

Lighting and Marking of Agricultural Equipment on Highways

Illustrative Guide to: ANSI/ASAE S279.18 OCT2019

Drafted by: The AEM Agricultural Equipment Lighting & Marking Committee

AEM 

**Association of
Equipment Manufacturers**

ANNEX B: Illustrations (Informative)

Illustrative Guide to Lighting and Marking Component Locations: ANSI/ASAE S279.18

Lighting and Marking of Agricultural Equipment on Highways

References: ANSI/ASAE S279, ANSI/ASAE S276, ASABE/ISO 20383:2017, SAE J588, SAE J2040, SAE J585, SAE J845

This document is provided as an illustrative guide to ANSI/ASAE S279 and the related standards for lighting and marking of agricultural tractors, self-propelled equipment, and rear mounted 3 point hitch implements, towed implements, and trailers. It uses pictorial representations to assist with understanding ANSI/ASAE S279. It includes lighting and marking illustrations for equipment width and length. It also includes lighting and marking guidance for equipment that obscures the lighting and marking of the tractor or the self-propelled machine to which it is attached. This guidance document is an example and cannot cover all possible equipment types and configurations and methods of compliance. For details concerning the function and operation of the lighting and marking components please refer to the body of the standard.

TABLE OF CONTENTS

LEGEND16

NOTES.....17

Lighting and Marking for Agricultural Tractors & Self-Propelled Equipment.....18

 Tractor Widths ≤ 3.7 m (12 ft.)18 - A-1

 Tractor Widths > 3.7 m (12 ft.)19 - A-2

 Sprayer/Combine Harvester Widths ≤ 3.7 m (12 ft.)20 - B-1

 Sprayer/Combine Harvester Widths > 3.7 m (12 ft.)21- B-2

 Front Mounted Equipment.....22 - C

Lighting and Marking of Agricultural Implements for Width 23

 Equipment extending to the left < 1.8 m (6 ft.)..... 23 - D

 Equipment extending to the right < 1.8 m (6 ft.)..... 23 - E

 Equipment extending to the left and right < 1.8 m (6 ft.) 23 - F

 Equipment extending to the left or right ≥ 1.8 m (6 ft.)..... 24 - G

Lighting and Marking of Agricultural Implements for Length 25

 Equipment extending > 1.2 m (4 ft.) & ≤ 5m (16.4 ft.) to the rear 25 - H

 Equipment extending > 5.0 m (16.4 ft.) & ≤ 7.6 m (25 ft.) to the rear 25 - I

 Equipment extending > 7.6 m (25 ft.) to the rear. 26 - J

Lighting and Marking of Agricultural Implements that Obscure the Lighting and SMV Emblem on the
Propelling Machine..... 27

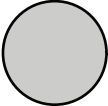
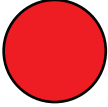


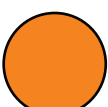





 Mounted Equipment 27 - K

 Towed Implements. 27 - L

NOTE: Function of Turn Signals in Accordance with ANSI/ASAE S279 28



LEGEND

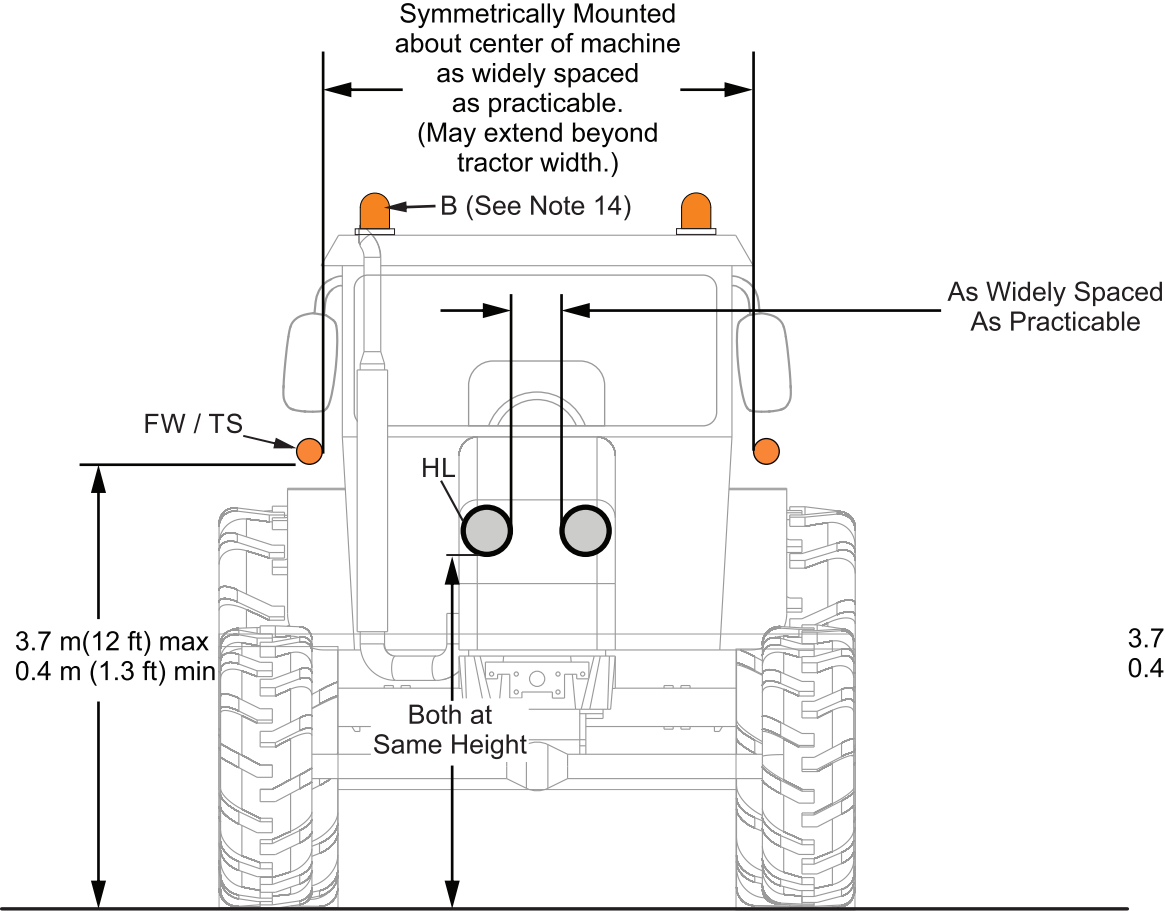
| | | | |
|---|--------------|-------|---|
|  | HL | ..... | Headlamp |
|  | TL | ..... | Tail Lamp Red |
|  | RR | ..... | Red Retroreflective Material - 50 x 230 mm (2 x 9 in.) |
|  | ROF | ..... | Red-Orange Fluorescent Material - 50 x 230 mm (2 x 9 in.) |
|  | FW/TS | ..... | Flashing Warning/Turn Signal (Indicator) Lamp, Amber |
|  | YR | ..... | Yellow Retroreflective Material - 50 x 230 mm (2 x 9 in.) |
|  | FE/TS | ..... | Flashing Extremity Warning/Turn Signal (Indicator) Lamp, Amber |
|  | B | ..... | Beacon, Rotating or Strobe |
|  | SIS | ..... | Speed Identification Sign |
|  | SMV | ..... | Slow Moving Vehicle Emblem |

1. Arrangements shown are minimum requirements. Drawings are schematic only. Lamp shape can vary.
2. Yellow reflector on left front on equipment ≤ 3.7 m (12 ft) wide required only for mounted or towed equipment extending more than 1.2 m (4 ft) to the left of center of the propelling machine. Reflector is not required on tractors & self-propelled equipment ≤ 3.7 m (12 ft).
3. Front mounted equipment does not require headlamps or flashing warning/turn signal (indicator) lamps unless those on the propelling machine are obscured. Flashing extremity warning/turn signal (indicator) lamps and yellow reflectors are required for equipment > 3.7 m (12 ft) wide.
4. Front mounted equipment does not require rear facing red retroreflective material or fluorescent orange material for a distance of 1.2 m (4 ft.) on either side of the propelling machine centerline. (i.e. SMV emblem, tail lamps and enhanced turn signal lamps are not required).
5. Red reflectors on the rear of equipment < 2 m (6.7 ft) wide may be 50 x 115 mm (2 x 4.5 in.).
6. Red reflectors (per SAE J594) may be incorporated into tail lamp lenses on the rear of equipment ≤ 3.7 m (12 ft) wide.
7. Rear mounted or towed equipment does not require headlamps or flashing warning/turn signal (Indicator) lamps visible to the front. Flashing extremity warning/turn signal (indicator) lamps and yellow reflectors are required for equipment > 3.7 m (12 ft) wide.
8. Rearward facing work lamps or general service lamps must be turned off during highway travel. Forward facing work lamps or general service lamps may be turned on provided that they are aimed downward to provide illumination close to the equipment.
9. On equipment > 3.7 m (12 ft) wide, the extremity lamps may take the place of warning lamps. However, it is acceptable to have both extremity and warning lamps.
10. Red-orange fluorescent material on rear of equipment > 3.7 m (12 ft) wide can be in line with, above or below red reflectors.
11. Red-orange fluorescent material and red reflectors positioned horizontally and in line (as shown) preferred. Angled or vertical orientation and/or not in line permissible
12. Equipment configuration may necessitate additional red reflectors and/or red-orange fluorescent material to maintain the 1.8 m (6 ft) maximum spacing. Retroreflective red and fluorescent material on the SMV emblem can be used to meet the spacing criteria.
13. All towed machinery shall have one SMV emblem as described in ANSI/ASAE S276. SMV emblem should be positioned as near to the rear and centered or left of center as practicable.
14. Beacon(s) are optional, refer to ANSI/ASAE S279 and SAE J845
15. All towed machinery shall have one rear facing Speed Identification Sign (SIS) as described in ASABE/ISO 20383:2017. One rear facing SIS and two rear facing stop lamps are required for tractors and self-propelled machines traveling >40 km/h (25 mile/h)
16. Turn indicators shall be provided. When a turn is signaled, the amber flashing warning lamp(s) opposite the direction of turn shall become steady burning.
The amber flashing warning lamp(s) in the direction of turn shall increase in flashing rate. In addition, a rearfacing red or amber lamp shall flash in the direction of turn and in unison with the amber flashing warning lamp(s). The additional lamp on the side opposite the turn may remain off, or on, or become brighter but shall not flash. If equipped with stop lamps, the additional rear facing red or amber turn indicators are not required regardless of speed (**refer to page 28**)

