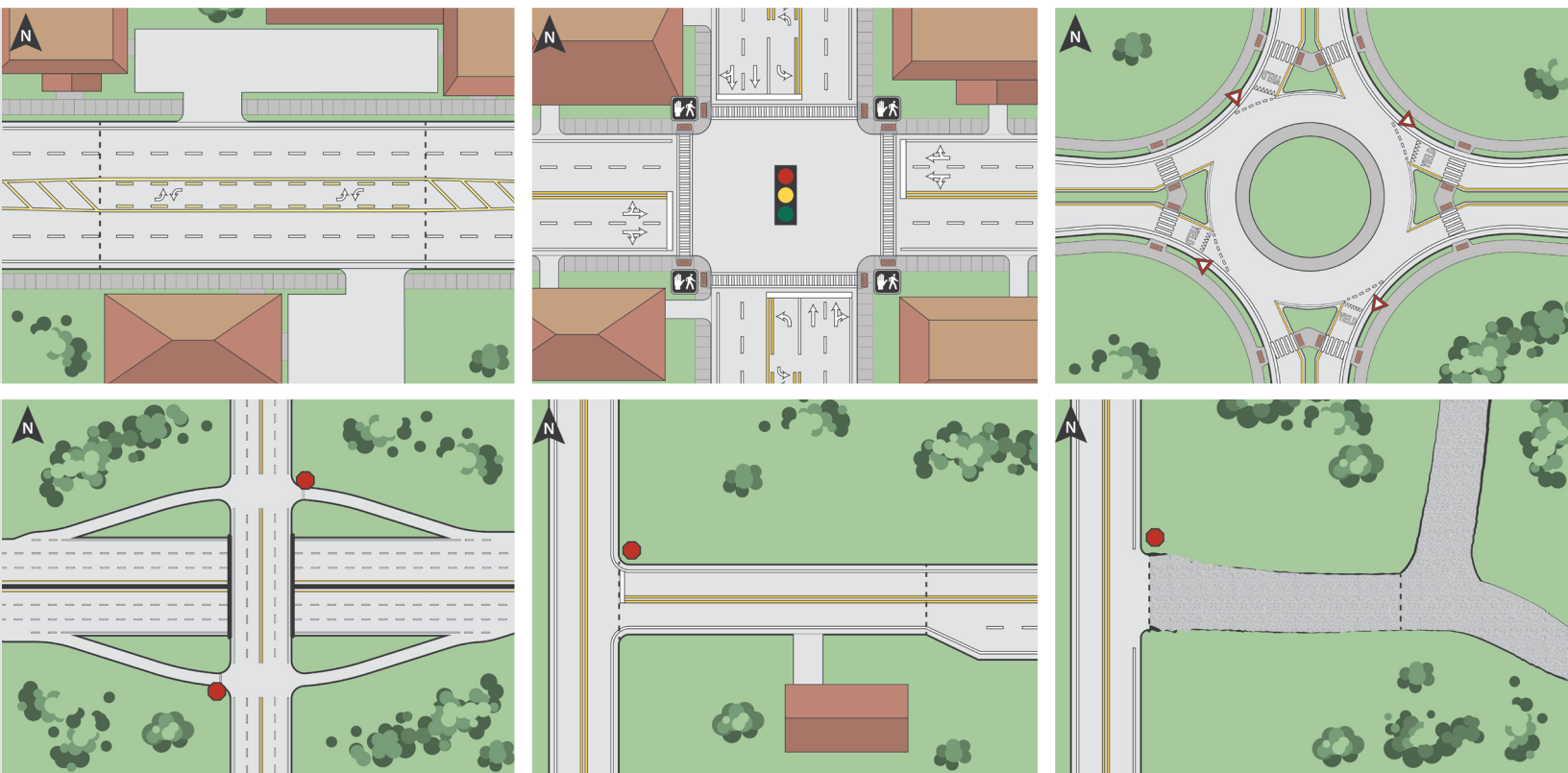


May 2022

Model Inventory of Roadway Elements Fundamental Data Elements (MIRE FDE): Example Illustrations



Source: FHWA



U.S. Department of Transportation
Federal Highway Administration

FHWA-SA-22-058

ZERO IS OUR GOAL
A SAFE SYSTEM IS HOW WE GET THERE

Technical Report Documentation Page

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16. ABSTRACT MIRE provides a comprehensive listing of roadway and traffic data elements and accompanying data dictionary that serves as a model of a robust inventory to support data-driven safety decision making. MIRE 2.0 provides an update of the previous version of MIRE. This guide illustrates the list of MIRE Fundamental Data Elements (FDE) by roadway category, MIRE 2.0 element number, definition, and recommended attributes.			
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ACRONYMS

AADT	Annual Average Daily Traffic	HSIP	Highway Safety Improvement Program
AC	Asphalt-Concrete	JPCP	Jointed Plain Concrete Pavement
ARNOLD	All Road Network of Linear Referenced Data	JRCP	Jointed Reinforced Concrete Pavement
CFI	Continuous Flow Intersection	LRS	Linear Referencing System
CRCP	Reinforced Concrete Pavement	MAP-21	Moving Ahead for Progress in the 21st Century Act
DCD	Double-Crossover Diamond	MIRE	Model Inventory of Roadway Elements
DLT	Displaced Left-Turn	mph	Miles Per Hour
FDE	Fundamental Data Elements	MUT	Median U-Turn
FHWA	Federal Highway Administration	NHS	National Highway System
HAWK	High-Intensity Activated Crosswalk	PCC	Portland Cement Concrete
HOT	High-Occupancy Toll	PHB	Pedestrian Hybrid Beacon
HOV	High-Occupancy Vehicle	SPI	Single Point Interchange
HPMS	Highway Performance Monitoring System		

DEFINITIONS

The following terms found in this guide are defined as such:

Roadway: The portion of a highway intended for vehicular use.¹

Non-local paved roads: Arterials and collectors.²

¹ FHWA. (2016). Highway Performance Monitoring System Field Manual. Office of Highway Policy Information. https://www.fhwa.dot.gov/policyinformation/hpms/fieldmanual/hpms_field_manual_dec2016.pdf.

² FHWA. (2016). Highway Safety Improvement Program. Federal Register. <https://www.federalregister.gov/documents/2016/03/15/2016-05190/highway-safety-improvement-program>.

HOW TO USE THIS DOCUMENT

Background

Data are key to making sound decisions on the safety performance of roadways. Critical data include not only crash, but roadway and traffic data as well. In 2010, the FHWA published the Model Inventory of Roadway Elements - MIRE, Version 1.0 (MIRE 1.0). MIRE provides a comprehensive listing of roadway and traffic data elements and accompanying data dictionary that serves as a model of a robust inventory to support data-driven safety decision making. MIRE is a recommended guideline of data elements that States could collect to develop a comprehensive roadway and traffic data inventory for safety management.

Since FHWA released MIRE 1.0, safety analysis techniques have advanced, and both the safety and data communities have developed an increased awareness of the importance of quality data in safety analysis. Additionally, there are new Federal requirements for related data, including the Highway Performance Monitoring System Field Manual All Road Network of Linear Referenced Data (HPMS ARNOLD). The HPMS ARNOLD requirement expanded State obligation to include all public roads into a State's Linear Referencing System (LRS) base map. This LRS requirement provides at least one means to geospatially locate MIRE data elements.

In response to these changes, FHWA initiated a reassessment of MIRE 1.0. The reassessment resulted in MIRE 2.0.

The Moving Ahead for Progress in the 21st Century Act (MAP-21) required the Secretary of Transportation to establish a subset of the MIRE that are useful for the inventory of roadway safety and ensure that States adopt and use the subset to improve data collection. [23 U.S.C. 148(f)(2)]. The FHWA established a subset of the MIRE as part of the Highway Safety Improvement Program (HSIP) Final Rule changes to 23 CFR Part 924, effective April 14, 2016. This subset is referred to as the fundamental data elements (FDEs). The FDEs are categorized by roadway functional classification and surface type and include three tables, one each for non-local paved roads, local paved roads, and unpaved roads. They are further refined into subcategories of data elements for road segments, intersections and interchanges for non-local paved roads.

Element Tier Categories

The MIRE FDE is comprised of 37 data elements. Recognizing the challenges States would face in collecting all 37 elements on all public roads, FHWA tiered the FDE based on functional class and surface type. This guide is organized into three categories and four subcategories that follow the MIRE 1.0 order shown in FHWA's *Guidance on State Safety Data Systems* issued March 15, 2016.

1. Non-local paved roads.
 - Segments.
 - Intersection.
 - Intersection: Circular.
 - Interchange/Ramps.
2. Local paved roads.
3. Unpaved roads.

To learn more, see the *Model Inventory of Roadway Elements MIRE 2.0 (FHWA-SA-17-048)* report.

1 NON-LOCAL PAVED ROADS

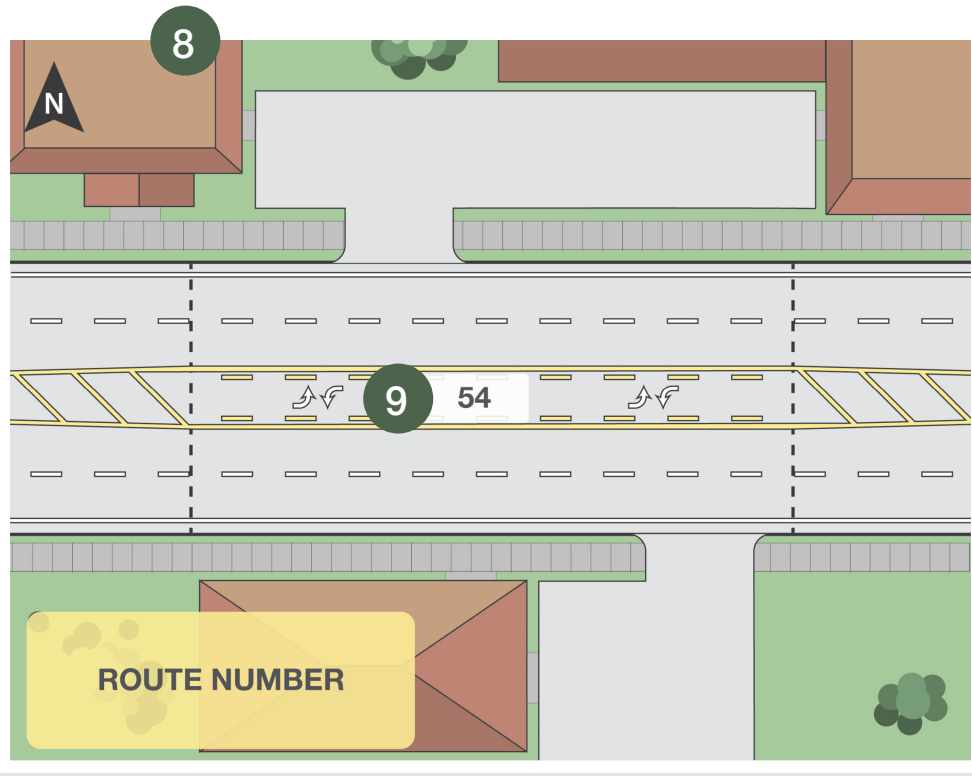
2 Roadway Segment

3 Route Number (8) 4

5 **Definition:** The signed route number.

6 **Recommended Attributes:** Signed numeric value for the roadway segment.

6 Note: Descriptive route name information should be included in *Element 9. Route/Street Name*.

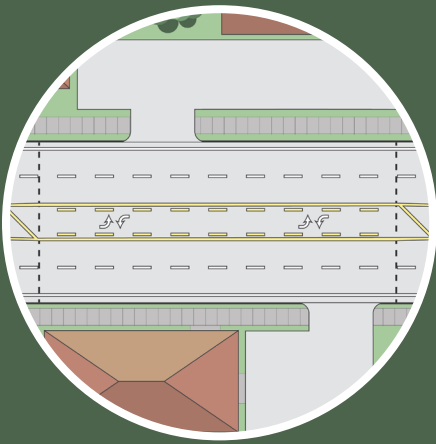


Source: FHWA

Key

- 1 Roadway Category.
- 2 Roadway Components.*
- 3 Fundamental Data Element.
- 4 MIRE 2.0 Number.
- 5 Definition of FDE.
- 6 Recommended Attributes.
- 7 Data is required for the Highway Performance Monitoring System Field Manual (HPMS).
- 8 Base Illustration.
- 9 Element Detail.

*Termed "Data Type" in MIRE 2.0.



NON-LOCAL PAVED ROADS

Roadway Segment

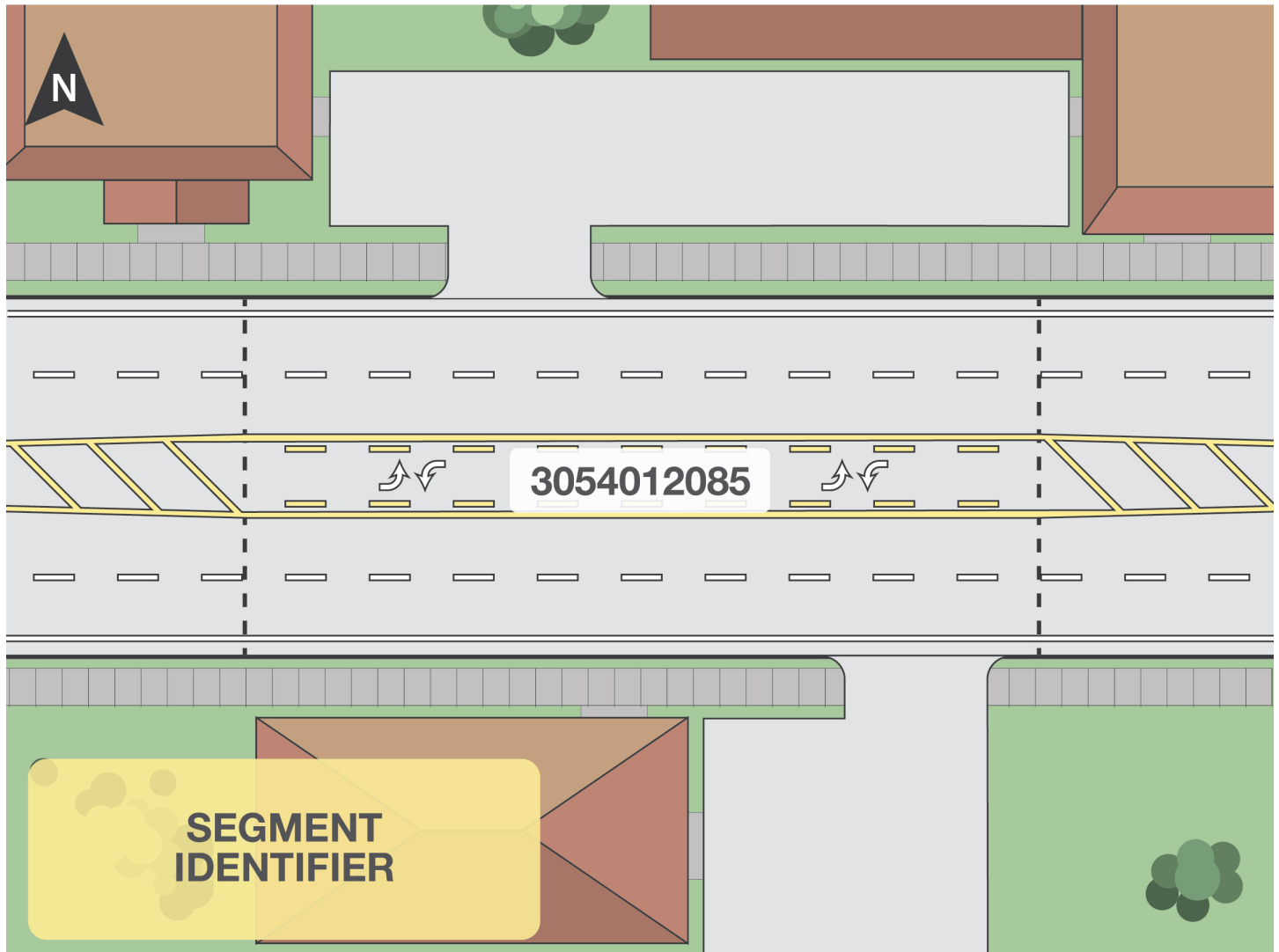
NON-LOCAL PAVED ROADS

Roadway Segment

Segment Identifier (12)

Definition: Unique segment identifier.

Recommended Attributes: Derived from other elements (e.g., combination of route number, county location and beginning and ending milepoints).



NON-LOCAL PAVED ROADS

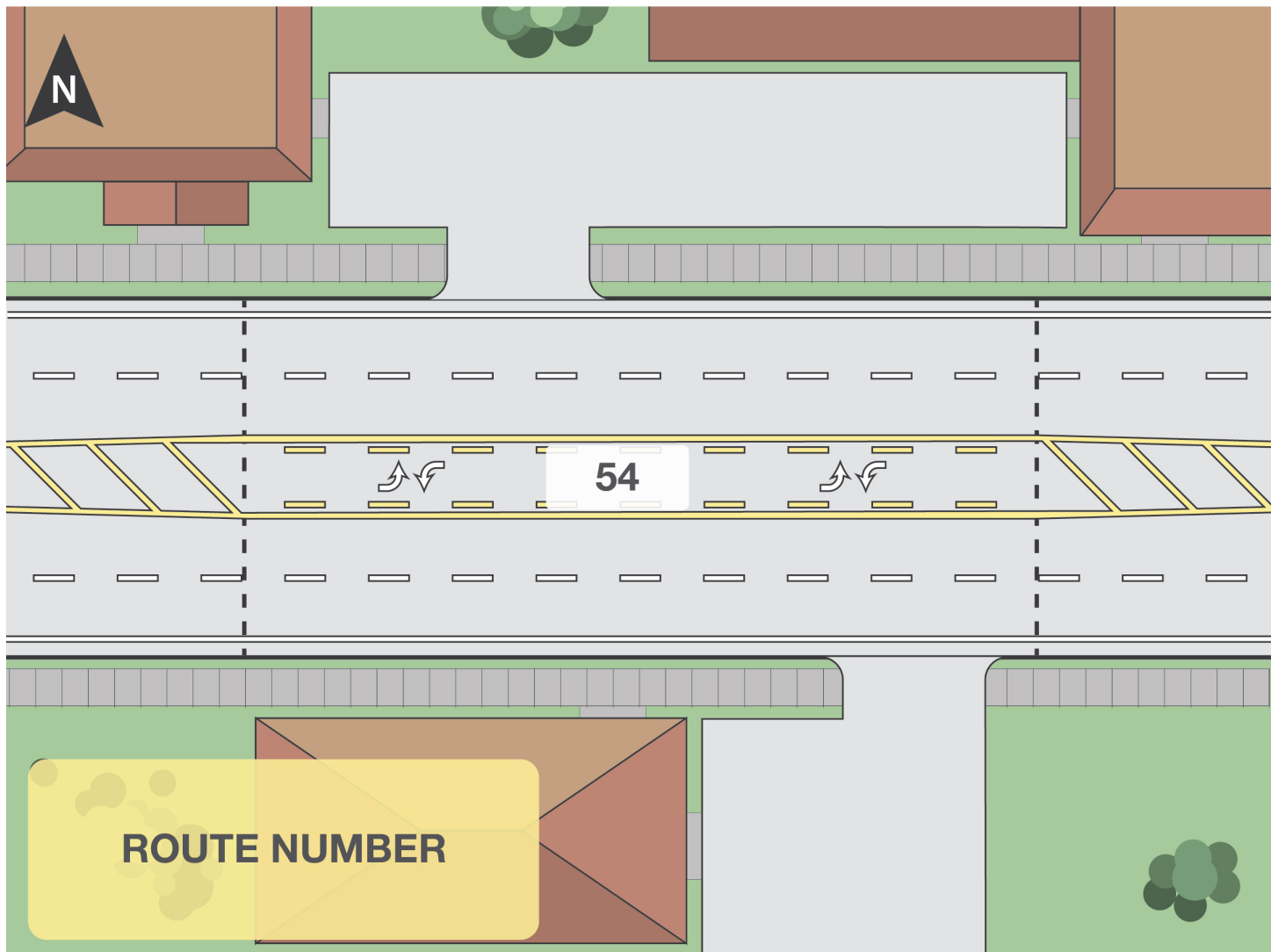
Roadway Segment

Route Number (8)

Definition: The signed route number.

Recommended Attributes: Signed numeric value for the roadway segment.

Note: Descriptive route name information should be included in *Element 9. Route/Street Name*.



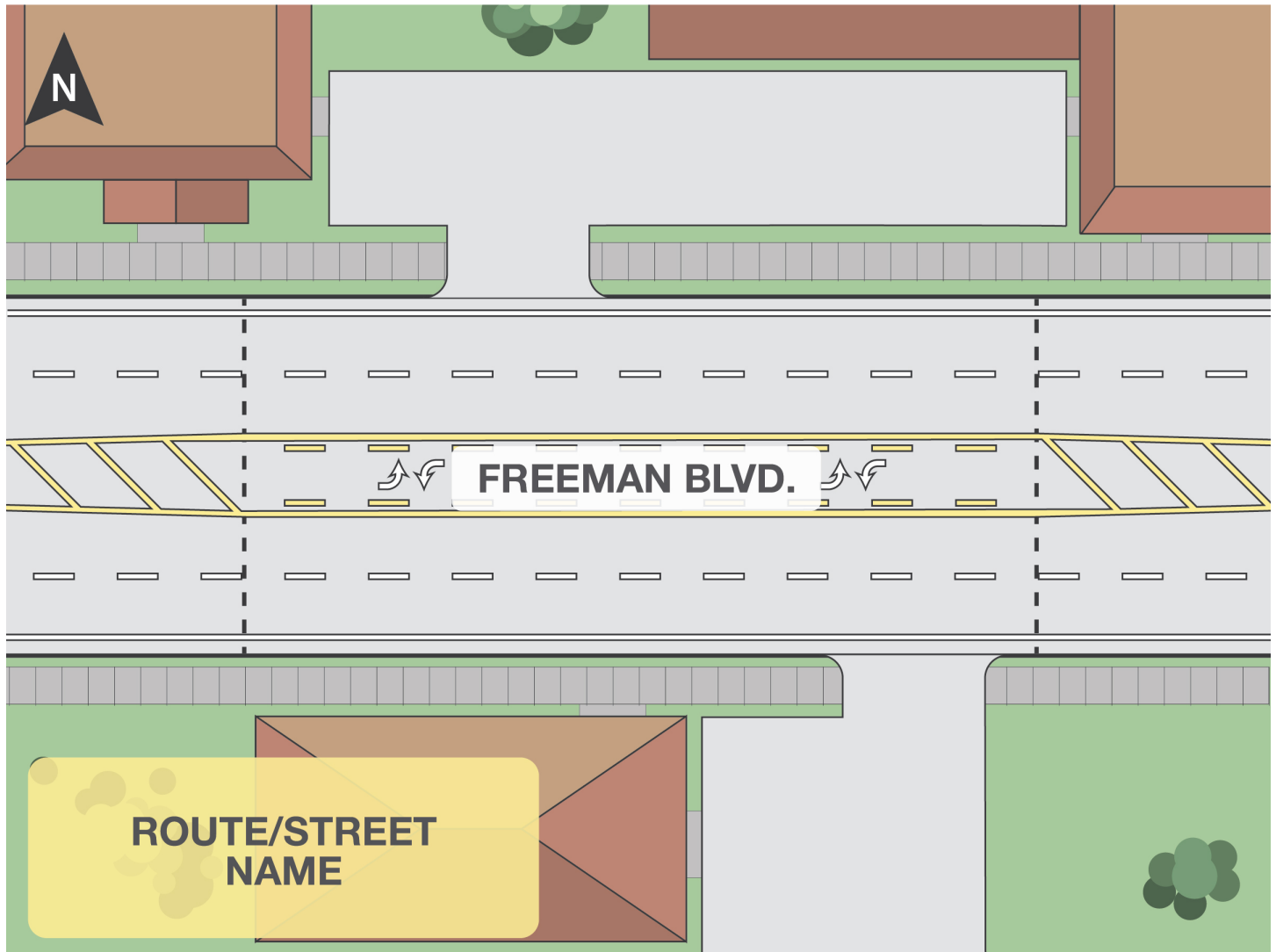
NON-LOCAL PAVED ROADS

Roadway Segment

Route/Street Name (9)

Definition: The route or street name, where different from *Element 8. Route Number*.

Recommended Attributes: The alphanumeric route or street name.



NON-LOCAL PAVED ROADS

Roadway Segment

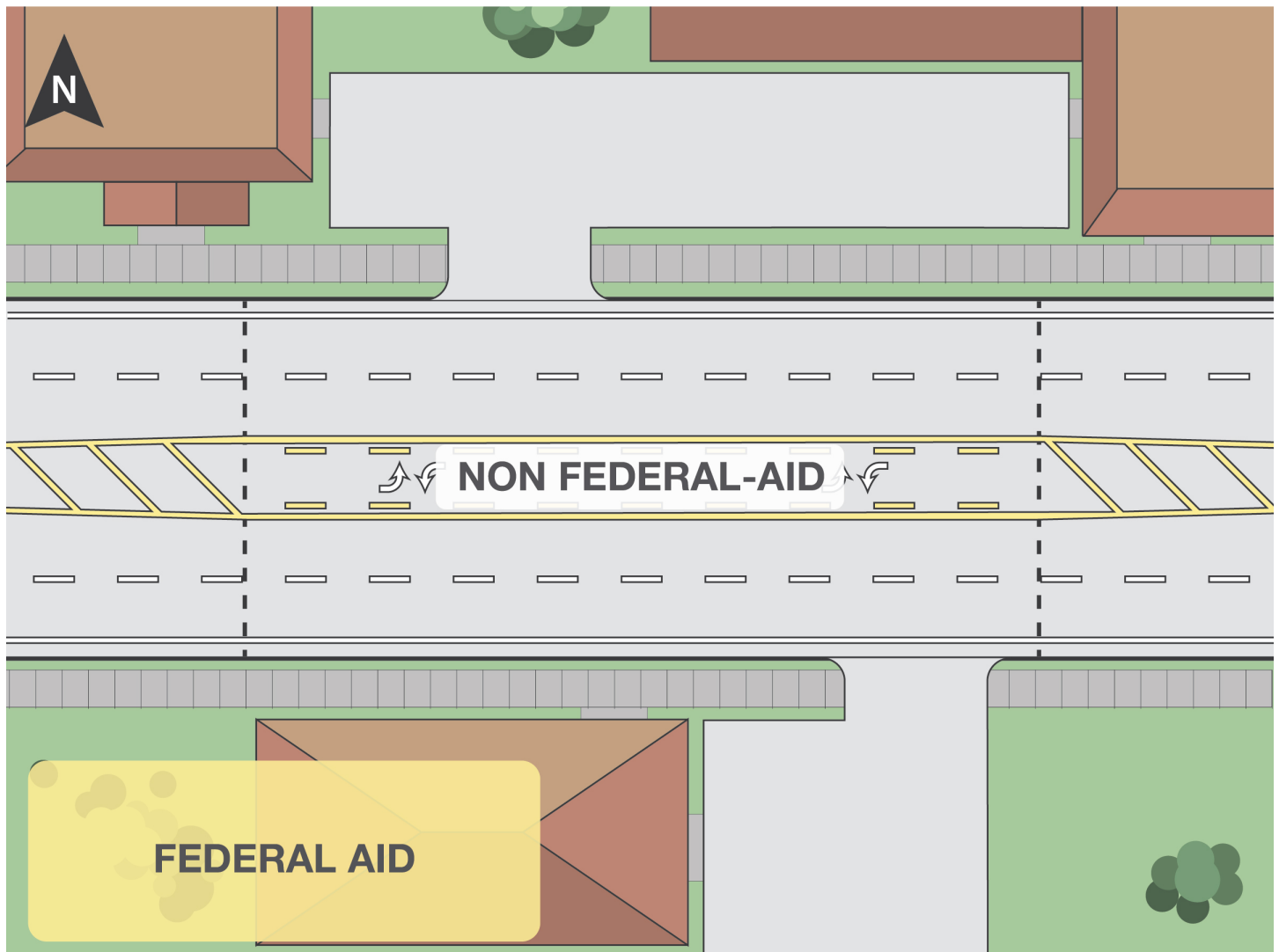
Federal Aid (21)

Definition: Indicate the system on which the route is located.

Recommended Attributes:

1. Route is non Federal-aid.
2. Route is Federal-aid, but not on National Highway System (NHS) (i.e., all non-NHS routes functionally classified as Interstate, Other Freeways & Expressways, Other Principal Arterials, Minor Arterials, Major Collectors, and Urban Minor Collectors).
3. Route is on NHS.

Note: This element has been changed since MIRE 1.0. In MIRE 1.0, elements 21 *Federal Aid* and 22 *Route Type* were a single combined element. In MIRE 2.0, they are separate elements.



NON-LOCAL PAVED ROADS

Roadway Segment

Route Type (22)

Definition: Federal-aid/NHS route type.

