Gathering Information for a SRTS Plan

TOOLE DESIGN

Gathering Information

- School information and student travel modes
- Existing conditions and behaviors
- Behaviors and perceptions

TOOLE DESIGN

School Information

- Location and grades served
- Attendance boundaries & where students live
- Arrival/dismissal times
- Student travel modes
- Student walk/bike routes
- Parent perceptions
- Policies/programs

TOOLE DESIGN

Existing Conditions - Environment

- Traffic volume and speeds
- Pedestrian and bicyclist crash data
- Personal safety data and concerns
- Walking and bicycling environment

TOOLE DESIGN

Existing Conditions - Behaviors

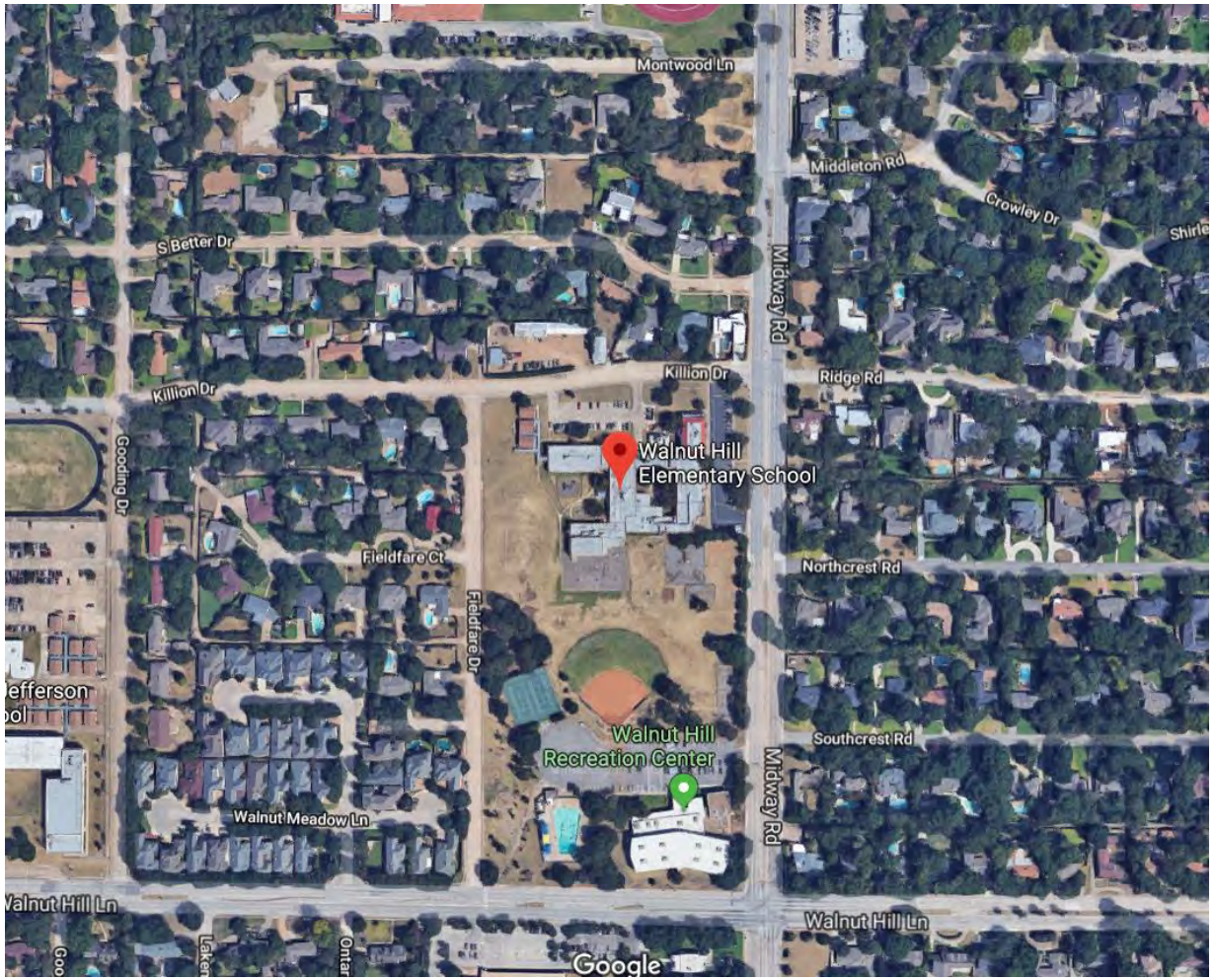
Observe school arrival and dismissal:

- Driver behaviors
- Pedestrian behaviors
- Bicyclist behaviors

TOOLE DESIGN

Assessing the Ped/Bike Network

What infrastructure is important?



TOOLE DESIGN

Engineering Treatments and Strategies

TOOLE DESIGN

Creating safe routes with engineering

- Improve children's safety
- Improve accessibility
- Encourage more bicycling and walking

TOOLE DESIGN

Walkways and crossings: Prerequisites for walking

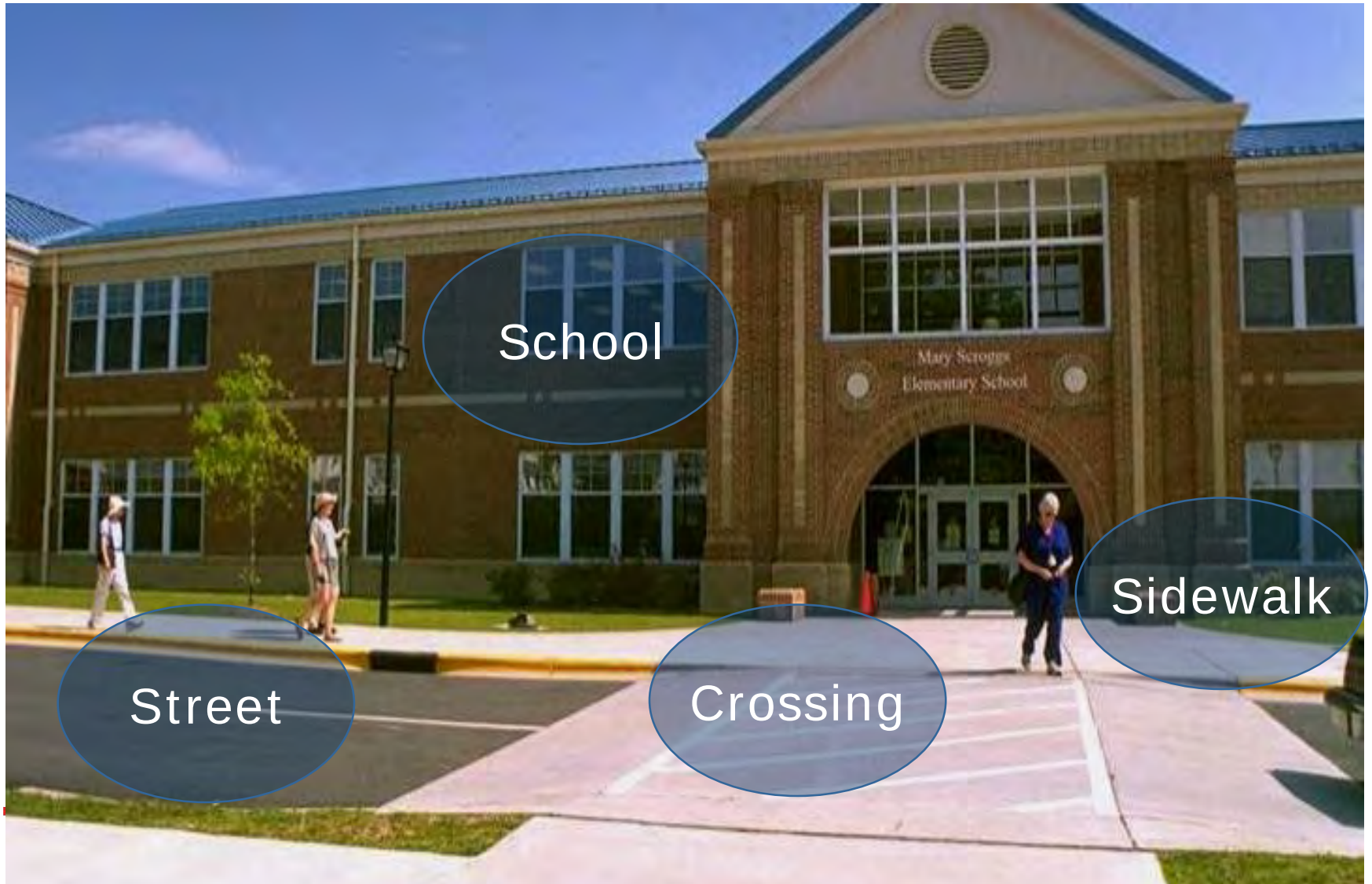
TOOLE DESIGN

Connect to the school

- Consider barriers to walking and biking
- Think about the complete route from door-to-door
- What message are we sending?

TOOLE DESIGN

Relationships are everything



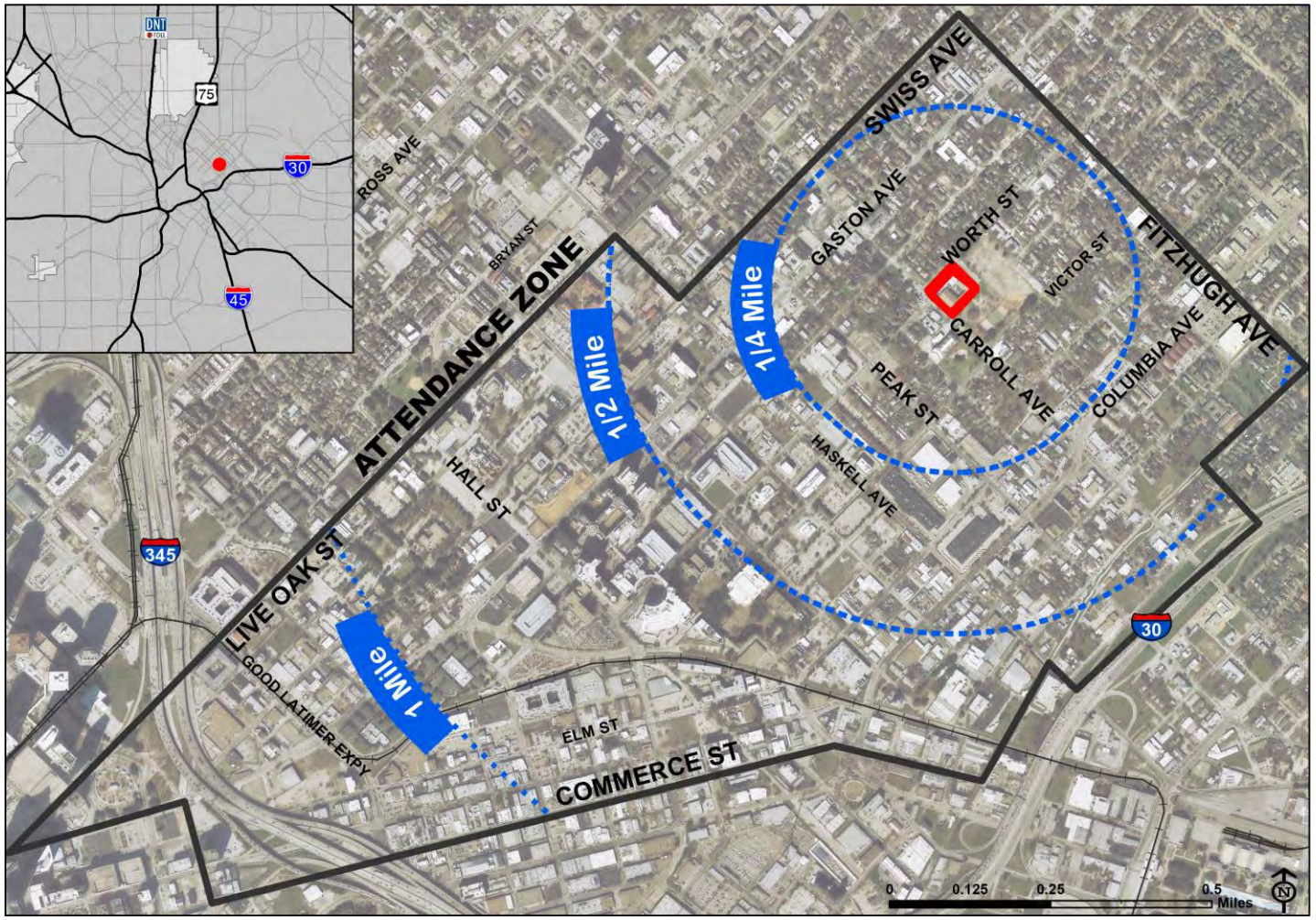
Focus on the basics

Engineering topic outline

- **Around the School**
- Along the School Route
- Crossing the Street
- Slowing Down Traffic

