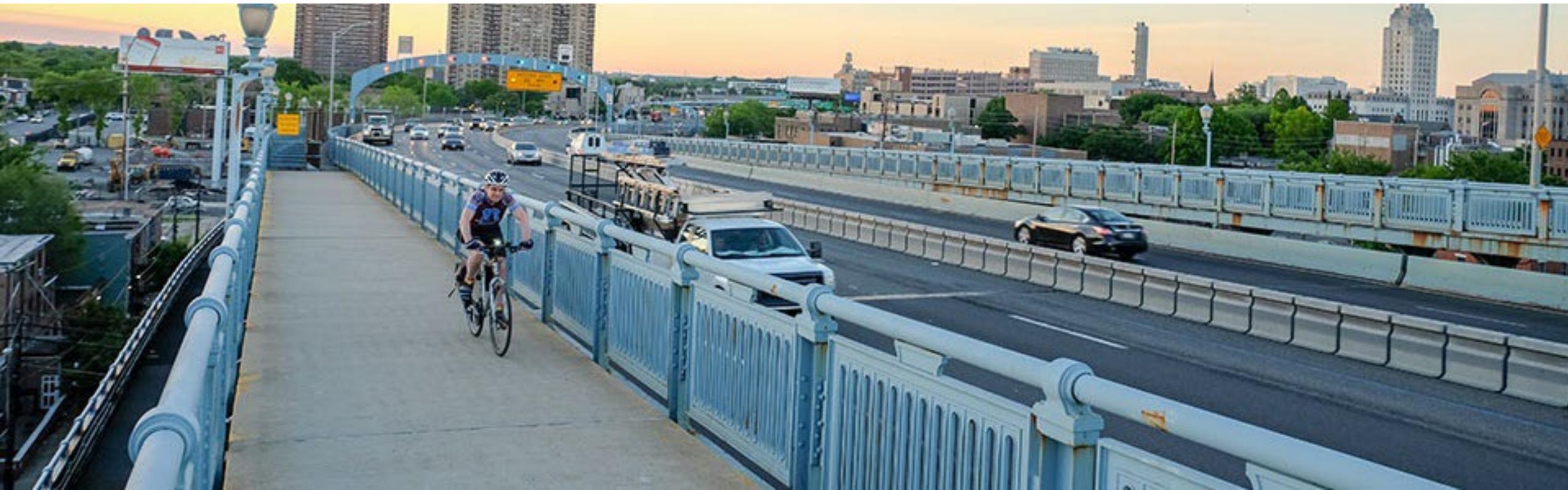




BUREAU OF CIVIL ENGINEERING | OFFICE OF ACCESS DESIGN | DIVISION OF DESIGN SERVICES

# Access Design Training



# Agenda

- Introduction to Access Management..... Arthur Eisdorfer
- Process Activities..... John Jones
- Specifics of Revocations..... Lorinda Lasus
- Alternative Access Signing..... Arthur Eisdorfer
- Specifics of Modifications, Adjustments, & Changes..... Lorinda Lasus, DAG
- Common Driveway Problems..... Arthur Eisdorfer
- Access Cutouts..... John Jones
- Sufficiency of Access..... Arthur Eisdorfer
- Questions and Answers



# Introduction to Access Management

Arthur Eisdorfer

# Impacts on Property



Project

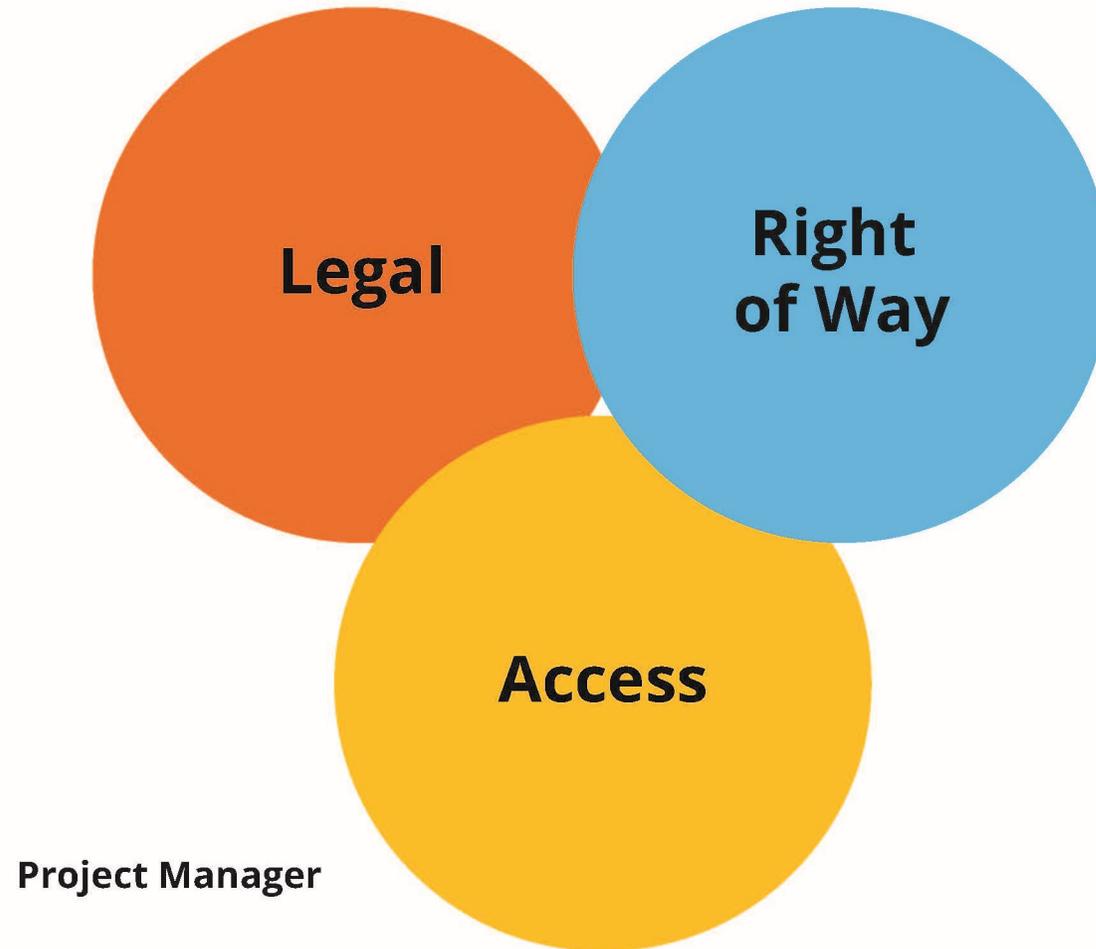


Access

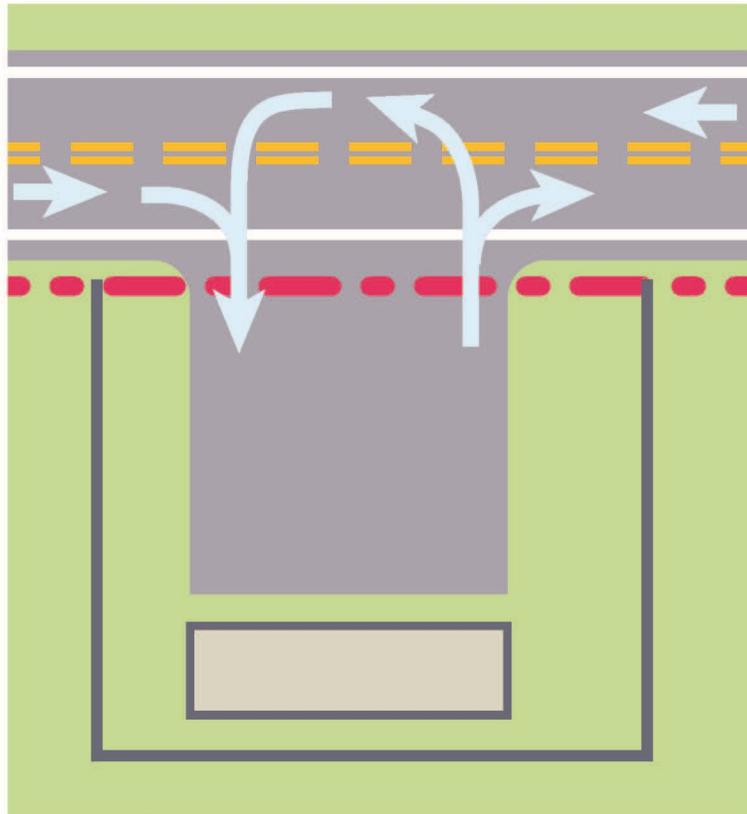


Right of Way

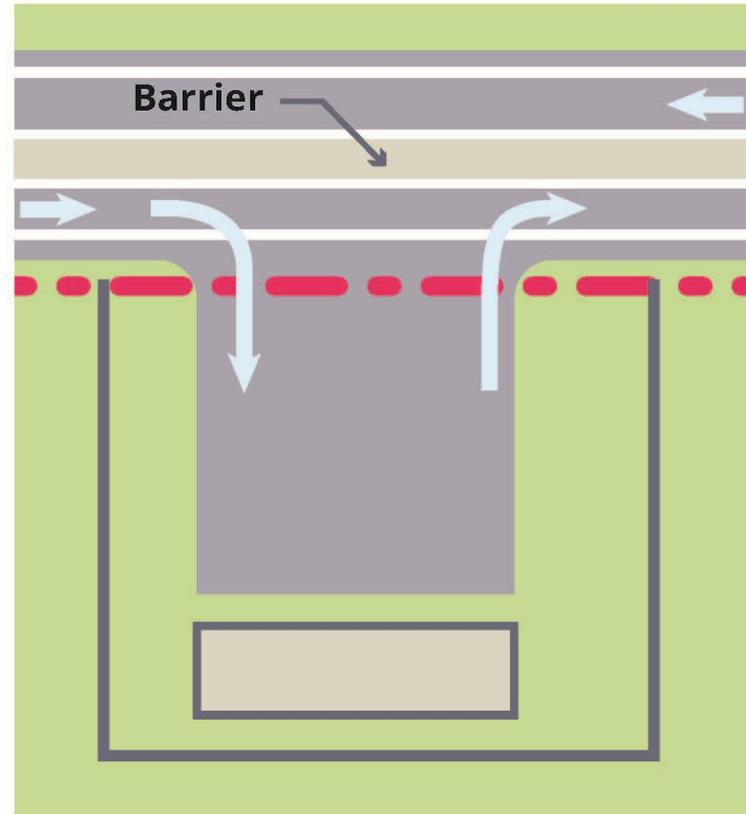
# Project Decisions



# Project Impact

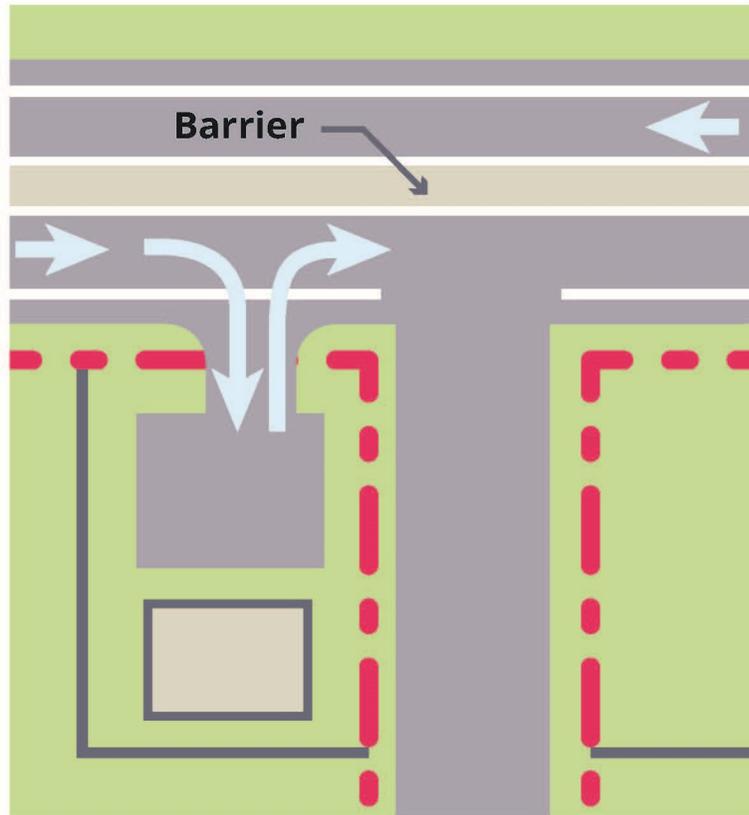


**Before**

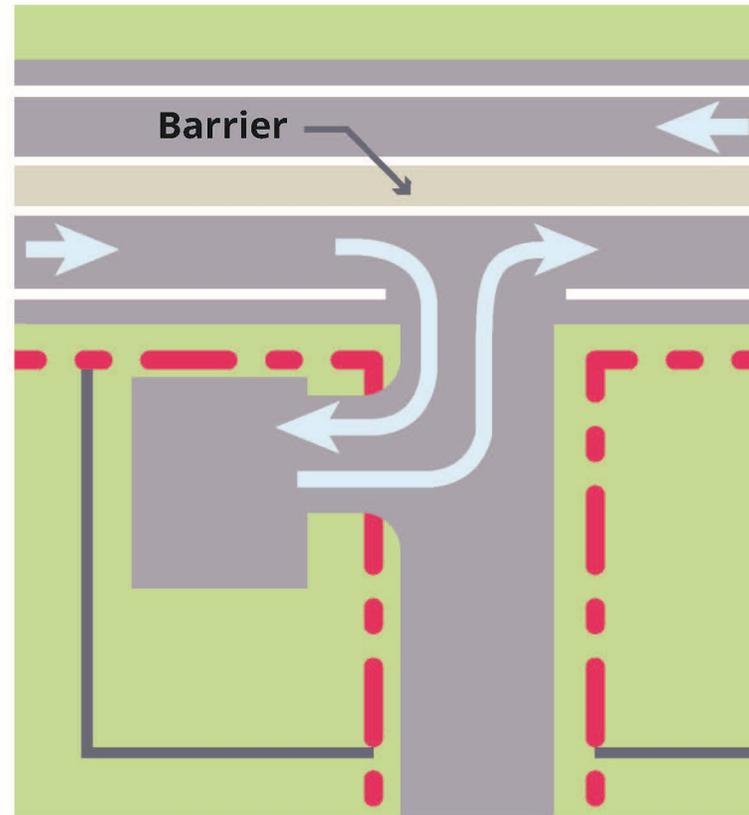


**After**

# Access Impact

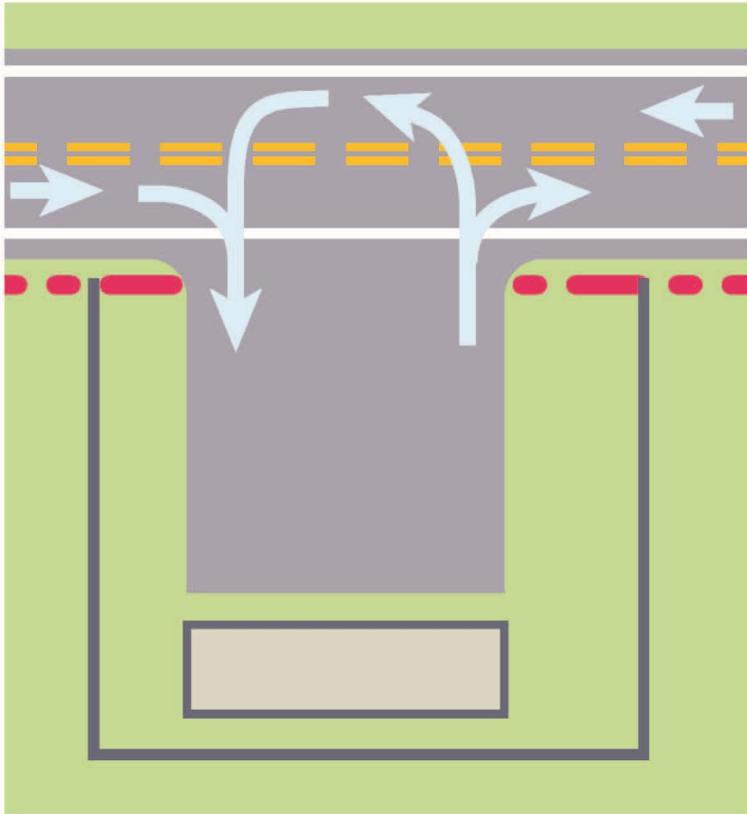


**Before**

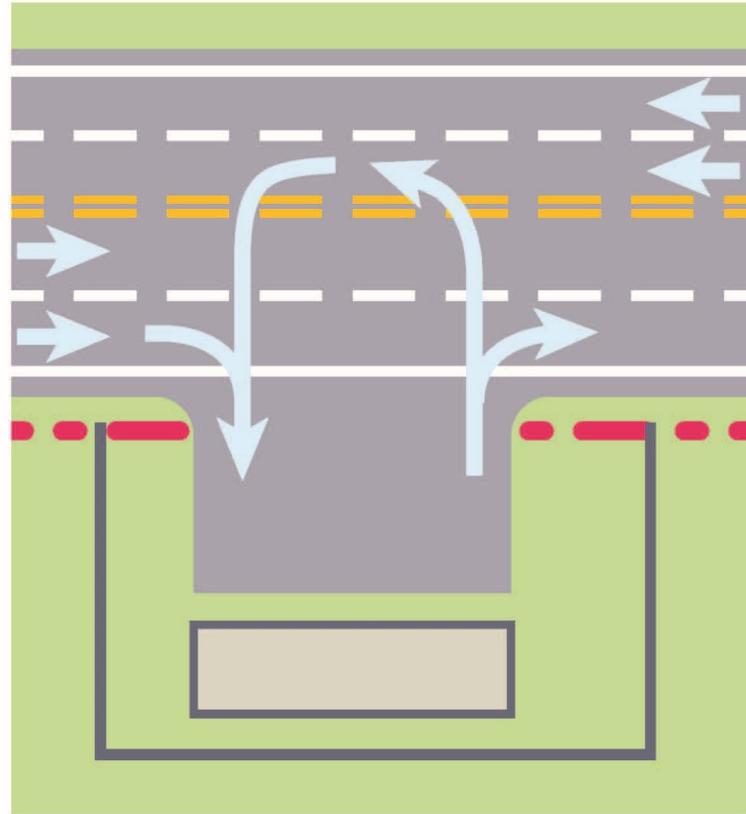


**After**

# Right of Way Impact



**Before**



**After**

# What is Access Management?

## The Control and Regulation of the Spacing and Design of:



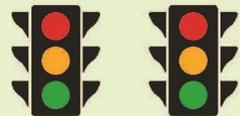
**Driveways**



**Medians**



**Median Openings**



**Traffic Signals**



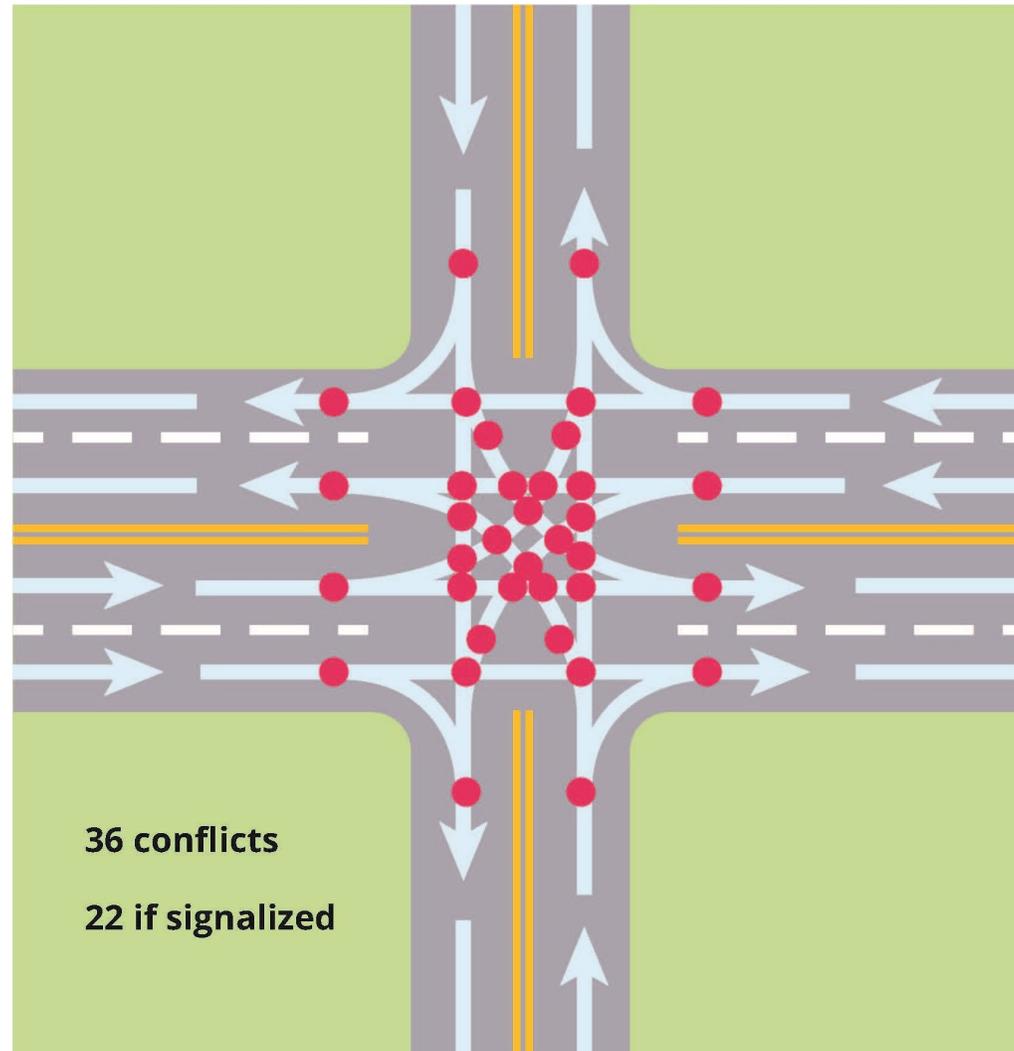
**Freeway Interchanges**

# What are the Goals of Access Management?

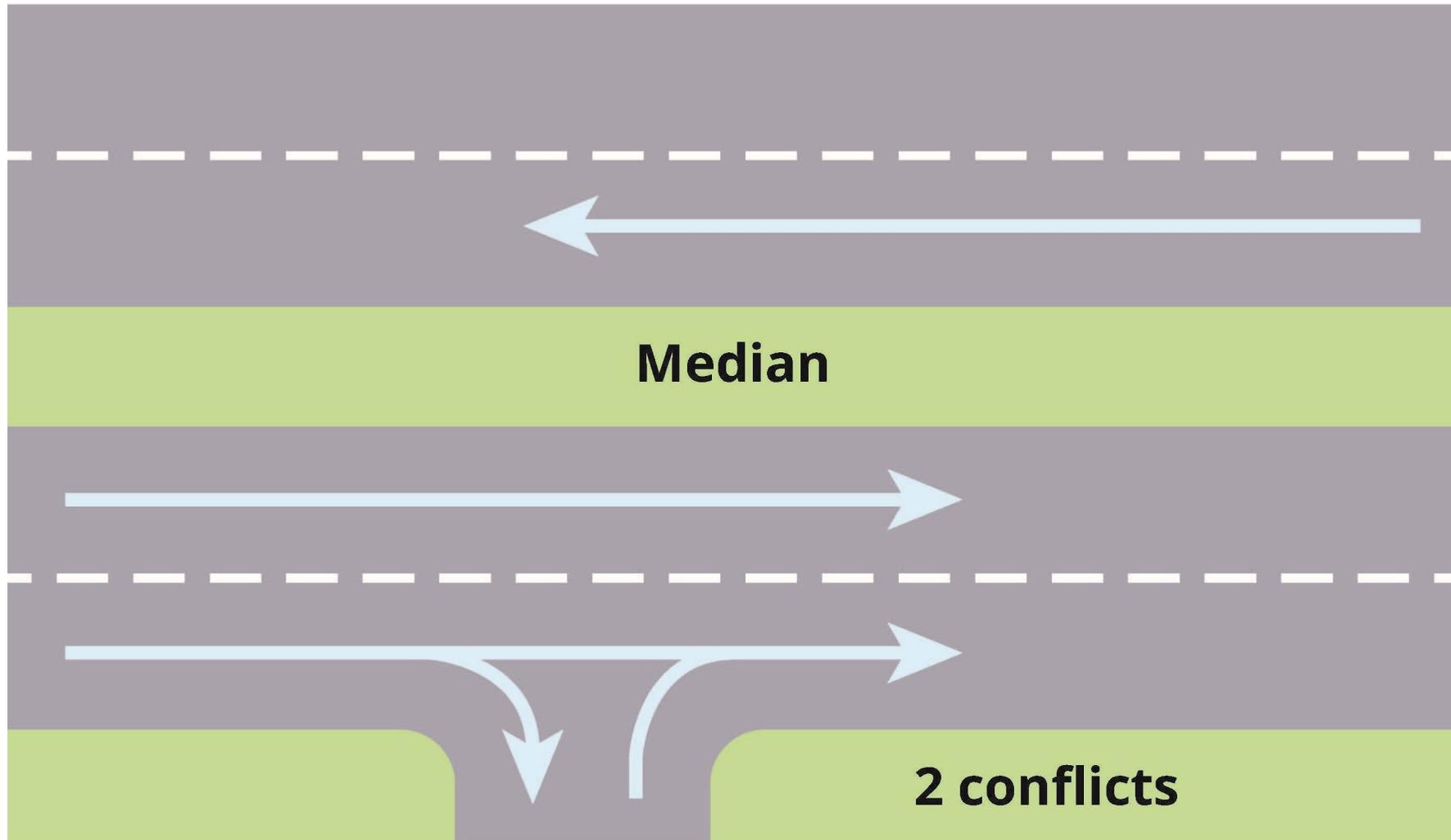


- ✓ Limit the number of conflict points
- ✓ Separate the conflict points
- ✓ Remove turning volumes and queues from through movements

