**Front Carried**
- Mount 1.3 to 12 ft (0.4 to 3.7 m) high (a)

**Front – Towed and Carried**
- Required if front flashing warning lamps are obscured on propelling machine (4.3.1.1.2)
  - Mount 1.3 to 10 ft (0.4 to 3.7 m) high - 12 ft allowed (b)

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Return to **Webinar Approach**
Flashing Warning Lamps

Tractor & Self Propelled > 12 Ft Wide
Front Carried > 12 Ft Wide
Rear Towed or Carried > 12 Ft Wide

Flashing warning lamps, continued

- Required on machines more than 12 ft (3.7 m) wide
- Flash in unison
- Mount within 16 in. (400 mm) of extremities - includes dual wheels, wide axles, headers

Tractor & SP implements (4.1.4.1)
Front Carried and Rear Towed or Carried (4.3.2.1)
Flashing Warning Lamps

Front Carried > 6 Ft Left or Right
Rear Towed or Carried > 6 Ft Wide L or R

Flashing warning lamps, continued

• One flashing warning lamp required (4.3.1.1.2) (4.3.2.1.1)

• Mount within 16 in. (400 mm) of projecting extremity (4.3.1.1.2) (4.3.2.1.1)

Towed and Carried

• Required if only one flashing warning lamp is obscured on the vehicle (4.3.1.1)

• Required if equipment extends more than 6 ft (1.8 m) to the left or right of center and beyond the left or right extremity of the propelling machine (4.3.2.1) (4.3.1.1.2)

• Examples are mouldboard plows or windrows
Lighting Requirements

Addional Warning Lamps

- May be added
- Shall flash in unison

Tractor & SP implements (4.1.4) (4.1.4.1)

Front Carried and Rear Towed or Carried (4.3.1.1.2) (4.3.2.1.1)(4.3.3)
Flashing warning lamps - common
- At least two amber lamps required
- Symmetrically mounted
- Widely space laterally as practicable
- Flash in unison - 60 to 85 flashes per minute

Tractor & SP implements (4.1.4)
- Mount 1.3 to 12 ft (0.4 to 3.7 m) high (a)

Rear – Towed and Carried
- Required if flashing warning lamps are obscured on propelling machine (4.3.1.1.2)
- Mount 1.3 to 10 ft (0.4 to 3.7 m) high - 12 ft allowed (b)
Lighting Requirements

Flashing warning lamps, continued

- Required on machines more than 12 ft (3.7 m) wide
- Required on implements extending more than 25 ft (7.6 m) to the rear of the hitch point
- Mount within 16 in. (400 mm) of extremities - includes dual wheels, wide axles, headers

Tractor & SP implements (4.1.4.1)

Front Carried and Rear Towed or Carried (4.3.2.1.1)

Rear Towed (4.3.3.1)
Additional Warning Lamps

- May be added
- Shall flash in unison

Tractor & SP implements (4.1.4) (4.1.4.1)

Front Carried and Rear Towed or Carried (4.3.1.1.2) (4.3.2.1.1)(4.3.3)
Flashing warning lamps, continued

- One flashing warning lamp required
  (4.3.1.1.2) (4.3.2.1.1)

- Mount within 16 in. (400 mm) of projecting extremity
  (4.3.1.1.2) (4.3.2.1.1)

Towed and Carried

- Required if only one flashing warning lamp is obscured on the vehicle
  (4.3.1.1)

- Required if equipment extends more than 6 ft (1.8 m) to the left or right of center and beyond the left or right extremity of the propelling machine
  (4.3.2.1) (4.3.1.1.2)

- Examples are mouldboard plows or windrowers
**Lighting Requirements**

**Turning Indicators**

- Shall be provided

- Amber flashing warning lights in direction of turn increase in flash rate minimum of 20 flashes per minute (not to exceed 125 flashes per minute)

- Opposite side lamp(s) shall stay on

**Tractor & SP implements 4.1.5**

- above

**Non-Self-Propelled**

- Required if the front turn indicators on the propelling machine are obscured (4.3.1.1.3)

- Required if machine is more than 12 ft (3.7 m) wide or extends more than 6 ft (1.8 m) to the left or right of center and beyond the left or right extremity of the propelling machine (4.3.2.1) (consistent with 4.1.5)
Turning Indicators

Tractor & Self Propelled

Front and Rear Carried and Rear Towed

- Shall be provided 4.1.5
- Amber flashing warning lights in direction of turn increase in flash rate minimum of 20 flashes per minute (not to exceed 125 flashes per minute)
- Opposite side lamp(s) shall stay on