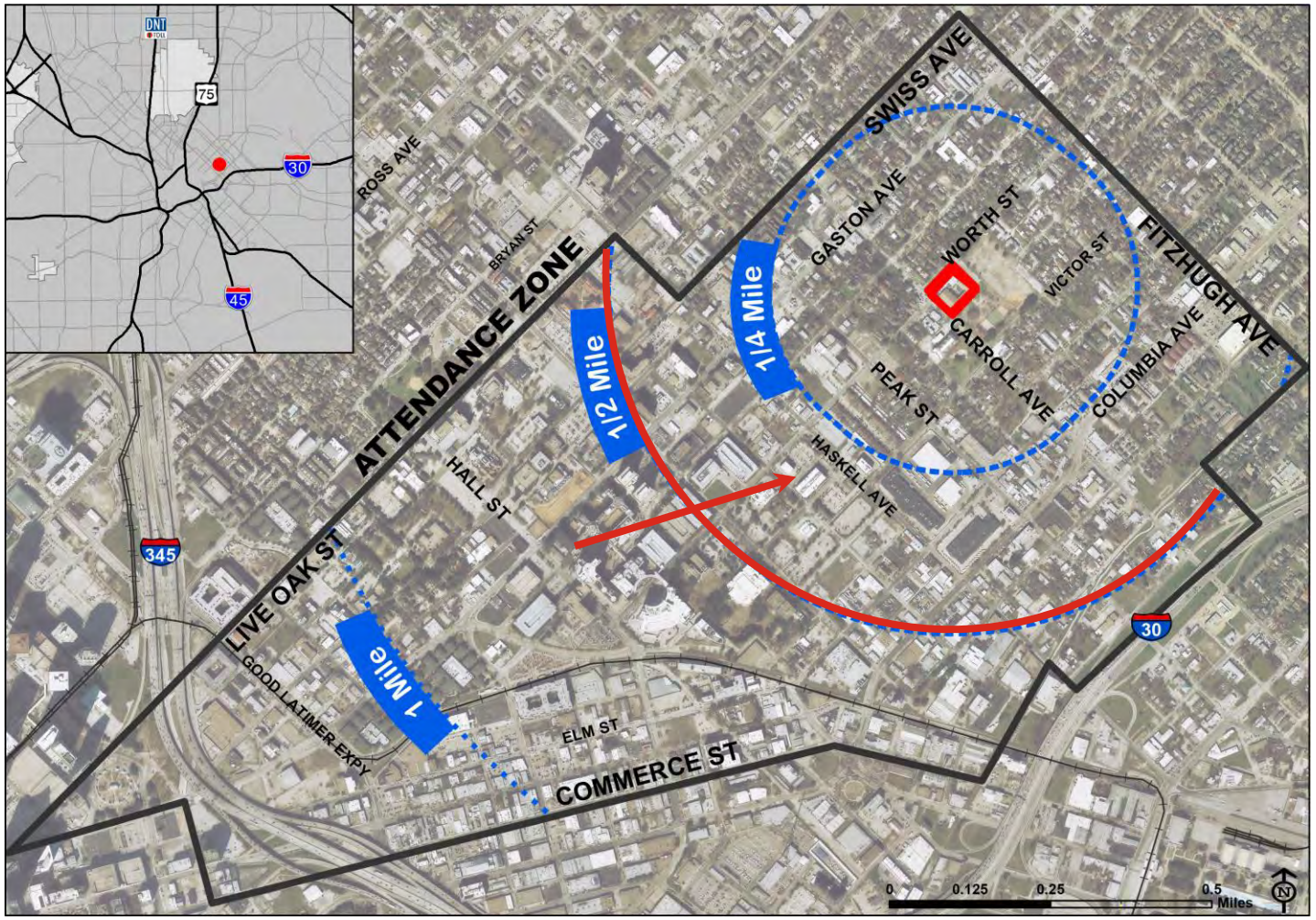
TOOLE DESIGN

School enrollment boundary



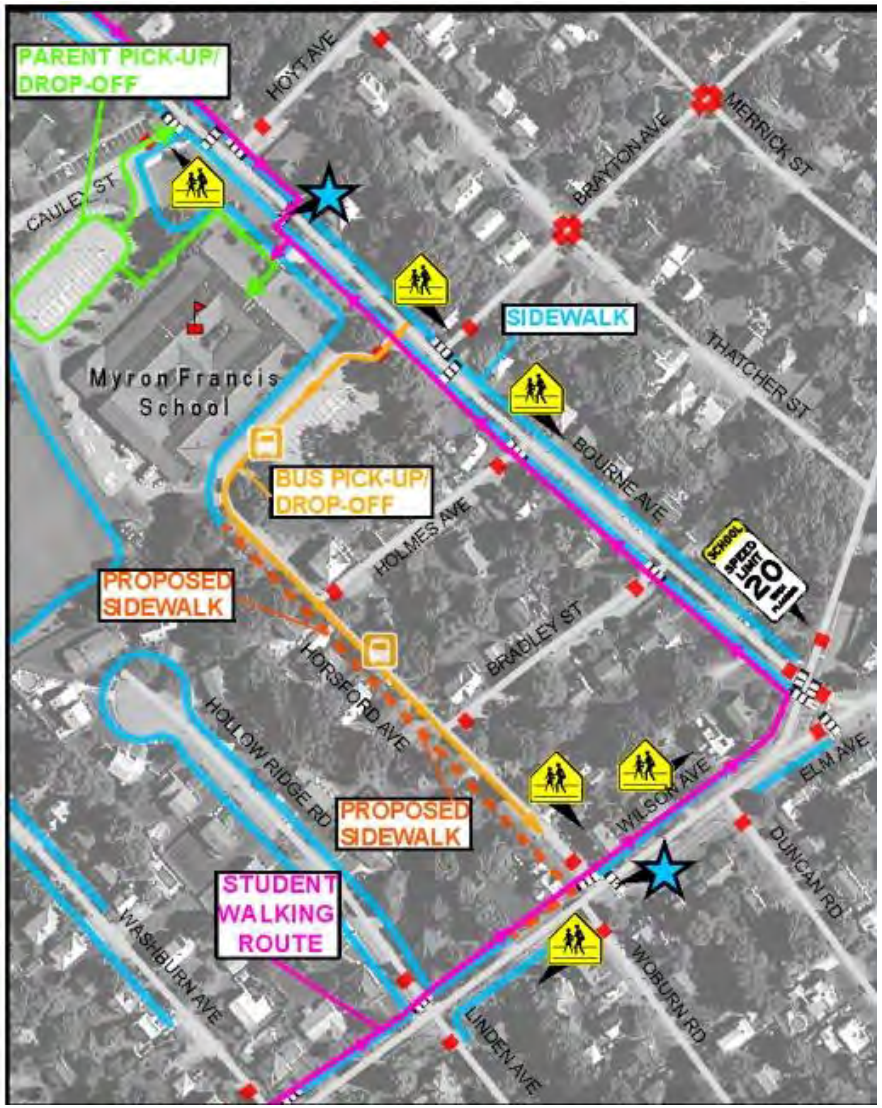
TOOLE DESIGN

School walk zone



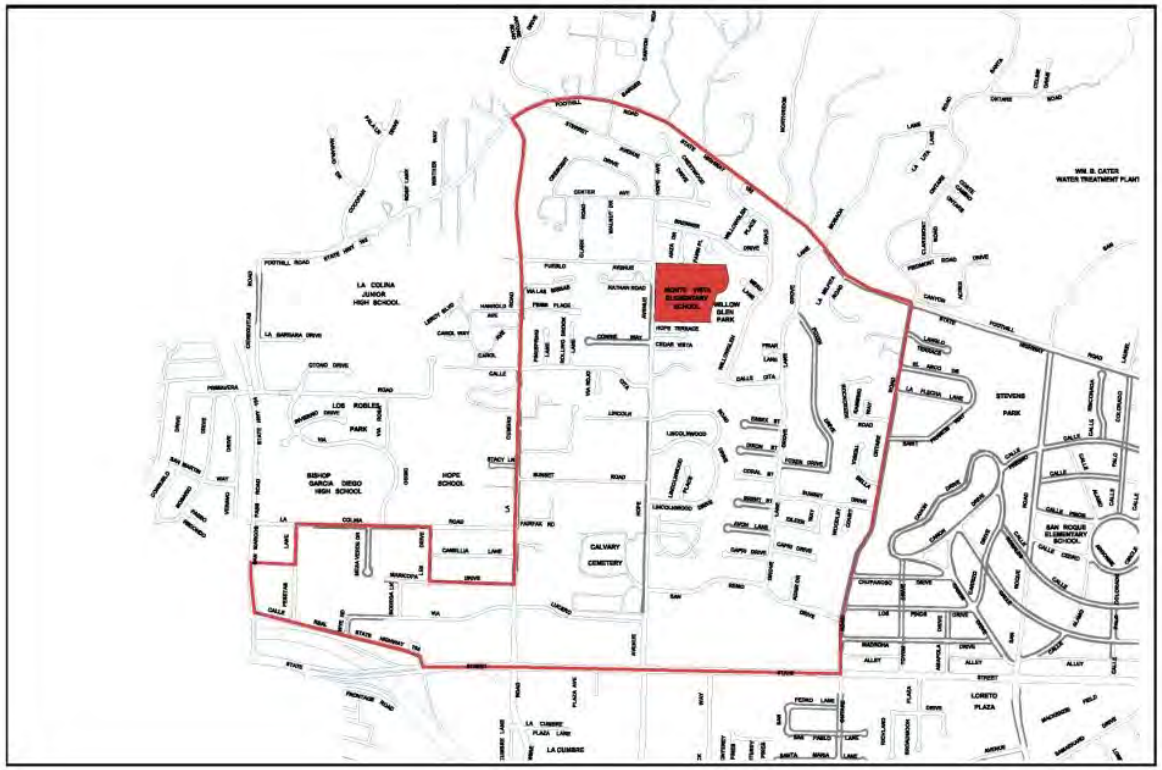
TOOLE DESIGN

Existing conditions map



TOOLE DESIGN

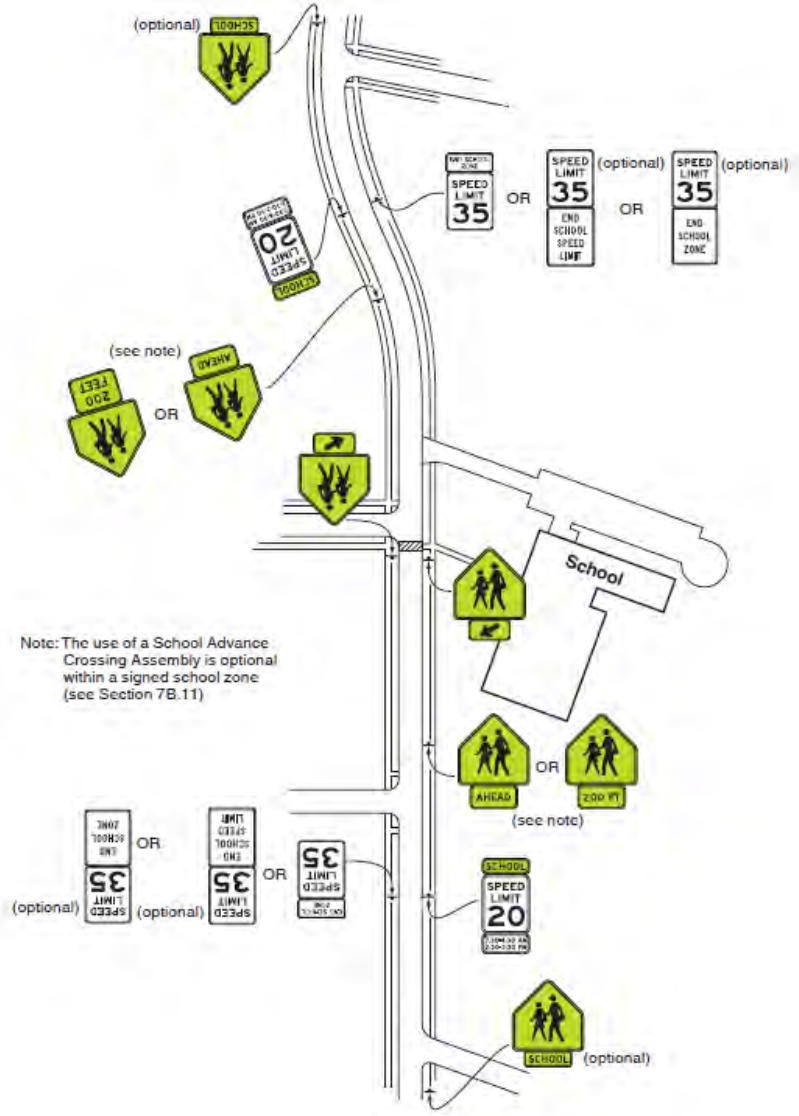
School zone



TOOLE DESIGN

Signing and marking the school zone

- **M**anual on
- **U**niform
- **T**raffic
- **C**ontrol
- **D**evices



TOOLE DESIGN

School area speed limit signing

TOOLE DESIGN

Speed feedback signs

TOOLE DESIGN

School crosswalk signs and warning signs

TOOLE DESIGN

Fluorescent yellow-green post covers

TOOLE DESIGN

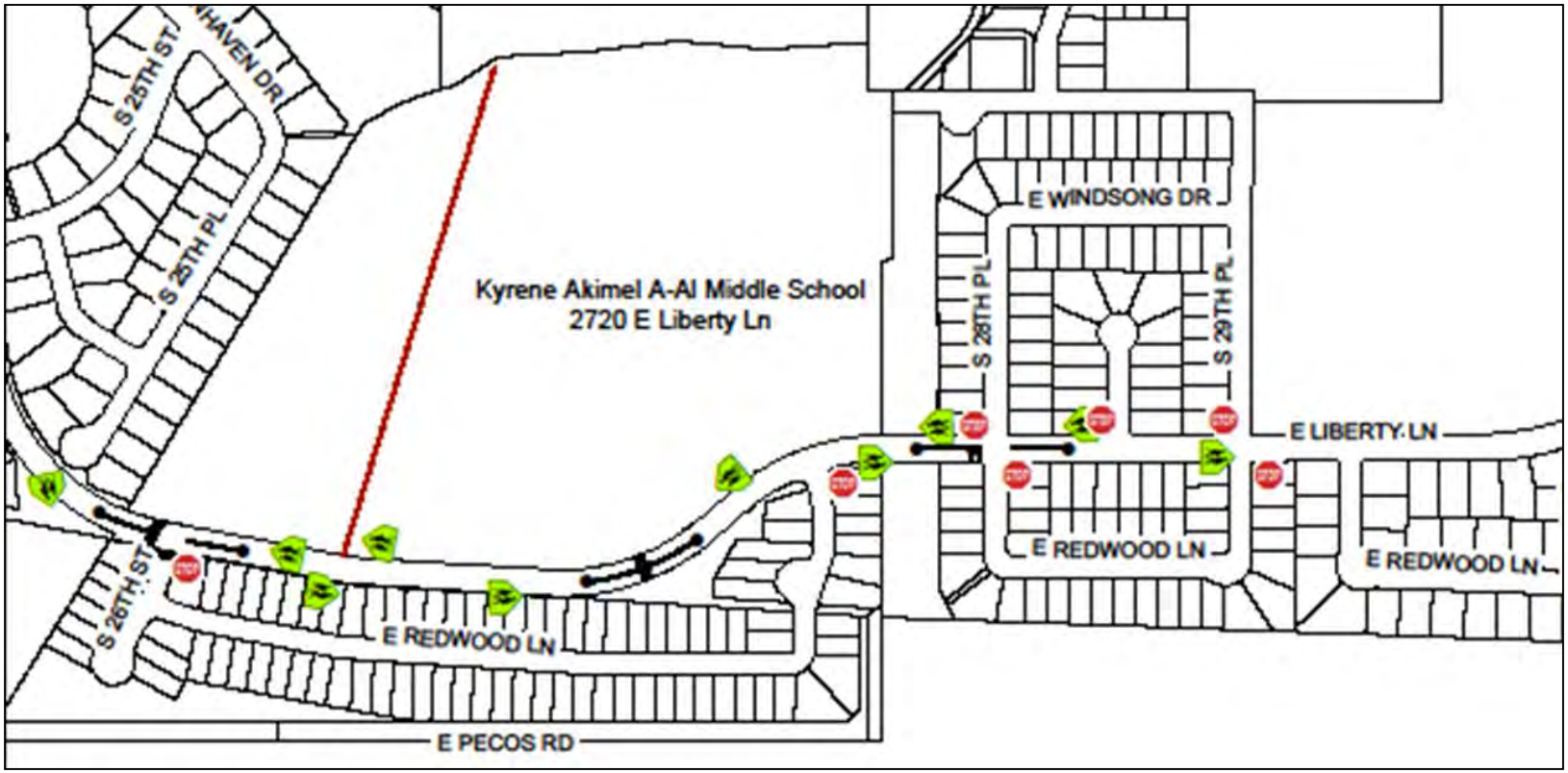
Parking regulations

TOOLE DESIGN

Keep signs simple

School pavement markings

Sample school traffic control plan



TOOLE DESIGN

Engineering topic outline

- Around the School