A-1)

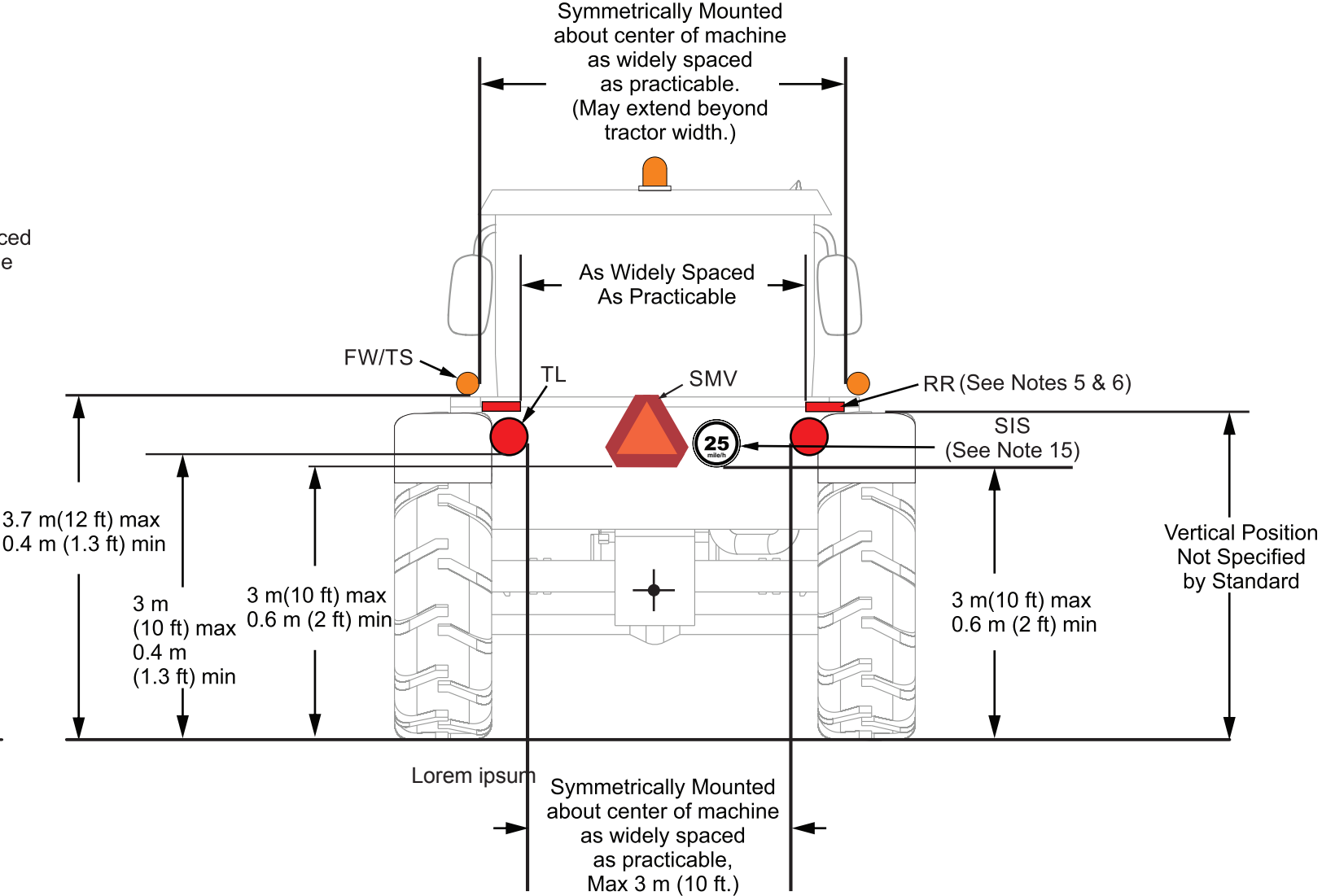
Tractor Front

Machine Width ≤ 3.7m (12 ft)



Tractor Rear

Machine Width ≤ 3.7m (12 ft)

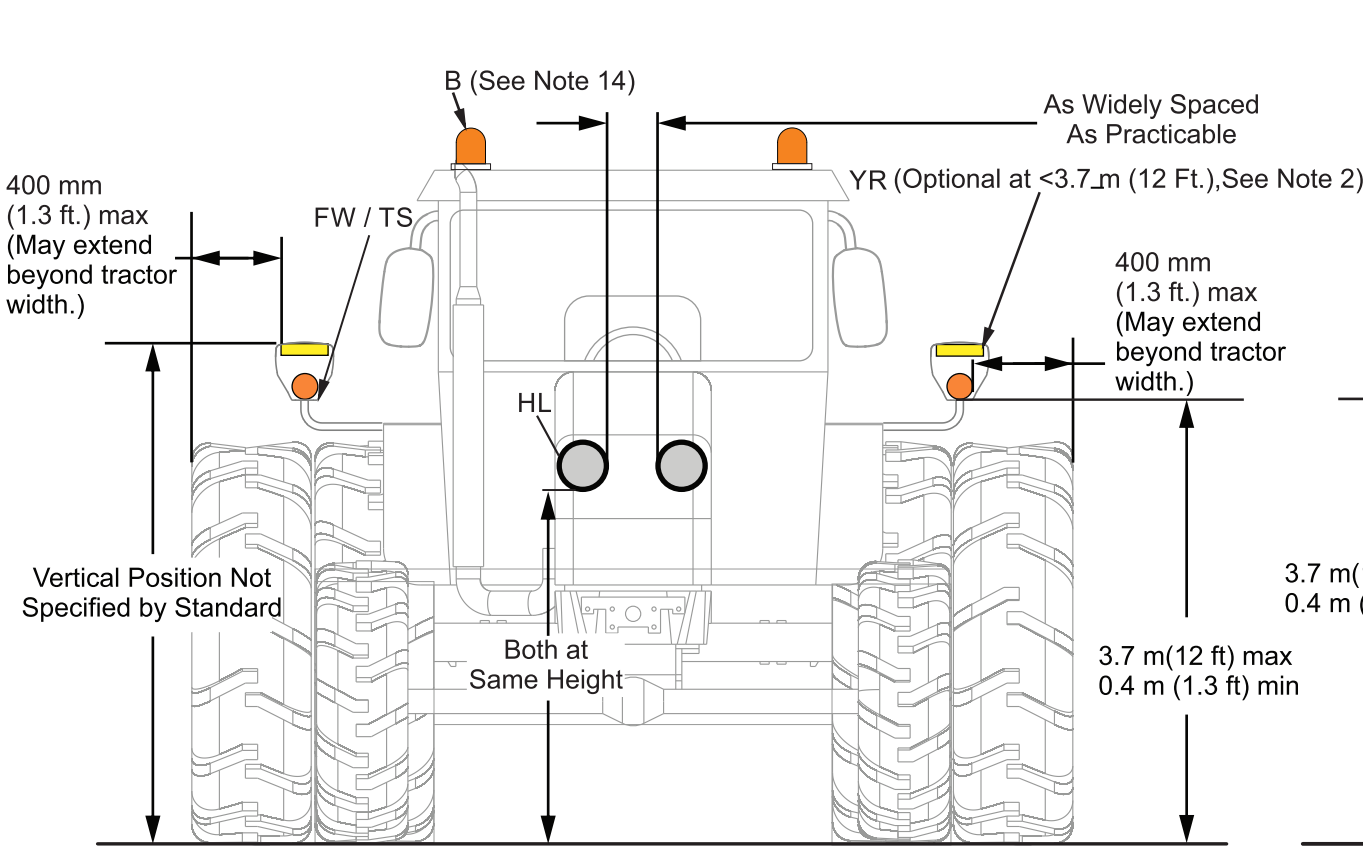


Lighting and Marking for Agricultural Tractors & Self-Propelled Equipment

A-2)