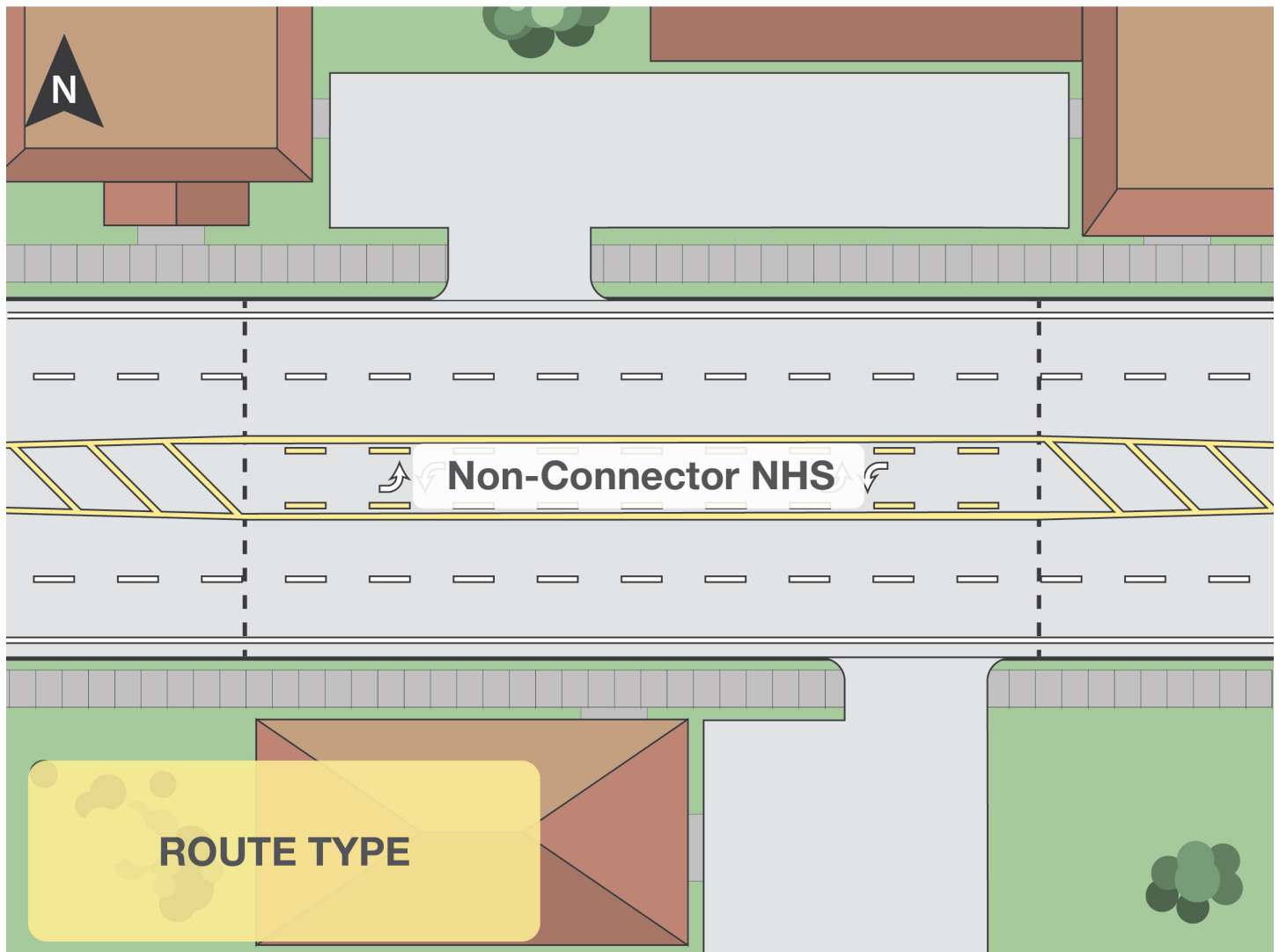
Recommended Attributes:

1. Non Connector NHS.
2. Major Airport.
3. Major Port Facility.
4. Major Amtrak Station.
5. Major Rail/Truck Terminal.
6. Major Inter City Bus Terminal.
7. Major Public Transportation or Multi-Modal Passenger Terminal.

8. Major Pipeline Terminal.

9. Major Ferry Terminal.

Note: This element has been changed since MIRE 1.0. In MIRE 1.0, elements 21 *Federal Aid* and 22 *Route Type* were a single combined element. In MIRE 2.0, they are separate elements.



NON-LOCAL PAVED ROADS

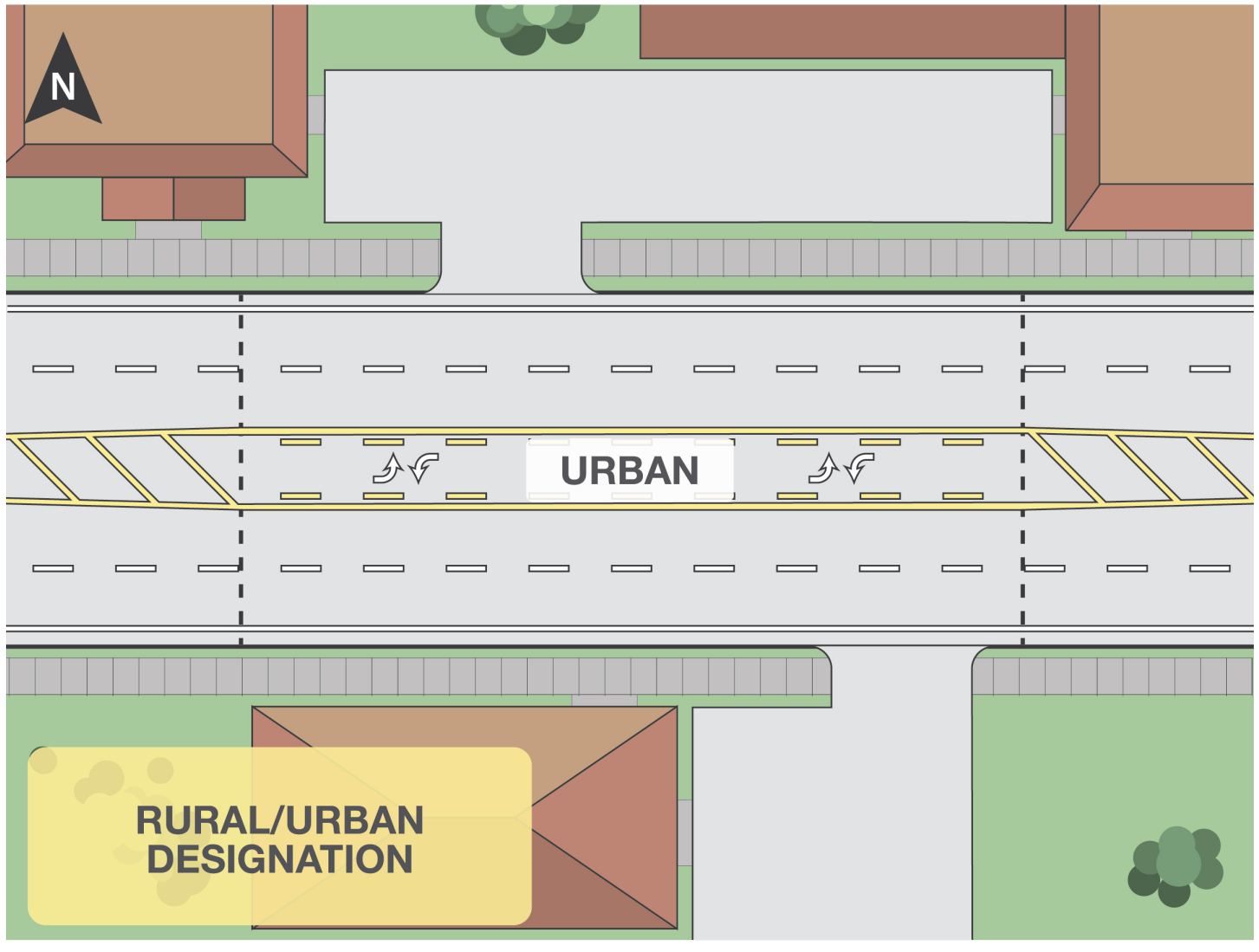
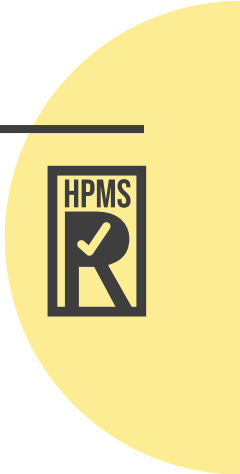
Roadway Segment

Rural/Urban Designation (20)

Definition: The rural or urban designation based on Census urban boundary and population.

Recommended Attributes:

1. Rural.
2. Urban (population > 5,000).



NON-LOCAL PAVED ROADS

Roadway Segment

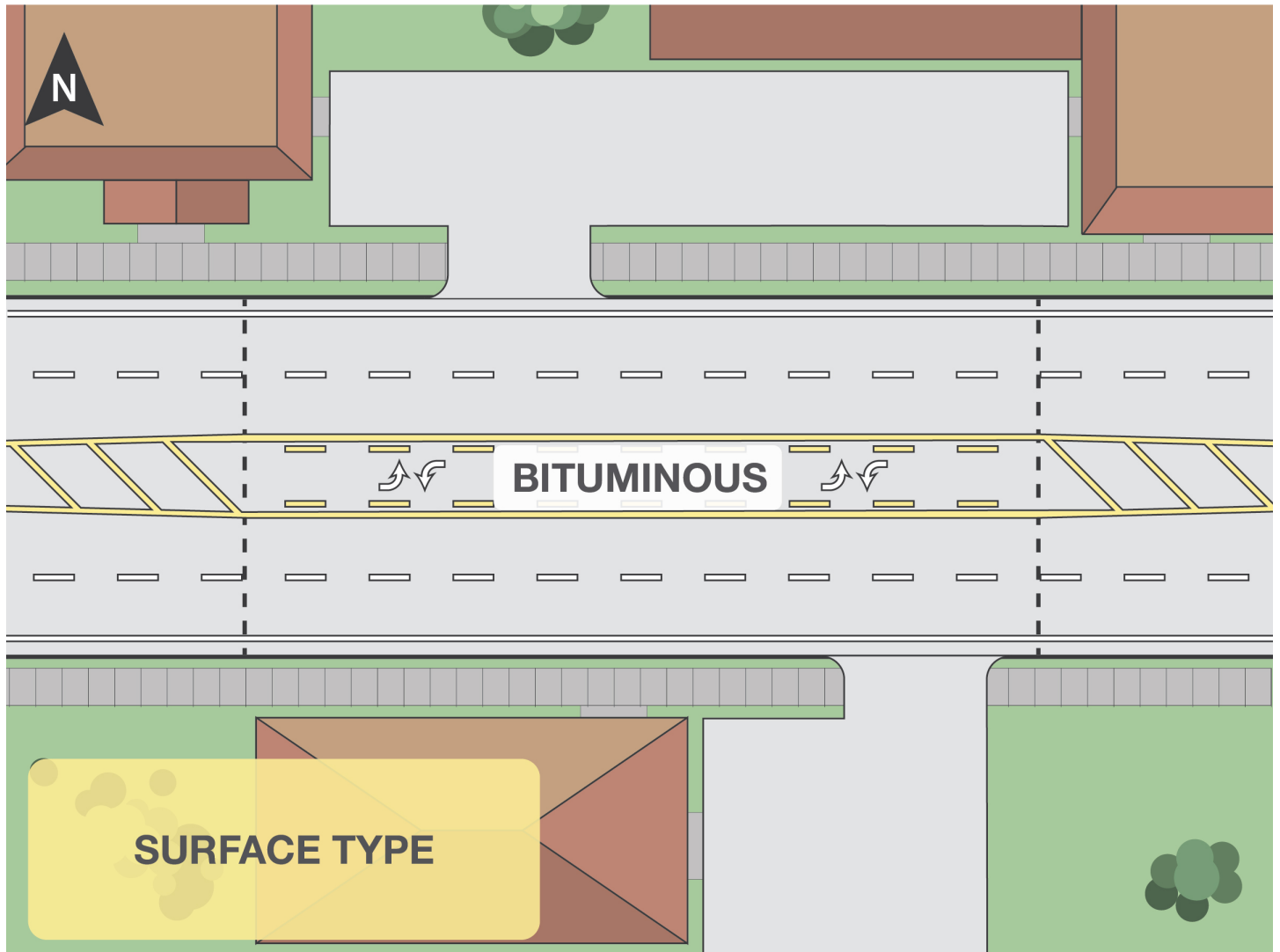


Surface Type (24)

Definition: The surface type of the segment.

Recommended Attributes:

- | | | | |
|---|---|---|--|
| 1. Unpaved.
a. Dirt. b. Gravel. c. Other. | Reinforced Concrete Pavement (CRCP). | 9. Unbonded Jointed Concrete Overlay on Portland Cement Concrete (PCC) Pavements. | 12. Other.
Note: This element has been changed since MIRE 1.0. To facilitate safety analyses, it is recommended that the type of surface for unpaved roads be more specifically identified. |
| 2. Bituminous. | 6. Asphalt-Concrete (AC) Overlay over Existing AC Pavement. | 10. Unbonded CRCP Overlay on PCC Pavements. | |
| 3. Jointed Plain Concrete Pavement (JPCP). | 7. AC Overlay over Existing Jointed Concrete Pavement. | 11. Bonded PCC Overlays on PCC Pavements. | |
| 4. Jointed Reinforced Concrete Pavement (JRCP). | 8. AC (Bi Overlay over Existing CRCP). | | |
| 5. Continuously | | | |



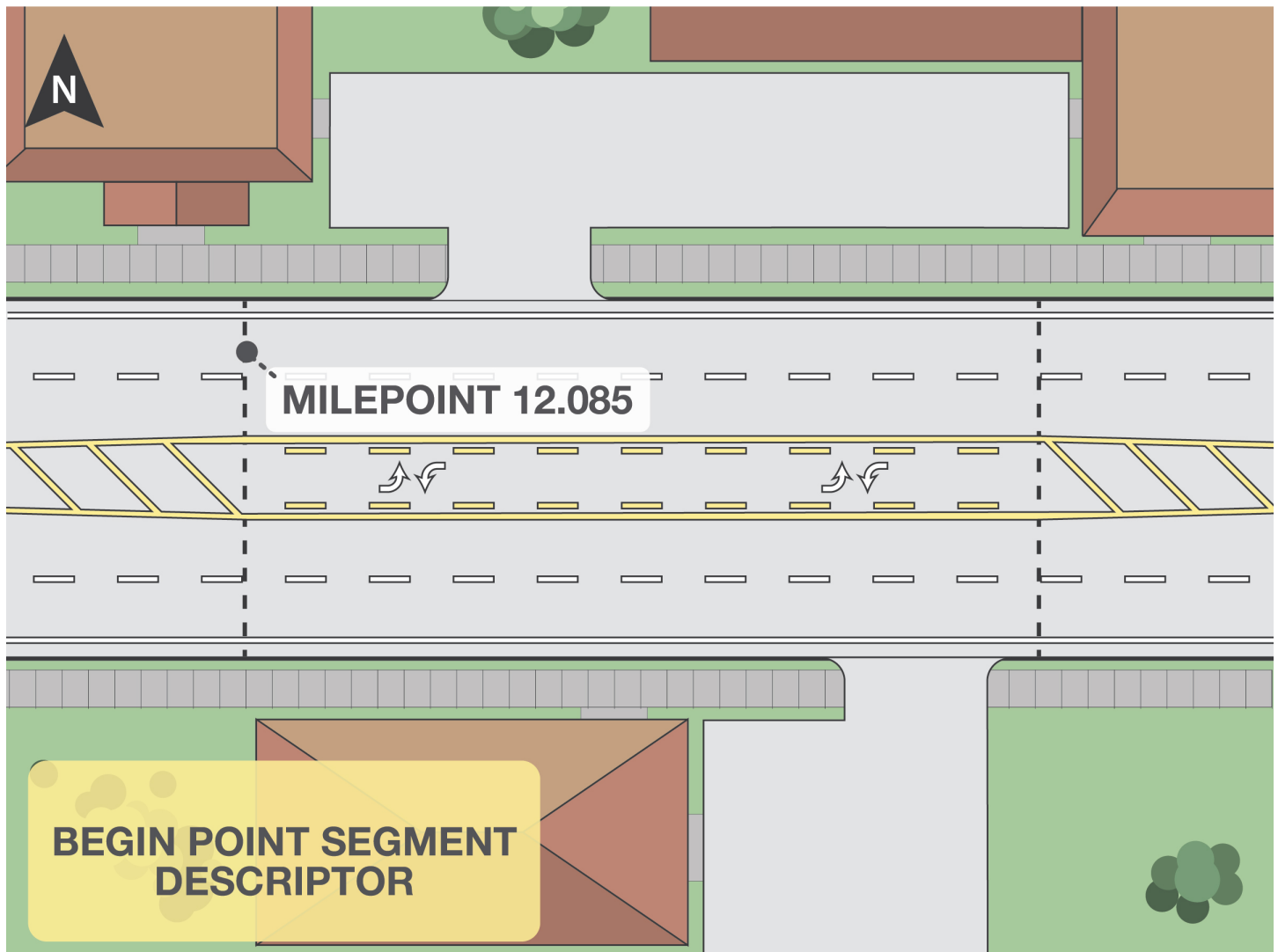
NON-LOCAL PAVED ROADS

Roadway Segment

Begin Point Segment Descriptor (10)

Definition: Location information defining the beginning of the segment.

Recommended Attributes: Begin point will be defined by the user agency. Generally, this will be based on homogeneity of chosen attributes throughout the segment. Begin point segment descriptors can be either linked to a Linear Reference System (e.g., Route-beginning milepoint, Route-ending milepoint) or to a spatial data system (i.e., longitude/latitude for begin and end points). Street address could also possibly be used for urban areas. The descriptor types used must be common across all MIRE files and compatible with crash data location coding.



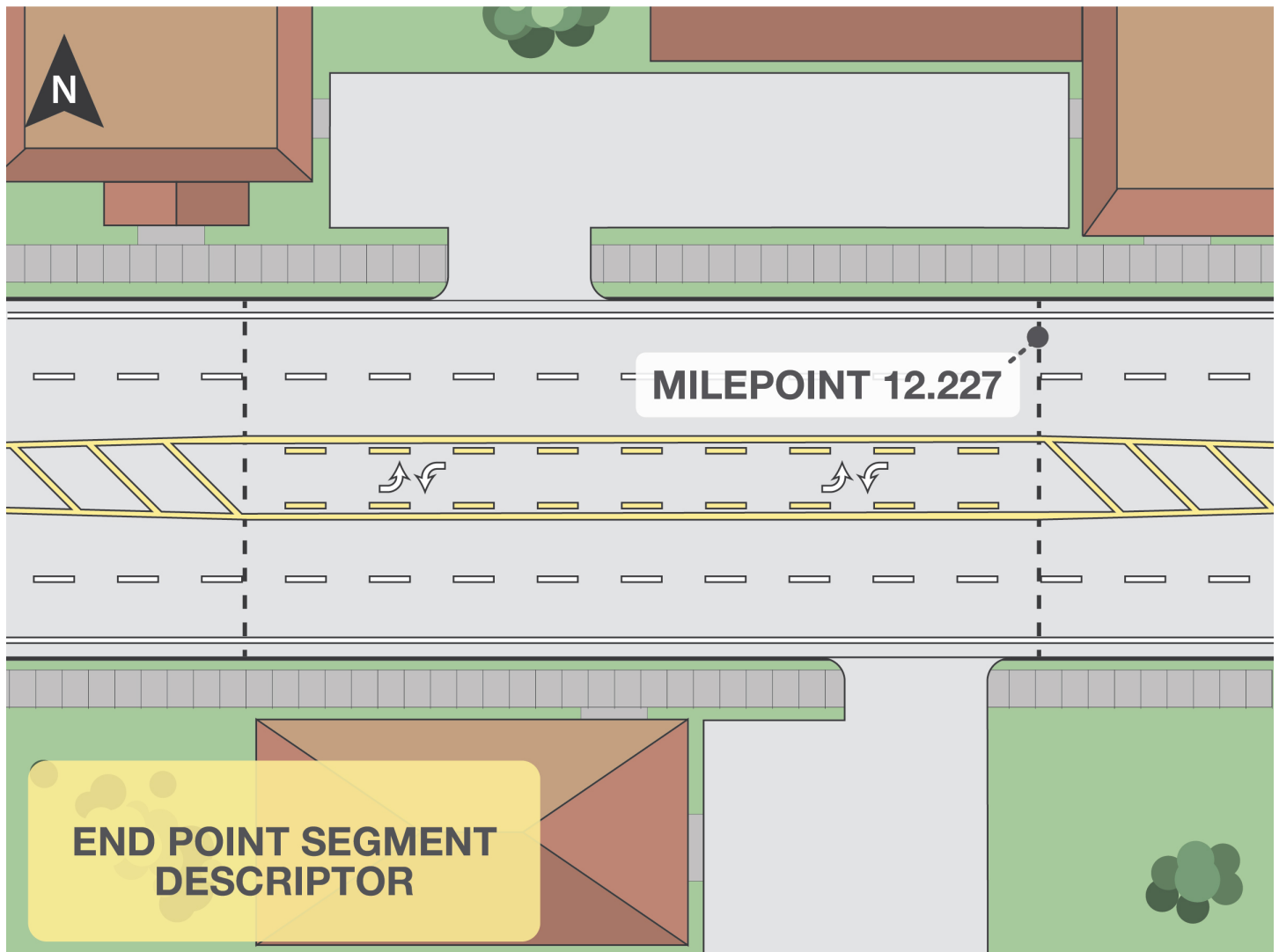
NON-LOCAL PAVED ROADS

Roadway Segment

End Point Segment Descriptor (11)

Definition: Location information defining the end of the segment.

Recommended Attributes: End point will be defined by the user agency. Generally, this will be based on homogeneity of chosen attributes throughout the segment). End point segment descriptors can be either linked to a Linear Reference System (e.g., Route-beginning milepoint, Route-ending milepoint) or to a spatial data system (i.e., longitude/latitude for begin and end points). Street address could also possibly be used for urban areas. The descriptor types used must be common across all MIRE files and compatible with crash data location coding.



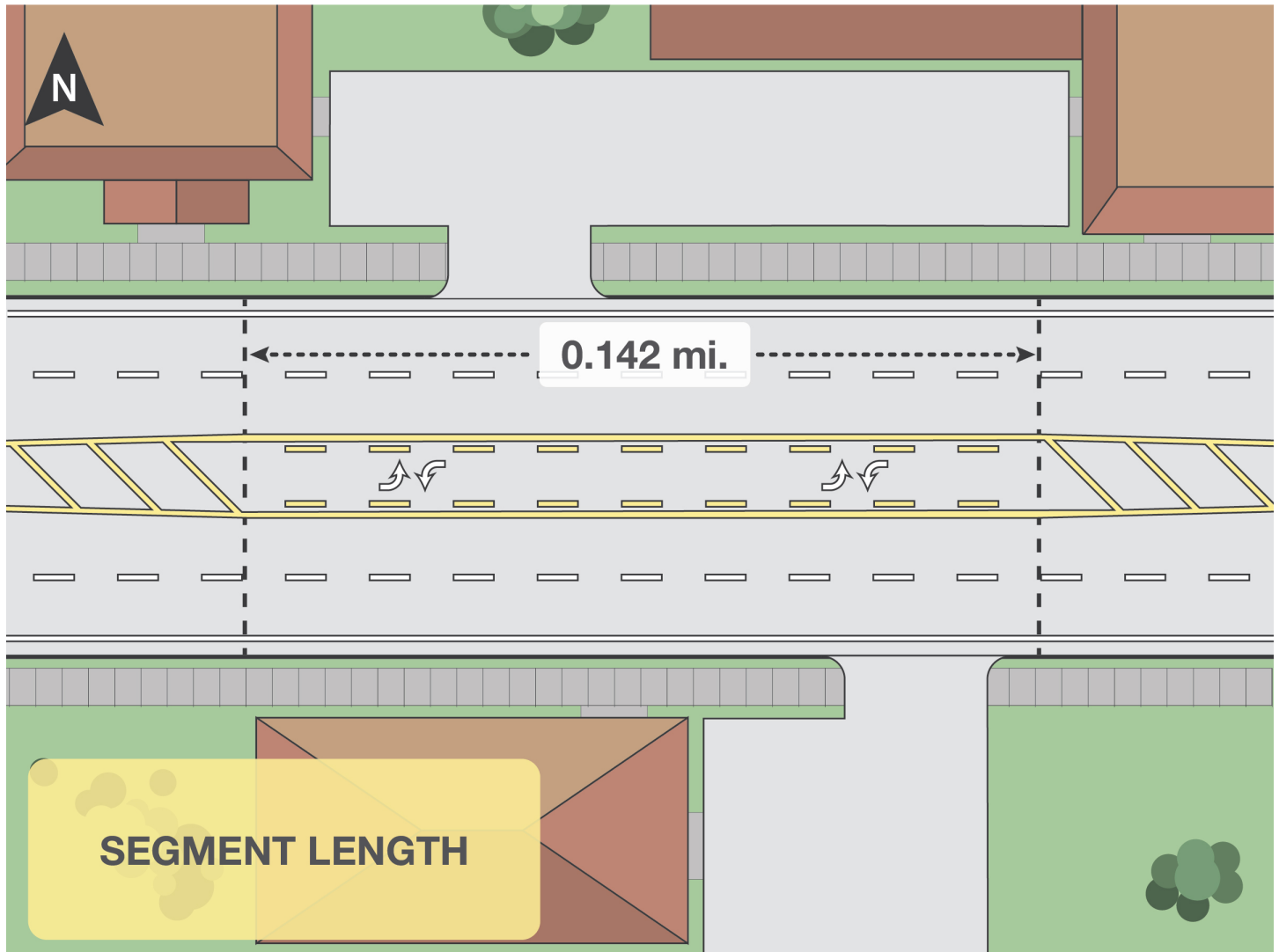
NON-LOCAL PAVED ROADS

Roadway Segment

Segment Length (13)

Definition: The length of the segment.

Recommended Attributes: Miles.



NON-LOCAL PAVED ROADS

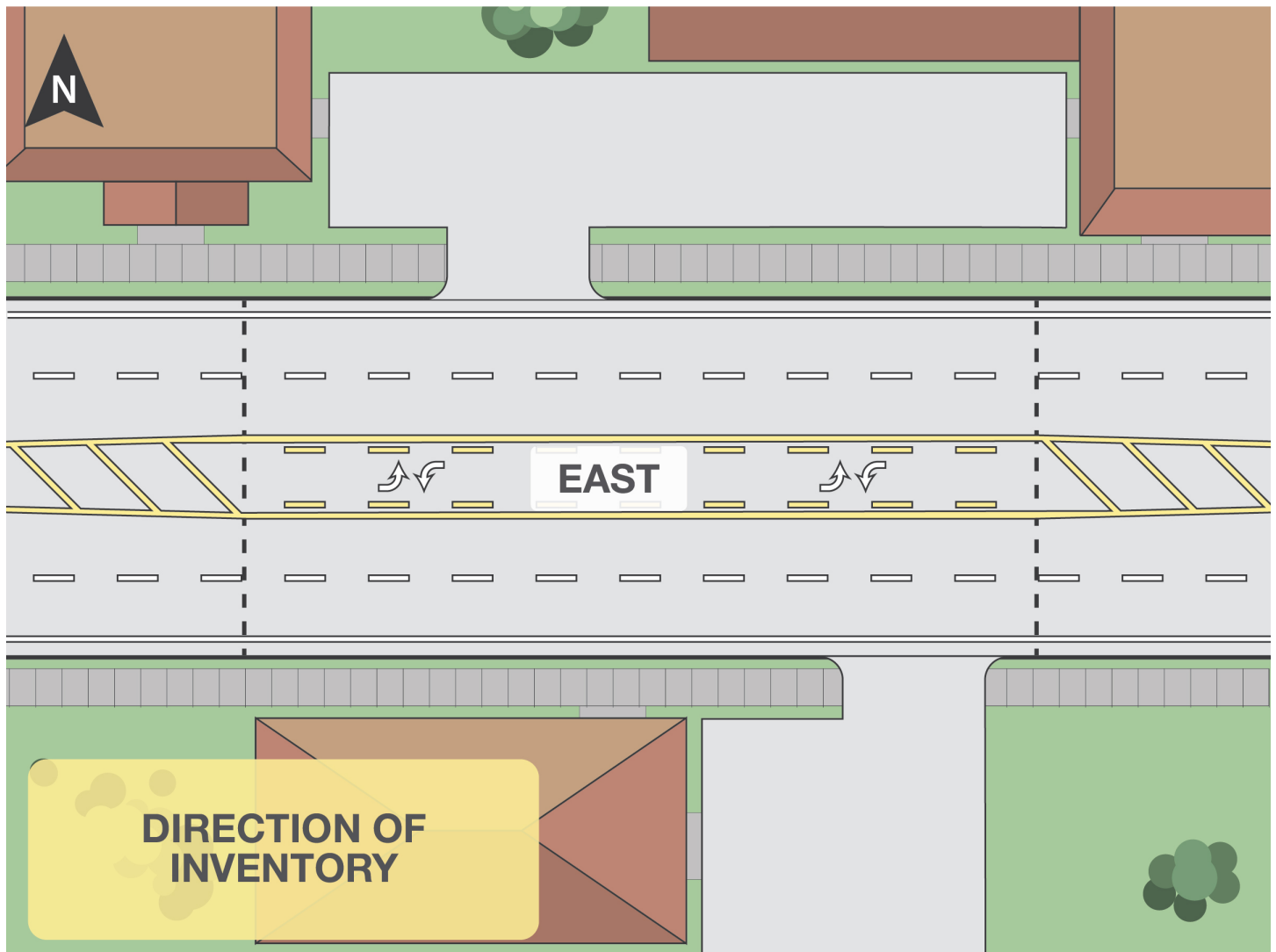
Roadway Segment

Direction of Inventory (18)

Definition: Direction of inventory if divided roads are inventoried in each direction.

Recommended Attributes:

1. Predominate compass direction (e.g. North, South, East, West) – if roads are inventoried in each direction usually due to different characteristics on each roadway.
2. Both – if inventoried in only one direction (e.g. the inventory applies to both directions of a single-carriageway roadway).



NON-LOCAL PAVED ROADS

Roadway Segment



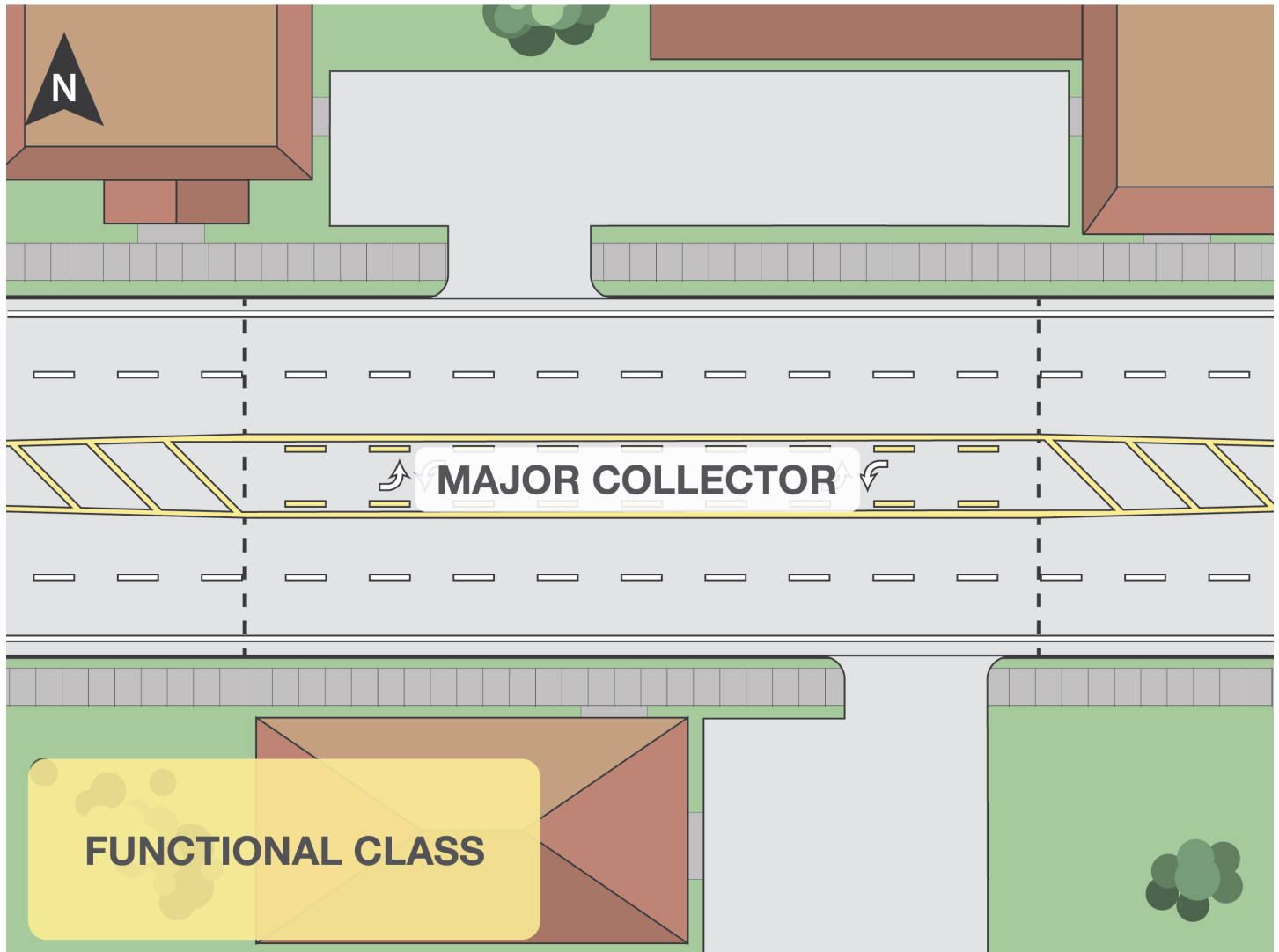
Functional Class (19)

Definition: The FHWA approved Functional Classification System.