- **Along the School Route**
  - **Sidewalks**
  - **On-street bicycling**
  - **Pathways**
  - **Connectivity**
- Crossing the Street
- Slowing Down Traffic

TOOLE DESIGN

What's wrong with this picture?

What's wrong with this picture?

TOOLE DESIGN

Perception versus reality

TOOLE DESIGN

Sidewalks are essential

TOOLE DESIGN

Sidewalks on both sides are preferred

TOOLE DESIGN

Limit driveway crossings

TOOLE DESIGN

Connections to the school

TOOLE DESIGN

Sidewalk design criteria

Connect all sidewalks in the school walking route

Accommodate pedestrian desire lines outside of splash zones

TOOLE DESIGN

Provide sidewalk buffers

TOOLE DESIGN

No sidewalk buffer

TOOLE DESIGN

Good sidewalk buffer

TOOLE DESIGN

Provide wide enough sidewalks

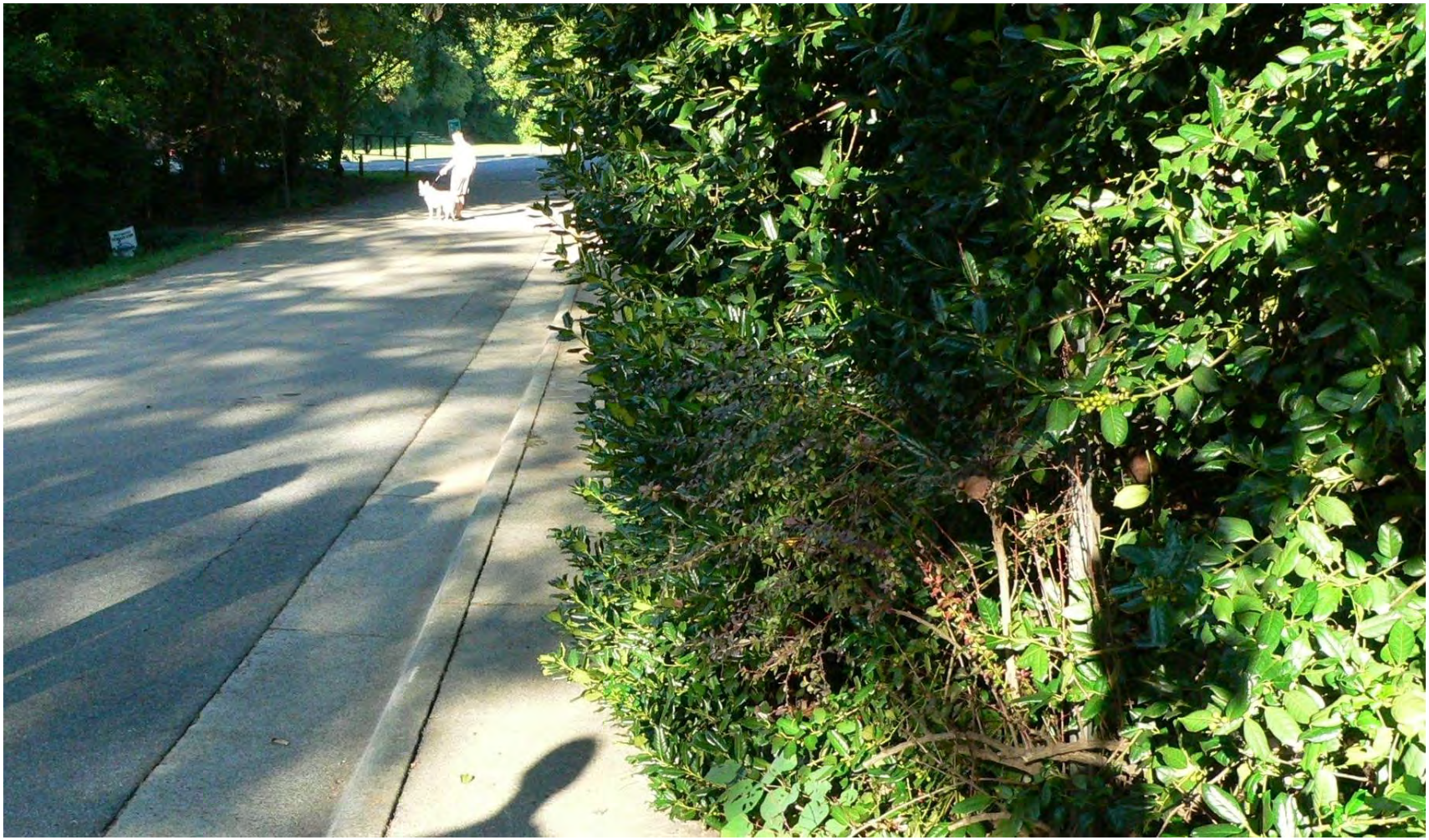
- Recommended minimum: 5’
- Preferred minimum: 6’
- At schools: 8’-10’

