



Urban Road Design - Safety Deficiencies and New Developments -



Prof. Dr.-Ing. Jürgen Gerlach – University of Wuppertal, Germany

Brno, 18th November 2009





WUPPERTAL

University of Wuppertal



Foto: presse.uni-wuppertal.de

Main Campus

Haspel Campus





WUPPERTAL

Schwebebahn – Suspended Monorail



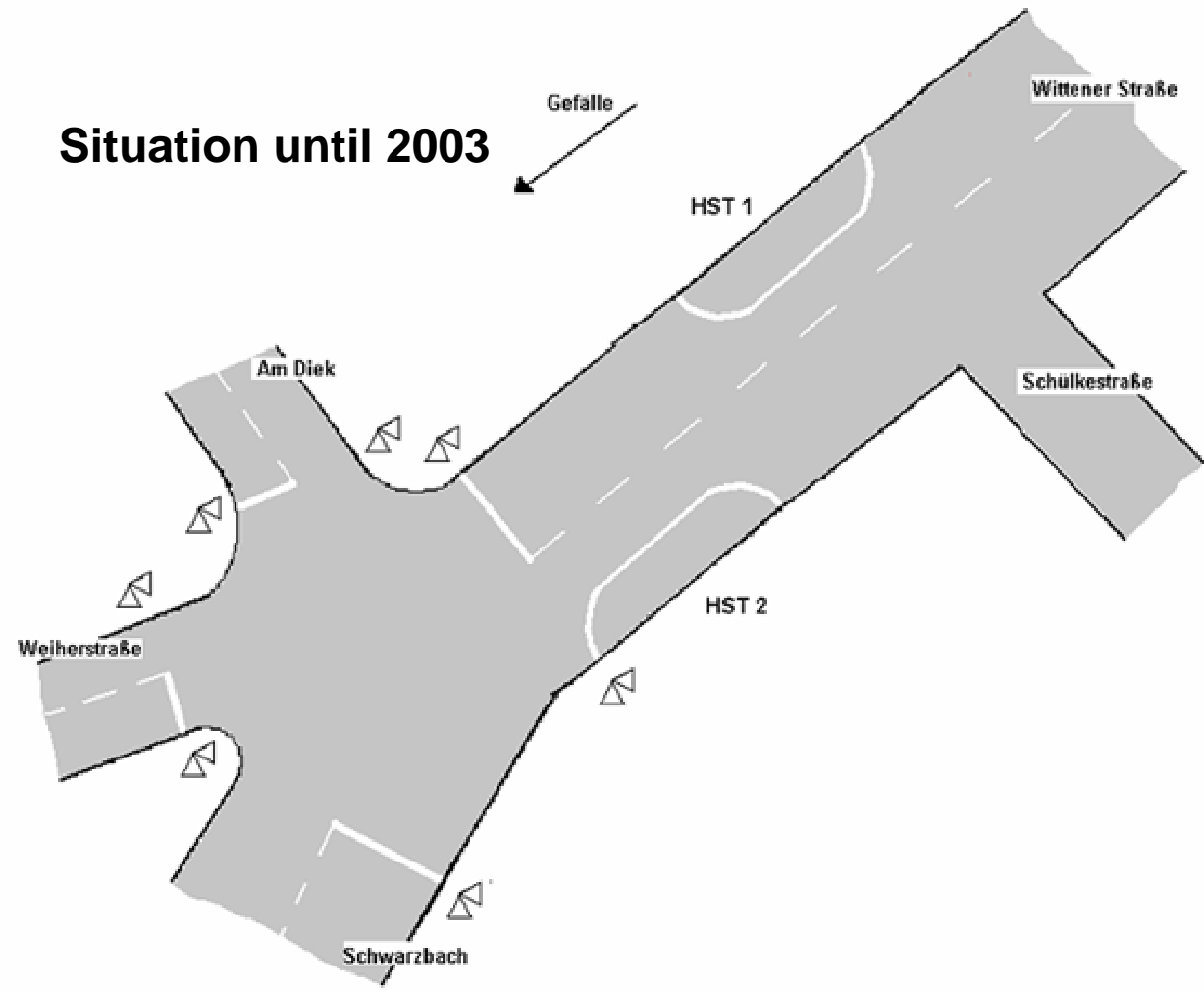
Foto: www.polar.sunynnassau.edu



Foto: www.answers.com

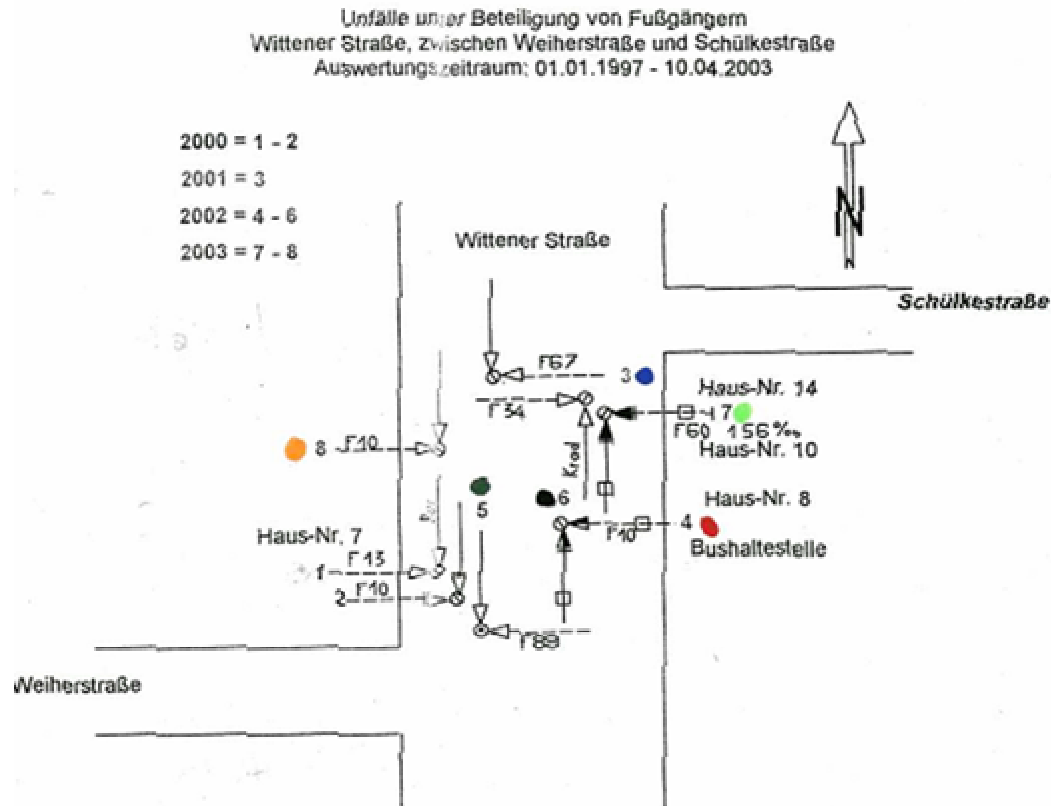


Black Spot (Example from Wuppertal)





Black Spot (Example from Wuppertal)

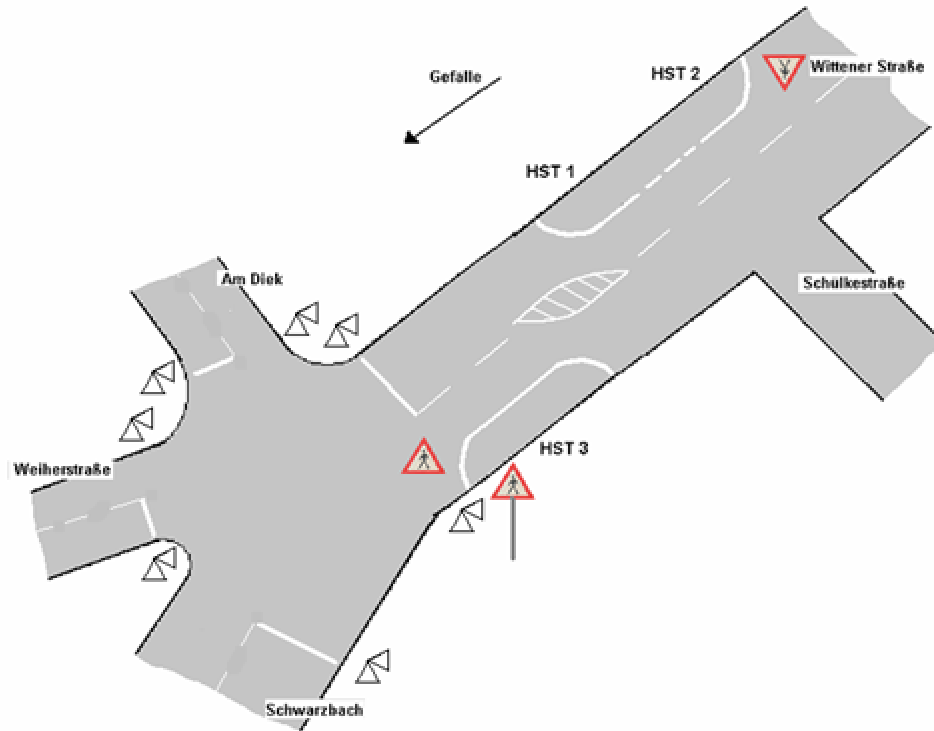


Pedestrian Crossings at a Bus Stop



No Accidents (Example from Wuppertal)

