Submitted by the experts from GTB

Informal document GRE-94-10
(94th GRE, 27-30 April 2026,
agenda item 7 (b))

This paper provides additional information and justification regarding document GRE/2026/13

I. Proposal for a Supplement to the 00 series of amendments to UN Regulation No. 149

Table 18, amend to read:

"Table 18
Class C – Bendlight – Category 1 – System Requirements

Class C – Bendlight Cat.1		*Position/deg*						*Column A*		*Column B*		*Column C*	
Tabled requirements expressed in cd		*horizontal*				*vertical*		*≙0% CoP*		*≙20% CoP*		*≙30% CoP*	
No	*Element*	*at/*	*from*	*to*		*at*		*min*	*max*	*min*	*max*	*min*	*max*
1	B50L	L	3.43			U	0.57		530		700		785
3	BR	R	2.5			U	1		1,750		2,100		2,275
4	Point BRR	R	8			U	0.57		3,550		4,260		4,615
5	Point BLL	L	8			U	0.57		625		880		1,005
7	Line III	L	4	V	V	H			880		1,135		1,260
10	50 R	R	1.72			D	0.86		44,100		52,920		57,330
11	75 R	R	1.15			D	0.57	10,100	44,100	8,080	52,920	7,070	57,330
12	50 V	V				D	0.86	5,100	44,100	4,080	52,920	3,570	57,330
13	50 L	L	3.43			D	0.86	1,700	~~13,200[1]~~	~~2,840~~ **1,360**	~~15,840[1]~~	~~2,485~~ **1,190**	~~17,160[1]~~

~~Note to Table 18:~~

~~[1] The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.~~ "

Table 21, amend to read:

"Table 21
Class V – Bendlight – Category 1 – System Requirements

Class V – Bendlight Cat.1		*Position/deg*						*Column A*		*Column B*		*Column C*	
Tabled requirements expressed in cd		*horizontal*				*vertical*		*≙0% CoP*		*≙20% CoP*		*≙30% CoP*	
No	*Element*	*at/*	*from*	*to*		*at*		*min*	*max*	*min*	*max*	*Min*	*max*
1	B50L	L	3.43			U	0.57		530		700		785
3	BR	R	2.5			U	1		880		1,135		1,260
4	Point BRR	R	8			U	0.57		880		1,135		1,260
5	Point BLL	L	8			U	0.57		880		1,135		1,260
7	Line III	L	4	V	V	H			880		1,135		1,260
10	50 R	R	1.72			D	0.86	5,100	44,100	4,080	52,920	3,570	57,330
13	50 L	L	3.43			D	0.86	1,700	~~13,200[1]~~	~~2,840~~ **1,360**	~~15,840[1]~~	~~2,485~~ **1,190**	~~17,160[1]~~

~~Note to Table 21:~~

~~[1] The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, of the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.~~ "

Table 23, amend to read:

"Table 23
Class W – Non-bending mode – System Requirements

Class W – non-bending mode		*Position/deg*						*Column A*		*Column B*		*Column C*	
Tabled requirements expressed in cd		*horizontal*				*vertical*		*≙0% CoP*		*≙20% CoP*		*≙30% CoP*	
No	*Element*	*at/*	*from*	*to*		*at*		*min*	*max*	*min*	*max*	*min*	*max*
1	B50L	L	3.43			U	0.57		625		880		1,005
3	BR	R	2.5			U	1		2,650		3,180		3,445
4	Point BRR	R	8			U	0.57		5,300		6,360		6,890
5	Point BLL	L	8			U	0.57		880		1,135		1,260
7	Line III b	L	4	L	0.5	U	0.34		880		1,135		1,260
11	75 R	R	1.15			D	0.57	20,300	70,500[1]	16,240	84,600[1]	14,210	91,650[1]
13	50 L	L	3.43			D	0.86	6,800	26,400[2]	5,440	31,680[2]	4,760	34,320[2]
14	25 LL	L	16			D	1.72	3,400	70,500[1]	2,720	84,600[1]	2,380	91,650[1]
15	25 RR	R	11			D	1.72	3,400	70,500[1]	2,720	84,600[1]	2,380	91,650[1]
16	Segment 20	L	3.5	V		D	2		17,600[1]		21,120[1]		22,880[1]
17	Segment 10	L	4.5	R	2.0	D	4		~~12,300[1]~~ **7,100[1]**		~~14,760[1]~~ **8,520[1]**		~~15,990[1]~~ **9,230[1]**
	Line E	L	20	R	20	U	10		175		260		300

Notes to Table 23:

[1] If, according to the applicants specification according to paragraph 3.1.3.2. (e) of this Regulation a class W passing beam is designed to produce on segment 20 and below it not more than 8,800 cd (10,560 cd corresponds to 20% CoP, 11,440 cd corresponds to 30% CoP) and on segment 10 and below it not more than 3,550 cd (4,260 cd

corresponds to 20% CoP and 4,615 cd corresponds to 30% CoP), the design value for I_{max} of that beam shall not exceed 88,100 cd (105,720 corresponds to 20% CoP, 114,530 cd corresponds to 30% CoP).