TOOLE DESIGN

Repair sidewalks

TOOLE DESIGN

Maintain landscaping to provide clear walkways and sight distances



TOOLE DESIGN

Remove obstacles from sidewalks

TOOLE DESIGN

Install street lighting

TOOLE DESIGN

Meet Americans With Disabilities Act (ADA) requirements for universal design

TOOLE DESIGN

Curb ramp design

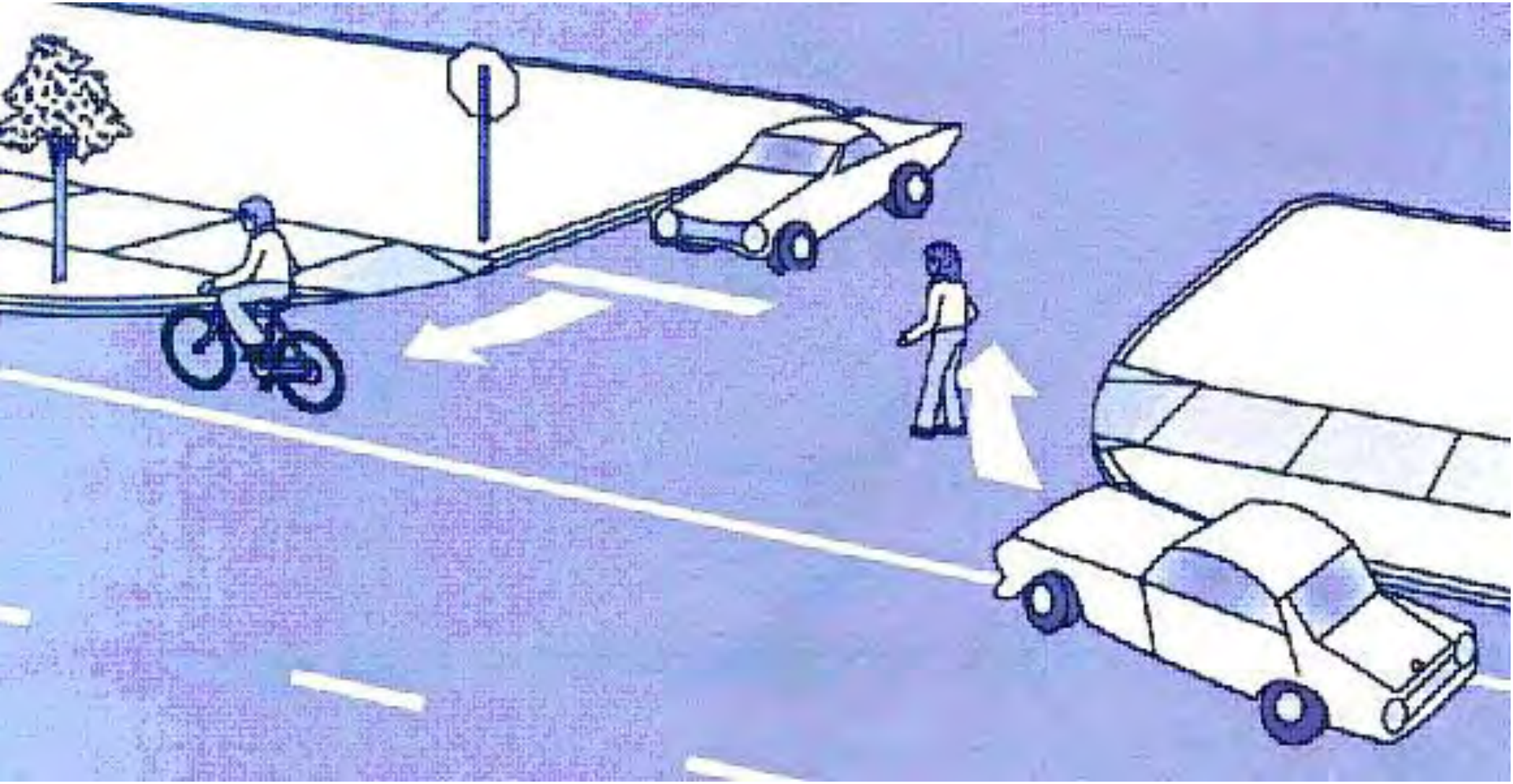
- Two ramps per corner
- Eight ramps per intersection

TOOLE DESIGN

Warning strip – 4’ x 2’

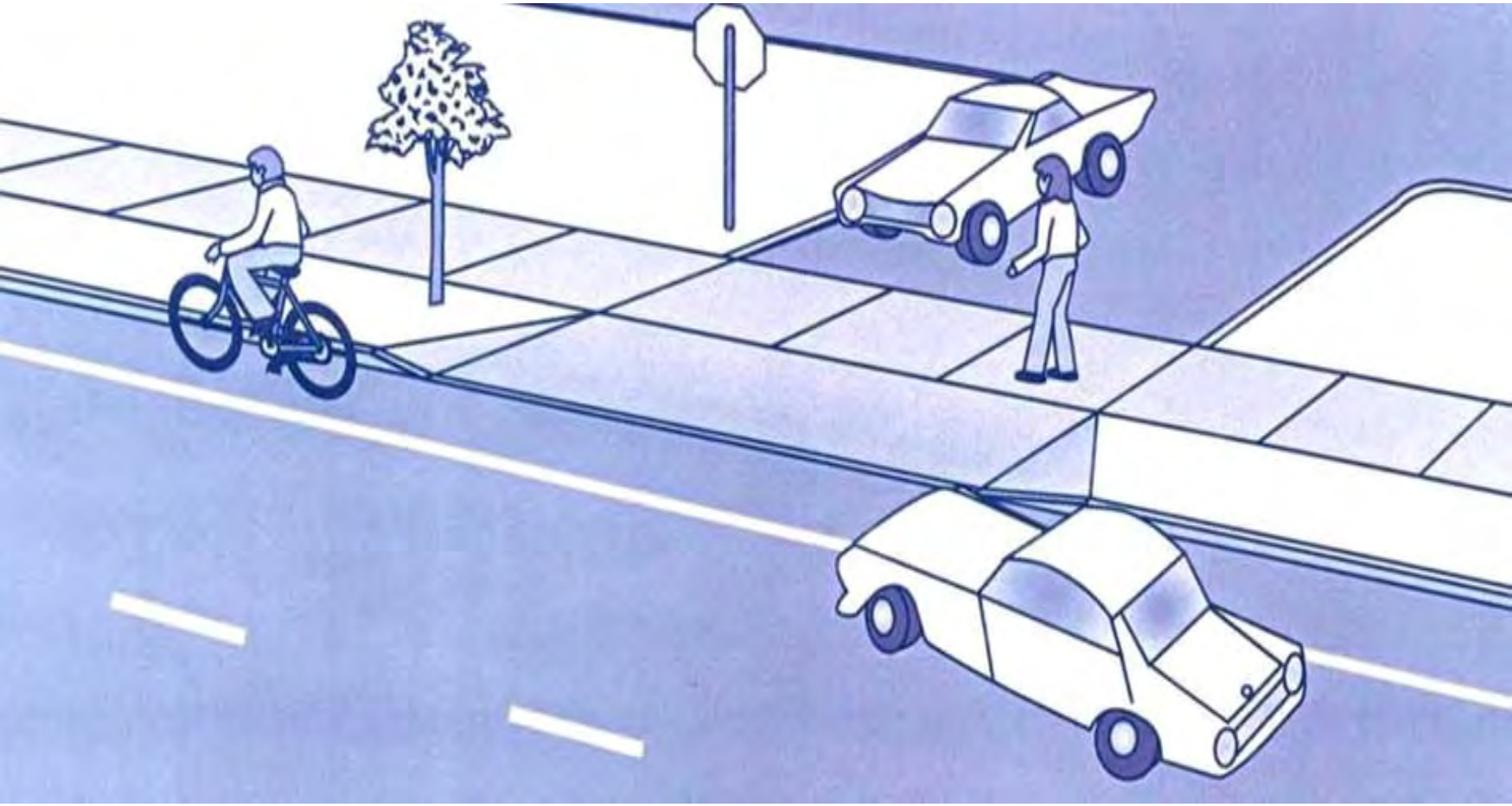
TOOLE DESIGN

Don’t build driveways like intersections



TOOLE DESIGN

Build driveways like driveways



TOOLE DESIGN

Along the school route: Bikeways

- Local streets
- Bike lanes
- Shoulders
- Pathways

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

Local streets – where most kids ride

TOOLE DESIGN

Bicycle lanes

TOOLE DESIGN

Install bicycle racks

TOOLE DESIGN

Yes – high school students will bike given the opportunity

TOOLE DESIGN

Along the school route: Pathways

TOOLE DESIGN

Success story: Mill Valley path

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?

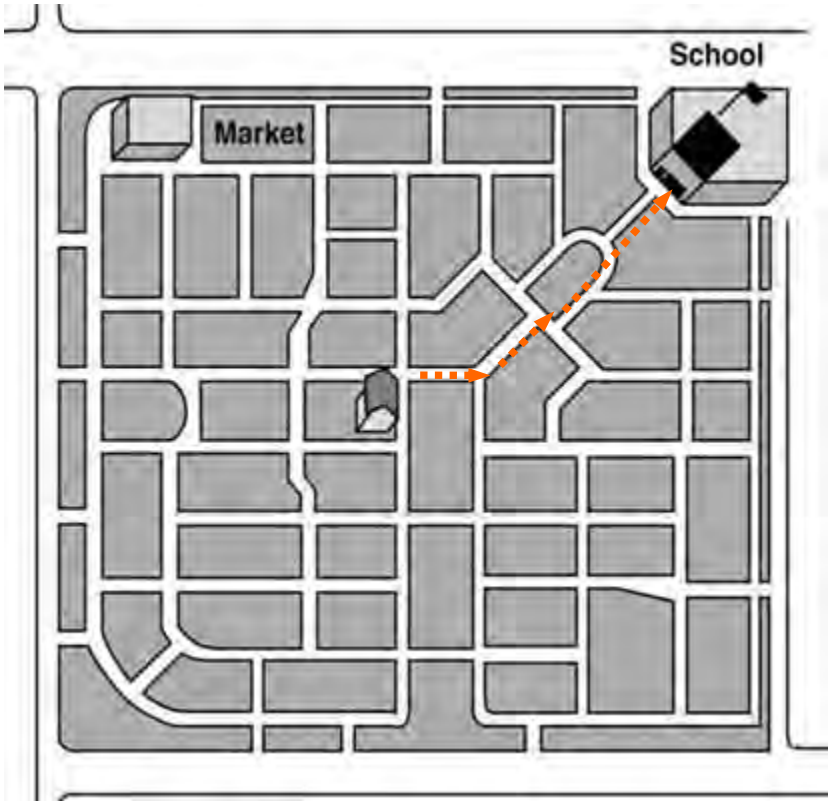
TOOLE DESIGN

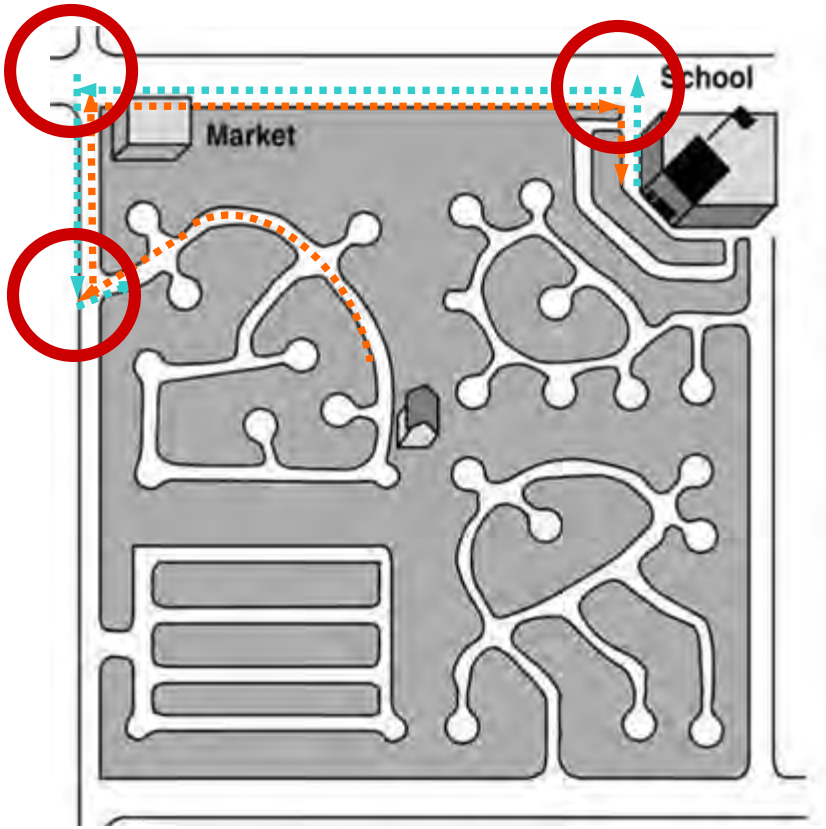
Connectivity creates a pedestrian-friendly street system

