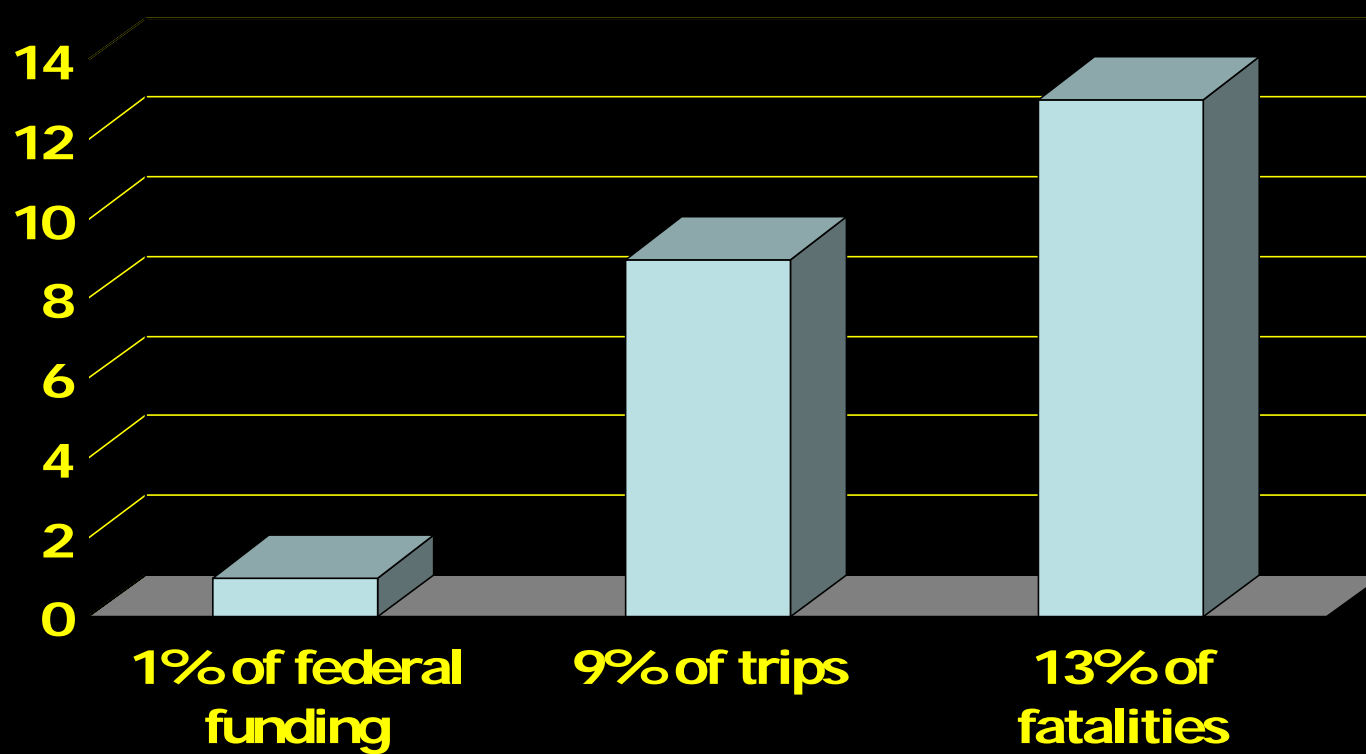


SAFE and COMFORTABLE for all users

SAFE and COMFORTABLE for all users

- **About 1/3 of Americans don't drive**
 - 21% of people over 60
 - All children under 16
 - Many low income Americans cannot afford automobiles
- **9% of all trips are made by foot or bicycle**
- **13% of all traffic fatalities are bicyclists or pedestrians**
- **Pedestrian injury is the 2nd leading cause of death for children 5-9**
- **More than 5,000 pedestrians and bicyclists die each year on U.S. roads**
- **64 pedestrians were killed in Atlanta in 2001**

Pedestrians and bicyclists...



Why aren't bicycle and
pedestrian needs given
equal consideration in
design?

A POLICY
on
GEOMETRIC DESIGN
of
HIGHWAYS
and
STREETS

1994



AMERICAN ASSOCIATION OF STATE
HIGHWAY AND TRANSPORTATION OFFICIALS

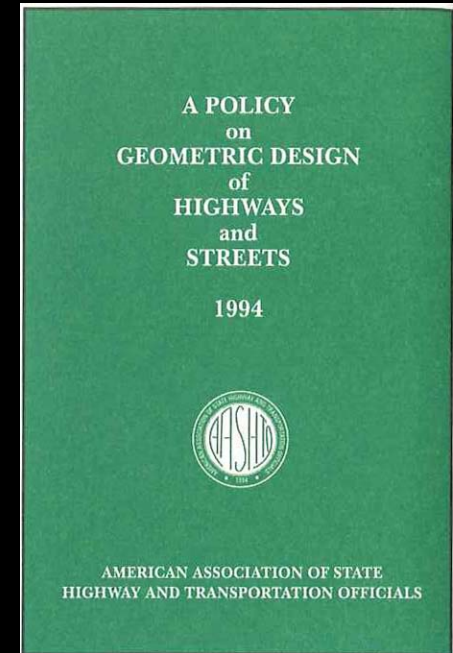
The Green Book is **NOT** a design manual....

It provides **guidance** on geometric dimensions of roadways.

Aspects of design not directly addressed:

- Problem definition
- Project definition
- Development of a concept
- Aesthetic treatments
- Design context

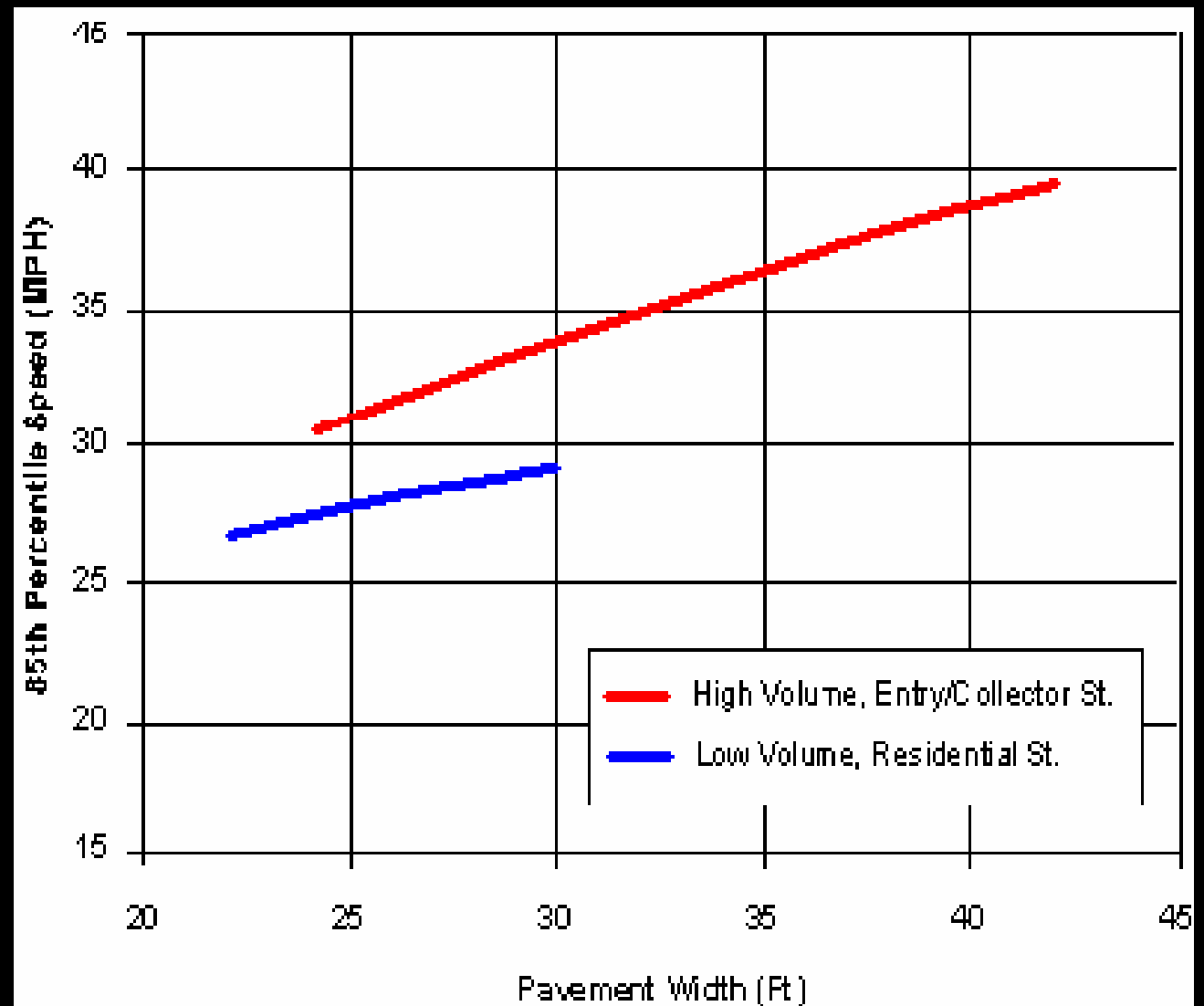
All of these decisions are made before the Green Book is applied.