Recommended Attributes:

1. Interstate.
2. Principal arterial other freeways and expressways.
3. Principal arterial other.
4. Minor arterial.
5. Major collector.
6. Minor collector.
7. Local.

Note: This element has been changed since MIRE 1.0.



NON-LOCAL PAVED ROADS

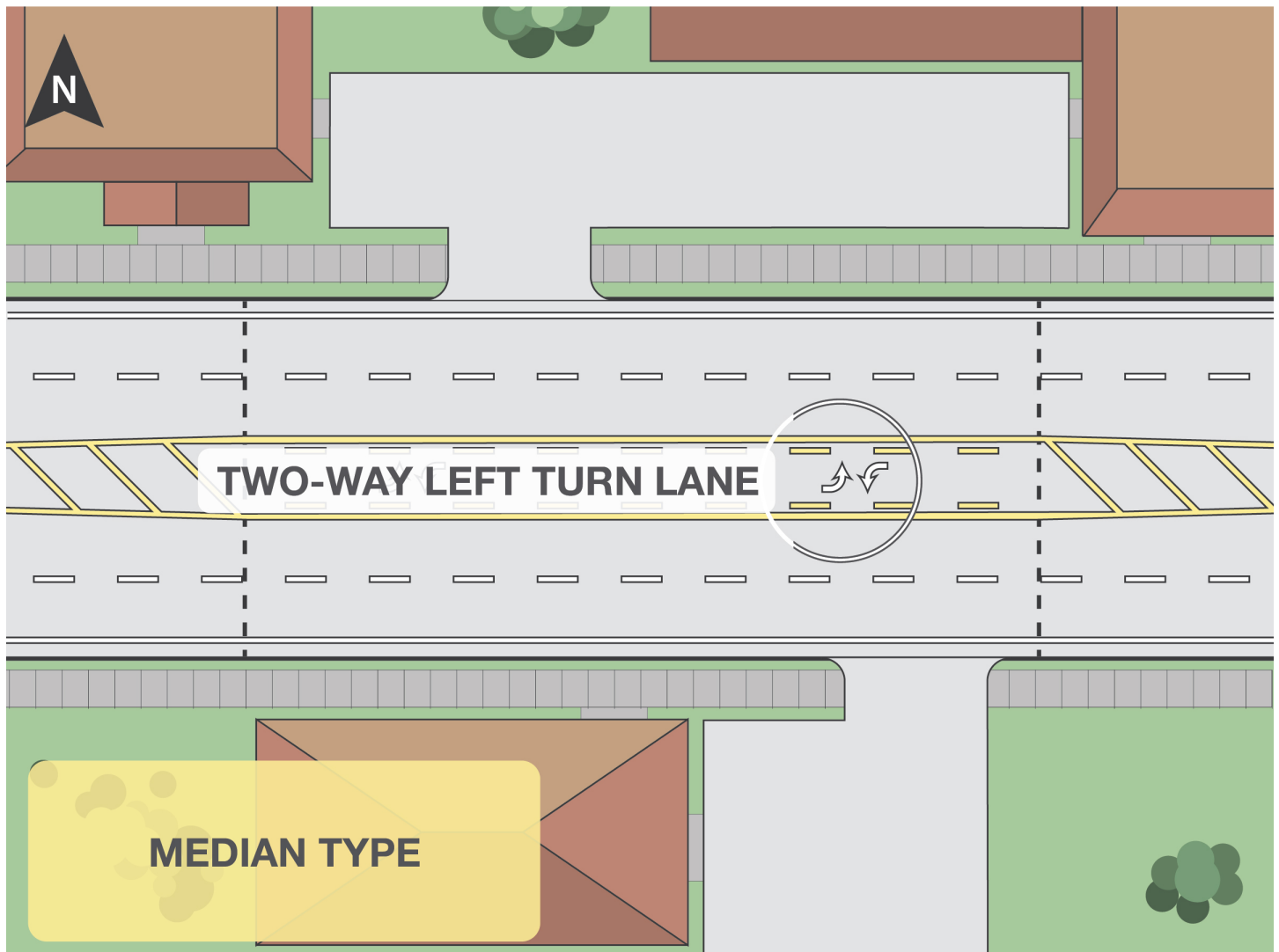
Roadway Segment

Median Type (55)

Definition: The type of median present on the segment.

Recommended Attributes:

1. Undivided.
2. Flush paved median (at least 4 ft in width).
3. Raised median.
4. Depressed median.
5. Two-way left-turn lane.
6. Railroad or rapid transit.
7. Divided, separate grades without retaining wall.
8. Divided, separate grades with retaining wall.
9. Other divided.



NON-LOCAL PAVED ROADS

Roadway Segment



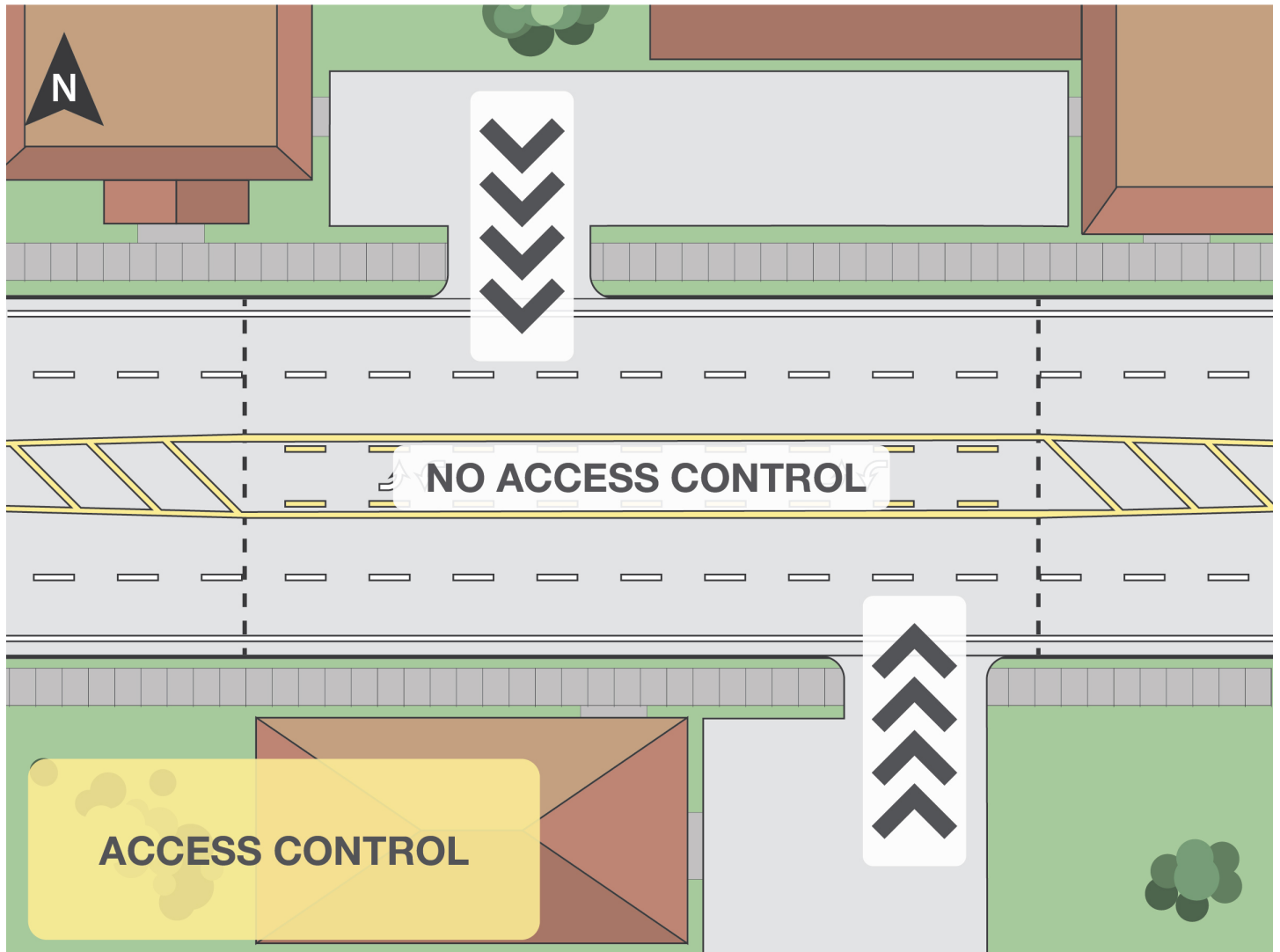
Access Control (23)

Definition: The degree of access control for a given section of road.

Recommended Attributes:

- 1. Full access control – Preference given to through traffic movements by providing interchanges with selected public roads, and by prohibiting crossing at-grade and direct driveway connections (i.e., limited access to the facility).
- 2. Partial access control - Preference given to through traffic movement. In addition to interchanges, there may be some crossings at-grade with public roads, but, direct private driveway connections have been minimized through the use of frontage roads or other local access restrictions. Control of curb cuts is not access control.
- 3. No access control - No degree of access control exists (i.e., full access to the facility is permitted).

Note: The definition of this element has been changed since MIRE 1.0.



NON-LOCAL PAVED ROADS

Roadway Segment

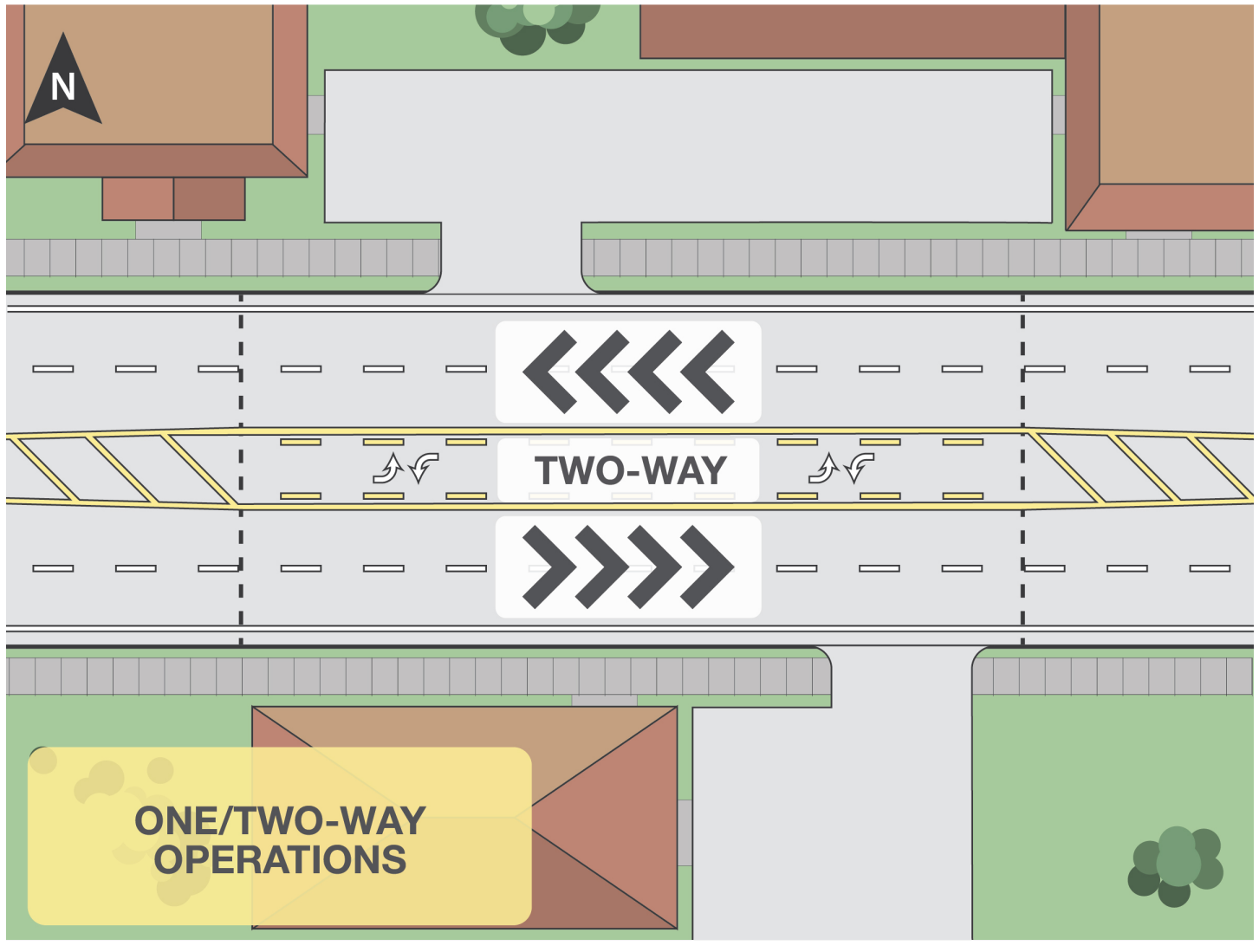


One/Two-Way Operations (93)

Definition: Indication of whether the segment operates as a one- or two-way roadway.

Recommended Attributes:

1. One-way.
2. Two-way.
3. One direction of travel for divided roadways.



NON-LOCAL PAVED ROADS

Roadway Segment

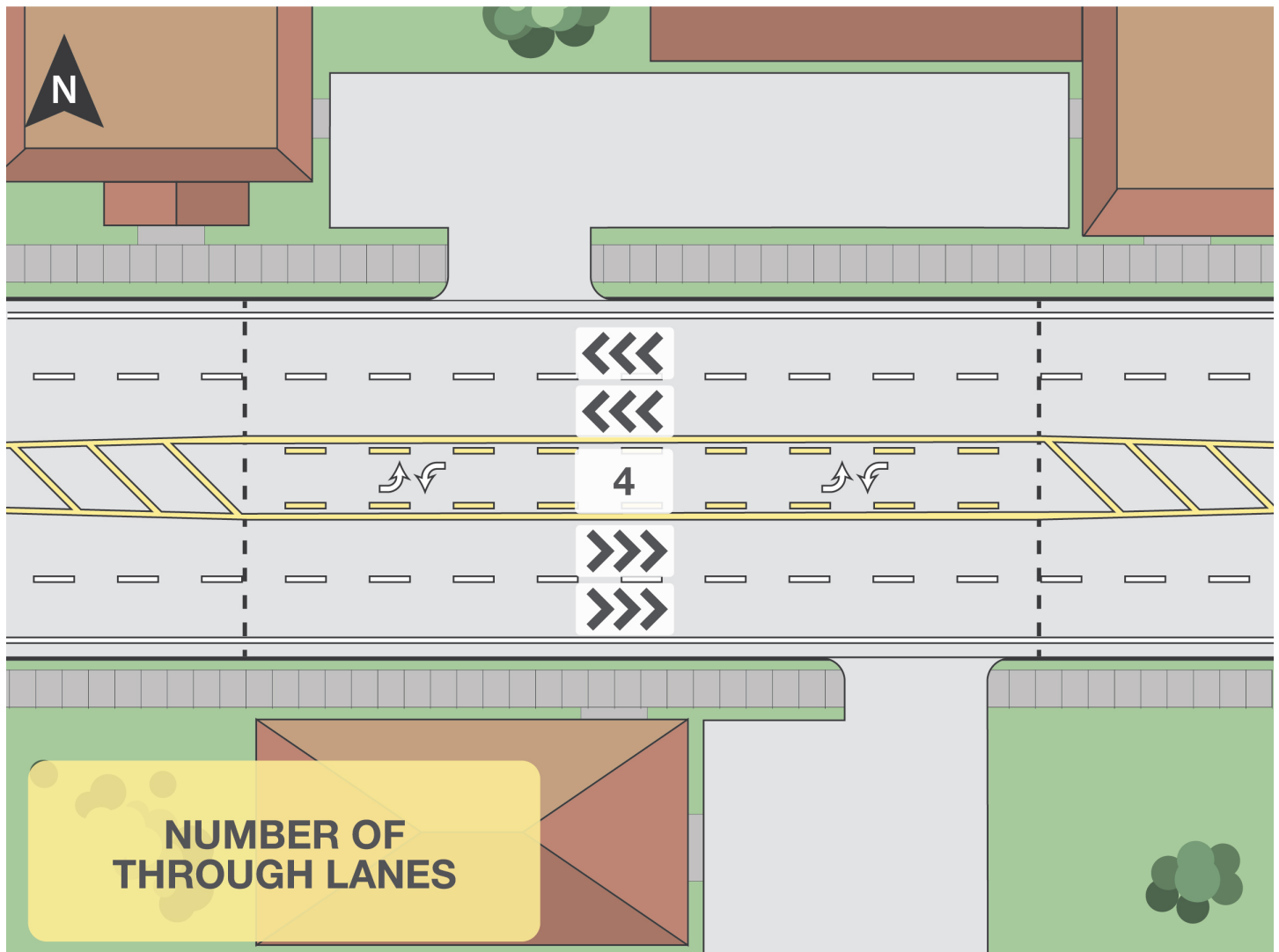
Number of Through Lanes (32)

Definition: The total number of through lanes on the segment. It is the number of through lanes in the direction of inventory. If the road is inventoried in both directions together, this would be the number of through lanes in both directions. If the road is inventoried separately for each direction, this would be the number of through lanes in one single direction.

This excludes auxiliary lanes, such as collector-distributor lanes, weaving lanes, frontage road lanes, parking and turning lanes, acceleration/deceleration lanes, toll collection lanes, high-occupancy vehicle (HOV) lanes, high-occupancy Toll (HOT) lanes, transit lanes, shoulders, and truck climbing lanes. These types of auxiliary lanes are captured in separate elements.

Recommended Attributes: Numeric.

Note: This element has been changed since MIRE 1.0.



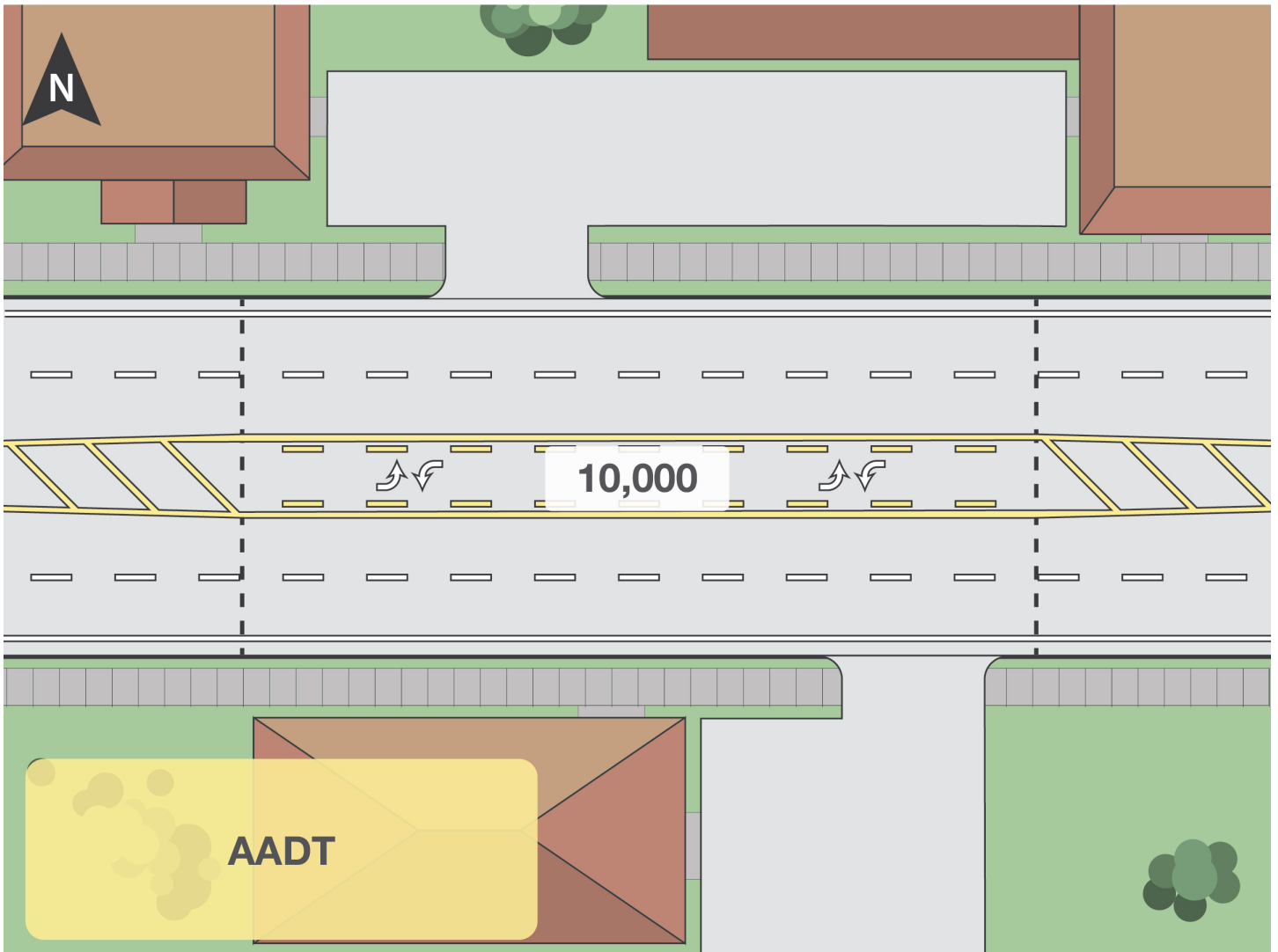
NON-LOCAL PAVED ROADS

Roadway Segment

Annual Average Daily Traffic (AADT) (81)

Definition: AADT value to represent the current data year. For two-way facilities, provide the AADT for both directions; provide the directional AADT if part of a one-way couplet or for one-way streets.

Recommended Attributes: Vehicles per day.



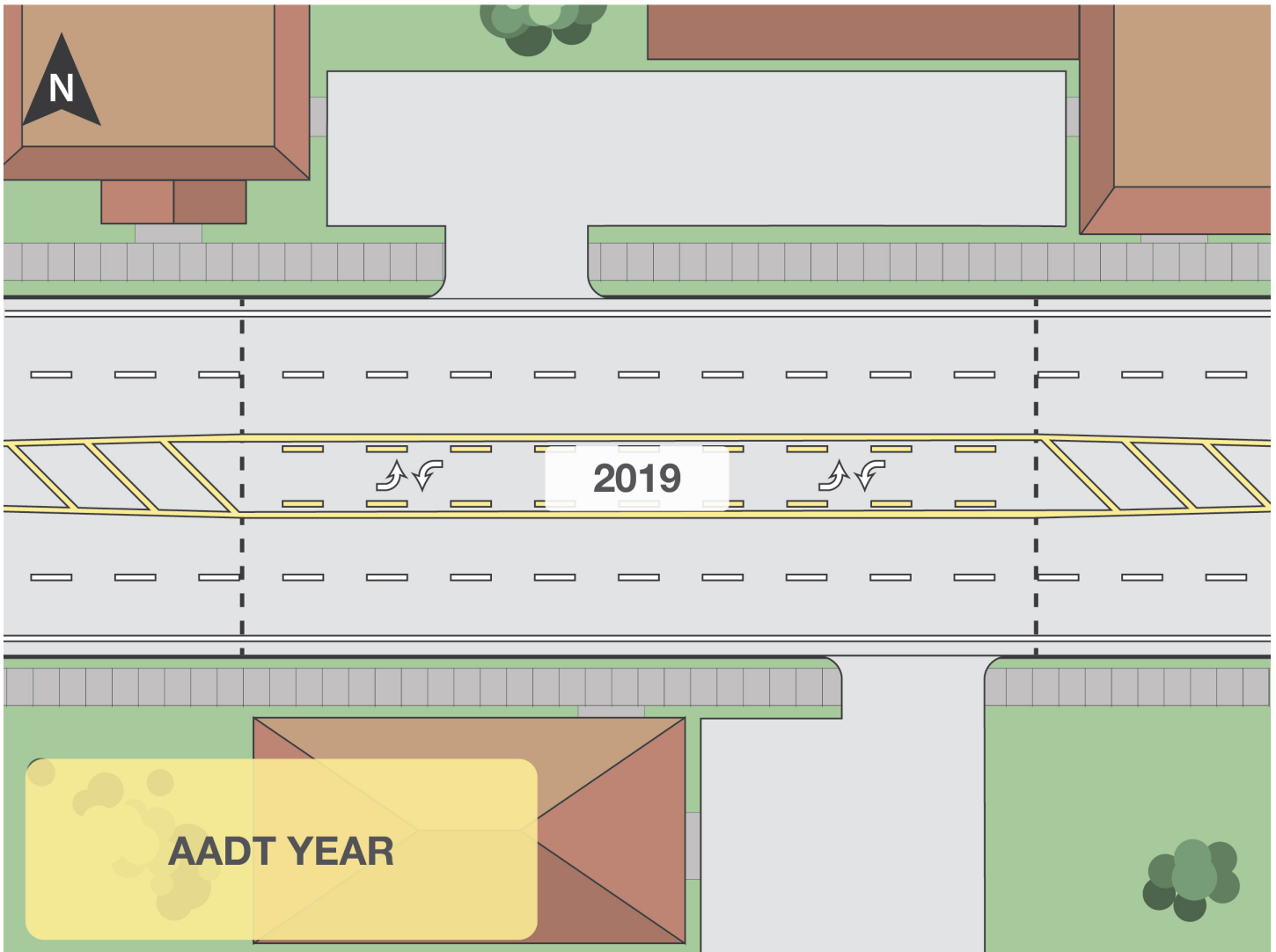
NON-LOCAL PAVED ROADS

Roadway Segment

AADT Year (82)

Definition: Year of AADT.

Recommended Attributes: Year.



NON-LOCAL PAVED ROADS

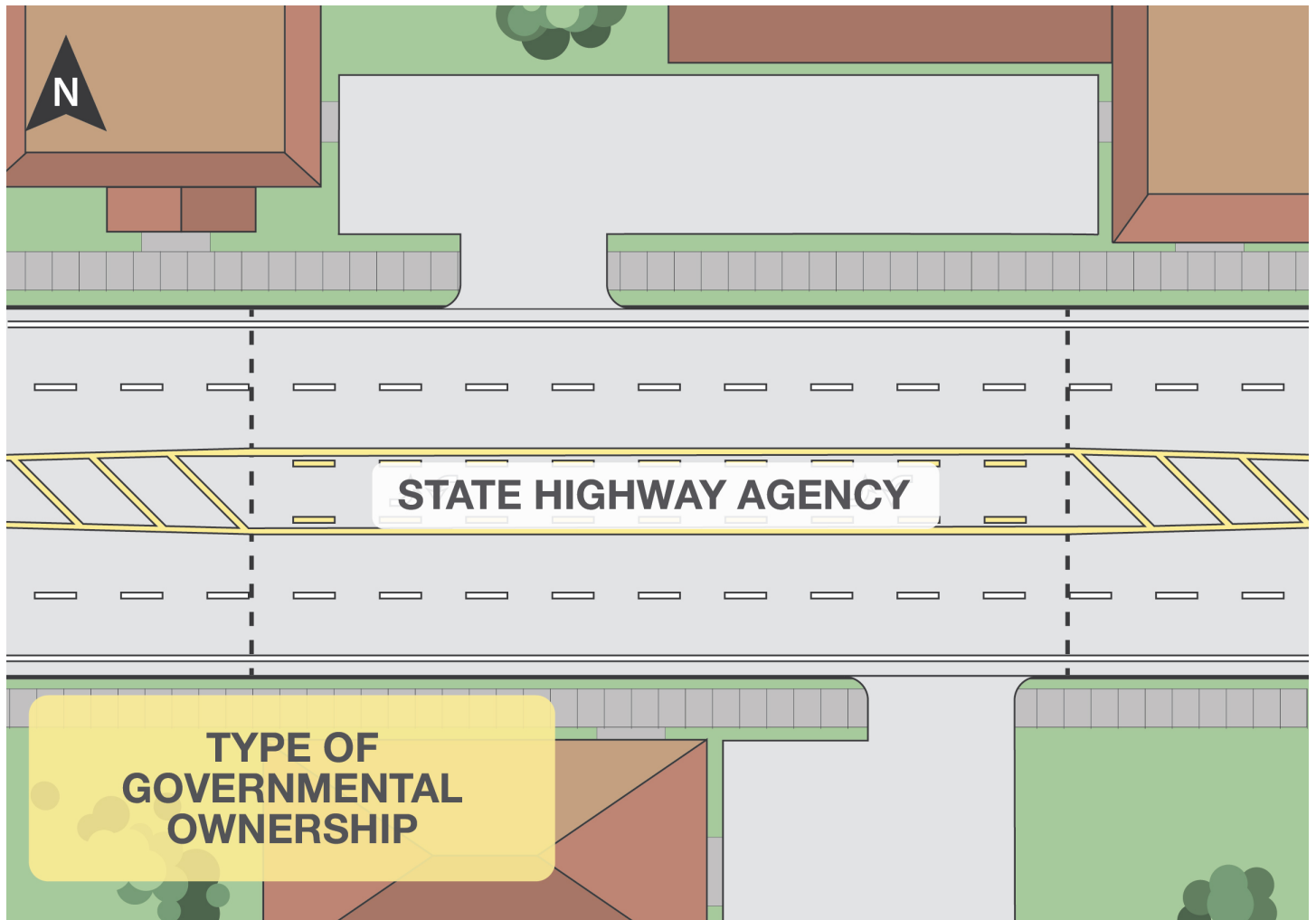
Roadway Segment

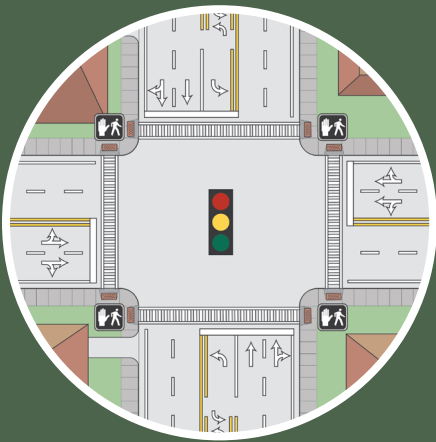
Type of Governmental Ownership (4)

Definition: The entity that has legal ownership of a roadway.