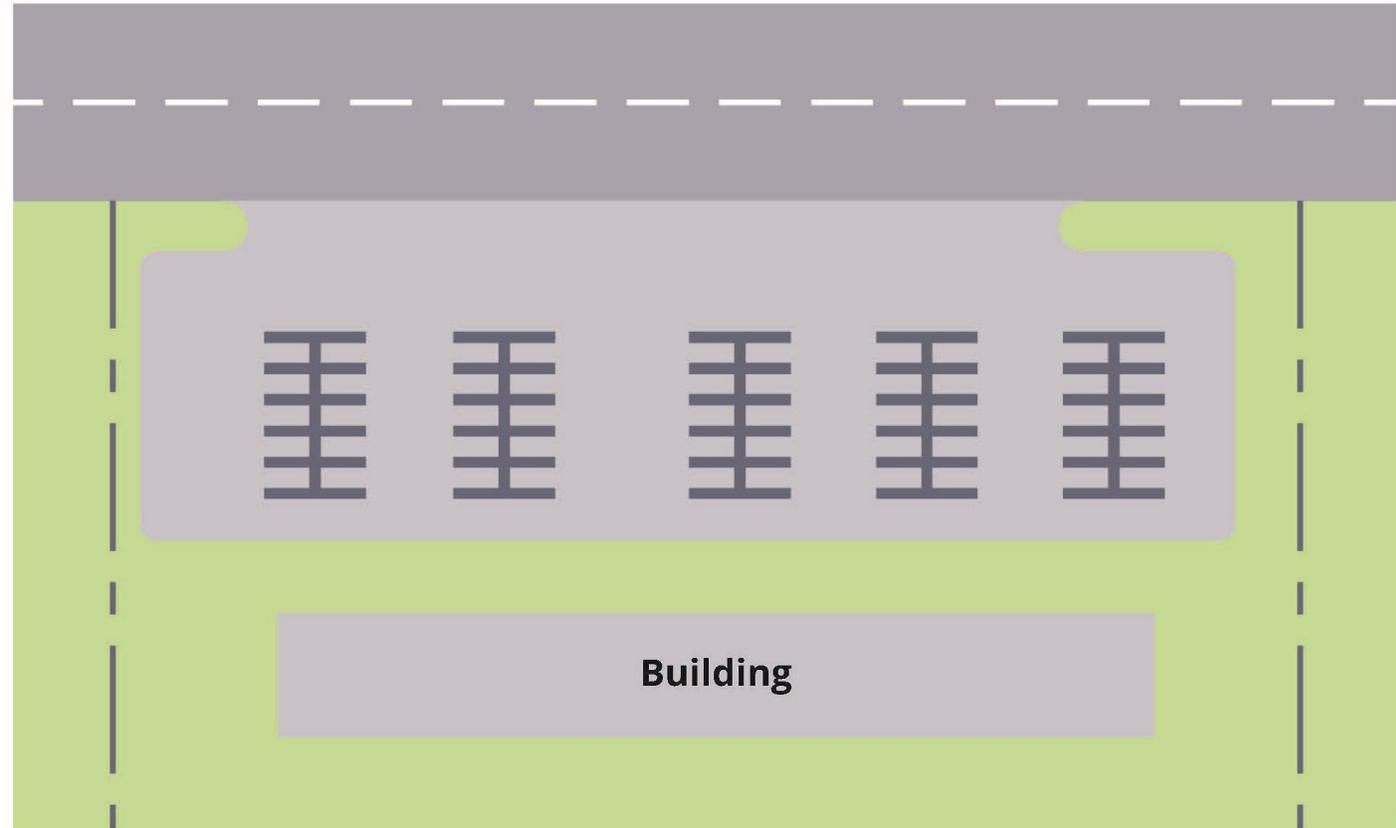
# Full Movement



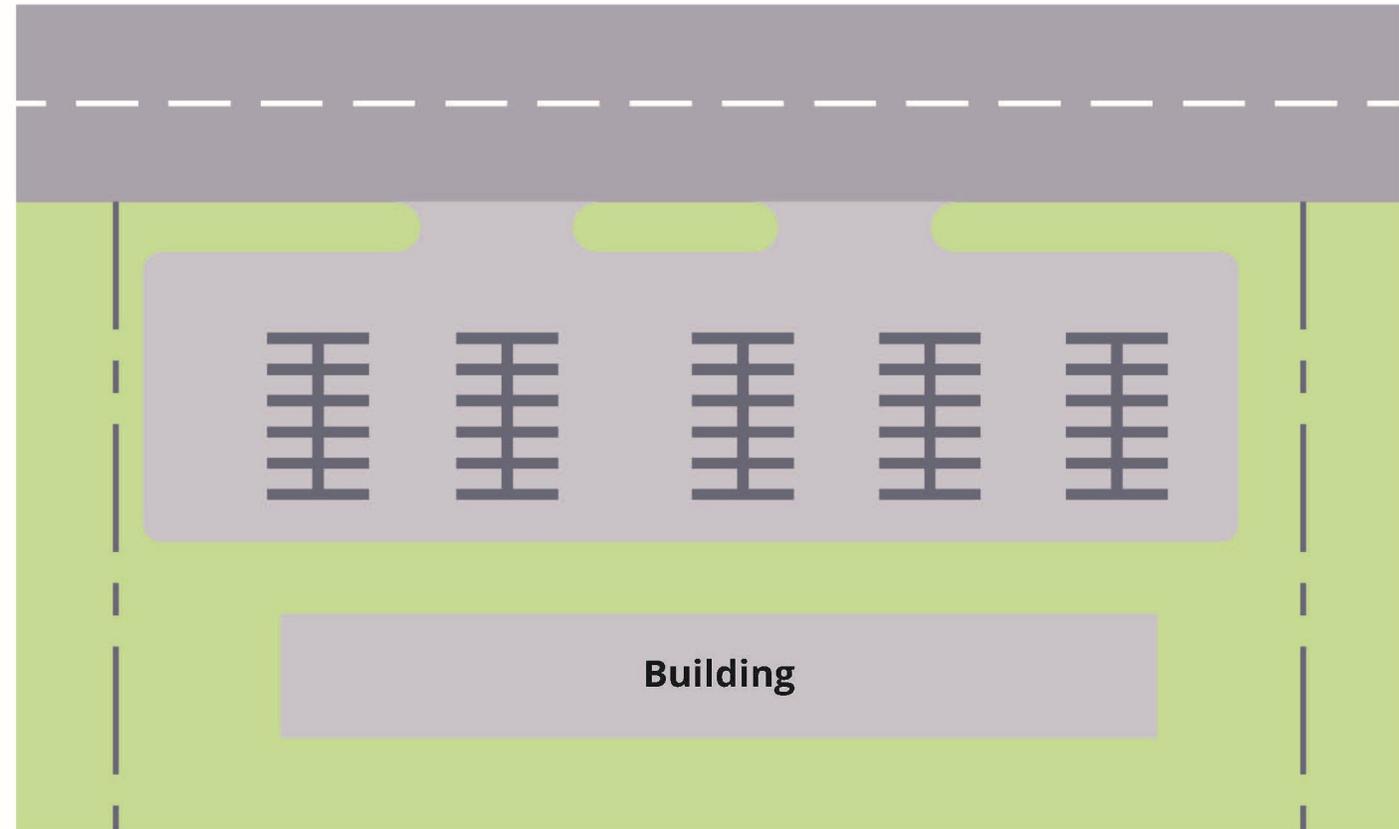
# Right-in/Right-out



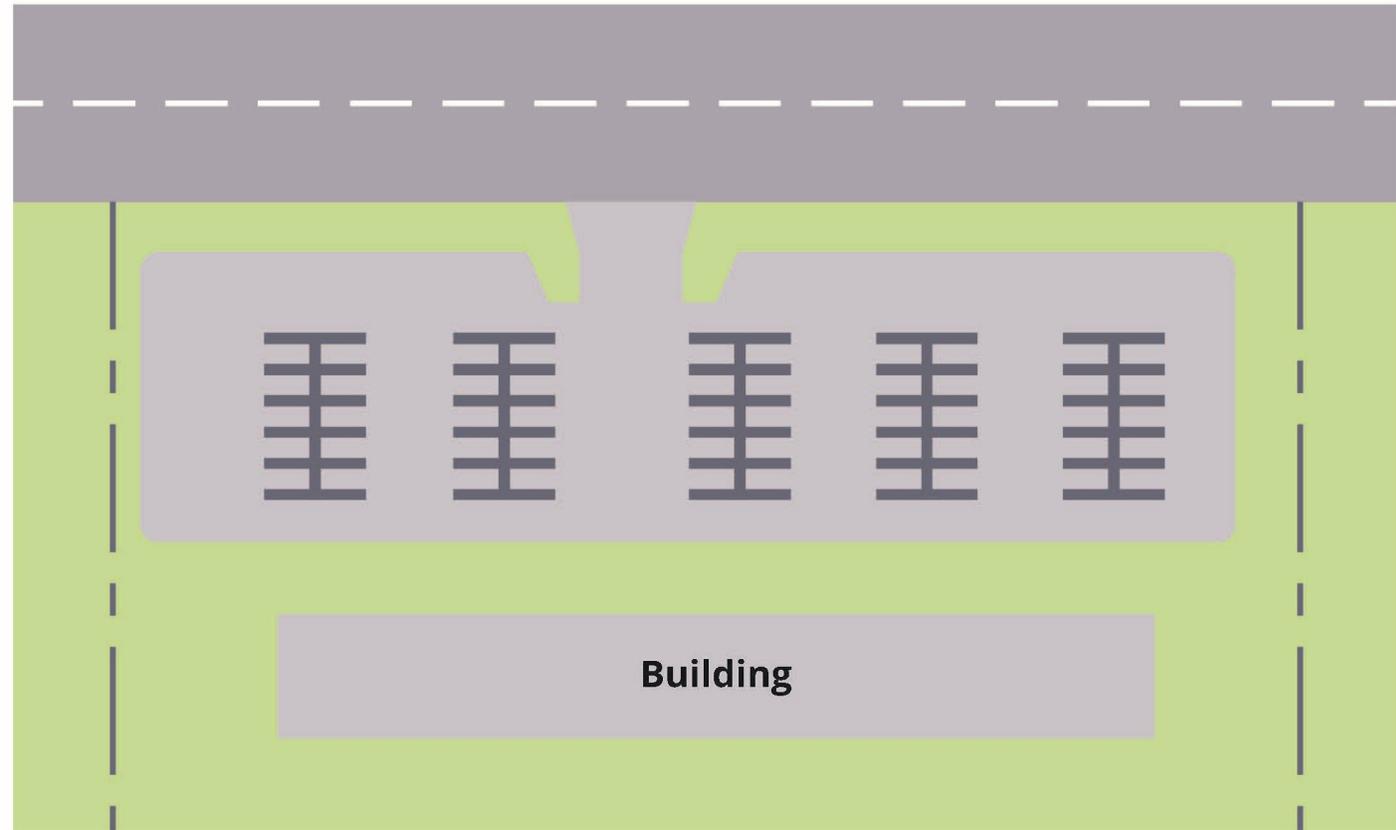
# Minimize Number of Access Points



# Minimize Number of Access Points



# Minimize Number of Access Points

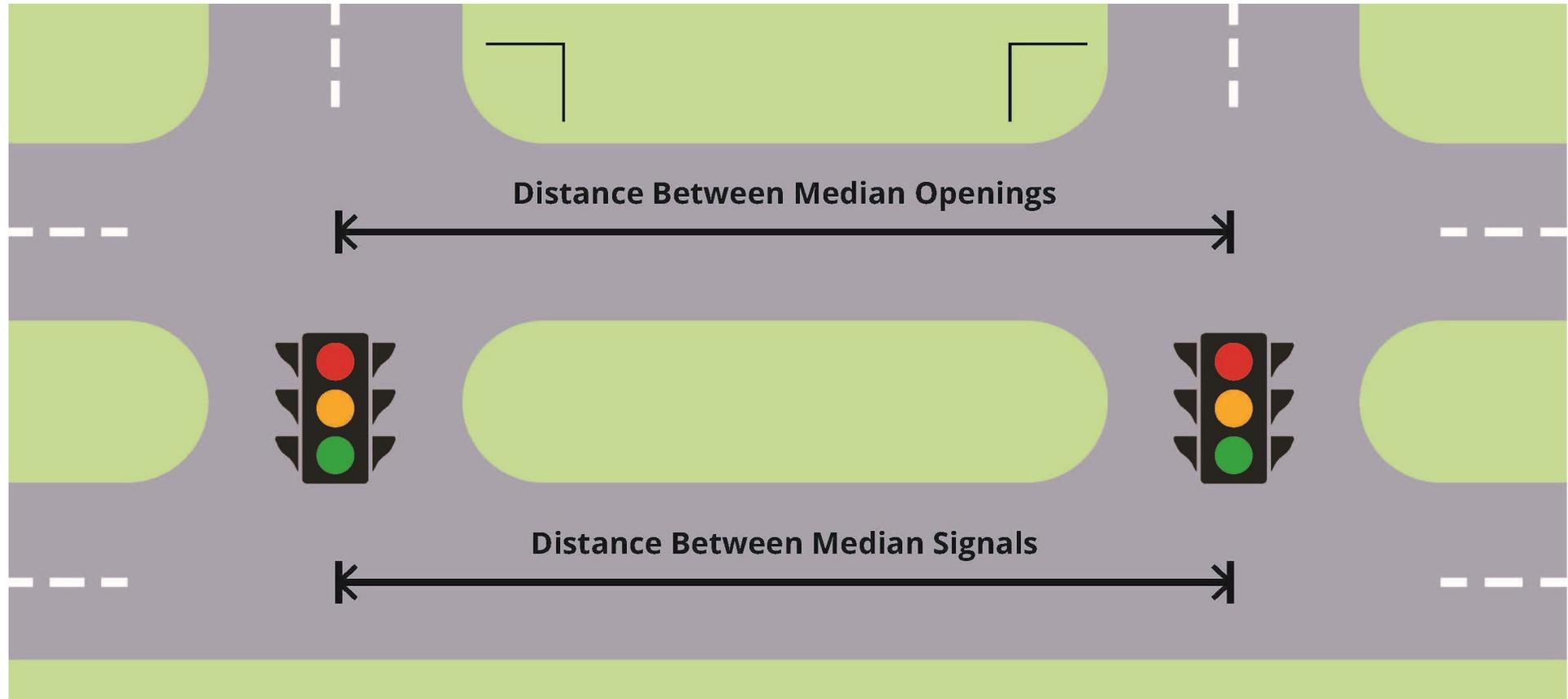


# What are the Goals of Access Management?

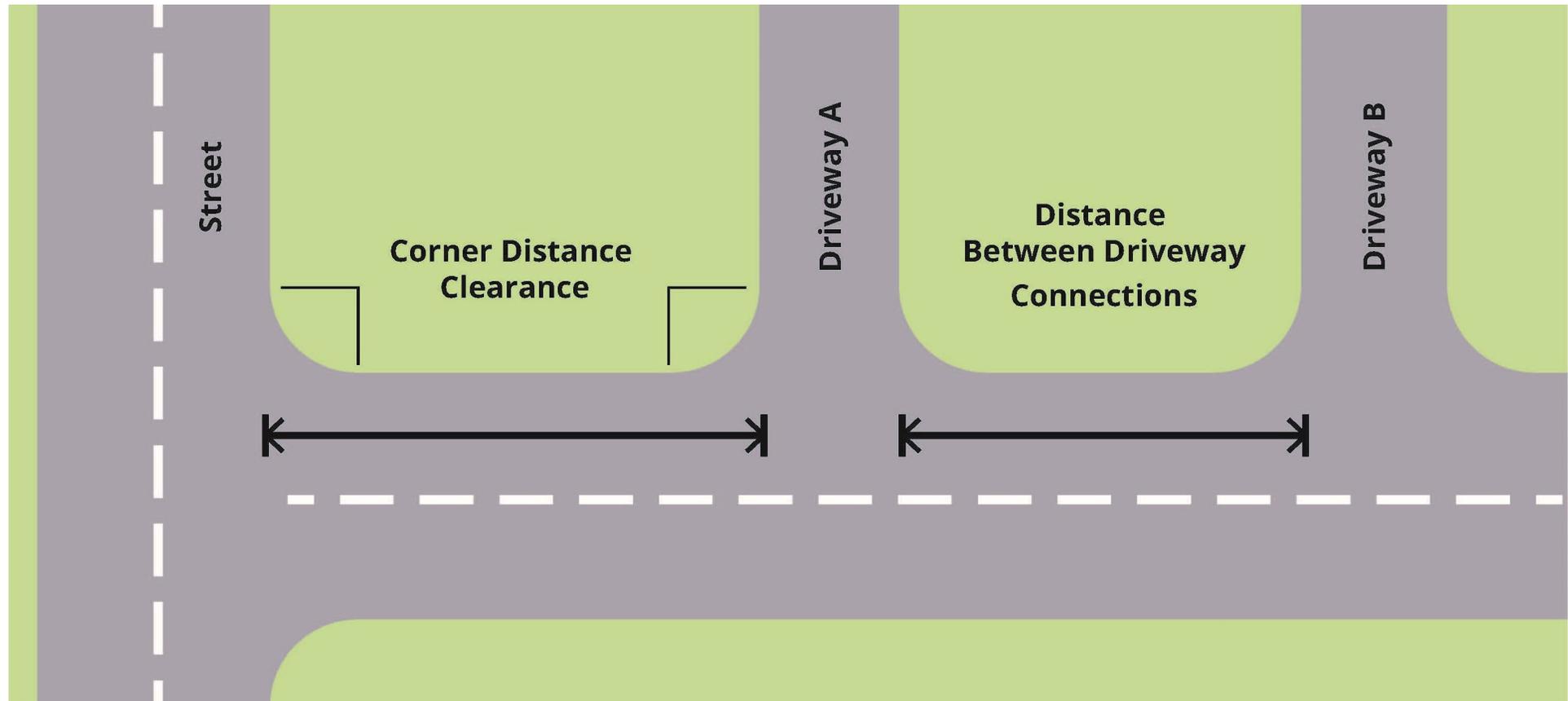


- ✓ Limit the number of conflict points
- ✓ **Separate the conflict points**
- ✓ Remove turning volumes and queues from through movements

# To Measure Distance Between Median Openings & Signals



# To Measure Distance Between Driveway Connections and Corner Clearance



# Techniques to Separate Conflict Points

*Florida has addressed all of these standards in regulations (Rule 14-97)*

- Driveway Separation Standards
- Median Opening Standards
- Corner Clearance Standards
- Signal Spacing Standards

# Preparation of Access Cutouts

## Principle #1

A driver can only “handle” one conflict at a time

## Principle #2

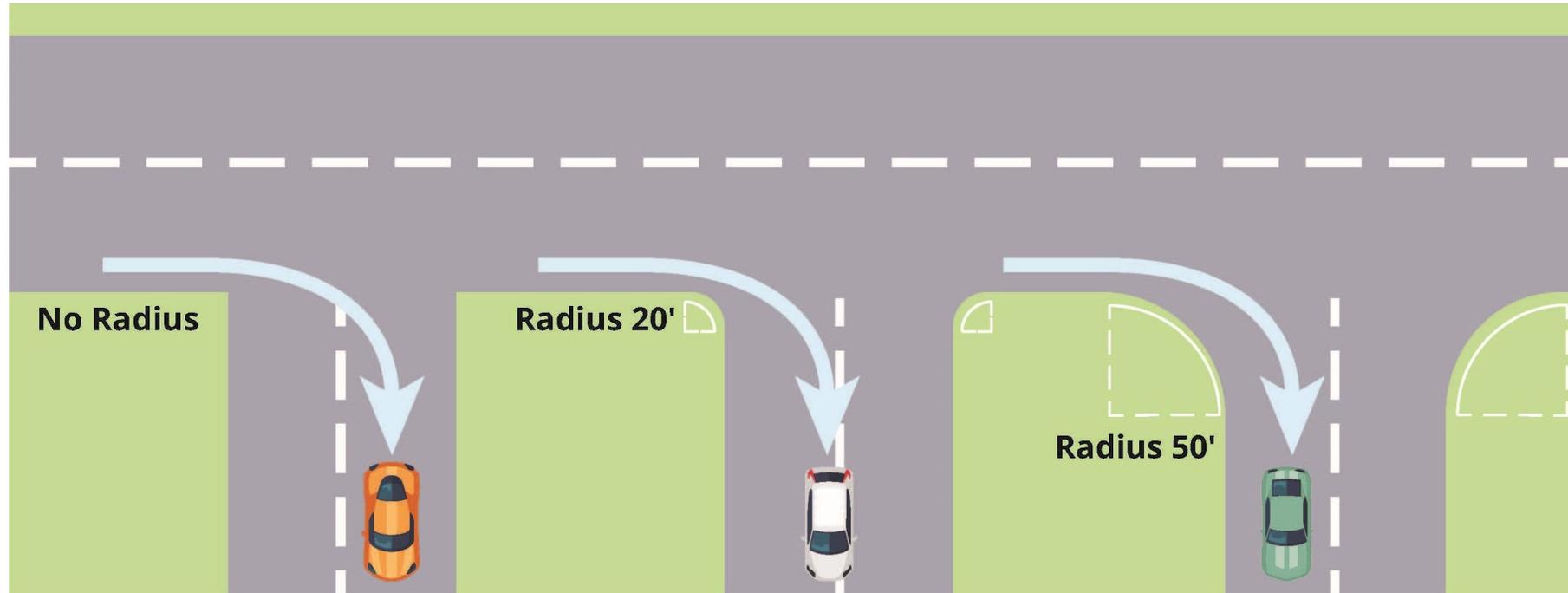
Provide enough time and space to react to the unexpected

# What are the Goals of Access Management?



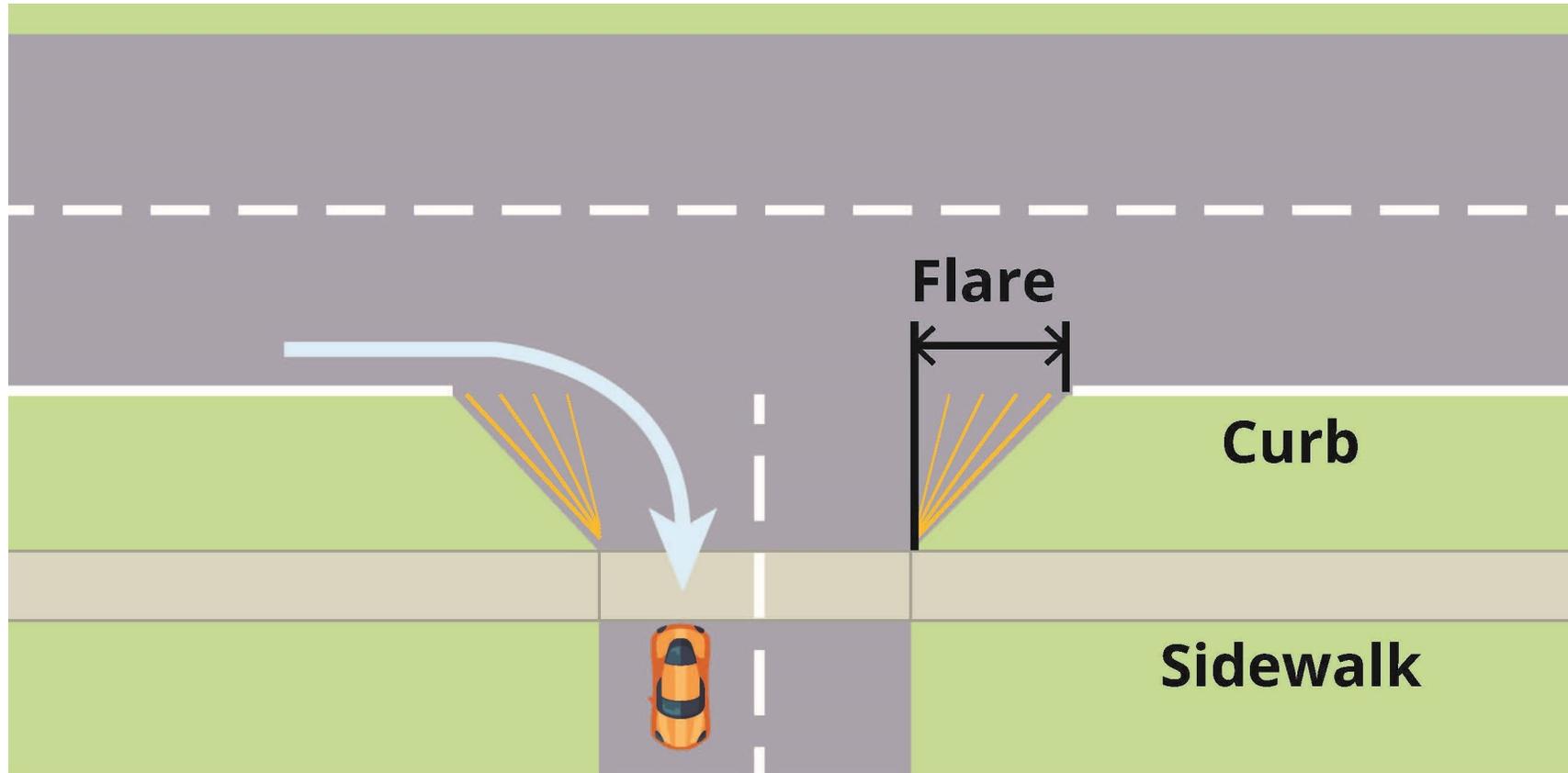
- ✓ Limit the number of conflict points
- ✓ Separate the conflict points
- ✓ **Remove turning volumes and queues from through movements**

# Turn Radii



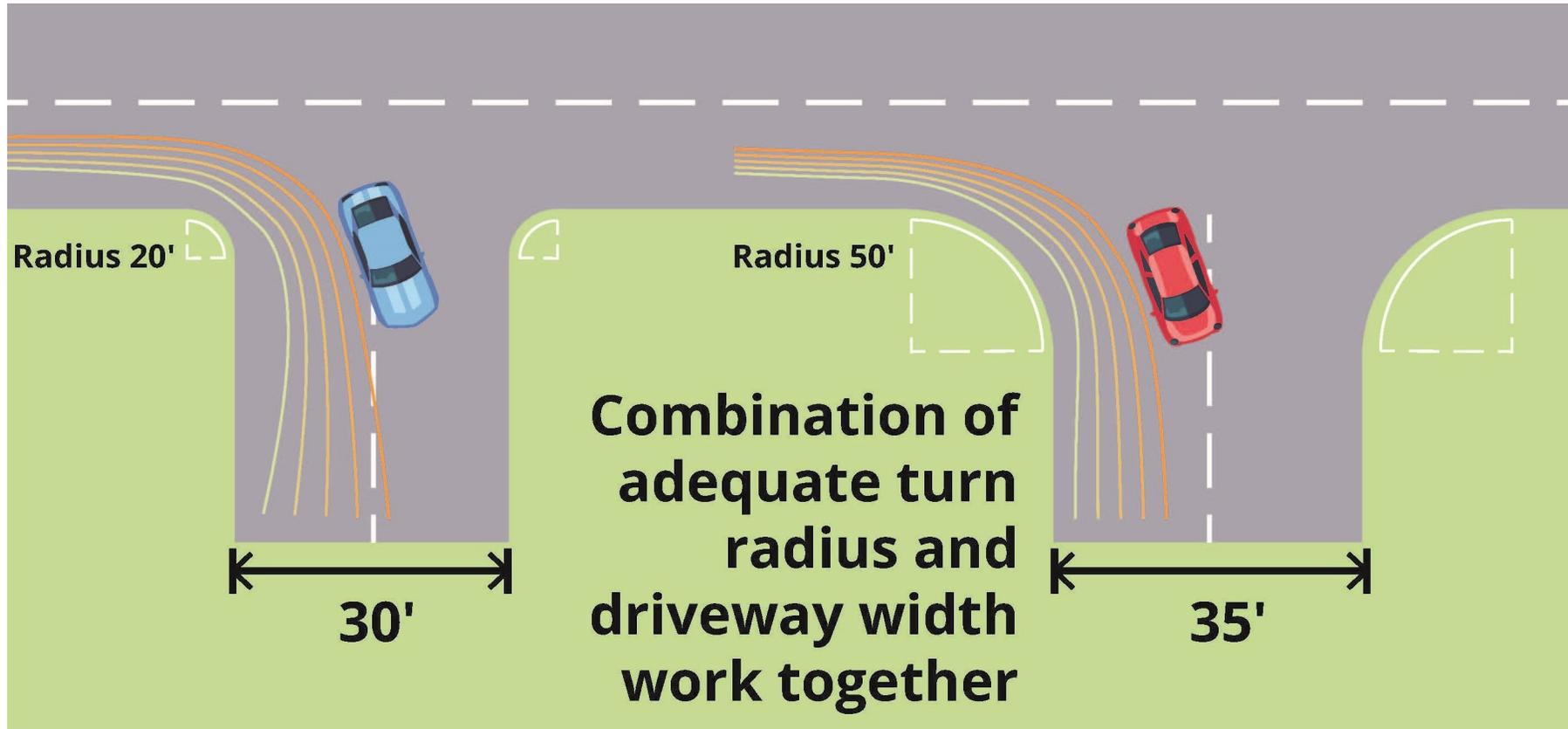
The bigger the radius, the faster the turning vehicle can get off the road and the less through-movement vehicles need to slow down

# Driveway Flare



Driveway flare is used to replicate turn radius in areas with curb and gutter construction

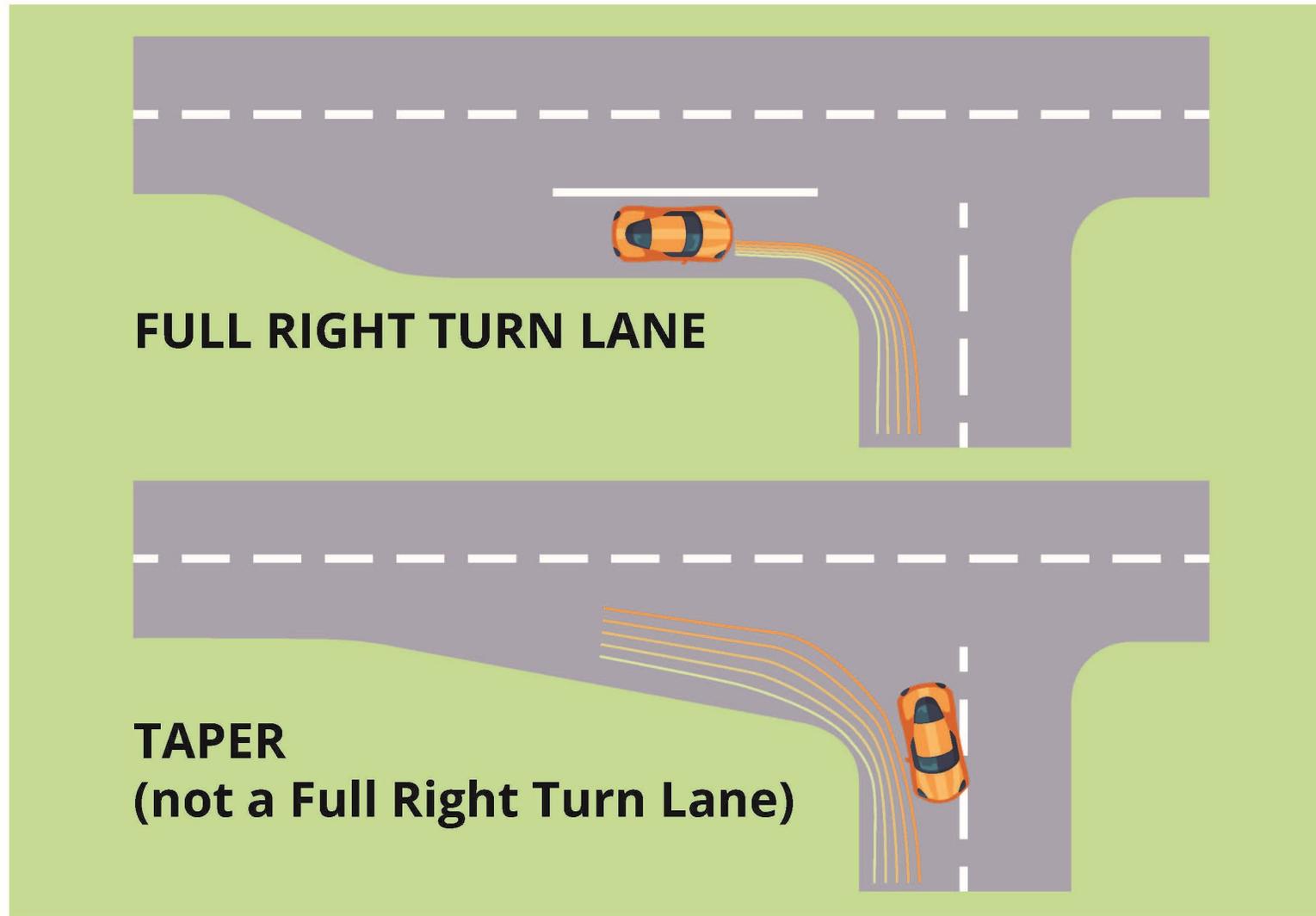
# Driveway Width



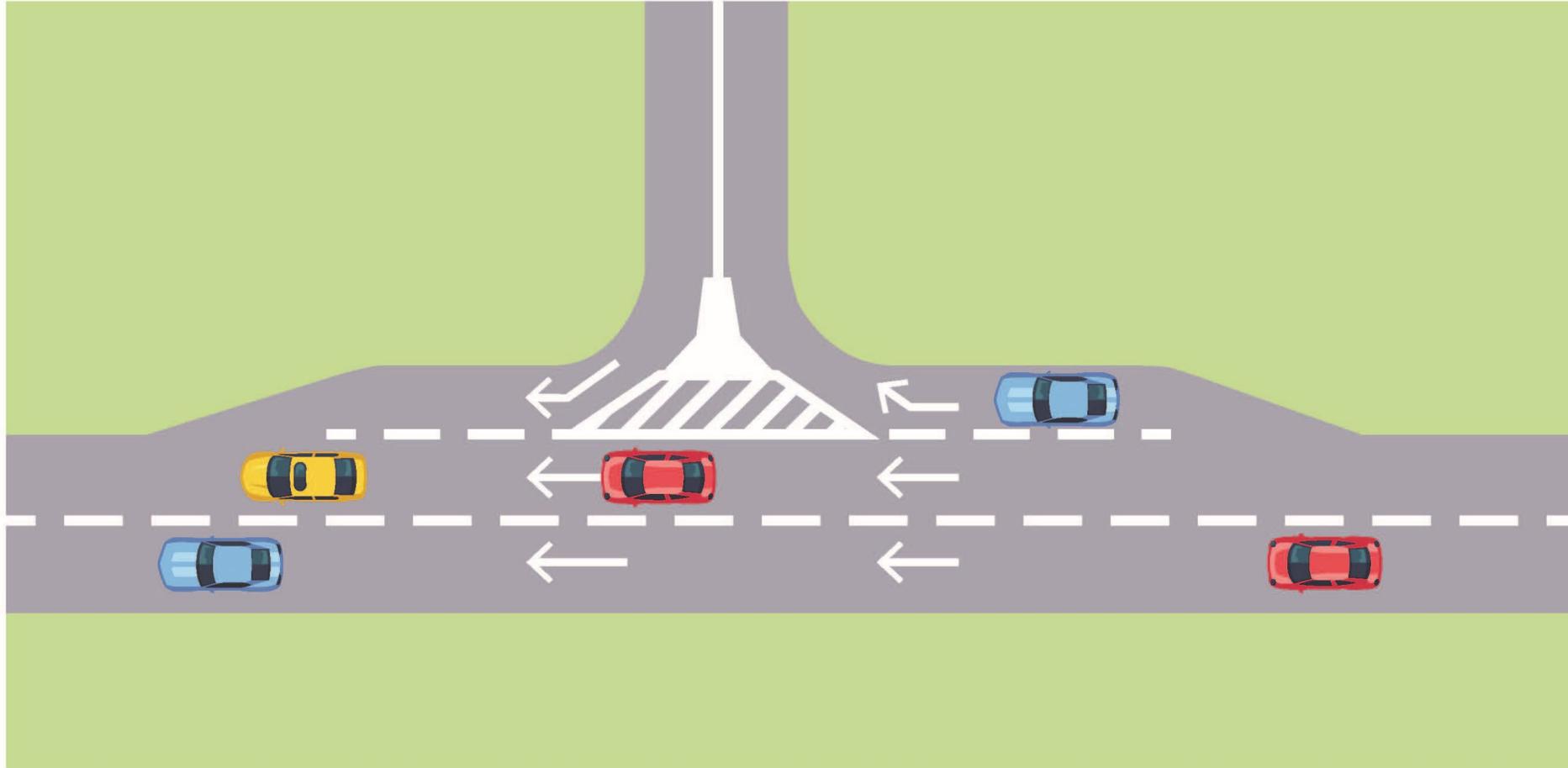
Adequate Driveway Width can also help to get turning vehicles off the road at greater speed and with less encroachment into the oncoming driveway traffic