Situation from 2004





Deficiencies in Urban Roads

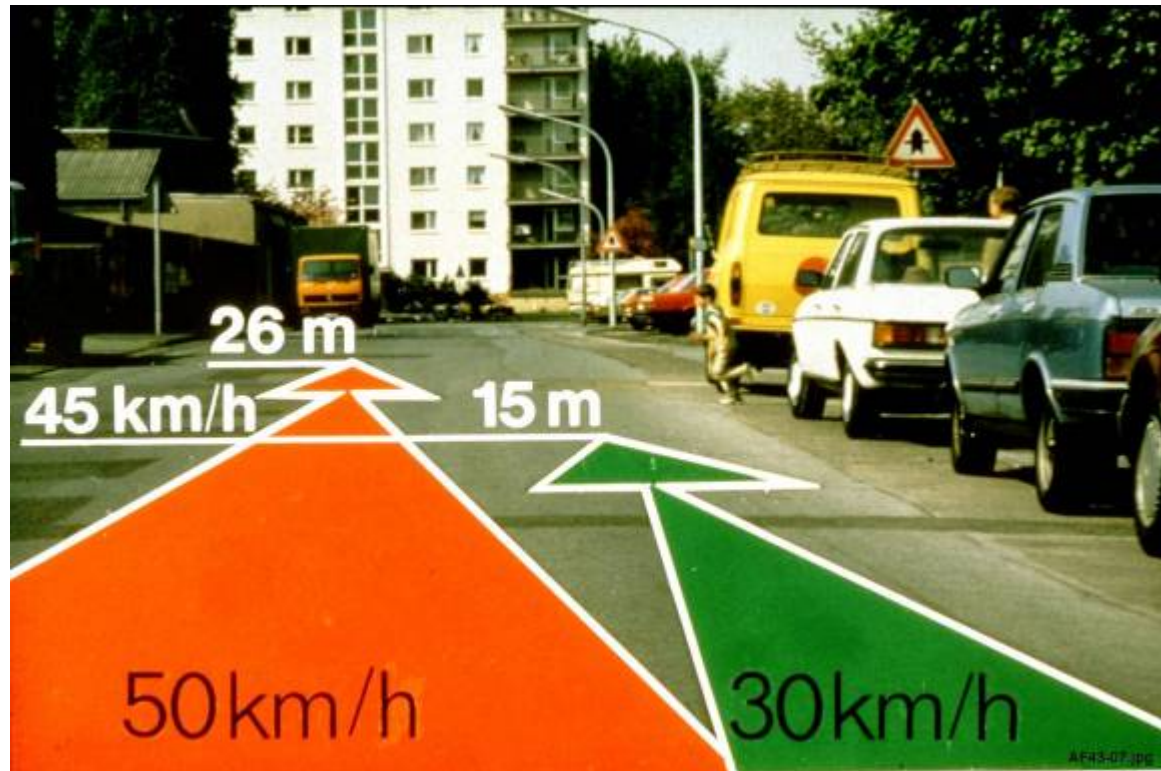
Excessive speed especially at the entry and through villages and cities



60 km/h and more...

Deficiencies in Urban Roads

Excessive speed especially at the entry and through villages and cities



Always keep in mind the braking distances !!!



Deficiencies in Urban Roads

Missing or insufficient sidewalks and cycle paths

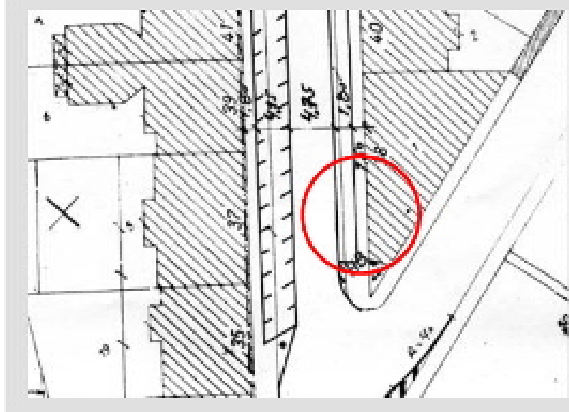
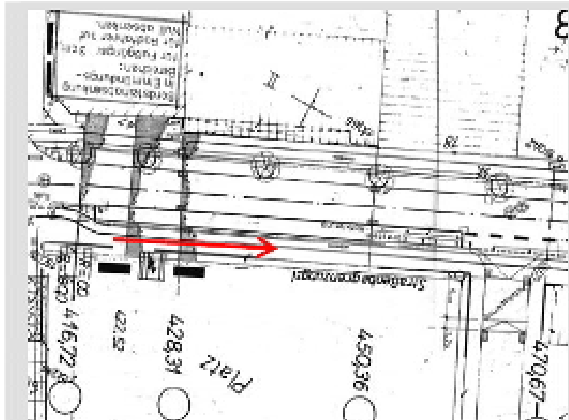


Sidewalk?
Cycle/Donkey path?



Deficiencies in Urban Roads

Combination of Minimum Sizes



- In case of shortage of space, road users switch to the carriage-way.
- Risk of accidents!

Deficiencies in Urban Roads

Missing Measures to prevent Illegal Parking

- Illegal parking, for example on the pavement.
- Line-of-sight obstruction.
- Missing safety clearances.