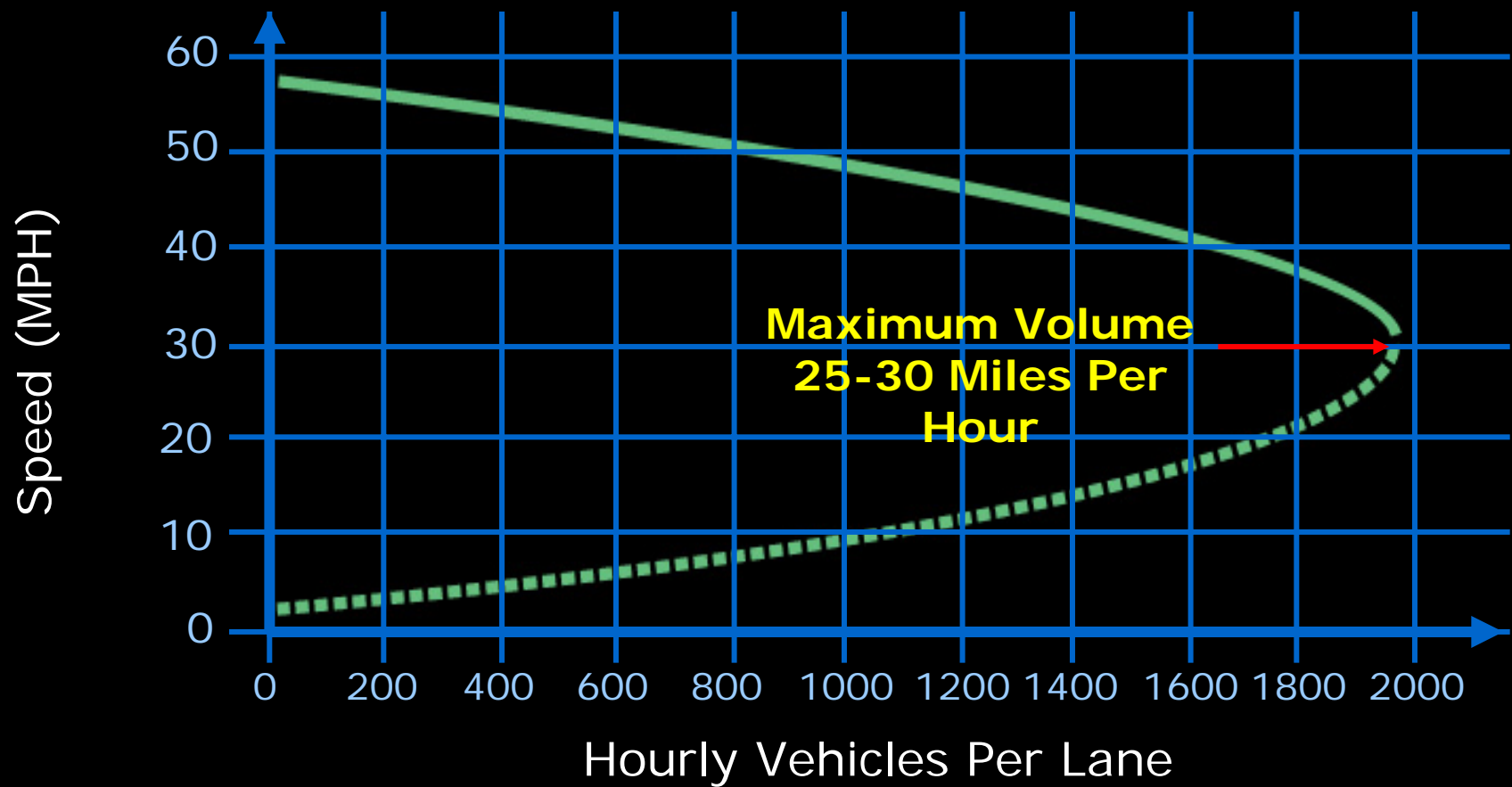
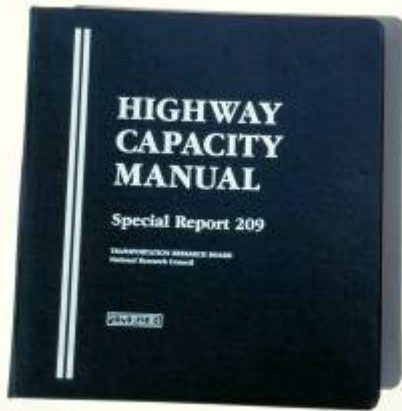
Source: Flexibility in Highway Design, USDOT

Basic Design Decisions
Should Derive from the
Goals Defined at the
Outset of the Project

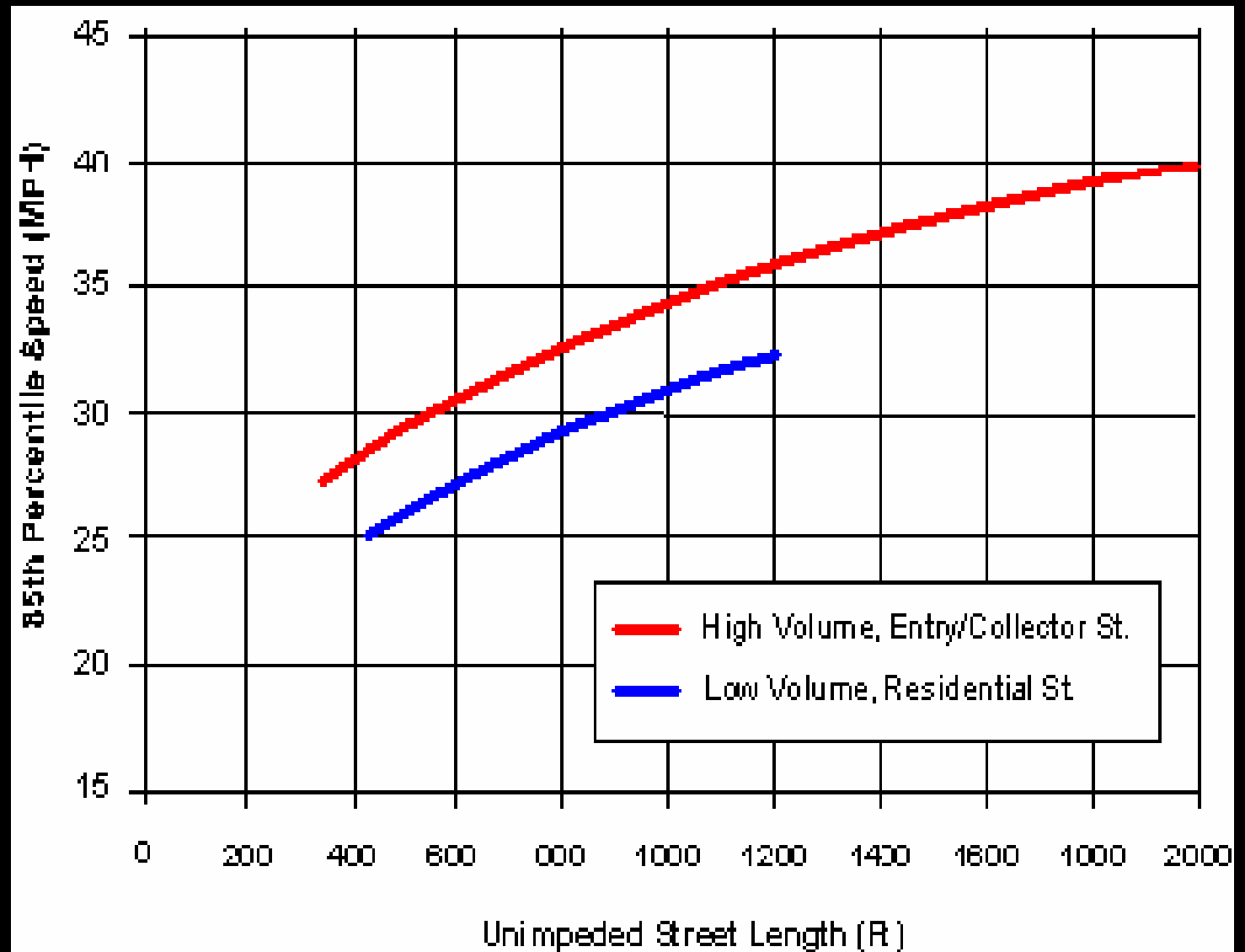
Relationship Between Pavement Width and Speed