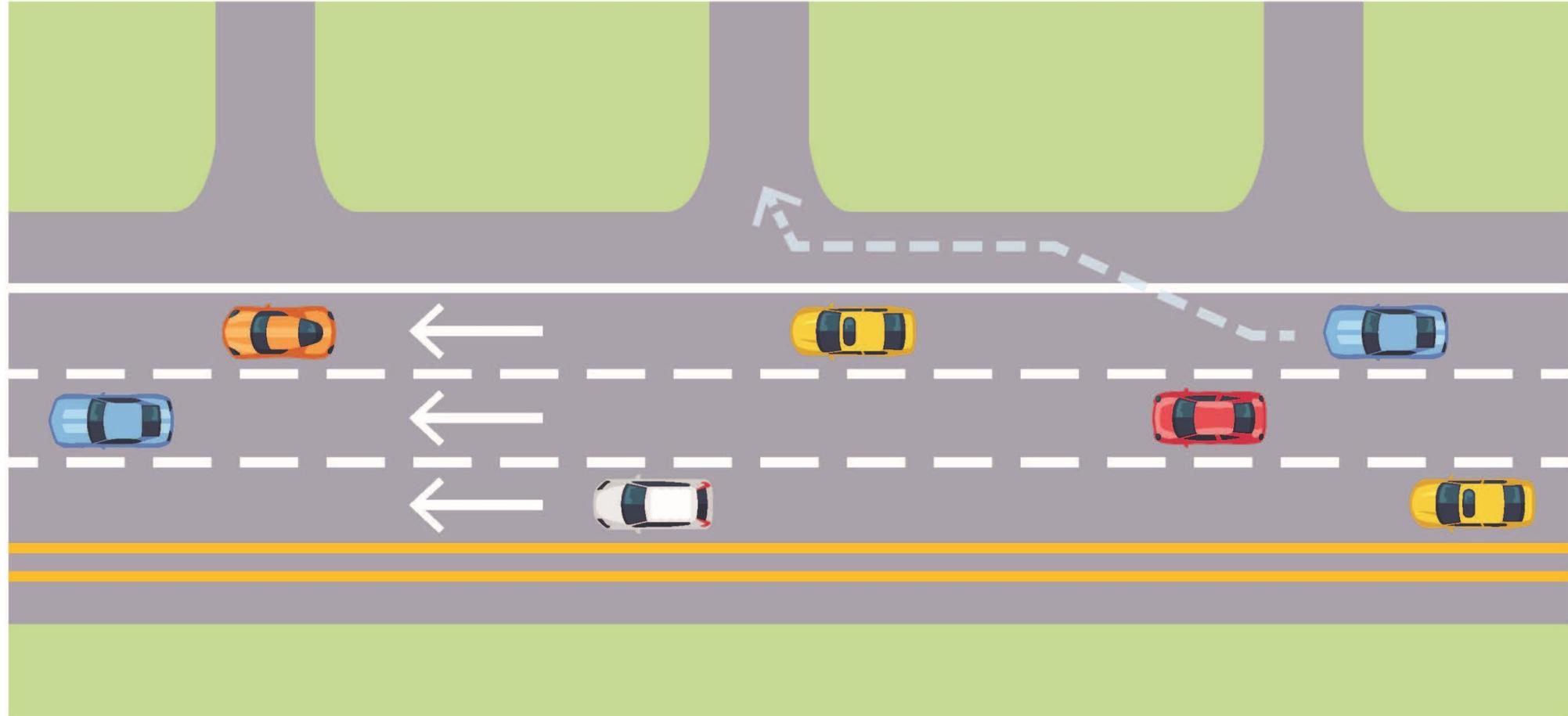
# Turn Lanes



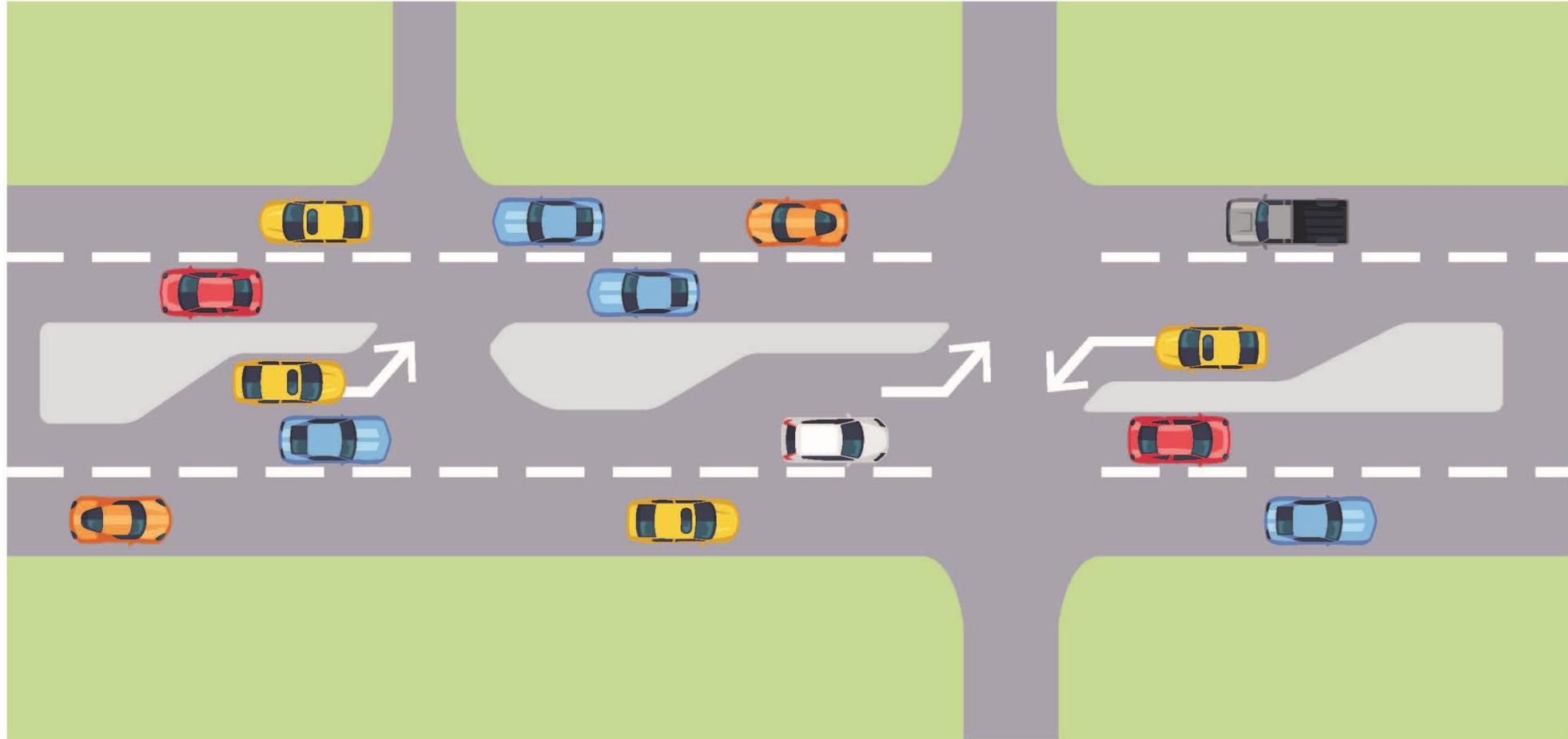
# Acceleration and Deceleration Lanes



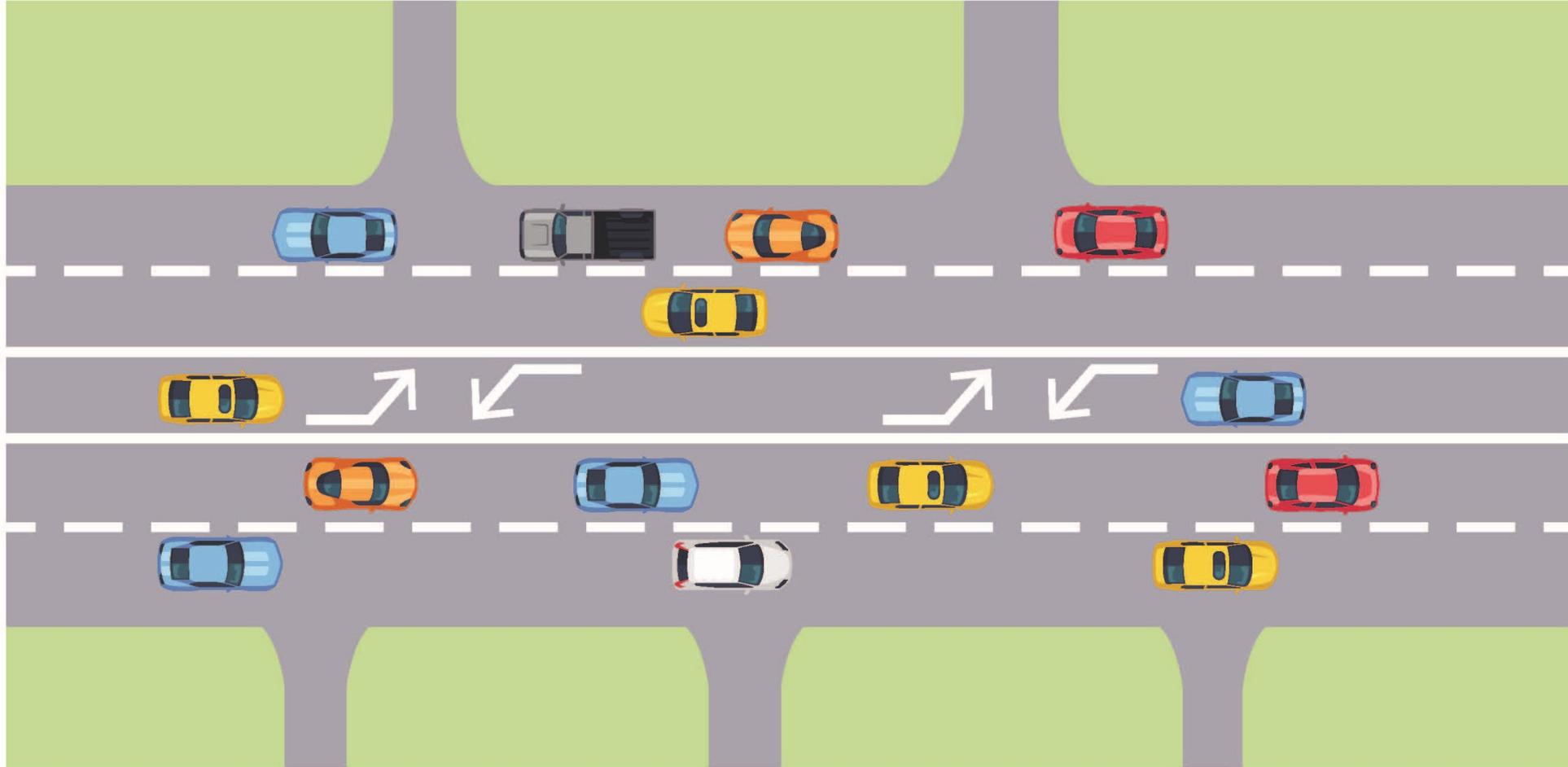
# Shoulders



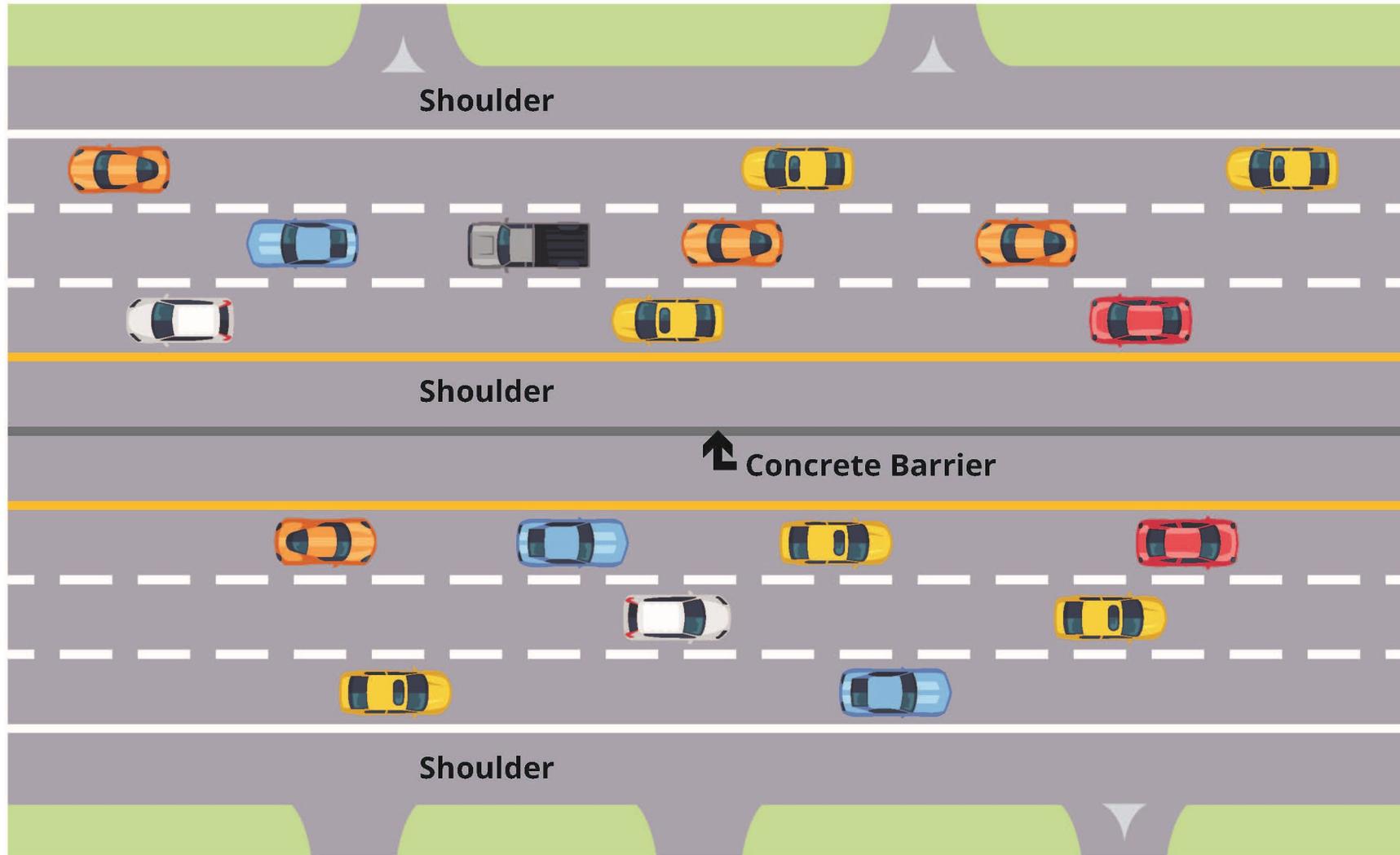
# Left-Turn Lanes



# Two-Way Left-Turn Lanes



# Concrete Median



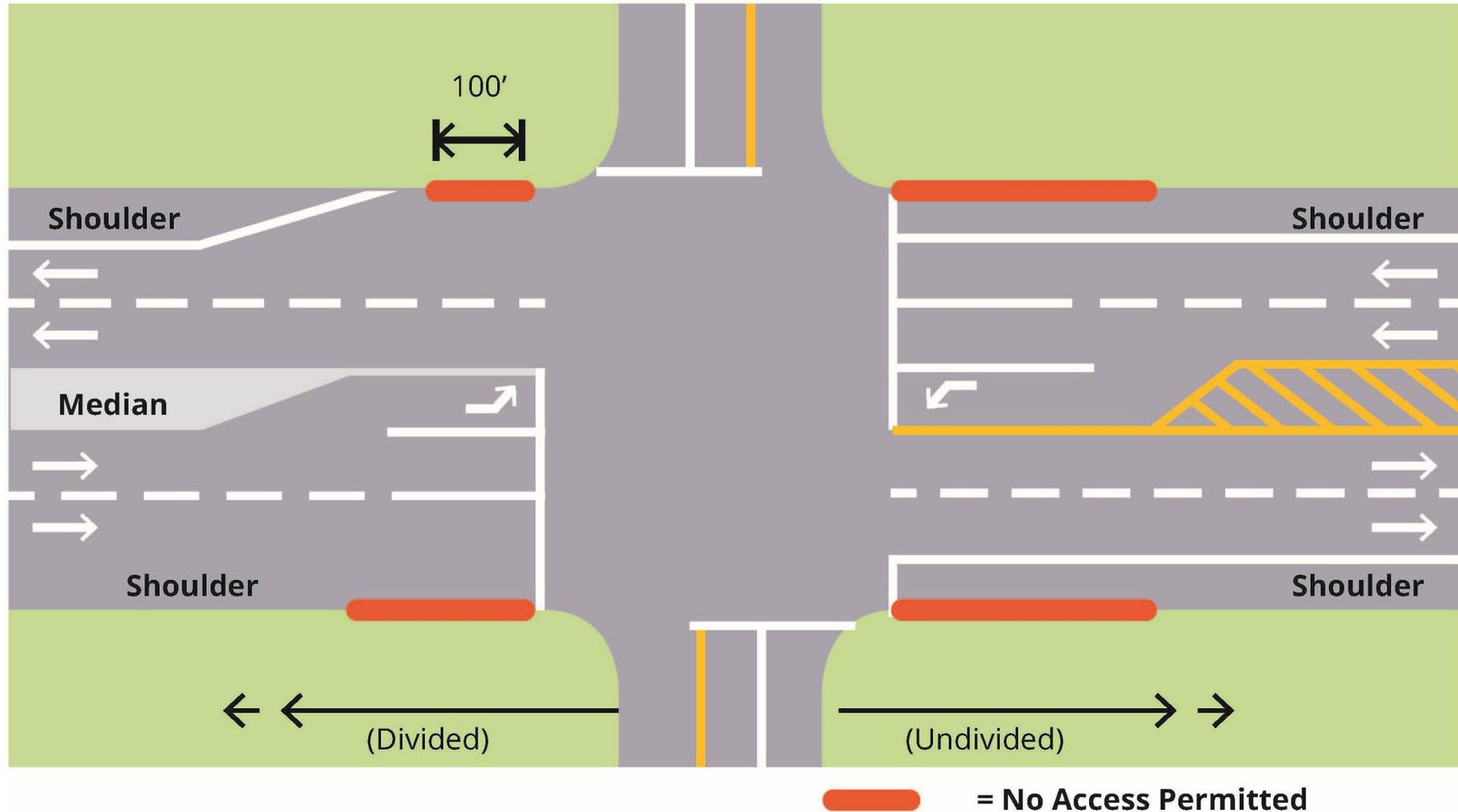
# How Can We Institute Access Management?



## Road Improvements

- ✓ Widenings
- ✓ Intersection Upgrades
- ✓ Installing new restrictive medians
- ✓ New roads

# Access Restrictions at Left-Turn Lanes





## ROW NOTE for Jughandle

“ However, future access shall be permitted consistent with the design of a type 'A' jughandle (illustrated in figure 6-U from the NJDOT design manual). ”

National Cooperative Highway Research Program

# NCHRP Report 420

Impacts of Access Management Techniques

Transportation Research Board  
National Research Council

# Table 4: Accident Rate Indexes

Total Access Points Per Mile (Both Directions)	Accident Rate Index
10	1.0
20	1.4
30	1.8
40	2.1
50	2.5
60	3.0
70	3.5



# Process Activities

John Jones

# Activities



## **1150 – Initiate Access Impacts**

*The initial review of access for every property within the project limits, conducted during scoping*



## **2080 – Prepare Access Cut-Outs**

*Using “input” criteria, Consultant or OAD staff develops the detailed access cutouts for property owner notification*



## **2090 – Review Access Cut-Outs**

*Review proposed access for each property for conformance with the Access Code*



## **2100 – Administer Access Revocations and Modification (also includes Adjustments & Changes)**

*OAD notifies owners and establishes the access for each property*

# 2100: Administer Access Revocations & Modifications

## Activities

- Prepare property owner notification letter, attach cutouts, and send by certified mail
- If property owner appeals, schedule informal meeting (Manager Civil Engineering, Office of Access Design Case Manager, DAG, Owner and Owner Representatives)
- Hold informal meeting and address owner concerns
- Prepare response to owner based on informal meeting
- Address any subsequent appeal



# Timeframes: Modification Appeal Process

	Step Days
Owner requests informal meeting with Manager Civil Engineers	30
Informal meeting scheduled	5
Informal meeting held	30
Manager Civil Engineering response to owner	30
Owners accepts or appeals decision to Director Design Services	40
Director schedules hearing	5
Director holds hearing	30
Director makes Final Agency Determination	30
	<b>Total: 200</b>

# Timeframes: Revocation Appeal Process

	Step Days
Owner requests informal meeting with Manager Civil Engineers	30
Informal meeting scheduled	5
Informal meeting held	30
Manager Civil Engineering response to owner	30
Owners accepts or appeals decision to OAL	40
Manager Civil Engineering requests OAL hearing	15
OAL holds hearing	120
OAL judge makes recommendation to Commissioner	75
Commissioner makes Final Agency Determination	45
	<b>Total: 390</b>



# Specifics of Revocations

Lorinda Lasus

## Revocation of Access

- N.J.A.C. 16:47-4.33 (d)

## Modification of Access

- N.J.A.C. 16:47-4.33 (c)

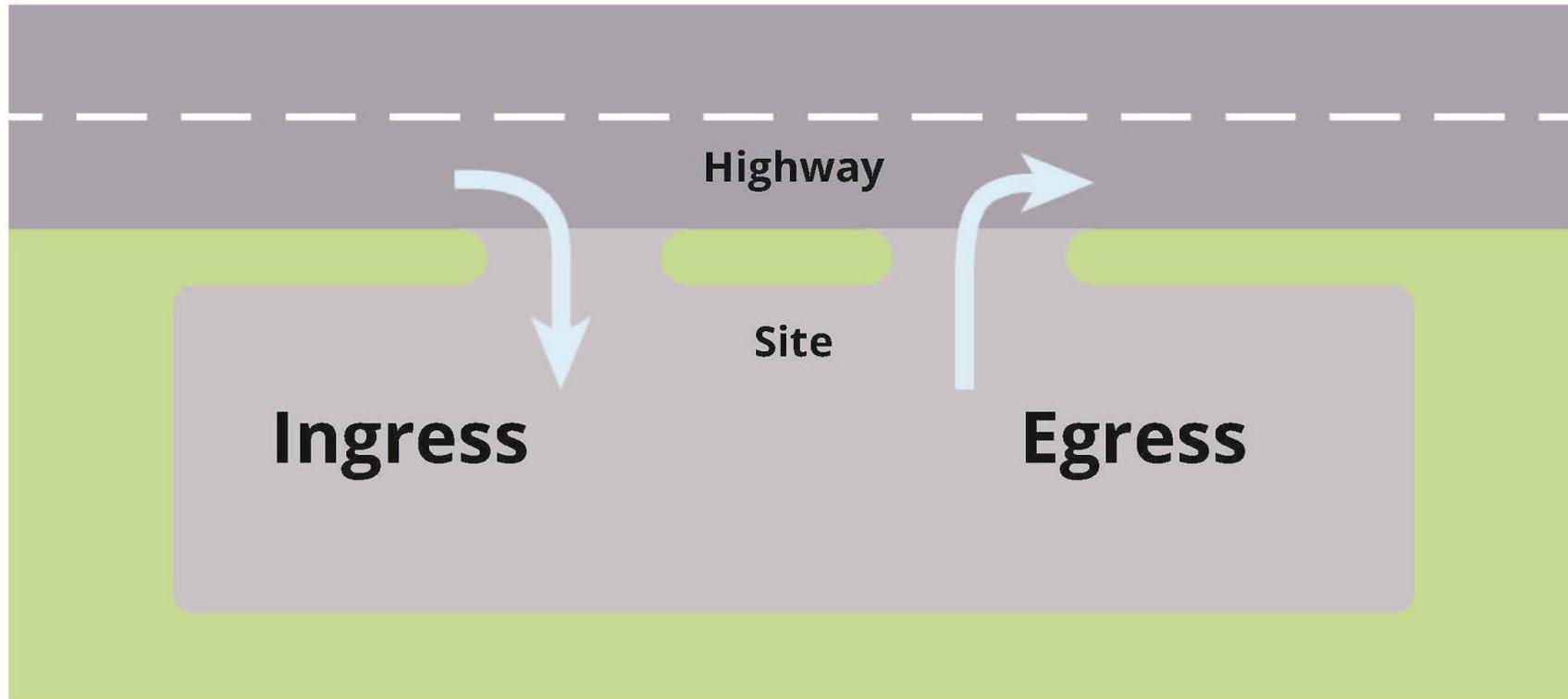
## Adjustment of Access

- N.J.A.C. 16:47-4.33 (b)

## Change of Access

- Not in Regulations

# Access = Ingress + Egress



# Revocation of Access

Providing alternative access to a street, highway, easement, service road, or common driveway other than the subject State highway

1

Eliminating  
Direct Ingress

2

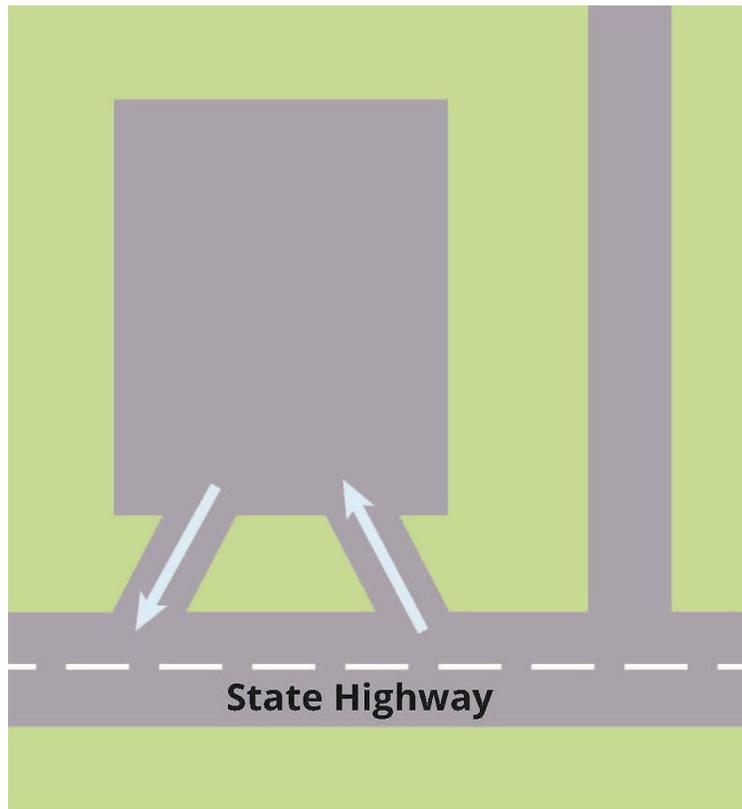
Eliminating  
Direct Egress

3

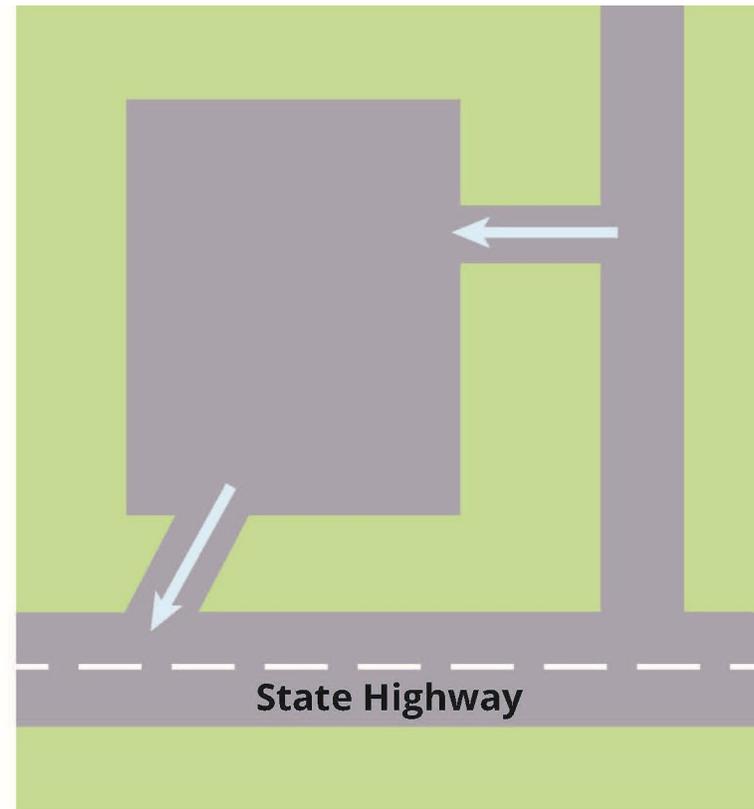
Eliminating Direct  
Ingress and Egress

# Revocation of Access

Example 1: Eliminating direct ingress



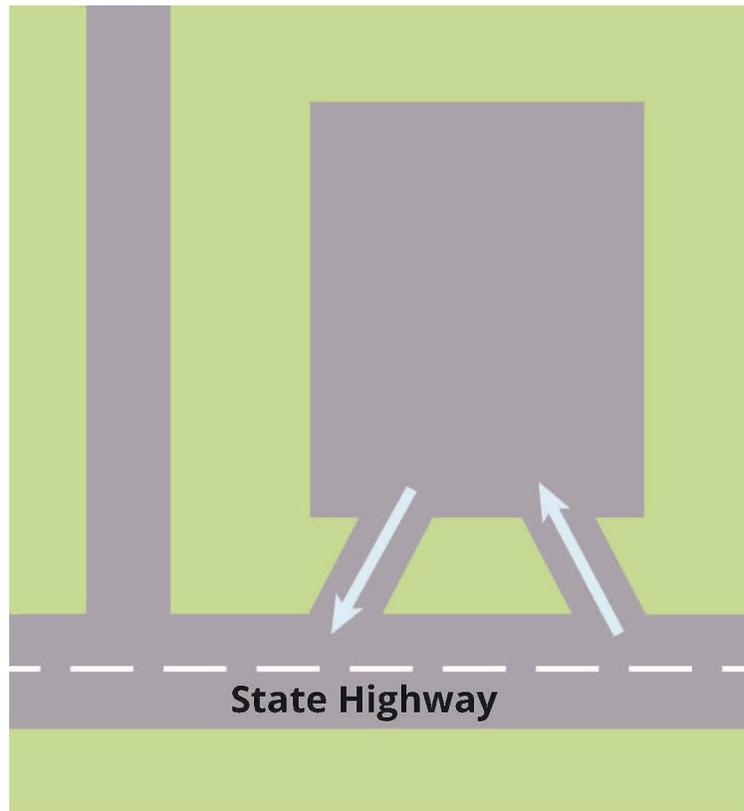
**Before**



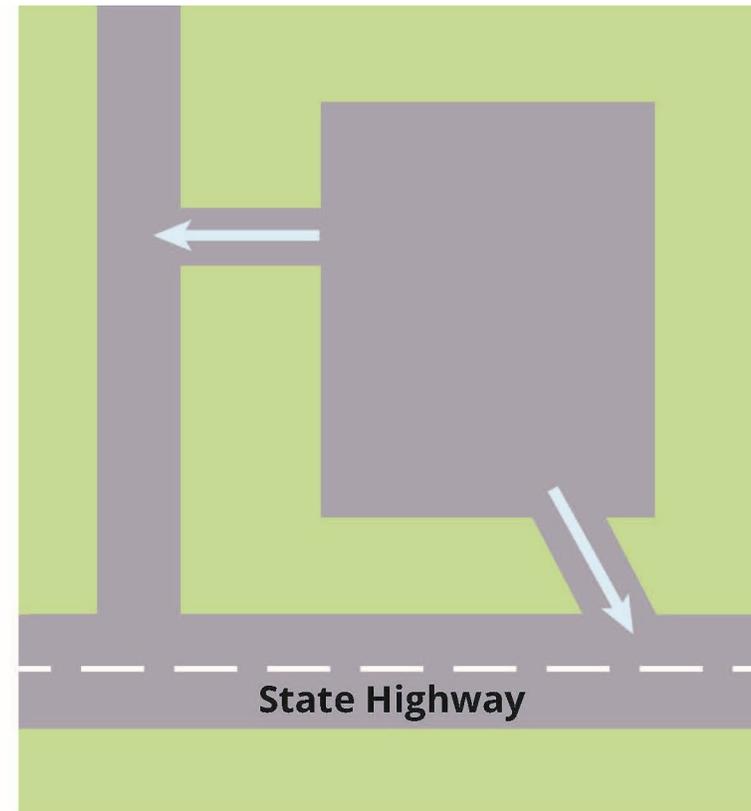
**After**

# Revocation of Access

Example 2: Eliminating direct egress



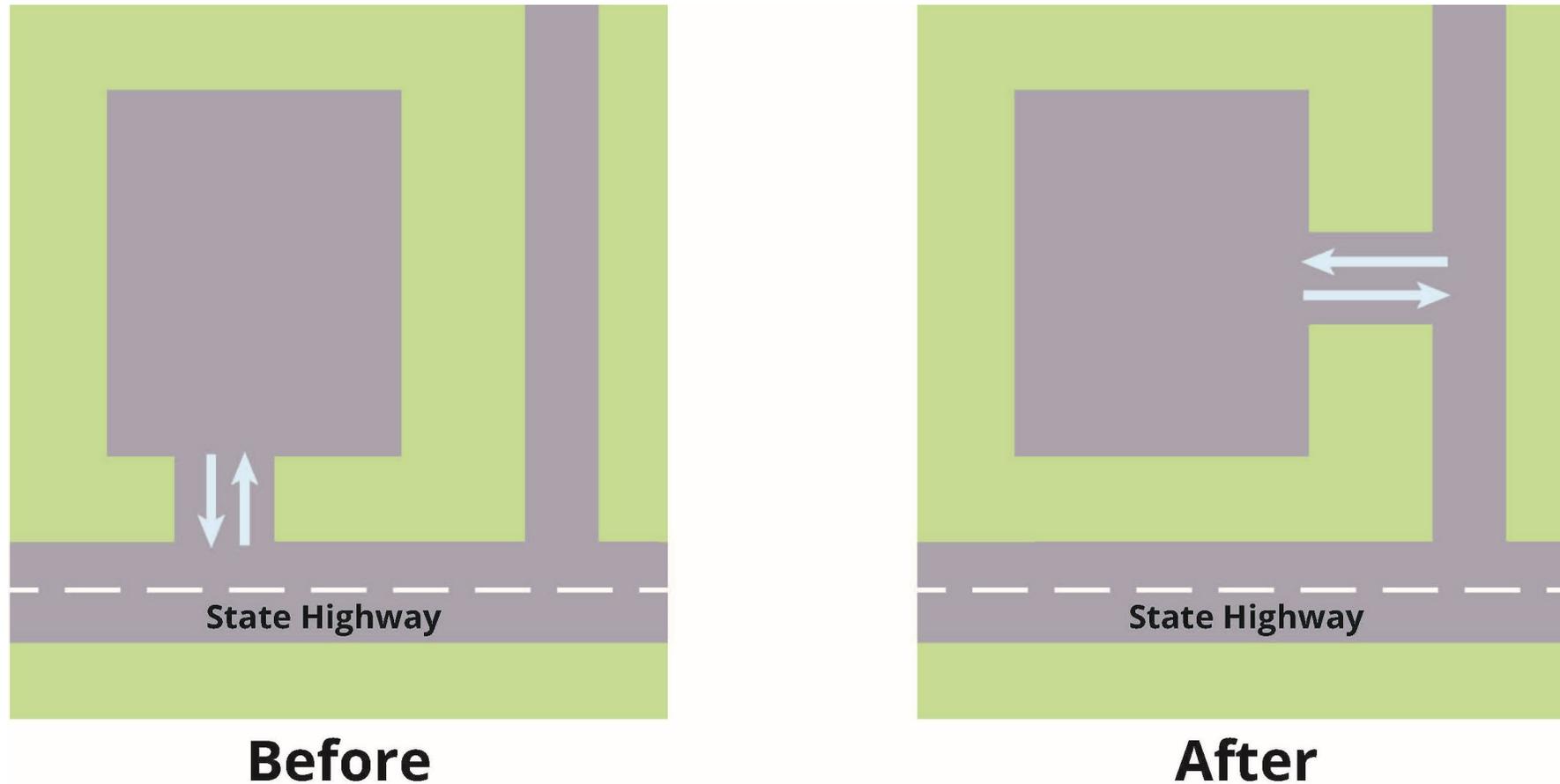
**Before**



**After**

# Revocation of Access

Example 3: Eliminating direct ingress and egress





# Revocation of Access

What is Reasonable Alternative Access?

# Revocation of Access

## Reasonable Alternative Access

\*street-highway-easement-service road-common driveway

### Commercial Property

Access onto any parallel or perpendicular roadway\* which is of sufficient design to support commercial traffic and is convenient, direct, and well marked

### Industrial Property

Access onto any improved roadway\* which is of sufficient design to support necessary truck/employee access as required by the industry

### Residential/ Agricultural Property

Access onto any improved public street or highway

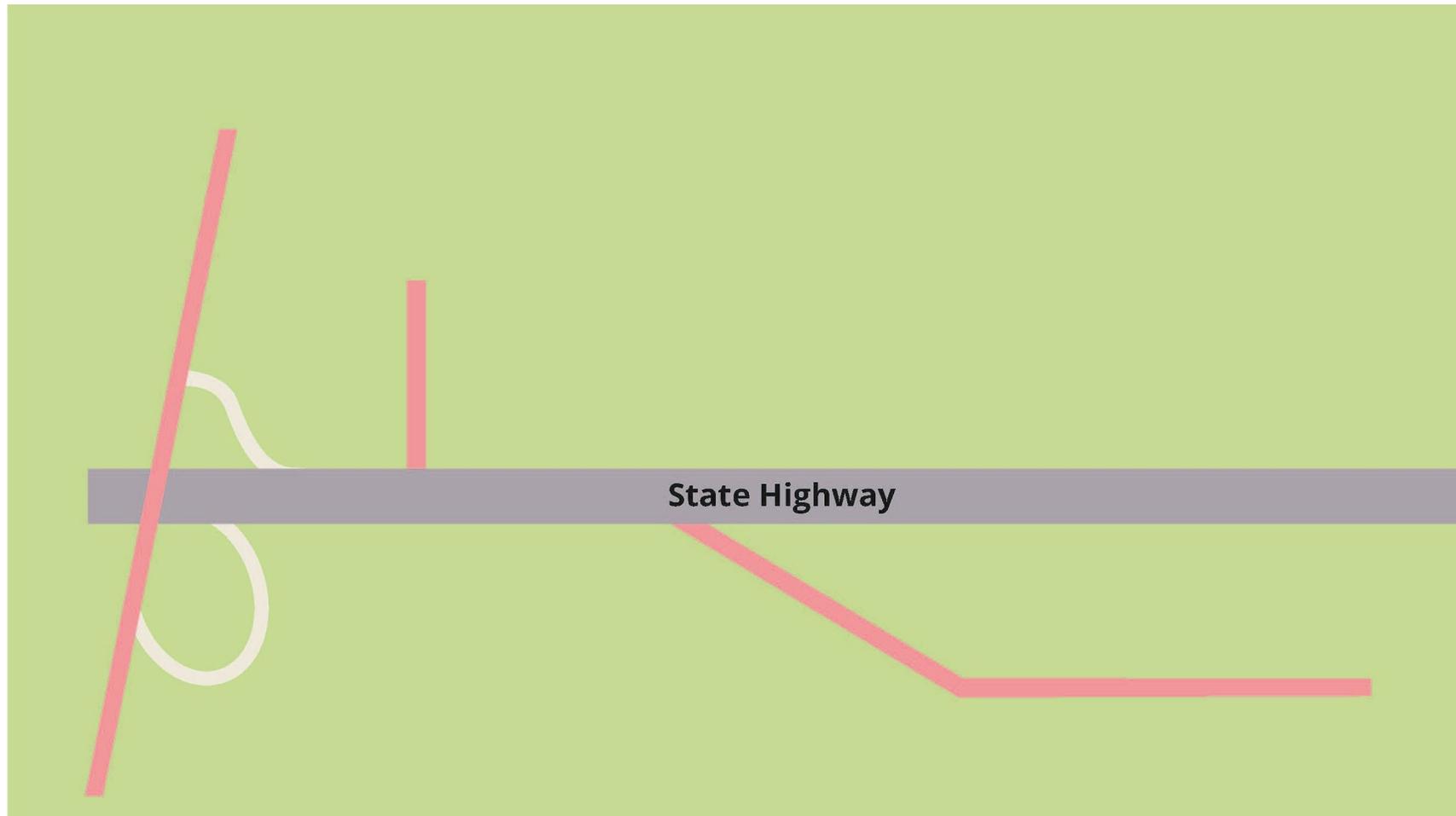
# Revocation of Access

## Reasonable Alternative Access Five Tests

- 1 Alternative access is provided via a parallel or perpendicular street, highway, easement, service road, or common driveway
- 2 Of sufficient design to support commercial traffic to and from the business or use
- 3 Convenient
- 4 Direct
- 5 Well-marked means of reaching the site and returning to the State highway

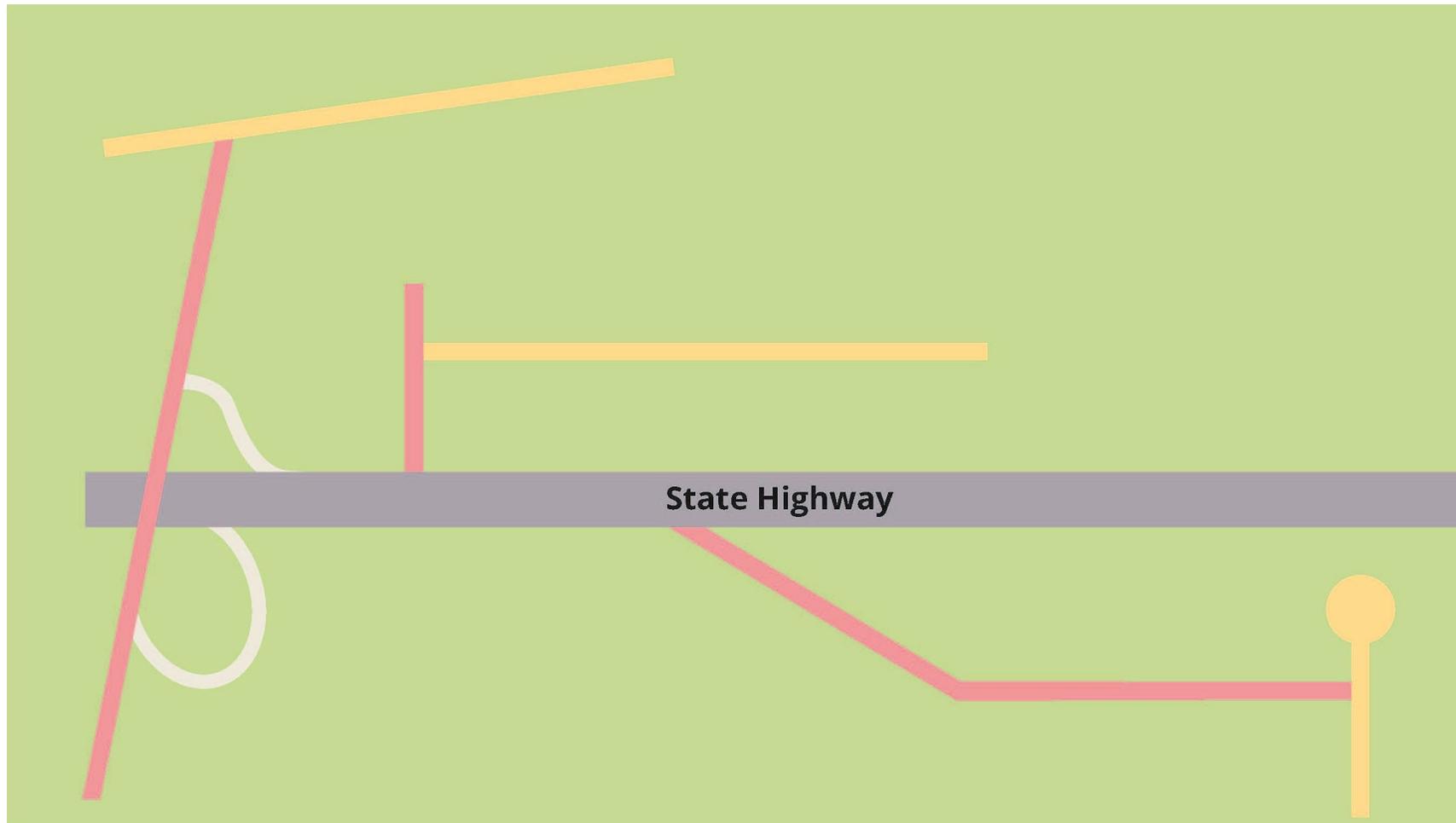
# Revocation of Commercial Access Test 1A Perpendicular Streets