Deficiencies in Urban Roads

Lacking pedestrian crossings



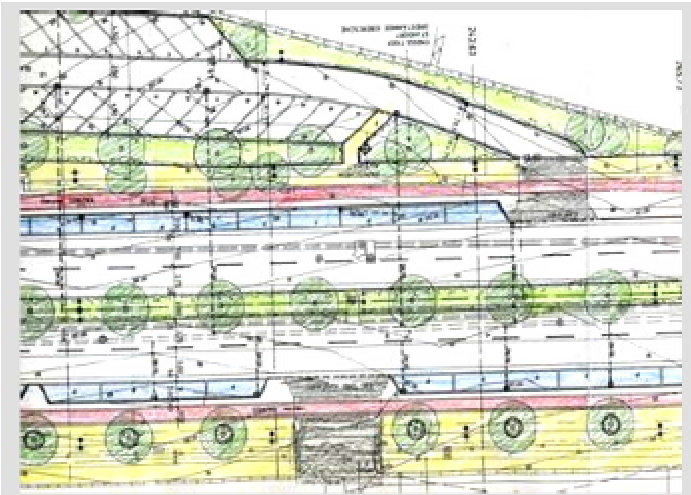
- Visibility of Vulnerable Road Users?
- Waiting Time for Vulnerable Road Users?
- Stopping distance?
- Excessive speed?





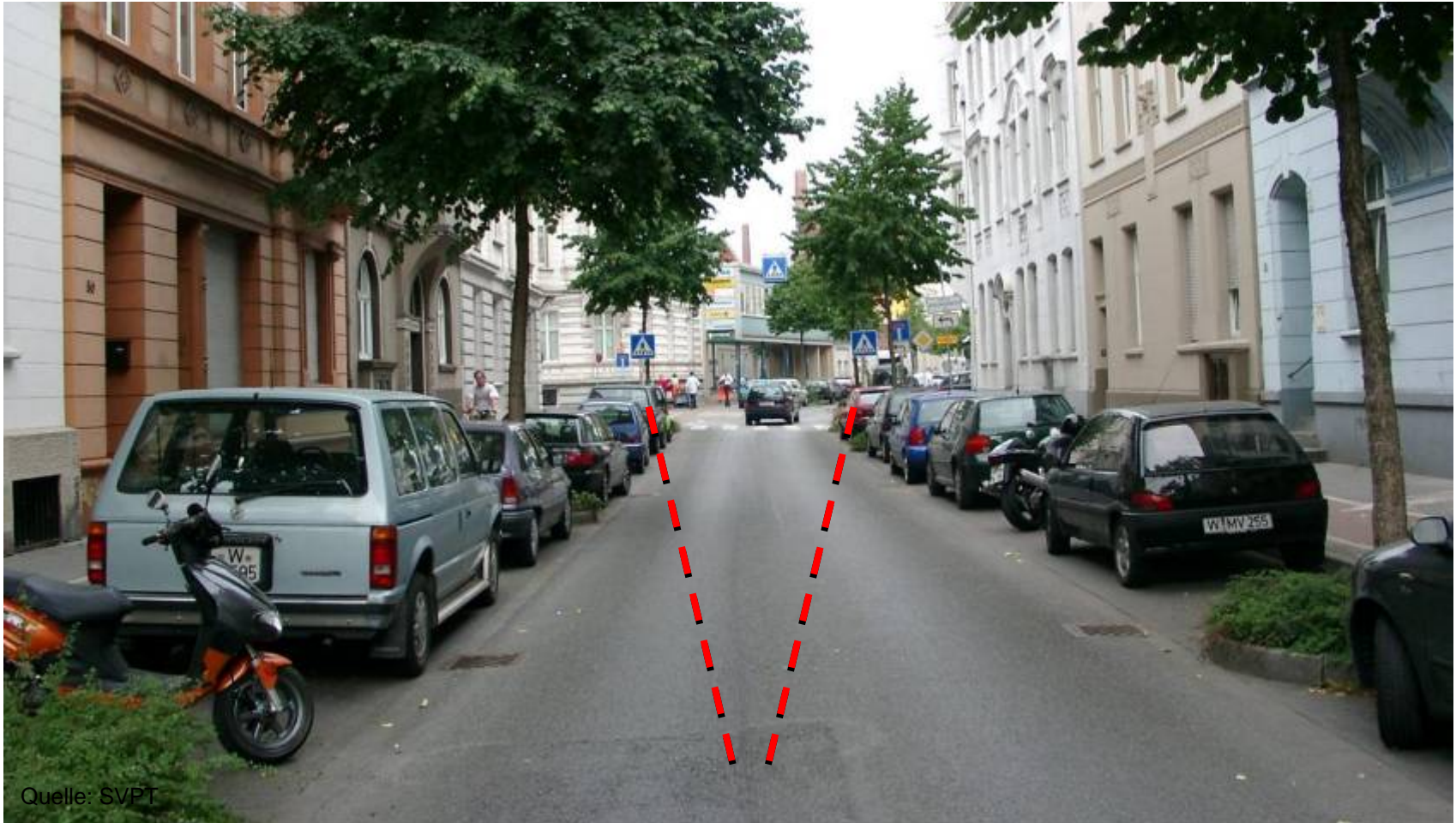
Deficiencies in Urban Roads

Lacking pedestrian crossings



Deficiencies in Urban Roads

Insufficient Sight Distances



Quelle: SVPT



Deficiencies in Urban Roads

Missing a barrier free design



- Acceptance and Use of Sidewalks?
- Continuity of sidewalks?
- High kerbs?
- Elderly People?
- Bicycle Crossing?