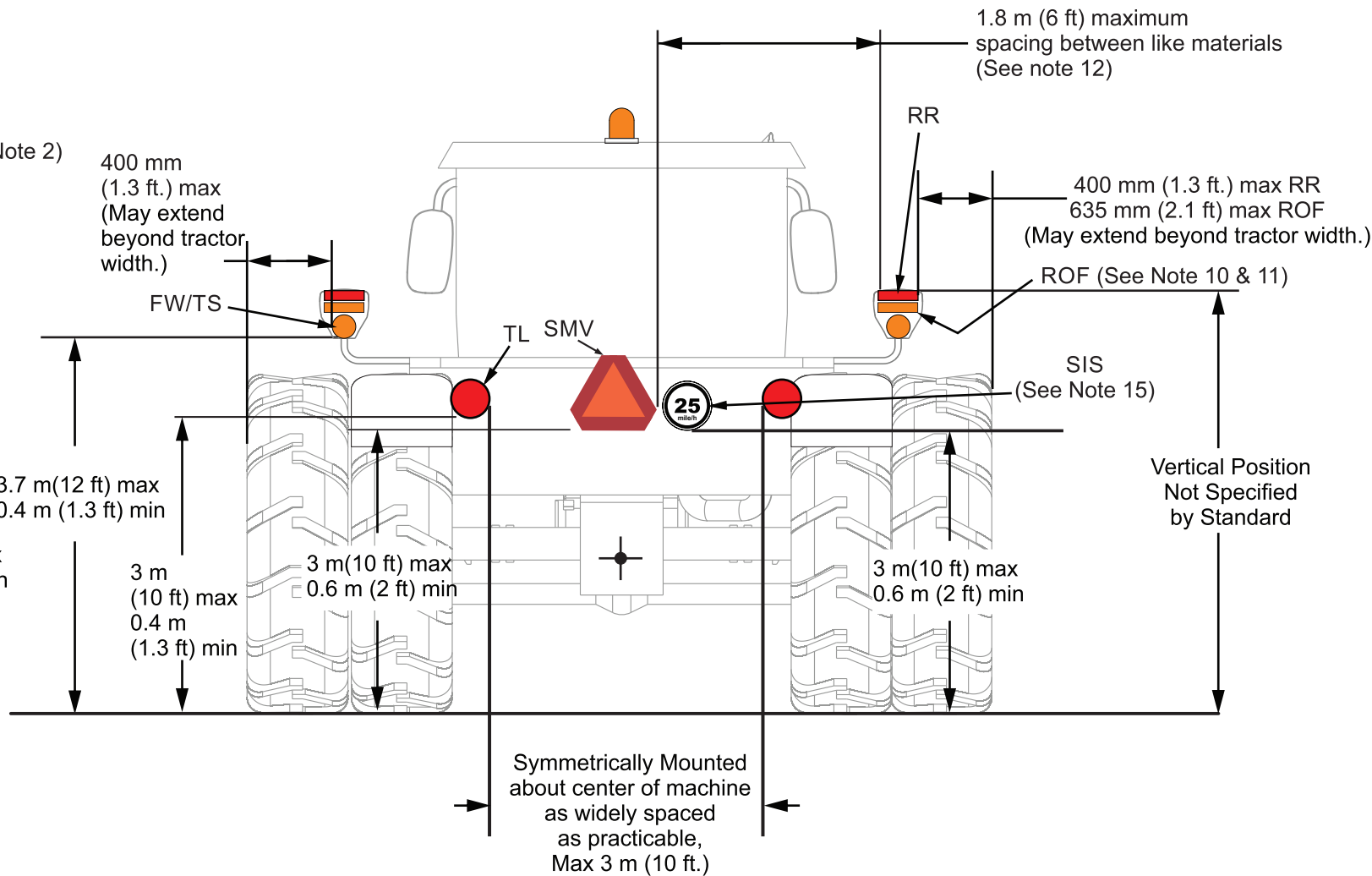
Tractor Front

Machine Width > 3.7m (12 ft)



Tractor Rear

Machine Width > 3.7m (12 ft)

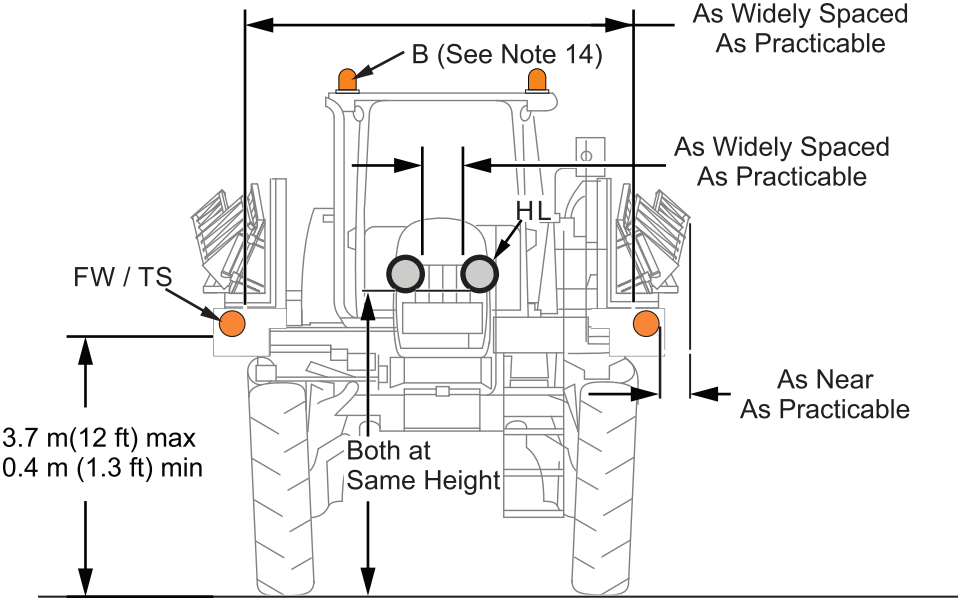


Lighting and Marking for Agricultural Tractors & Self-Propelled Equipment

B-1)

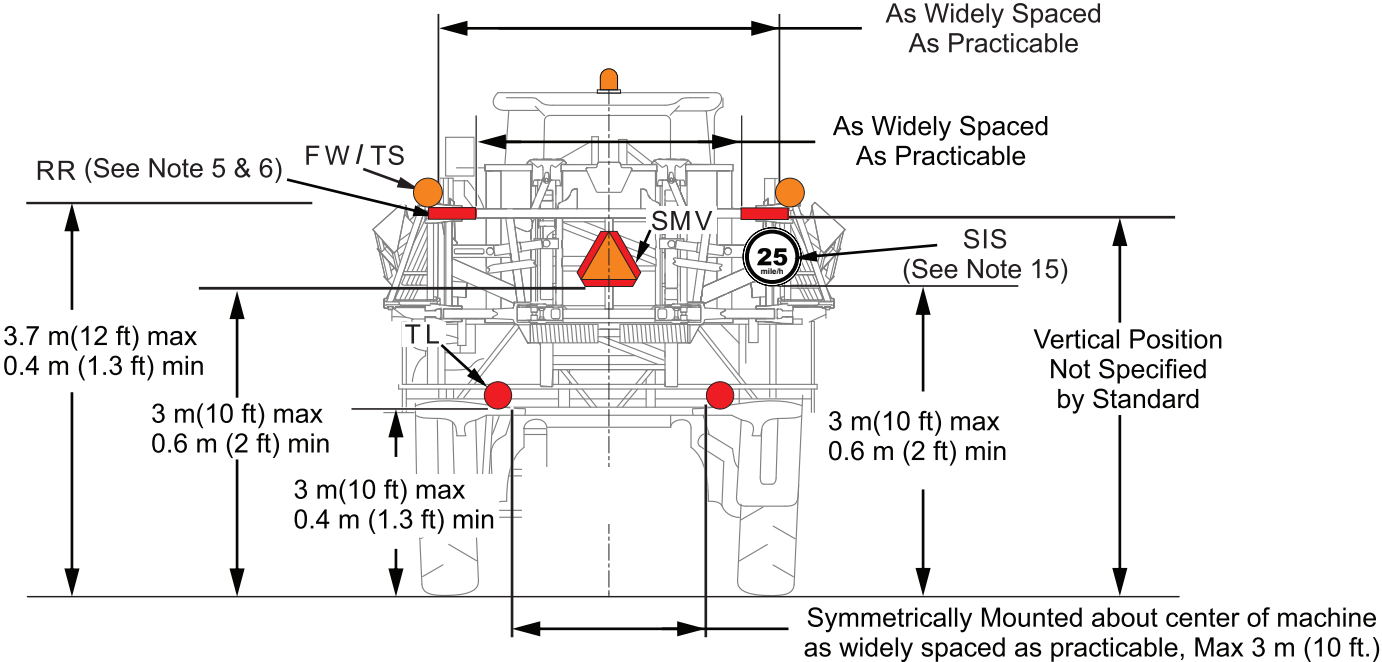
Sprayer Front

Machine Width $\leq 3.7\text{m}$ (12 ft)



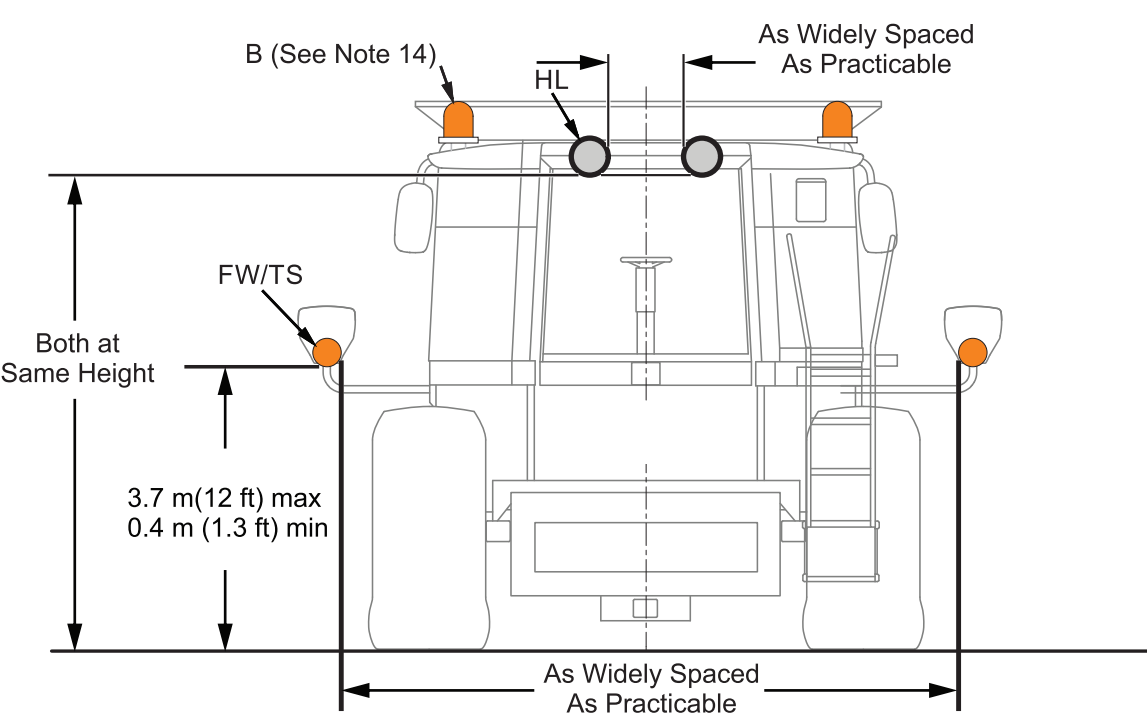
Sprayer Rear

Machine Width $\leq 3.7\text{m}$ (12 ft)