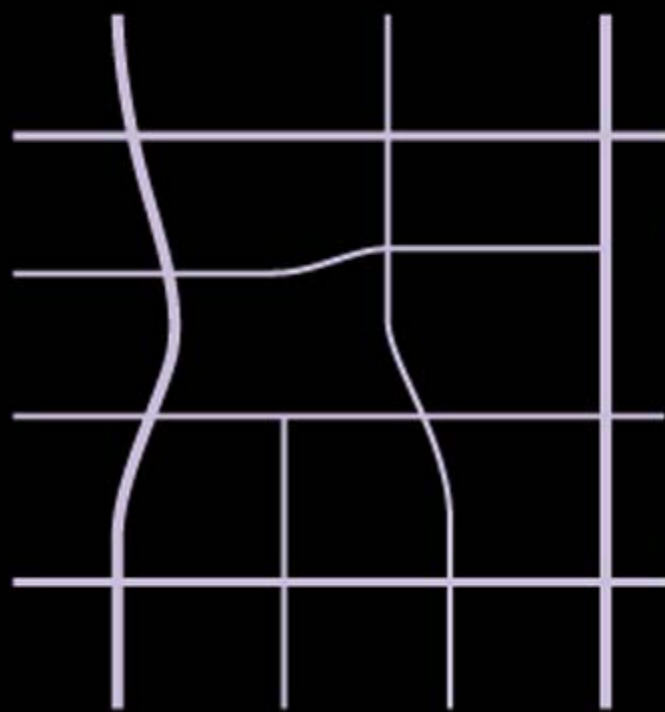
Source: City of San Antonio, TX



Relationship Between Unimpeded Block Length and Speed



Source: City of San Antonio, TX



Network

Same Lane-Miles



Greater Capacity



Sparse Hierarchy

The Effects of Designing for Cars



The Effects of Designing for Cars





Transportation Principles



Pedestrian Design Considerations

1. Sidewalk Capacity

2. Quality of the Environment

3. Perception of Safety (or Comfort)

Factors that affect SAFETY

Motor Vehicle Speeds — Especially in crosswalks

Lateral Separation Zone from Cars

Buffers and Barriers from Cars — Landscaping; Parked Cars, etc.