(Any street that intersects a highway)



# Revocation of Commercial Access Test 1B Parallel Streets

(Any street that intersects a perpendicular street)



# Activities

## Test 2 Sufficiency of Design

- *The path can carry the size and type of traffic for the commercial use*
- *Capacity to handle the anticipated volume of traffic, as of the date of the notice to the owner*
- *Pavement strength to handle the weight of the anticipated traffic*
- *Driveways must handle anticipated volume, size, and type of vehicles*

## Test 3 Convenient

*Do the alternative ingress and egress:*

- *Fit with the site?*
- *Line up with traffic circulation aisles?*
- *Serve loading areas, drive-up windows, etc.?*

## Test 4 – Direct

- *Relatively straight*
- *There are limited choices along the path*

## Test 5 – Well-Marked

- *Signs are provided to direct motorists from the existing ingress to the alternative ingress and from the existing egress back to the highway*
- *A sign will be provided at each place where a motorist will have to make a decisions*
- *Signs*
  - *8 square feet*
  - *White message on blue or green background*
  - *Maintained for at least one year*



# Alternative Access Signing

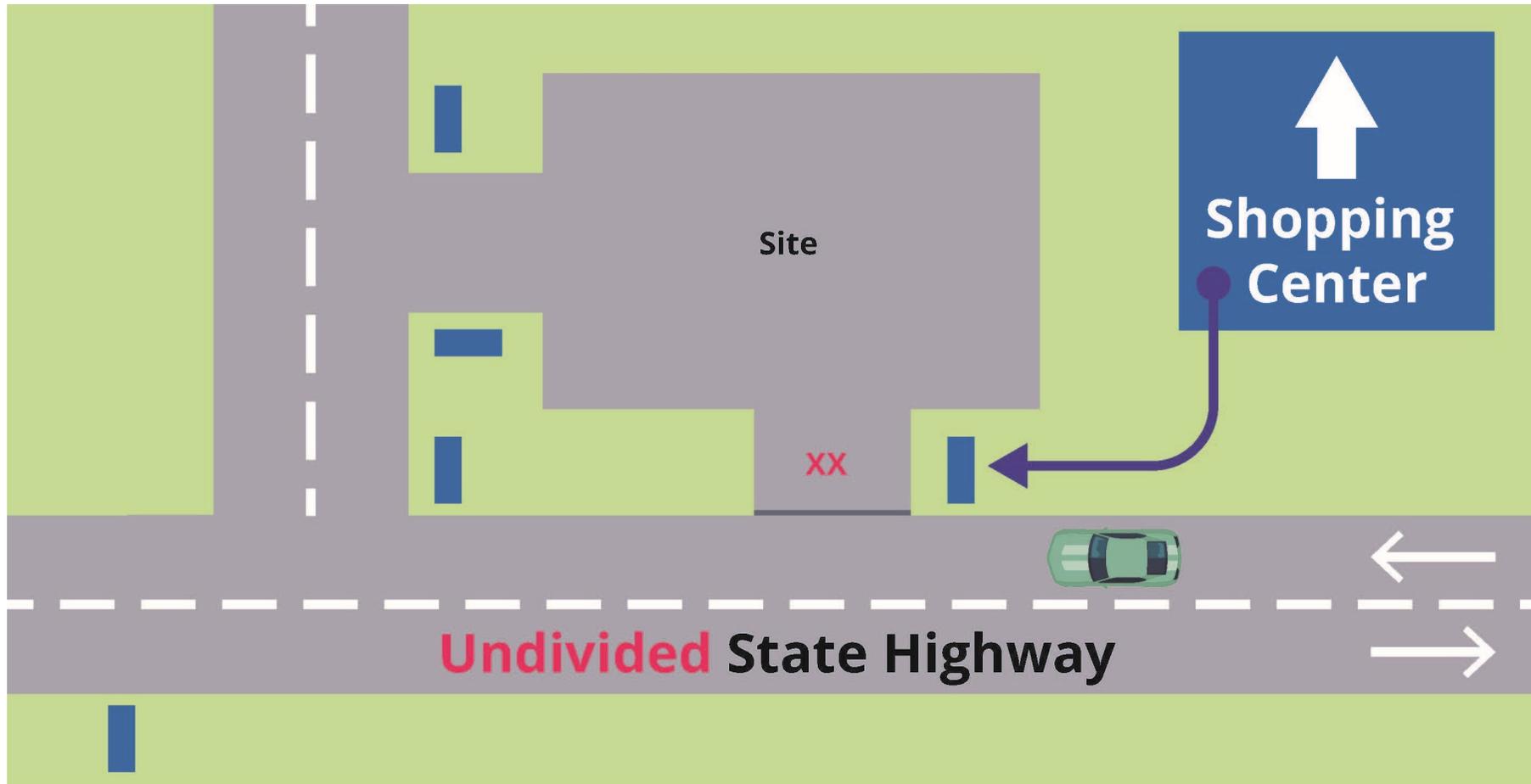
Arthur Eisdorfer

- Site is upstream or downstream of Alternative Access
- Highway is undivided or divided
- Site is upstream of Alternative Access
- Highway is undivided



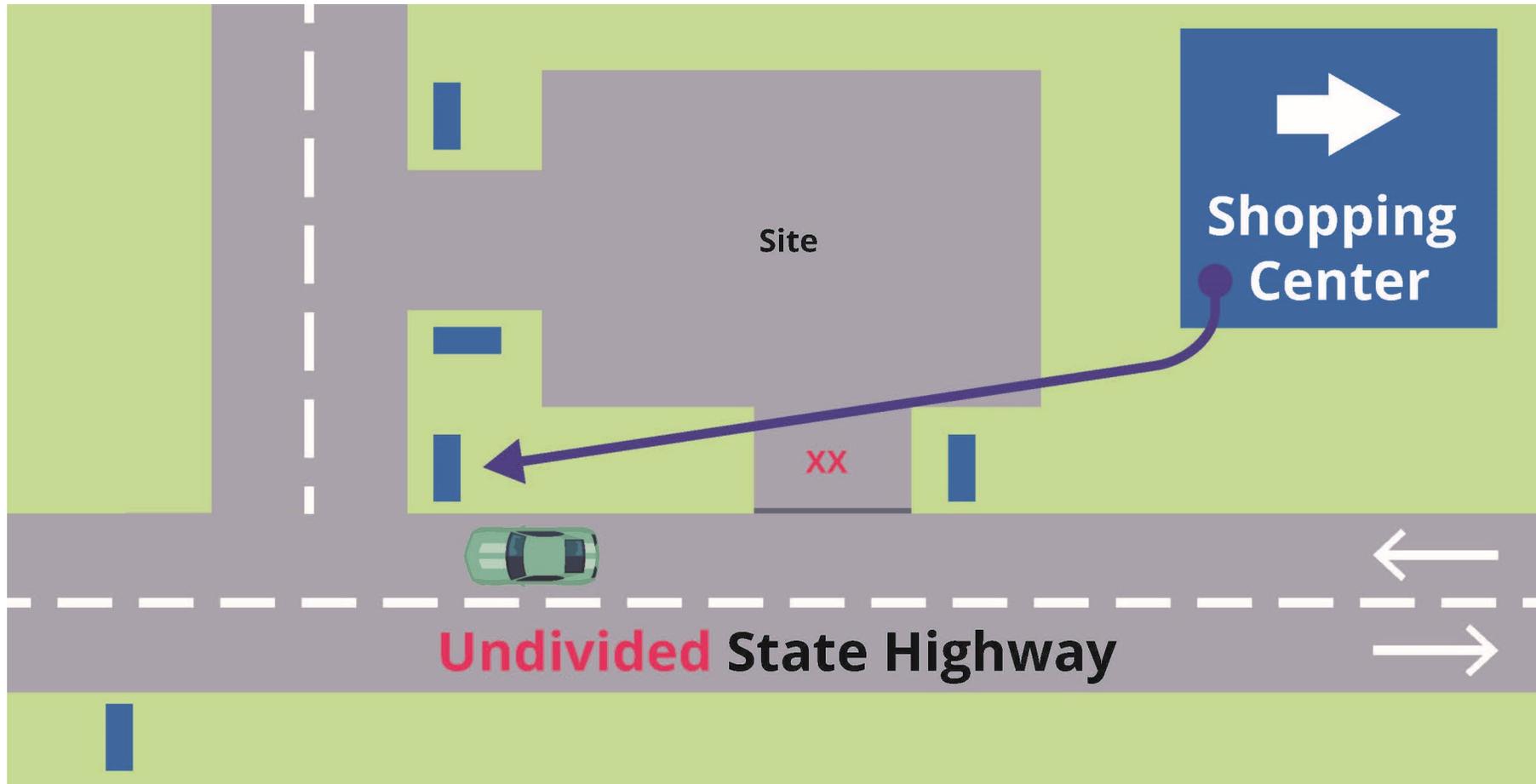
# Revocation of Access Test 5

Recommended Sign Placement (Site is **upstream** of Alternative Access)



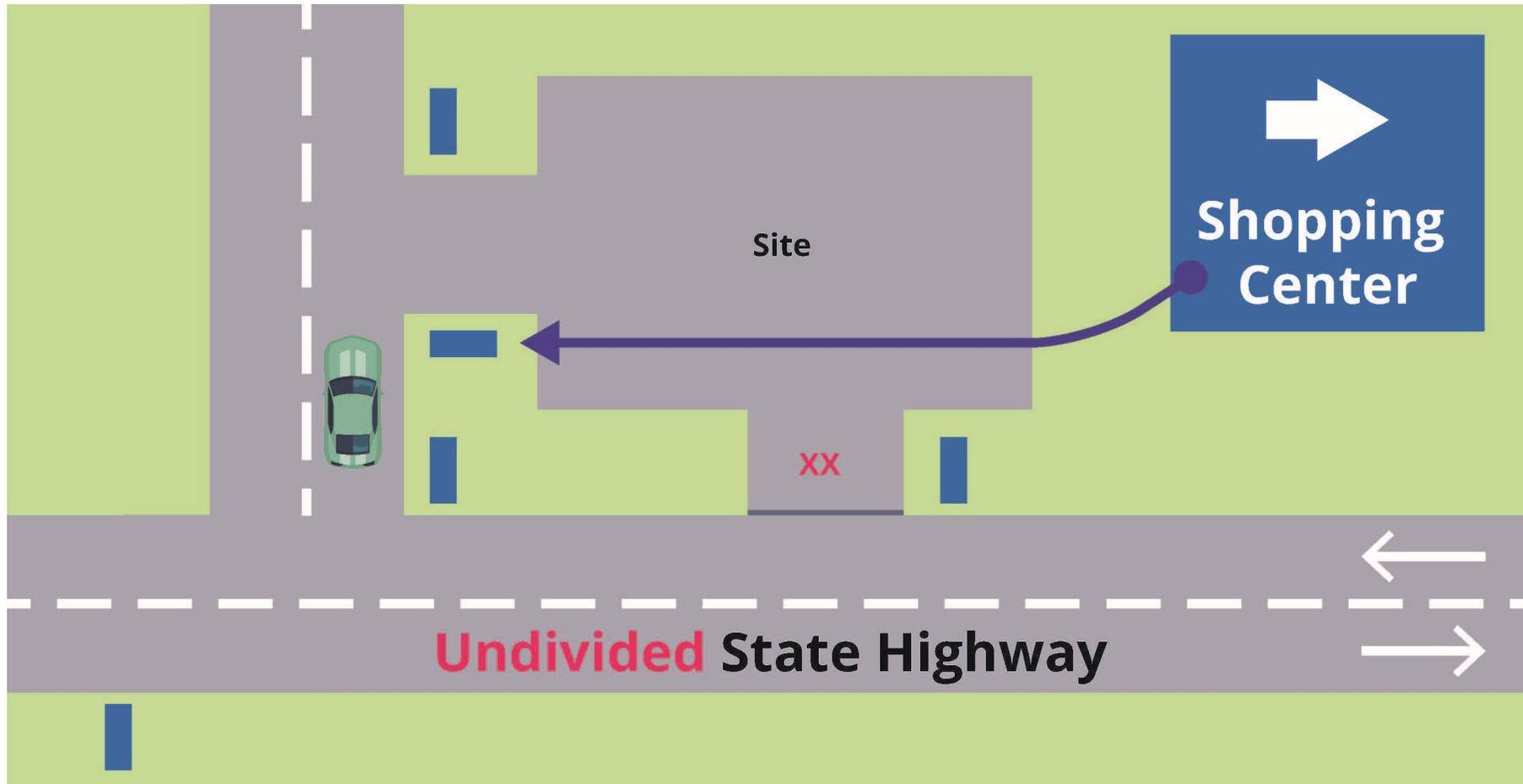
# Revocation of Access Test 5

Recommended Sign Placement (Site is **upstream** of Alternative Access)



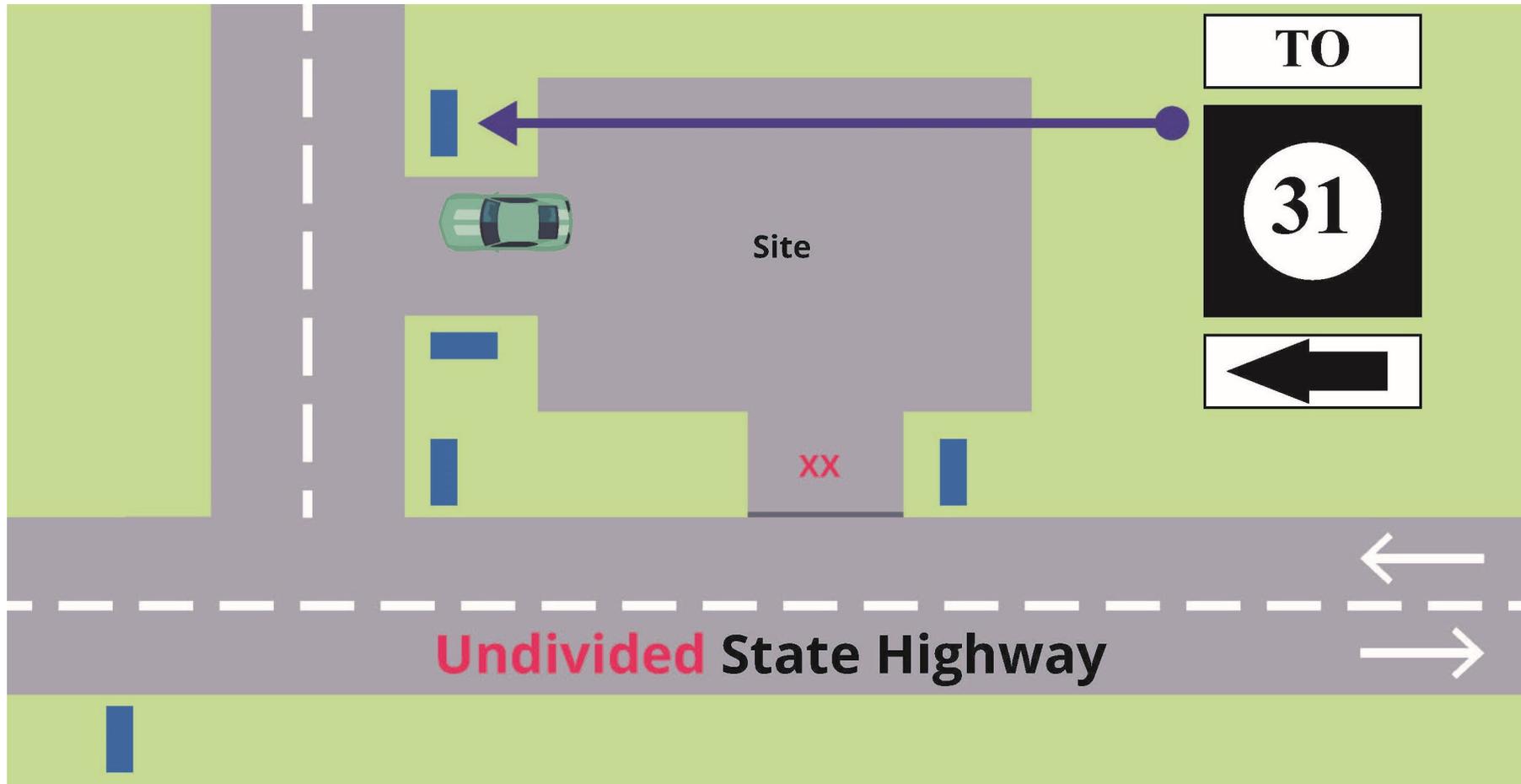
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Recommended Sign Placement (Site is **upstream** of Alternative Access)



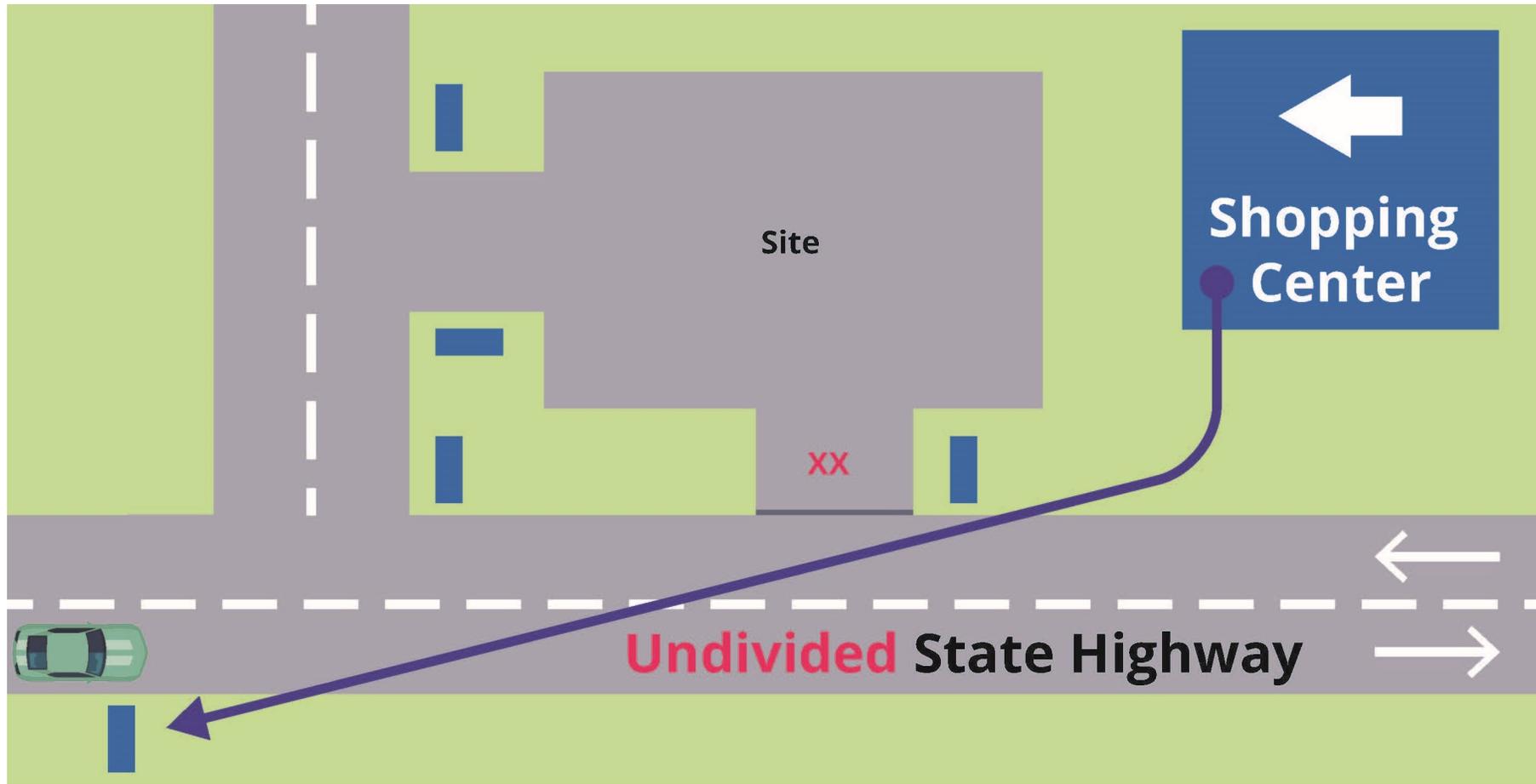
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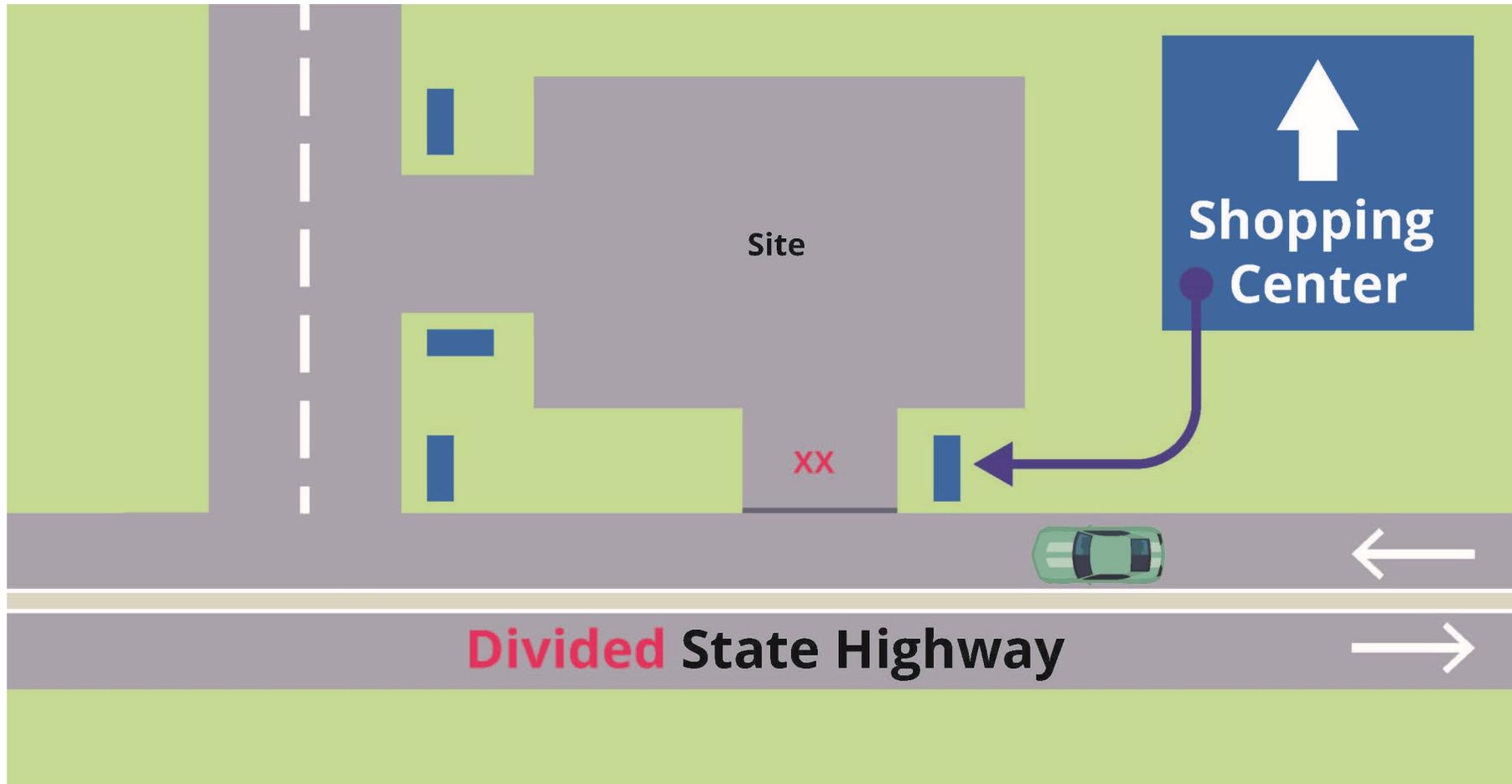
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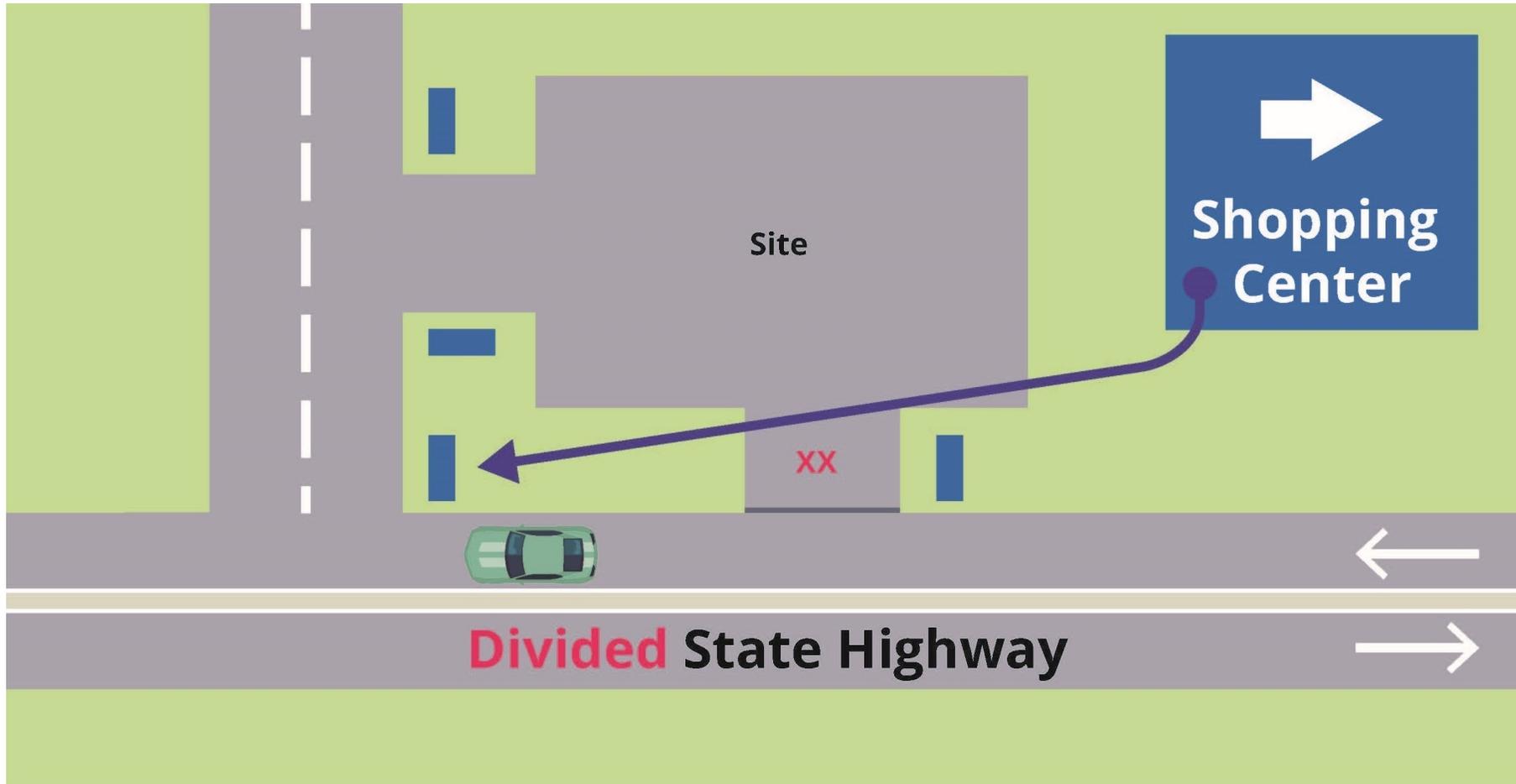
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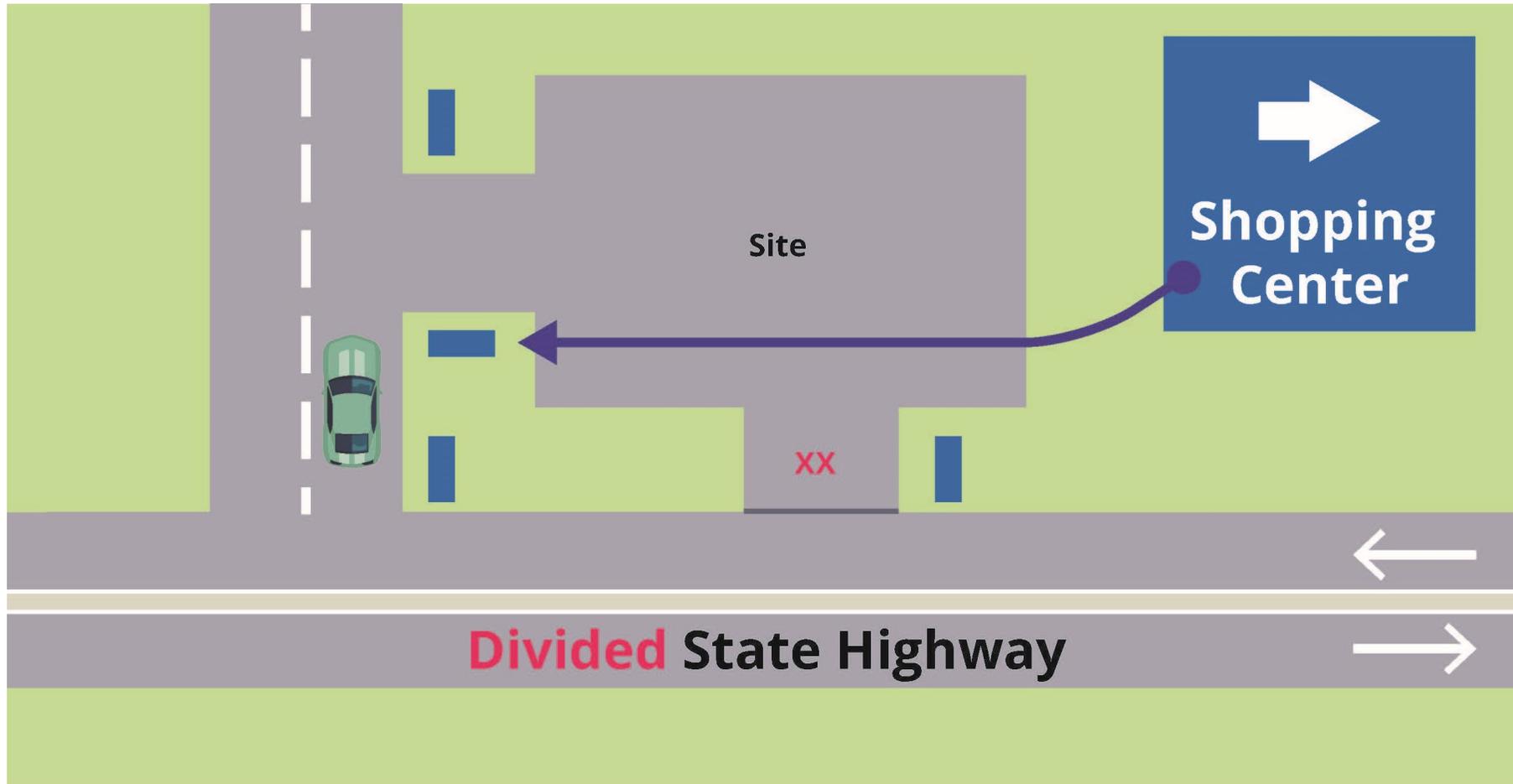
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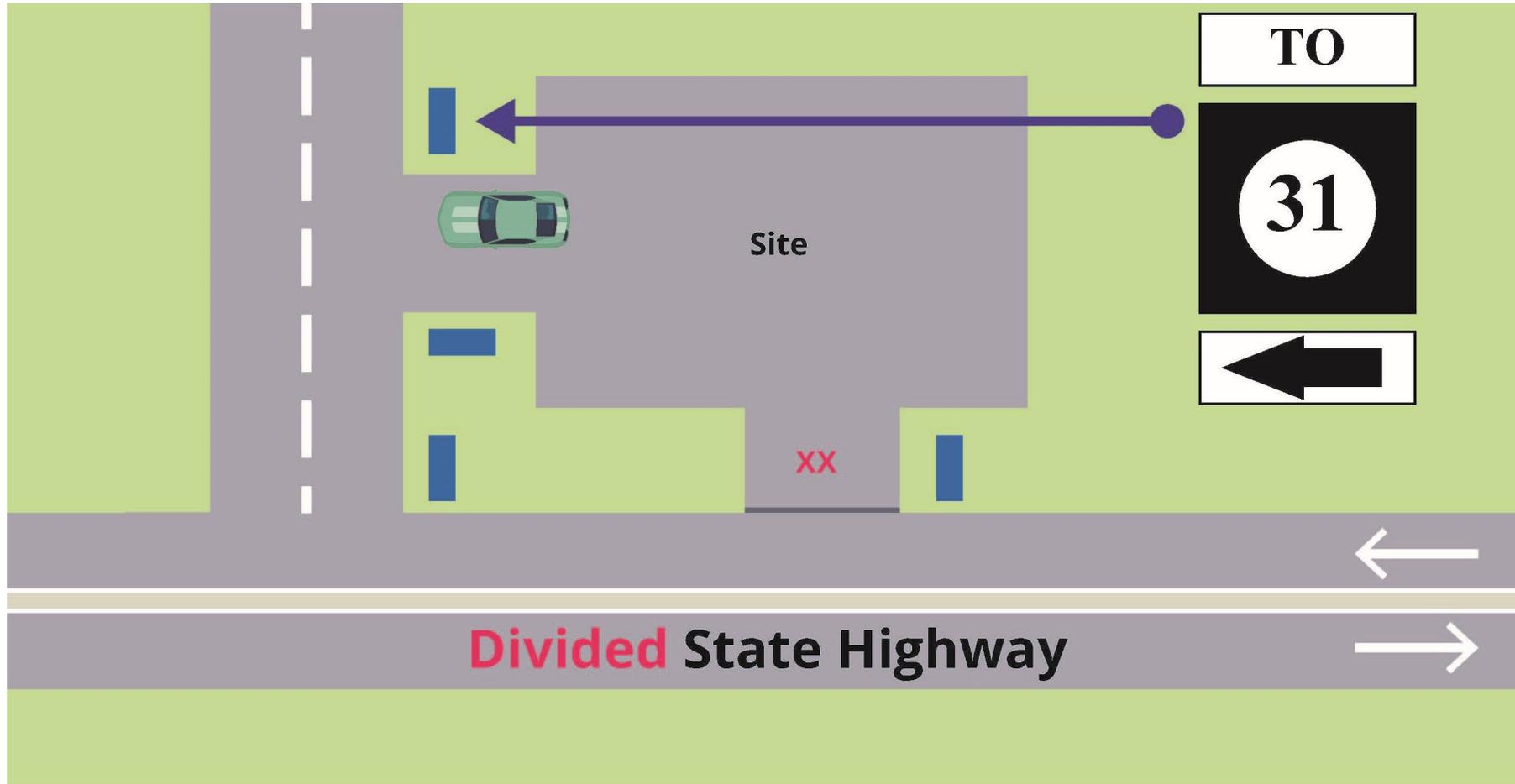
# Revocation of Access Test 5

Recommended Sign Placement (Site is **upstream** of Alternative Access)



