

Ergonomics and Visibility in tramway driver's cab

Alexandra Guesset

Tramway specialist

French Ministry of Transport / STRMTG

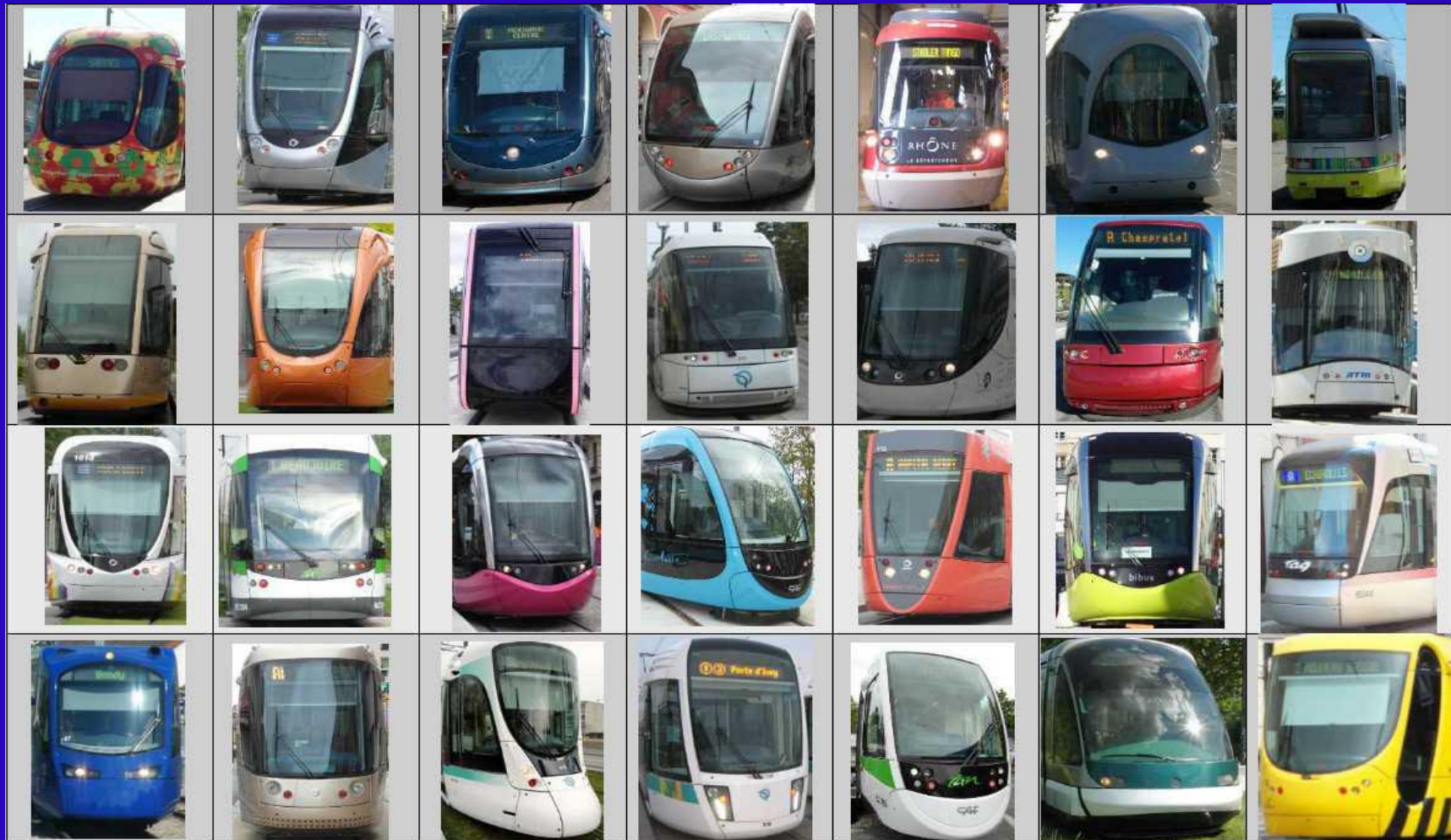
Grenoble - FRANCE

Key Presentation Take Aways

- French context
- Methodology
- Focus on visibility requirements
- Example of a new design
- For further information...