Ample and Visible Crossing Locations

Driveway Frequency

Factors that affect COMFORT

Adequate width — Between 5 and 20ft. free of obstructions

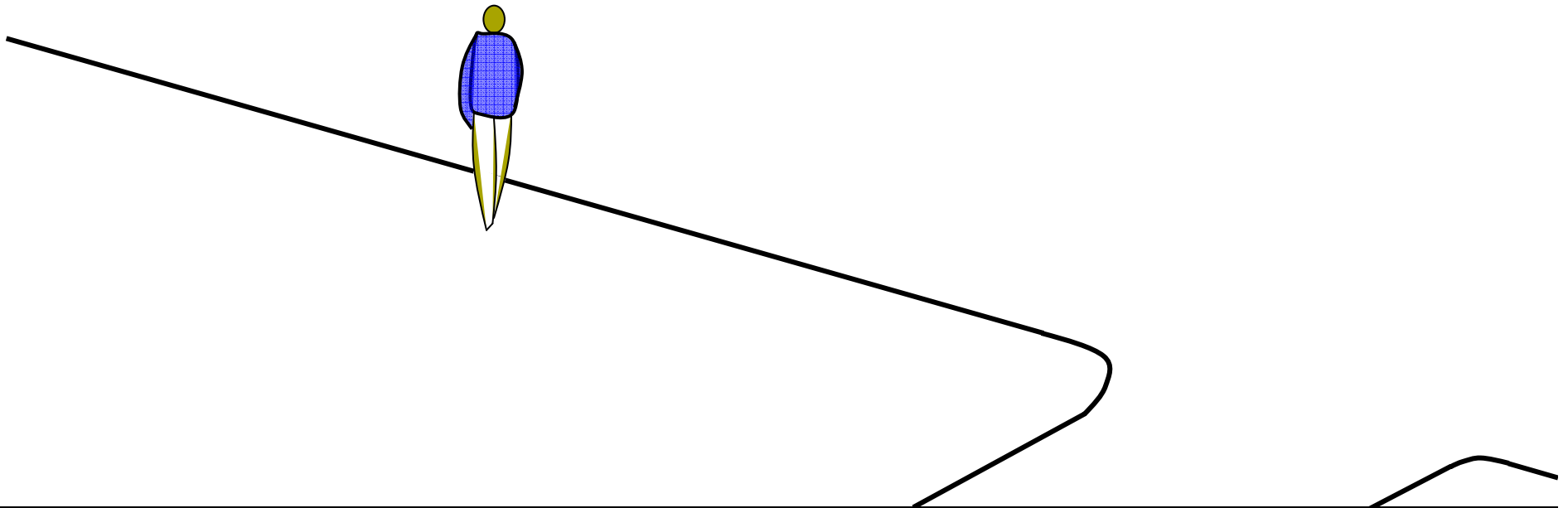
Effective lighting

Ground level uses and activities

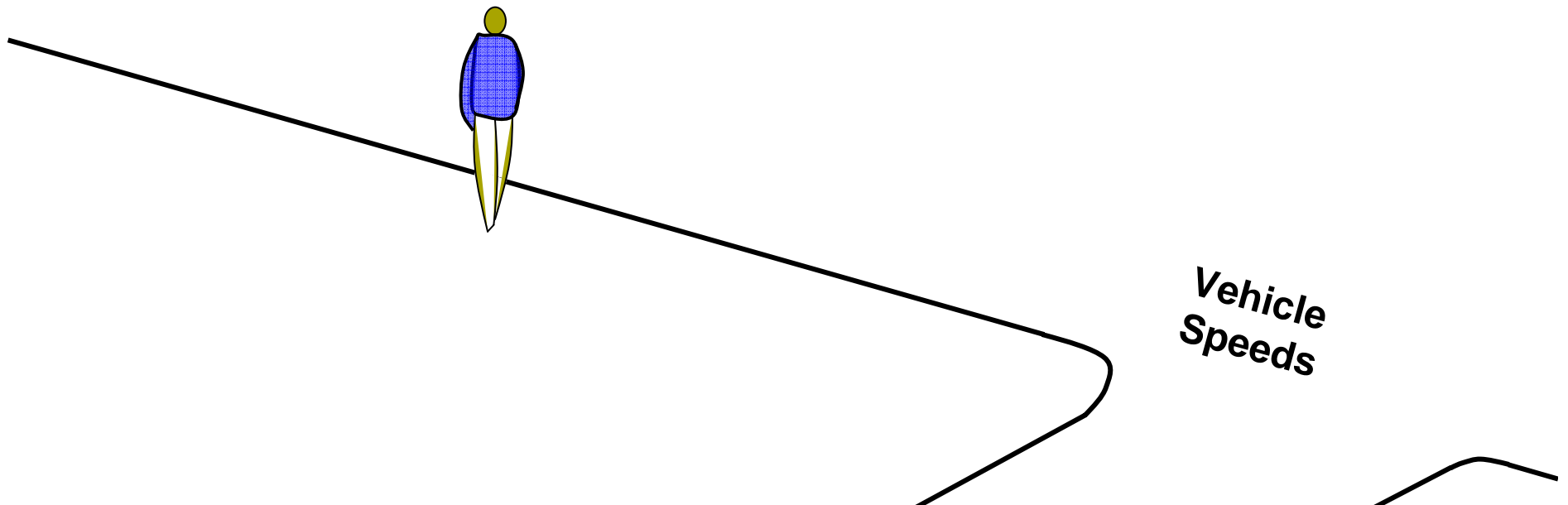
Shade — Either from trees or buildings

Surface — Smooth, dry, level

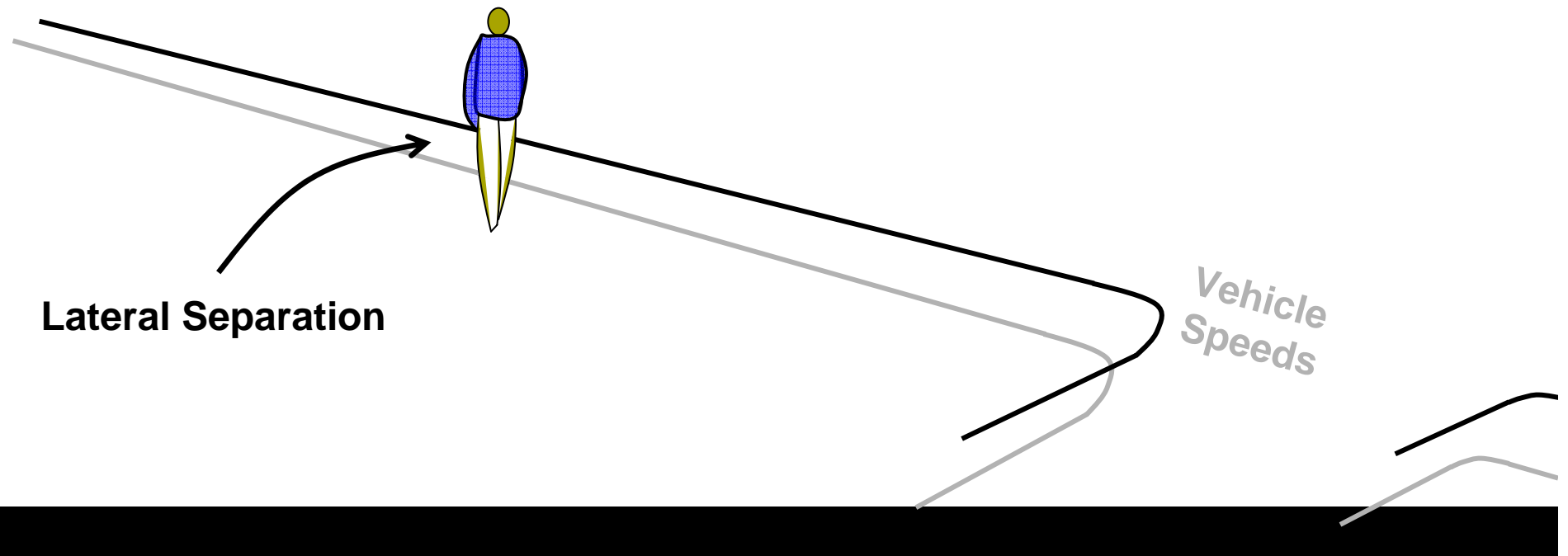
Pedestrian Safety and Comfort



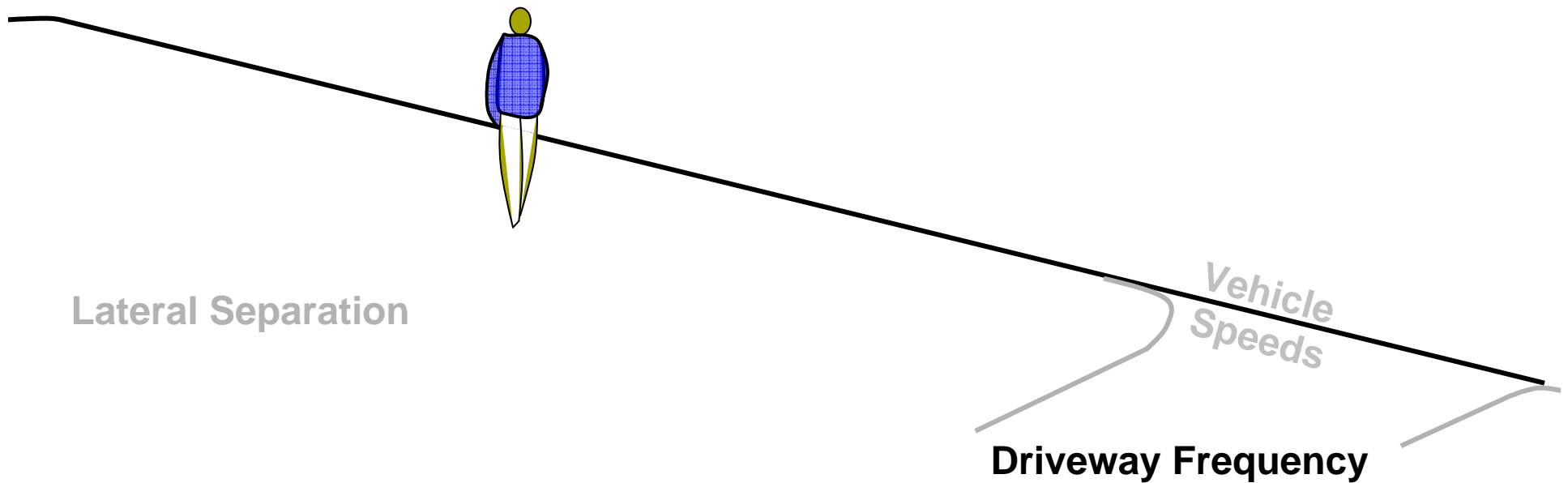
Pedestrian Safety and Comfort



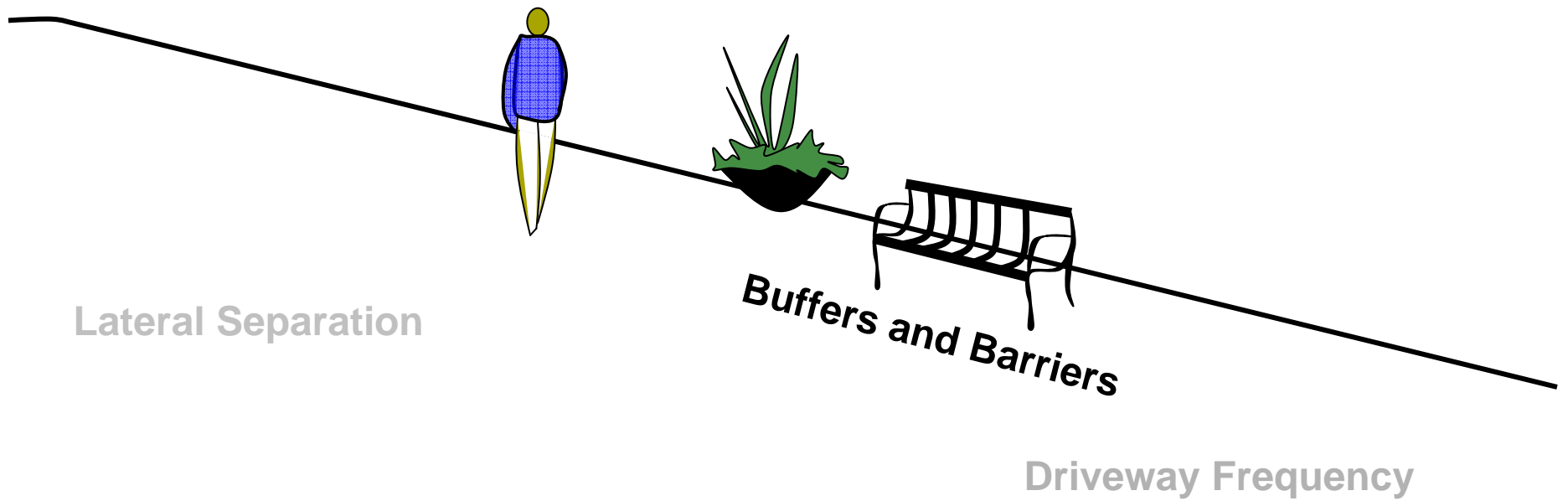
Pedestrian Safety and Comfort



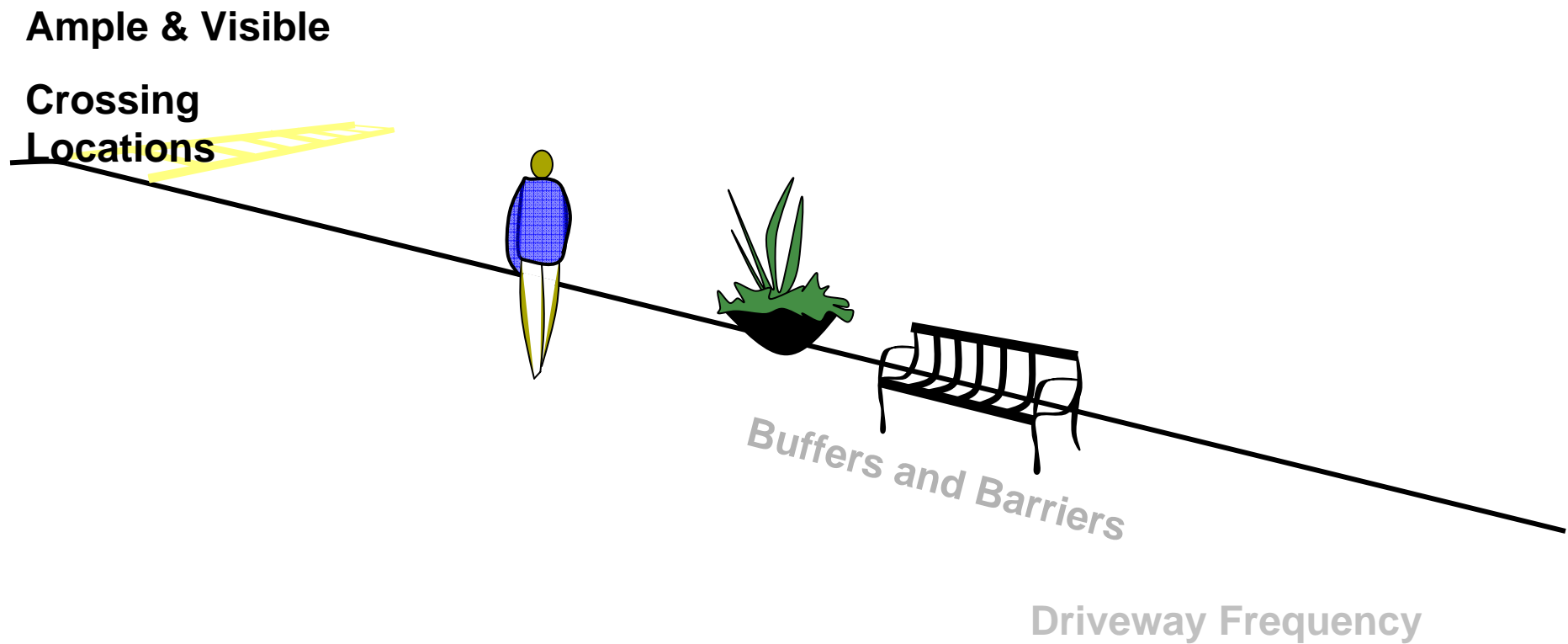
Pedestrian Safety and Comfort



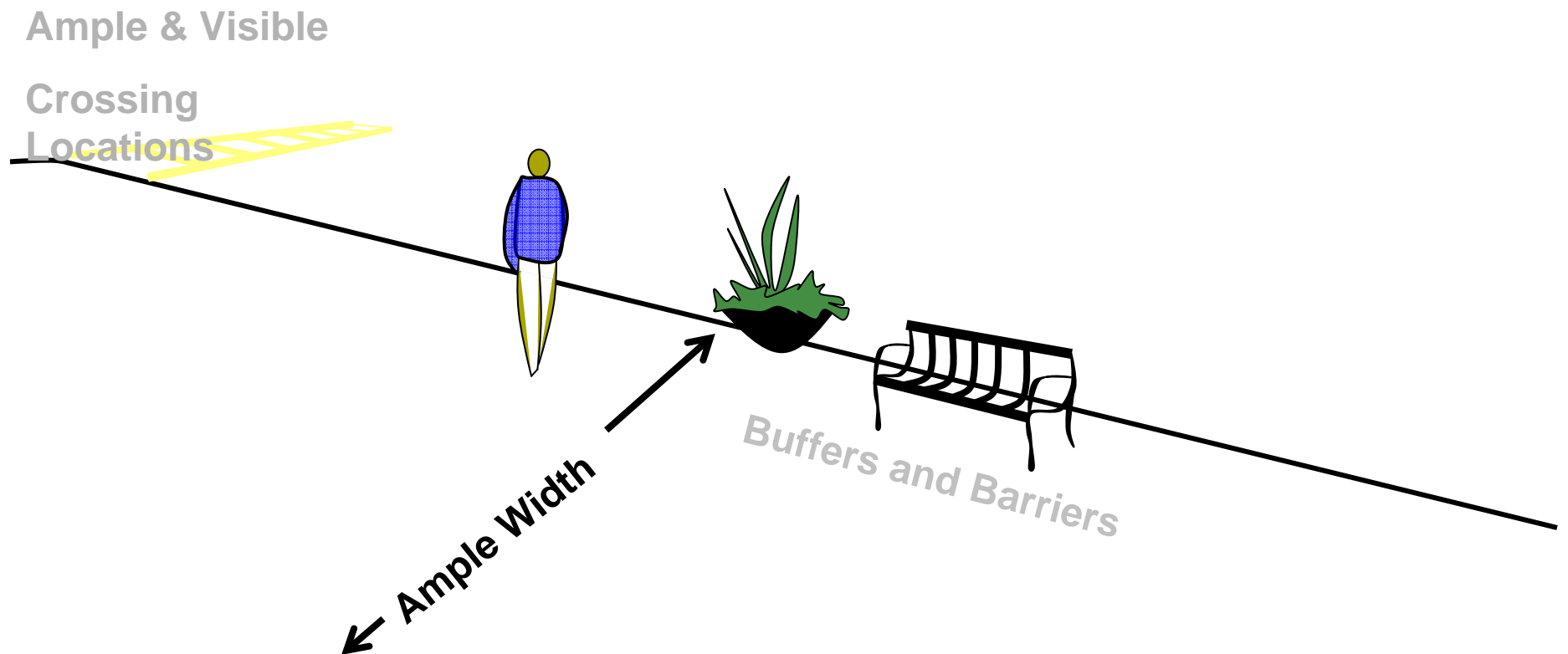
Pedestrian Safety and Comfort



Pedestrian Safety and Comfort

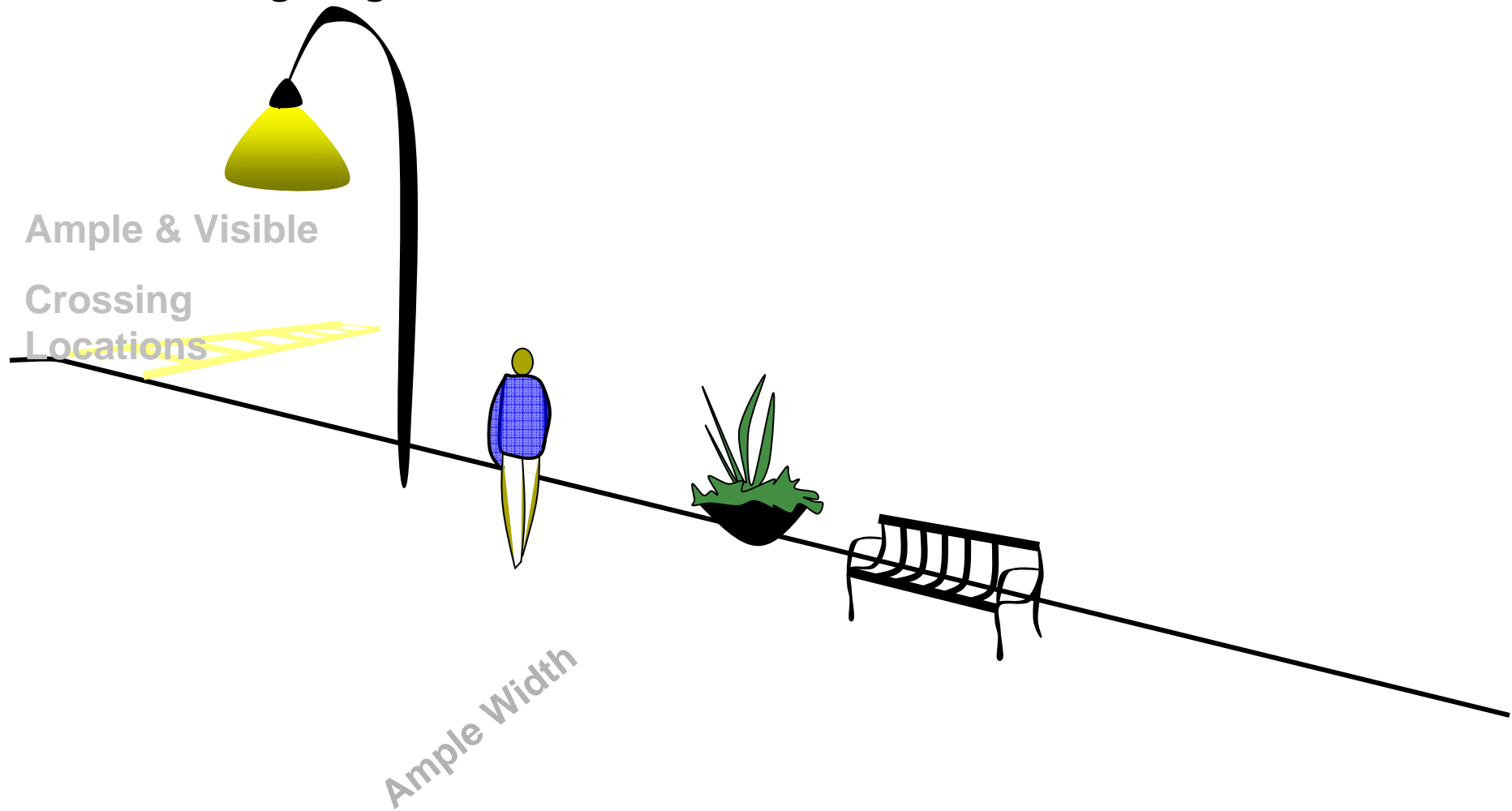