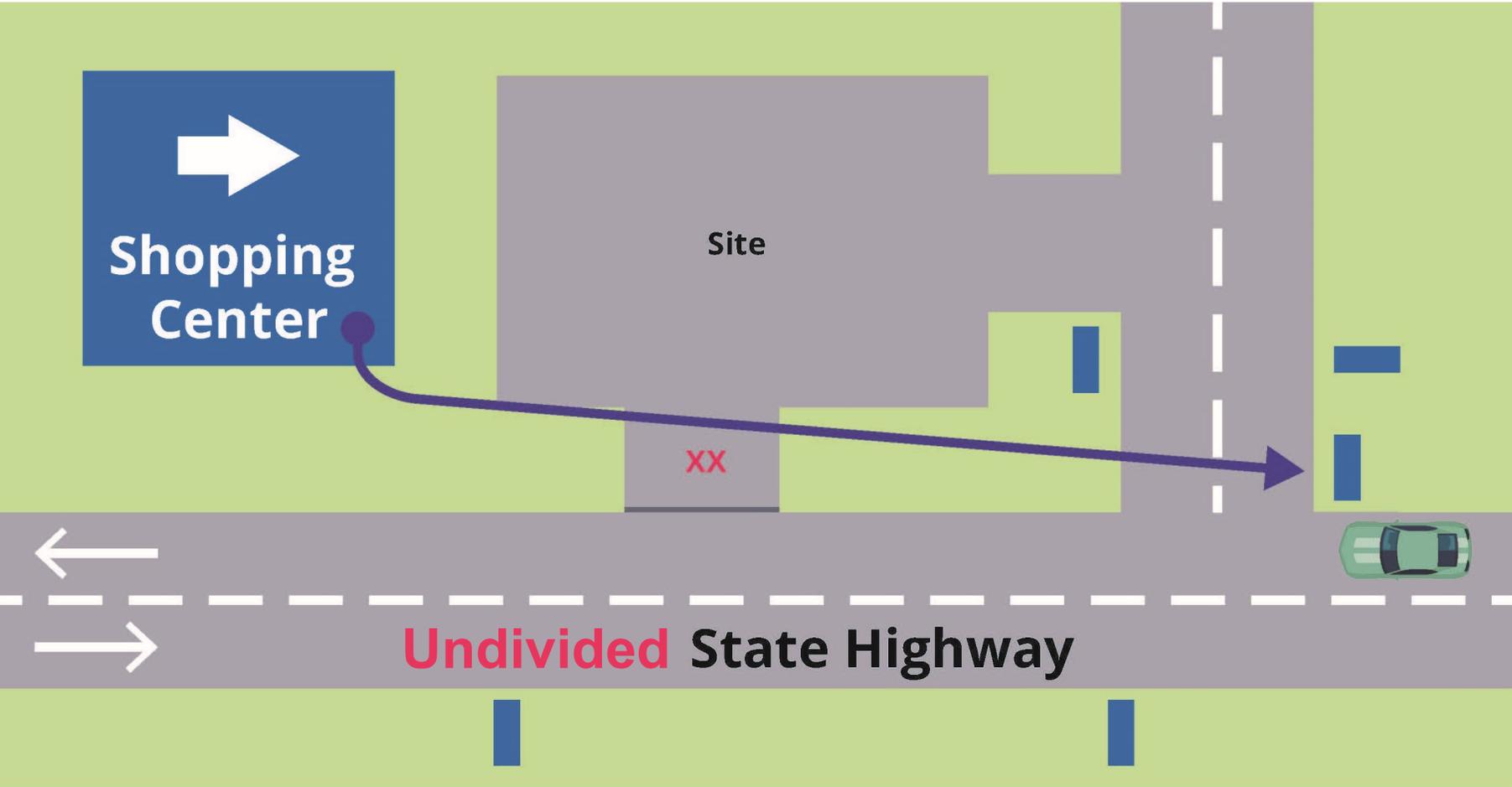
# Revocation of Access Test 5

Recommended Sign Placement (Site is **upstream** of Alternative Access)



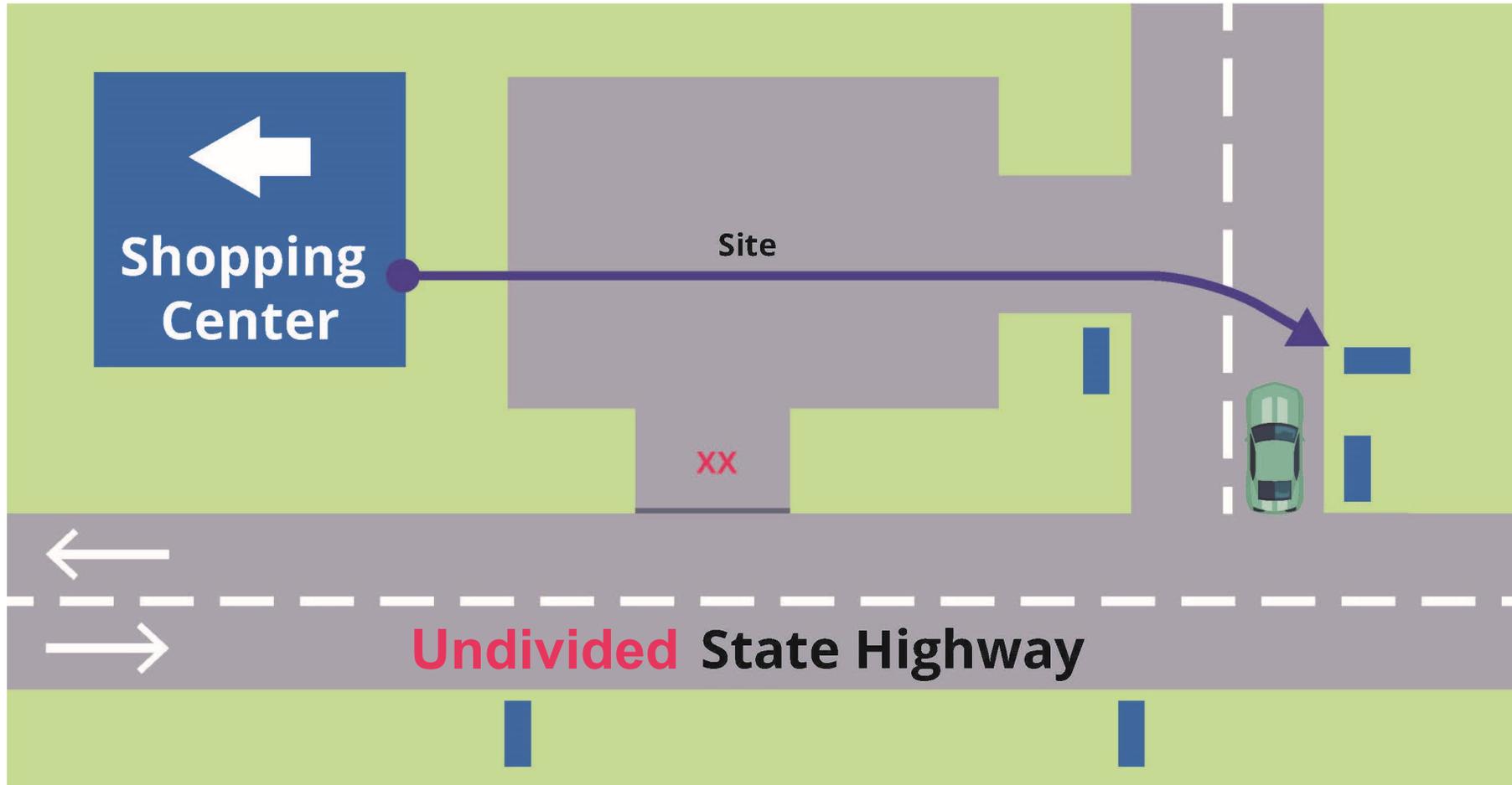
# Revocation of Access Test 5

Recommended Sign Placement (Site is **downstream** of Alternative Access)



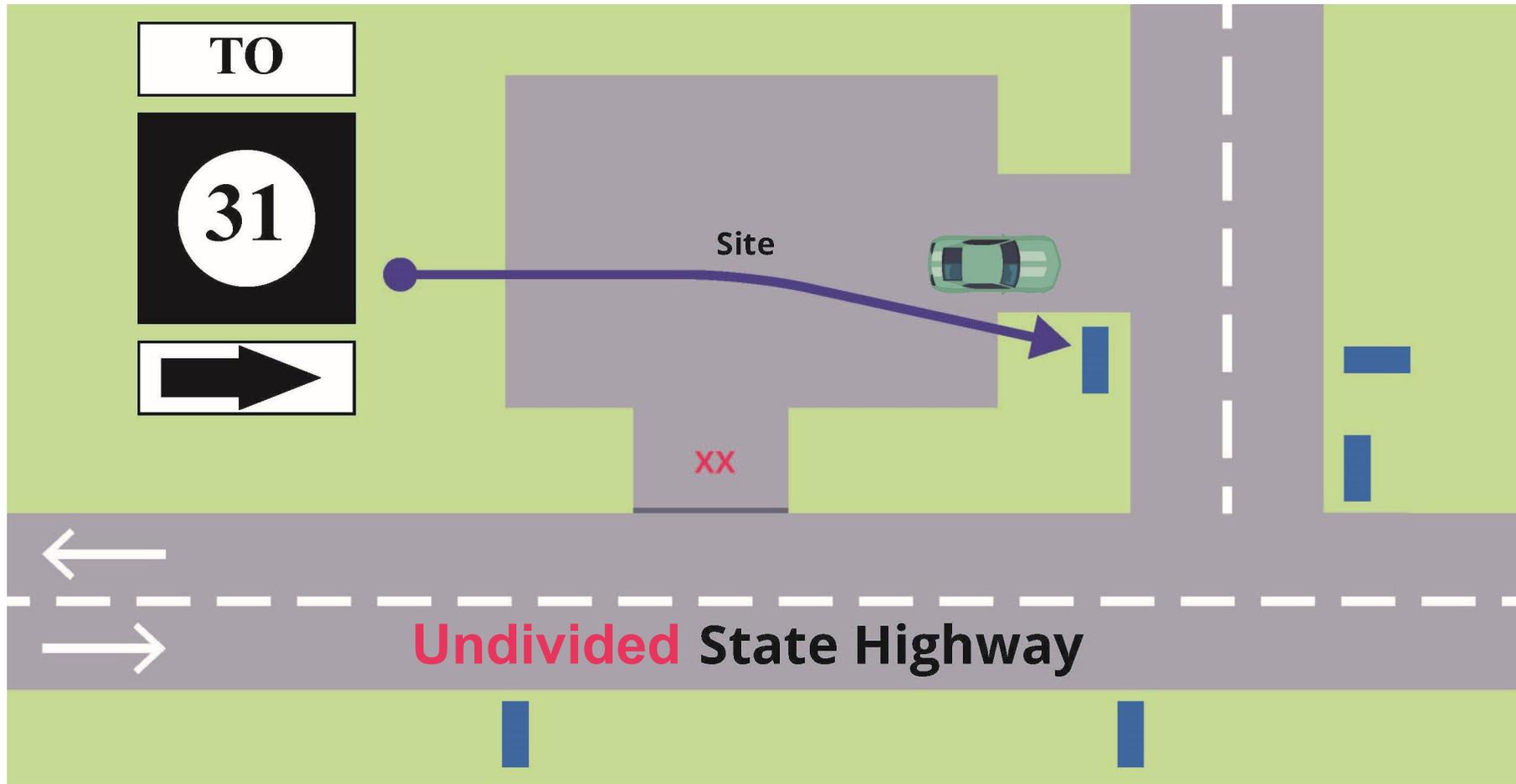
# Revocation of Access Test 5

Recommended Sign Placement (Site is **downstream** of Alternative Access)



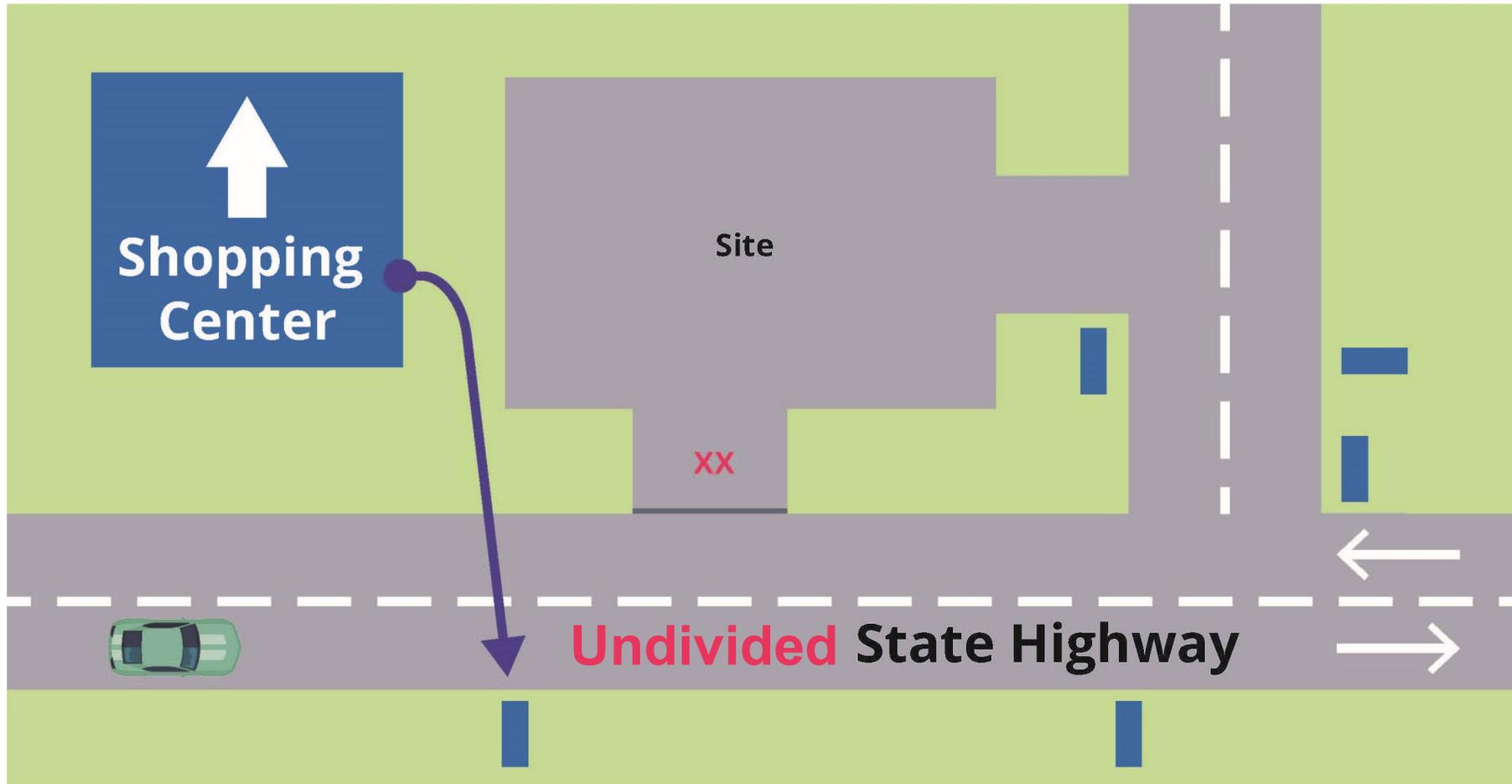
# Revocation of Access Test 5

Recommended Sign Placement (Site is **downstream** of Alternative Access)



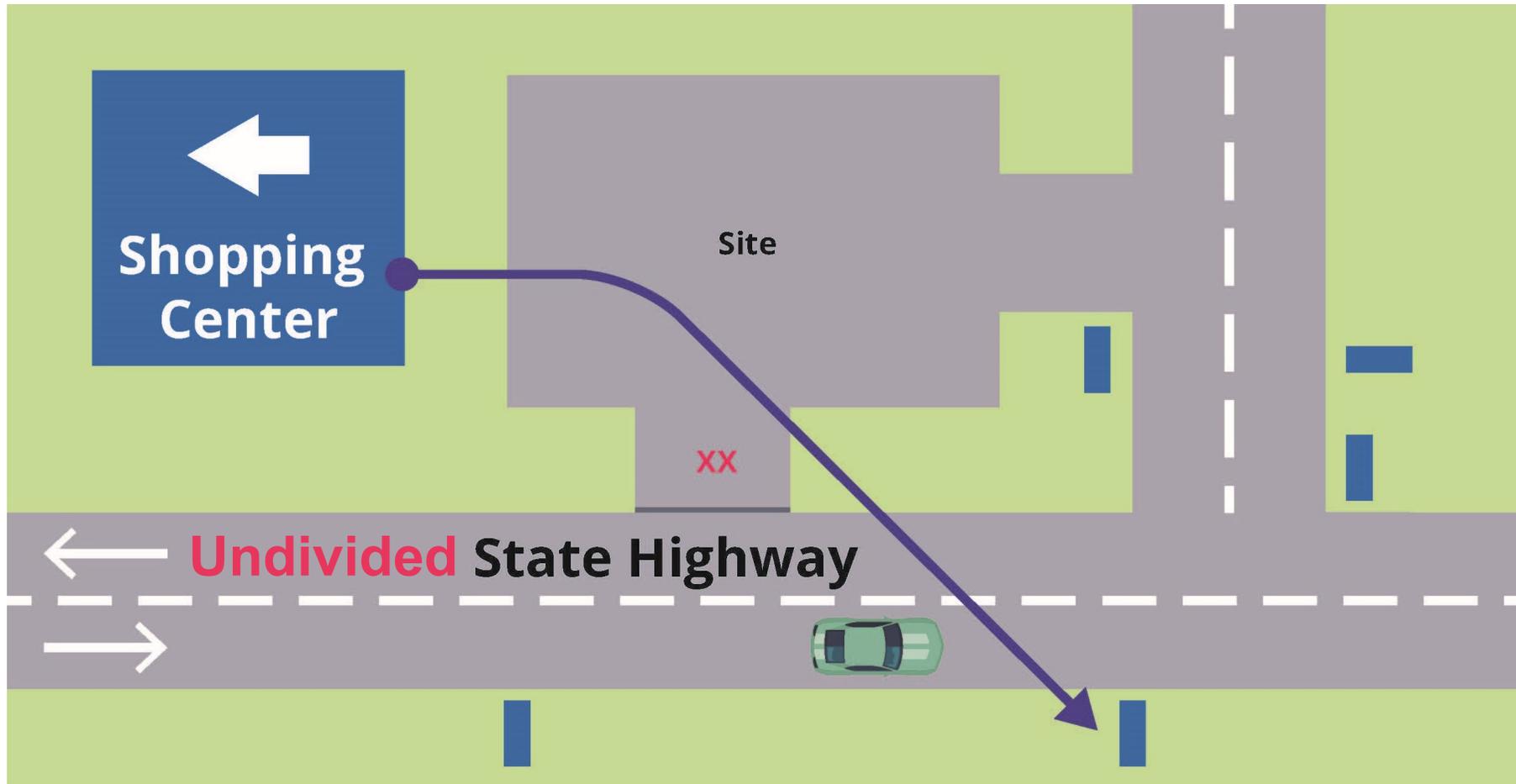
# Revocation of Access Test 5

Recommended Sign Placement (Site is **downstream** of Alternative Access)



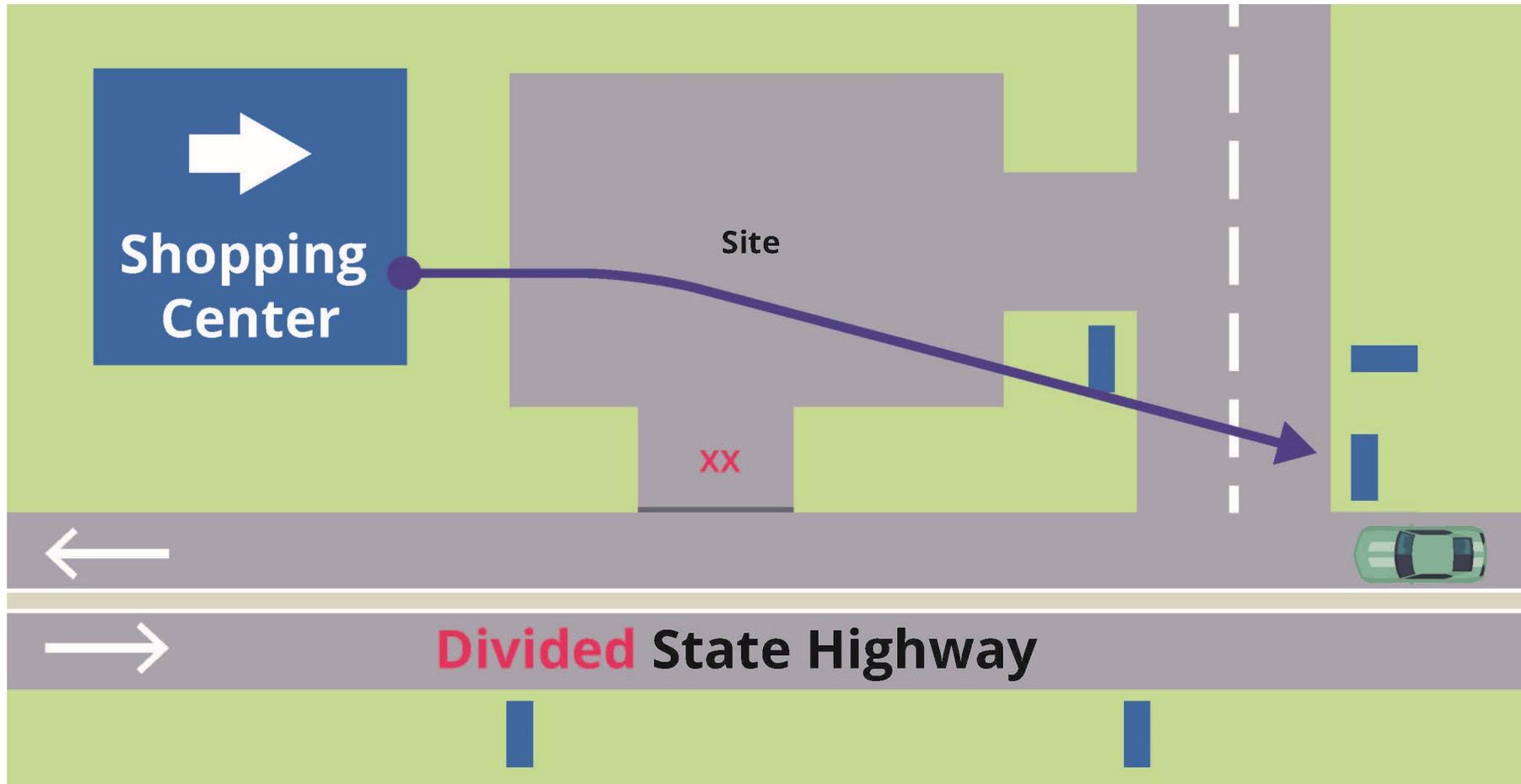
# Revocation of Access Test 5

Recommended Sign Placement (Site is **downstream** of Alternative Access)



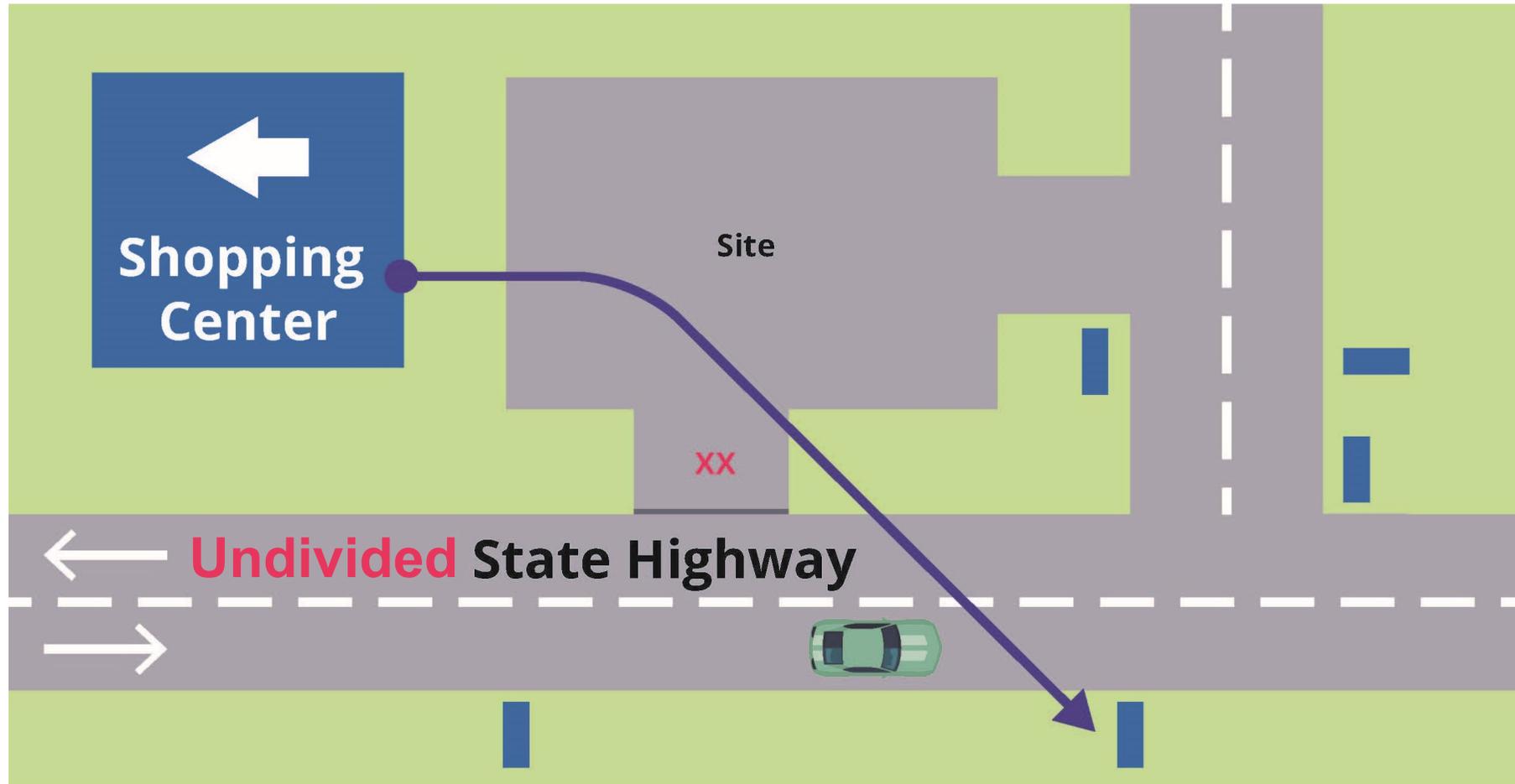
# Revocation of Access Test 5

Recommended Sign Placement (Site is **downstream** of Alternative Access)



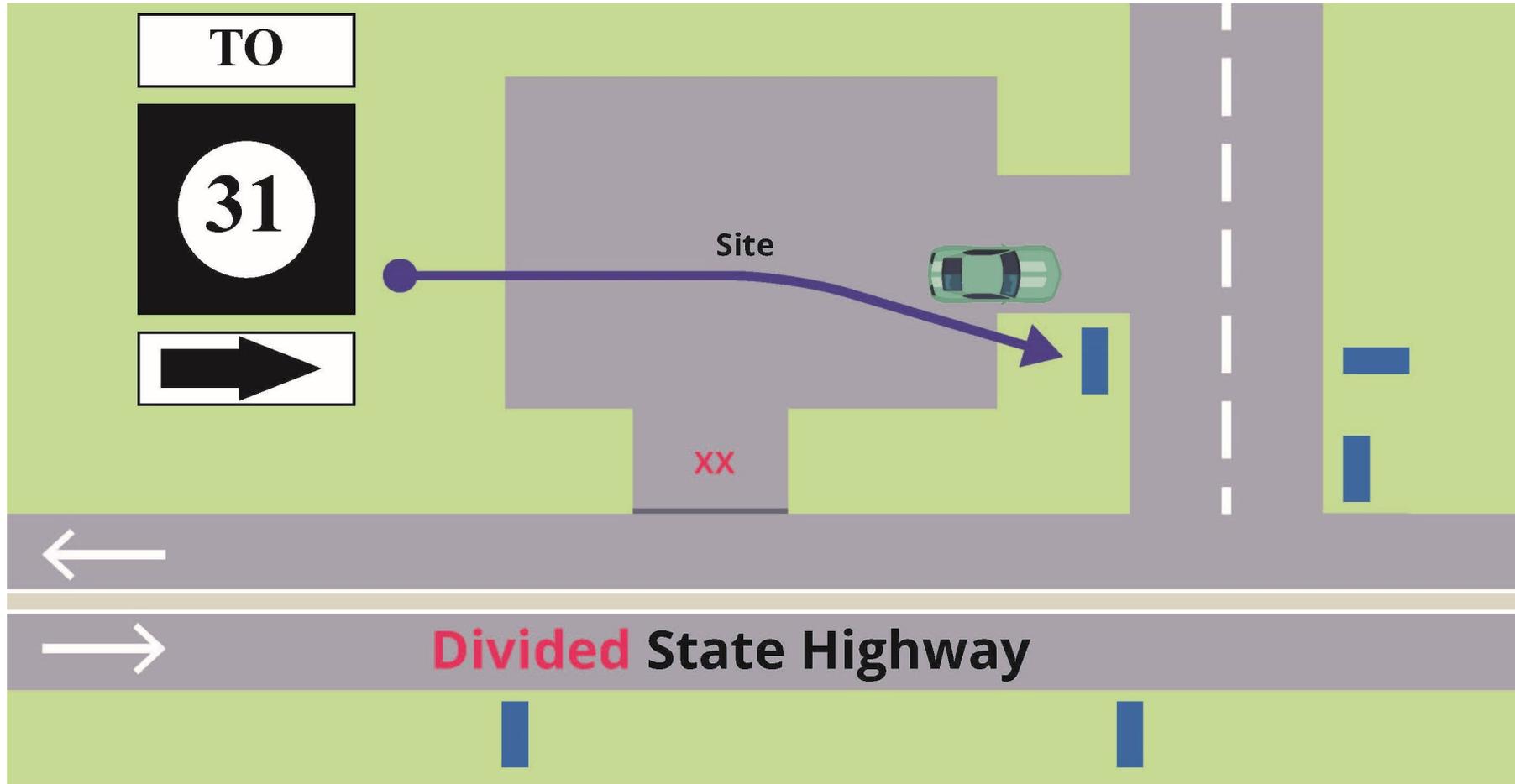
# Revocation of Access Test 5

Recommended Sign Placement (Site is **downstream** of Alternative Access)



# Revocation of Access Test 5

Recommended Sign Placement (Site is **downstream** of Alternative Access)