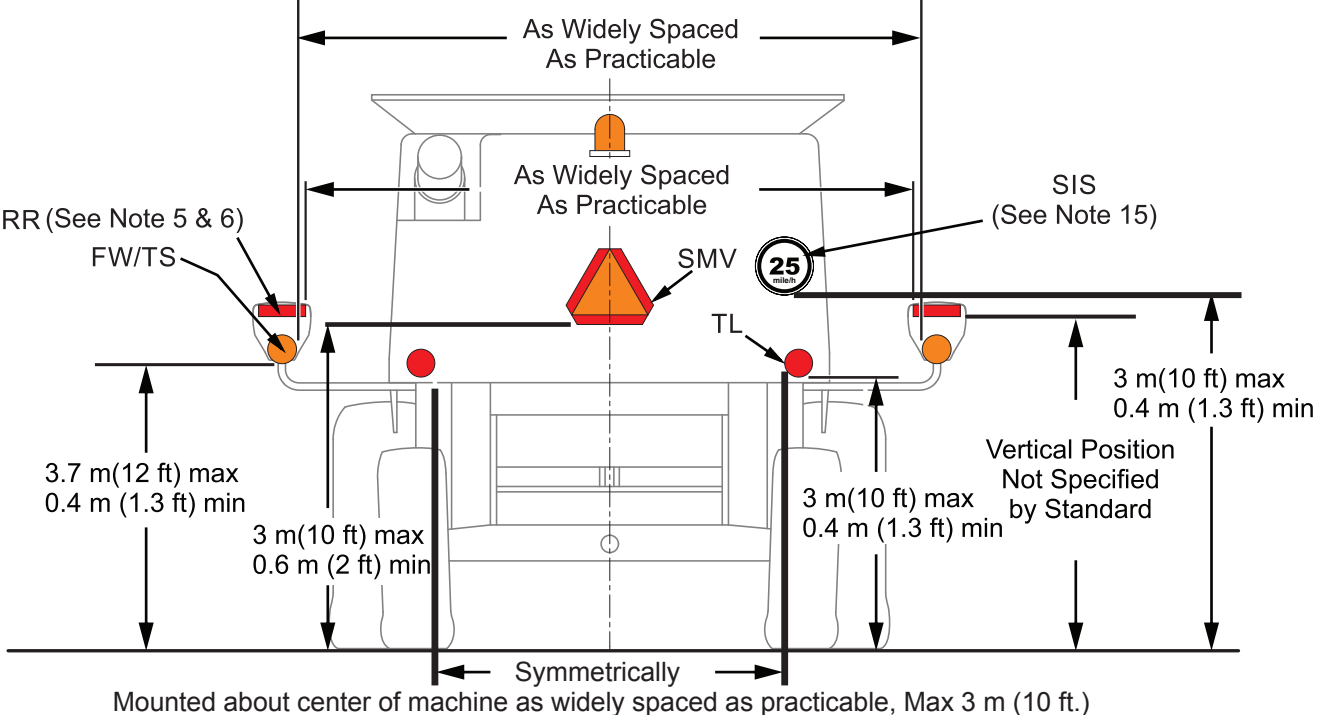
Combine Harvester Front

Machine Width $\leq 3.7\text{m}$ (12 ft)



Combine Harvester Rear

Machine Width $\leq 3.7\text{m}$ (12 ft)

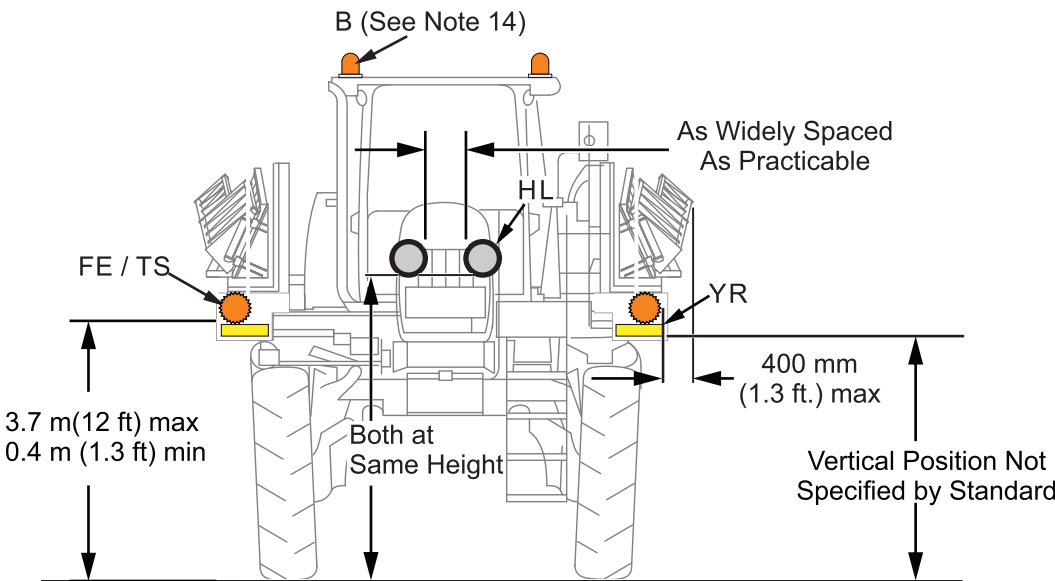


Lighting and Marking for Agricultural Tractors & Self-Propelled Equipment

B-2)

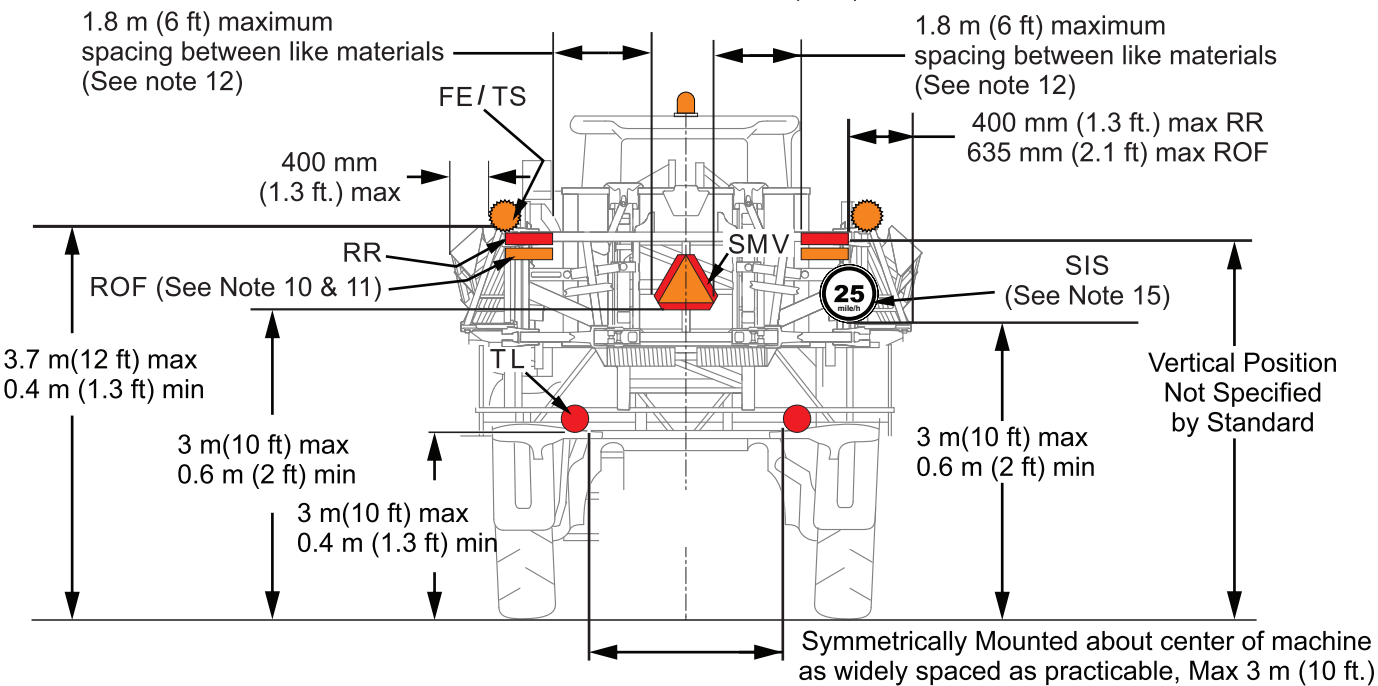
Sprayer Front

Machine Width > 3.7m (12 ft)