[2] The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.
"

Table 24, amend to read:
"Table 24
Class W – Bendlight – Category 1 – System Requirements

Class W – Bendlight Cat.1		*Position/deg*						*Column A*		*Column B*		*Column C*	
Tabled requirements expressed in cd		*horizontal*				*vertical*		*≙0% CoP*		*≙20% CoP*		*≙30% CoP*	
No	*Element*	*at/*	*from*	*to*		*at*		*min*	*max*	*min*	*max*	*min*	*max*
1	B50L	L	3.43			U	0.57		790		960		1,045
3	BR	R	2.5			U	1		2,650		3,180		3,445
4	Point BRR	R	8			U	0.57		5,300		6,360		6,890
5	Point BLL	L	8			U	0.57		880		1,135		1,260
7	Line III b	L	4	L	0.5	U	0.34		880		1,135		1,260
11	75 R	R	1.15			D	0.57	20,300	70,500[1]	16,240	84,600[1]	14,210	91,650[1]
13	50 L	L	3.43			D	0.86	3,400	~~13,200~~[2]	2,720	~~15,840~~[2]	2,380	~~17,160~~[2]

Notes~~s~~ to Table 24:

[1] If, according to the applicants specification according to paragraph 3.1.3.2 (e) of this Regulation a class W passing beam is designed to produce on segment 20 and below it mot more than 8,800 cd (10,560 cd corresponds to 20% CoP, 11,440 cd corresponds to 30% CoP) and on segment 10 and below it not more than 3,550 cd (4,260 cd corresponds to 20% CoP and 4,615 cd corresponds to 30% CoP), the design value for I_{max} of that beam shall not exceed 88,100 cd (105,720 corresponds to 20% CoP, 114,530 cd corresponds to 30% CoP).

~~[2] The maximum value may be multiplied by 1.4, if it is guaranteed according to the manufacturer's description that this value will not be exceeded in use, either by means of the system or, if the system's use is confined to vehicles, providing a corresponding stabilization/limitation of the system's supply, as indicated in the communication form.~~
"

Table 30, amend to read:
"Table 30
Class R – Driving – Neutral State – System Requirements

		Column A		*Column B*		*Column C*	
Driving Beam Straight Ahead Test Point	*Angular Coordinates (degrees)*	*Required luminous intensity (cd) ≙0% CoP*		*Required luminous intensity (cd) ≙20% CoP*		*Required luminous intensity (cd) ≙30% CoP*	
		Min	*Max*	*Min*	*Max*	*Min*	*Max*
HV	H,V	32,400	215,000	~~26,000~~ **25,920**	258,000	~~23,000~~ **22,680**	279,500
H-5L	0.0, 5.0L	5,100	215,000	4,080	258,000	3,570	279,500
H-2.5L	0.0, 2.5L	20,300	215,000	16,240	258,000	14,210	279,500
H-2.5R	0.0, 2.5R	20,300	215,000	16,240	258,000	14,210	279,500
H-5R	0.0, 5.0R	5,100	215,000	4,080	258,000	3,570	279,500

"

Table 31, amend to read:

"Table 31

Class R – Driving Beam Bendlight – System Requirements

		Column A		*Column B*		*Column C*	
Driving Beam Bendlight Test Point	*Angular Coordinates (degrees)*	*Required luminous intensity (cd) ≙0% CoP*		*Required luminous intensity (cd) ≙20% CoP*		*Required luminous intensity (cd) ≙30% CoP*	
		Min	*Max*	*Min*	*Max*	*Min*	*Max*
HV	H,V	32,400	215,000	~~26,000~~ **25,920**	258,000	~~23,000~~ **22,680**	279,500
H-5L	0.0, 5.0 L	4,080	215,000	3,264	258,000	2,856	279,500
H-2.5L	0.0, 2.5 L	16,240	215,000	12,992	258,000	11,368	279,500
H-2.5R	0.0, 2.5 R	16,240	215,000	12,992	258,000	11,368	279,500
H-5R	0.0, 5.0 R	4,080	215,000	3,264	258,000	2,856	279,500