# Where is Existing Access?



## Access

- Ingress
- Egress

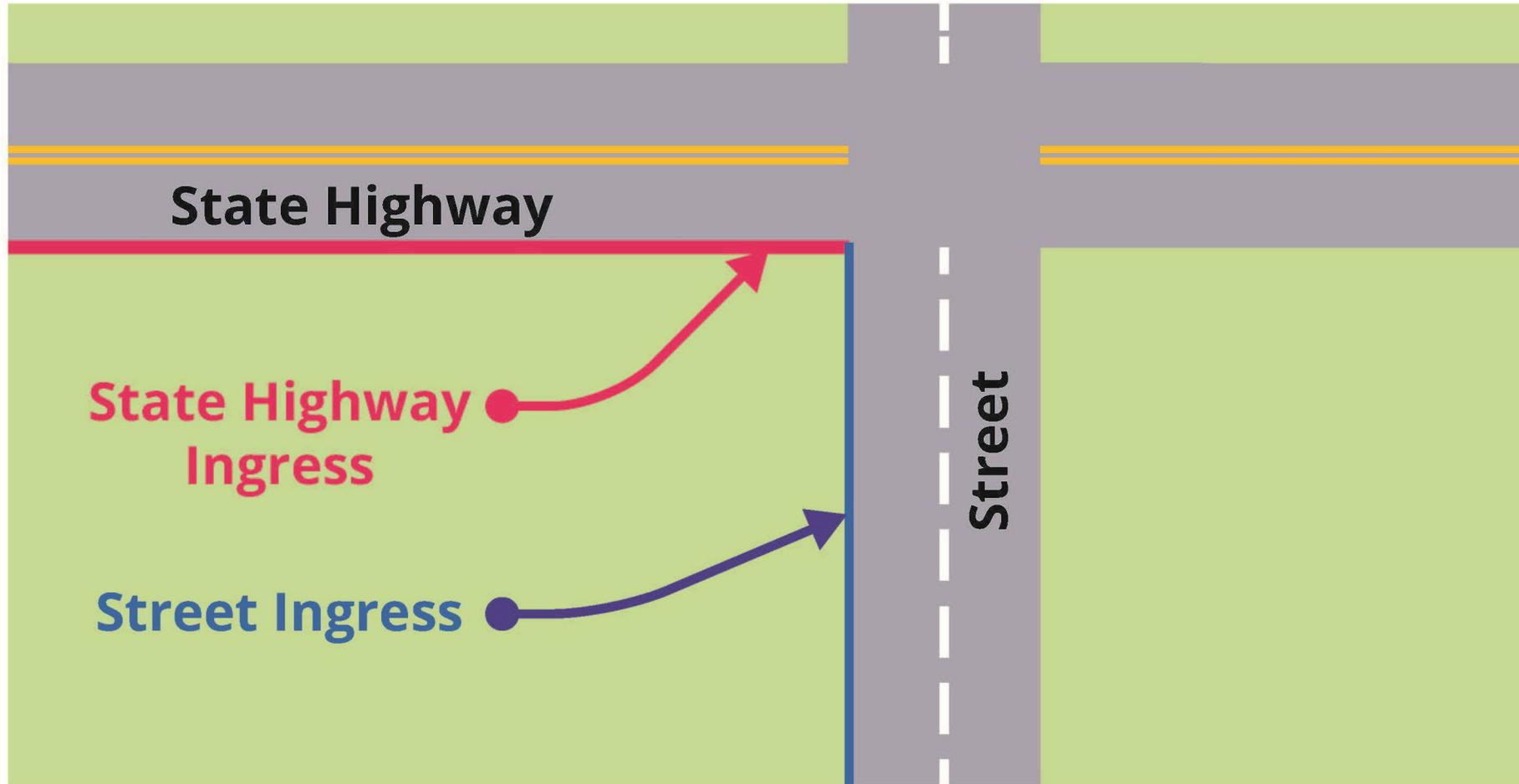
## Road

- State highway
- Non-state highway

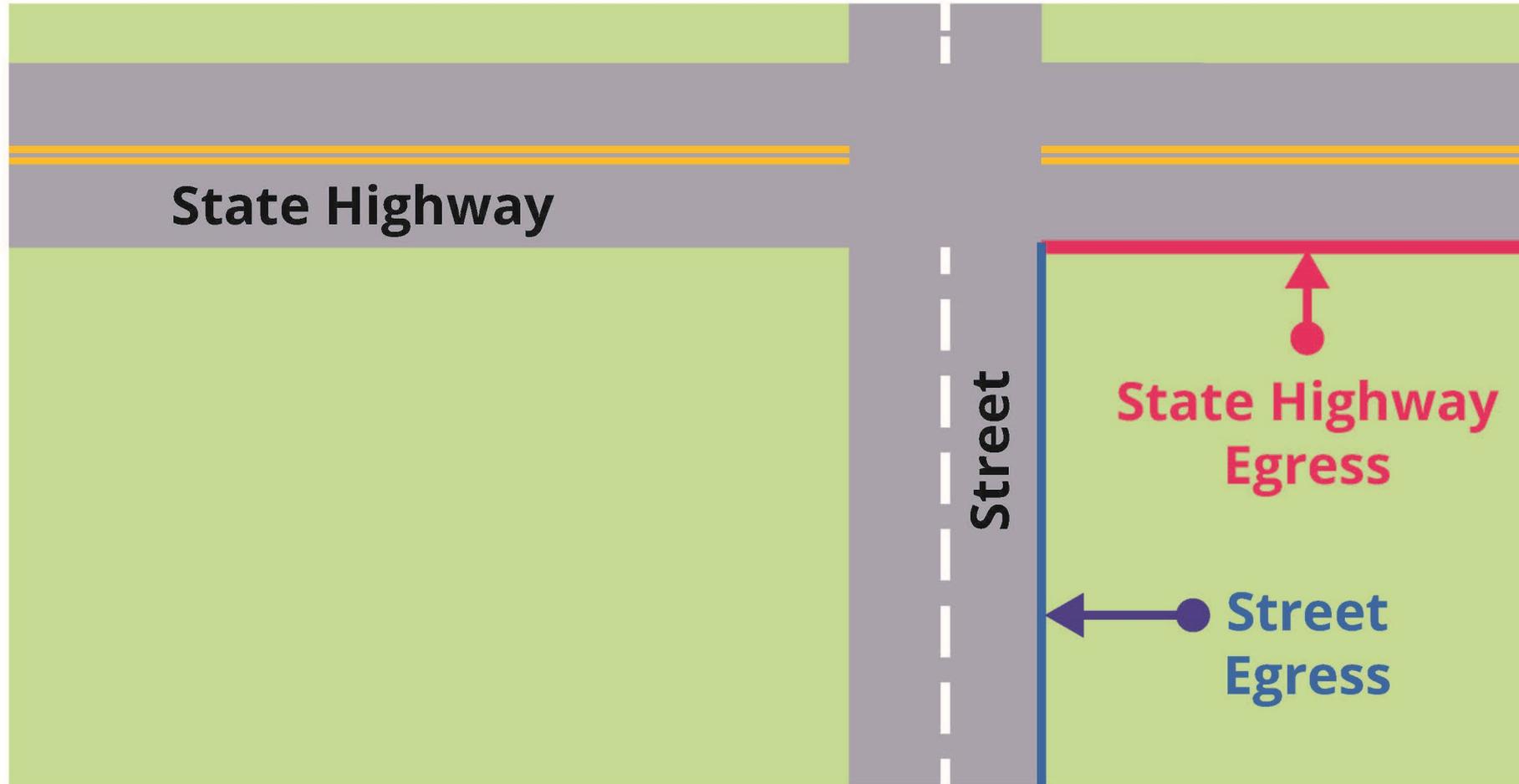
## Intersection

- Street
- Jughandle (Forward and Reverse)
- Interchange

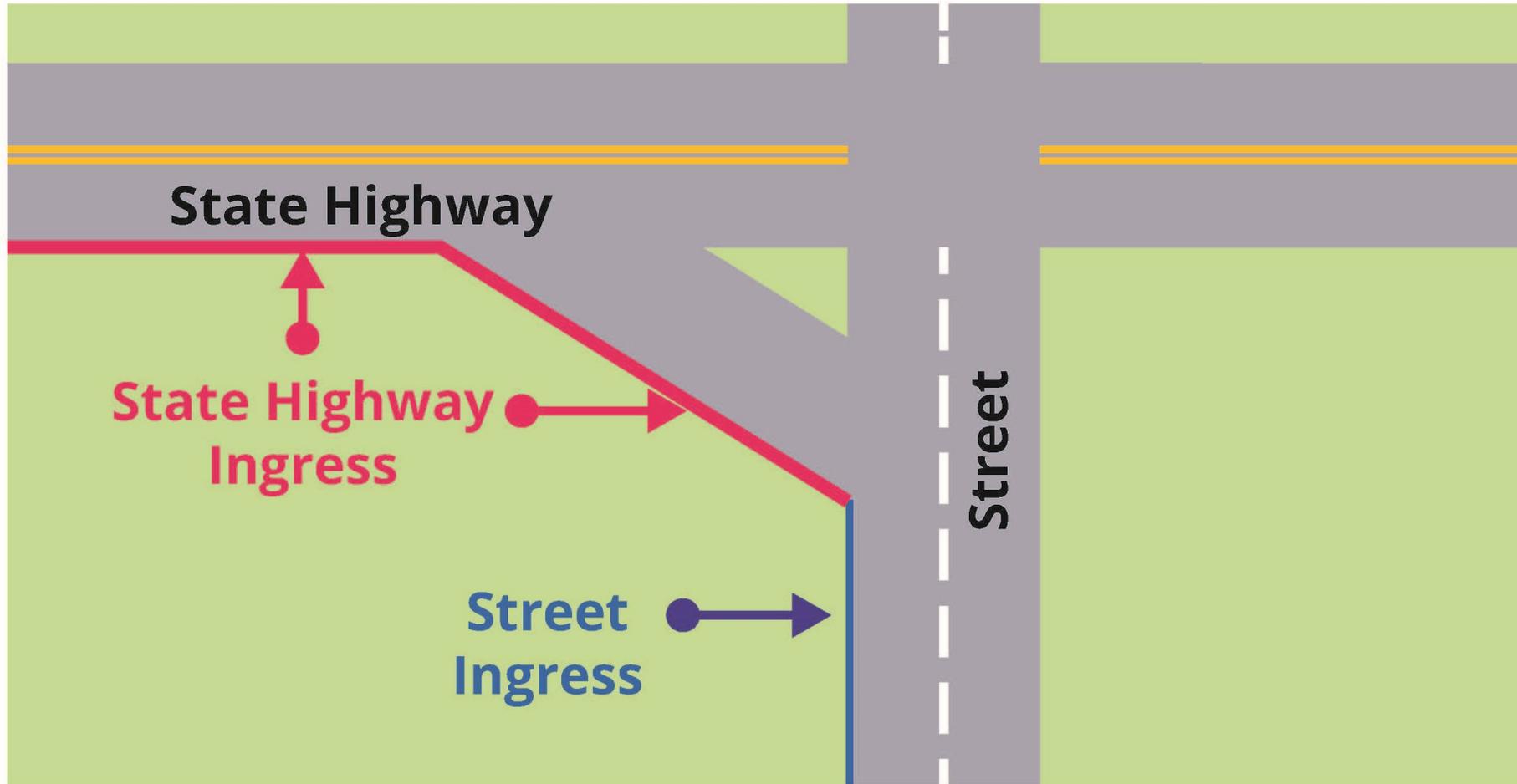
# Street Intersection Ingress



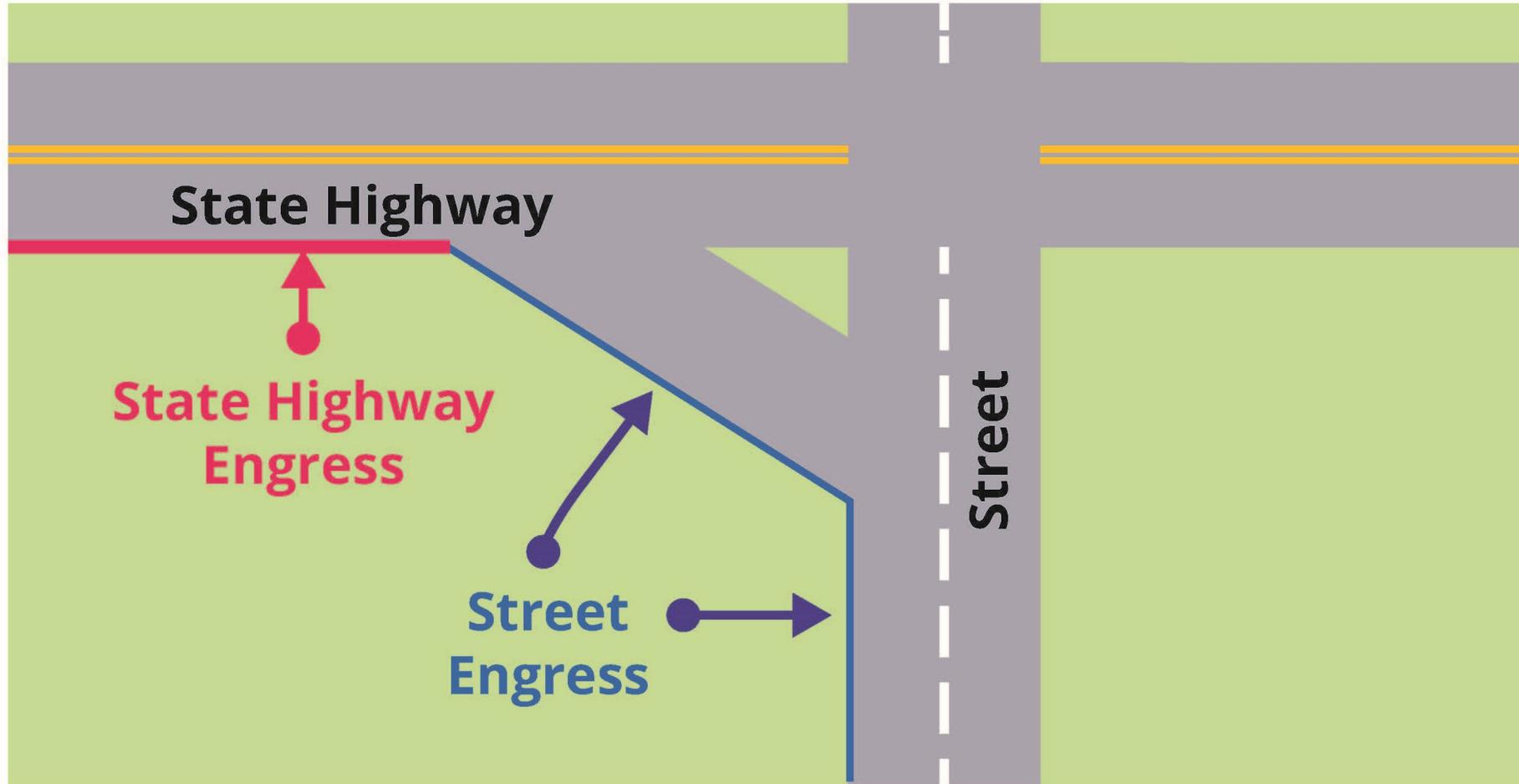
# Street Intersection Egress



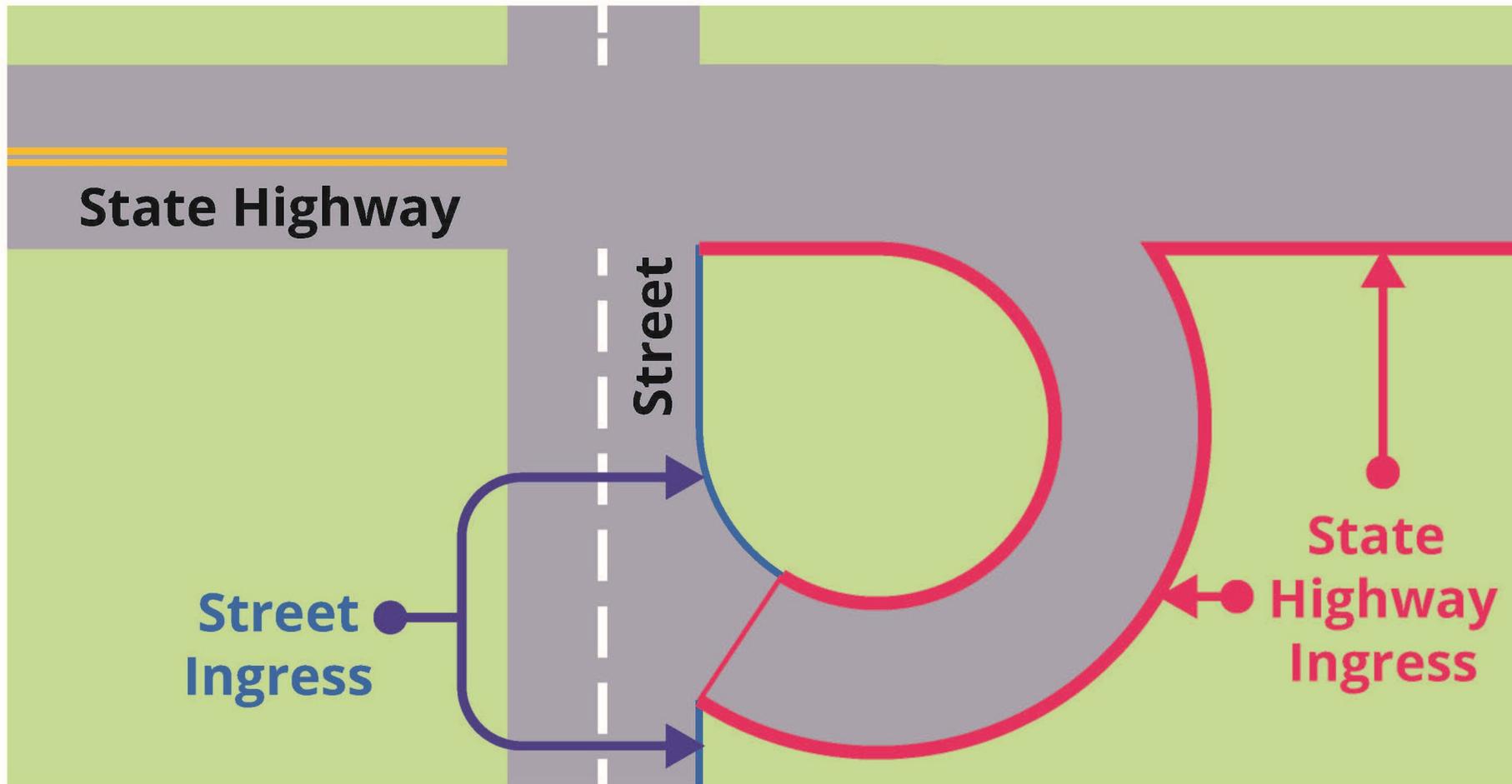
# Forward Jughandle Ingress



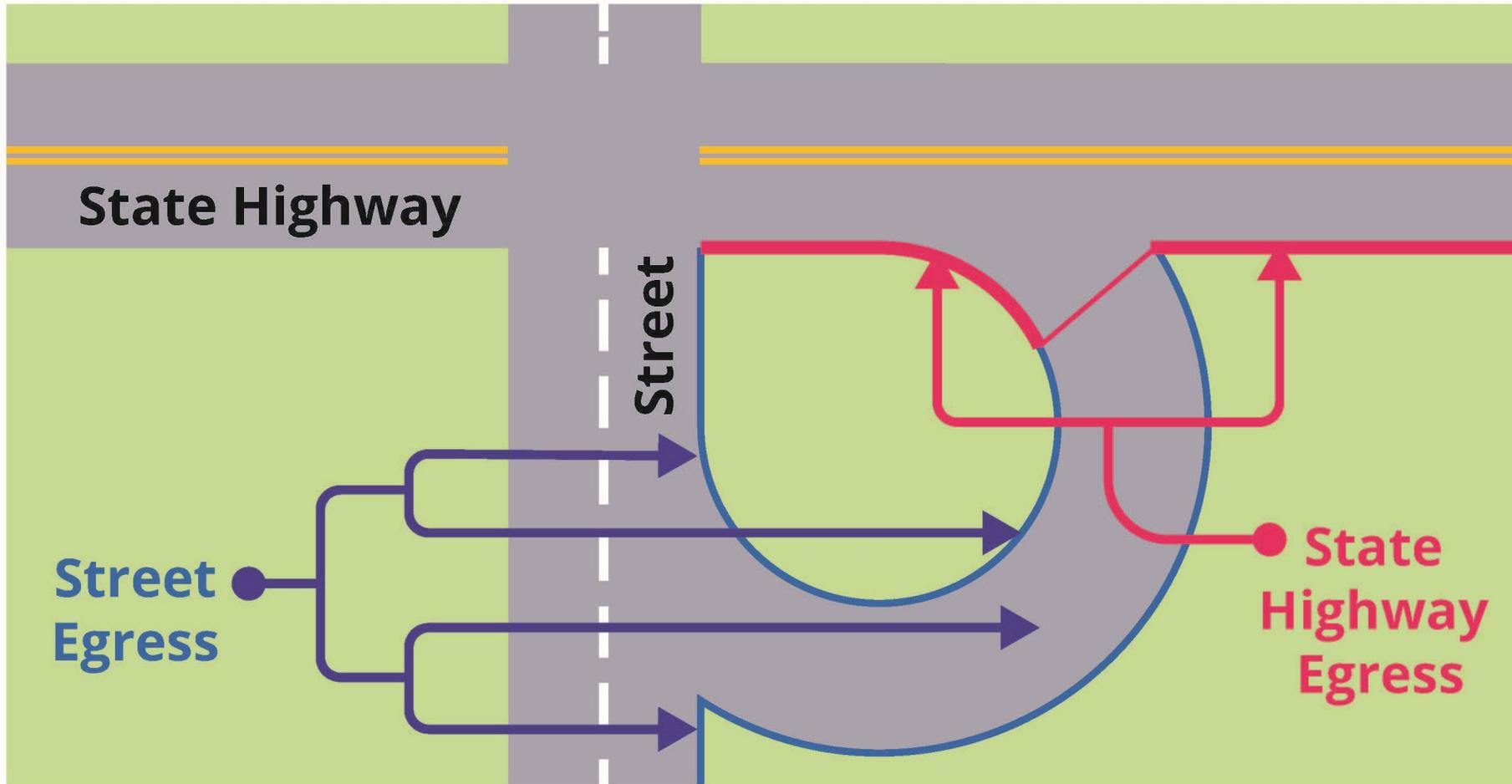
# Forward Jughandle Egress



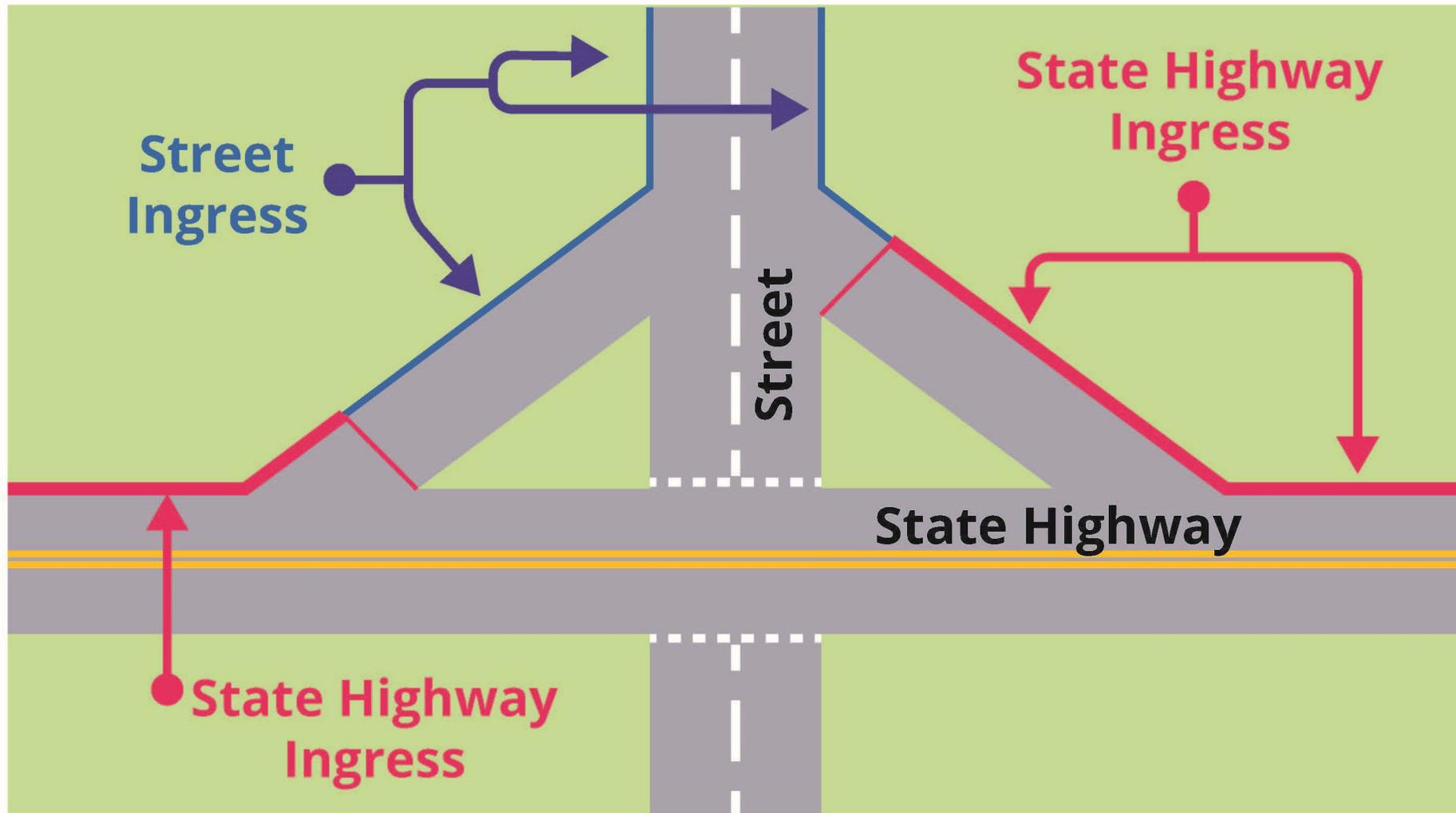
# Reverse Jughandle Ingress



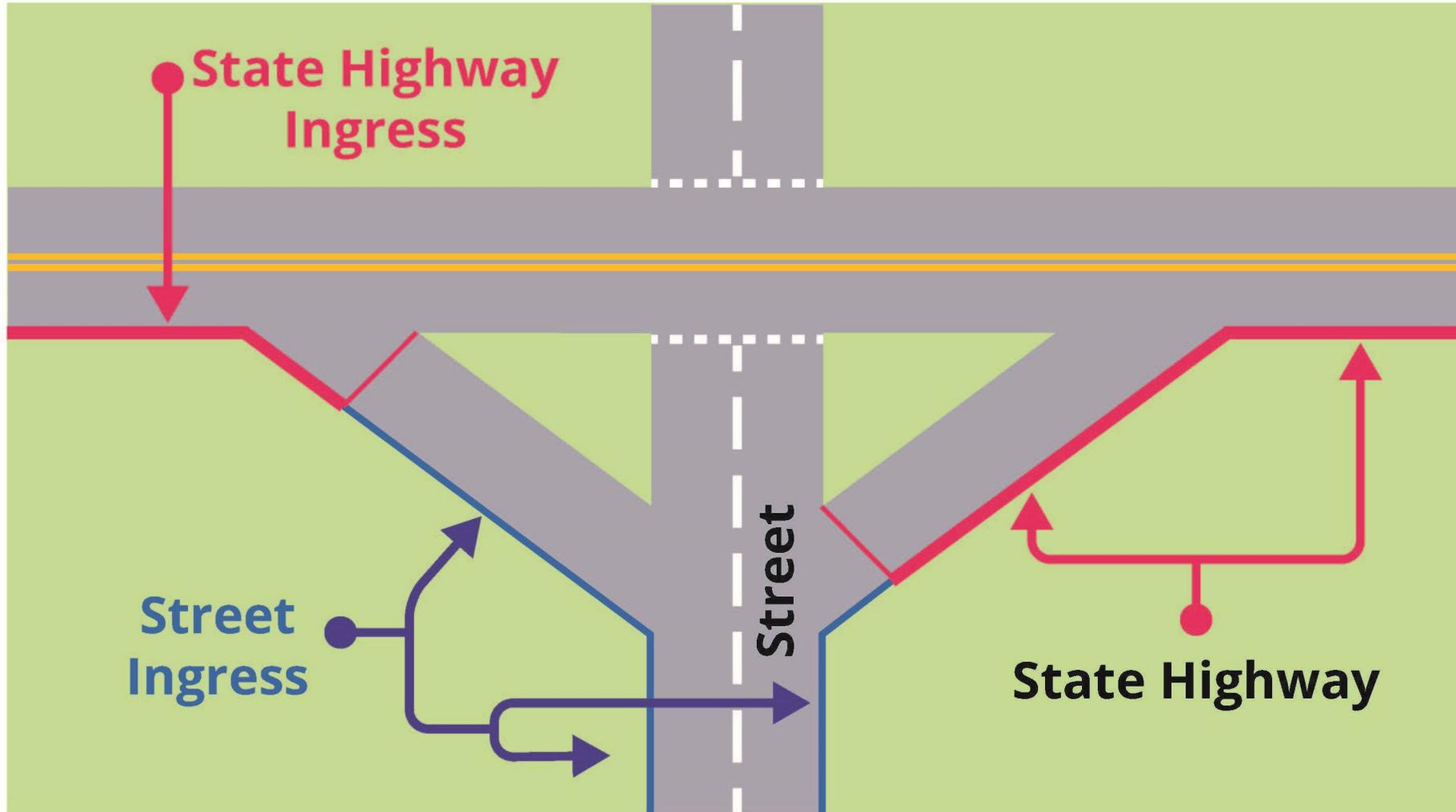
# Reverse Jughandle Egress



# Interchange Ingress



# Interchange Egress





# Specifics of Modifications

Lorinda Lasus

# Modification of Access

1

Changing the number of access points

2

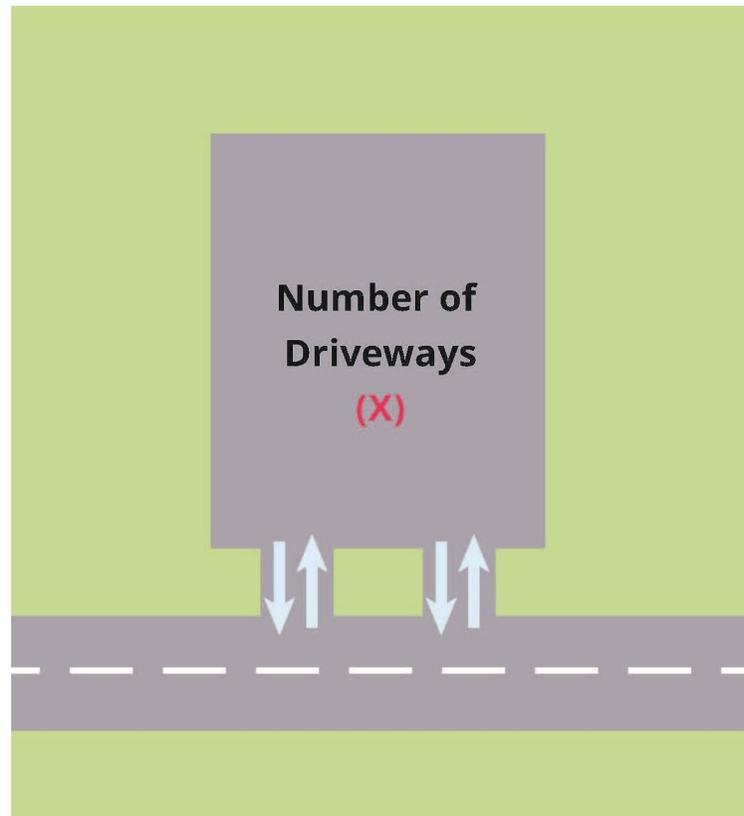
Changing the width of an access point by more than 5 feet (1.5 meters)

3

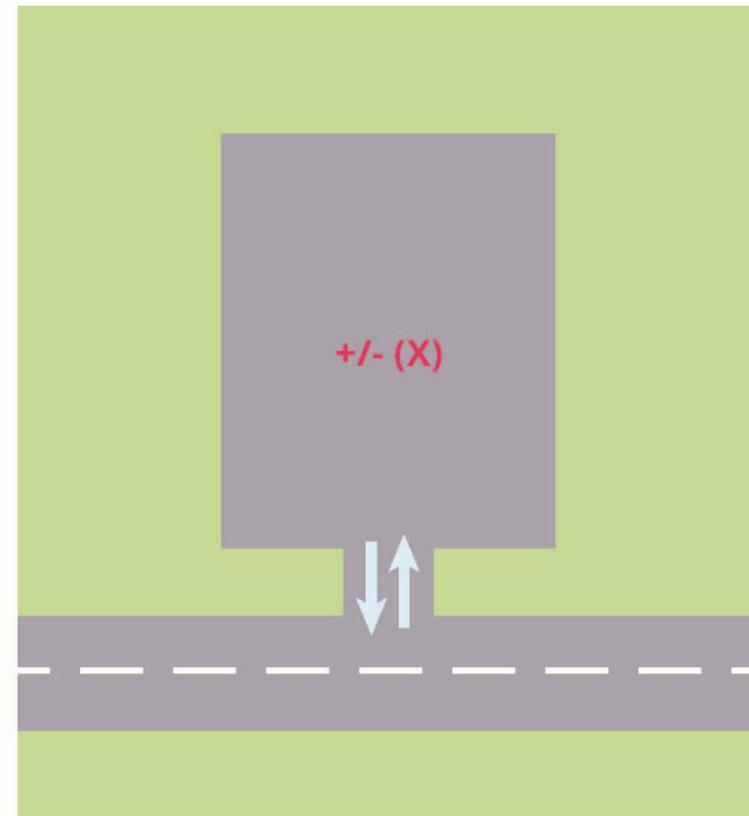
Changing the location of an access point by more than 10 feet (3 meters)

# Modifications of Access

Example 1: Changing number of driveways



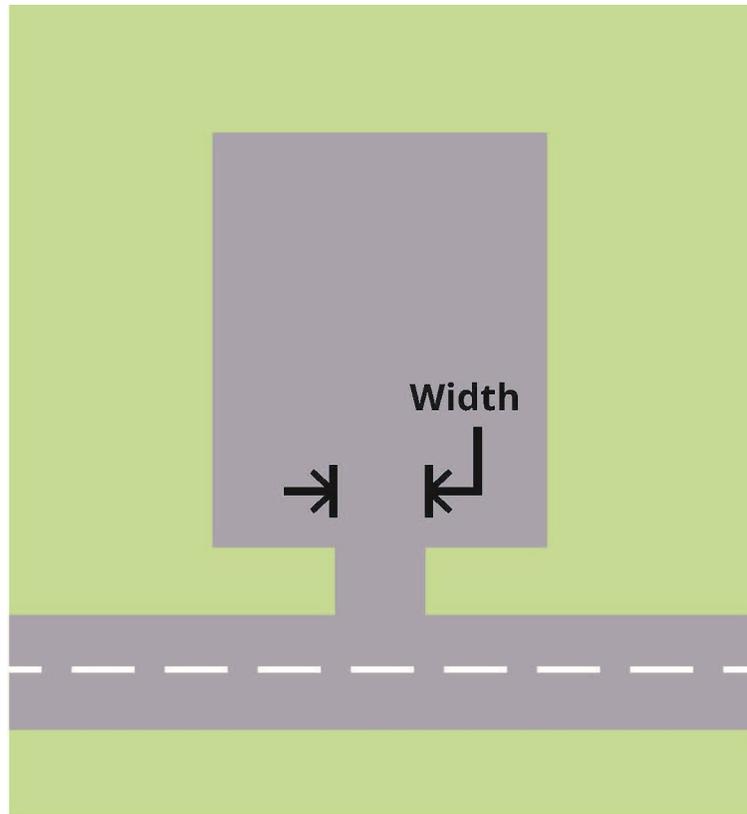
**Before**



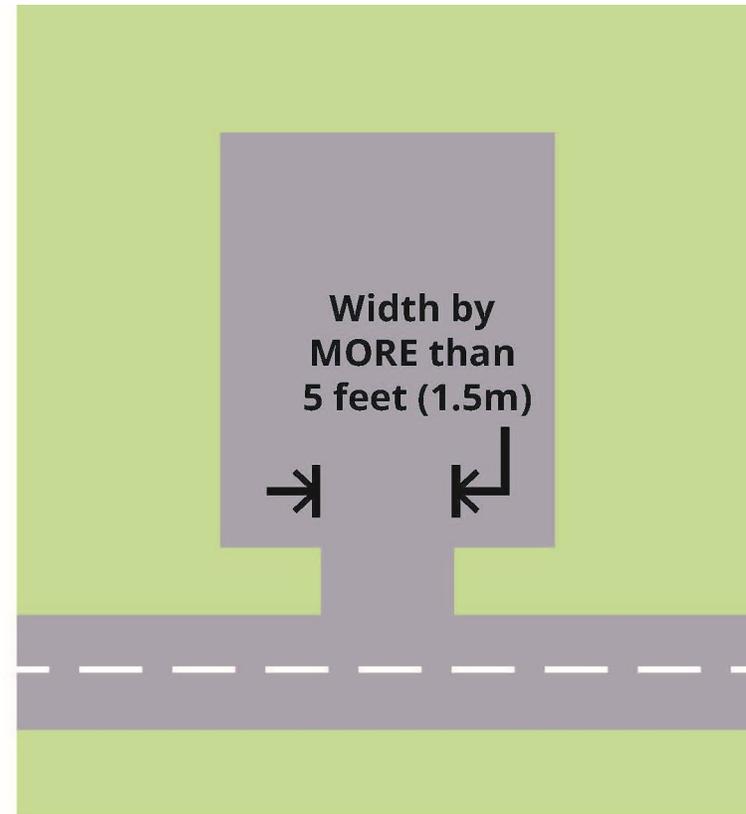
**After**

# Modifications of Access

Example 2: Changing width by more than 5 feet



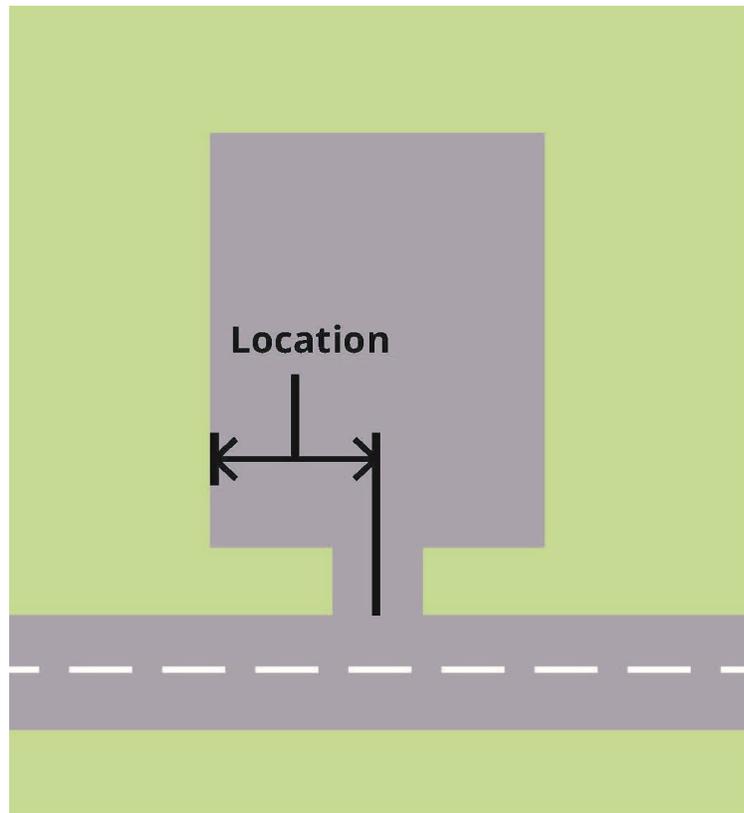
**Before**



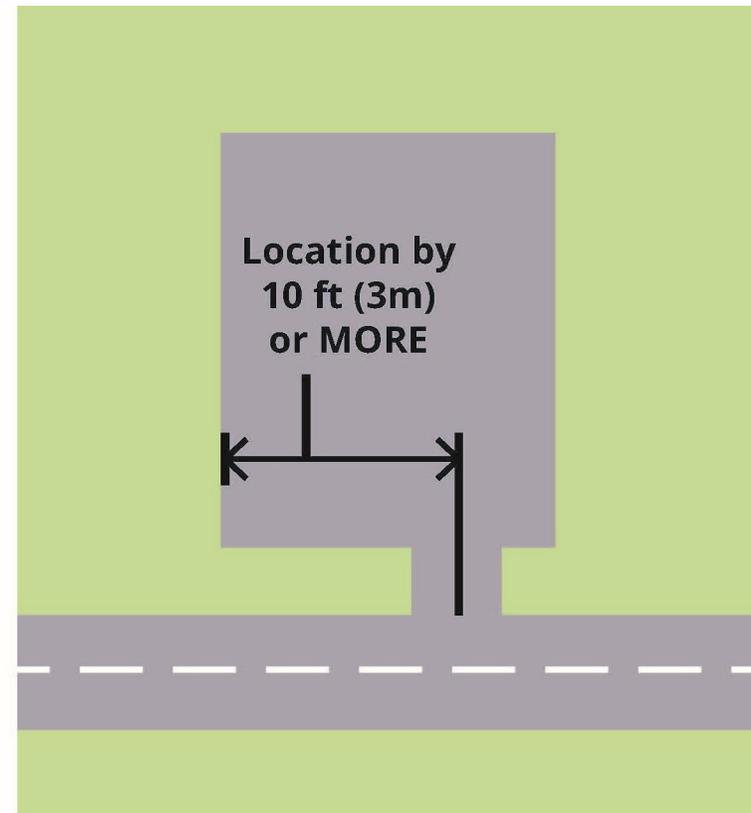
**After**

# Modifications of Access

Example 3: Changing location by more than 30 feet



**Before**



**After**

The background of the slide is a photograph of a city street. In the foreground, there are tram tracks on a concrete sidewalk. A silver car is driving on the street to the left of the tracks. In the background, there are green trees and a multi-story brick building. A large yellow rectangular box is overlaid on the right side of the image, containing the title and author's name in white text. There are also two dark blue horizontal bars, one above and one below the yellow box.