- Reduces walking distance
- Offers more route choices – disperses traffic
- Less traffic = more pedestrian friendly

TOOLE DESIGN

Connectivity can reduce walking distances and crossings required





TOOLE DESIGN

Connecting cul-de-sacs

TOOLE DESIGN

Formal and informal connections

TOOLE DESIGN

Engineering topic outline

- Around the School
- Along the School Route
- **Crossing the Street**
  - **Shortening crossing distances**
  - **Marking crosswalks**
  - **Creating visible crossings**
  - **Using stop signs and traffic signals**
- Slowing Down Traffic

TOOLE DESIGN

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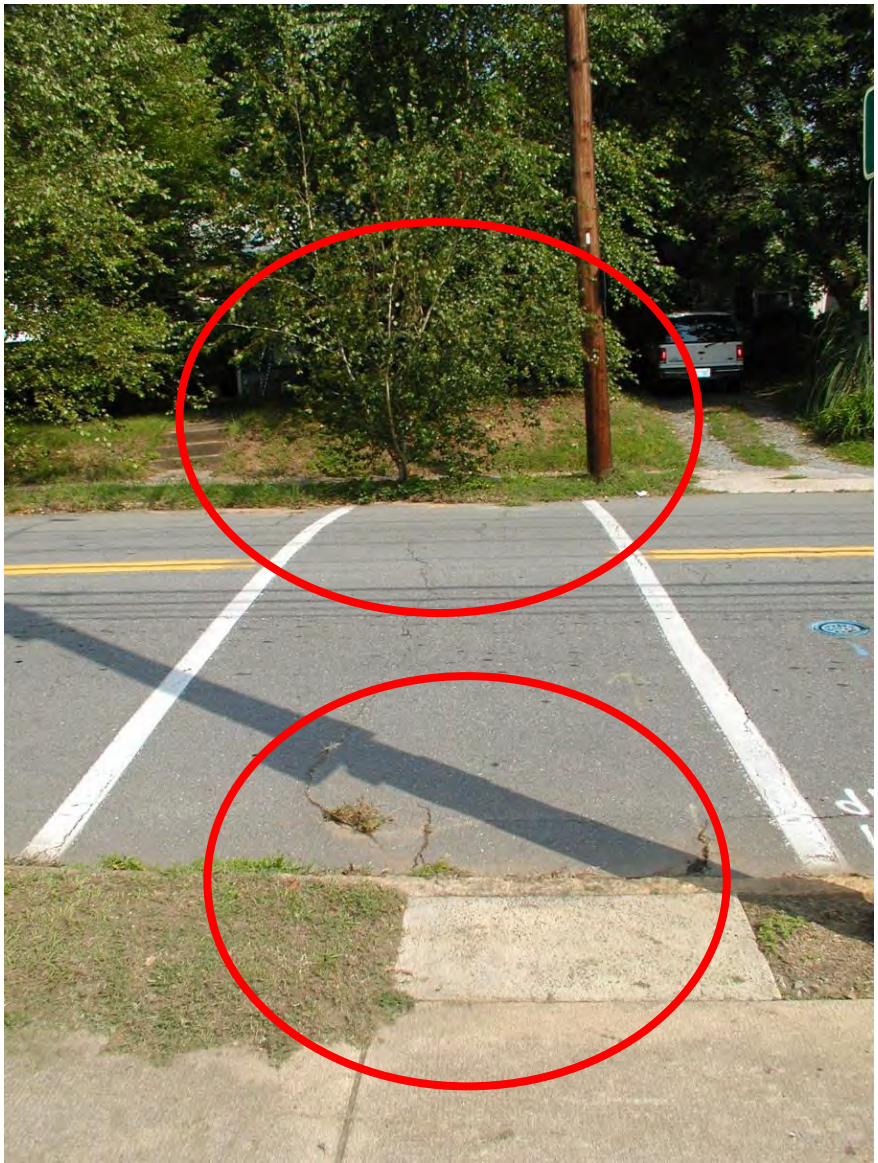


TOOLE DESIGN

Principles for creating safe crossings

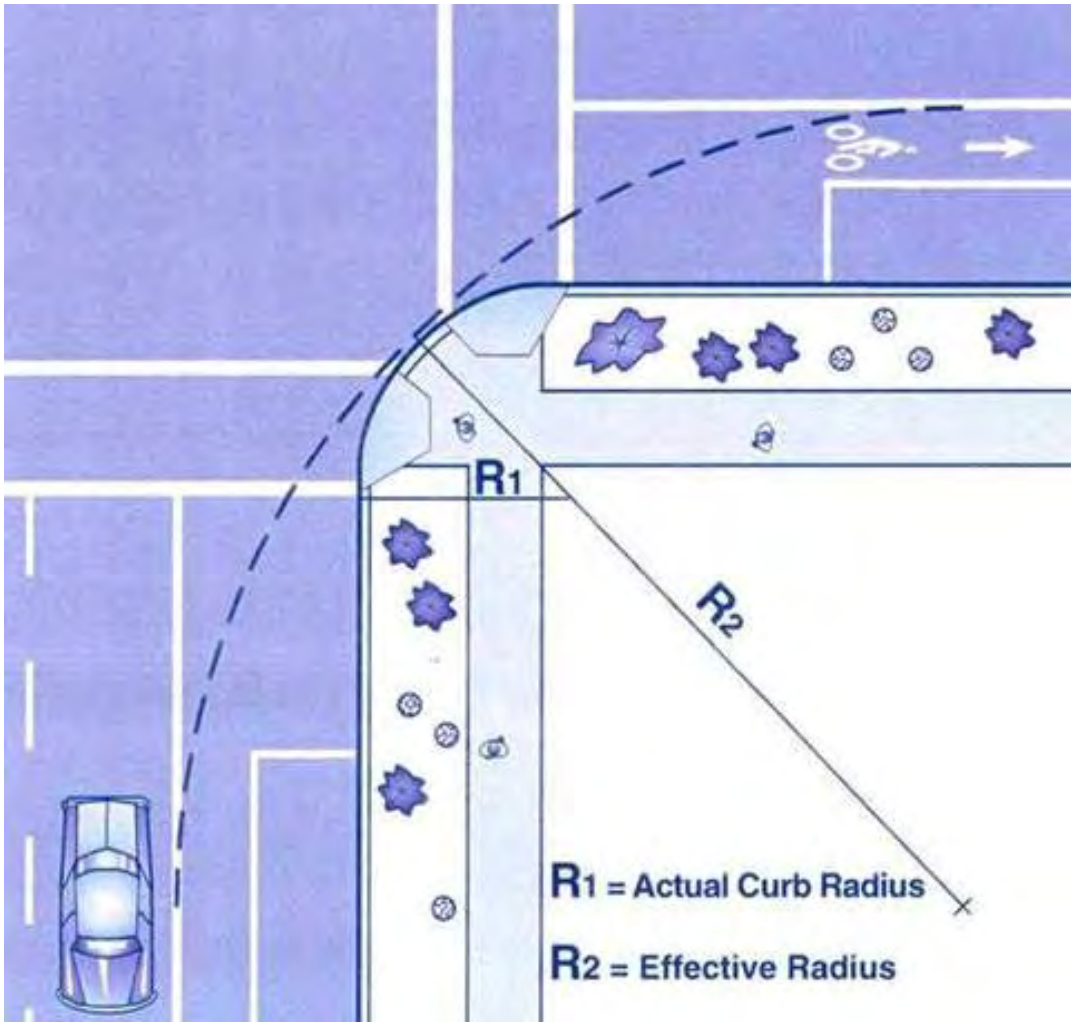
- Reduce crossing distance
- Use appropriate traffic control
  - Marked crosswalks
  - Warning signs or flashers
  - Stop signs and traffic signals
  - Crossing guards
- Slow vehicle speeds

TOOLE DESIGN

Large turn radius

TOOLE DESIGN

Curb radii: Keeping it tight



TOOLE DESIGN

Wide, multi-lane roads are barriers

TOOLE DESIGN

Pedestrian and bicycle bridges

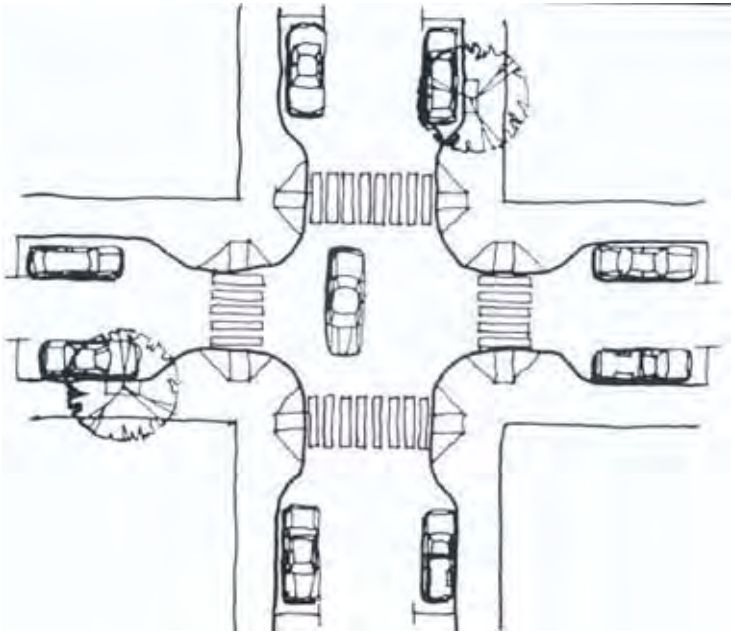
- Expensive
- Often not used
- Consider topography and circumstances

