

**Outline of Draft Amendment to ECE Regulation No.46
(Draft Requirements for Driver's Field of Vision of
Immediate Frontward and Sideward)**

Transmitted by the expert from Japan

Japan proposes an amendment to R46 and the outline of amendment is as follows;

“Add requirements for driver's field of vision of close front and right side of a vehicle (For right-hand drive vehicles, read hereafter "right" as "left" and "left" as "right").”

1. Category M and Category N of which its weight is not exceeding 7.5 t

- For vehicles of Category M and Category N of which its weight is not exceeding 7.5 t, at least a part of a column of 0.3 m in diameter and 1 m in height (See 1. in attached sheet) placed proximate frontward and right sideward (passenger side) of the vehicle shall be visible from either the driver's eye points (See 2. in attached sheet) or displaced eye points (See 3. in attached sheet) through either the exterior mirror or a Class VI mirror (new). This requirement, however, shall not apply in case where the said column is directly visible from either driver's eye points or displaced eye points.
- To ensure front direct visibility, a Class VI(new) mirror may be installed with a minimum curvature of 100R.
- In the case above, the blind spots made by the A-pillar and the exterior mirror shall not be regarded as such as long as they satisfy the provisions of the 4. in attached sheet.

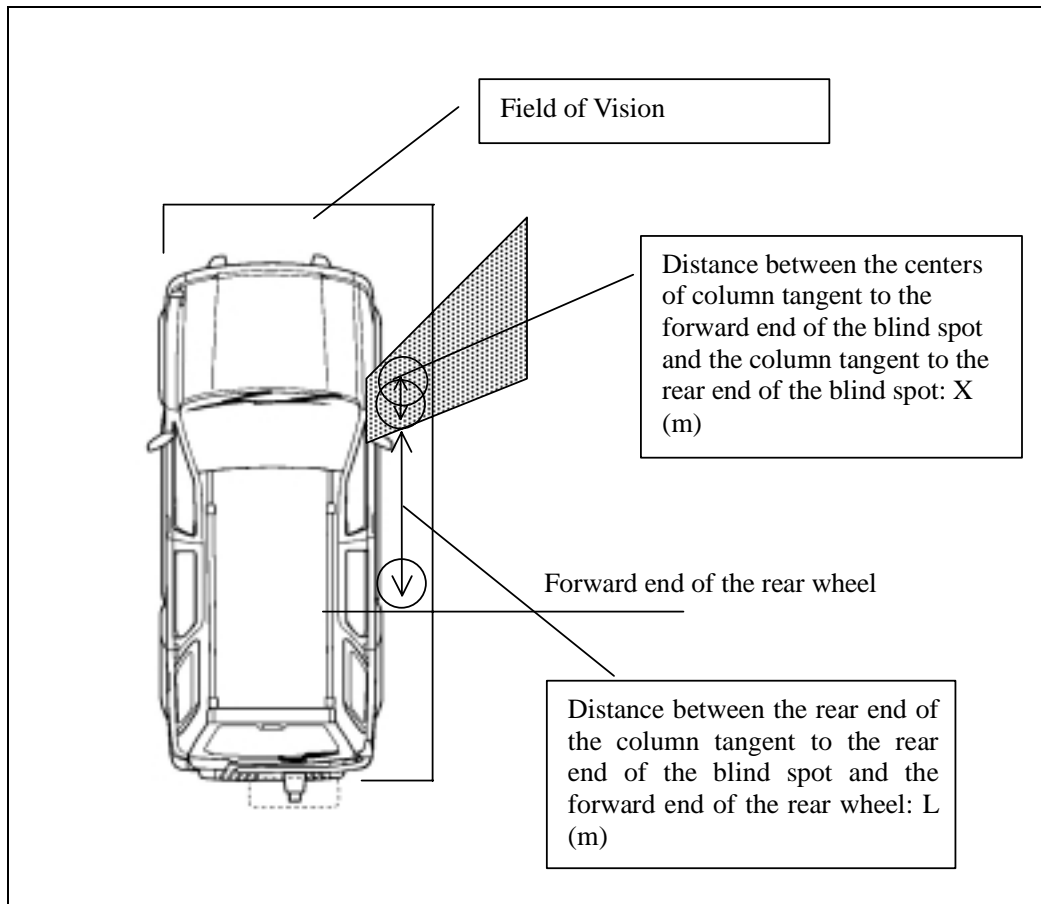
2. Vehicles of Category N of which its weight is exceeding 7.5 t