French Context

Ends of vehicle = visual identity of a city



French Context

Actors:

- Public authorities in charge of transport organisation
→ defines the specifications for the RS
- Operators
→ users of the RS
- STRMTG
→ delivers authorisation regarding the safety

Methodology

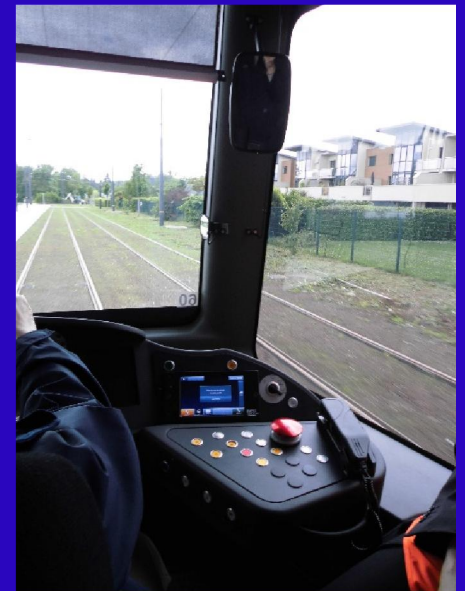
Other European guidebooks?

Based on:

- Needs of operators and STRMTG (safety)
- Standards (buses, conventional railway RS) and regulations (road vehicle)
- Know-how of manufacturers and ergonomics specialist
- Working group with all concerned professions

Focus on visibility requirements

Hazards \longleftrightarrow Conditions of Visibility



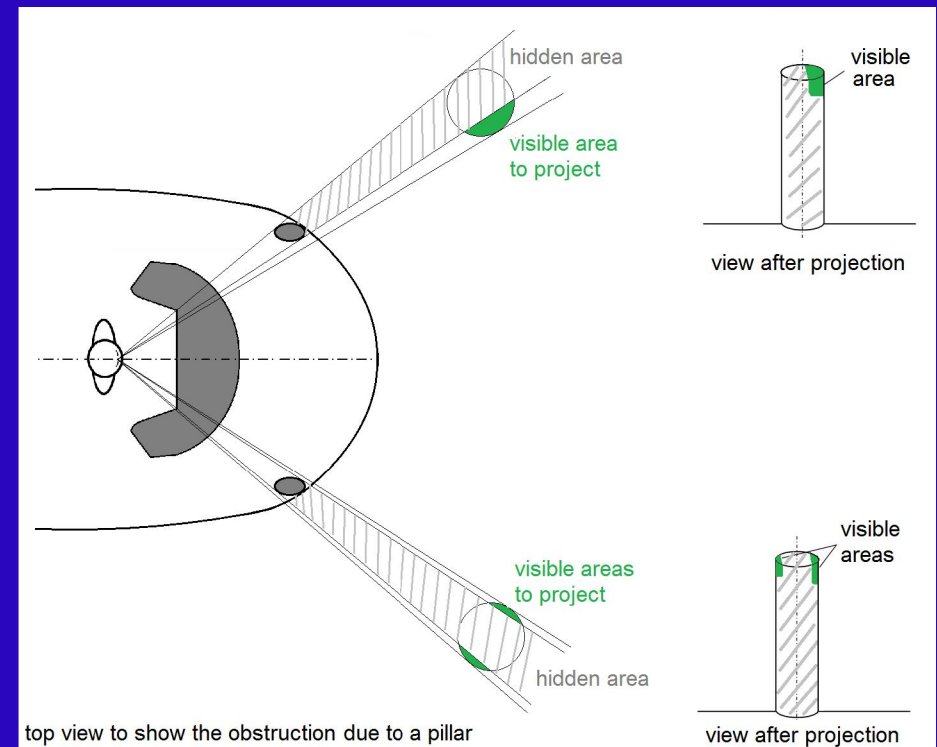
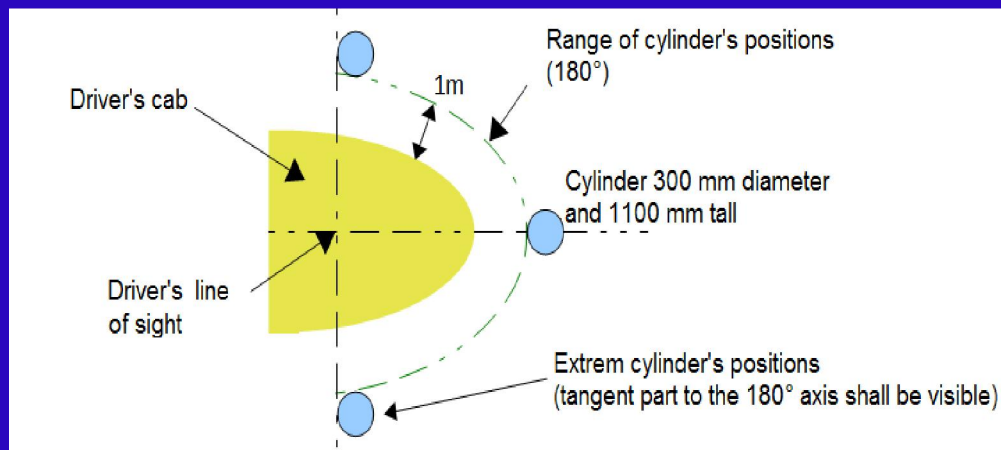
Focus on visibility requirements