Recommended Attributes:

- | | | | |
|---|--|----------------------------------|--------------------------------|
| 1. State Highway Agency. | 7. Other State Agency. | 14. Indian Tribe Nation. | 21. Bureau of Land Management. |
| 2. County Highway Agency. | 8. Other Local Agency. | 15. Other Federal Agency. | 22. Bureau of Reclamation. |
| 3. Town or Township Highway Agency. | 9. Private (other than Railroad). | 16. Bureau of Indian Affairs. | 23. Corps of Engineers. |
| 4. City or Municipal Highway Agency. | 10. Railroad. | 17. Bureau of Fish and Wildlife. | 24. Air Force. |
| 5. State Park, Forest, or Reservation Agency. | 11. State Toll Authority. | 18. U.S. Forest Service. | 25. Navy/Marines. |
| 6. Local Park, Forest, or Reservation Agency. | 12. Local Toll Authority. | 19. National Park Service. | 26. Army. |
| | 13. Other Public Instrumentality (e.g. Airport). | 20. Tennessee Valley Authority. | 27. Other. |





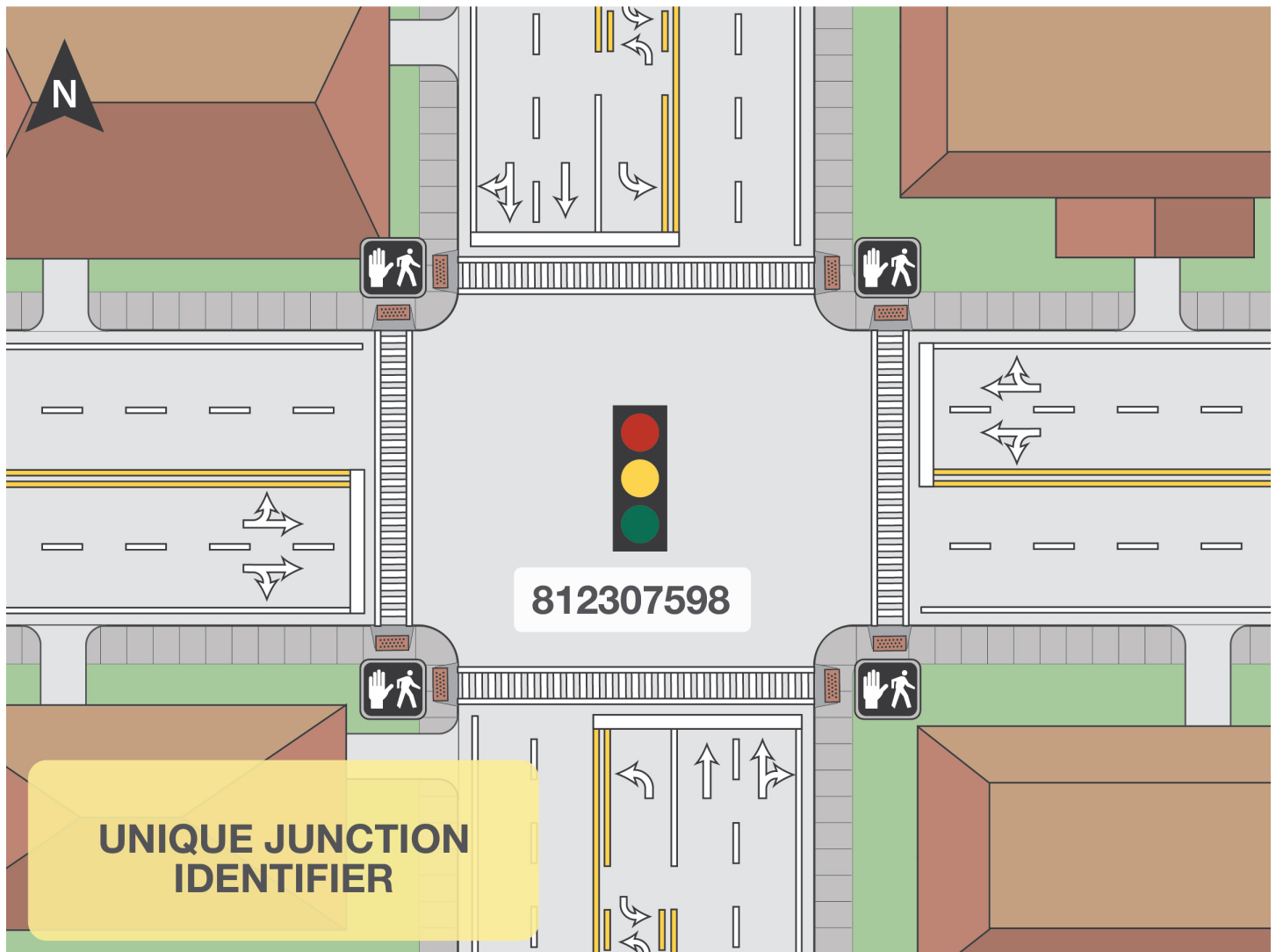
NON-LOCAL PAVED ROADS Intersection

NON-LOCAL PAVED ROADS Intersection

Unique Junction Identifier (110)

Definition: A unique junction identifier.

Recommended Attributes: User defined (e.g., node number, LRS of primary route, etc.).



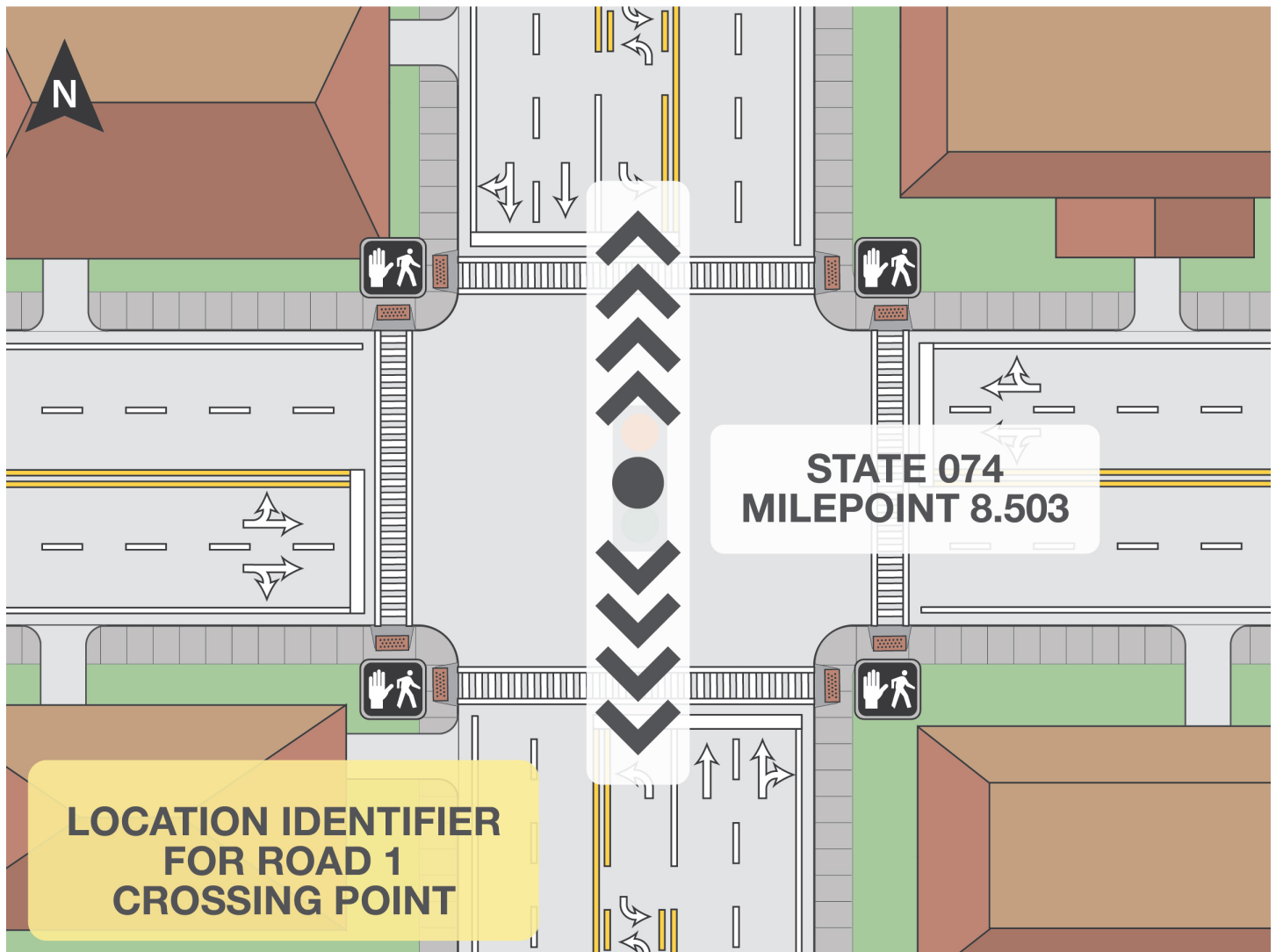
NON-LOCAL PAVED ROADS Intersection

Location Identifier for Road 1 Crossing Point (112)

Definition: Location of the center of the junction on the first intersecting route (e.g. route milepost). Note that if the Junction File is a spatial data file, this would be the coordinates and would be the same for all crossing roads.

Recommended Attributes: Route and location descriptors (e.g., route and milepost or route and spatial coordinates).

Note: Must be consistent with other MIRE files for linkage.



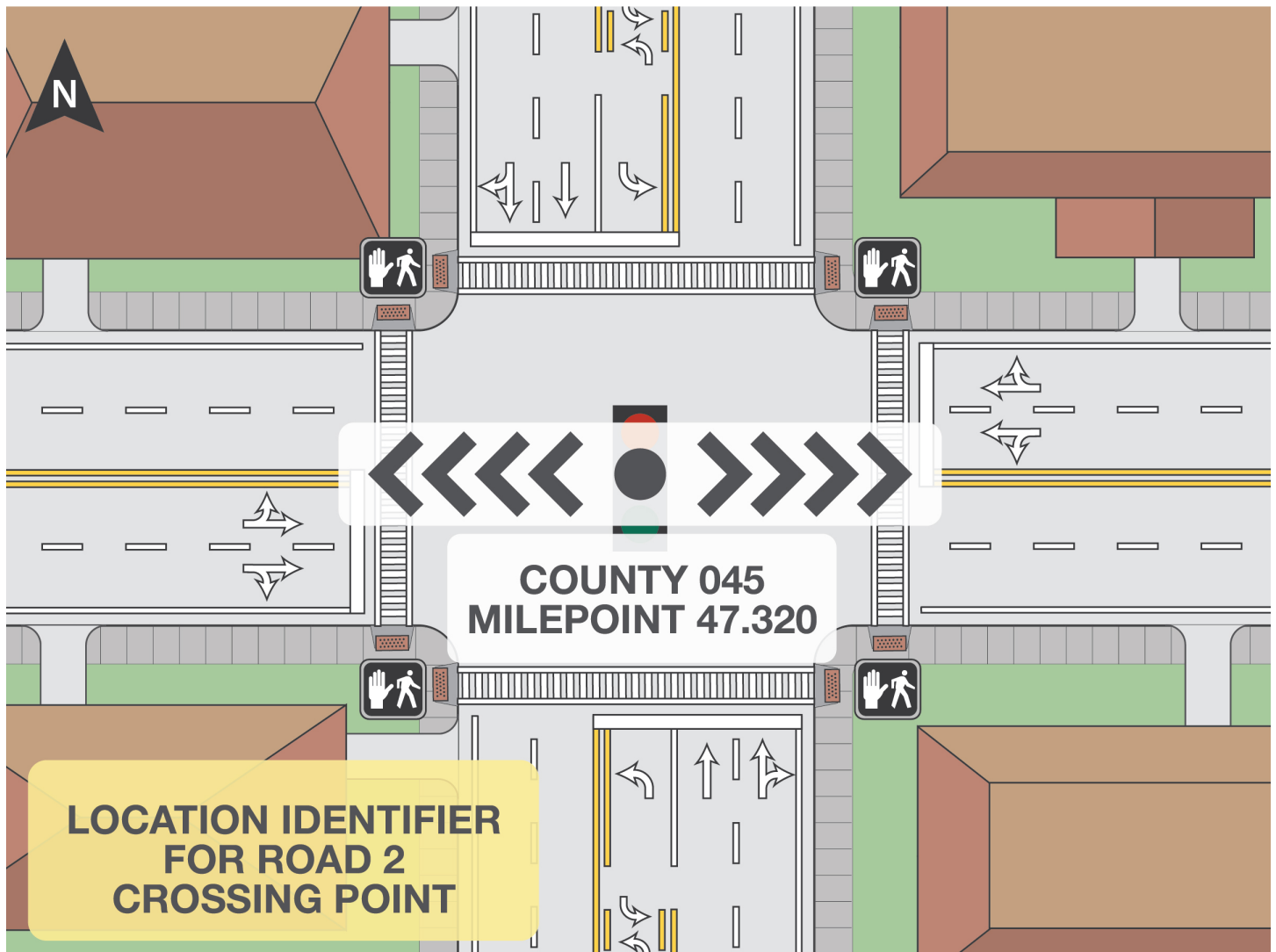
NON-LOCAL PAVED ROADS Intersection

Location Identifier for Road 2 Crossing Point (113)

Definition: Location of the center of the junction on the second intersecting route (e.g. route-milepost). Note that in a spatial data system, this would be the same as Element 112. *Location Identifier for Road 1 Crossing Point*. Not applicable if intersecting route is not an inventoried road (i.e., a railroad or bicycle path).

Recommended Attributes: Route and location descriptors (e.g., route and milepoint or route and spatial coordinates).

Note: Must be consistent with other MIRE files for linkage.



NON-LOCAL PAVED ROADS

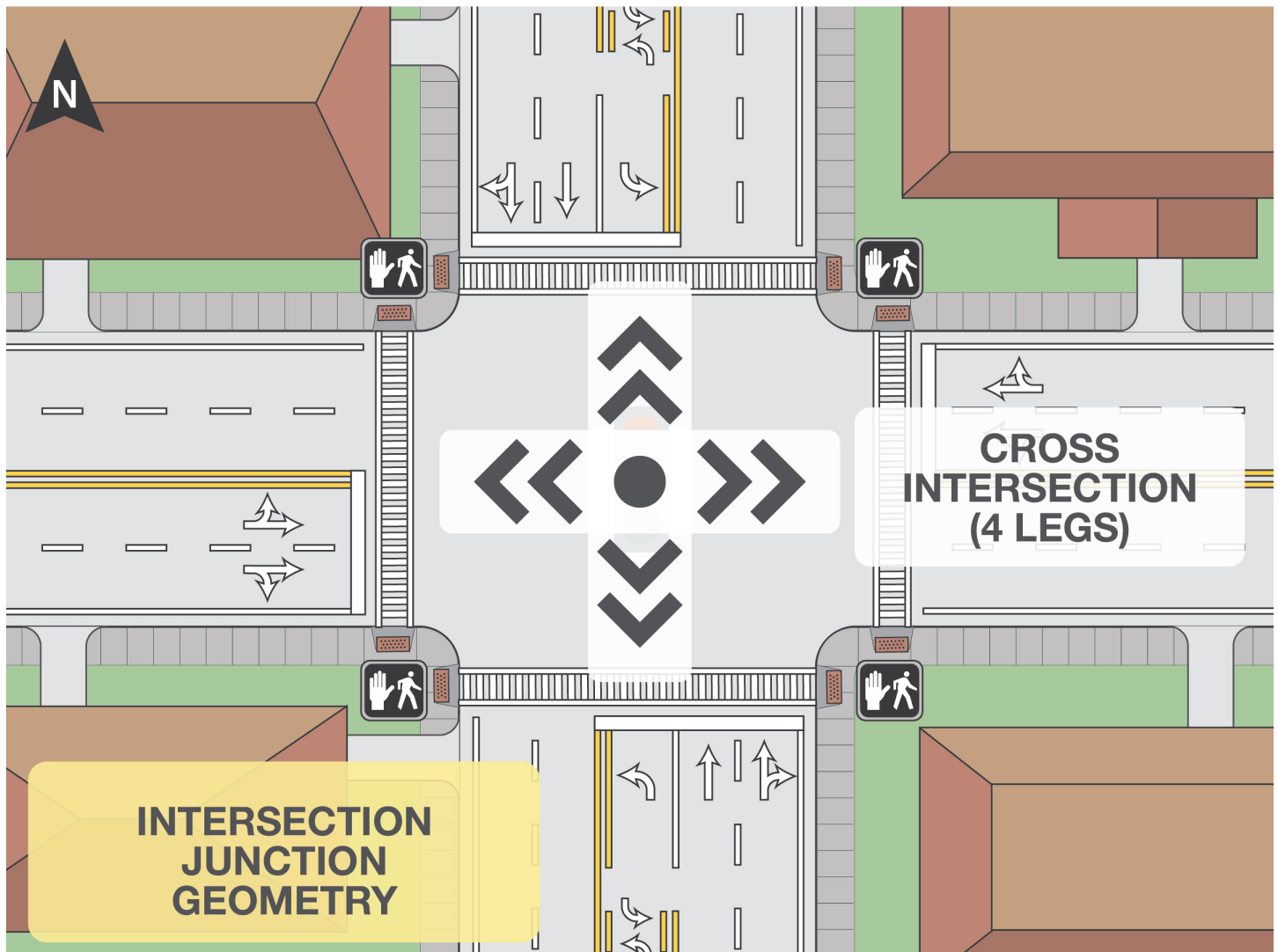
Intersection

Intersection/Junction Geometry (116)

Definition: The type of geometric configuration that best describes the intersection/junction.

Recommended Attributes:

- | | | |
|--|---|--|
| <ol style="list-style-type: none"> 1. T-Intersection. 2. Y-Intersection. 3. Cross-Intersection (four legs). 4. Five or more legs and not circular. 5. Roundabout. 6. Other circular intersection (e.g., rotaries, neighborhood traffic circles). 7. Midblock pedestrian crossing. | <ol style="list-style-type: none"> 8. Restricted crossing U-turn (i.e., RCUT, J-turn, Superstreet) intersection. 9. Median U-turn (i.e., MUT, Michigan Left, Thru-turn) intersection. 10. Displaced left-turn (i.e., DLT, continuous flow (CFI)) intersection. 11. Jughandle (i.e., New Jersey jughandle) intersection. | <ol style="list-style-type: none"> 12. Continuous green T intersection. 13. Quadrant (i.e., quadrant roadway) intersection. 14. Other. <p>Note: This element has been changed since MIRE 1.0. In MIRE 1.0, this element has 8 attributes. In MIRE 2.0 this element has 14 attributes.</p> |
|--|---|--|



NON-LOCAL PAVED ROADS

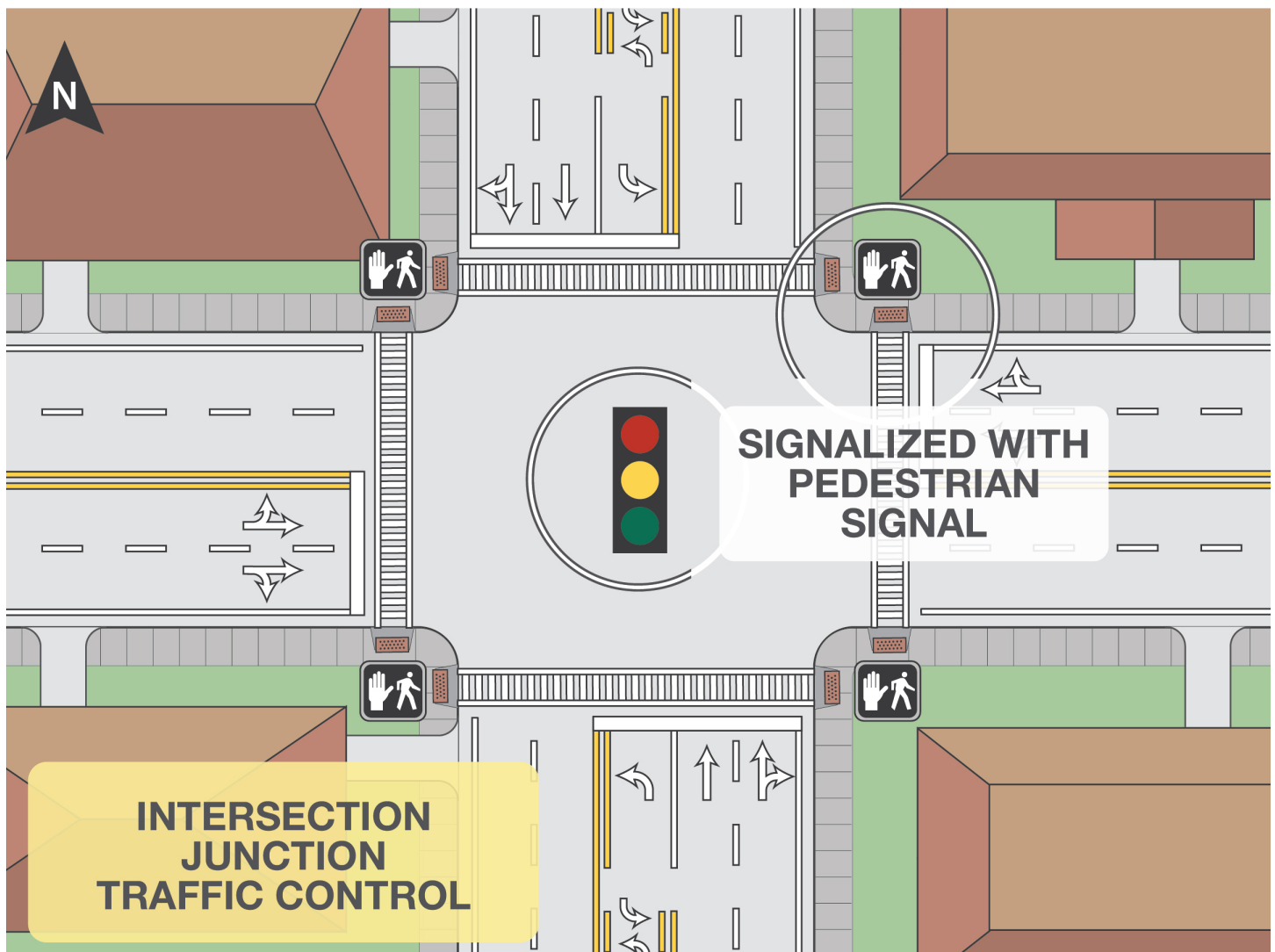
Intersection

Intersection/Junction Traffic Control (121)

Definition: Traffic control present at intersection/junction.

Recommended Attributes:

- | | | |
|--|---|--|
| 1. Uncontrolled. | 7. Flash Beacon (include Rectangular Rapid Flash Beacon). | 11. Railroad crossing, crossbucks only. |
| 2. Two-way stop. | 8. Railroad crossing, gates and flashing lights. | 12. Other. |
| 3. All-way stop. | 9. Railroad crossing, flashing lights only. | Note: This element has been changed since MIRE 1.0. In MIRE 1.0, there are 11 attributes. In MIRE 2.0, there are 12 attributes with more detail regarding type of signalization. |
| 4. Yield sign. | 10. Railroad crossing, stop-sign controlled. | |
| 5. Signalized. | | |
| 6. Pedestrian Hybrid Beacon (PHB) or High-Intensity Activated Crosswalk [HAWK]). | | |

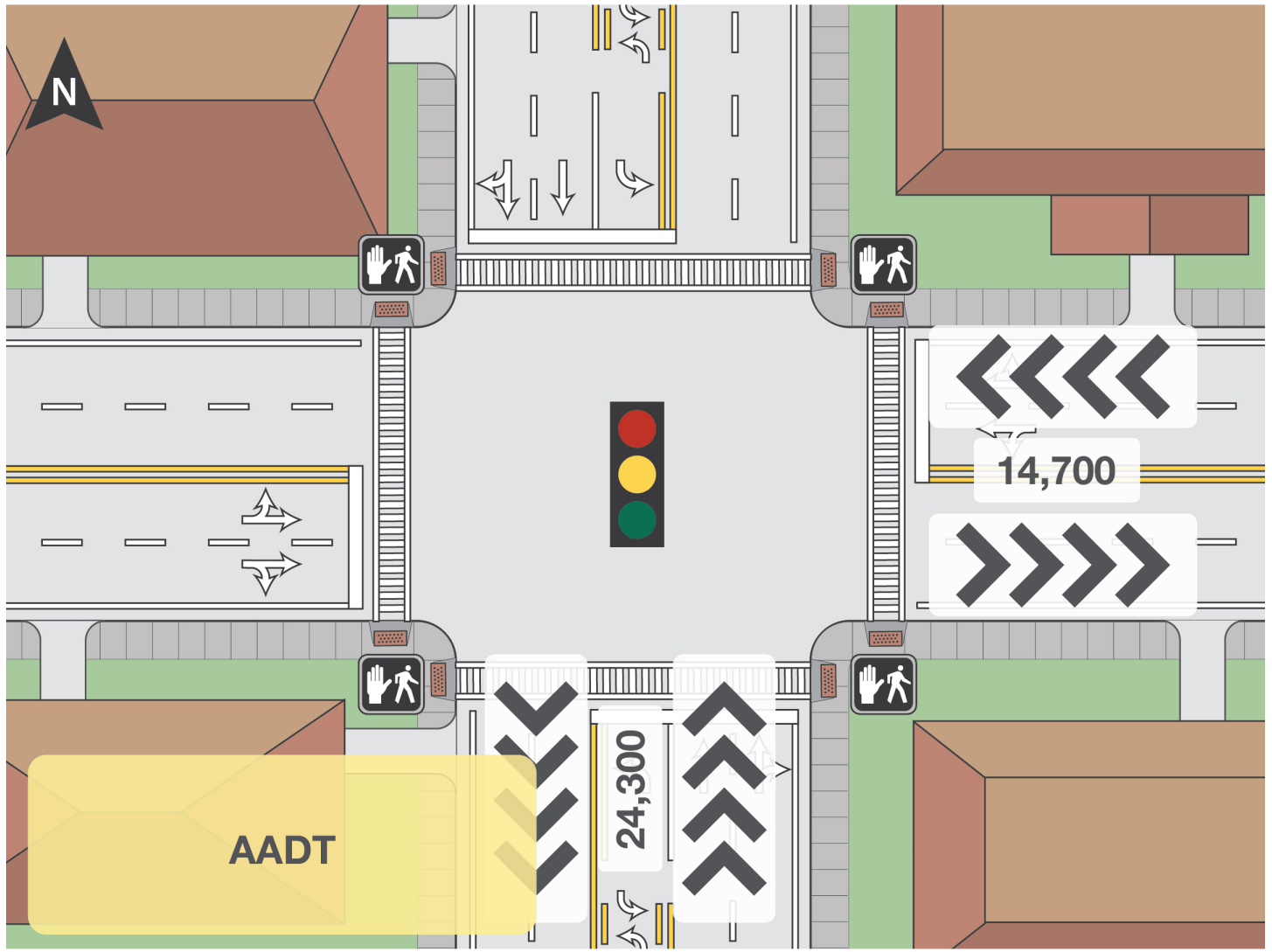


NON-LOCAL PAVED ROADS Intersection

Approach AADT (130) [for Each Intersecting Road]

Definition: The AADT on the approach leg of the intersection/junction.

Recommended Attributes: Vehicles per day.

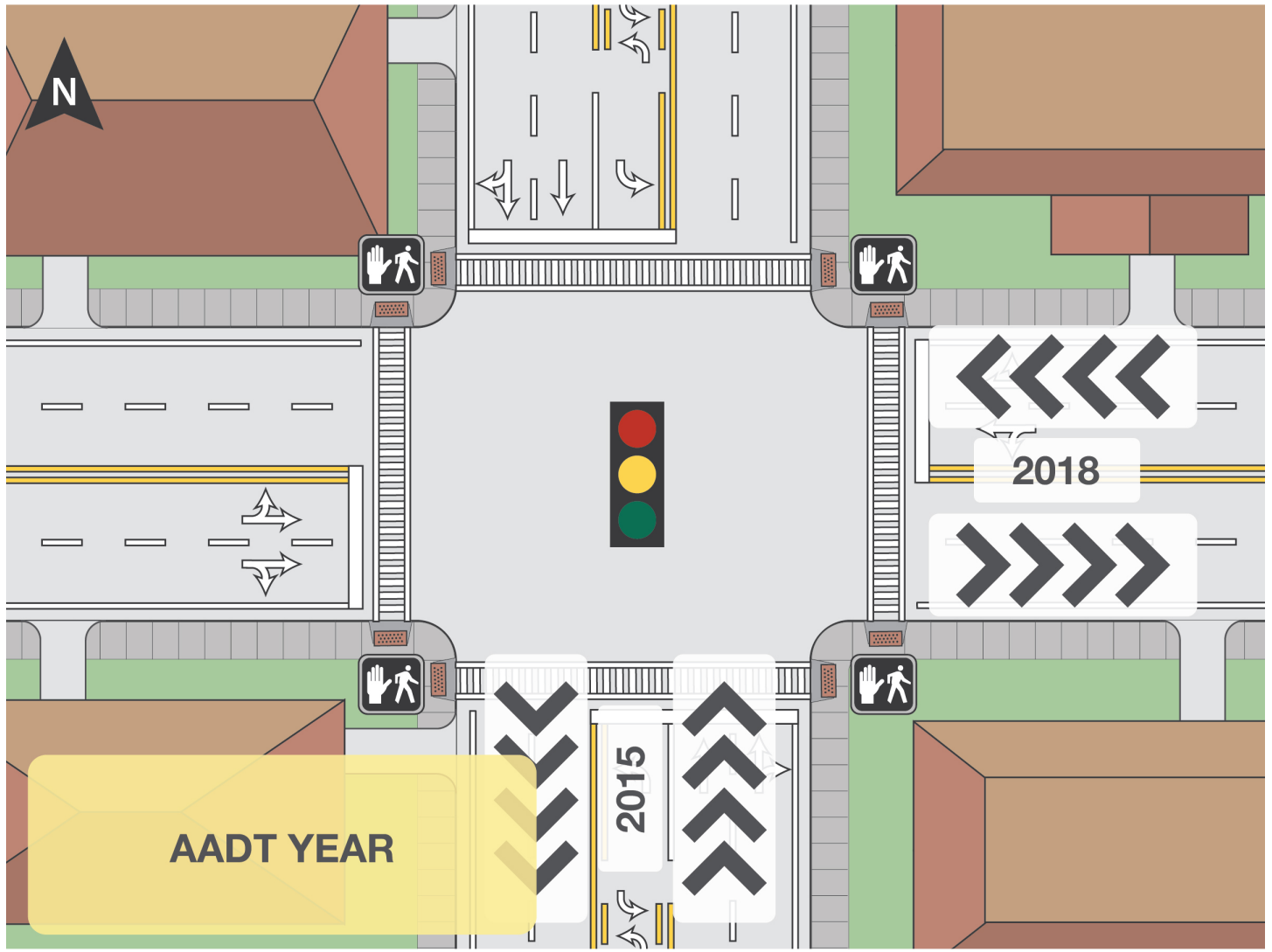


NON-LOCAL PAVED ROADS Intersection

Approach AADT Year (131) [for Each Intersecting Road]

Definition: The year of the AADT on the approach leg of the intersection/junction.