TOOLE DESIGN

Tools to reduce crossing distance

TOOLE DESIGN

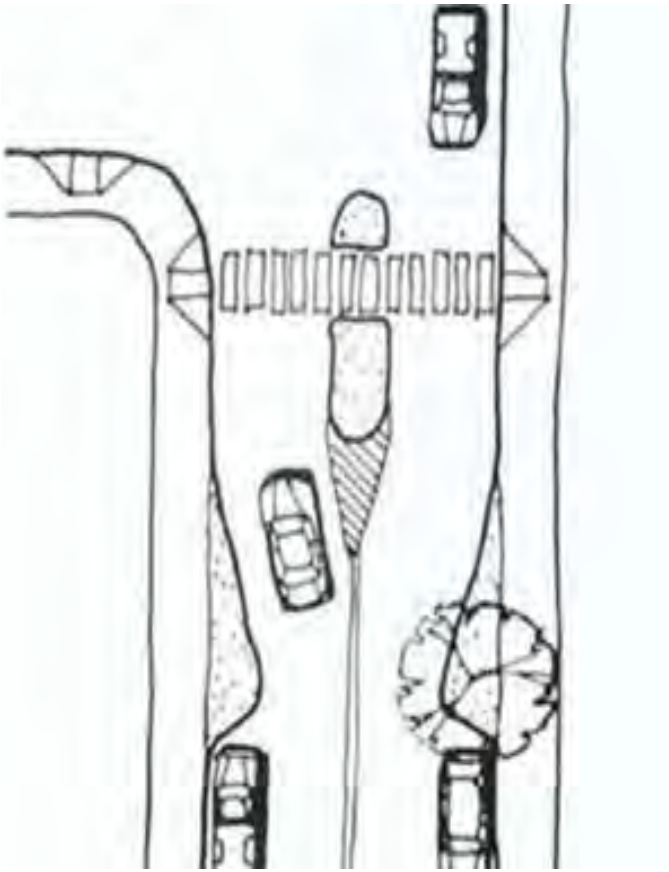
Curb extensions at crossings



Reduce the crossing distance

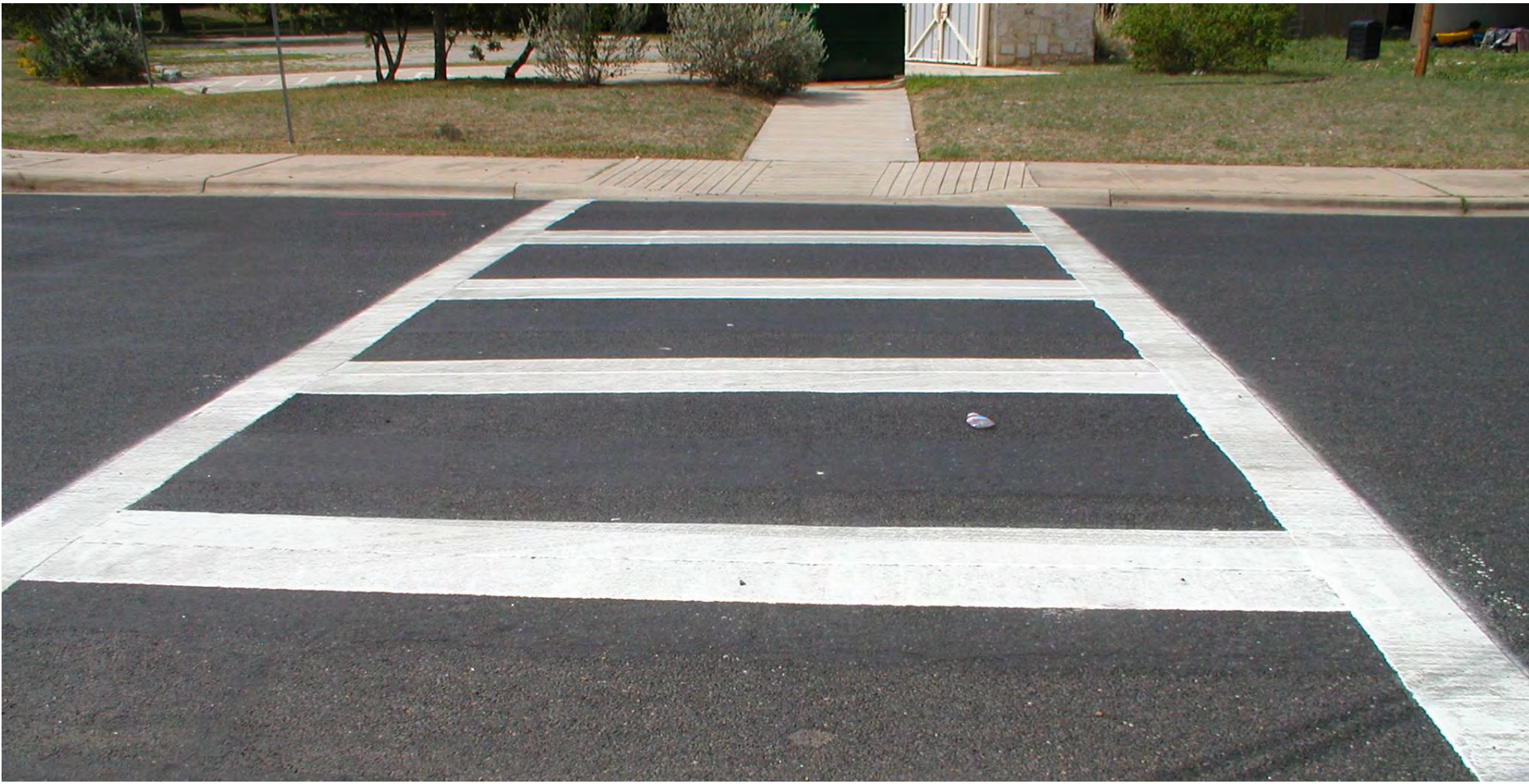
TOOLE DESIGN

Crossing islands



TOOLE DESIGN

Marking crosswalks



TOOLE DESIGN

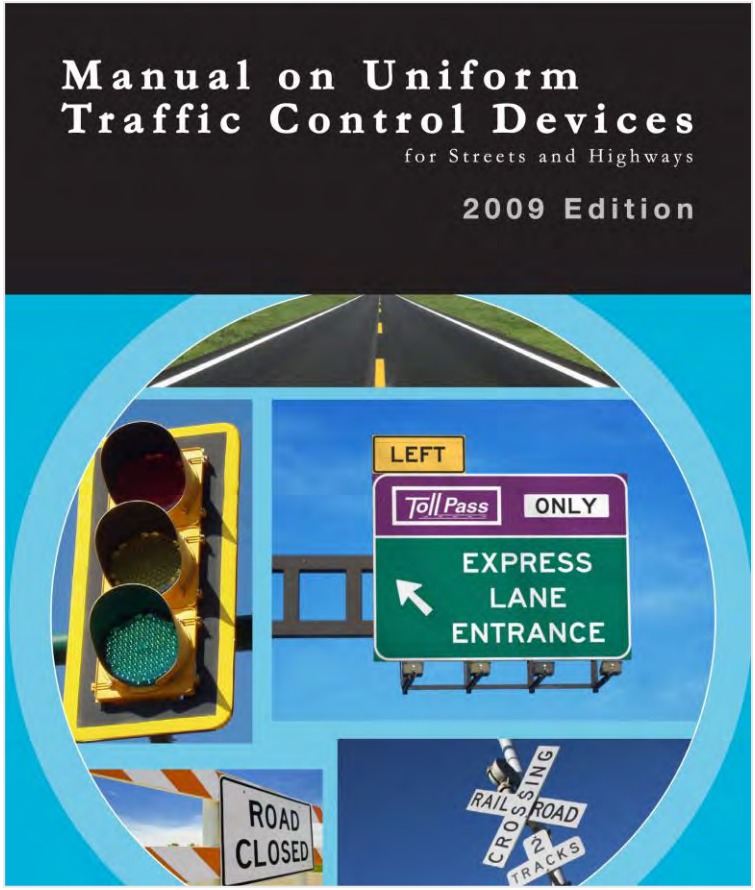
Why install marked crosswalks?

- Indicate a preferred pedestrian crossing location
- Alert drivers to an often-used pedestrian crossing
- Indicate school walking routes

TOOLE DESIGN

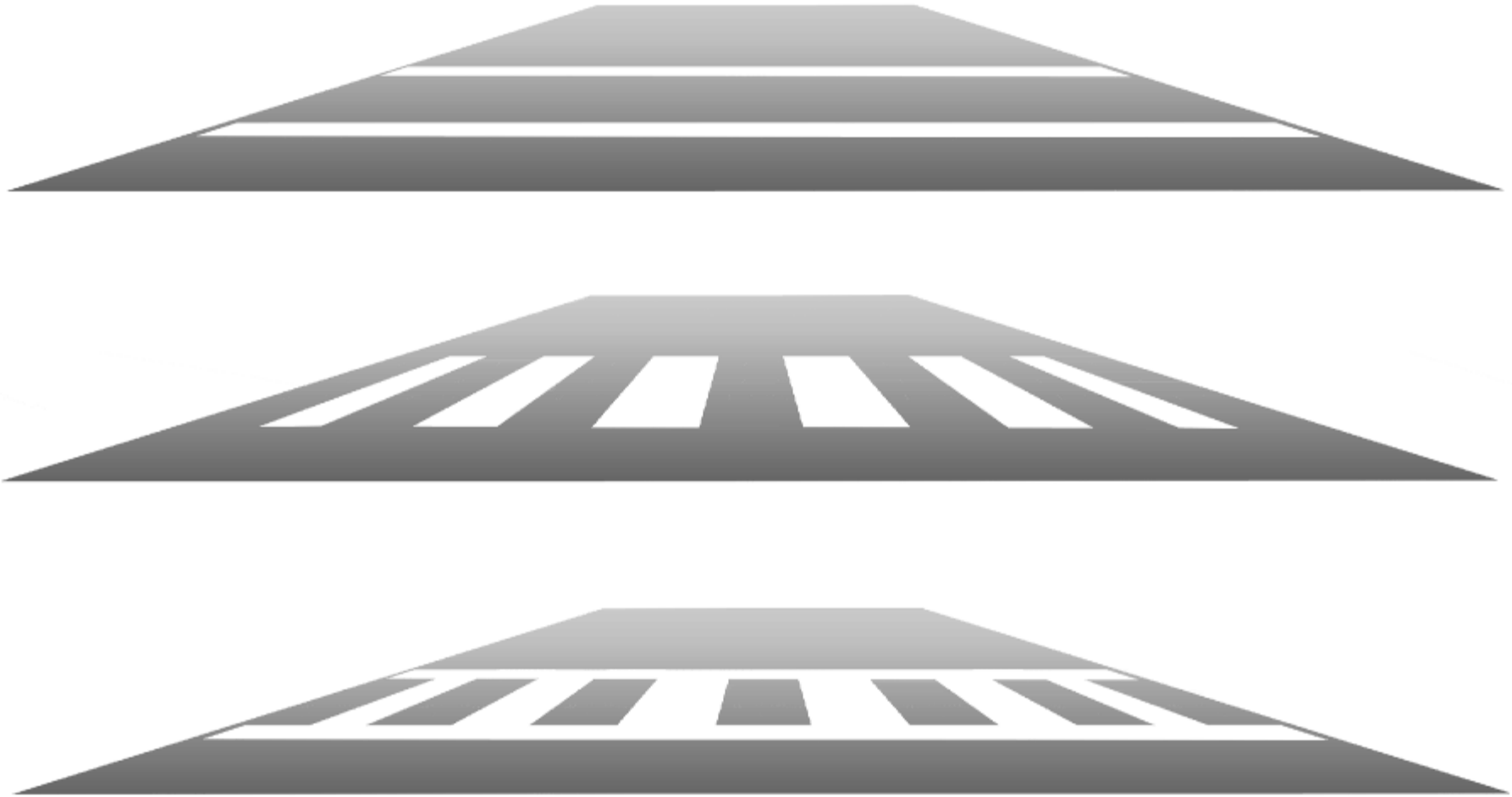
Where to install marked crosswalks

- Signalized intersections
- School routes
- Uncontrolled crossings (see MUTCD guidelines)



TOOLE DESIGN

Install high-visibility markings



TOOLE DESIGN

What the pedestrian sees

TOOLE DESIGN

What the driver sees (same crosswalk)