Deficiencies in Urban Roads

Lacking consideration of Elderly People





The most effective Measures all over the world

Measures that are effective in reducing speed

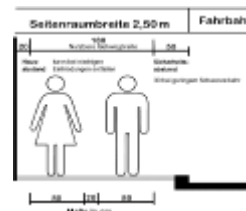
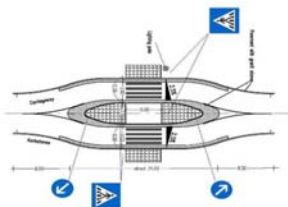
- The best effects being obtained by a unit of road design, signing, marking and enforcement

Measures that improve visibility

- Many accidents in urban areas could be avoided by adequate sight distances

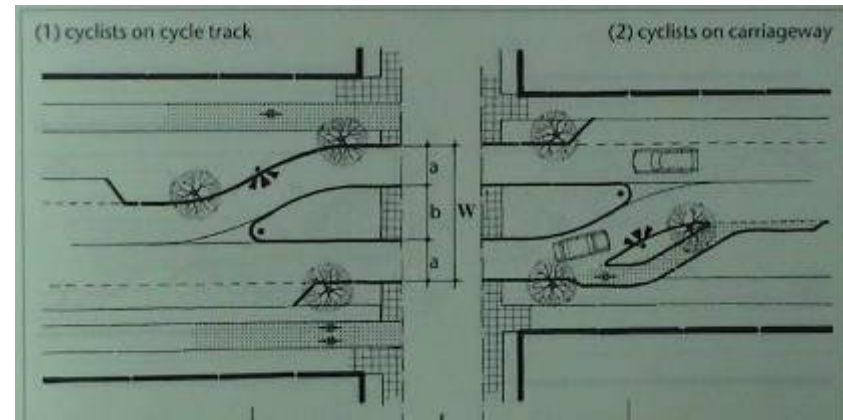
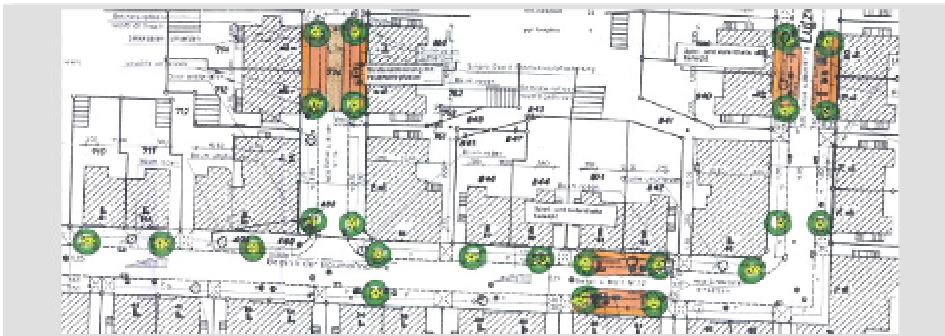
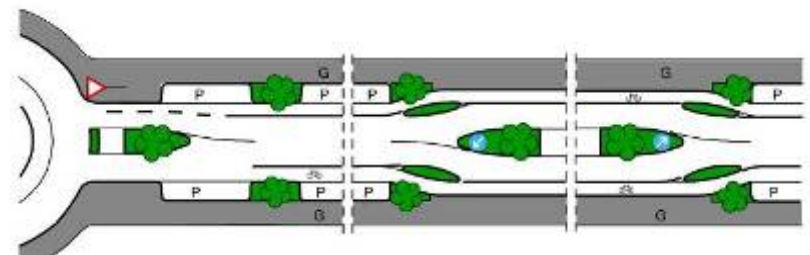
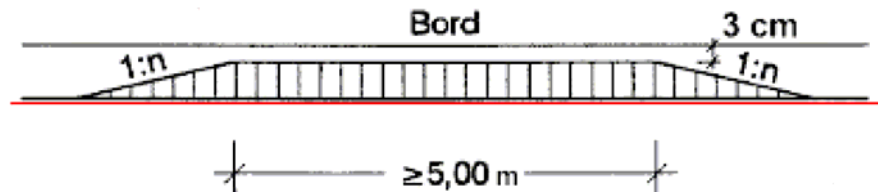
Measures that successfully separate road users