# Specifics of Adjustments

Lorinda Lasus

# Adjustment of Access

1

Changing width of an access point by 5 feet (1.5 meters) or less

2

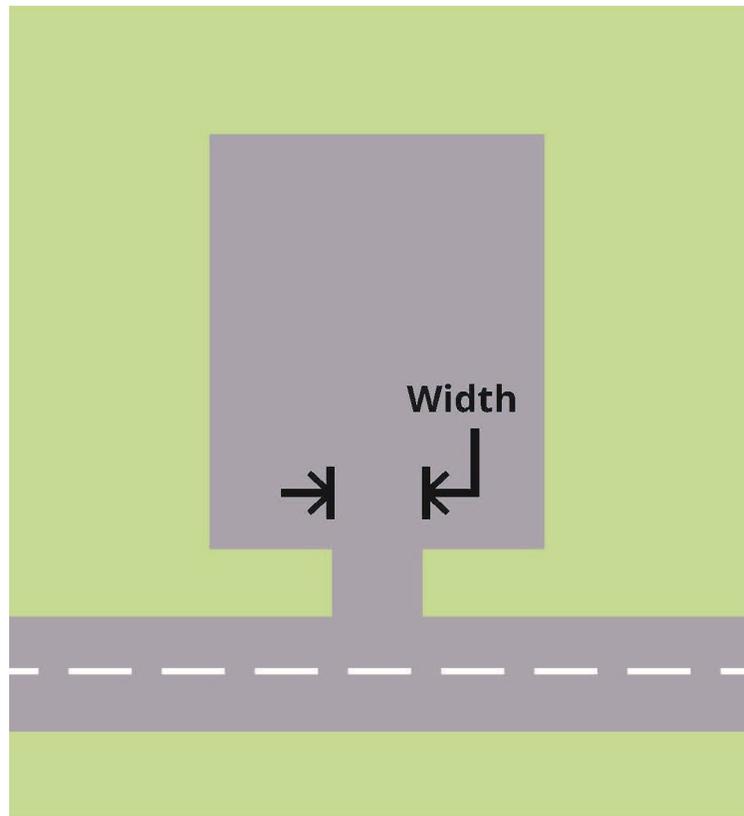
Changing the location of an access point by 10 feet (3 meters) or less

3

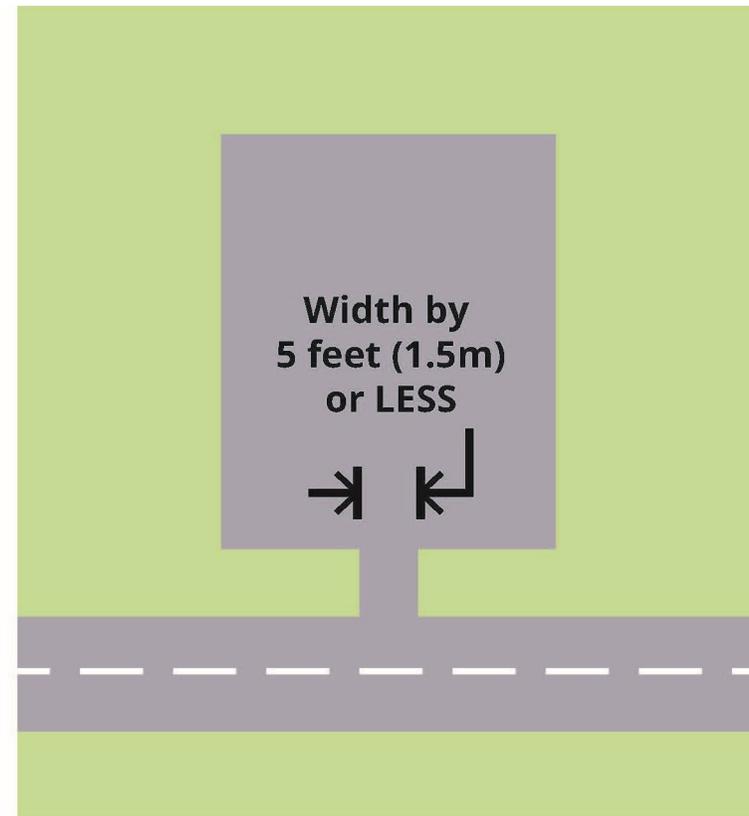
Moving an access point away from the centerline of the highway

# Adjustment of Access

Example 1: Changing width by 5 feet or less



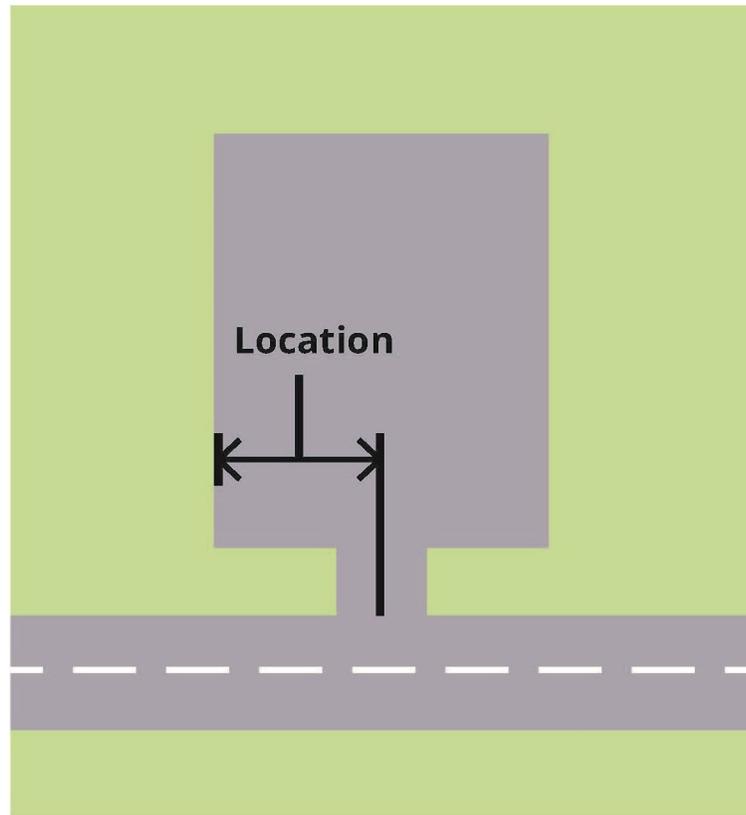
**Before**



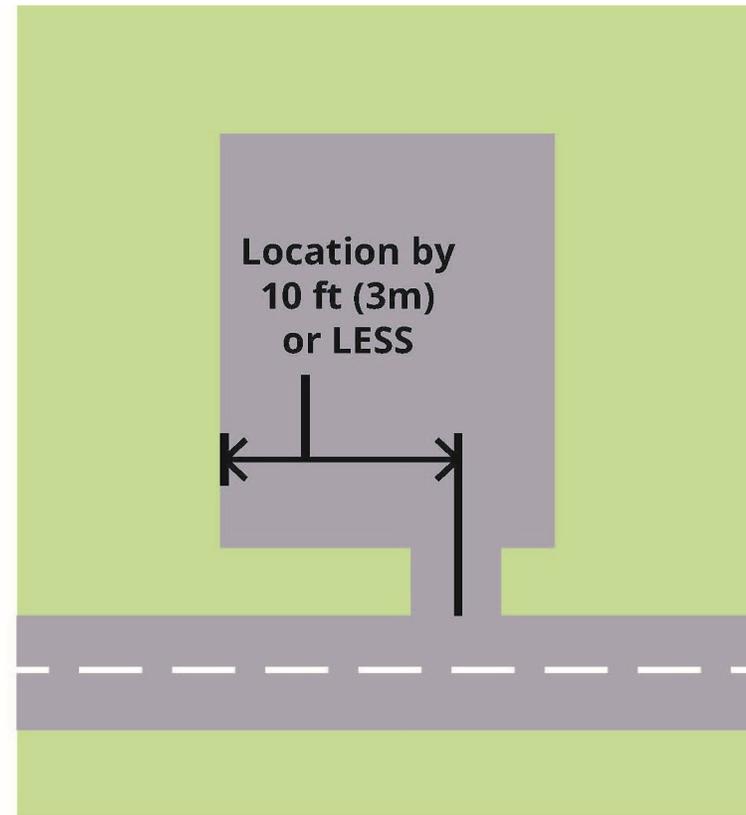
**After**

# Adjustment of Access

Example 2: Changing location by 10 feet or less



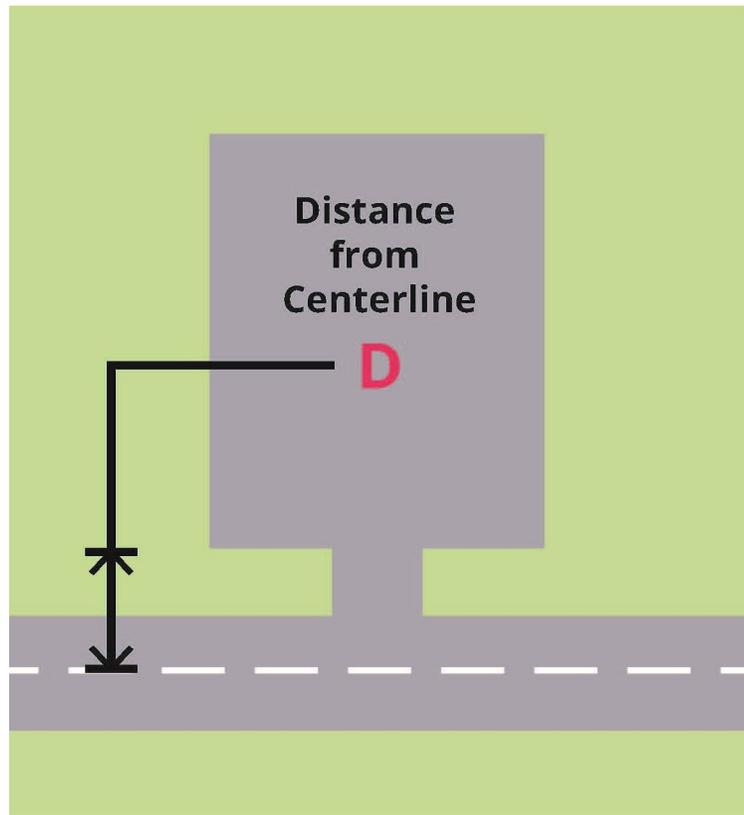
**Before**



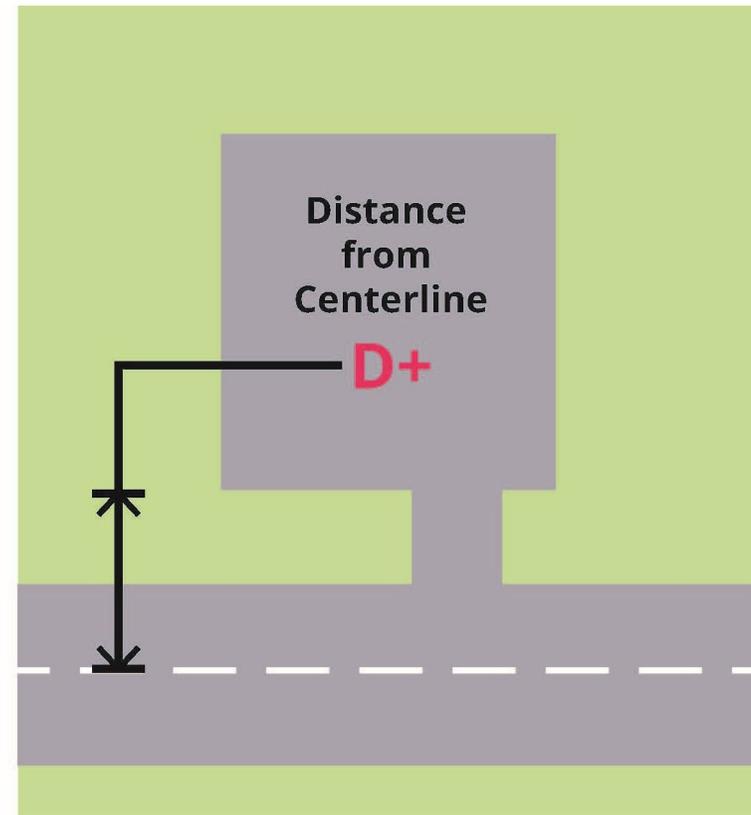
**After**

# Adjustment of Access

Example 3: Moving away from the Centerline



**Before**



**After**



# Specifics of Changes

Lorinda Lasus

# Change of Access



- Change of Access is the Non-State highway equivalent of a State highway Access Revocation, Modification, or Adjustment
- Notifications are like those for Modifications or Adjustment
- Any appeals are administered like those for Modifications of Access



# Common Driveway Problems

Arthur Eisdorfer

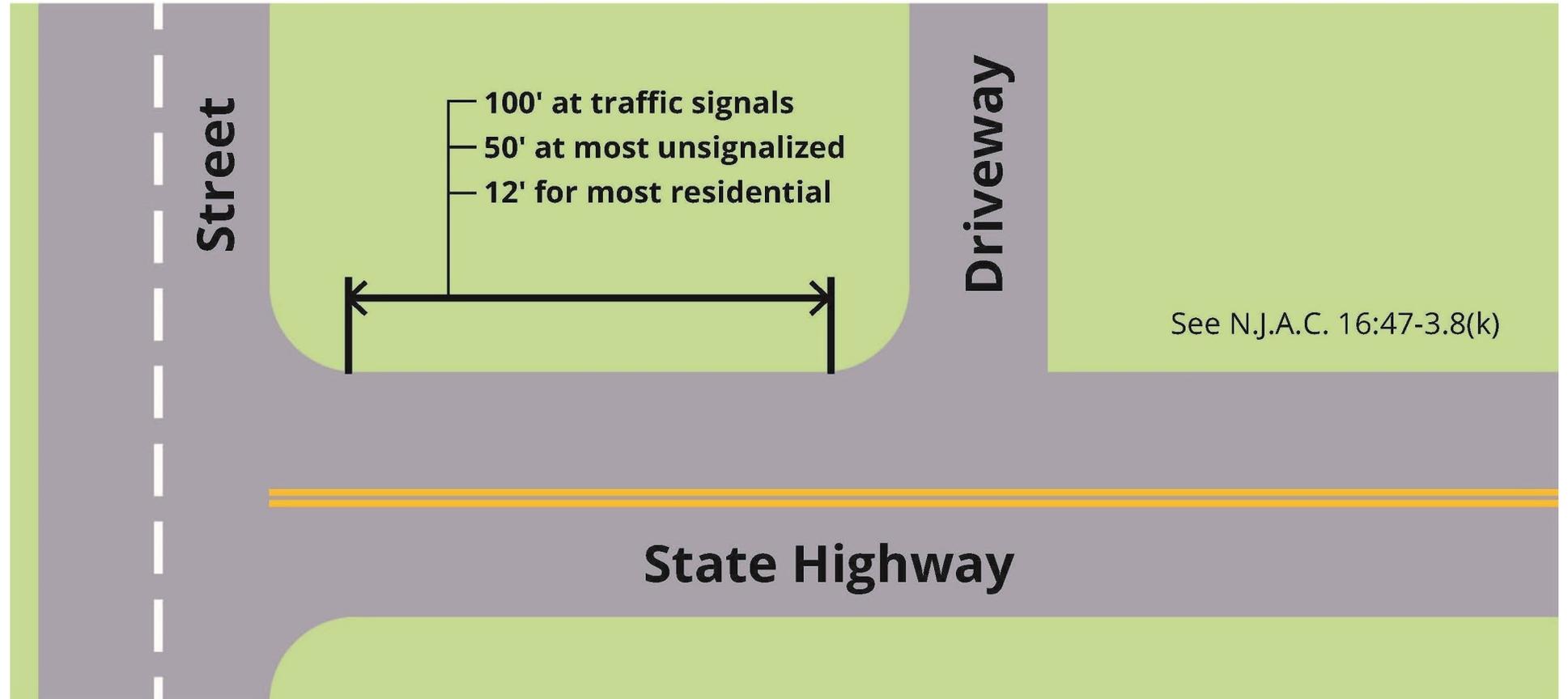
# What are the most common problems?

- Too many existing driveways
- Driveways too close to intersections
- Owner has invaded the right of way
- Owner wants betterments



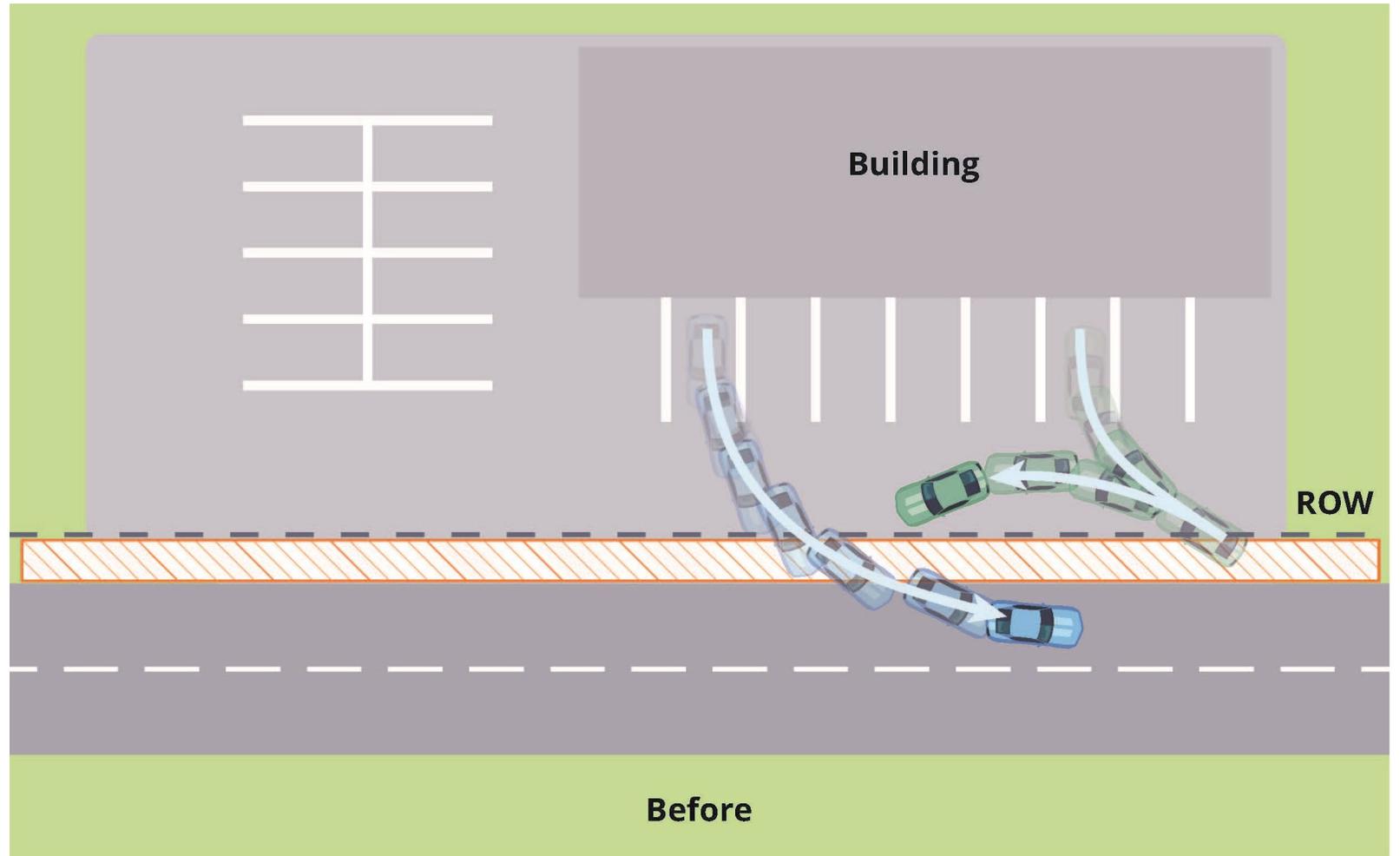
# What are the most common problems?

Driveways too close to intersections



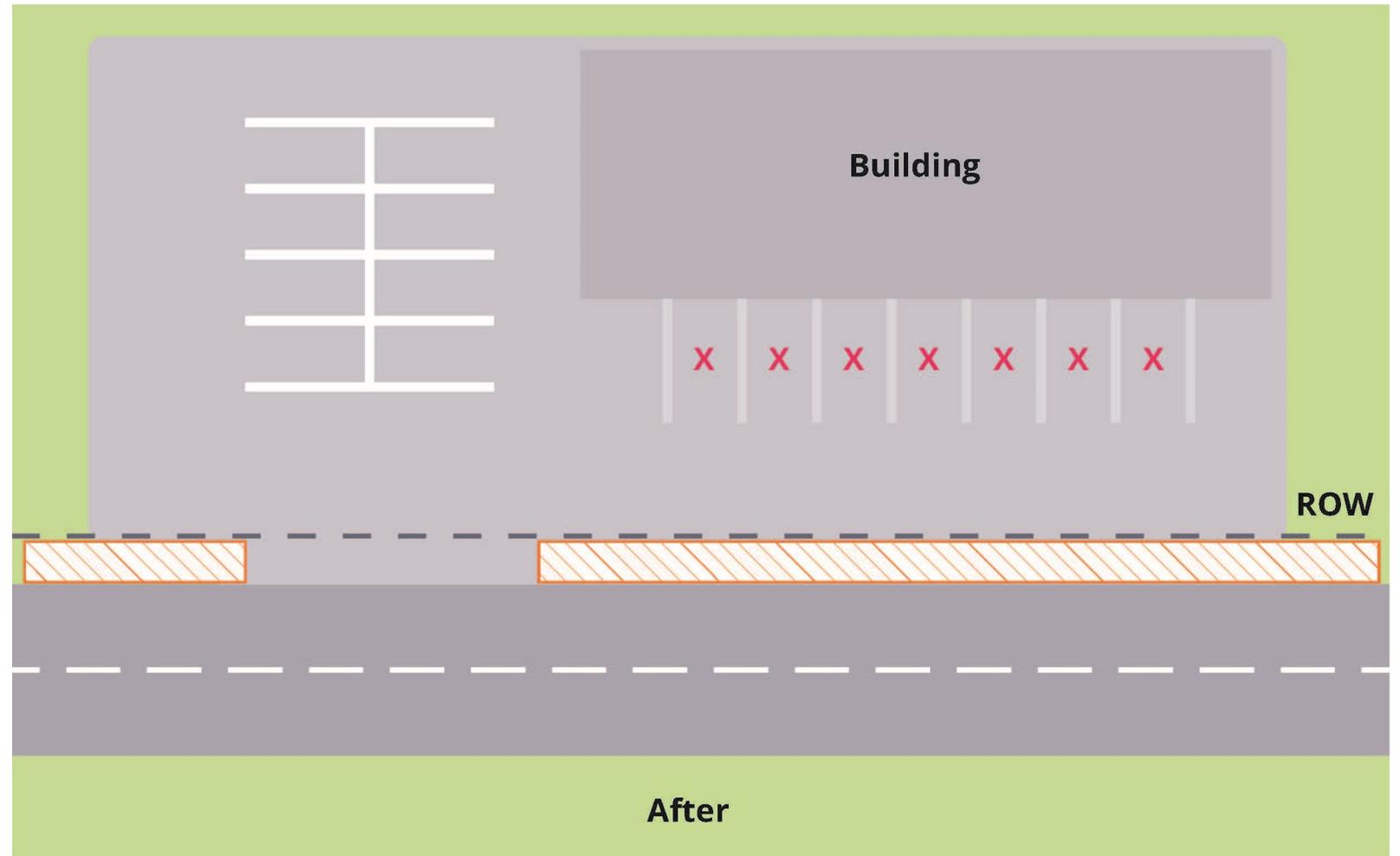
# Reclaiming ROW

Owner has invaded the right of way



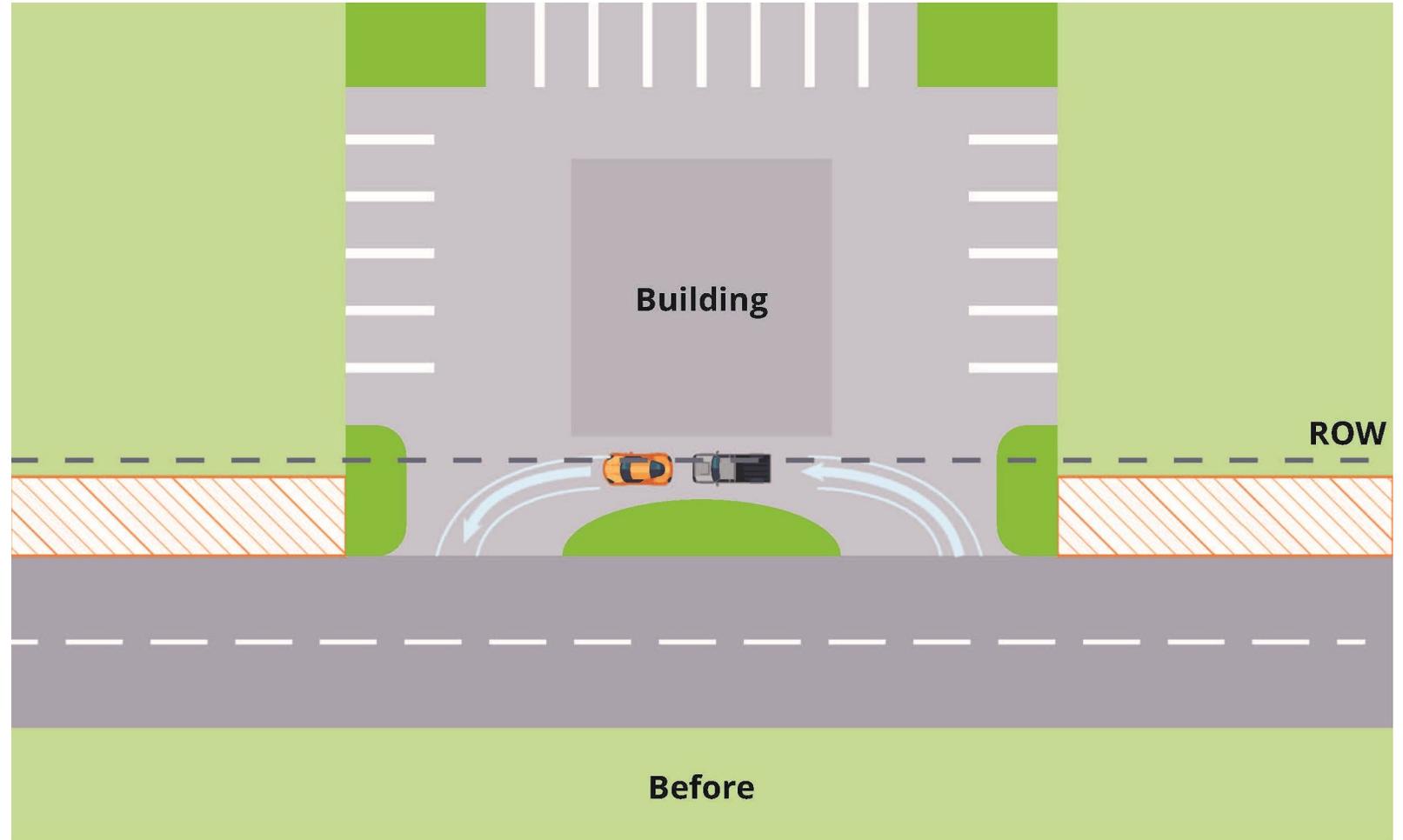
# Reclaiming ROW

Owner has invaded the right of way



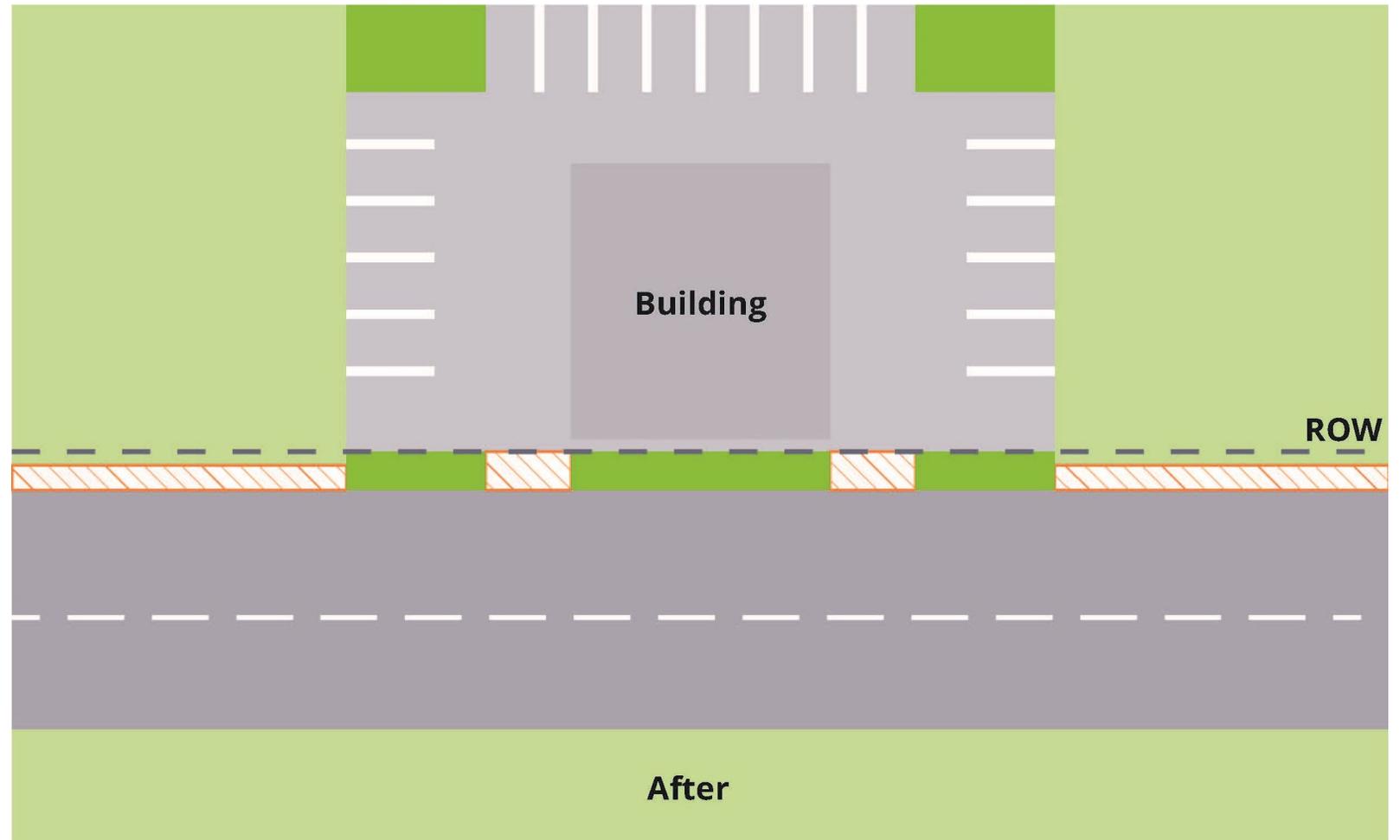
# Reclaiming ROW

Owner has invaded the right of way



# Reclaiming ROW

Owner has invaded the right of way

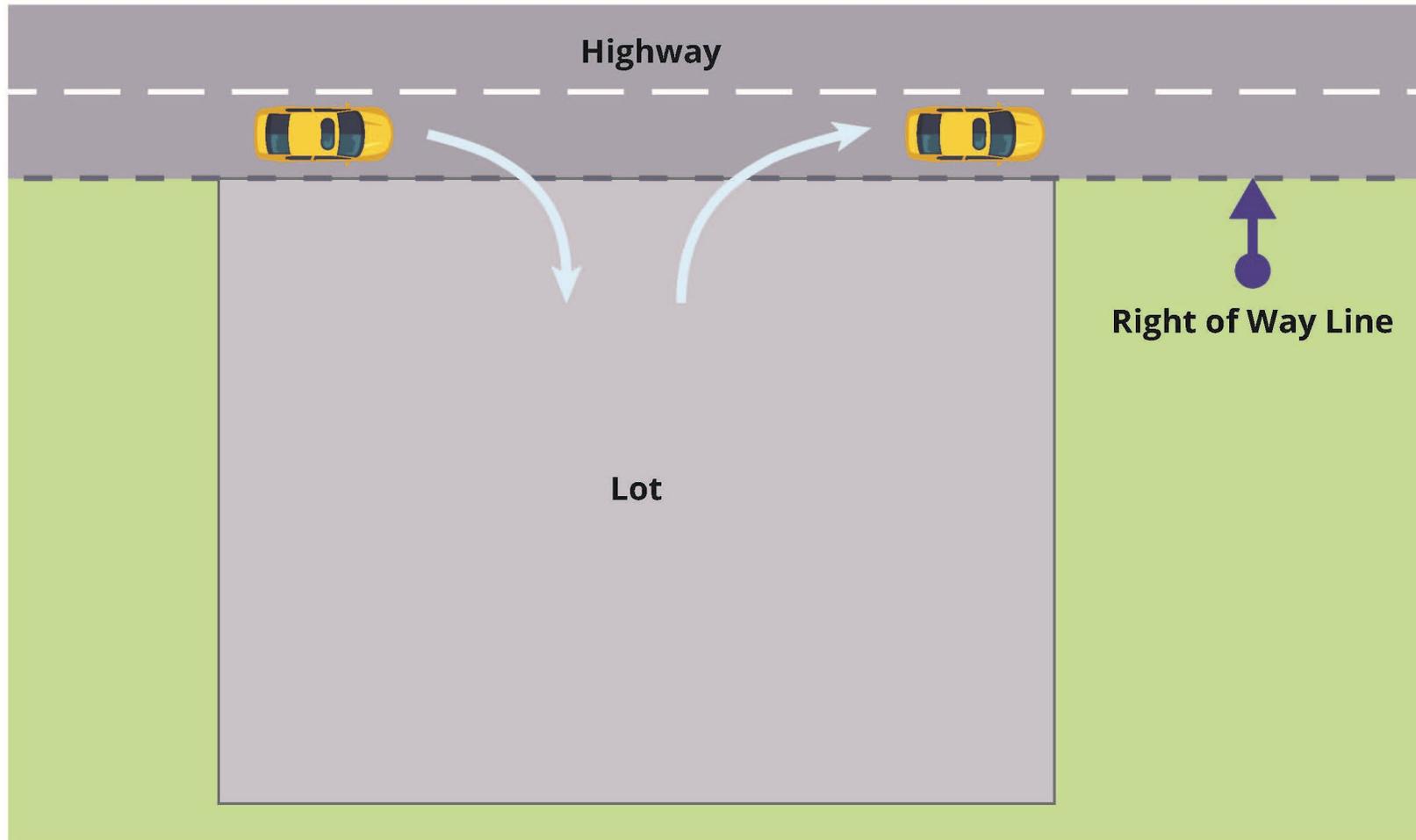




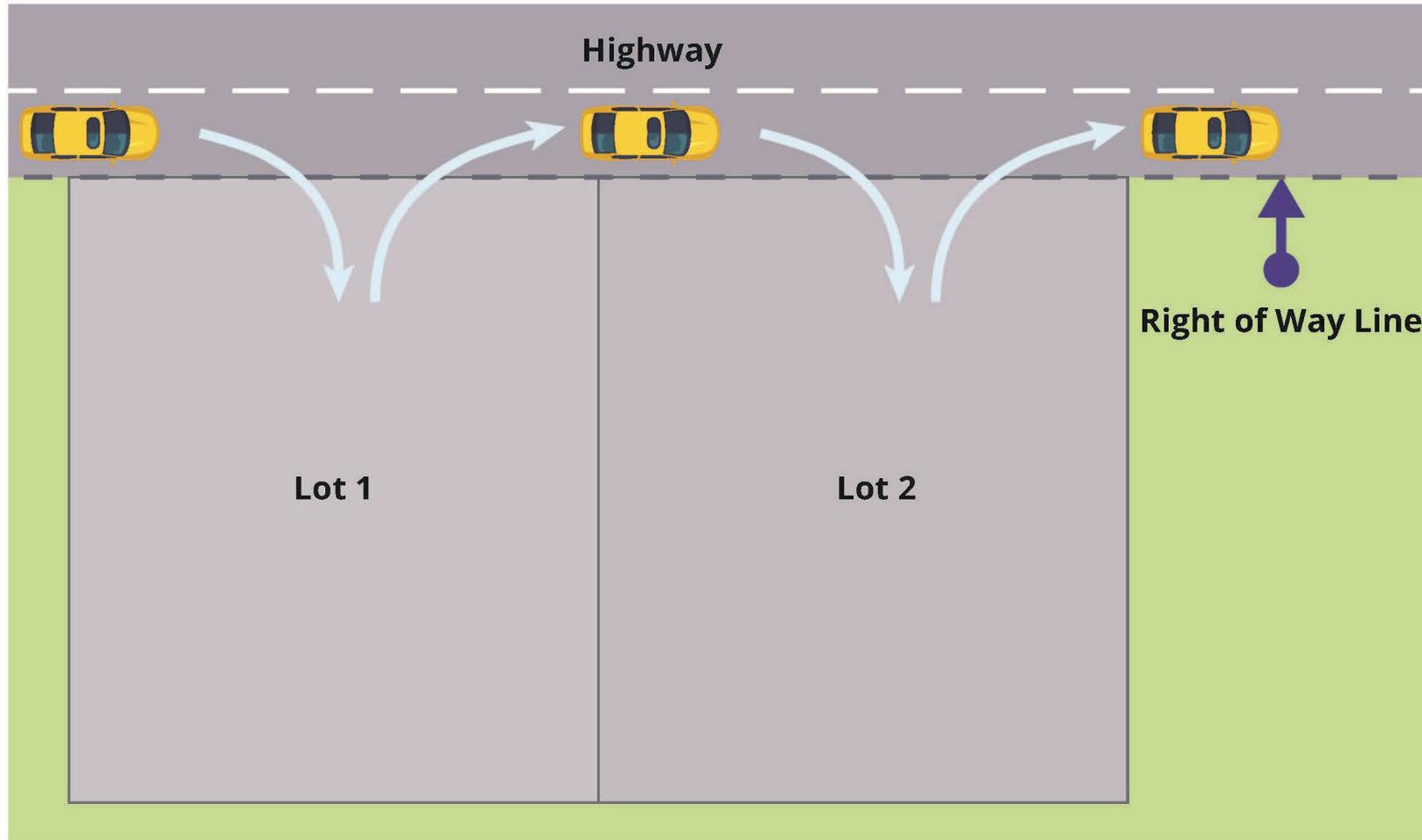
# Access – Dependent Parcels

(Lots that share access)