Pedestrian Safety and Comfort

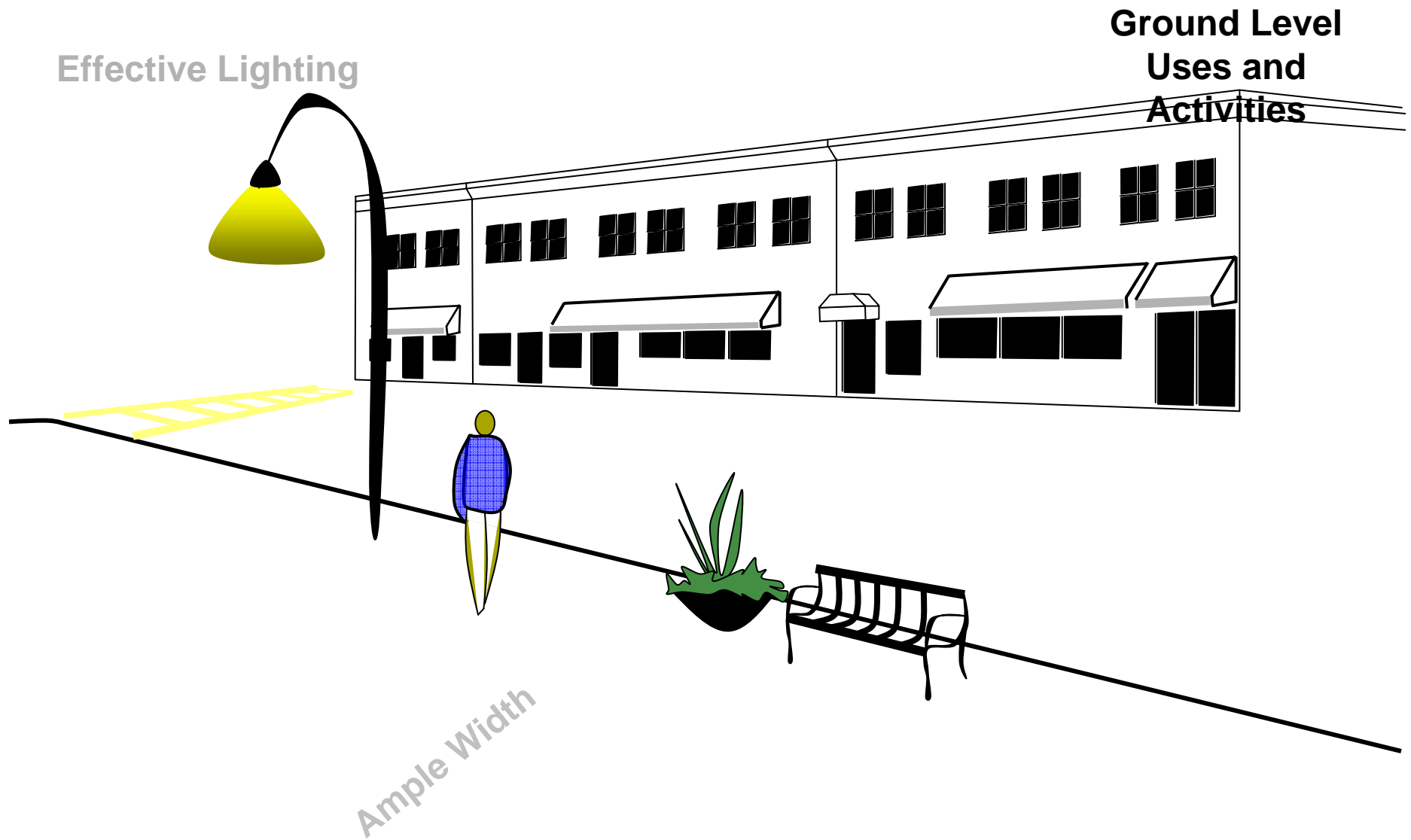


Pedestrian Safety and Comfort

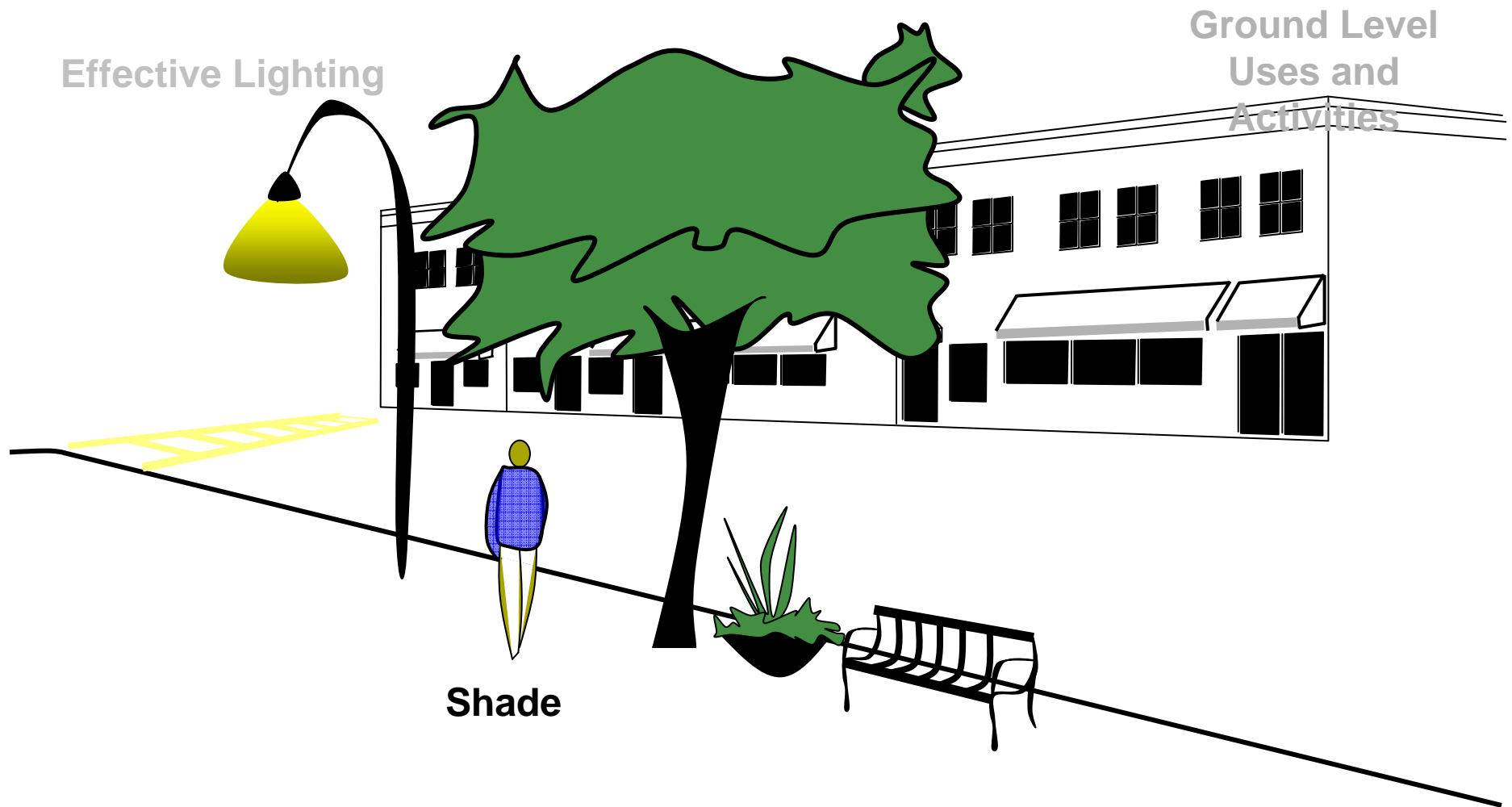
Effective Lighting



Pedestrian Safety and Comfort



Pedestrian Safety and Comfort



Factors that affect SAFETY

Motor Vehicle Speeds

Presence of Dedicated Facilities



Factors that affect COMFORT

Traffic volume- Higher traffic volumes /greater potential risk for bicycles

Traffic mix- Trucks, buses, etc. can increase risk

On-street parking- Additional width is needed

Sight distance- Allow motor vehicle to change lane position or slow down; primarily on rural highways

Number of intersections- Intersections may require special treatments

1. What type of bicyclist is the route most likely to serve?

Advanced bicyclists -