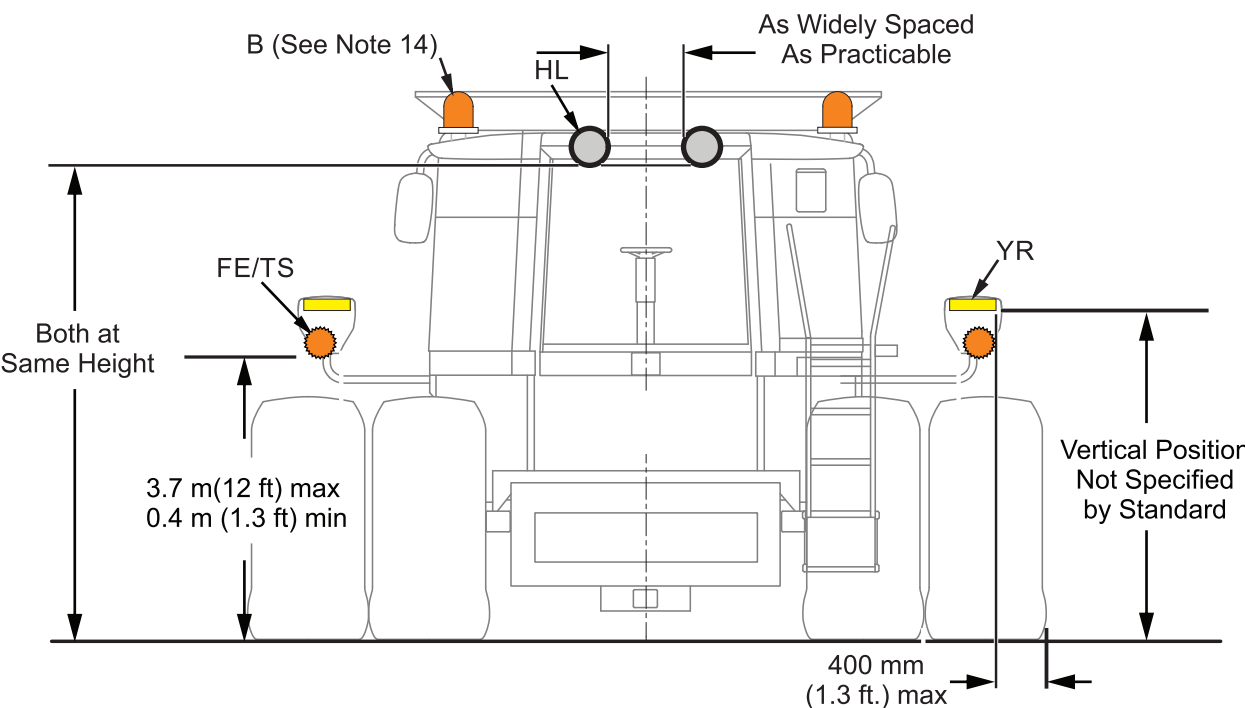
Sprayer Rear

Machine Width > 3.7m (12 ft)



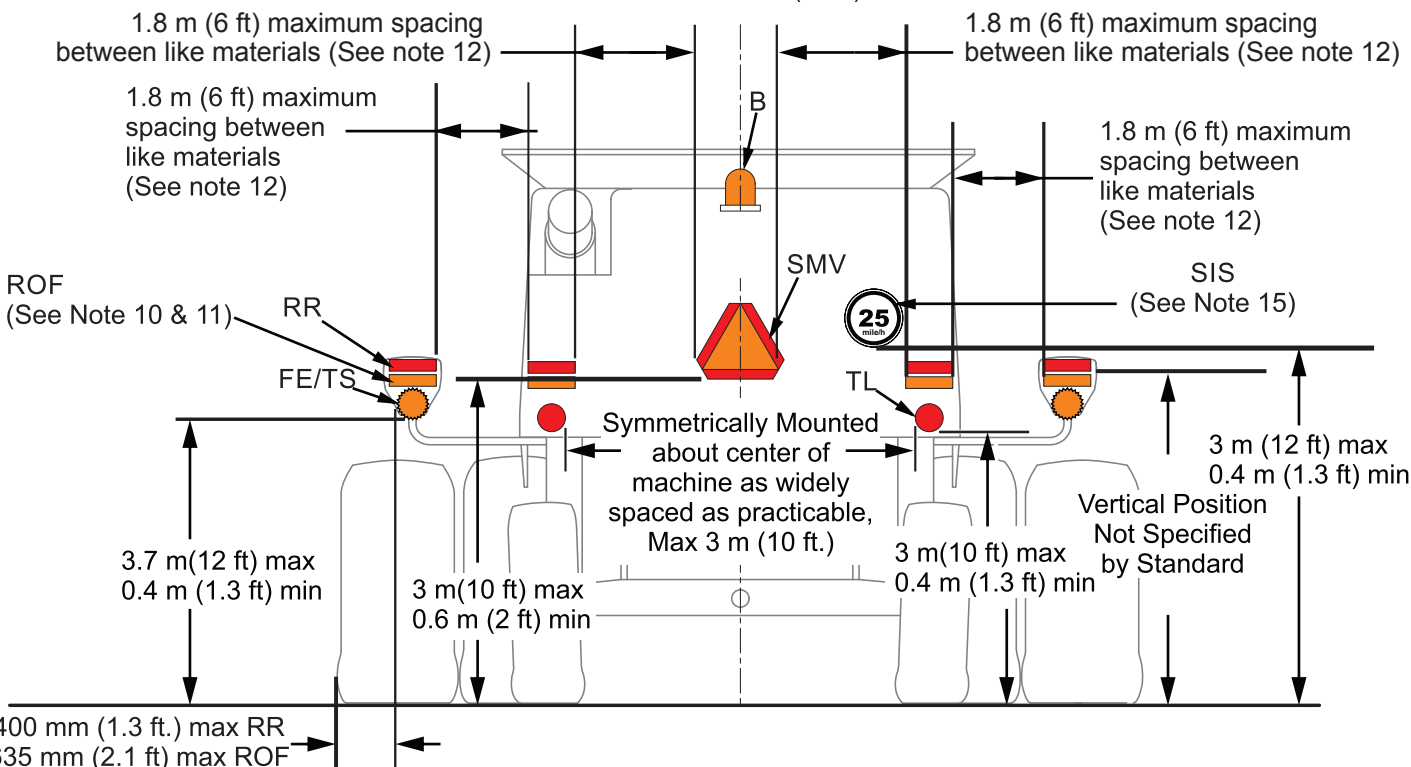
Combine Harvester Front

Machine Width > 3.7m (12 ft)



Combine Harvester Rear

Machine Width > 3.7m (12 ft)



C.) Front mounted Equipment Front View (Combine Harvester Example)

Machine width > 3.7 m (12 ft)

This diagram illustrates the front view of a combine harvester. It shows the front-end lights and reflectors. Key specifications include:

- 400 mm (16 in) max both sides:** The maximum horizontal distance from the centerline to the outermost front-end light or reflector.
- YR:** Yellow reflector.
- FE / TS:** Front-end light / Turn signal.
- Vertical Position Not Specified by Standard:** The vertical placement of the front-end lights is not defined by the standard.
- 3.7 m (12 ft) max 0.4 m (1.3 ft) min:** The vertical distance from the ground to the center of the front-end lights, with a maximum of 3.7 m and a minimum of 0.4 m.

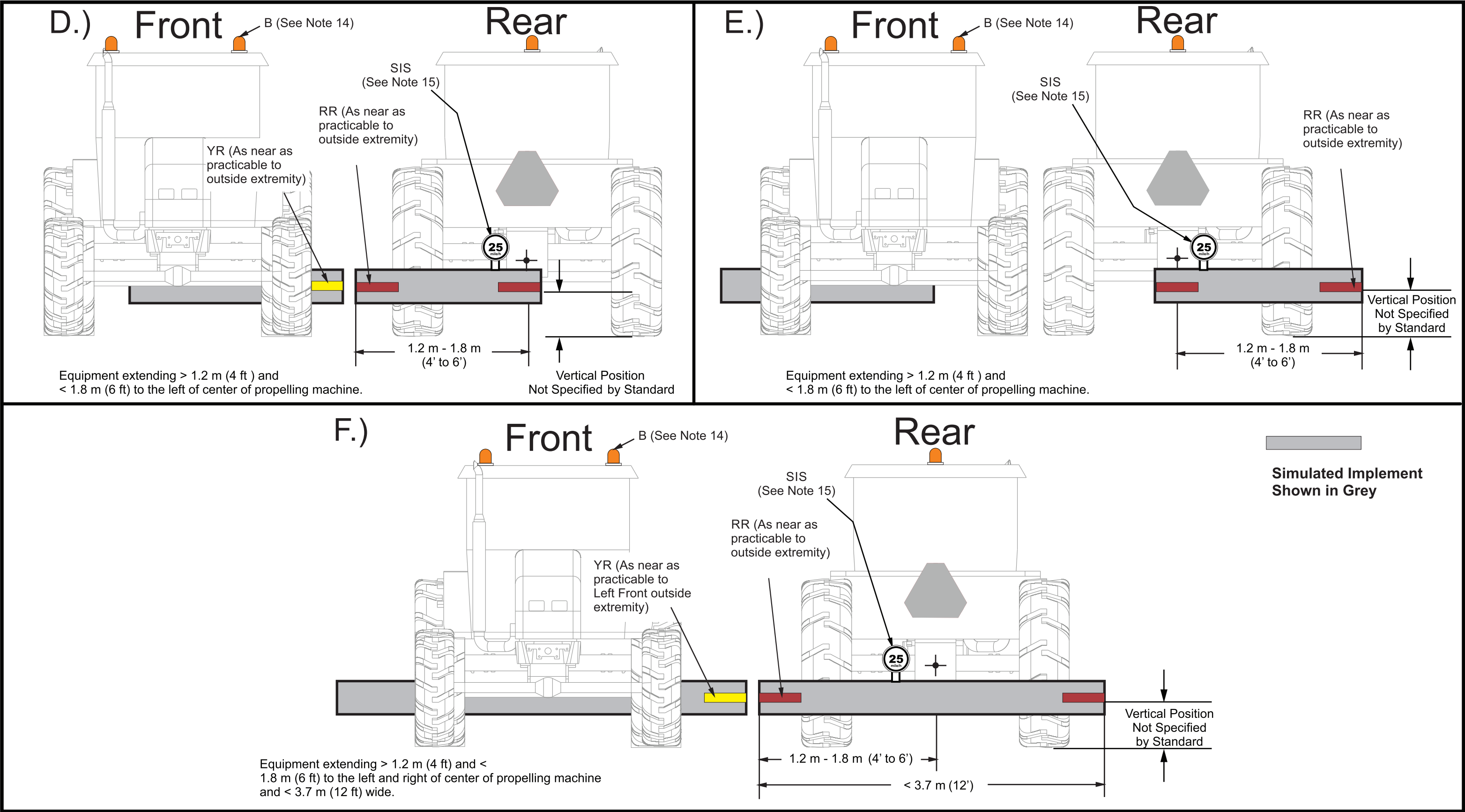
Front mounted Equipment Rear View (Combine Harvester Example)