- For vehicles of Category N of which its weight is exceeding 7.5 t, at least a part of a column of 0.3 m in diameter and 1 m in height (See 1. in attached sheet) placed inside the field of 2 m frontward and 3 m right sideward (passenger side) of the vehicle shall be visible from the driver's eye points (See 2. in attached sheet) through either the exterior mirror or a Class VI mirror (new). This requirement, however, shall not apply in case where the said column is directly visible from the driver's eye points (See attached sheet 2).
- To ensure front visibility, a Class VI mirror (new) may be installed with a minimum curvature of 100R.
- If this requirement is satisfied, the installation of a Class V mirror is optional.

3. Other issues (common to all categories)

- To recognize pedestrians while ensuring direct visibility, it is necessary to reduce the curvature of the mirrors. Therefore, the lower limit of the curvature of the Class II and III mirrors shall be set to 600R.
- As for the Class VI mirror (new), its installation at a height of 2 m or less shall be tolerated as long as it satisfies impact absorption requirements.

1. Driver's Field of Vision



2. Eye points

For the purpose of this document, the term "eye points" means the reference eye points obtained by compensating the midpoint of the "driver's ocular points" defined in R46 13.2 with a "back angle" compensation according to Table 1 below.

Table 1 Compensation of Midpoint of Reference Eye Points

Back angles (degrees)	Compensation		Back angles (degrees)	Compensation	
	Longitudinal Direction (mm)	Vertical Direction (mm)		Longitudinal Direction mm	Vertical Direction mm
5	-186	28	23	-18	5
6	-177	27	24	-9	3
7	-167	27	25	0	0
8	-157	27	26	9	-3
9	-147	26	27	17	-5
10	-137	25	28	26	-8
11	-128	24	29	34	-11
12	-118	23	30	43	-14
13	-109	22	31	51	-18
14	-99	21	32	59	-21
15	-90	20	33	67	-24
16	-81	18	34	76	-28
17	-72	17	35	84	-32
18	-62	15	36	92	-35
19	-53	13	37	100	-39
20	-44	11	38	108	-43
21	-35	9	39	115	-48
22	-26	7	40	123	-52

(Note) Symbols in the table

Longitudinal direction ("-" :forward, "+" : rearward)

Vertical direction ("-" :downward, "+" : upward)

3. Displaced eye points

The term "displaced eye points" means the (binocular) eye points obtained by the driver in a series of motions he/she makes to ensure their visibility around the vehicle, moving their body back and forth, right and left, or up and down.

The midpoint of the displaced eye points (the midpoint of the line segment joining the two eyes) may be obtained according to Table 2 below, taking the midpoint position of the reference eye points as base point.

For the left-hand drive vehicles, read "right" as "left" and "left" as "right".

Table 2 Midpoints of Displaced Eye Points

	Longitudinal (+:rearward -:frontward)	Lateral (+:right -:left)	Vertical (+:upward -:downward)
Reference eye points	0	0	0
Upward displaced eye points	0	-10	40
Frontward displaced eye points	-140	-15	10
Sideward displaced eye points	30	-110	15

4. Deviation to blind spot definition

The visibility of an obstacle shall not be required if it is in a blind spot created by a A-pillar or an exterior rear view mirror and that satisfies the following conditions. When there is more than one blind spot, each blind spot shall satisfy such conditions.

$$X \leq 0.292L - 0.203$$

Where:

- X (m): The boundary of the area thus excluded. The distance between the centers of the columns tangent to the front end and the rear end of the blind spot.
- L (m): The distance between the rear end of the column standing in a blind spot created by a A-pillar or rearview mirror and tangent to the rear end of such blind spot and the front end of the rear wheel.