Recommended Attributes: Year.



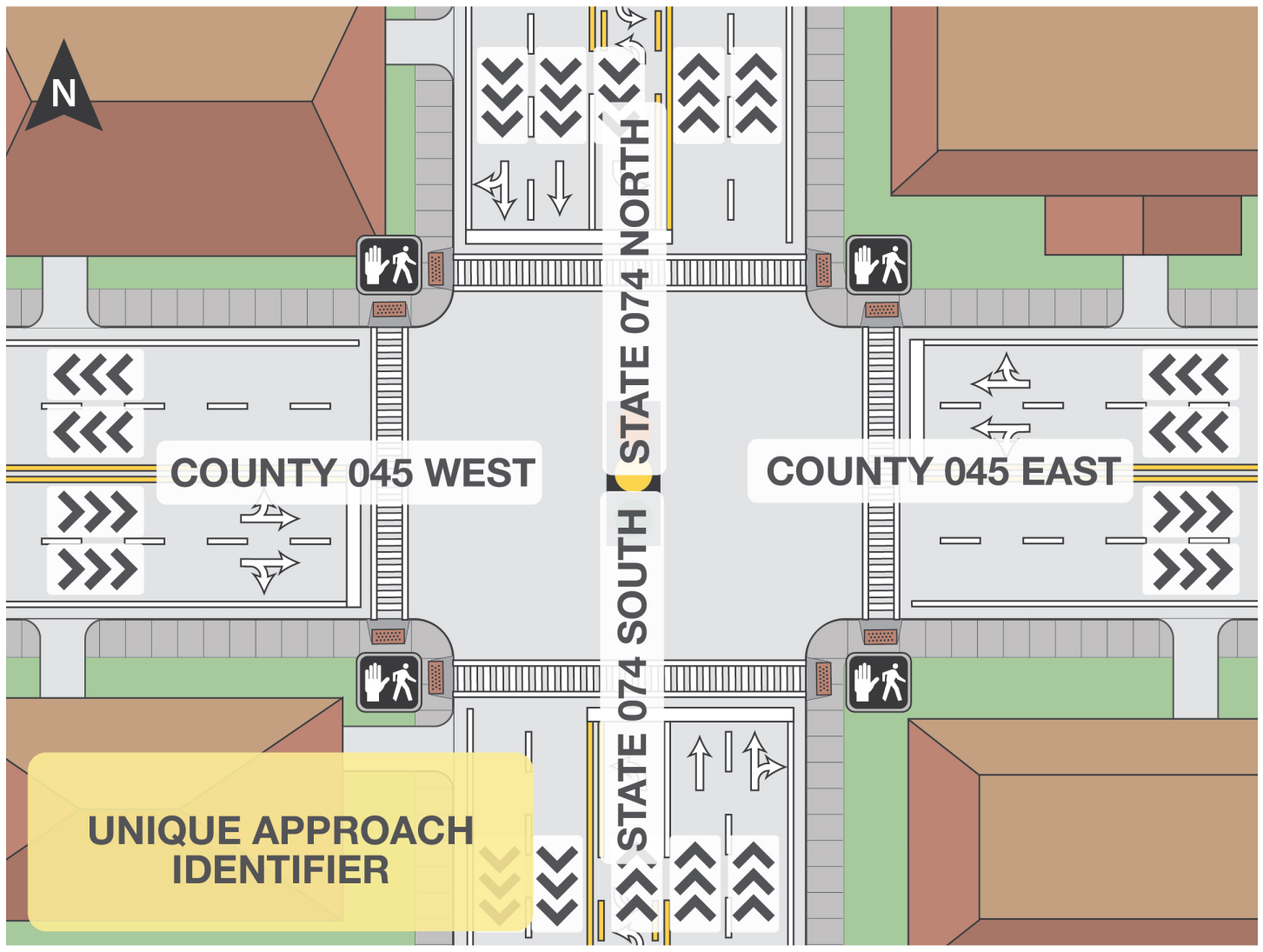
NON-LOCAL PAVED ROADS

Intersection

Unique Approach Identifier (129)

Definition: A unique identifier for each approach of an intersection.

Recommended Attributes: Any identifier that is unique for each approach within a single intersection (e.g., sequential numbers or letters, compass directions, “clock hours”).





NON-LOCAL PAVED ROADS

Intersection: Circular

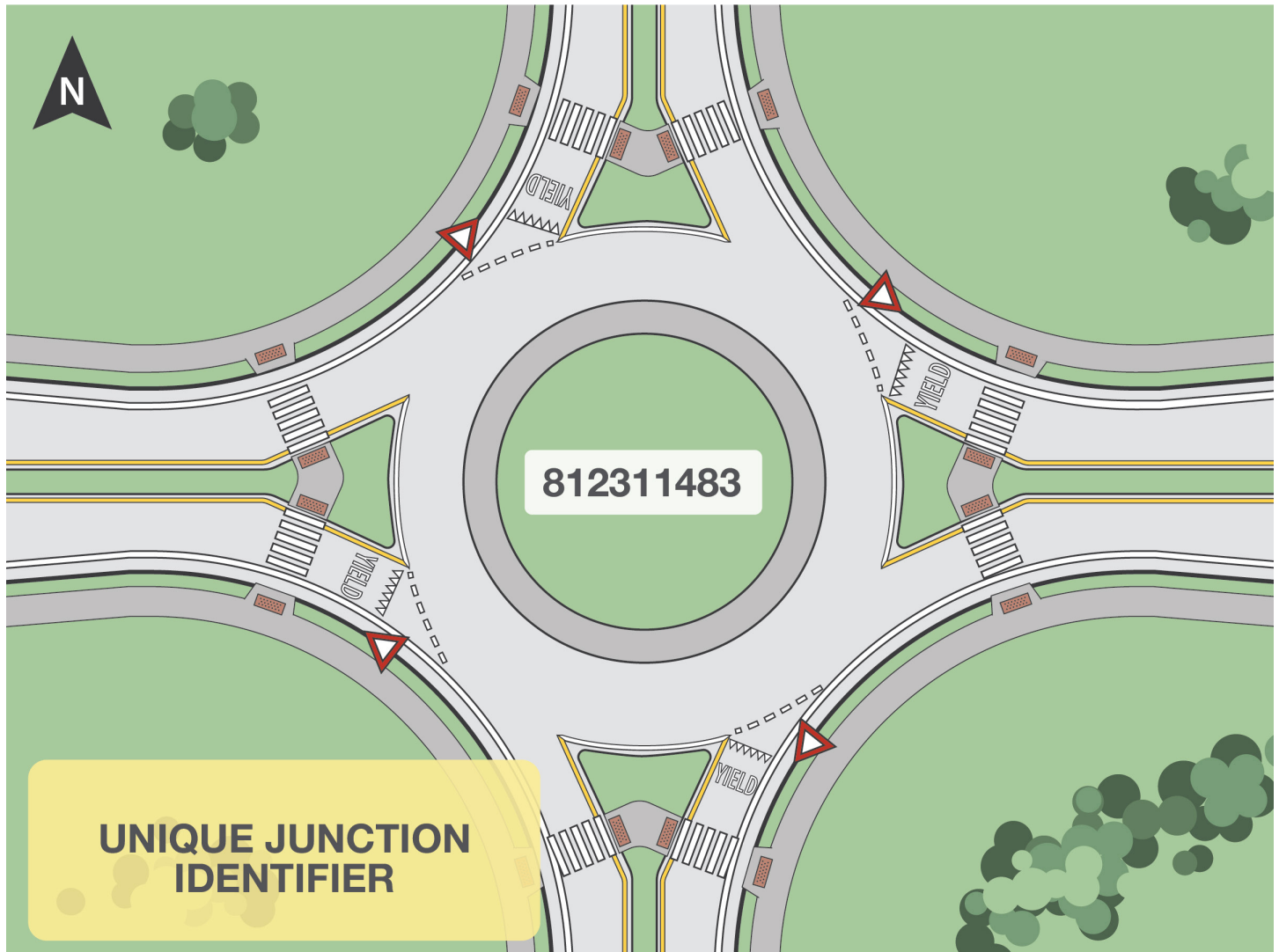
NON-LOCAL PAVED ROADS

Intersection: Circular

Unique Junction Identifier (110)

Definition: A unique junction identifier.

Recommended Attributes: User defined (e.g., node number, LRS of primary route, etc.).



NON-LOCAL PAVED ROADS

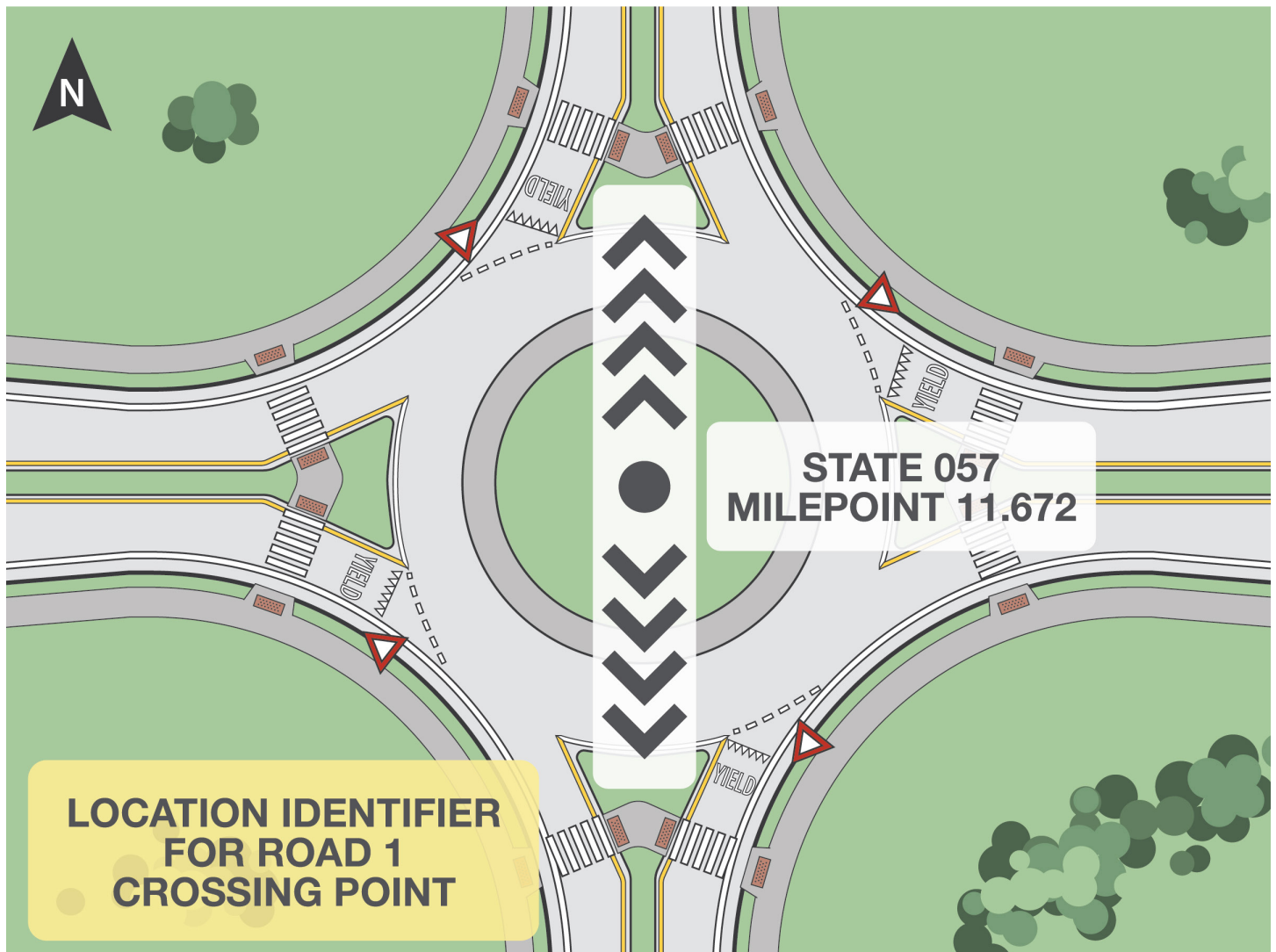
Intersection: Circular

Location Identifier for Road 1 Crossing Point (112)

Definition: Location of the center of the junction on the first intersecting route (e.g. route-milepost). Note that if the Junction File is a spatial data file, this would be the coordinates and would be the same for all crossing roads.

Recommended Attributes: Route and location descriptors (e.g., route and milepoint or route and spatial coordinates).

Note: Must be consistent with other MIRE files for linkage.



NON-LOCAL PAVED ROADS

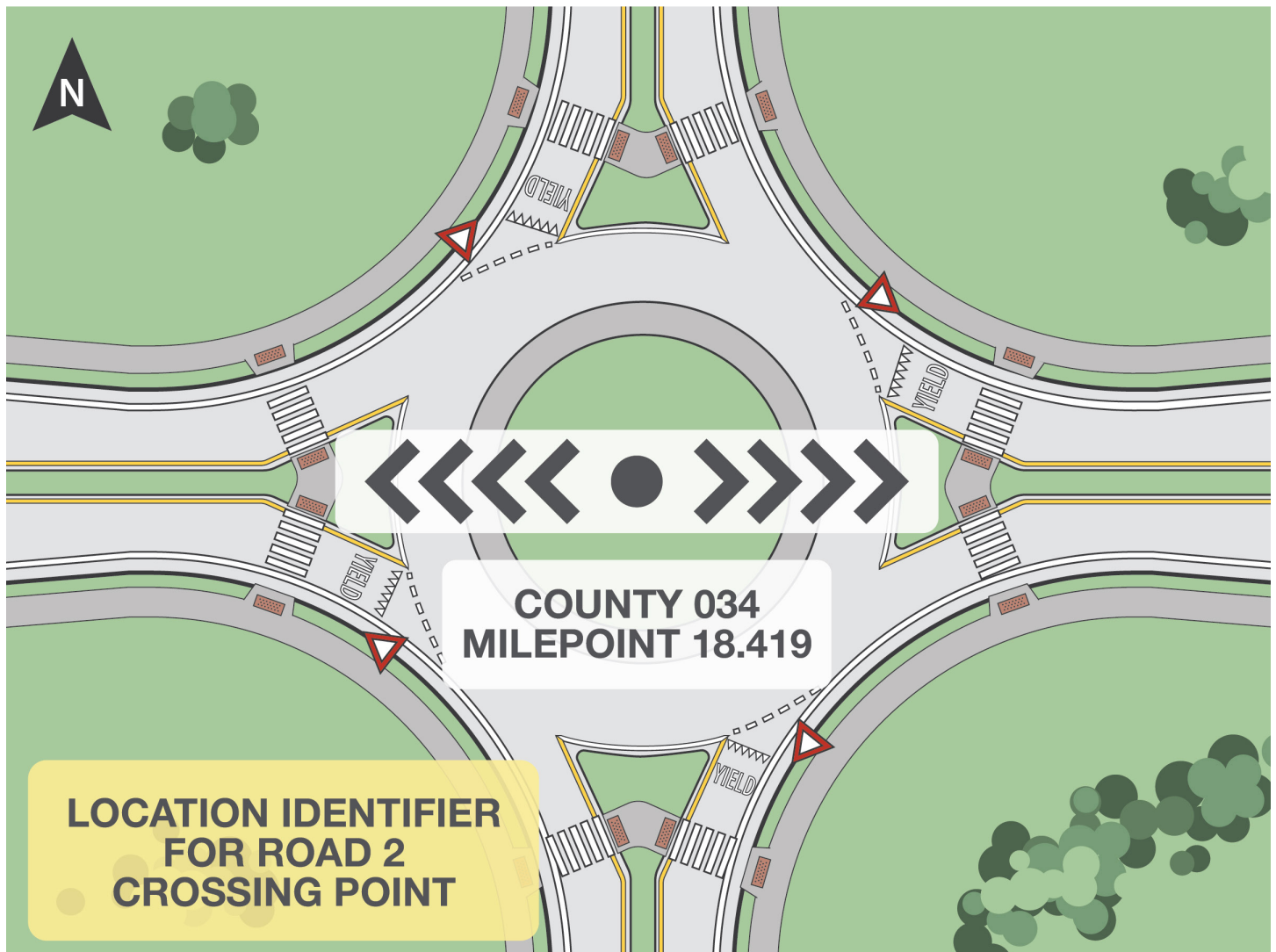
Intersection: Circular

Location Identifier for Road 2 Crossing Point (113)

Definition: Location of the center of the junction on the second intersecting route (e.g. route-milepost). Note that in a spatial data system, this would be the same as Element 112. *Location Identifier for Road 1 Crossing Point.* Not applicable if intersecting route is not an inventoried road (i.e., a railroad or bicycle path).

Recommended Attributes: Route and location descriptors (e.g., route and milepoint or route and spatial coordinates).

Note: Must be consistent with other MIRE files for linkage.



NON-LOCAL PAVED ROADS

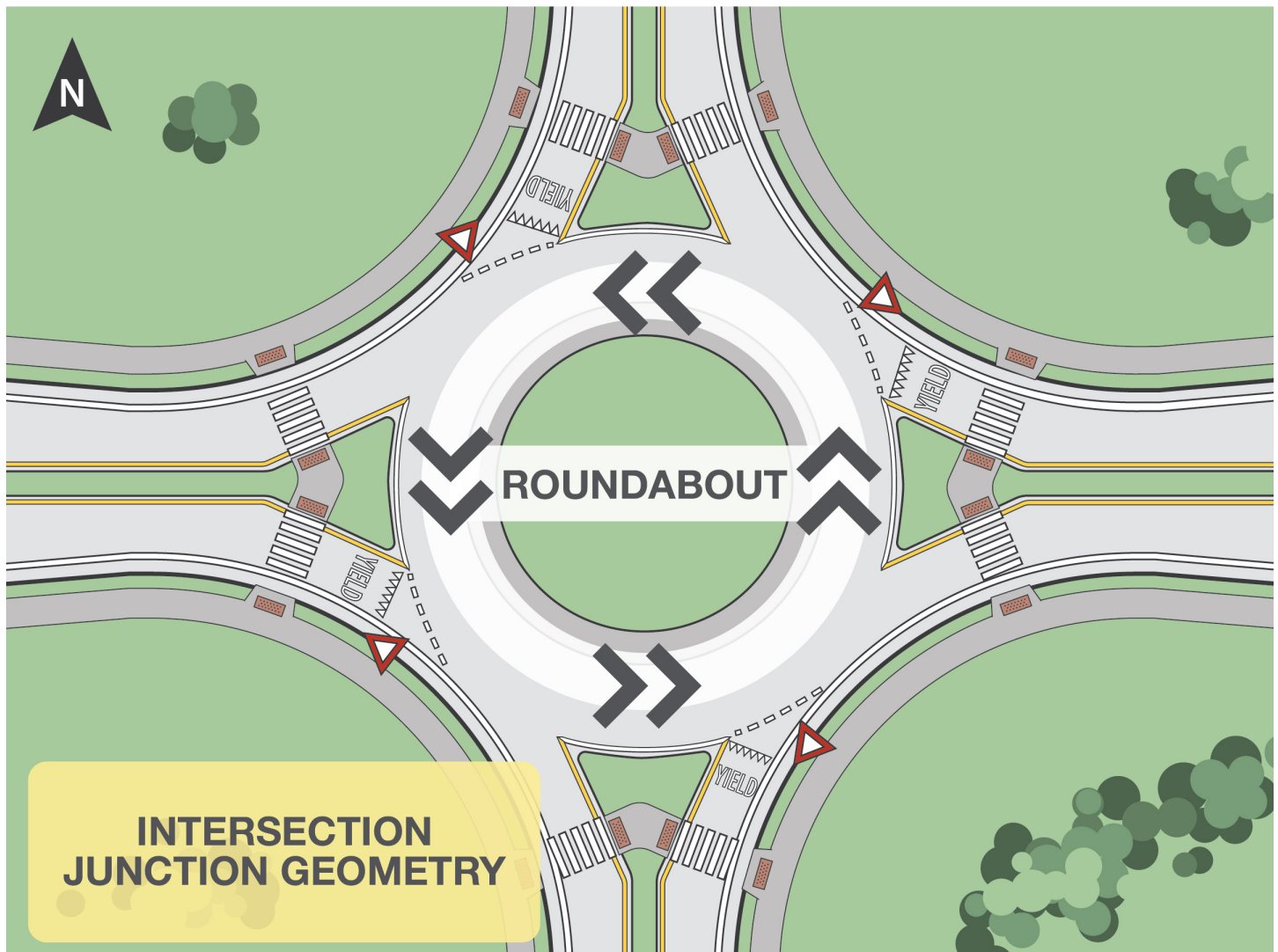
Intersection: Circular

Intersection/Junction Geometry (116)

Definition: The type of geometric configuration that best describes the intersection/junction.

Recommended Attributes:

- | | | |
|--|---|---|
| 1. T-Intersection. | 7. Midblock pedestrian crossing. | 11. Jughandle (i.e., New Jersey jughandle) intersection. |
| 2. Y-Intersection. | 8. Restricted crossing U-turn (i.e., RCUT, J-turn, Superstreet) intersection. | 12. Continuous green T intersection. |
| 3. Cross-Intersection (four legs). | 9. Median U-turn (i.e., MUT, Michigan Left, Thru-turn) intersection. | 13. Quadrant (i.e., quadrant roadway) intersection. |
| 4. Five or more legs and not circular. | 10. Displaced left-turn (i.e., DLT, CFI) intersection. | 14. Other. |
| 5. Roundabout. | | Note: In MIRE 1.0, this element has 8 attributes. In MIRE 2.0 this element has 14 attributes. |
| 6. Other circular intersection (e.g., rotaries, neighborhood traffic circles). | | |



NON-LOCAL PAVED ROADS

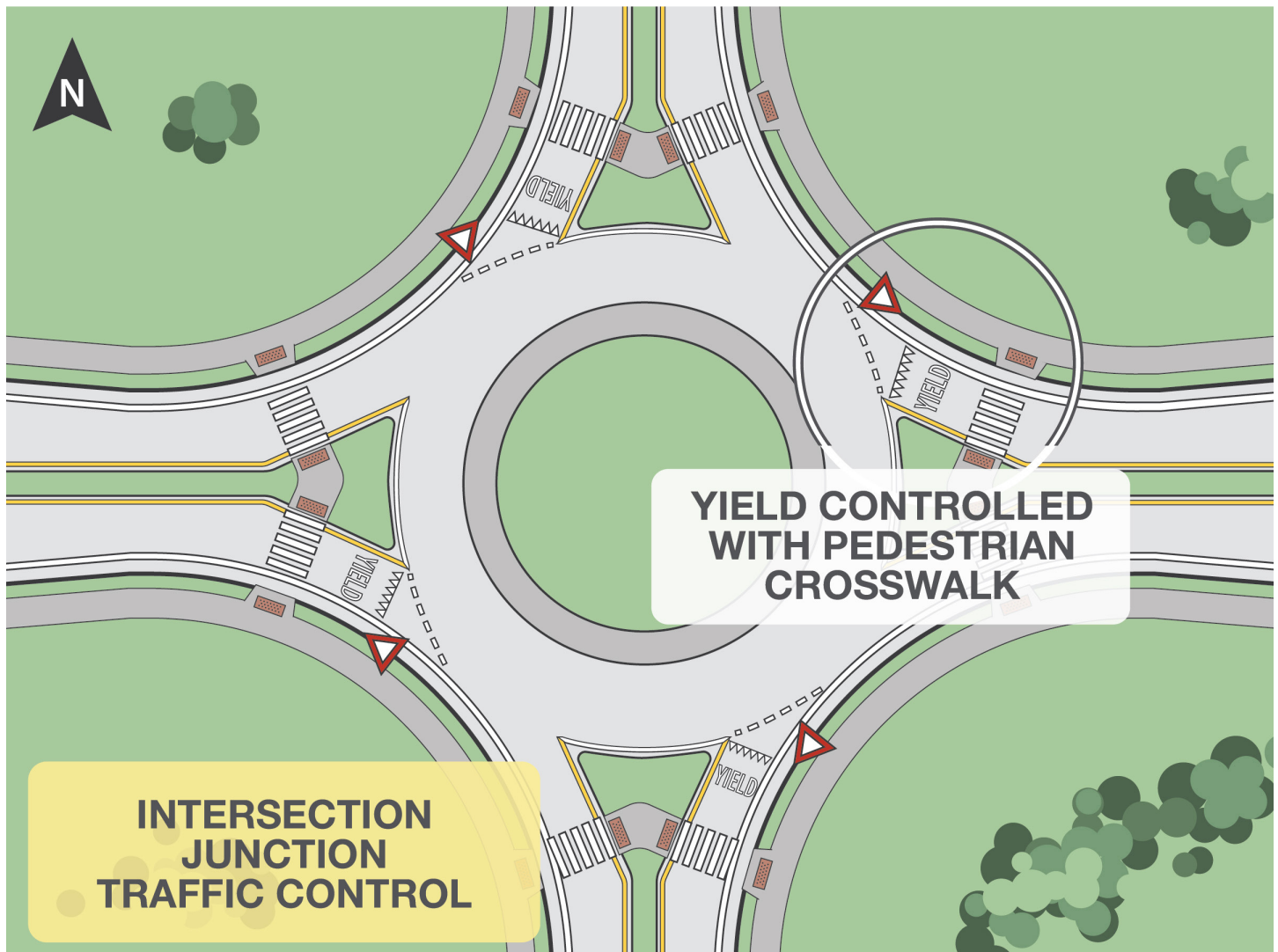
Intersection: Circular

Intersection/Junction Traffic Control (121)

Definition: Traffic control present at intersection/junction.

Recommended Attributes:

- | | | |
|--|---|--|
| 1. Uncontrolled. | 7. Flash Beacon (include Rectangular Rapid Flash Beacon). | 11. Railroad crossing, crossbucks only. |
| 2. Two-way stop. | 8. Railroad crossing, gates and flashing lights. | 12. Other. |
| 3. All-way stop. | 9. Railroad crossing, flashing lights only. | Note: This element has been changed since MIRE 1.0. In MIRE 1.0, there are 11 attributes. In MIRE 2.0, there are 12 attributes with more detail regarding type of signalization. |
| 4. Yield sign. | 10. Railroad crossing, stop-sign controlled. | |
| 5. Signalized. | | |
| 6. Pedestrian Hybrid Beacon (PHB) or High-Intensity Activated Crosswalk [HAWK]). | | |



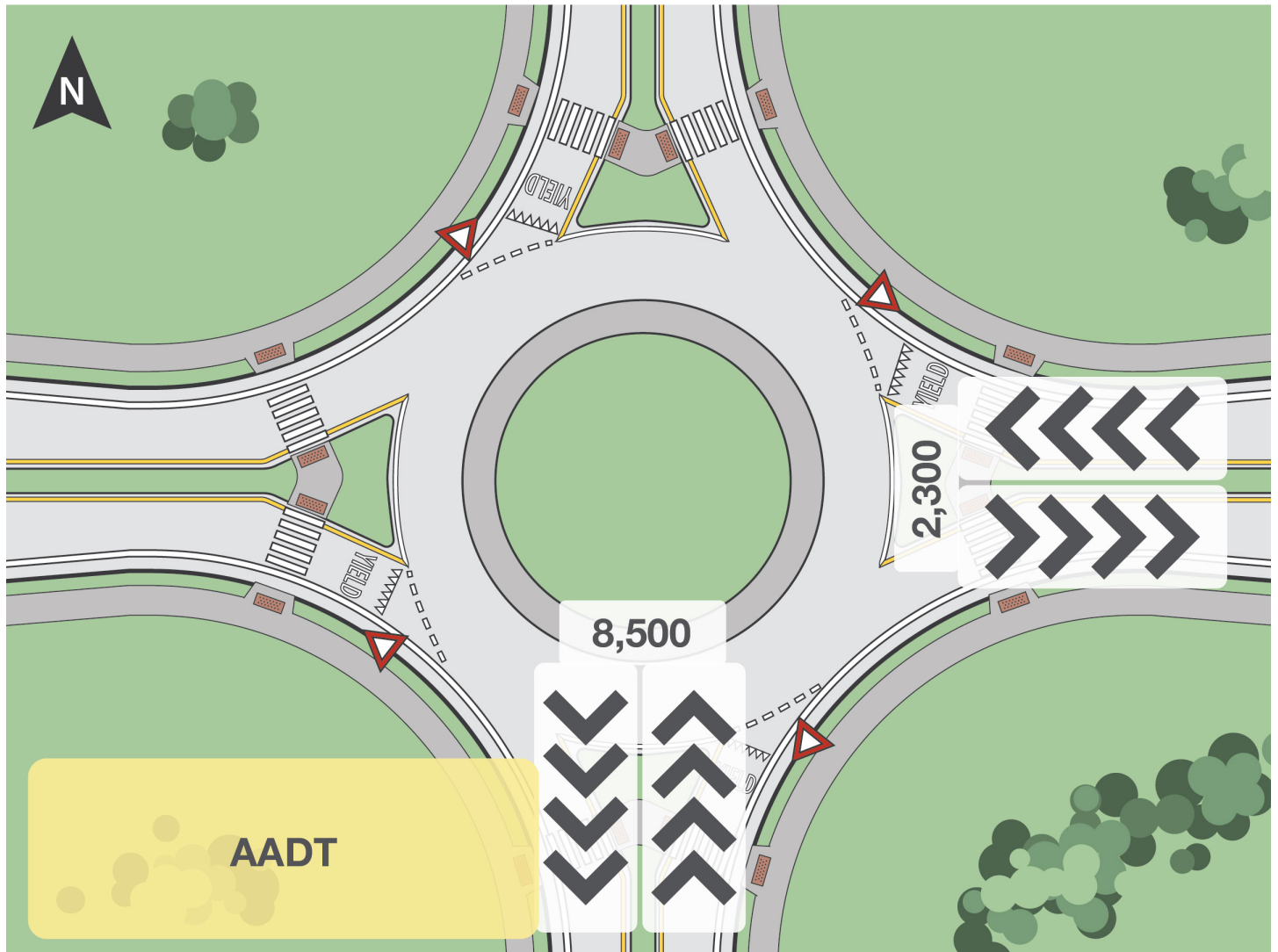
NON-LOCAL PAVED ROADS

Intersection: Circular

Approach AADT (130) [for Each Intersecting Road]

Definition: The AADT on the approach leg of the intersection/junction.