"

II. Proposal for a Supplement to the 01 series of amendments to UN Regulation No. 149

Table 28, amend to read:
"Table 28
Class W – Bend lighting – Category 1 – System Requirements (indicated for right-hand traffic)

Element	*Angular coordinates in deg.*		*Luminous intensity in cd*					
			Column A		*Column B*		*Column C*	
	vertical	*horizontal*	*≙ 0% CoP*		*≙ 20% CoP*		*≙ 30% CoP*	
			min	*max*	*min*	*max*	*min*	*max*
BR	1°U	2.5°R	-	~~$7.90 \cdot 10^2$~~ **$2.65 \cdot 10^3$**	-	~~$9.60 \cdot 10^2$~~ **$3.18 \cdot 10^3$**	-	~~$1.05 \cdot 10^3$~~ **$3.45 \cdot 10^3$**
Point BLL	0.57°U	8°L	-	$8.80 \cdot 10^2$	-	$1.14 \cdot 10^3$	-	$1.26 \cdot 10^3$
B50L	0.57°U	3.43°L	-	$7.90 \cdot 10^2$	-	$9.60 \cdot 10^2$	-	$1.05 \cdot 10^3$
Line III b	0.34°U	4°L to 0.5°L	-	$8.80 \cdot 10^2$	-	$1.14 \cdot 10^3$	-	$1.26 \cdot 10^3$
75R	0.57°D	1.15°R	$1.52 \cdot 10^4$	-	$1.22 \cdot 10^4$	-	$1.06 \cdot 10^4$	-
50L	0.86°D	3.43°L	$3.40 \cdot 10^3$	-	$2.72 \cdot 10^3$	-	$2.38 \cdot 10^3$	-

"

Table 29, amend to read:
"Table 29
Class W – Bend lighting – Category 2 – System Requirements (indicated for right-hand traffic)

Element	*Angular coordinates in deg.*		*Luminous intensity in cd*					
			Column A		*Column B*		*Column C*	
	vertical	*horizontal*	*≙ 0% CoP*		*≙ 20% CoP*		*≙ 30% CoP*	
			min	*max*	*min*	*max*	*min*	*max*
BR	1°U	2.5°R	-	~~$7.90 \cdot 10^2$~~ **$2.65 \cdot 10^3$**	-	~~$9.60 \cdot 10^2$~~ **$3.18 \cdot 10^3$**	-	~~$1.05 \cdot 10^3$~~ **$3.45 \cdot 10^3$**
Line BLL	0.57°U	20°L to 8°L	-	$8.80 \cdot 10^2$	-	$1.14 \cdot 10^3$	-	$1.26 \cdot 10^3$
B50L	0.57°U	3.43°L	-	$7.90 \cdot 10^2$	-	$9.60 \cdot 10^2$	-	$1.05 \cdot 10^3$
Line III b	0.34°U	4°L to 0.5°L	-	$8.80 \cdot 10^2$	-	$1.14 \cdot 10^3$	-	$1.26 \cdot 10^3$

"

Table 35, amend to read:
"Table 35

Class R – Driving-beam Bend lighting – System Requirements

Element	*Angular coordinates in deg.*		*Luminous intensity in cd*					
			Column A		*Column B*		*Column C*	
	vertical	*horizontal*	*≙ 0% CoP*		*≙ 20% CoP*		*≙ 30% CoP*	
			min	*max*	*min*	*max*	*min*	*max*
2U-V	2°U	0°	$1.30 \cdot 10^3$	$2.15 \cdot 10^5$	~~$1.08 \cdot 10^3$~~ **$1.04 \cdot 10^3$**	$2.58 \cdot 10^5$	~~$9.50 \cdot 10^2$~~ **$9.10 \cdot 10^2$**	$2.80 \cdot 10^5$
H-12L	0°	12°L	$1.20 \cdot 10^3$		$9.60 \cdot 10^2$		$8.40 \cdot 10^2$	
H-9L	0°	9°L	$2.70 \cdot 10^3$		~~$2.17 \cdot 10^3$~~ **$2.16 \cdot 10^3$**		~~$1.90 \cdot 10^3$~~ **$1.89 \cdot 10^3$**	
H-6L	0°	6°L	$4.00 \cdot 10^3$		$3.20 \cdot 10^3$		$2.80 \cdot 10^3$	
H-3L	0°	3°L	$1.40 \cdot 10^4$		$1.12 \cdot 10^4$		$9.80 \cdot 10^3$	
H-V	0°	0°	$3.20 \cdot 10^4$		$2.56 \cdot 10^4$		$2.24 \cdot 10^4$	
H-3R	0°	3°R	$1.40 \cdot 10^4$		$1.12 \cdot 10^4$		$9.80 \cdot 10^3$	
H-6R	0°	6°R	$4.00 \cdot 10^3$		$3.20 \cdot 10^3$		$2.80 \cdot 10^3$	
H-9R	0°	9°R	$2.70 \cdot 10^3$		~~$2.17 \cdot 10^3$~~ **$2.16 \cdot 10^3$**		~~$1.90 \cdot 10^3$~~ **$1.89 \cdot 10^3$**	
H-12R	0°	12°R	$1.20 \cdot 10^3$		$9.60 \cdot 10^2$		$8.40 \cdot 10^2$	