- Non-use of separate facilities is a problem – high-standard design is needed



Reduce Speed

Measures for Traffic Calming

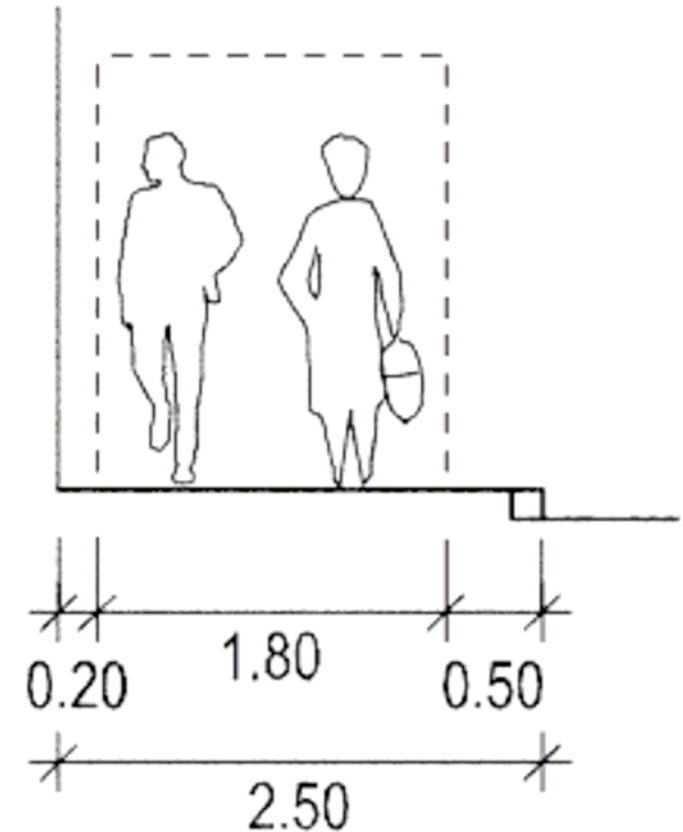


Take care of Pedestrians Quality Needs

- Provide safe pedestrian facilities!
- Increase pedestrian crossings!
- Create adequate sight distances!
- Work with contrasts!