Recommended Attributes: Vehicles per day.



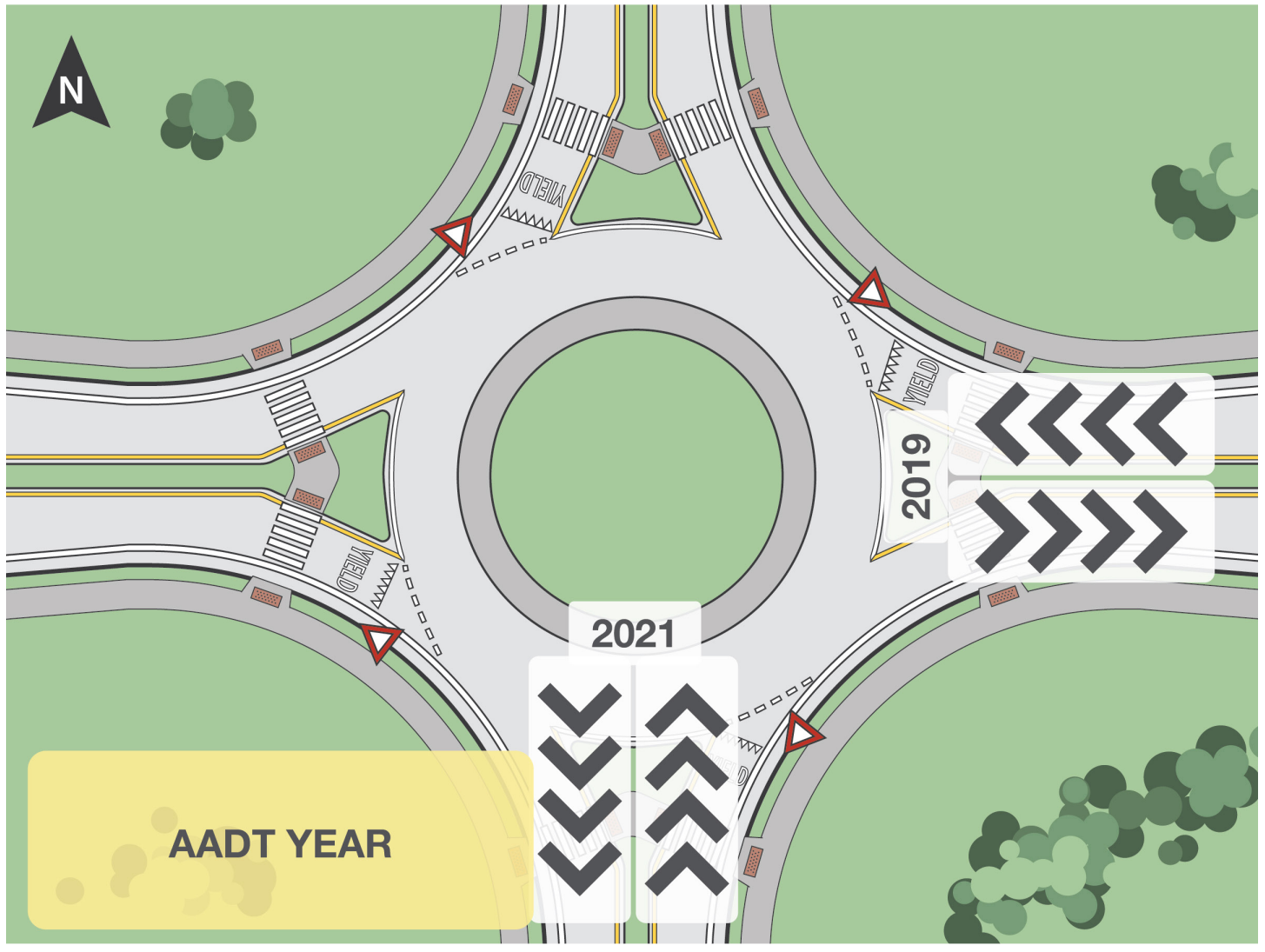
NON-LOCAL PAVED ROADS

Intersection: Circular

Approach AADT Year (131) [for Each Intersecting Road]

Definition: The year of the AADT on the approach leg of the intersection/junction.

Recommended Attributes: Year.



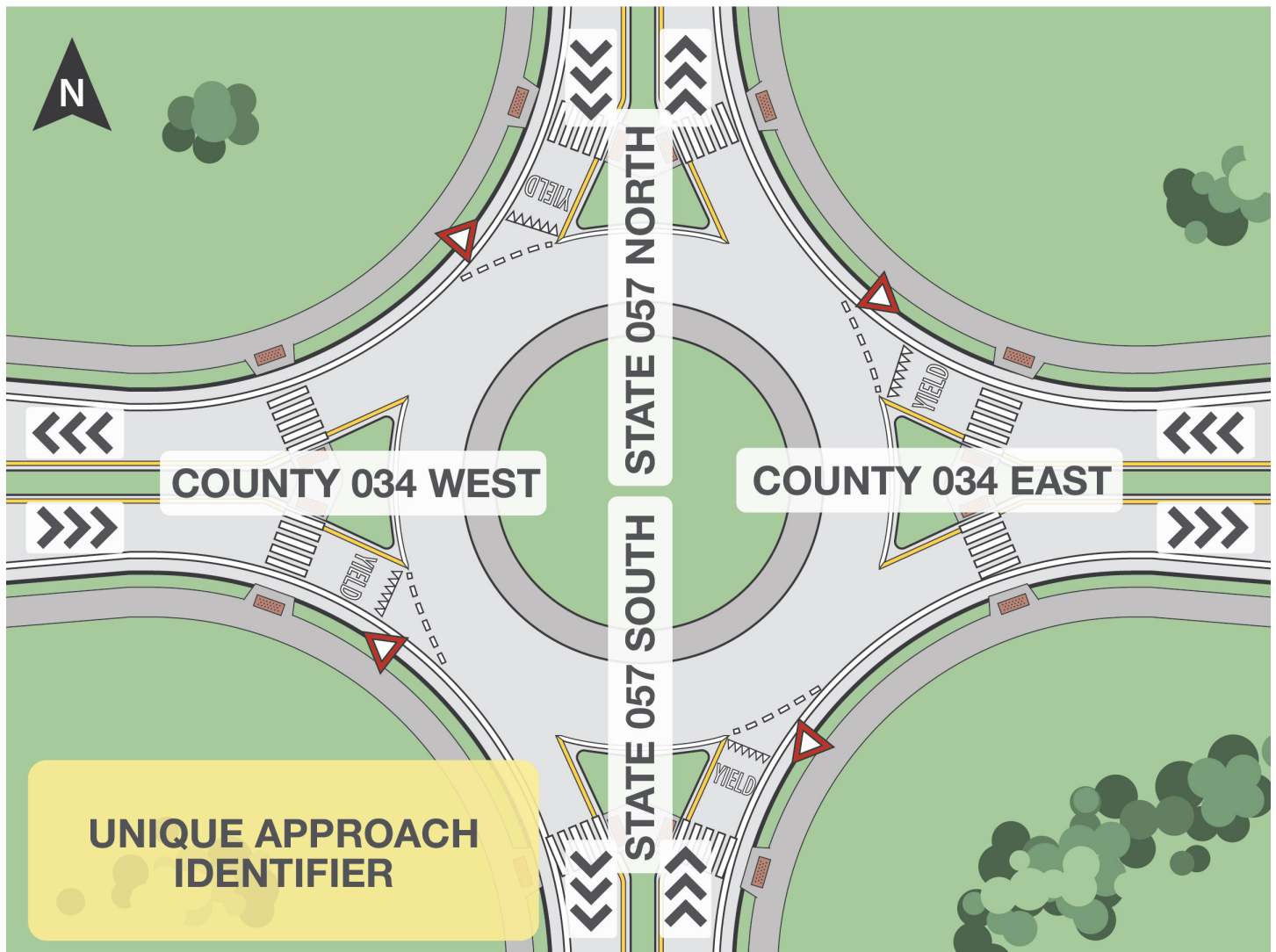
NON-LOCAL PAVED ROADS

Intersection: Circular

Unique Approach Identifier (129)

Definition: A unique identifier for each approach of an intersection.

Recommended Attributes: Any identifier that is unique for each approach within a single intersection (e.g., sequential numbers or letters, compass directions, “clock hours”).





NON-LOCAL PAVED ROADS

Interchange/Ramp

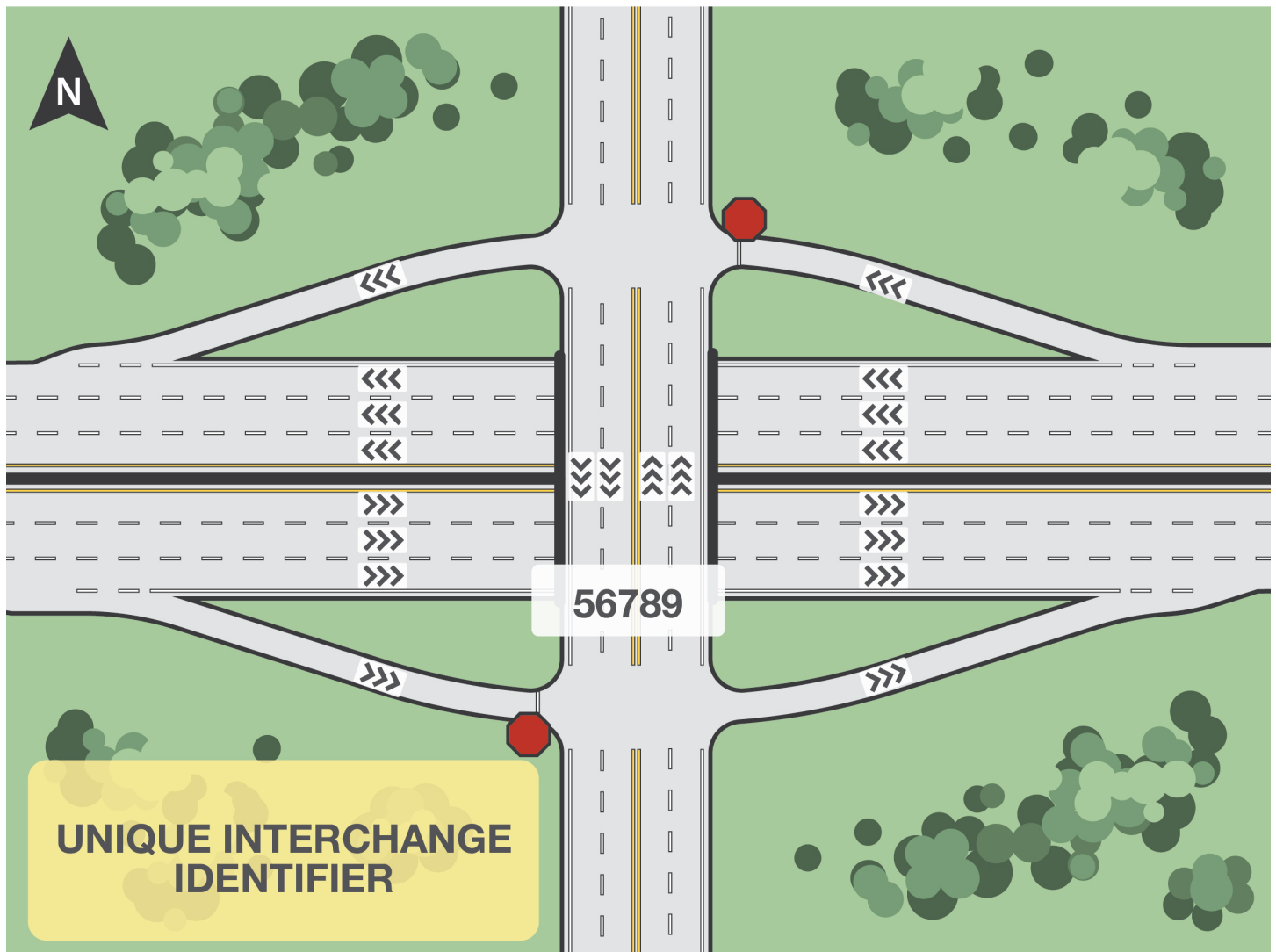
NON-LOCAL PAVED ROADS

Interchange/Ramp

Unique Interchange Identifier (168)

Definition: A unique identifier for each interchange.

Recommended Attributes: User defined (e.g., node number, LRS of primary route, exit numbers, etc.).



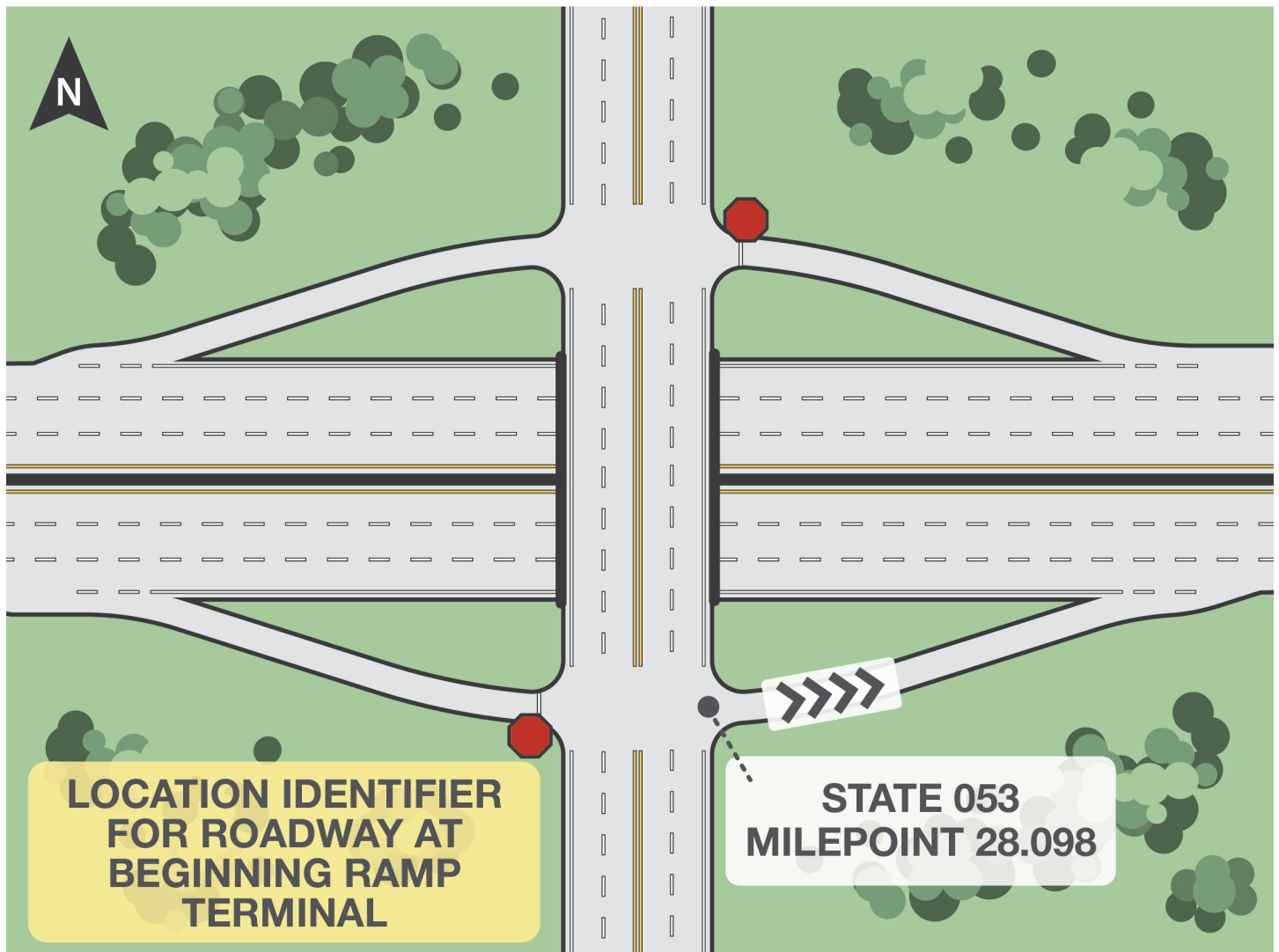
NON-LOCAL PAVED ROADS

Interchange/Ramp

Location Identifier for Roadway at Beginning Ramp Terminal (187)

Definition: Location on the roadway at the beginning ramp terminal (e.g. route-milepost for that roadway) if the ramp connects with a roadway at that point.

Recommended Attributes: Route and location descriptors (e.g., route and milepoint or spatial coordinates) for the roadway intersected at the beginning ramp terminal. Must be consistent with other MIRE files for linkage.



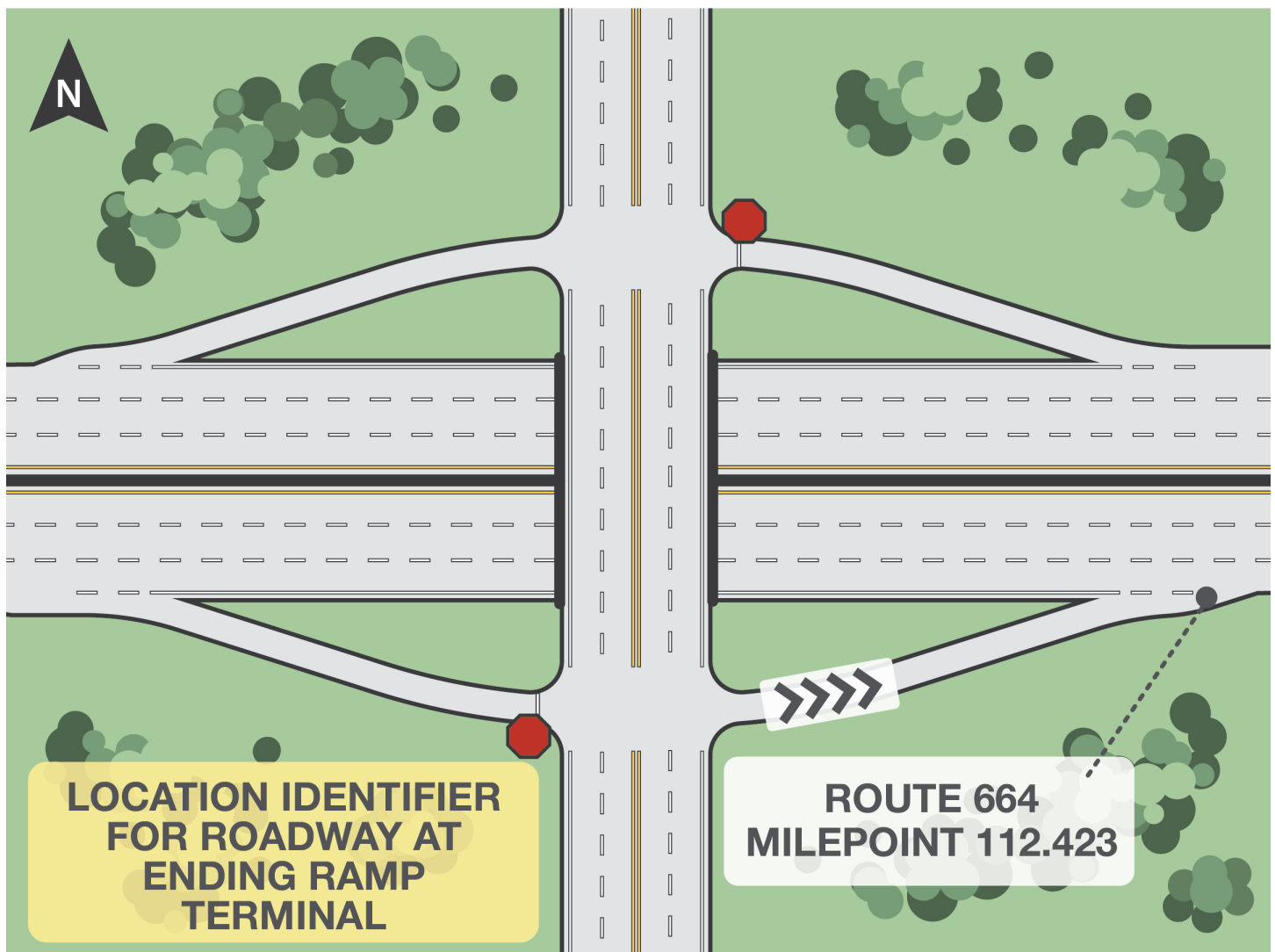
NON-LOCAL PAVED ROADS

Interchange/Ramp

Location Identifier for Roadway at Ending Ramp Terminal (191)

Definition: Location on the roadway at the ending ramp terminal (e.g. route-milepost for that roadway) if the ramp connects with a roadway at that point.

Recommended Attributes: Route and location descriptors (e.g., route and milepoint or spatial coordinates) for the roadway intersected at the ending ramp terminal. Must be consistent with other MIRE files for linkage.



NON-LOCAL PAVED ROADS

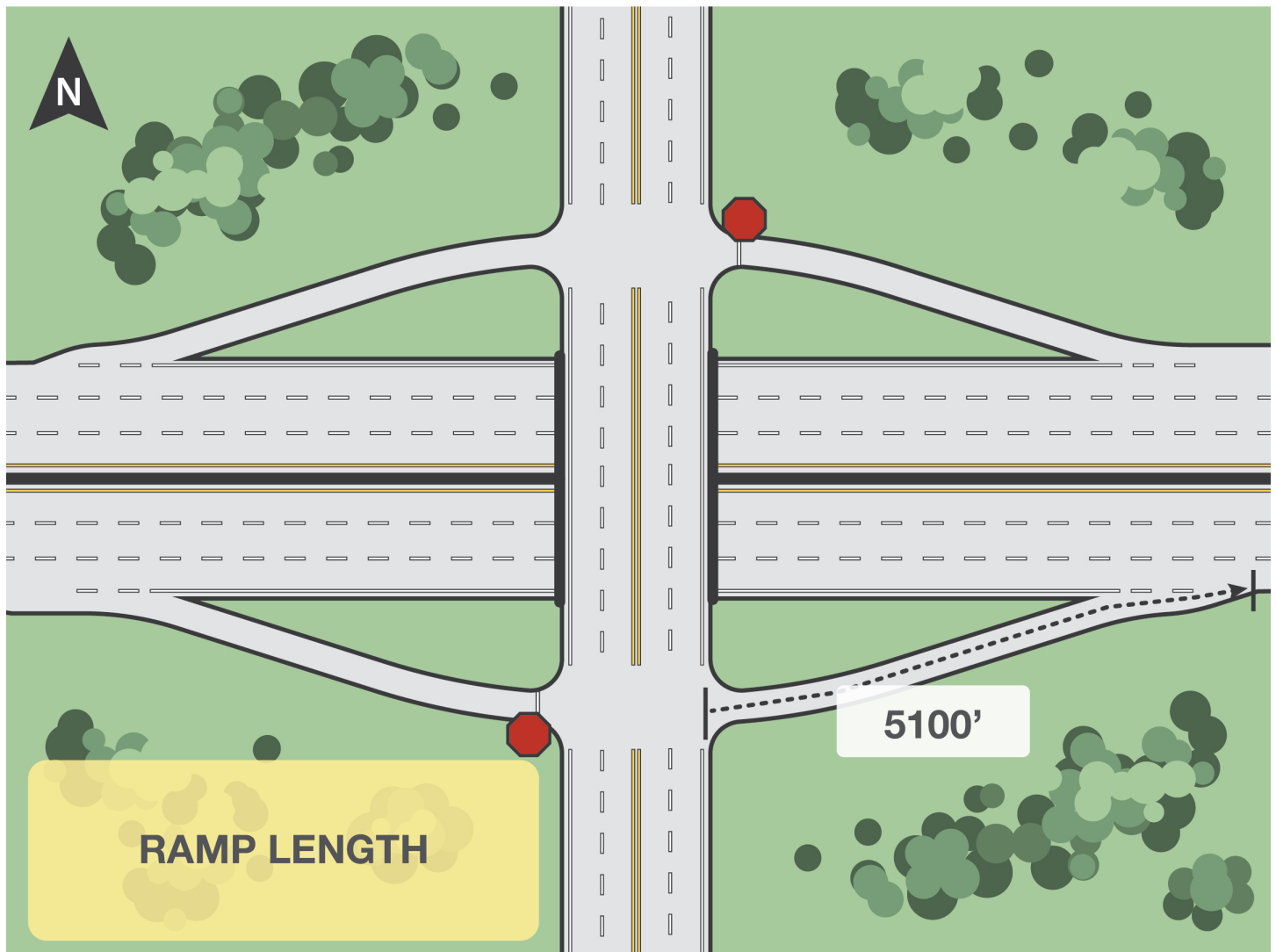
Interchange/Ramp

Ramp Length (177)

Definition: Length of ramp. The length should be measured from taper to taper.

Recommended Attributes: Feet.

Note: This element has been changed since MIRE 1.0.



NON-LOCAL PAVED ROADS

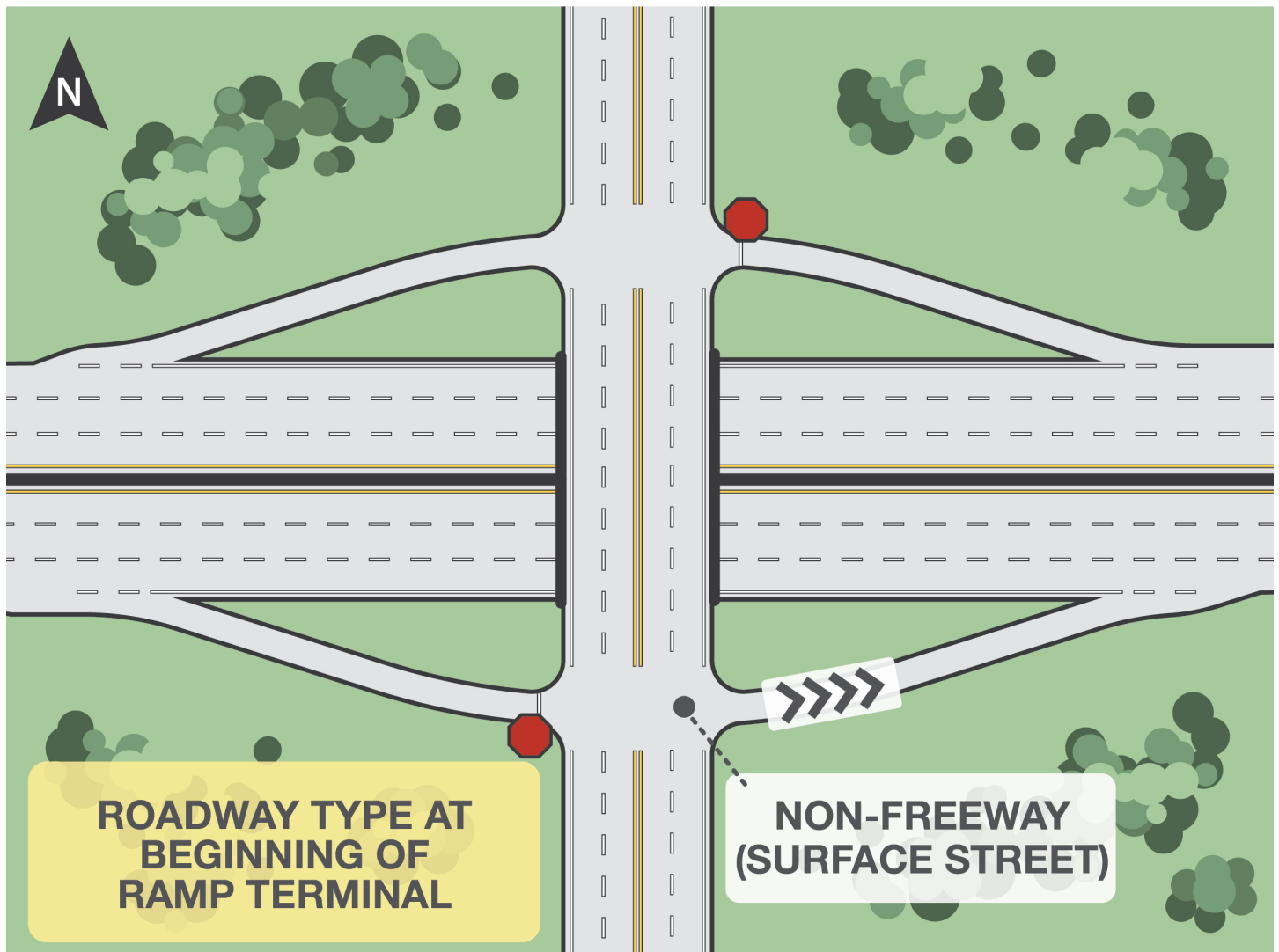
Interchange/Ramp

Roadway Type at Beginning Ramp Terminal (185)

Definition: A ramp is described by a beginning and ending ramp terminal in the direction of ramp traffic flow or the direction of inventory. This element describes the type of roadway intersecting with the ramp at the beginning terminal.