"

Annex 4, paragraph 1.6.2.1., amend to read:

"1.6.2.1. However, in those cases where a provision is specified for one side only, the division by the factor of 2 does not apply. These cases are: paragraphs 5.3.2.5.2., 5.3.2.8.1., 5.1.4.2., 5.3.3.4., 5.3.5.1. of this Regulation, and notes ~~1~~**a** and ~~7~~**f** of Table 7. "

III. Justification

General

In UN Regulation No. 149 (series 00 and 01), some CoP values are slightly different from the Type Approval values, and some Tables also contain calculation errors. These inconsistencies may lead to confusion for manufacturers and technical services. The proposed corrections are intended to clarify the situation and avoid possible confusion

Part I – UN Regulation 149-00

1. For the type-approval requirements of Classes C, V and W bending mode (i.e. Table 9, Part B) there is no maximum at point 50L. However, maximum values are shown at point 50L in the CoP tables of Class C, V and W Bend Light Category 1 (i.e. Tables 18, 21 and 24 respectively). These maximum values should be deleted.
   Note: this inconsistency between Reg. 123 and R149 originated when the type-approval values have changed from Reg. 123-02 to Reg. 149-00, but the corresponding amendments to the CoP values were inadvertently overseen.

2. In Tables 18 and 21 for Class C and V Bend Light Category 1, as the 0% CoP minimum value at point 50L is 1,700 cd, the correct CoP minimum values should be: 1,360 cd (20% CoP) instead of 2,840 cd, and 1,190 cd (30% CoP) instead of 2,485 cd.

3. In Table 23 for Class W non-bending mode, at Segment 10, the 0% CoP maximum value is incorrectly given as 12,300 cd instead of 7,100 cd. As this error also affected the calculated 20% and 30% values, the correct CoP values should be 8,520 cd (20% CoP) and 9,230 cd (30% CoP).

4. In Tables 30 and 31 for Class R Neutral State and Bend Lighting, at point HV the accurate CoP minimum values based on 32,400 cd are 25,920 cd (20% CoP) and 22,680 cd (30% CoP) respectively, instead of 26,000 cd and 23,000 cd.

Part II – UN Regulation 149-01

5. At point BR in the Class W type approval table (i.e. Table 7), the maximum value is 2.65×10^3. Accordingly, the same point in the CoP tables of Class W Bend Light Category 1 and 2 (i.e. Tables 28 and 29) should be 2.65×10^3 instead of 7.90×10^2. Therefore, the correct CoP maximum values should be: 3.18×10^3 (20% CoP) and 3.45×10^3 (30% CoP)

6. In Table 35 for Class R Bend Lighting CoP, the 20% and 30% values were miscalculated. The accurate CoP minimum values should be as follows:

   • 2U-V

   - 20% CoP: 1.04×10^3 (instead of 1.08×10^3)
   - 30% CoP: 9.10×10^2 (instead of 9.50×10^2)

   • H-9L and H-9R

   - 20% CoP: 2.16×10^3 (instead of 2.17×10^3)
   - 30% CoP: 1.89×10^3 (instead of 1.90×10^3)

7. With the introduction of scientific notation in the 01 series of amendments to UN Regulation No. 149, to avoid confusion, all table notes had to be indicated with letters instead of numbers. This proposal is correcting in Annex 4, paragraph 1.6.2.1., the references to the table notes where the division by the factor of 2 does not apply (i.e. notes a) and f) of Table 7).