Tractor & SP implements

- Above

Non-Self-Propelled

- Required if turn indicators on the propelling machine are obscured (4.3.1.1.3) (consistent with 4.1.5)
- Required if more than 12 ft (3.7 m) wide or extends more than 6 ft (1.8 m) to the left or right of center and beyond the left or right extremity of the propelling machine (4.3.2.1.3) (consistent with 4.1.5)
- Required if extends more than 25 ft (7.6 m) to the rear of the hitch point (4.3.3.1) see 4.3.2.1.3 and 4.1.5
Turn Indicators – continued,

Additional requirement –

- **Rear-facing red or amber lamp shall be provided** (4.1.5)
- Between 1.3 and 12 ft (0.4 and 3.7 m) high
- No greater than 5 ft (1.5 m) to the left and right of the center, symmetrically mounted
- Widely spaced laterally as practicable
- Flash in the direction of turn in unison with the amber flashing warning lamp(s)
- Opposite side warning light stays on
- Additional required lamp on the side opposite the turn may remain off, or on, or become brighter but shall not flash

- **Flash rate increase** - minimum 20 flashes per minute

**Tractor & Self Propelled**

**Front and Rear Carried and Rear Towed**

- **Red or Amber**
  - a. Min 1.3-Max 12 ft height
  - b. ≤ 5 Ft from center
  - Wide as practicable

- **Opposite side stays on**

**Rear**

- Stays off
- Burns brighter or
- **Stays on**
Stop Lamps

- On implements equipped with stop lamps that conform to clause 4.1.6,
- Additional rear facing red or amber turn indicators are not required regardless of speed 4.1.5

Tractor & SP implements (4.1.5)
Rear Towed and Carried (4.3.1.1.3) (4.3.2.1.3) (4.3.3.1) and 4.3.4

Additional turn indicator not required with stop lamps

Stop Lamp

Turn Indicators/Stop Lamps

Tractor & Self Propelled
Front and Rear Carried and Rear Towed
Stop Lamps as turn indicators

- If stop lamps are used as turn indicator per 4.1.6.3
- Turn indicator function shall have priority in direction of turn
- Opposite side warning light stays on
- Opposite side stop lamp shall function as a stop lamp
- Stop lamps may be combined with the tail lamps Per 4.1.6.3
  (Same functions as above)

Tractor & SP implements (4.1.6.3)

Rear Towed and Carried 4.1.6 via
(4.3.1.1.3) (4.3.2.1.3) (4.3.3.1)
**Lighting Requirements**

**Stop Lamps as turn indicators**
- If stop lamps are **used as turn indicator** per 4.1.6.3
- Turn indicator function shall have priority in direction of turn
- Opposite side warning light stays on
- Opposite side stop lamp shall function as a stop lamp
- Stop lamps may be combined with the tail lamps Per 4.1.6.3 (Same functions as above)

**Tractor & SP implements** (4.1.6.3)

**Rear Towed and Carried** 4.1.6 via (4.3.1.1.3) (4.3.2.1.3) (4.3.3.1)
Head Lamps and Beacons

Tractor & Self Propelled

Front – Tractors & Self-Propelled

- Two headlamps required (ASABE S608) (4.1.1)
- Same height
- Spaced laterally as widely as practicable

- Rotating beacon or strobe beacon may be installed (4.1.4.2)
- Light up the ground 164 ft (50 m) from the periphery of the machine
- Shall conform to SAE J845 Class II (yellow) or ECE Regulation No. 65 (amber).
Harness Attachment - Towed Implements

Pig Tails: Attaching Points and Requirements...

- SAE J560, 4.3.5, 4.3.6 Compliant
- Plug location and cable length - 4.1.11 compliant
- Circuit - 4.1.11.2
Thank You
Tractor & Self Propelled

Minnesota Prairie Roots

WKOW Television

Indiana Prairie Farmer
Tractor & Self Propelled

Rear
Tractor & Self Propelled
Marking & Lighting Pictorials

Front Carried

Front
Marking & Lighting Pictorials

Front Carried

daughterofatrucker.com

Rear
Rear Towed or Carried

Marking & Lighting Pictorials

KRISTV.com

Michigan State University Extension

Huntsville Times Oct 2009
Rear Towed
Rear Towed
Marking & Lighting Pictorials

Rear Towed
Marking & Lighting Pictorials

Rear Towed

Texas Farm Bureau
Marking & Lighting Pictorials

Which of these implements meets the requirements of the standard or reg?

Dutchman News