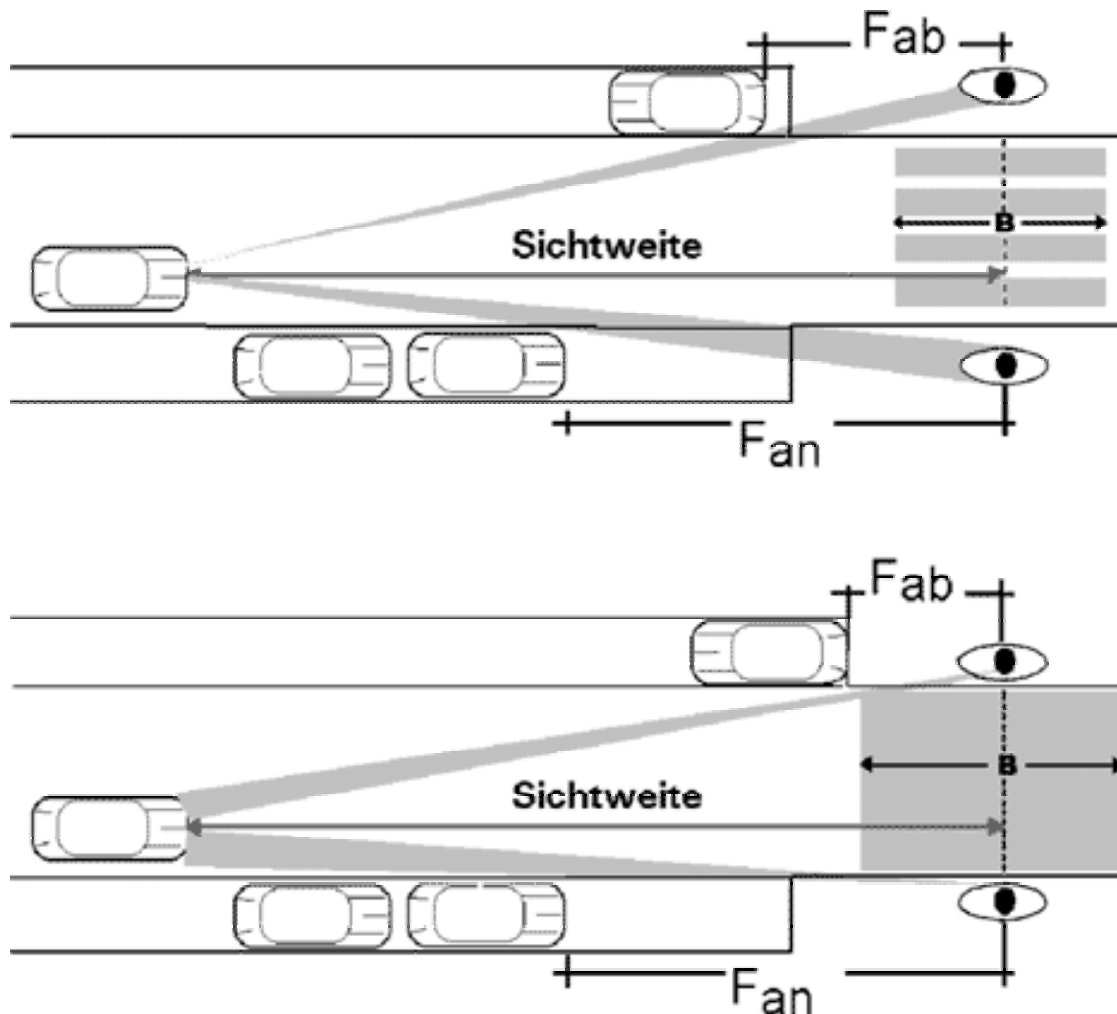


Source: MMMEV NRW





Take care of Pedestrians Safety and Security Needs



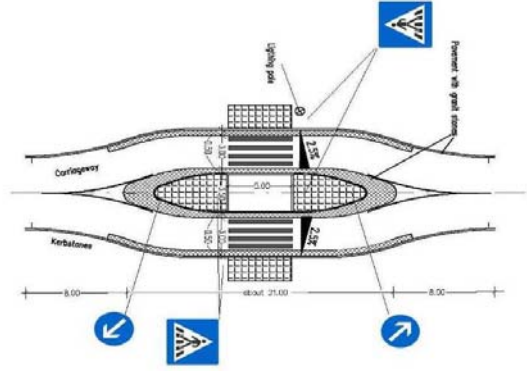
Always take care for the Visibility and Sight view at any Pedestrian Crossing

$F_{an} = \text{min. } 20\text{m}$
 $F_{ab} = \text{min. } 15\text{m}$

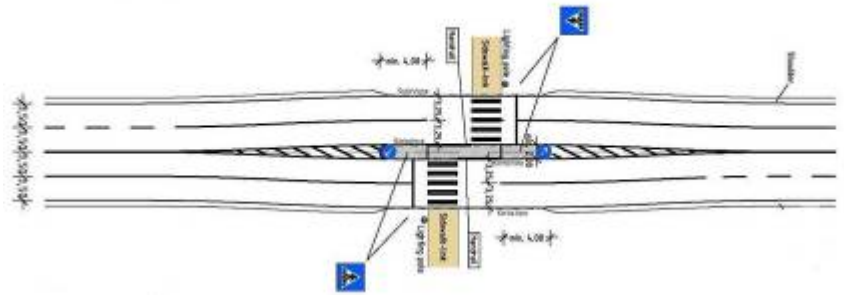


Provide middle islands

min. 2,00-2,50m, better more



Staggered refuge island (4 lane road)

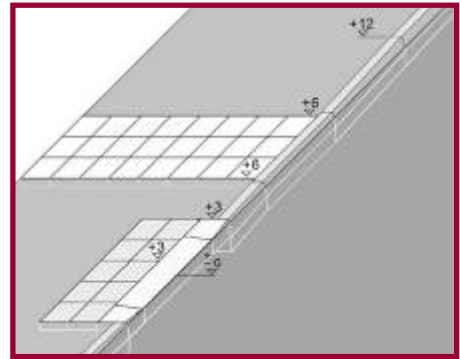
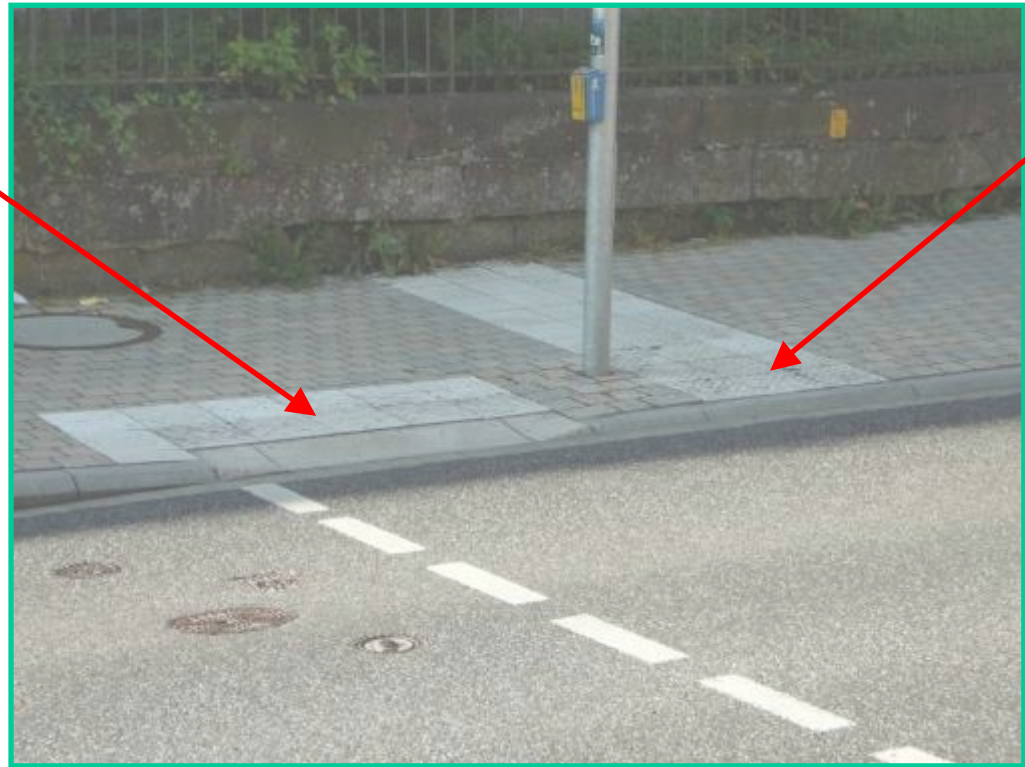
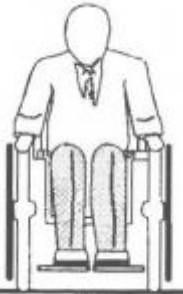