Machine width > 3.7 m (12 ft)

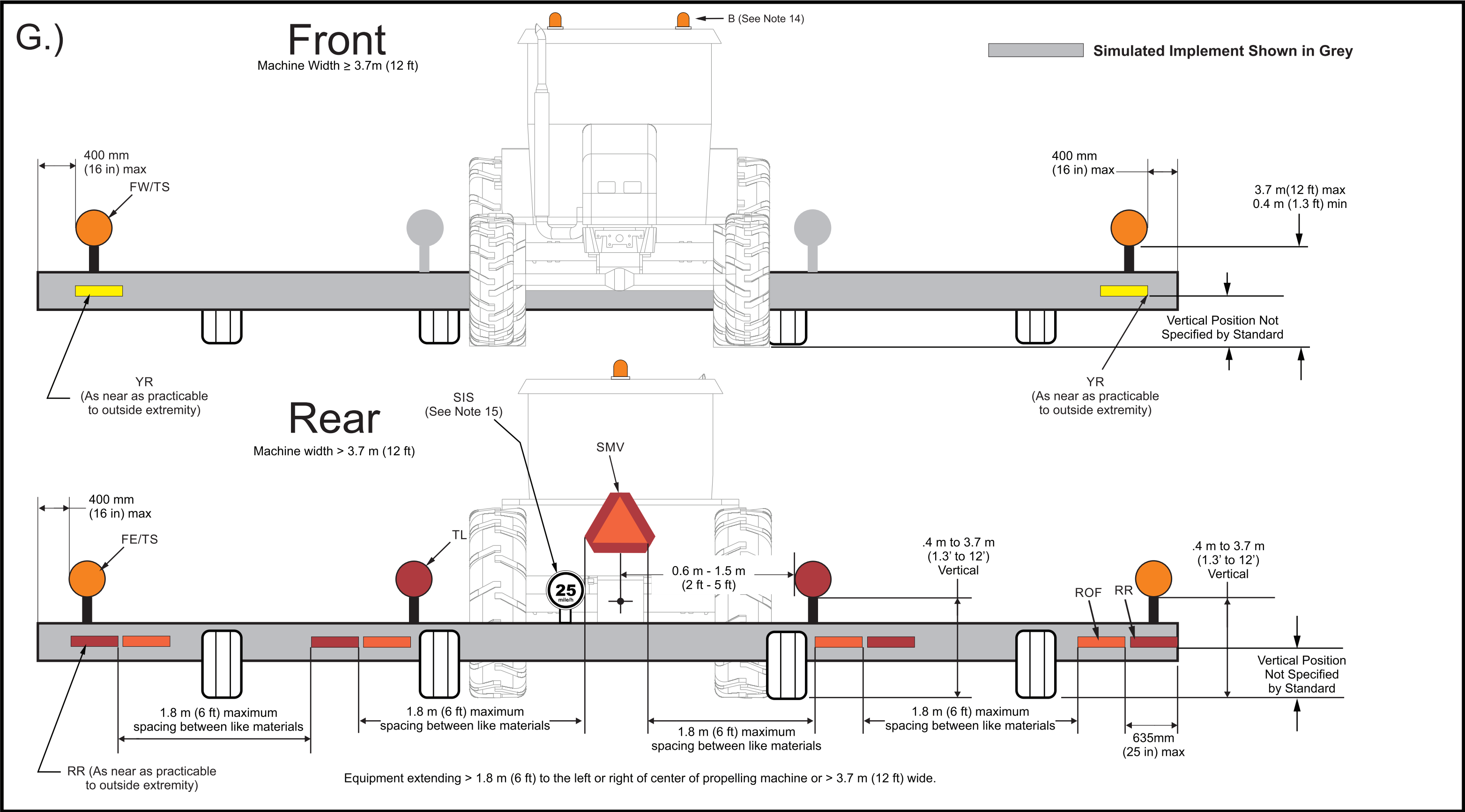
This diagram illustrates the rear view of a combine harvester. It shows the rear-end lights, reflectors, and the central warning device. Key specifications include:

- 400 mm (16 in) max both sides:** The maximum horizontal distance from the centerline to the outermost rear-end light or reflector.
- B (See Note 14):** A red, circular, flashing beacon mounted on the roof.
- SMV:** A red, triangular, day-and-night reflective device mounted on the rear.
- FE/TS:** Front-end light / Turn signal (shown on the left side).
- ROF (See Note 10 & 11):** Rear-end light / Turn signal.
- RR:** Rear-end reflector.
- 400 mm (1.3 ft.) max:** The maximum horizontal distance from the centerline to the outermost rear-end light or reflector.
- Vertical Position Not Specified By Standard:** The vertical placement of the rear-end lights is not defined by the standard.
- 3.7 m (12 ft) max 0.4 (1.3 ft) min:** The vertical distance from the ground to the center of the rear-end lights, with a maximum of 3.7 m and a minimum of 0.4 m.
- 1.8 m (6 ft) maximum spacing between like materials (See note 12):** The maximum horizontal distance between similar materials (lights or reflectors) on the rear.
- 635 mm (25 in) max (both sides):** The maximum horizontal distance from the centerline to the outermost rear-end light or reflector.