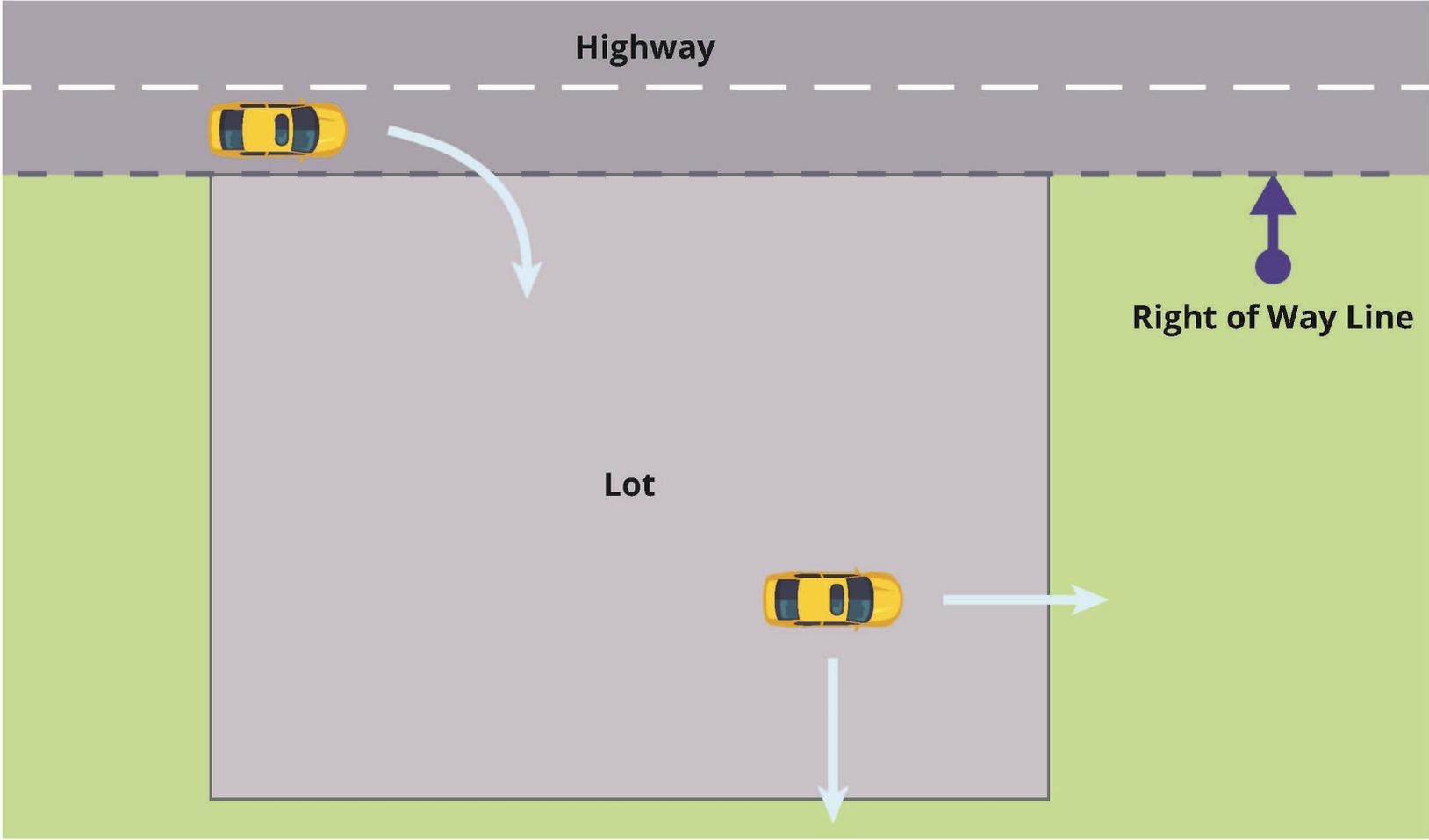
# Access Independent Lot



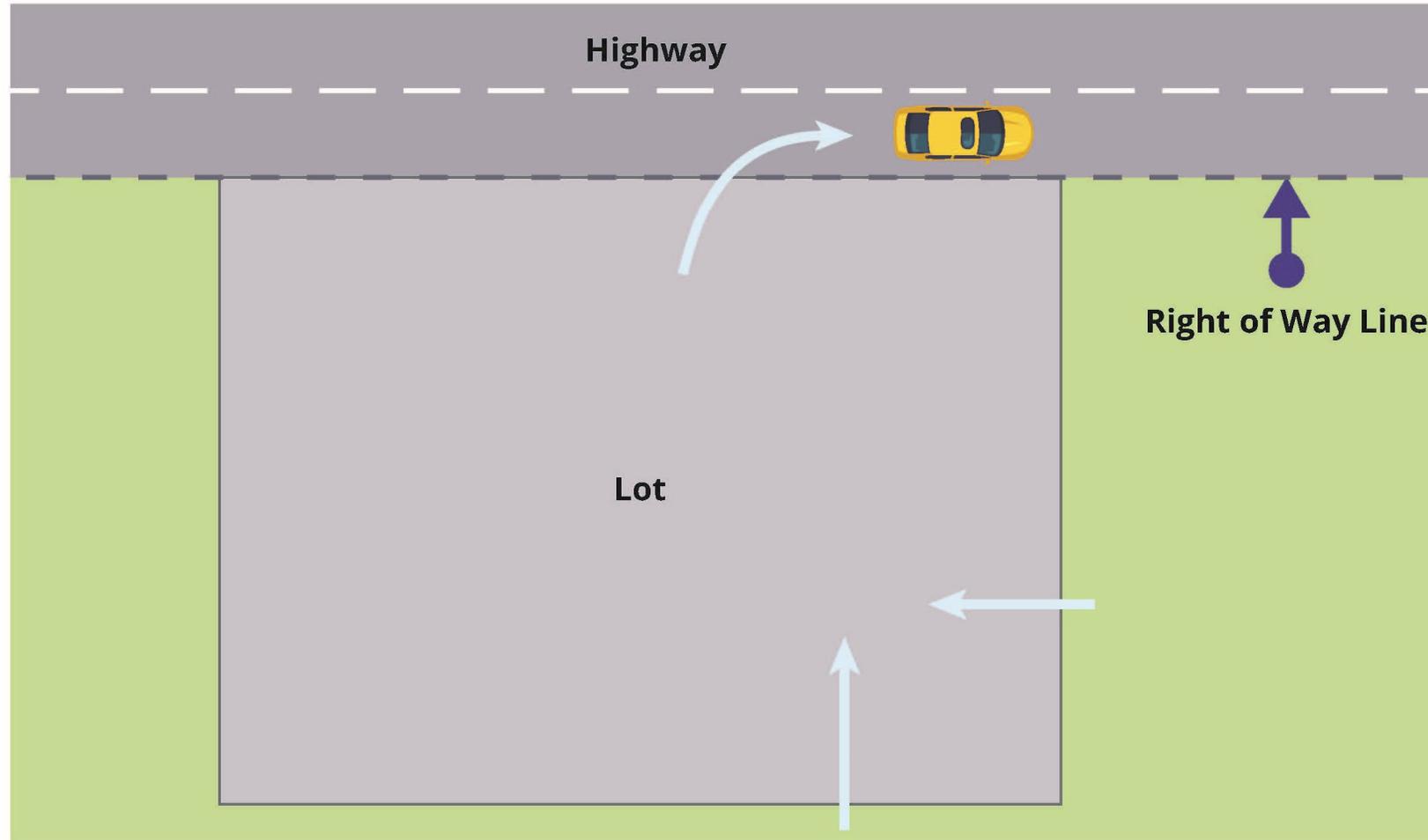
# 2 Access Independent Lots



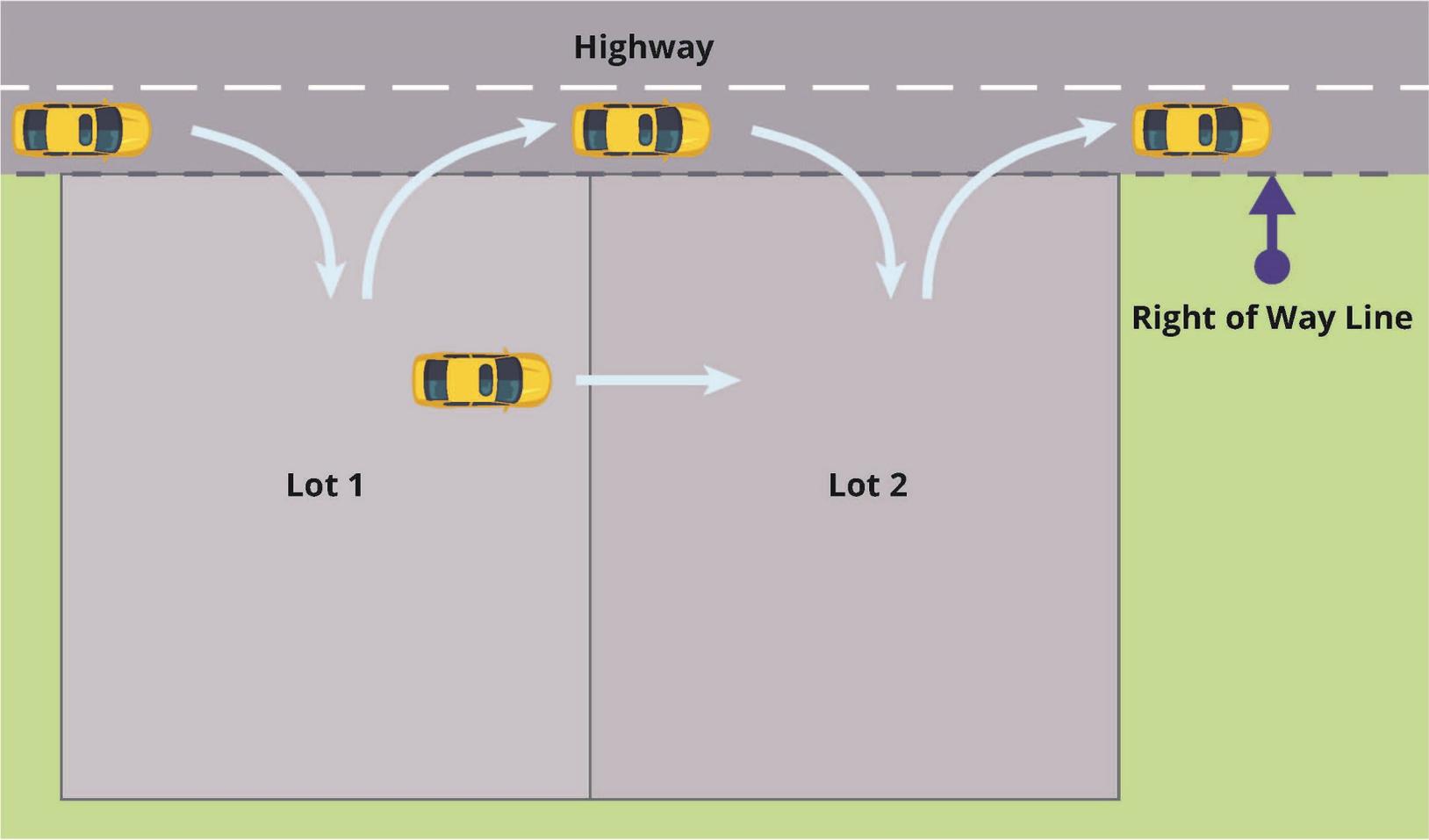
# Egress Dependent Lot



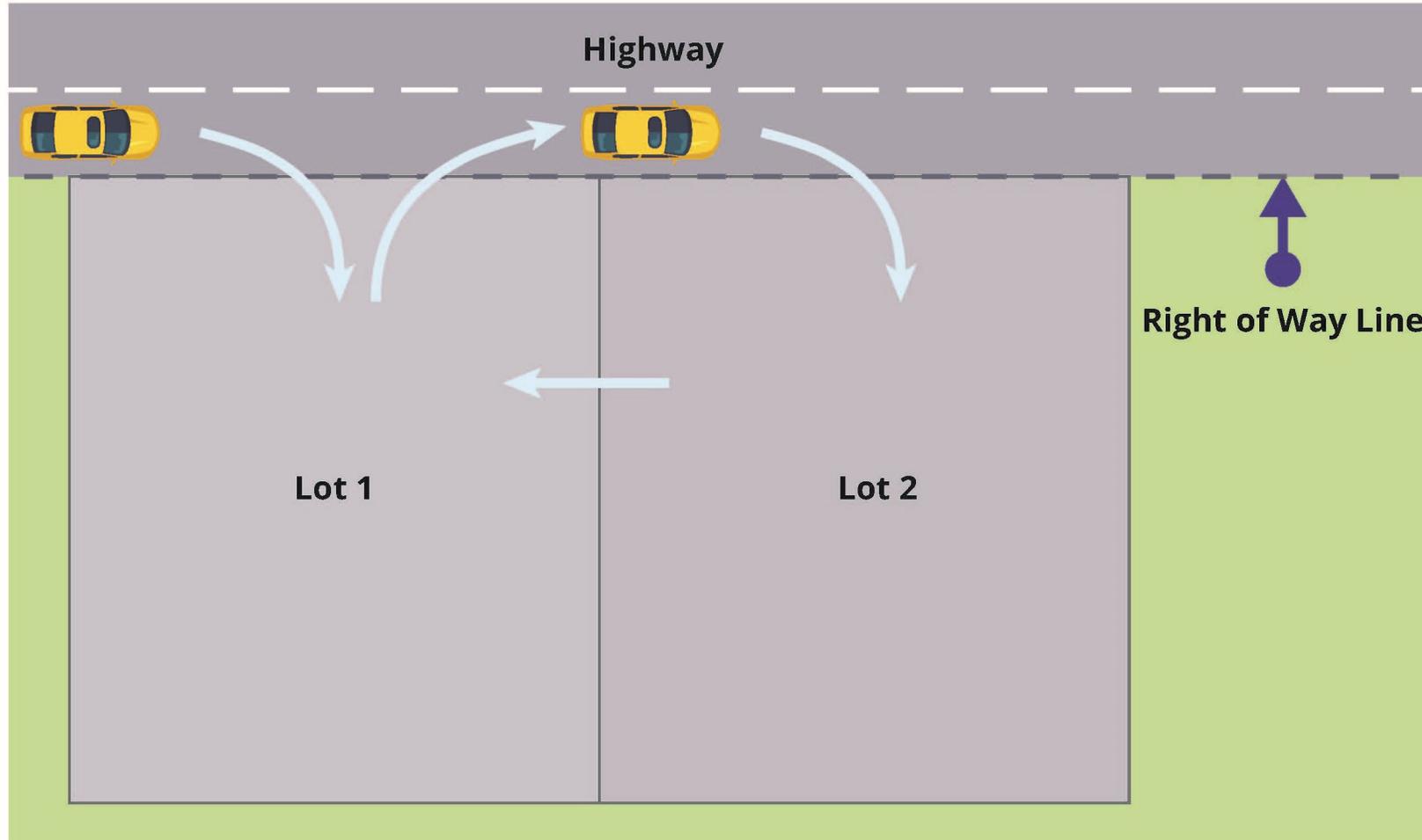
# Ingress Dependent Lot



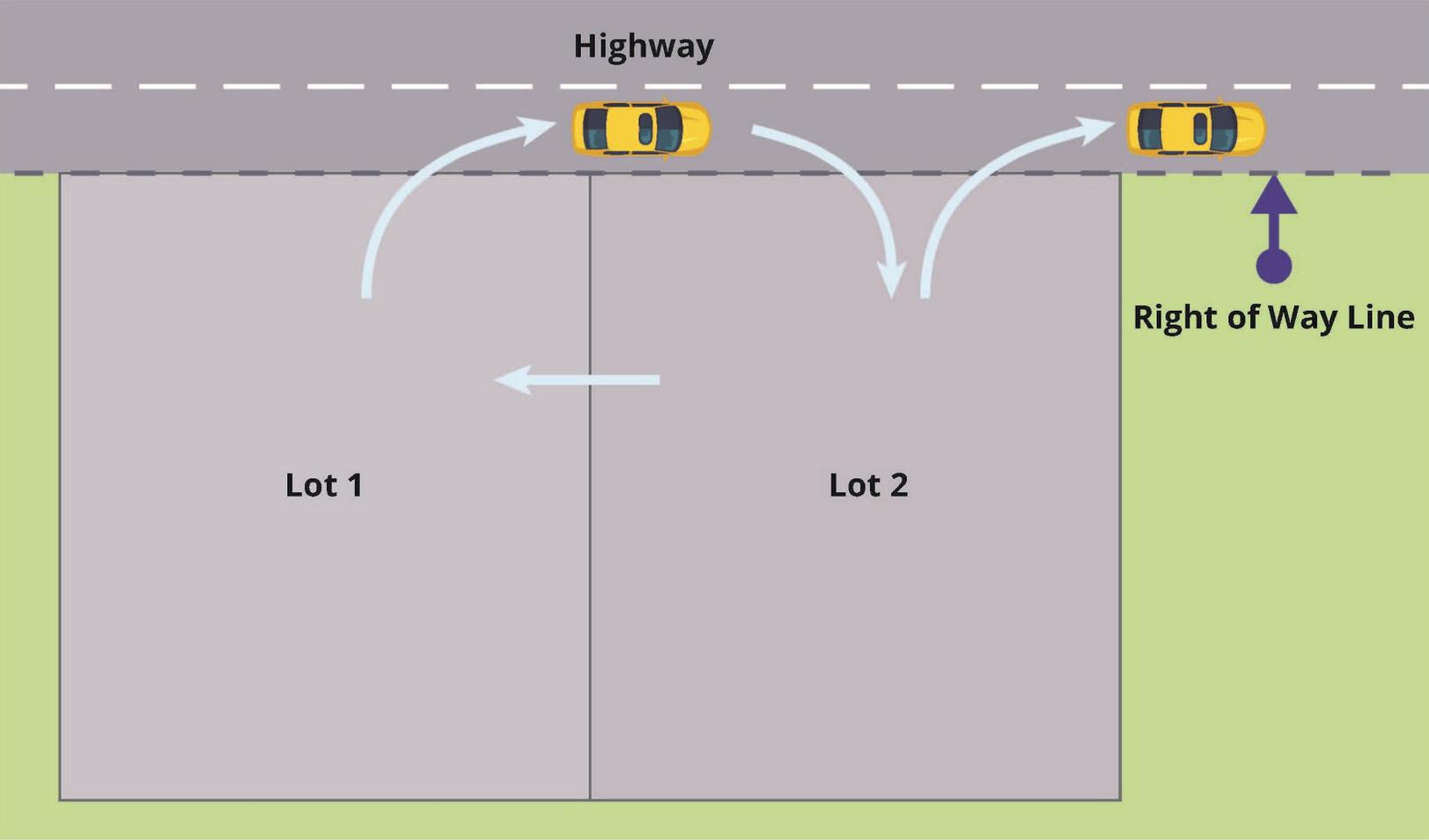
# Lot 1 – Egress Dependent, Lot 2 – Access Independent



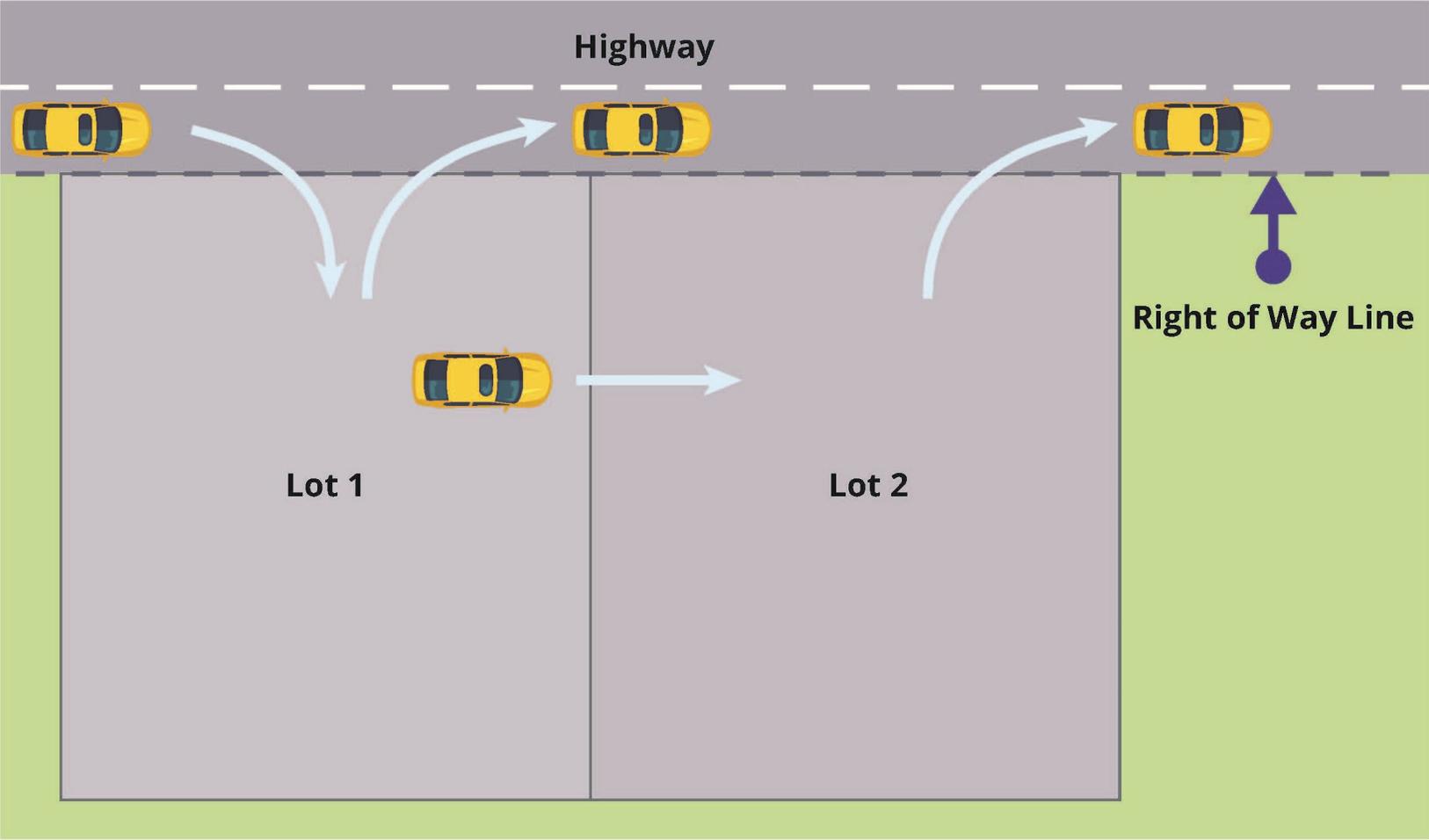
# Lot 1 – Access Independent, Lot 2 – Egress Dependent

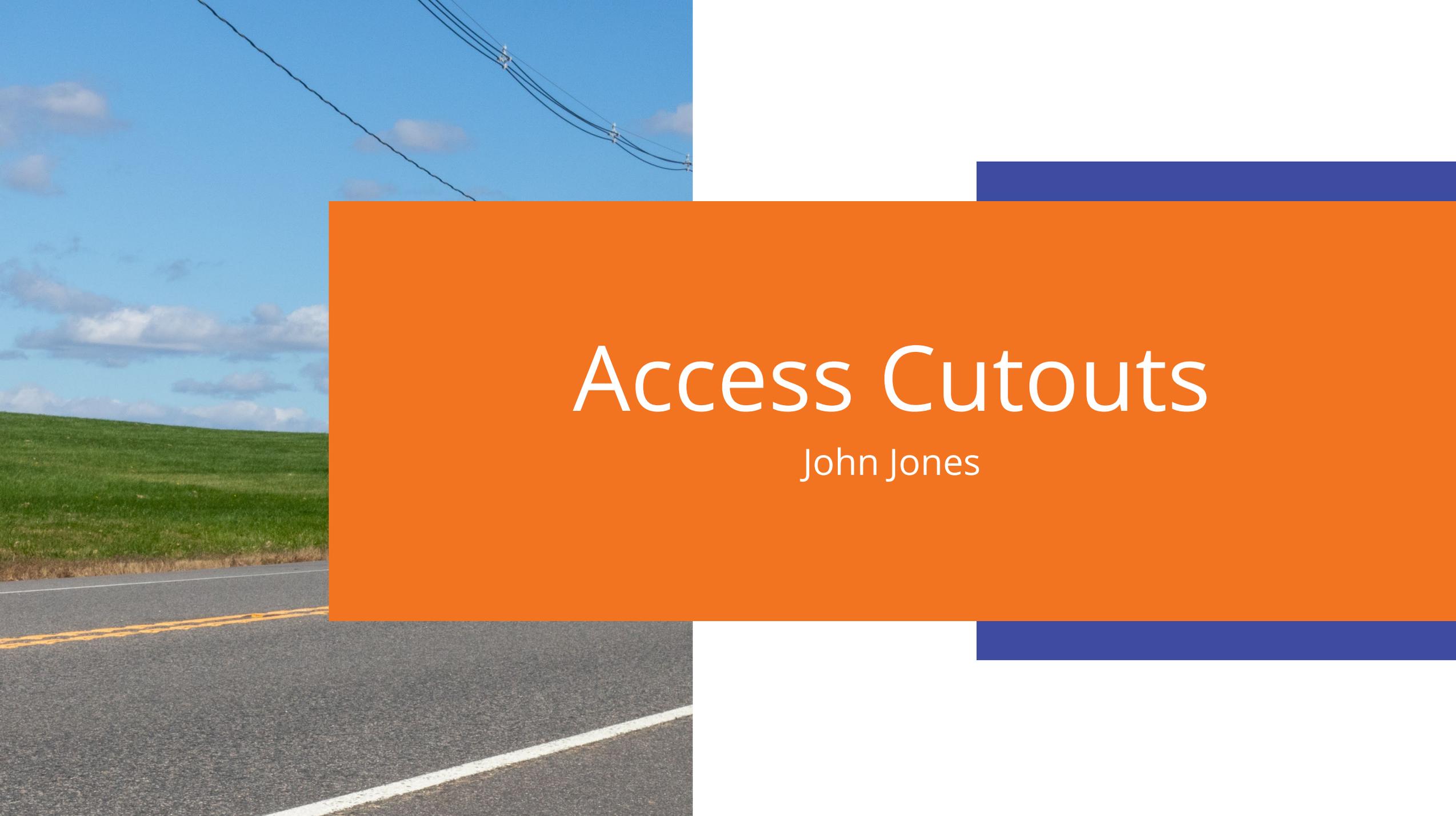


# Lot 1 – Ingress Dependent, Lot 2 – Access Independent



# Lot 1 – Access Independent, Lot 1 – Ingress Dependent





# Access Cutouts

John Jones

# Preparation of Access Cutouts

**Following the establishment of the project's geometry the designer will prepare detailed access cutouts that will be used for property owner notification, based on:**

- ✓ ROW Lines  
(Existing & Proposed)
- ✓ Property Lines  
(Existing & Proposed)
- ✓ Slope Lines  
(Existing & Proposed)
- ✓ Denial of Access Lines  
(Existing & Proposed)
- ✓ Traffic Striping  
(Existing & Proposed)
- ✓ Driveways  
(Existing & Proposed with limits of paving)
- ✓ Drainage & Sign Structures  
(Existing & Proposed)
- ✓ Guiderail  
(Existing & Proposed)
- ✓ Block #, Lot #, Zoning & Existing Land Use
- ✓ Existing Topography
- ✓ Existing On-Site Parking, circulation & loading areas

# Cutout Content Requirements

- Size (sufficient to show entire property)
- Owner's Name & Address
- Scale of Plan
- Title Block
- Proposed ROW Line Block
- No Abbreviations
- Alternative access route & signing plan (revs only)
- Date of Plan (mm/dd/yy)
- 12 Copies (minimum)

## Legend

-  Red = Existing Driveway
-  Purple = Existing Driveway to be Removed
-  Blue = Proposed Driveway
-  Green = Topsoil and Seeded Area

# Sample Cutout

**(insert sample design)**

# Preparation of Access Cutouts

## Consultant

- Prepare markups on the base plan
- Submit markups to OAD for review
- Prepare individual cutouts (Revocations, Modifications, Adjustments, Changes showing entire property)
- Revs require a plan showing alternative access route and signing plan

## Office of Access Design

- Review submitted markups
- Arrange meeting with Project Manager and Consultant to discuss alternatives for lots with unique or difficult access
- Review submitted cutouts for conformity with Access Code and content requirements



# Sufficiency of Access

Arthur Eisdorfer

# Design Vehicles

## Things to Consider:

- Identify the vehicles that use the site
- Establish the before travel paths
  - Getting to and from the site
  - Circulating on the site
- Establish the after travel paths
  - Analyze getting to and from the site
  - Analyze circulating on the site

- Passenger cars
- Single unit trucks (UPS, Fedex, etc.)
- Fuel delivery vehicles – WB 15 (Gas Stations)
- Tractor trailers
  - WB 15
  - WB 19

# Sufficiency of Driveway Design

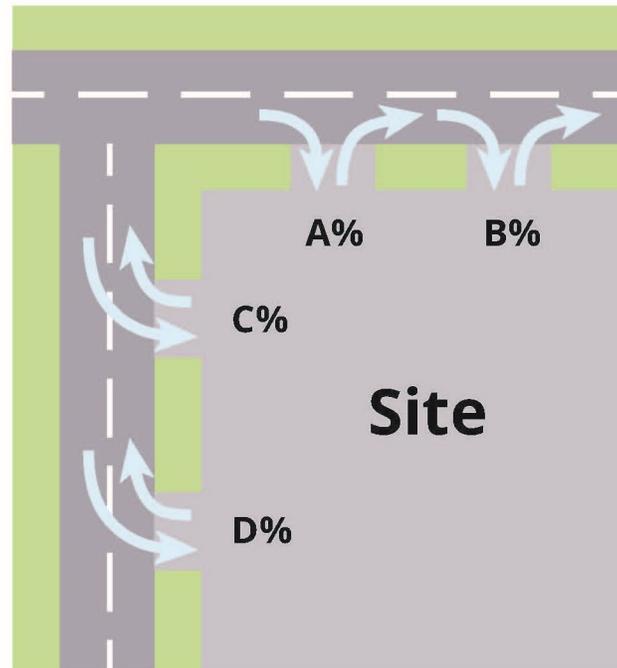
Date of road traffic volumes = Date of initial access notice

Site trip generation = ITE rates for size and type of land use

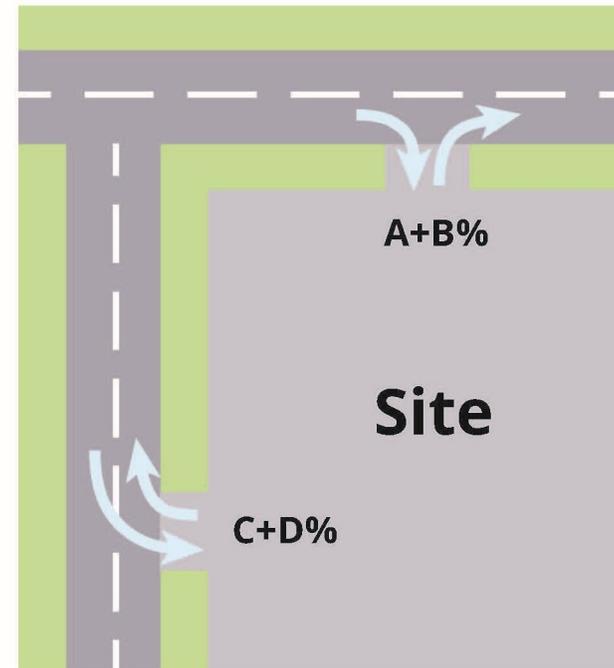
Site trip distribution = Based on traffic counts or assumptions

Hours to analyze = PM and Saturday for shopping, AM and PM for most other land uses

Driveway LOS standard = A-E >> 45 seconds Urban, 30 seconds Rural, F >> no worse than no-build



**Before**



**After**

- Ability of alternative access roadways to handle traffic
- Ability of alternative access driveways to handle traffic



# Analysis Before Submitting Revocation Plan

- ✓ Project traffic conditions to date of revocation notice
- ✓ Traffic for existing roads
  - DOT may have counts
  - Designer may have counts
- ✓ Site traffic
  - Use ITE trip generation rates
  - Use trip generation from Appendix E1
- ✓ Traffic counts may be needed to establish distribution for sites with multiple driveways
- ✓ Use Highway Capacity Manual analyses for
  - Signalized and unsignalized intersections
  - Merges and diverges, etc.
- ✓ Present results in tables

A photograph of a street scene. In the foreground, a red hatchback car is parked on the left side of the road. The road has white lane markings and a yellow curb. In the background, there is a building with a covered walkway and some trees. The sky is blue with some clouds. The image is partially obscured by a large purple rectangle in the center and a blue rectangle at the top right.

# Questions & Answers