Sufficient space on the roadway shoulder
Treated as vehicles
Bike lanes on arterial and collector streets

Basic bicyclists and children -

Low-speed, low-volume streets or multiuse path

2. What type of roadway project is involved, i.e., new construction, major reconstruction, rehabilitation?

Even on rehab projects, steps such as widening the pavement area 1 to 2 ft. will enhance the roadway for bicycle use.

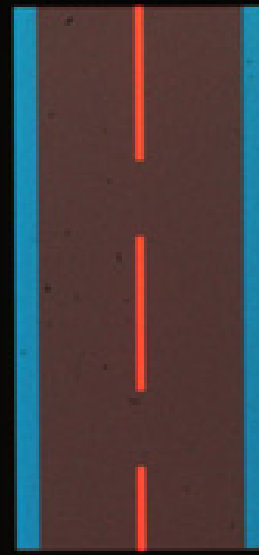


Bicycle Facilities



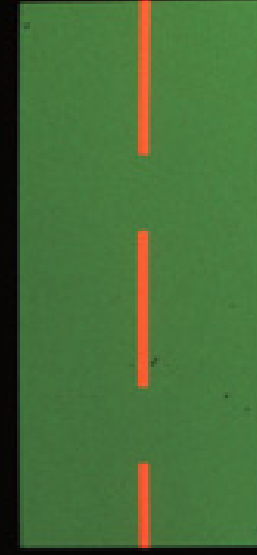
Bike Paths

Bikes out
of Street



Bike Lane

Part of Street
Reserved for Bikes



Bike Route

Bikes Share
Entire Street

Bikeway Hierarchy

Bicycle Facility Types

Shared lane- a "standard-width" travel lane that both bicycles and motor vehicles share

Wide outside lane- an outside travel lane with a width of at least 4.2 m (14 ft) to accommodate both bicyclists and motorized vehicles

Shoulder- a paved portion of the roadway to the right of the traveled way designed to serve bicyclists

Bicycle lane- a portion of the roadway designated by striping, signing, and/or pavement markings for preferential or exclusive use by bicycles and/or other nonmotorized vehicles

Multiuse path- a facility that is physically separated from the roadway and intended for use by bicyclists, pedestrians, and others

It's the Law! - SAFETEA-LU

(Safe, Accountable, Flexible & Efficient Transportation Equity Act - a Legacy for Users)

- ***Safe Routes to School Program***
- ***Transportation Enhancements***
- ***Congestion Mitigation and Air Quality (CMAQ)***