Lighting and Marking of Agricultural Implements for Width

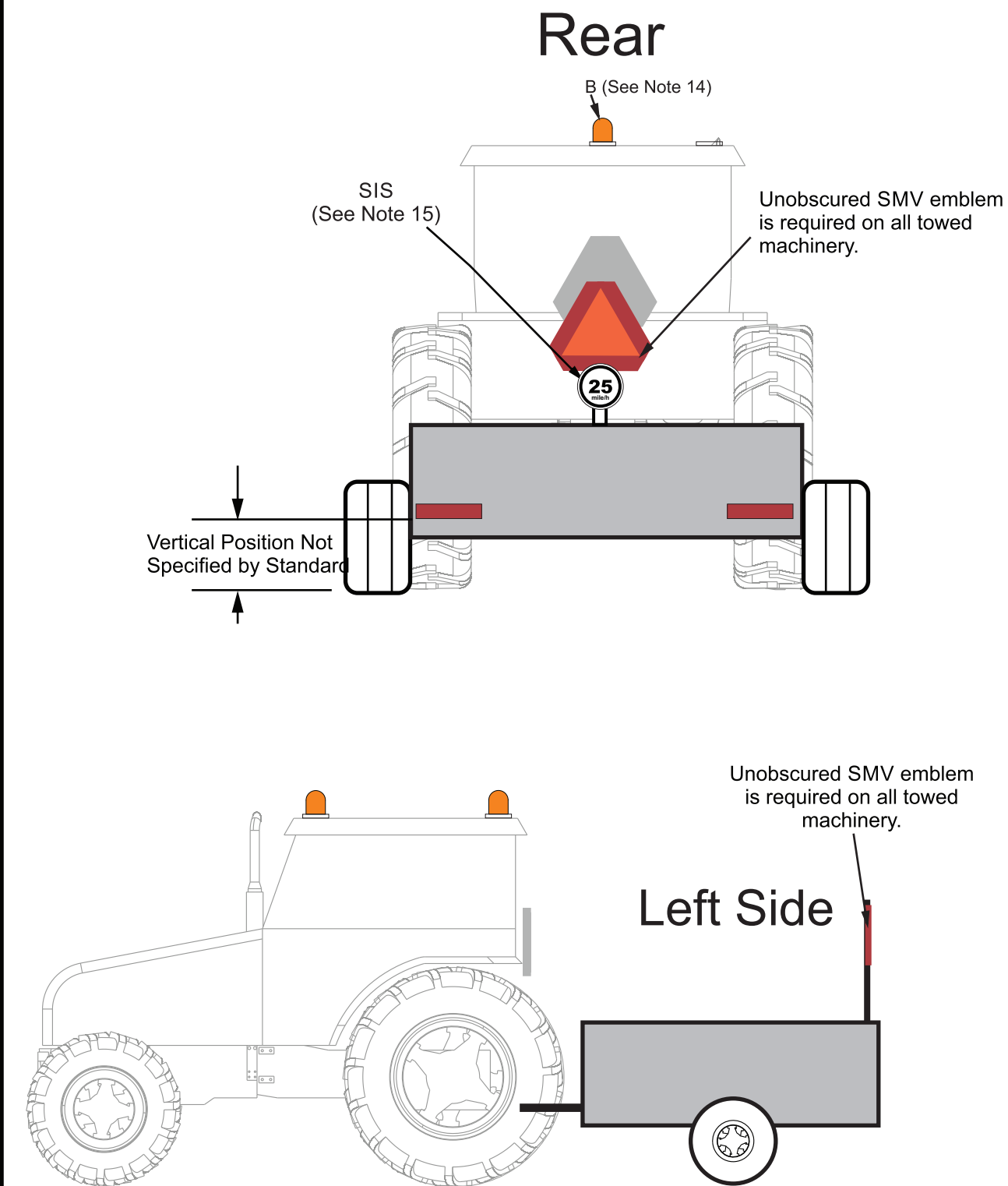


Lighting and Marking of Agricultural Implements for Width



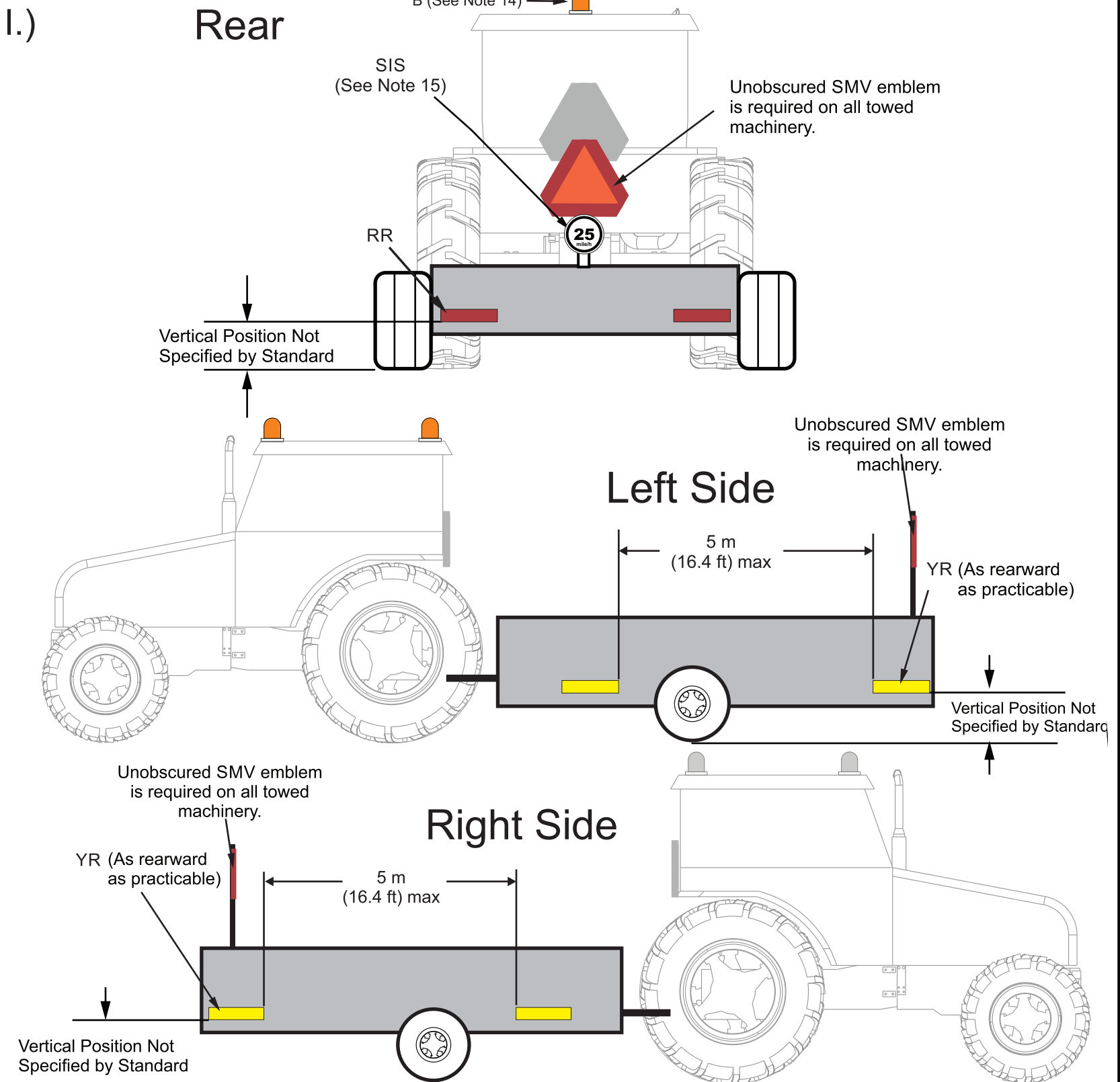
Marking of Agricultural Implements for Length

H.)



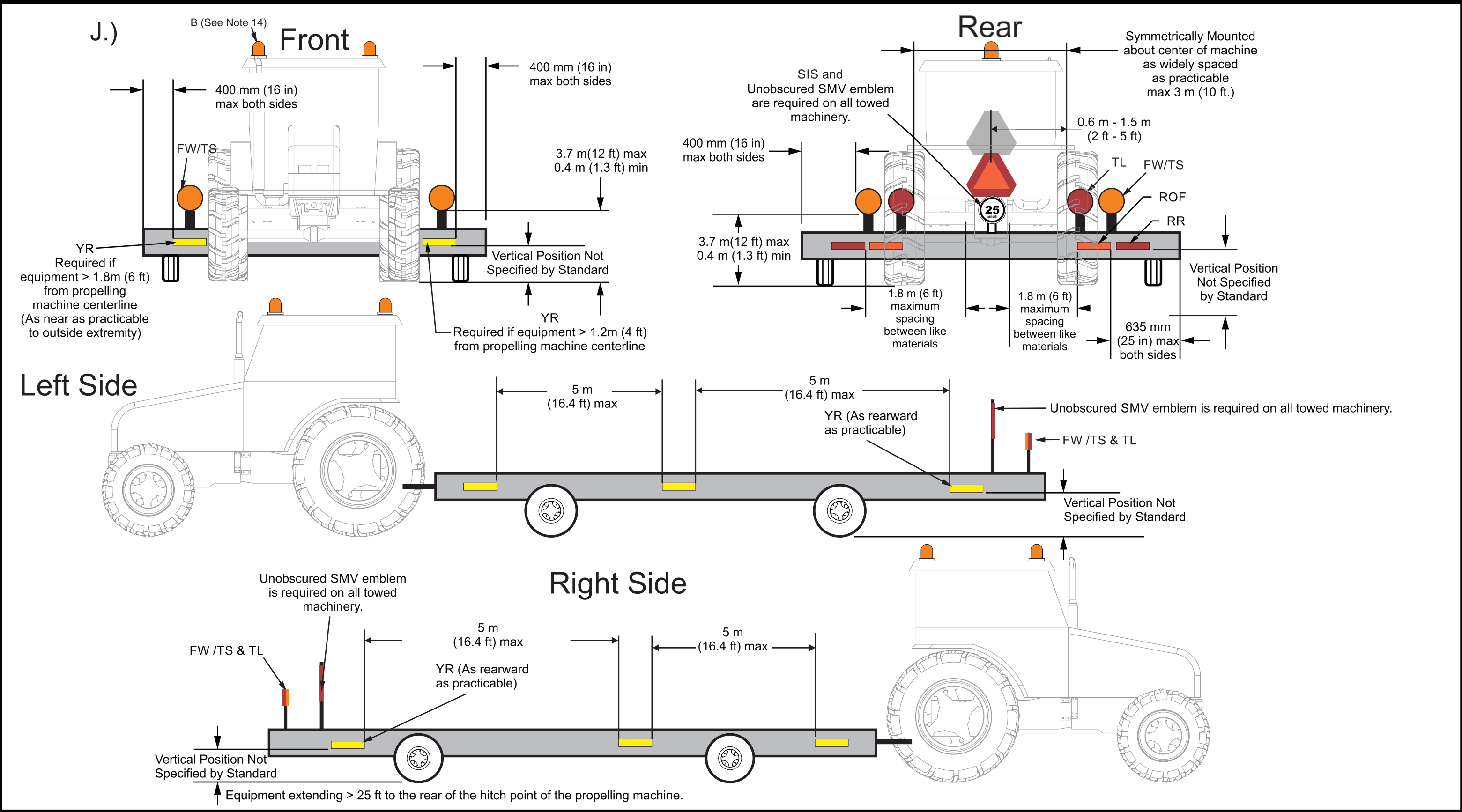
Equipment extending > 1.2 m (4 ft) & ≤ 5 m (16.4 ft.) to the rear of the hitch point (draw bar or draft arms) of the propelling machine.

I.)