Benefits of visibility and anticipation:

- Reduce collisions with pedestrians
1 fatality and 1 severe injured victims in 2010 due to the obstruction of the pillars (8° and 18°)
- Reduce collisions with every third parties
- Reduce emergency braking → falls in the tram
428 victims in France in 2014

Focus on visibility requirements

Tram at standstill \leftrightarrow Close field of vision
Child crossing in front of the tram

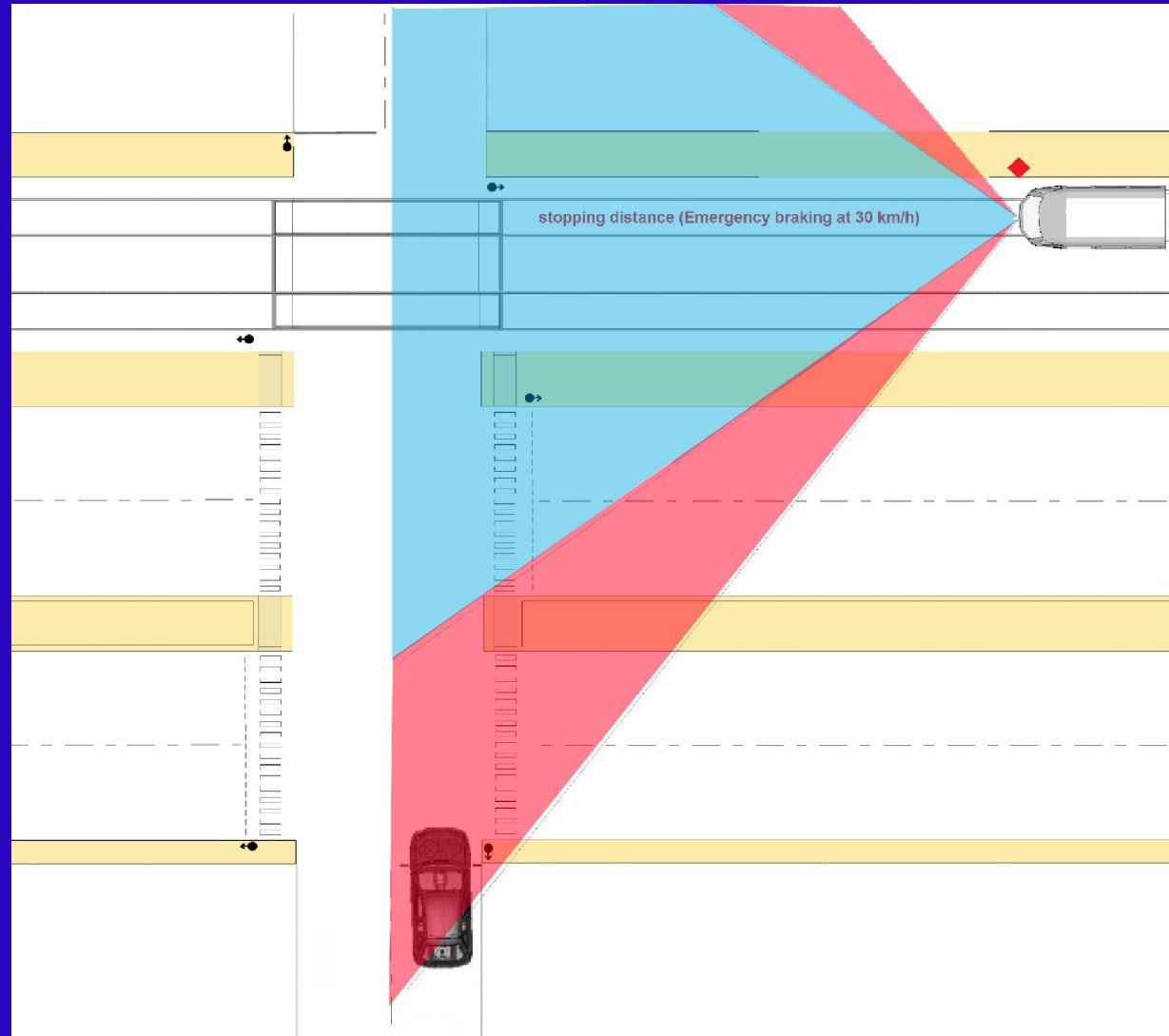


Focus on visibility requirements

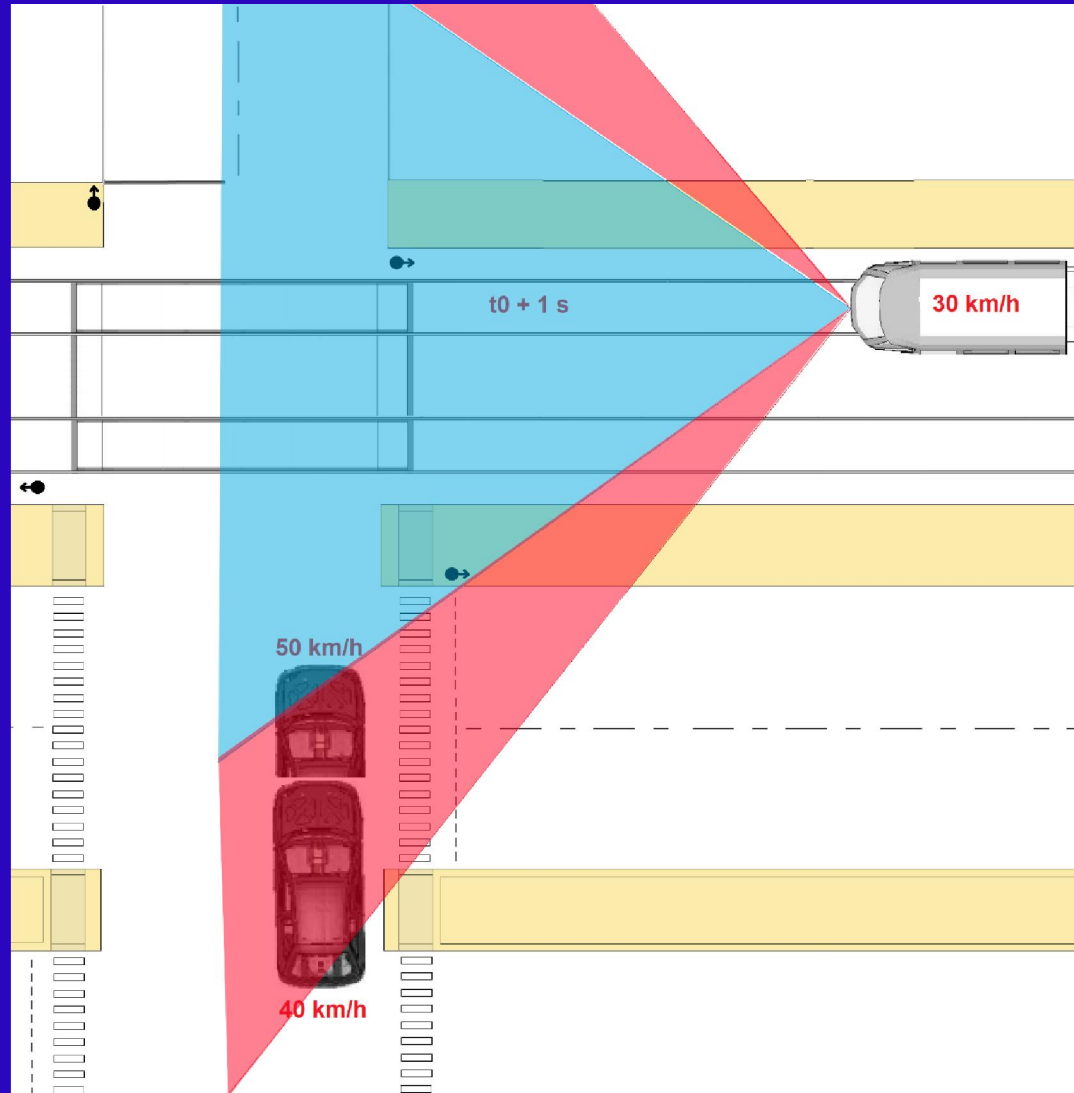
Tram moving \longleftrightarrow Far-off visibility