TOOLE DESIGN

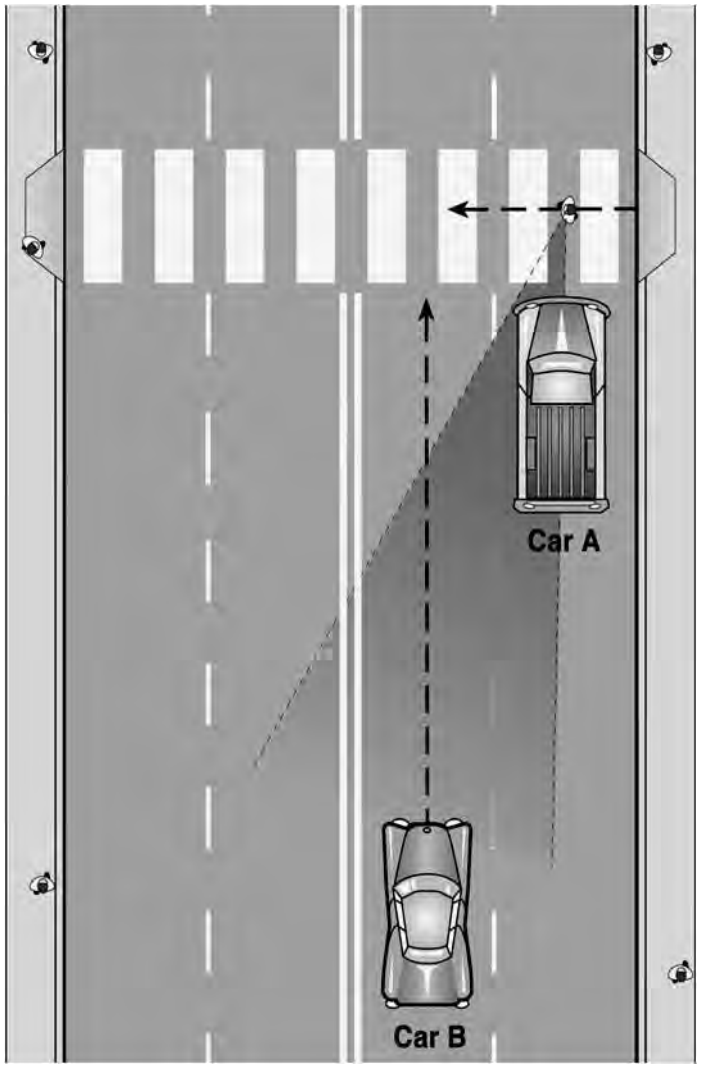
High visibility markings

TOOLE DESIGN

“Multiple threat” crashes

1st car stops to let pedestrian cross, blocking sight lines

2nd car doesn’t stop, hits pedestrian at high speed

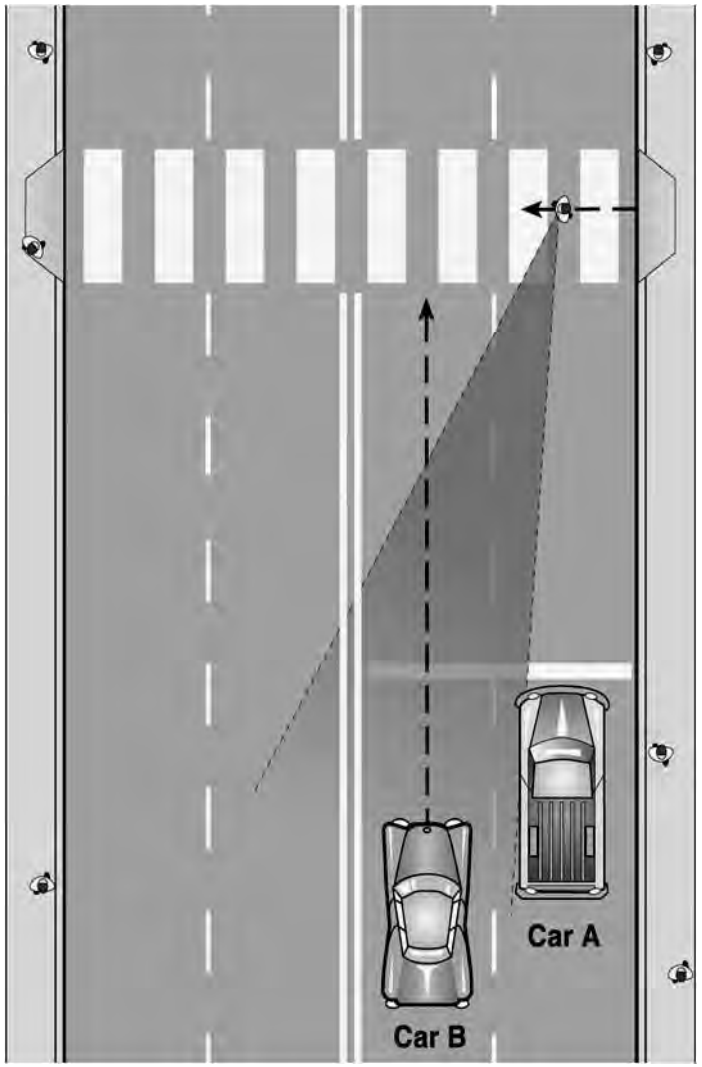


TOOLE DESIGN

Solution: Advance stop/yield line

1st car stops further back, opening up sight lines

2nd car can be seen by pedestrian



TOOLE DESIGN

‘Yield here for pedestrian’ signs

TOOLE DESIGN

In-street signage

Source: City of McKinney, 2019

TOOLE DESIGN

Rectangular rapid flash beacon (RRFB)

- Pedestrian activated (push button or passive detection)
- Beacon is yellow and has a rapid flash
- Yield rates increased from approx. 20% to 80% (CMF = 0.53)
- Not yet in MUTCD – FHWA gave interim approval in 2008.

TOOLE DESIGN

Rectangular rapid flash beacon

TOOLE DESIGN

Pedestrian hybrid beacon

- Pedestrian activated
- Solid red phase brings all cars to a stop
- Can reduce pedestrian crashes by 55% (CMF = 0.45) (FHWA)
- In the MUTCD
- Should be strongly considered for all crossings where speed limits are ≥ 40 mph

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

What's wrong with this picture?

TOOLE DESIGN

Parking restrictions at corners

Better visibility for both drivers and pedestrians

TOOLE DESIGN

Engineering topic outline

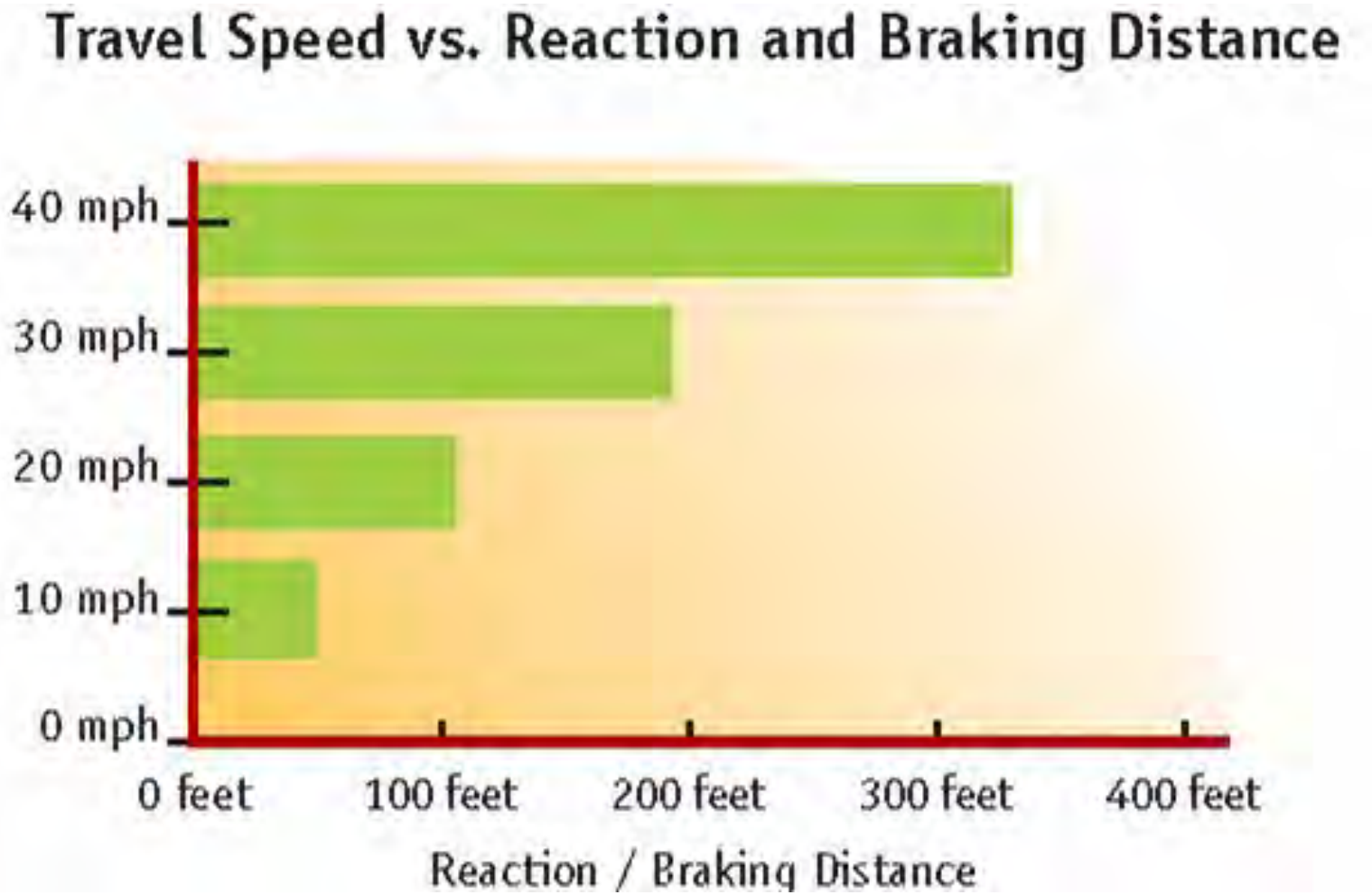
- Around the School
- Along the School Route
- Crossing the Street
- **Slowing Down Traffic**