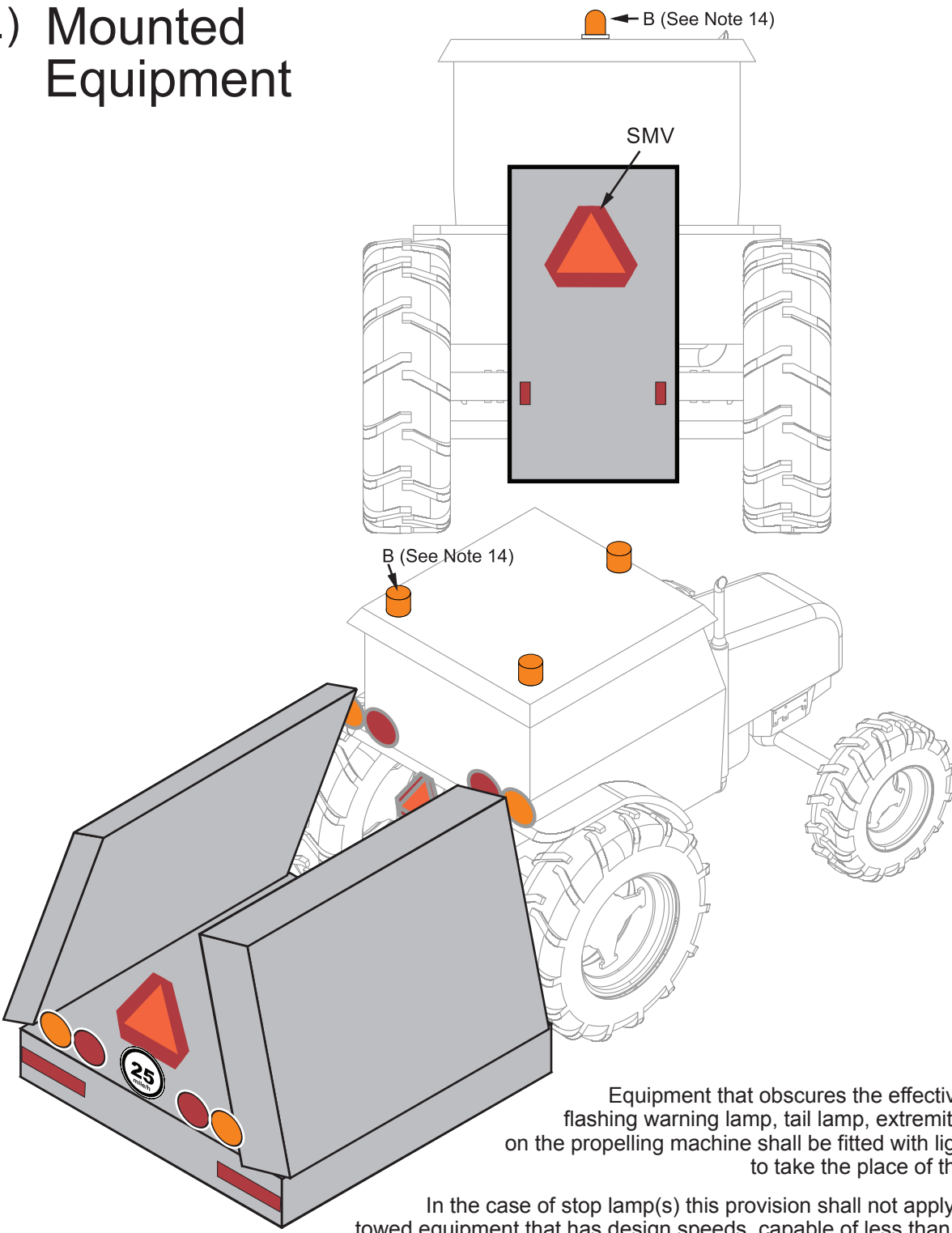
Equipment extending > 5 m (16.4 ft) and ≤ 7.6 m (25 ft) to the rear of the hitch point of the propelling machine.

Lighting and Marking of Agricultural Implements for Length



Lighting and Marking for Agricultural Implements that Obscure the Lighting and SMV Emblem on the Propelling Machine

K.) Mounted Equipment

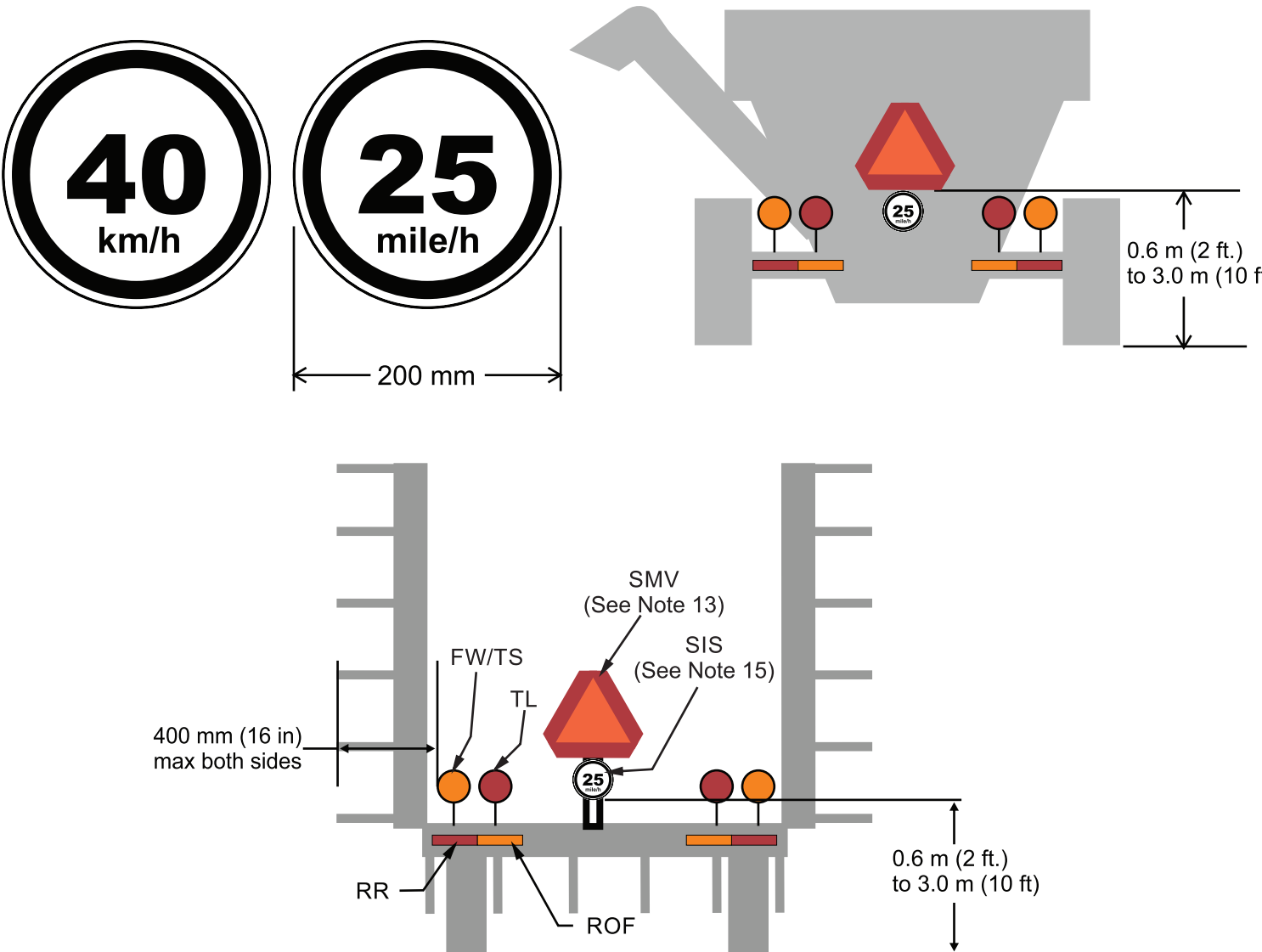


Equipment that obscures the effective illumination of any flashing warning lamp, tail lamp, extremity lamp, or stop lamp on the propelling machine shall be fitted with lighting as appropriate to take the place of the lamp(s) obscured.

In the case of stop lamp(s) this provision shall not apply to semi-mounted or towed equipment that has design speeds capable of less than 40 km/h (25 mile/h).

Equipment that will obscure any portion of the SMV emblem of the machine on which it is mounted or towed when transported shall have its own SMV emblem.

L.) Towed Implements



Implements that obscure the SMV emblem shall have one SMV emblem as described in ANSI/ASAE S276. SMV emblem should be positioned as near to the rear and centered or left of center as practicable.

Agricultural machines and implements traveling >40 km/h (25 mile/h) and <65 km/h (40 mile/h) shall require at least one rear facing SIS as described in ASABE/ISO 20383:2017.

NOTE: For light and reflector dimensions refer to previous pages.

NOTE: Function of Turn Signals in Accordance with ANSI/ASAE S279

Explanatory note on the function of turn signals in accordance with ANSI/ASAE S279

4.1.5 Turn indicators shall be provided. When a turn is signaled, the amber flashing warning lamp(s) opposite the direction of turn shall become steady burning. The amber flashing warning lamp(s) in the direction of turn shall increase in flashing rate a minimum of 20 flashes per minute, but shall not exceed 125 flashes per minute. In addition, a rear-facing red or amber lamp conforming to SAE J2261 symmetrically mounted and positioned as widely spaced laterally as practicable but no greater than 1.5 m (5 ft) to the left and right of the machine center and between 0.4 and 3.7 m (1.3 and 12 ft) high shall flash in the direction of turn and in unison with the amber flashing warning lamp(s). The additional lamp on the side opposite the turn may remain off, or on, or become brighter but shall not flash. If equipped with stop lamps that conform to clause 4.1.6, the additional rear facing red or amber turn indicators are not required regardless of speed.

4.1.5 Explanatory note

This clause speaks of two additional amber or red lamps that are visible to the rear of the tractor or self-propelled machine. The purpose of the additional amber or red lamps, sometimes referred to as 'enhanced turn indicators', is to provide additional notice to a following motorist that the agricultural equipment is preparing to turn. This is achieved by causing the illumination of a lamp, either amber or red, that is normally off to illuminate in the direction of the turn when a turn is signaled. This additional lamp is to flash in synchronization with the amber flashing warning lamp in the direction of the turn that is described in the second sentence of 4.1.5 clause. When the turn is completed the additional lamp must revert to the 'off' state. If the machine is equipped with stop lamps as described by clause 4.1.6, the enhanced turn indicator is not required. However the stop lamp may, as an alternative to an additional lamp, serve as an enhanced turn indicator by flashing in synchronization with the amber flashing warning lamp described in the second sentence of 4.1.5 clause.