Focus on visibility requirements

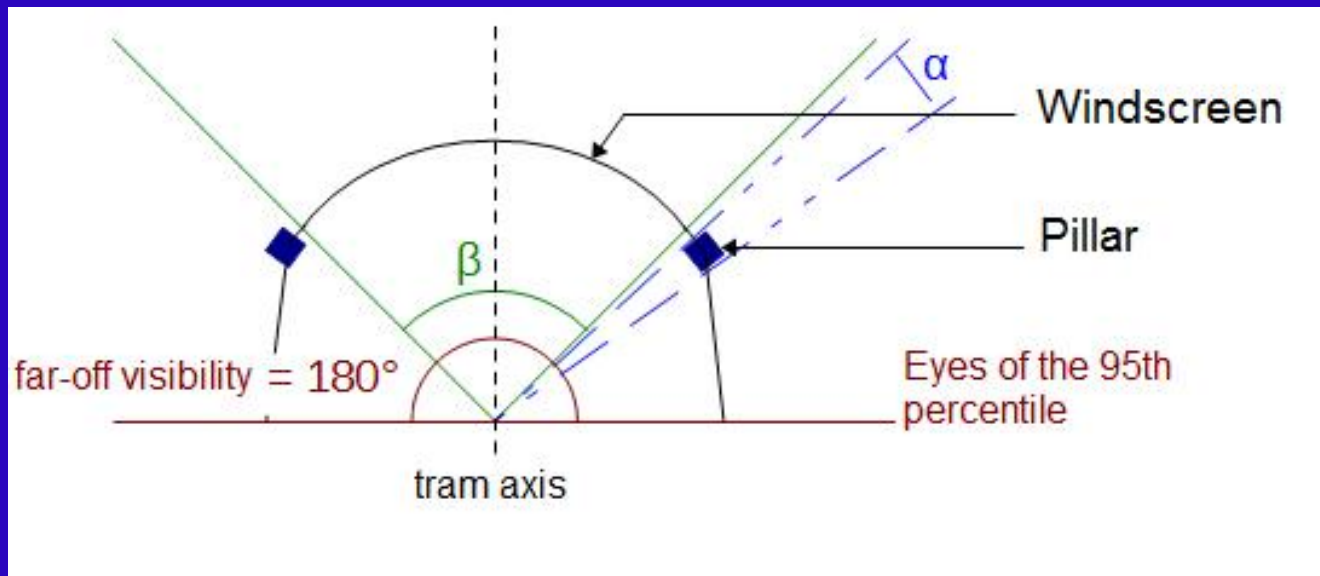


Focus on visibility requirements



Focus on visibility requirements

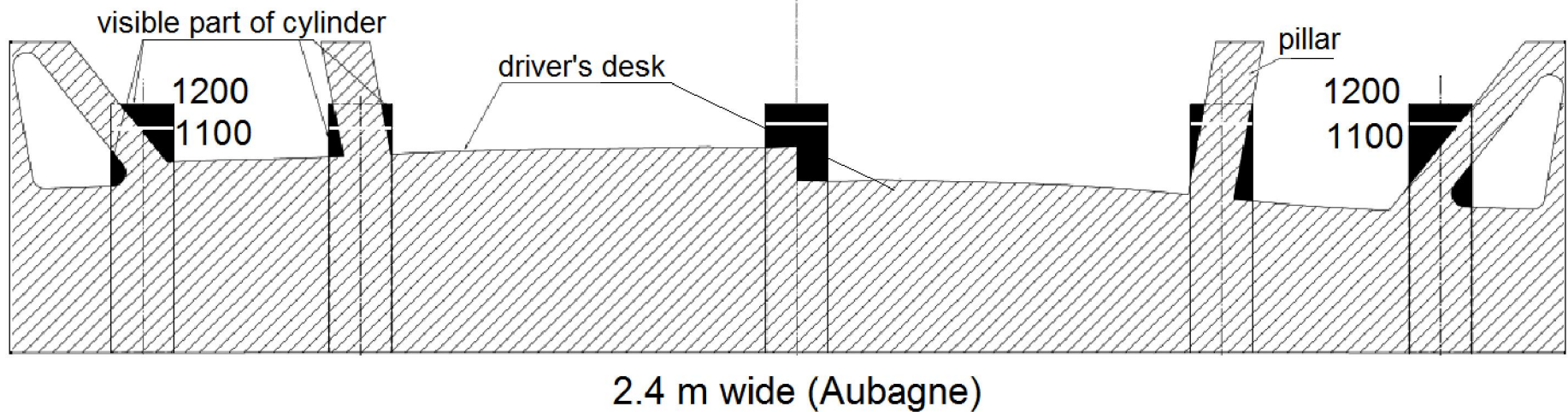
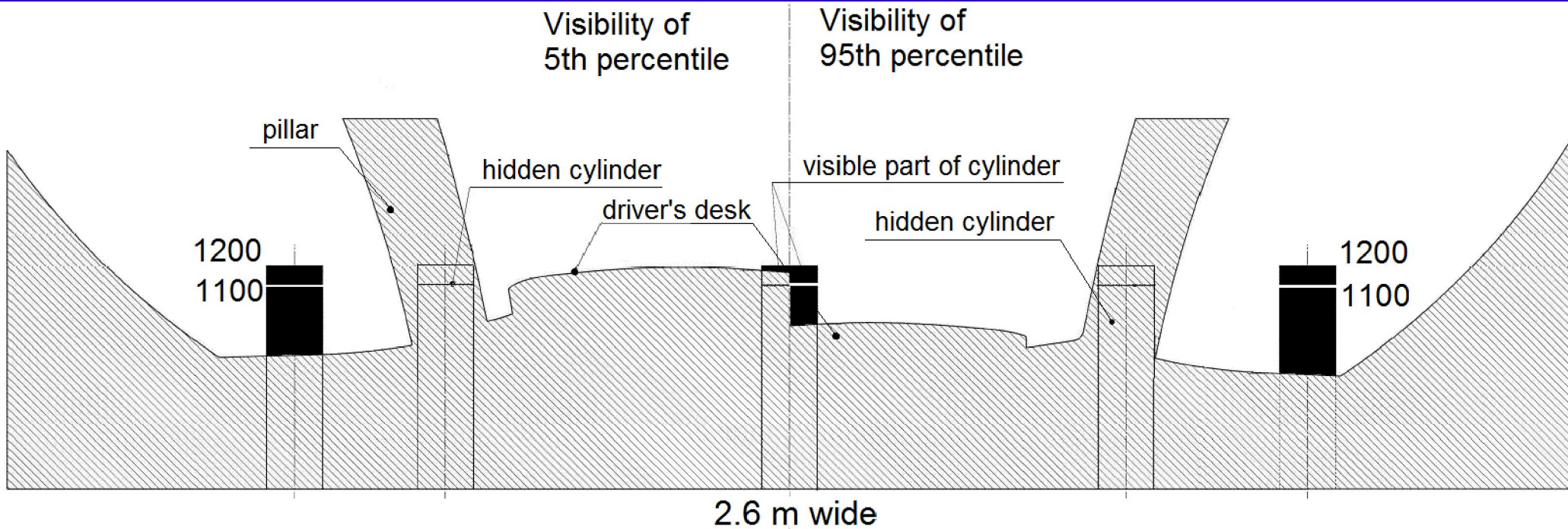
- Angle without any obstacle $\beta = 100^\circ$ min
- 25° min above the horizontal plane
- 180° min for the forward field of vision
- Angle of obstruction by pillar $\alpha = 6^\circ$ max



Example of a new design



Example of a new design



For further information...

Guidebook available on STRMTG's website
English version coming soon

<http://www.strmtg.developpement-durable.gouv.fr/en/>

Contact :

DTW.STRMTG@developpement-durable.gouv.fr