Recommended Attributes:

1. Freeway.
2. Non-freeway (surface street).
3. Other Ramp.
4. Frontage road.
5. Other.



NON-LOCAL PAVED ROADS

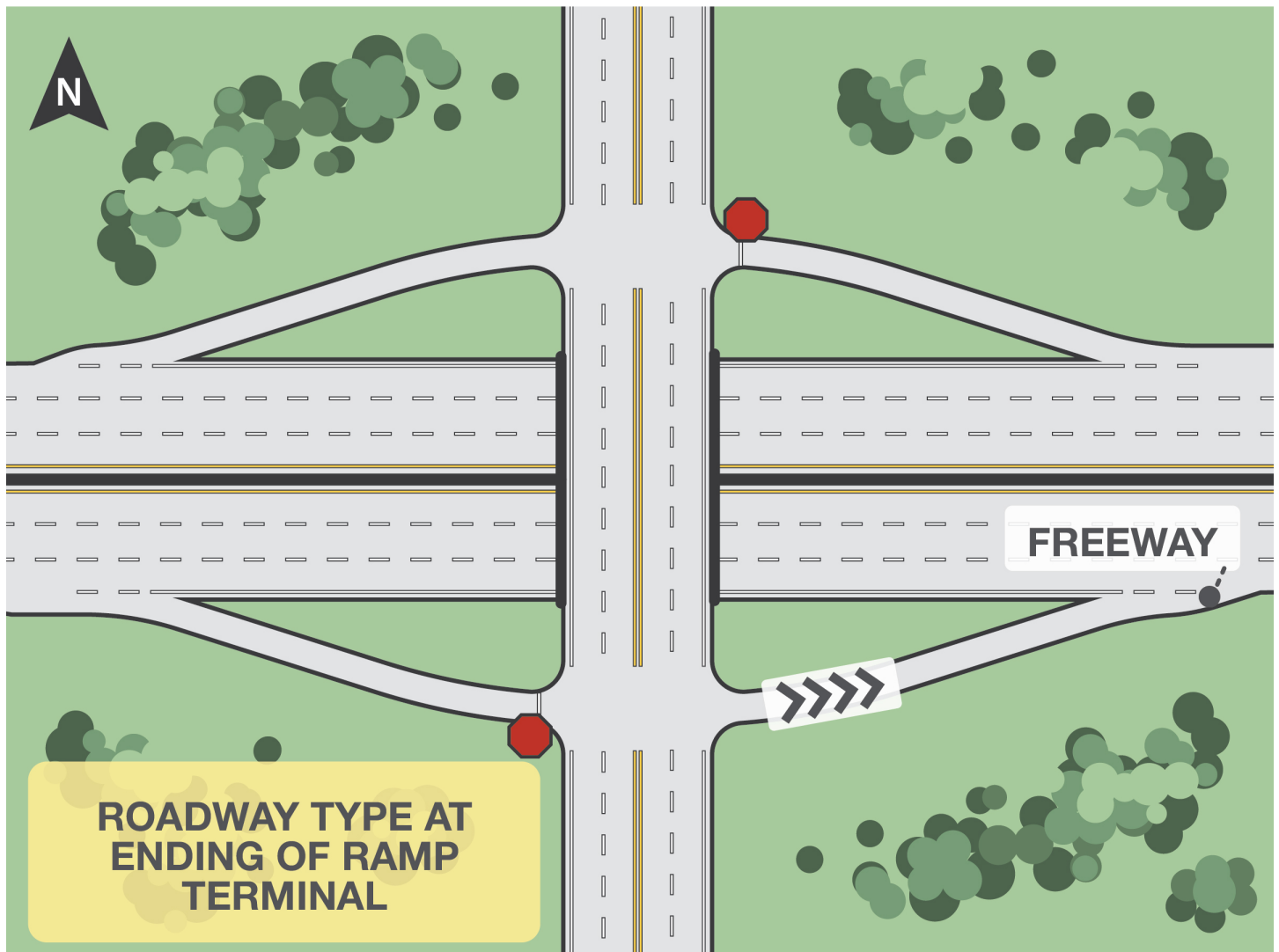
Interchange/Ramp

Roadway Type at Ending Ramp Terminal (189)

Definition: A ramp is described by a beginning and ending ramp terminal in the direction of inventory. This element describes the type of roadway intersecting with the ramp at the ending terminal.

Recommended Attributes:

1. Freeway.
2. Non-freeway (surface street).
3. Other Ramp.
4. Frontage road.
5. Other.



NON-LOCAL PAVED ROADS

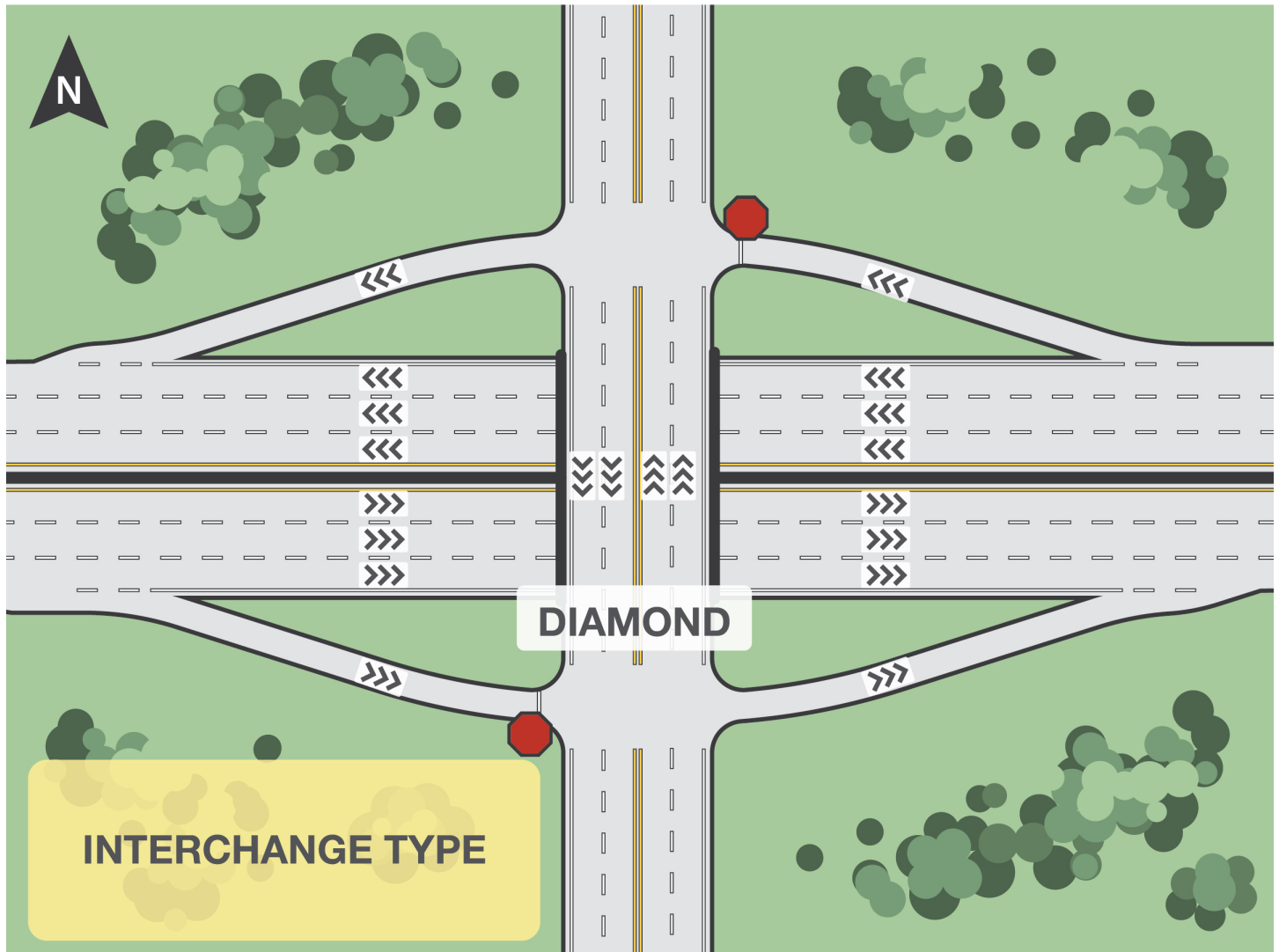
Interchange/Ramp

Interchange Type (172)

Definition: Type of interchange.

Recommended Attributes:

- | | | |
|------------------------------|--|---|
| 1. Diamond. | 8. Single entrances and/or exits (partial interchange). | 12. Single roundabout (i.e., single roundrop) interchange. |
| 2. Full cloverleaf. | 9. Single point interchange (SPI). | 13. Quadrant . |
| 3. Partial cloverleaf. | 10. Diverging diamond (i.e., DDI, double-crossover diamond DCD) interchange. | 14. Other. |
| 4. Trumpet. | 11. Double roundabout (i.e., double roundrop) interchange. | Note: This element has been changed since MIRE 1.0. Additional interchange types have been added to the attributes in MIRE 2.0. |
| 5. Three-leg directional. | | |
| 6. Four-leg all-directional. | | |
| 7. Semi-directional. | | |



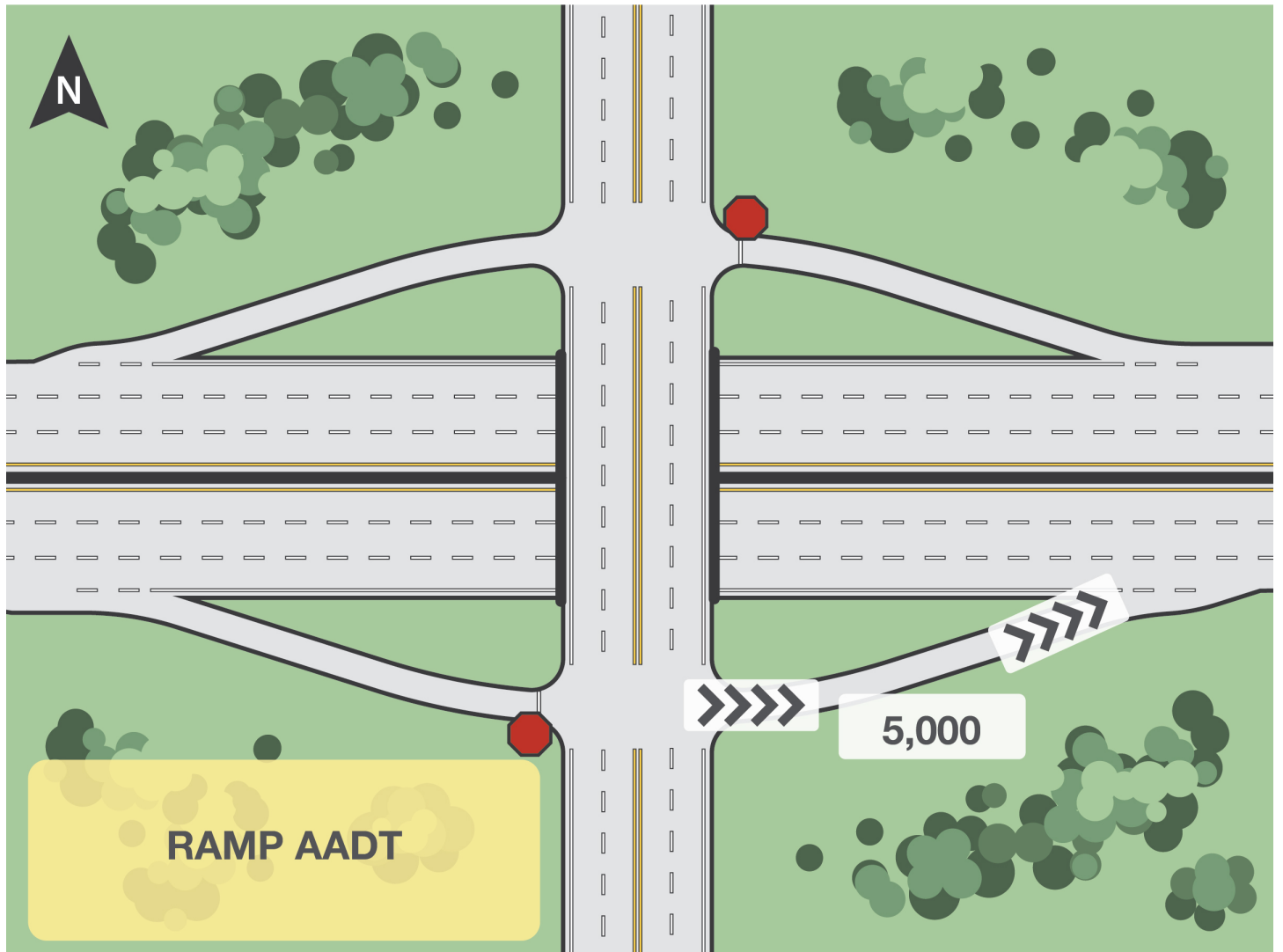
NON-LOCAL PAVED ROADS

Interchange/Ramp

Ramp AADT (181)

Definition: AADT on ramp.

Recommended Attributes: Numeric.



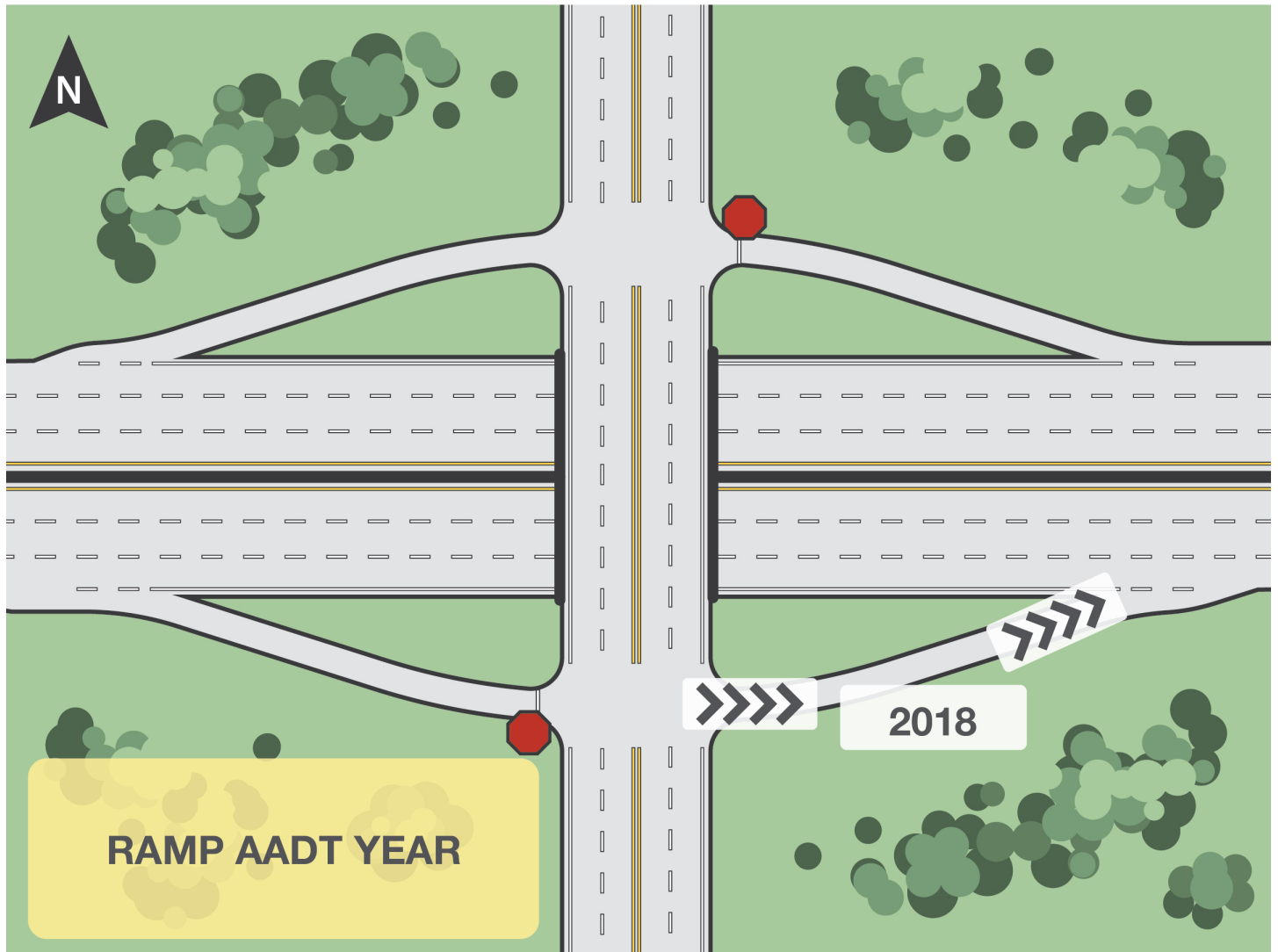
NON-LOCAL PAVED ROADS

Interchange/Ramp

Year of Ramp AADT (182)

Definition: Year of AADT on ramp.

Recommended Attributes: Year.



NON-LOCAL PAVED ROADS

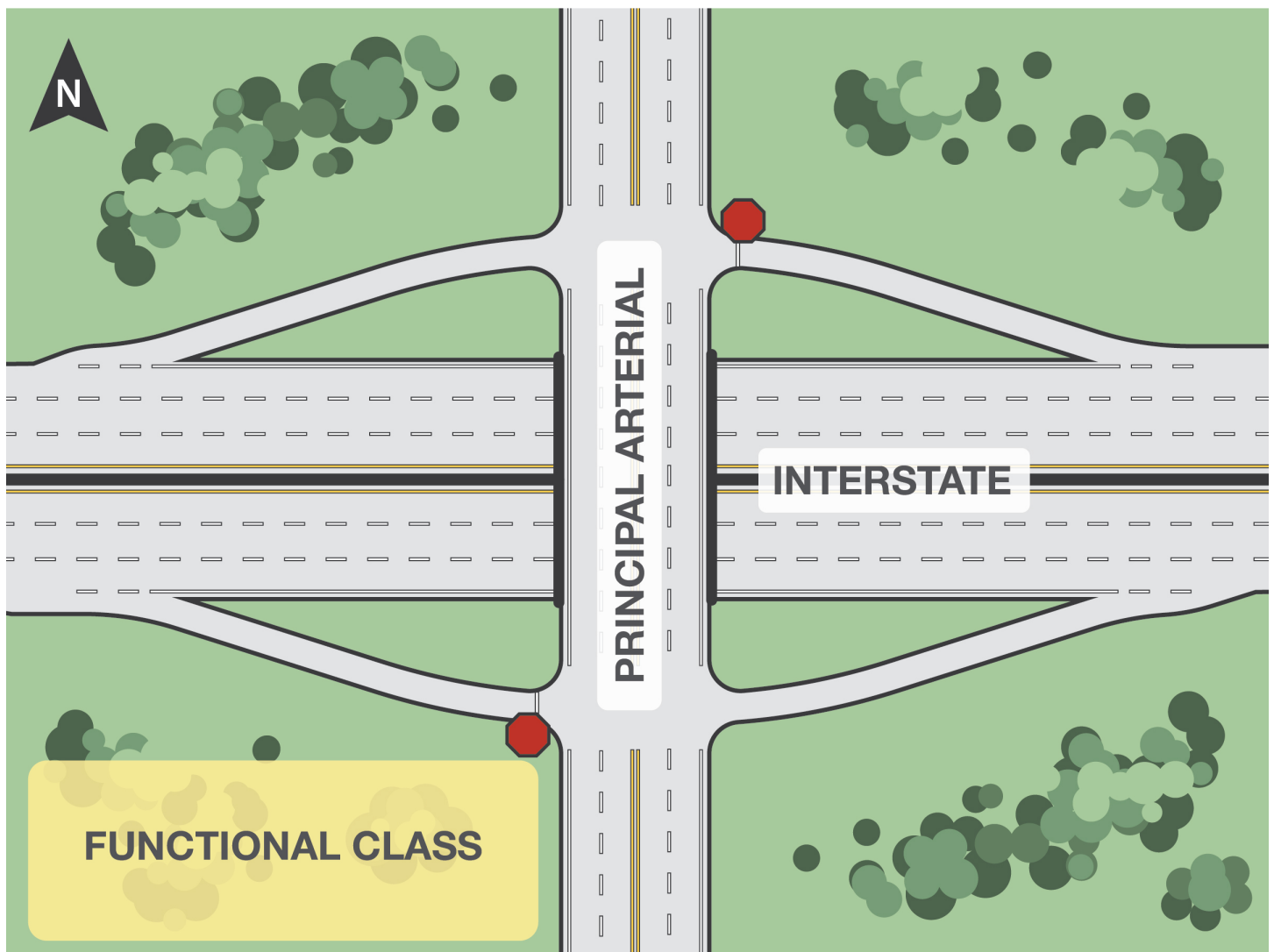
Interchange/Ramp

Functional Class (19)

Definition: The FHWA approved Functional Classification System.

Recommended Attributes:

- | | |
|---|---|
| 1. Interstate. | 7. Local. |
| 2. Principal arterial other freeways and expressways. | Note: This element has been changed since MIRE 1.0. |
| 3. Principal arterial other. | |
| 4. Minor arterial. | |
| 5. Major collector. | |
| 6. Minor collector. | |



NON-LOCAL PAVED ROADS

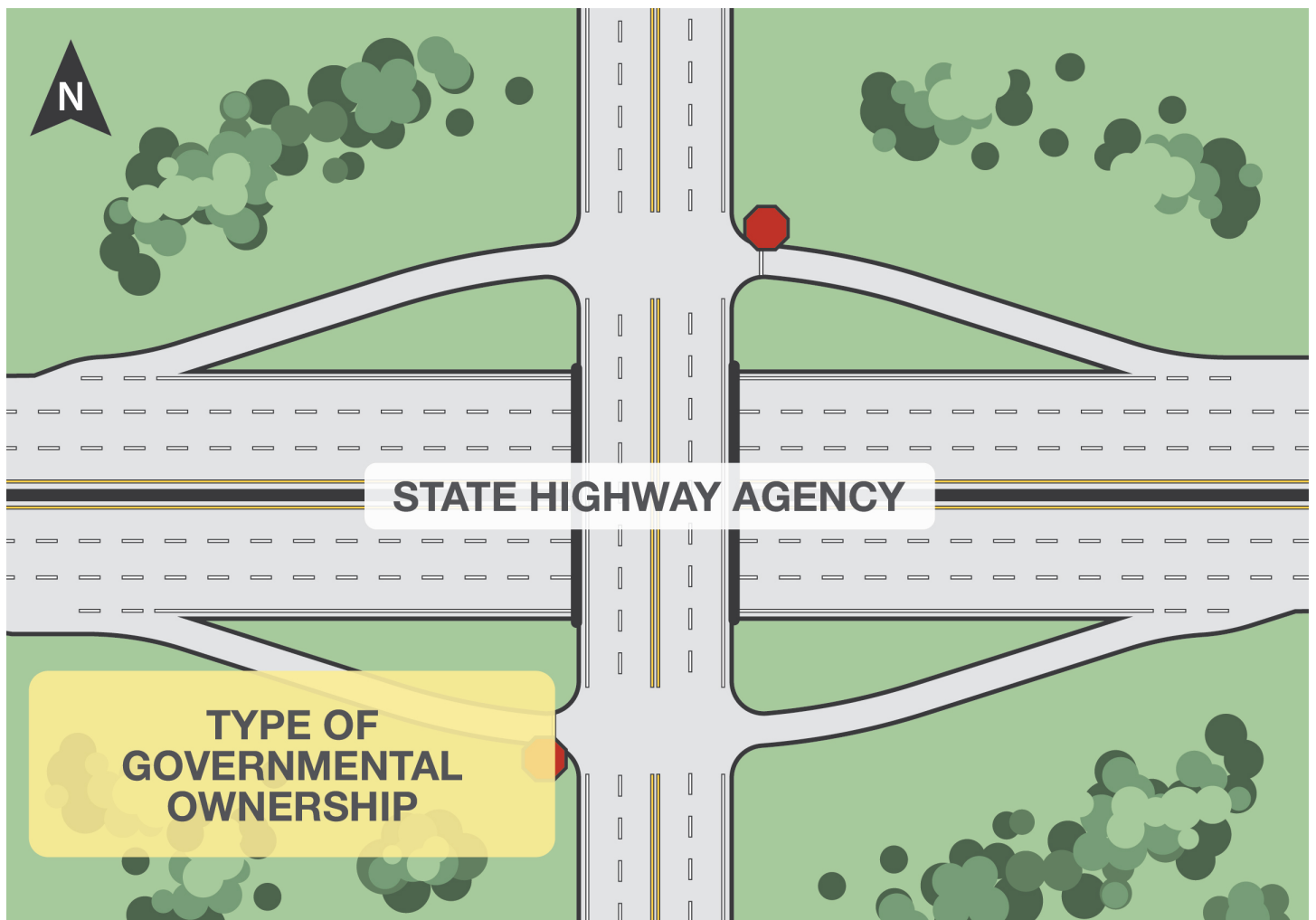
Interchange/Ramp

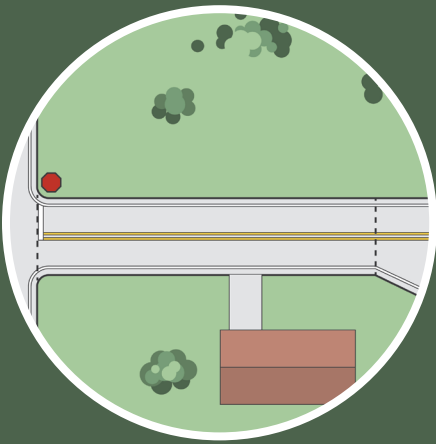
Type of Governmental Ownership (4)

Definition: The entity that has legal ownership of a roadway.

Recommended Attributes:

- | | | | |
|---|--|----------------------------------|--------------------------------|
| 1. State Highway Agency. | 7. Other State Agency. | 14. Indian Tribe Nation. | 21. Bureau of Land Management. |
| 2. County Highway Agency. | 8. Other Local Agency. | 15. Other Federal Agency. | 22. Bureau of Reclamation. |
| 3. Town or Township Highway Agency. | 9. Private (other than Railroad). | 16. Bureau of Indian Affairs. | 23. Corps of Engineers. |
| 4. City or Municipal Highway Agency. | 10. Railroad. | 17. Bureau of Fish and Wildlife. | 24. Air Force. |
| 5. State Park, Forest, or Reservation Agency. | 11. State Toll Authority. | 18. U.S. Forest Service. | 25. Navy/Marines. |
| 6. Local Park, Forest, or Reservation Agency. | 12. Local Toll Authority. | 19. National Park Service. | 26. Army. |
| | 13. Other Public Instrumentality (e.g. Airport). | 20. Tennessee Valley Authority. | 27. Other. |





LOCAL PAVED ROADS

Roadway Segment

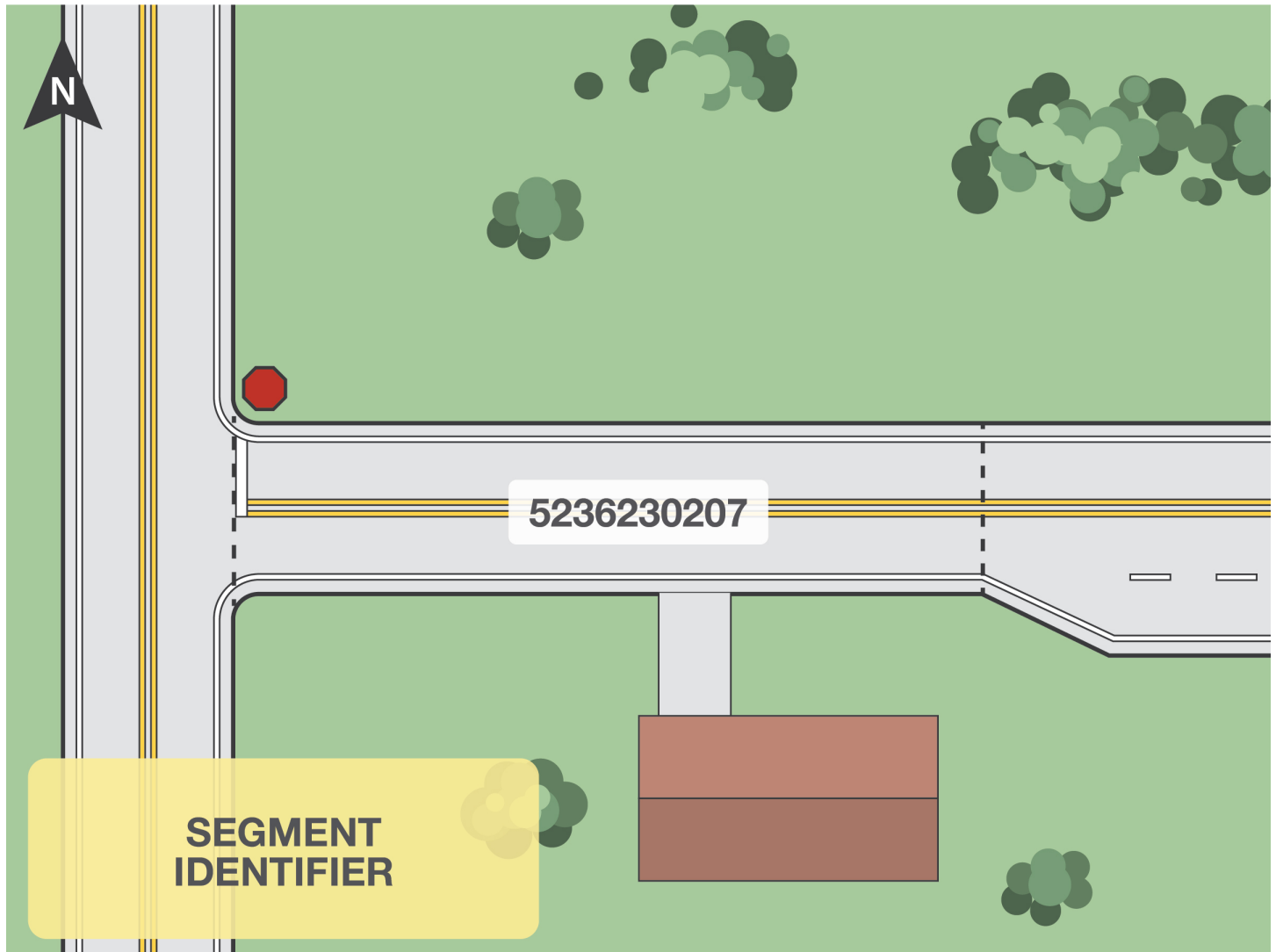
LOCAL PAVED ROADS

Roadway Segment

Segment Identifier (12)

Definition: Unique segment identifier.

Recommended Attributes: Derived from other elements (e.g., combination of route number, county location and beginning and ending milepoints).



