

Direct forward field of drivers vision
Vehicles of category other than M1

Transmitted by the expert from India

This is further to the Informal document no. GRSG-92-13 submitted by India.

This has reference to:-

- Report no. TRANS/WP29/GRSG/71, page 10, clause no.30)
- Provisional agenda for 93rd Session, clause no. 11

1. Preamble:

Different aspects of field of vision are

- Direct vision
- Indirect vision
- Lighting
- Light signaling
- Reflections
- Soiling
- Mist / rain / ice

While so many aspects influence driver's vision, 180 degrees forward field of vision is the subject of discussion here.

1.1 Vision areas can be classified as follows:

- View between the two A-pillars is addressed as frontal vision
- Towards the side until 180 degrees, from and beyond the A-pillars, could be a matter of concern
- Presence of rear view mirrors – Class II and Class IV add to the obstruction to direct vision

1.2 Front straight ahead vision

- Long range view is not a concern. It is normally clear
- Matter of concern could be proximity view – This matters most when the vehicle starts from stationary condition

1.3 Among 180 degree frontal area.

- With class VI mirror front proximity range is addressed
- With class V mirror co-driver side kerb view is addressed
- Driver side proximity kerb view is directly visible to the driver

1.4 Though ideally one must be able to view everything around, it is practically impossible even for a free standing person on road. Considering a driver vehicle in traffic vulnerable situations are identified that can cause accident. Researches identified three traffic situations as vulnerable, pertaining to proximity vision

- a) Two situations while the vehicle is in full movement

- Lane change
 - Turning (particularly to the co-driver side)
- b) one situation while the vehicle is about to start moving – In front of the vehicle. This is addressed with the Class VI mirror (ECE R46)

1.5 When direct view is not possible, attempted to effective address by support systems can be made. The solution could be “caution the driver about a vulnerable situation”

- Show the object thru mirror (s)
- Show the object thru visual display : input from camera
- Signal the driver : audio or visual – input from radar detector



Where should the driver look at??

Though it is possible to be addressed by a combination of direct and indirect vision, to make it visible directly is better because it will minimise the distraction of drivers attention !

2. Proposed action ahead

- Though forward 180 degree visibility evaluation is good, priority shall be towards the most vulnerable situations
- First phase of work shall be focused on blind spots caused due to A-pillar and mirrors
- It is proposed to carry out driver clinics to understand driver behaviors under
 - varied traffic conditions
 - while driving in varied categories of vehicle like M2, M3, N2 or N3

2.1 Primary considerations are:

- The orientation of the vehicle with respect to the traffic as well as orientation of driver with respect to the controls in the vehicle defines the orientation of driver w.r.t the traffic
- What type of traffic situation inputs must be provided so that we are able to “objectively” record drivers’ reaction to the situations
- The intention is to make every driver experience the same “traffic moments” so that the reactions and thus the analysis will lead to comprehensive study.

2.2 Expected outcome

- We must be able to define what is “adequate” field of forward vision for the driver

- How to evaluate the same
- Subsequently, how to regulate

2.3 We propose to build a driving simulator.

- Every driver will be put through same experience.
- Induce impulse moments and record his reflex reaction “objectively”
- Also register subjective comments from him after the exercise, about those moments
- These will form basis for our study and analysis that “should” lead to defining “what is acceptable field of vision”

2.4 Challenges in hand, now:

- The orientation of driver wrt the vehicle control will be different for various categories say, M2, M3, N2 or N3. Should we have different simulators? Or can an adjustable simulator work?
- Position of the screen showing traffic will have to be located at different orientations for the various categories. Or adjustable screens and also the traffic flow orientation in the screen possible
- What kind of impulse / testing moments should be induced to assess the reaction of the driver – primarily in lane changing and turning situations.
- Inputs on the “question paper” for this “exam” needs to be designed

3. Final note

Request participation and inputs from GRSG experts to design and experiment, tools and assessment method to determine “what is adequate field of vision” for a driver.