Implementation

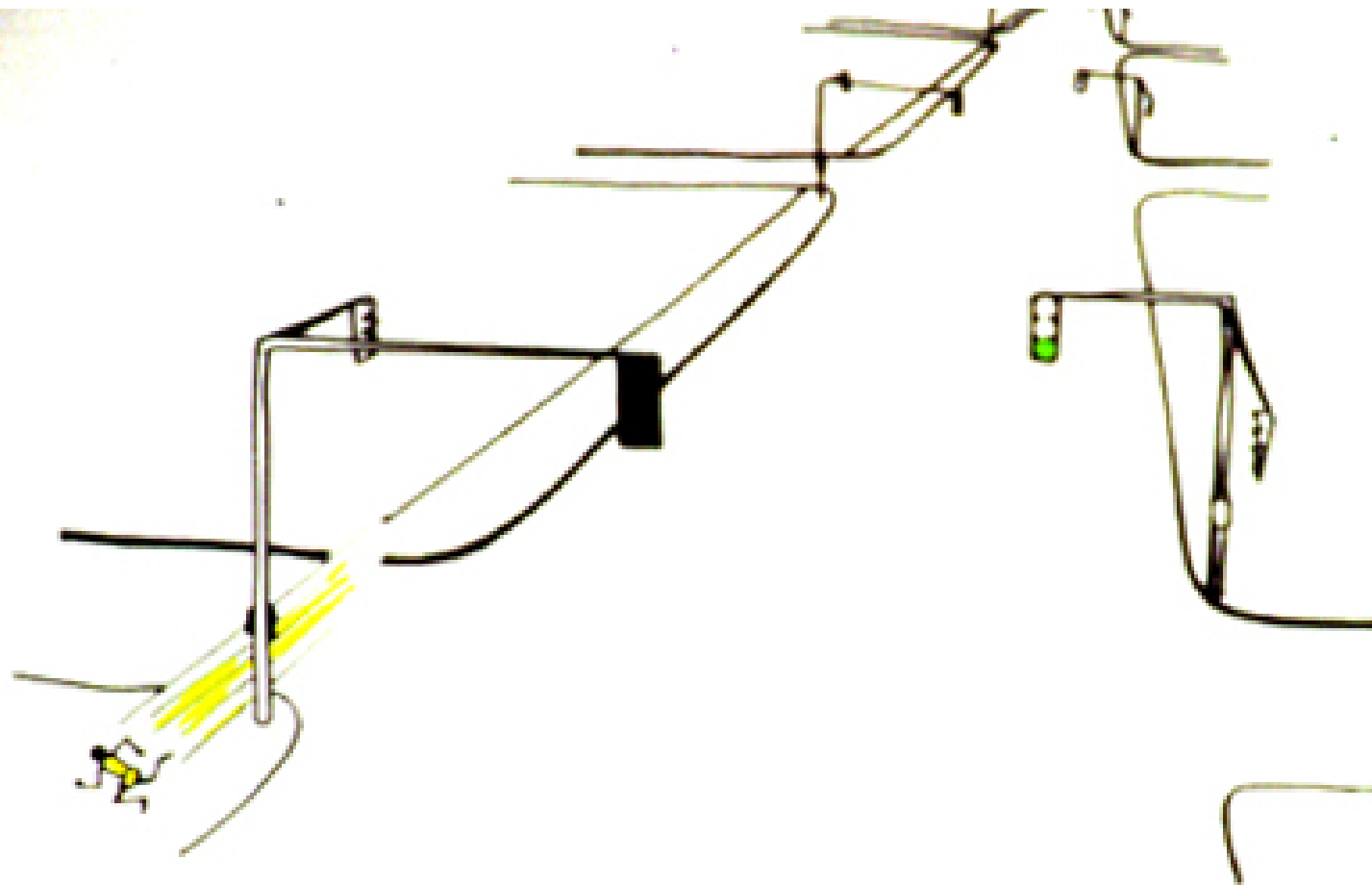
- Procedures should accommodate all users on every project
- Design manuals should encompass the safety of all users
- Planners and engineers should be trained to balance the needs of diverse users
- Create new data collection procedures to track how well the streets are serving all users

ONCE YOUR
STREET IS **IMPROVED**, THE
CURB WILL BE RIGHT
HERE



UPGRADES? SURE IT'S GOT
PLENTY. EVEN THE STREET
GOT **UPGRADED** TO AN ARTERIAL
JUST THE OTHER DAY.





SCOTT KNEW THAT THE
SIGNALS WERE TIMED TO ALLOW
FOR THE SMOOTH FLOW OF TRAFFIC
MOVING AT 25 MPH (40 Km/h)

I TOLD YOU THAT SIX
LANES WOULD IMPROVE
THE *LEVEL OF SERVICE*.

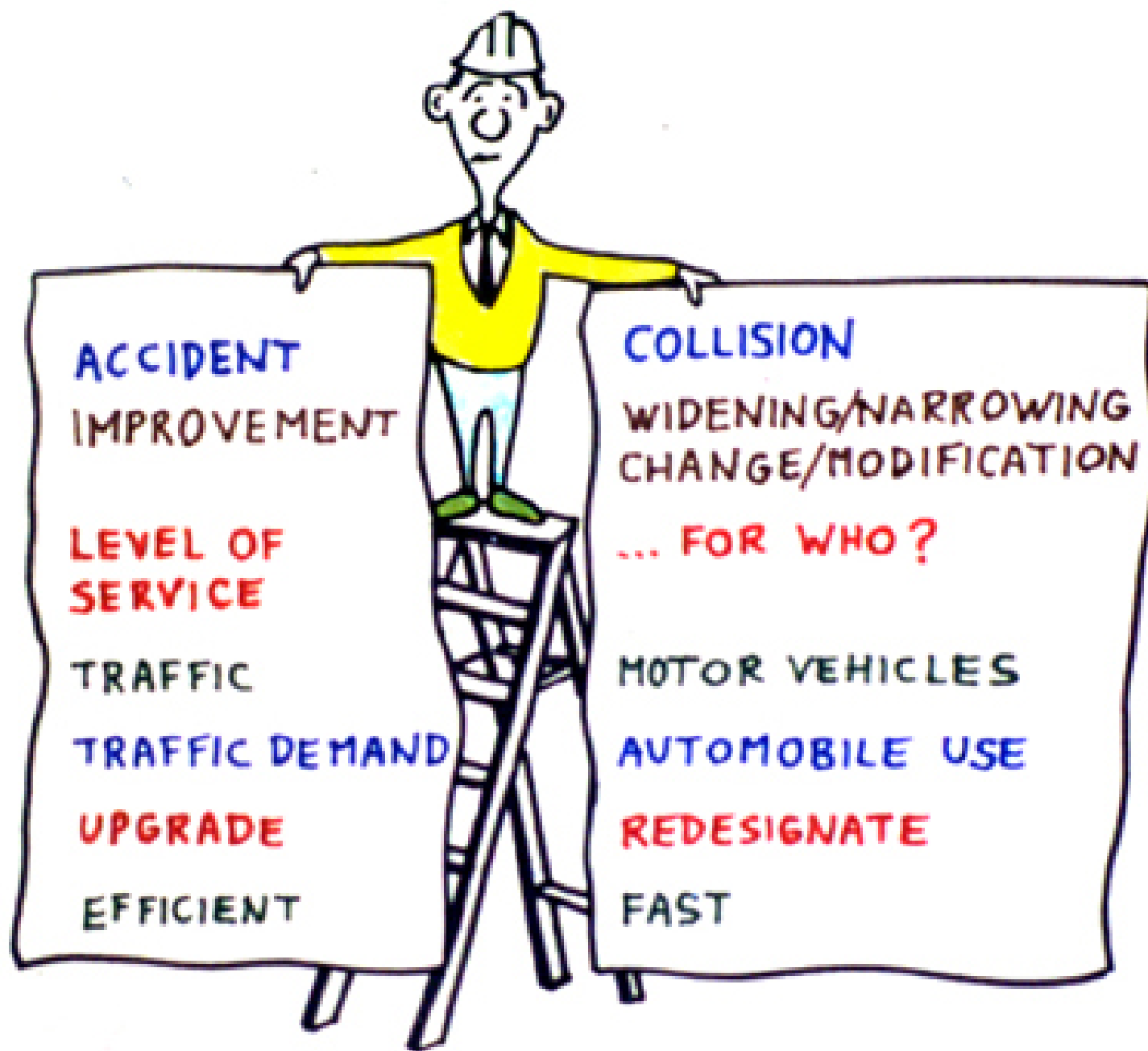




... AND THEY AGREED
THAT **PROTECTING** THE RIGHT OF
WAY NEXT TO JOE'S HOUSE
WAS A GOOD IDEA

WE HAVE
HAD ABOUT 30,000
ACCIDENTS IN THE COUNTY
EVERY YEAR FOR THE PAST
FIVE YEARS





ACCIDENT
IMPROVEMENT

LEVEL OF
SERVICE

TRAFFIC

TRAFFIC DEMAND

UPGRADE

EFFICIENT

COLLISION

WIDENING/NARROWING
CHANGE/MODIFICATION

... FOR WHO?

MOTOR VEHICLES

AUTOMOBILE USE

REDESIGNATE

FAST

A Good Complete Streets Policy

- Specifies that 'all users' includes pedestrians, bicyclists, transit vehicles and users, and motorists, of all ages and abilities.
- Aims to create a comprehensive, integrated, connected network.
- Recognizes the need for flexibility: that all streets are different and user needs will be balanced.
- Is adoptable by all agencies to cover all roads.
- Applies to both new and retrofit projects, including design, planning, maintenance, and operations, for the entire right of way.
- Makes any exceptions specific and sets a clear procedure that requires high-level approval of exceptions.
- Directs the use of the latest and best design standards.
- Directs that complete streets solutions fit in with context of the community.
- Establishes performance standards with measurable outcomes.