Alternative: Median Strip in shopping areas



Design for All Road Users

D4A – Design for All Principles



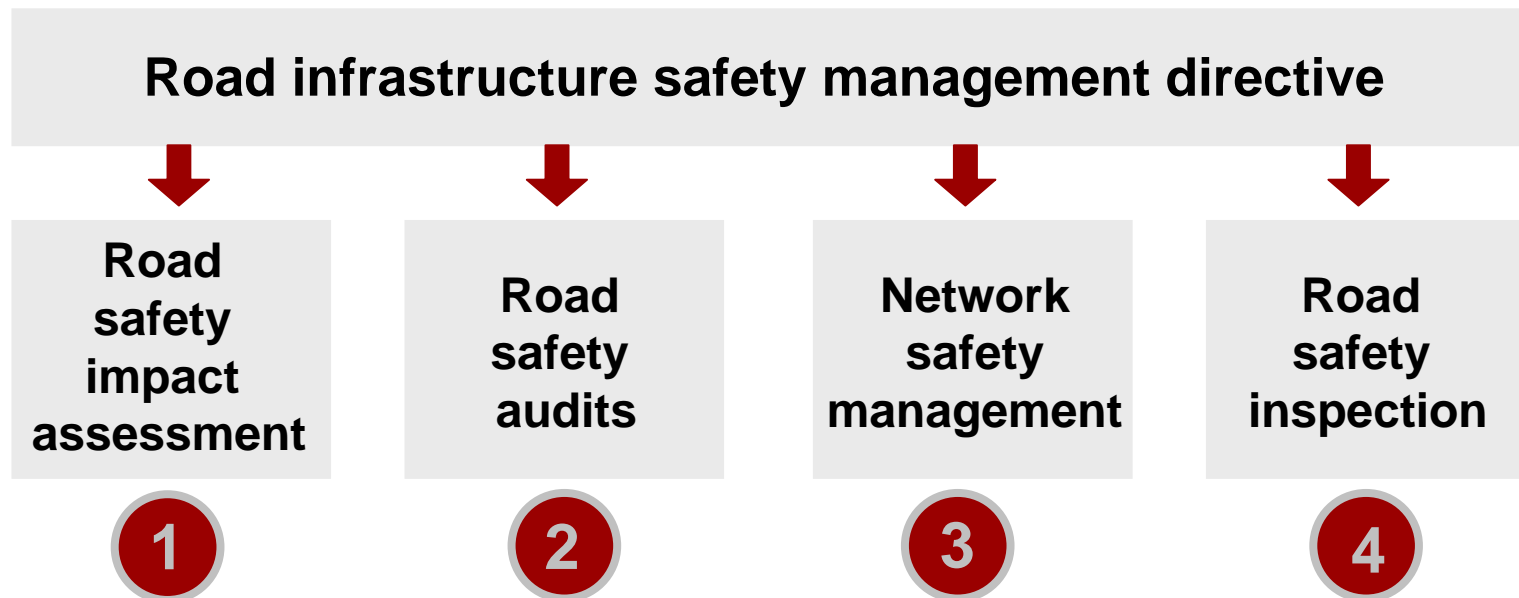


Implement New Instruments

Road infrastructure safety management directive



Procedures of the directive





Simplify your City

Reducing complex situations

SimplyCity

Source: Franz Linder, P3 Agentur, Cologne



Support Respect of Pedestrian Needs

Kevelaer (D), Verkehrsberuhigter Bereich (Traffic Calming Area) Roermonder Platz

10.000 veh/24h



Support Respect of Pedestrian Needs

Haren (NL), Shared Space Rijksstraatweg

8.000 veh/24h





Support Respect of Pedestrian Needs

Burgdorf (CH), Begegnungszone (encounter zone) Bahnhof



6.000 veh/24h





Support Respect of Pedestrian Needs

Biel (CH), Begegnungzone („common use zone“) Zentralplatz

10.000 veh/24h





Support Respect of Pedestrian Needs

Bern (CH), Tempo-30-Zone (open space) Köniz

20.000 veh/24h





Announce the Renaissance of Walking

Practical example

London – „walk London“

- Promotion of walking with a path network of 577 km.
- Connection of all 33 districts.
- Creation of a positive image.





Thanks for your attention!

Juergen Gerlach
jgerlach@uni-wuppertal.de