TOOLE DESIGN

Slowing down traffic

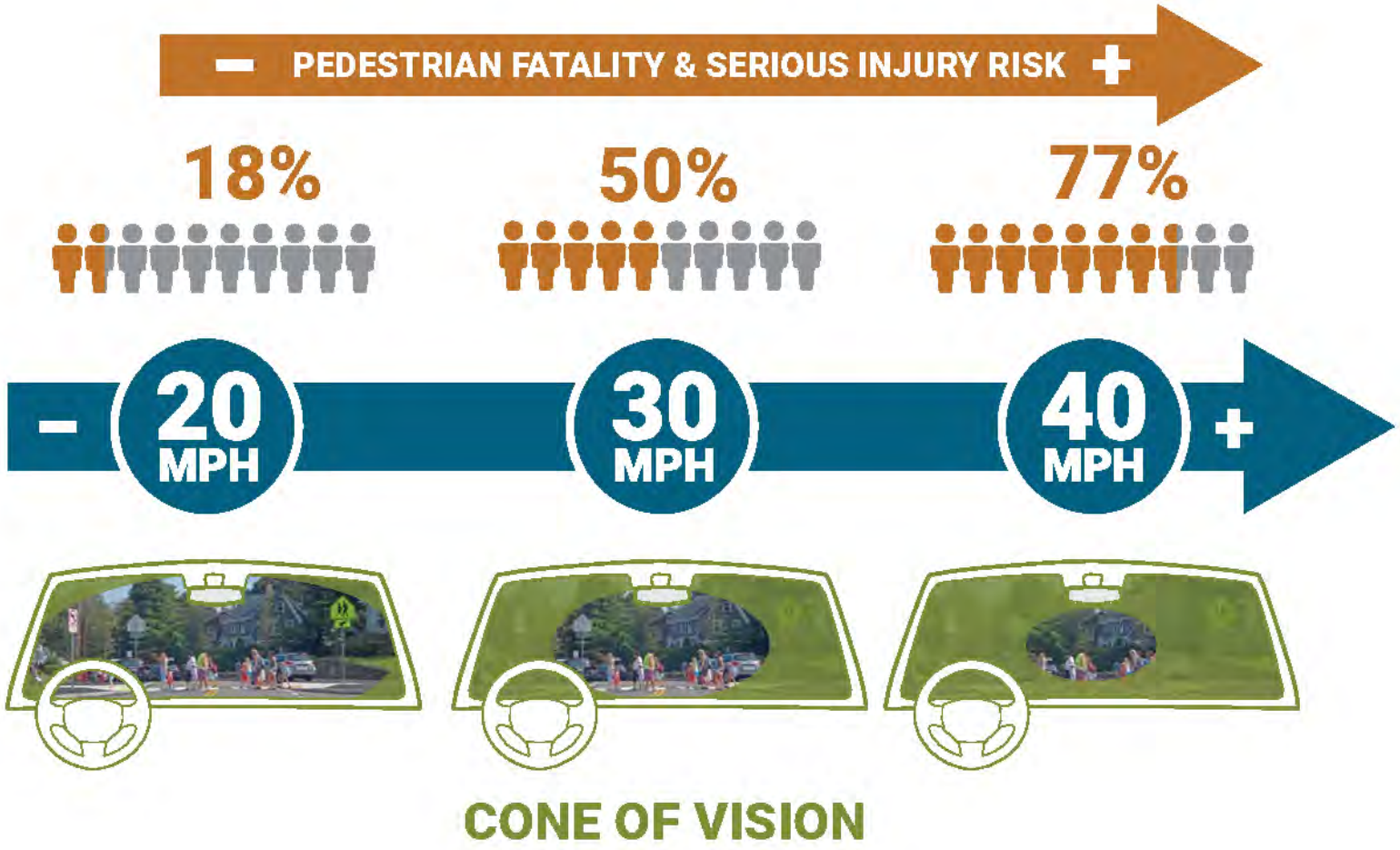
TOOLE DESIGN

High speeds increase stopping distance



TOOLE DESIGN

High speeds increase ped injuries



TOOLE DESIGN

Design can invite desired use

TOOLE DESIGN

Modern roundabout

- Slows vehicles as they enter, travel through and exit.

- Reduces potential conflict points.

TOOLE DESIGN

Narrow lanes reduce speeds

Use paint to reduce lane width

TOOLE DESIGN

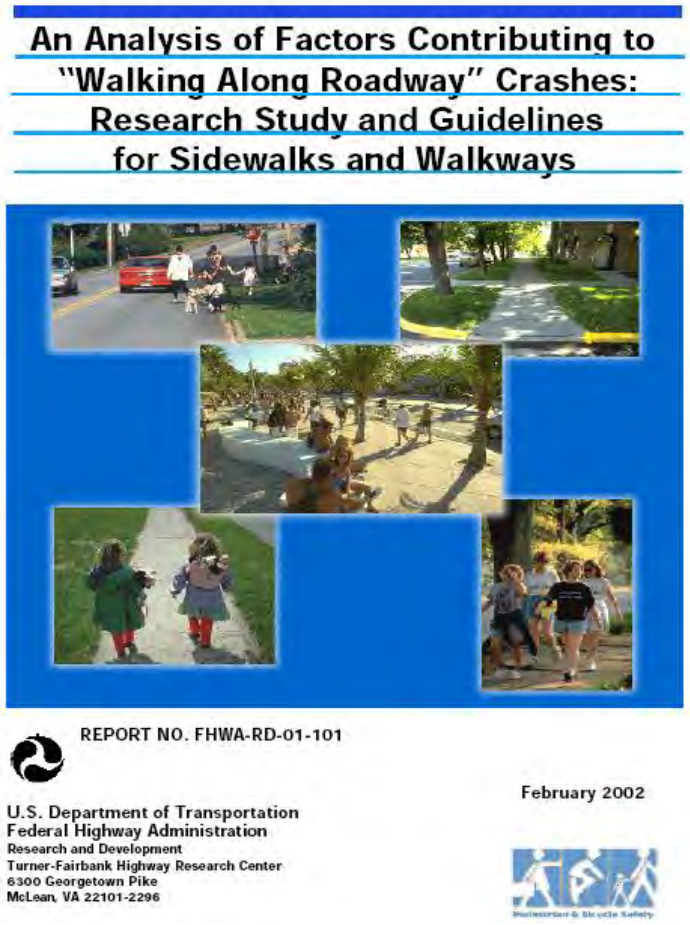
Speed humps slow traffic on local streets

TOOLE DESIGN

Raised crosswalks

TOOLE DESIGN

FHWA references



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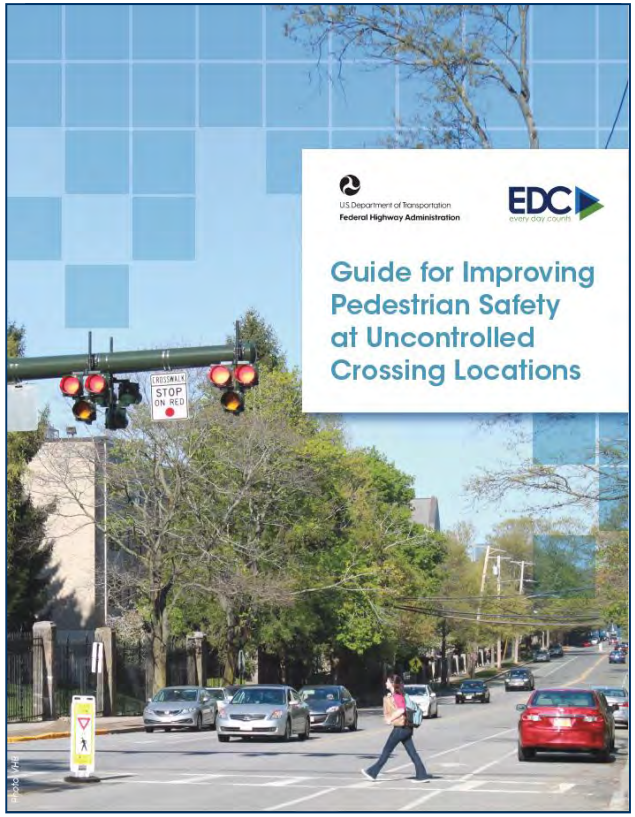
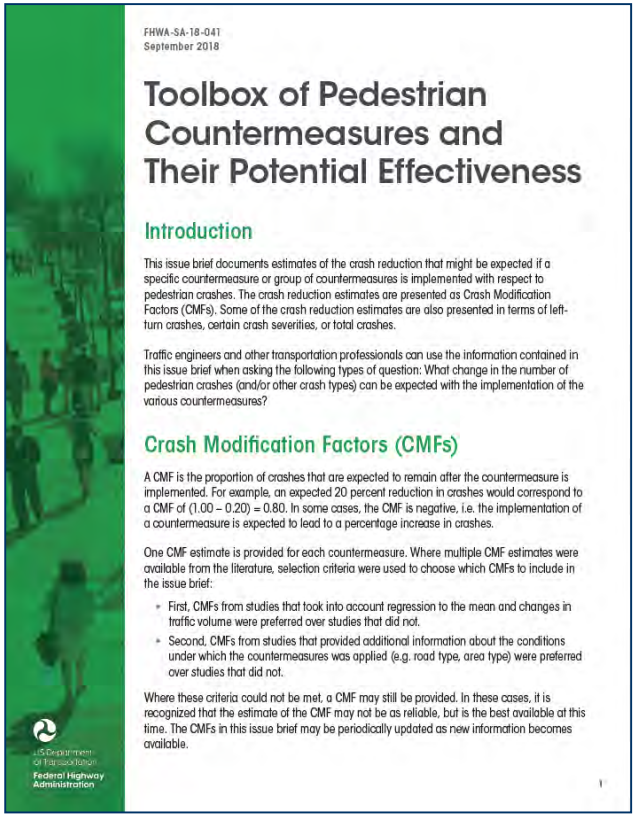
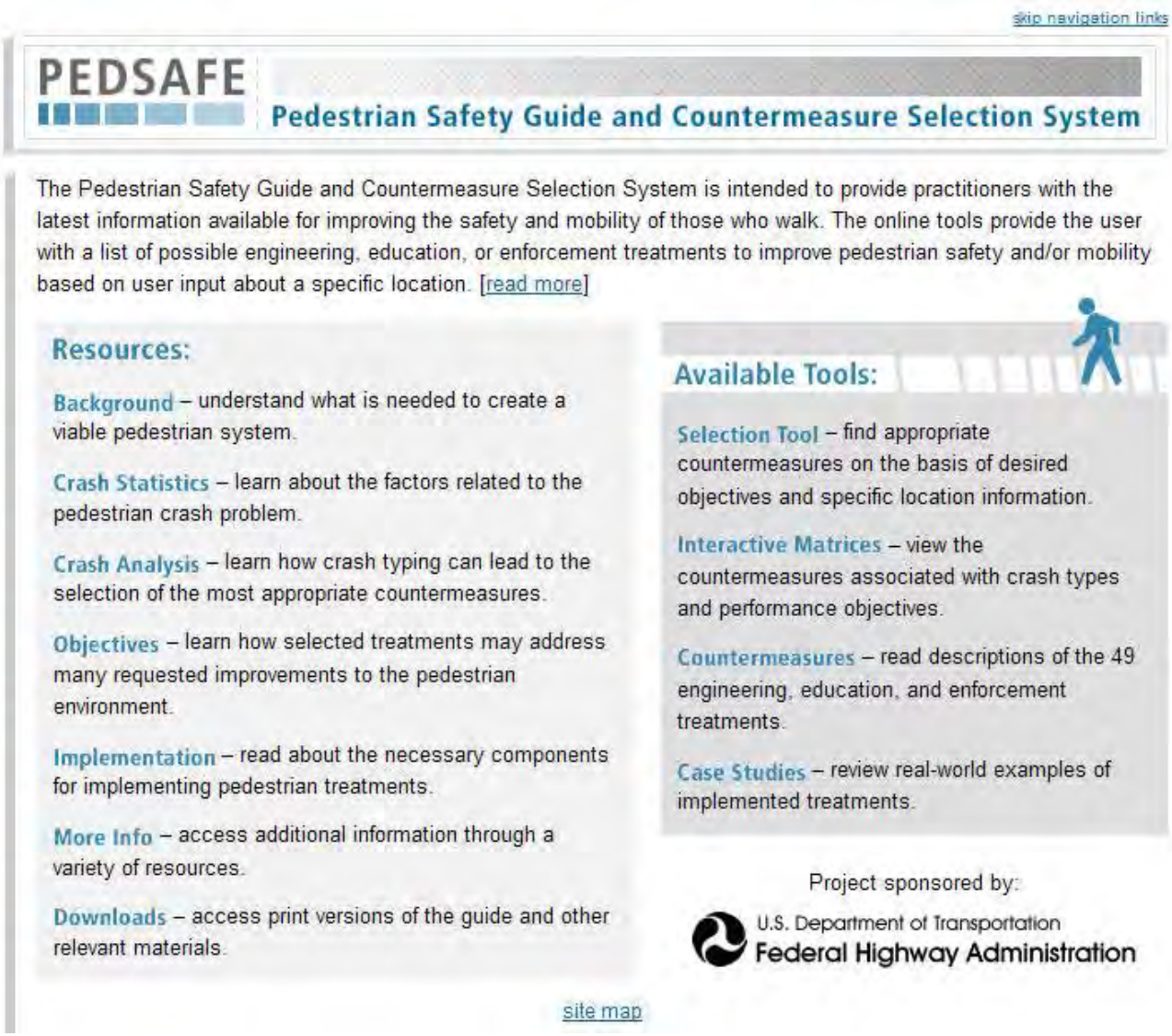
FHWA references





TOOLE DESIGN

PEDSAFE



TOOLE DESIGN

Summary

1. Focus first on the basics
2. Identify and program longer-term improvement needs (e.g. sidewalks)
3. Match the treatment to the type of problem
4. Provide and maintain facilities along the school route
5. Provide safe street crossings
6. Slow down traffic speeds

TOOLE DESIGN