LOCAL PAVED ROADS

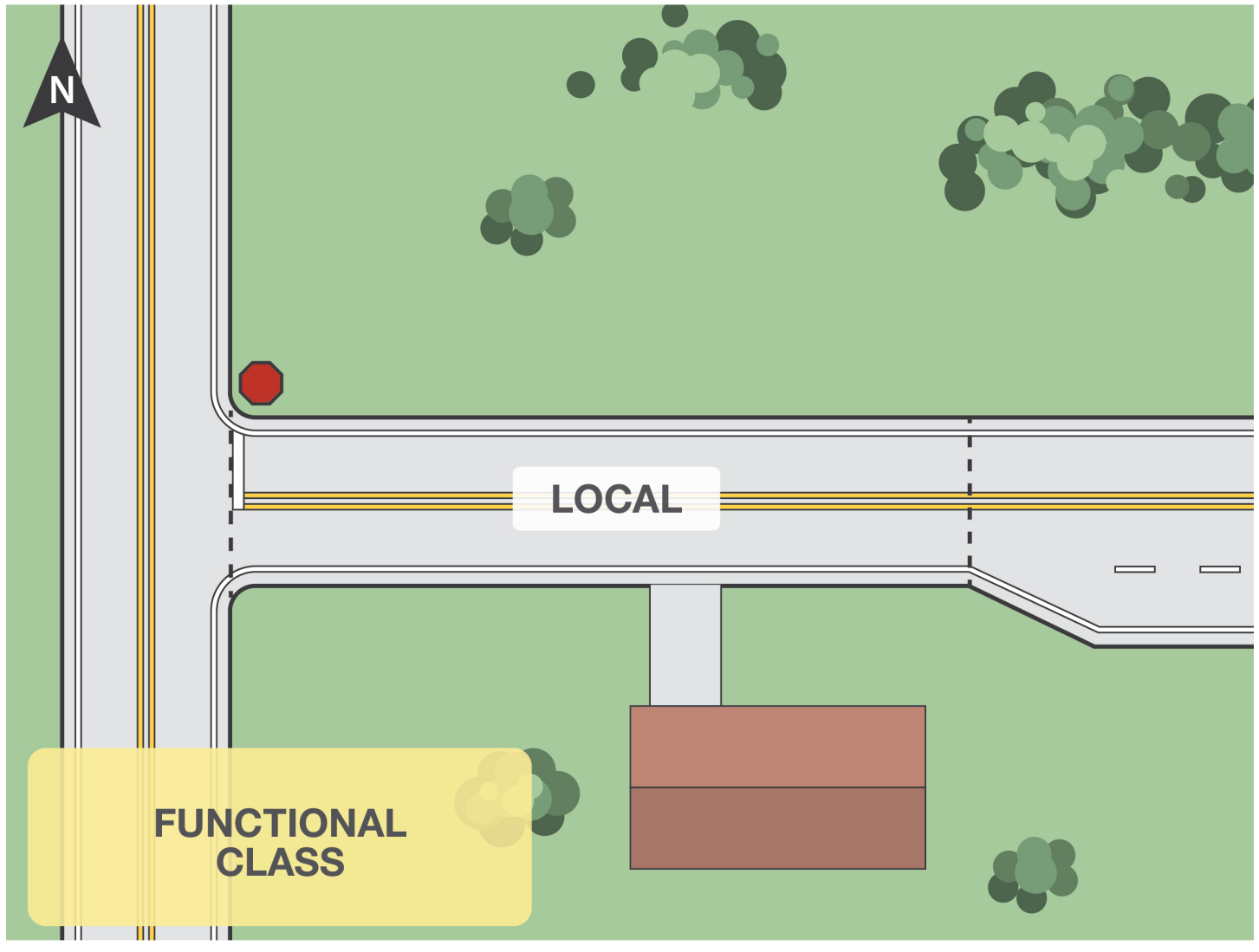
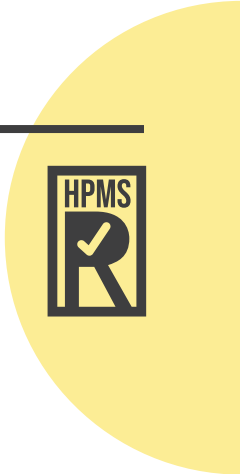
Roadway Segment

Functional Class (19)

Definition: The FHWA approved Functional Classification System.

Recommended Attributes:

- | | |
|---|---|
| 1. Interstate. | 7. Local. |
| 2. Principal arterial other freeways and expressways. | Note: This element has been changed since MIRE 1.0. |
| 3. Principal arterial other. | |
| 4. Minor arterial. | |
| 5. Major collector. | |
| 6. Minor collector. | |



LOCAL PAVED ROADS

Roadway Segment

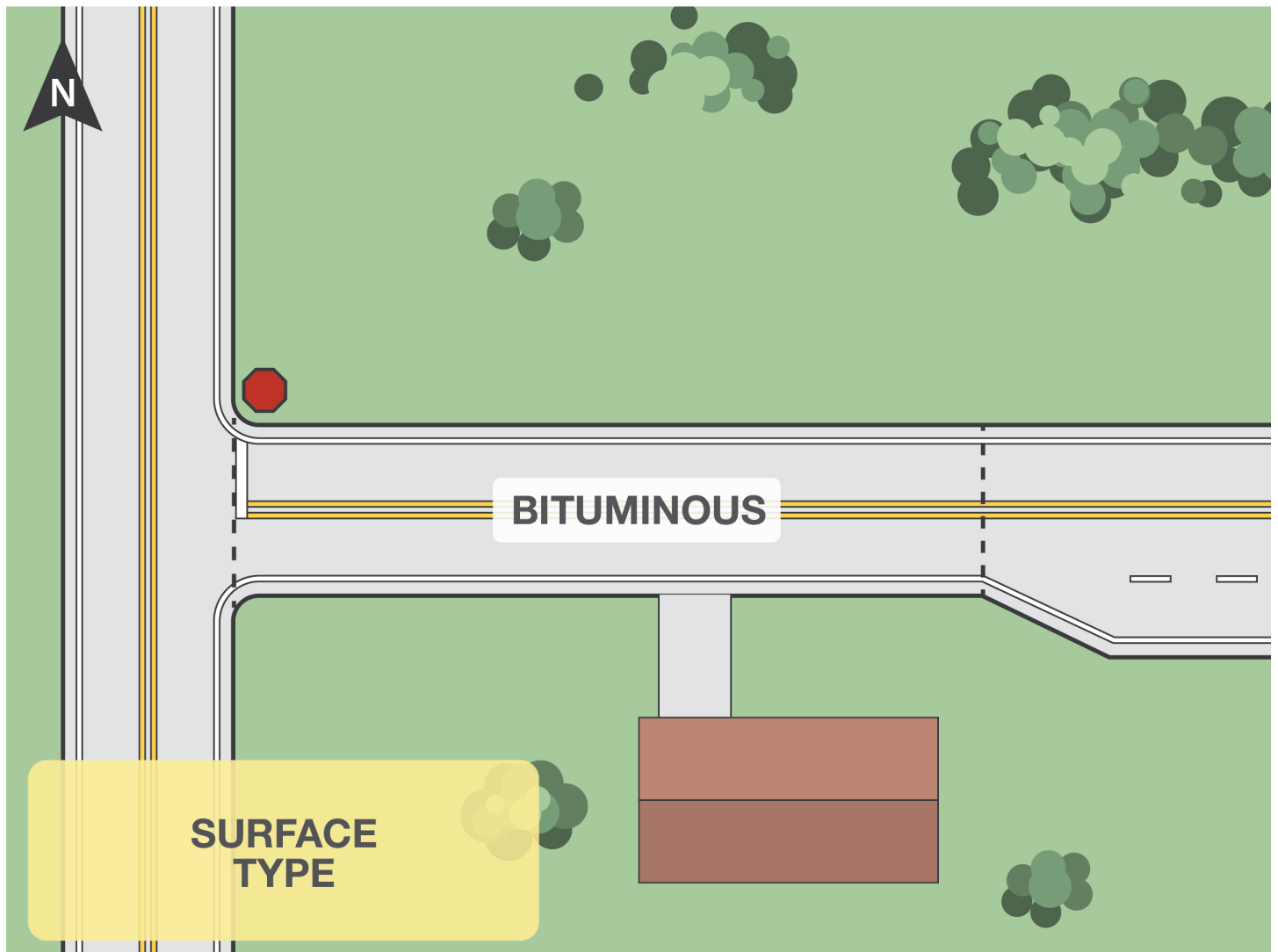


Surface Type (24)

Definition: The surface type of the segment.

Recommended Attributes:

- | | | | |
|---|---|---|--|
| 1. Unpaved.
a. Dirt. b. Gravel. c. Other. | Reinforced Concrete Pavement (CRCP). | 9. Unbonded Jointed Concrete Overlay on Portland Cement Concrete (PCC) Pavements. | 12. Other.
Note: This element has been changed since MIRE 1.0. To facilitate safety analyses, it is recommended that the type of surface for unpaved roads be more specifically identified. |
| 2. Bituminous. | 6. Asphalt-Concrete (AC) Overlay over Existing AC Pavement. | 10. Unbonded CRCP Overlay on PCC Pavements. | |
| 3. Jointed Plain Concrete Pavement (JPCP). | 7. AC Overlay over Existing Jointed Concrete Pavement. | 11. Bonded PCC Overlays on PCC Pavements. | |
| 4. Jointed Reinforced Concrete Pavement (JRCP). | 8. AC (Bi Overlay over Existing CRCP). | | |
| 5. Continuously | | | |



LOCAL PAVED ROADS

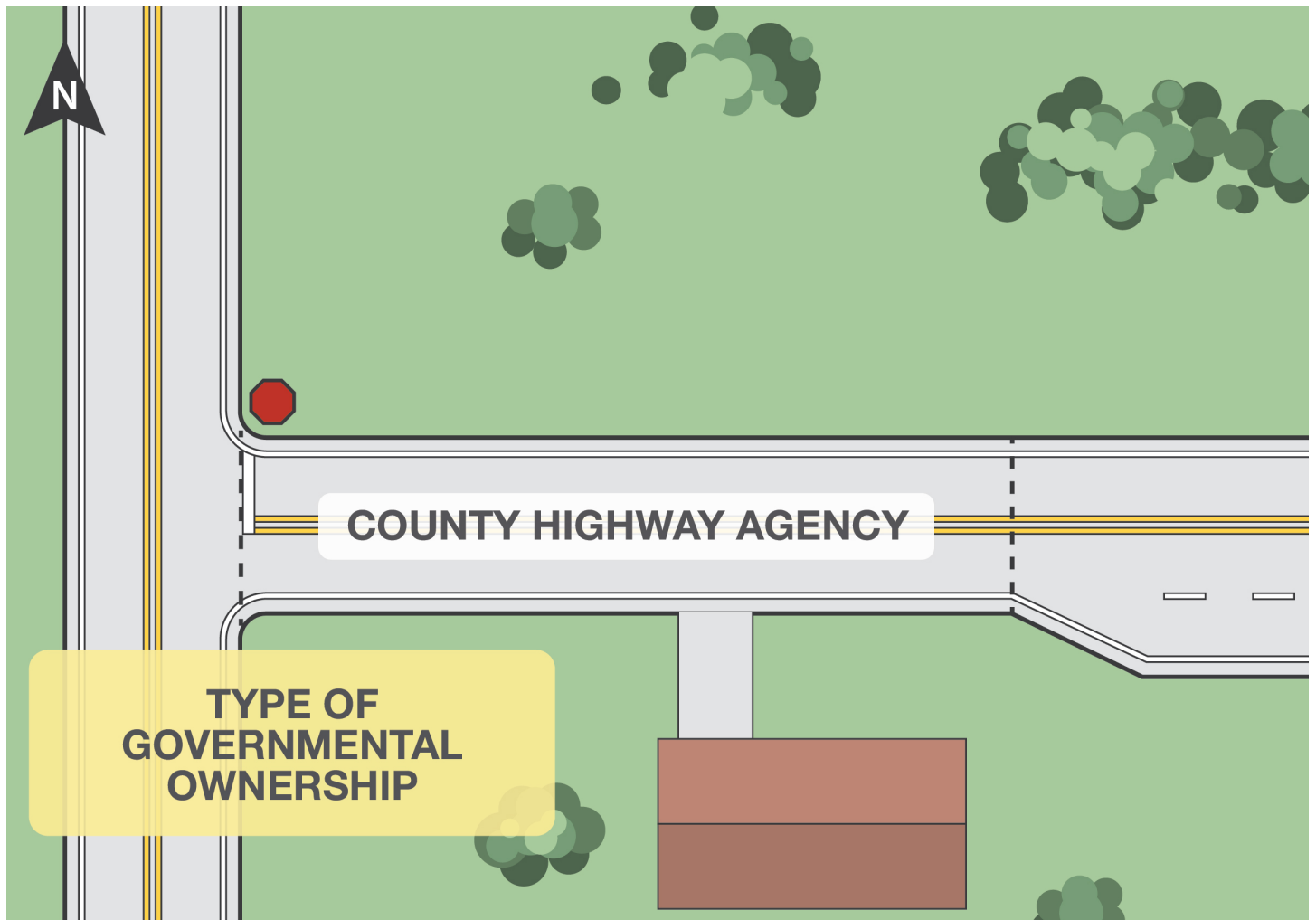
Roadway Segment

Type of Governmental Ownership (4)

Definition: The entity that has legal ownership of a roadway.

Recommended Attributes:

- | | | | |
|---|--|----------------------------------|--------------------------------|
| 1. State Highway Agency. | 7. Other State Agency. | 14. Indian Tribe Nation. | 21. Bureau of Land Management. |
| 2. County Highway Agency. | 8. Other Local Agency. | 15. Other Federal Agency. | 22. Bureau of Reclamation. |
| 3. Town or Township Highway Agency. | 9. Private (other than Railroad). | 16. Bureau of Indian Affairs. | 23. Corps of Engineers. |
| 4. City or Municipal Highway Agency. | 10. Railroad. | 17. Bureau of Fish and Wildlife. | 24. Air Force. |
| 5. State Park, Forest, or Reservation Agency. | 11. State Toll Authority. | 18. U.S. Forest Service. | 25. Navy/Marines. |
| 6. Local Park, Forest, or Reservation Agency. | 12. Local Toll Authority. | 19. National Park Service. | 26. Army. |
| | 13. Other Public Instrumentality (e.g. Airport). | 20. Tennessee Valley Authority. | 27. Other. |



LOCAL PAVED ROADS

Roadway Segment

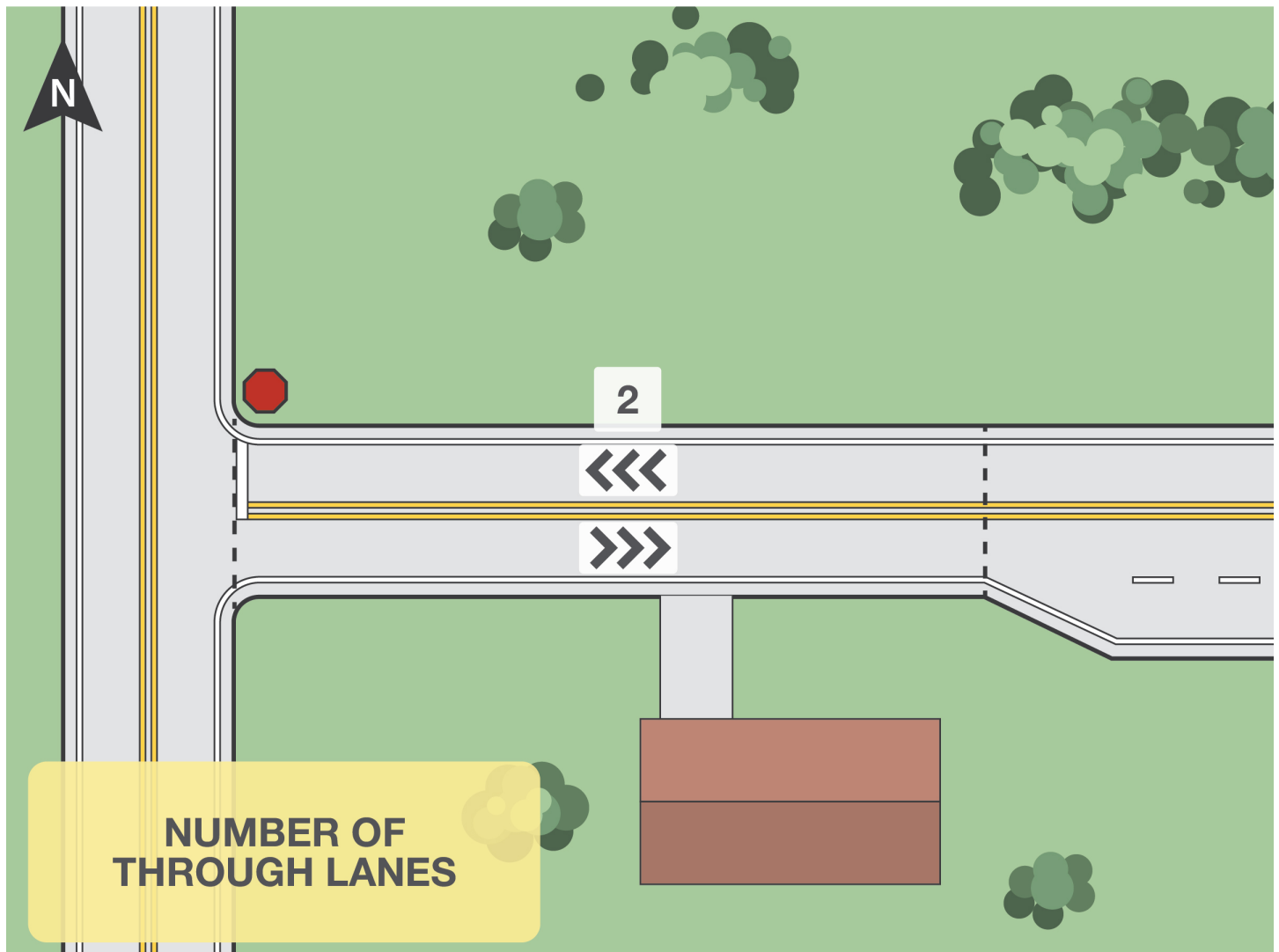
Number of Through Lanes (32)

Definition: The total number of through lanes on the segment. It is the number of through lanes in the direction of inventory. If the road is inventoried in both directions together, this would be the number of through lanes in both directions. If the road is inventoried separately for each direction, this would be the number of through lanes in one single direction.

This excludes auxiliary lanes, such as collector-distributor lanes, weaving lanes, frontage road lanes, parking and turning lanes, acceleration/deceleration lanes, toll collection lanes, HOV lanes, HOT lanes, transit lanes, shoulders, and truck climbing lanes. These types of auxiliary lanes are captured in separate elements.

Recommended Attributes: Numeric.

Note: This element has been changed since MIRE 1.0.



LOCAL PAVED ROADS

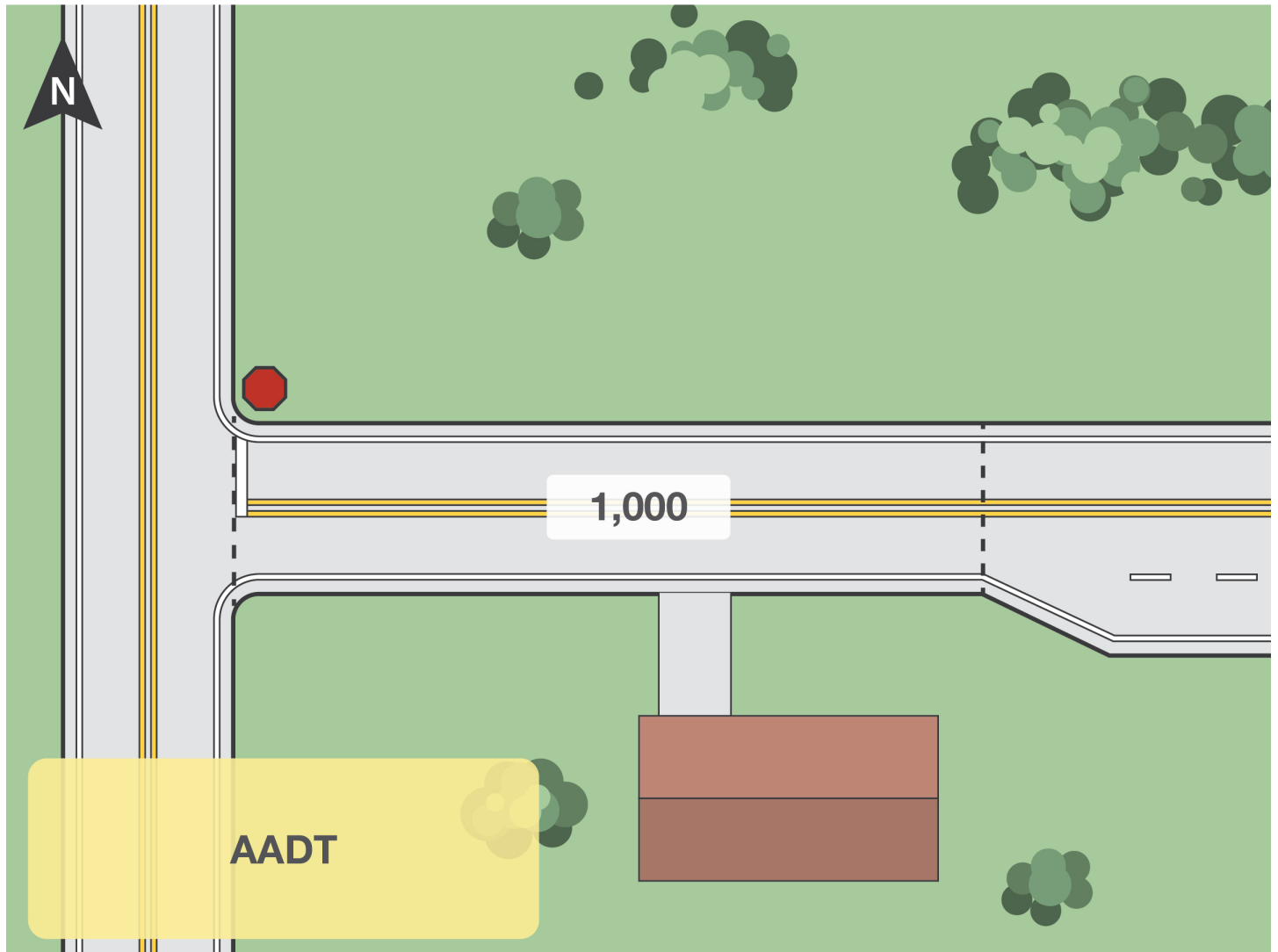
Roadway Segment

Annual Average Daily Traffic (81)

Definition: The FHWA approved Functional Classification System.

Recommended Attributes:

- | | |
|---|---|
| 1. Interstate. | 7. Local. |
| 2. Principal arterial other freeways and expressways. | Note: This element has been changed since MIRE 1.0. |
| 3. Principal arterial other. | |
| 4. Minor arterial. | |
| 5. Major collector. | |
| 6. Minor collector. | |



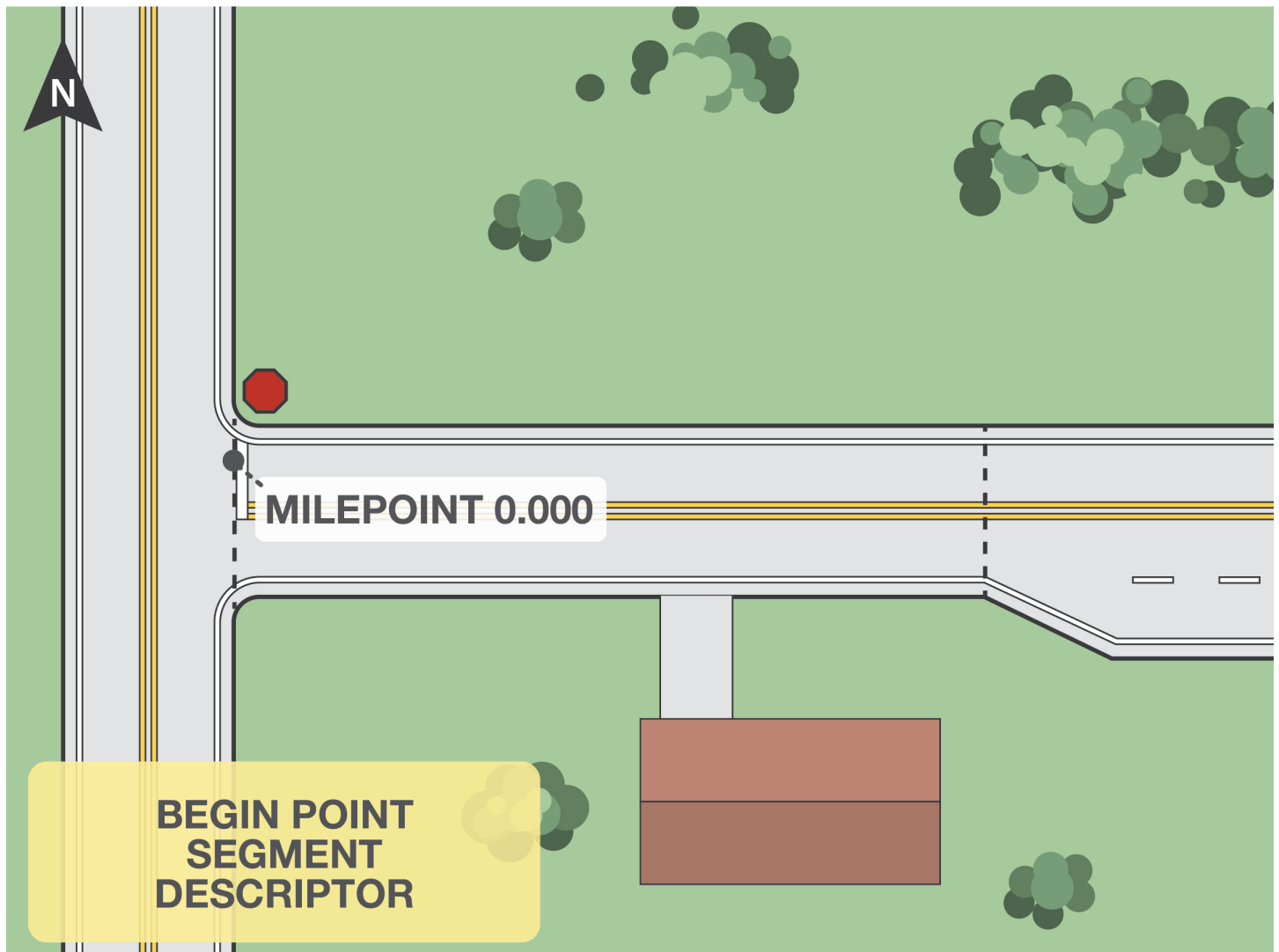
LOCAL PAVED ROADS

Roadway Segment

Begin Point Segment Descriptor (10)

Definition: Location information defining the beginning of the segment.

Recommended Attributes: Begin point will be defined by the user agency. Generally, this will be based on homogeneity of chosen attributes throughout the segment. Begin point segment descriptors can be either linked to a Linear Reference System (e.g., Route-beginning milepoint, Route-ending milepoint) or to a spatial data system (i.e., longitude/latitude for begin and end points). Street address could also possibly be used for urban areas. The descriptor types used must be common across all MIRE files and compatible with crash data location coding.



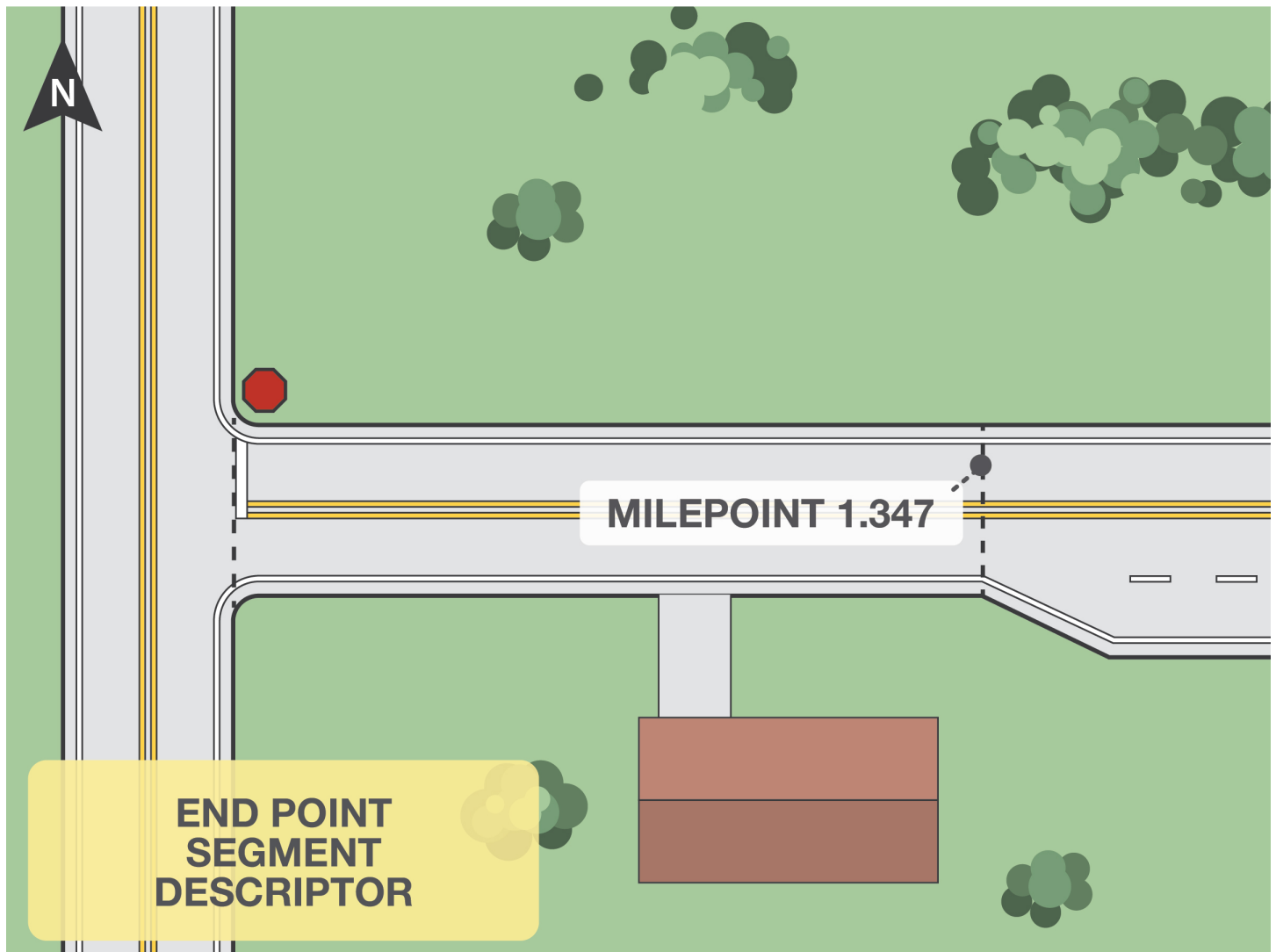
LOCAL PAVED ROADS

Roadway Segment

End Point Segment Descriptor (11)

Definition: Location information defining the end of the segment.

Recommended Attributes: End point will be defined by the user agency. Generally, this will be based on homogeneity of chosen attributes throughout the segment). End point segment descriptors can be either linked to a Linear Reference System (e.g., Route-beginning milepoint, Route-ending milepoint) or to a spatial data system (i.e., longitude/latitude for begin and end points). Street address could also possibly be used for urban areas. The descriptor types used must be common across all MIRE files and compatible with crash data location coding.



LOCAL PAVED ROADS

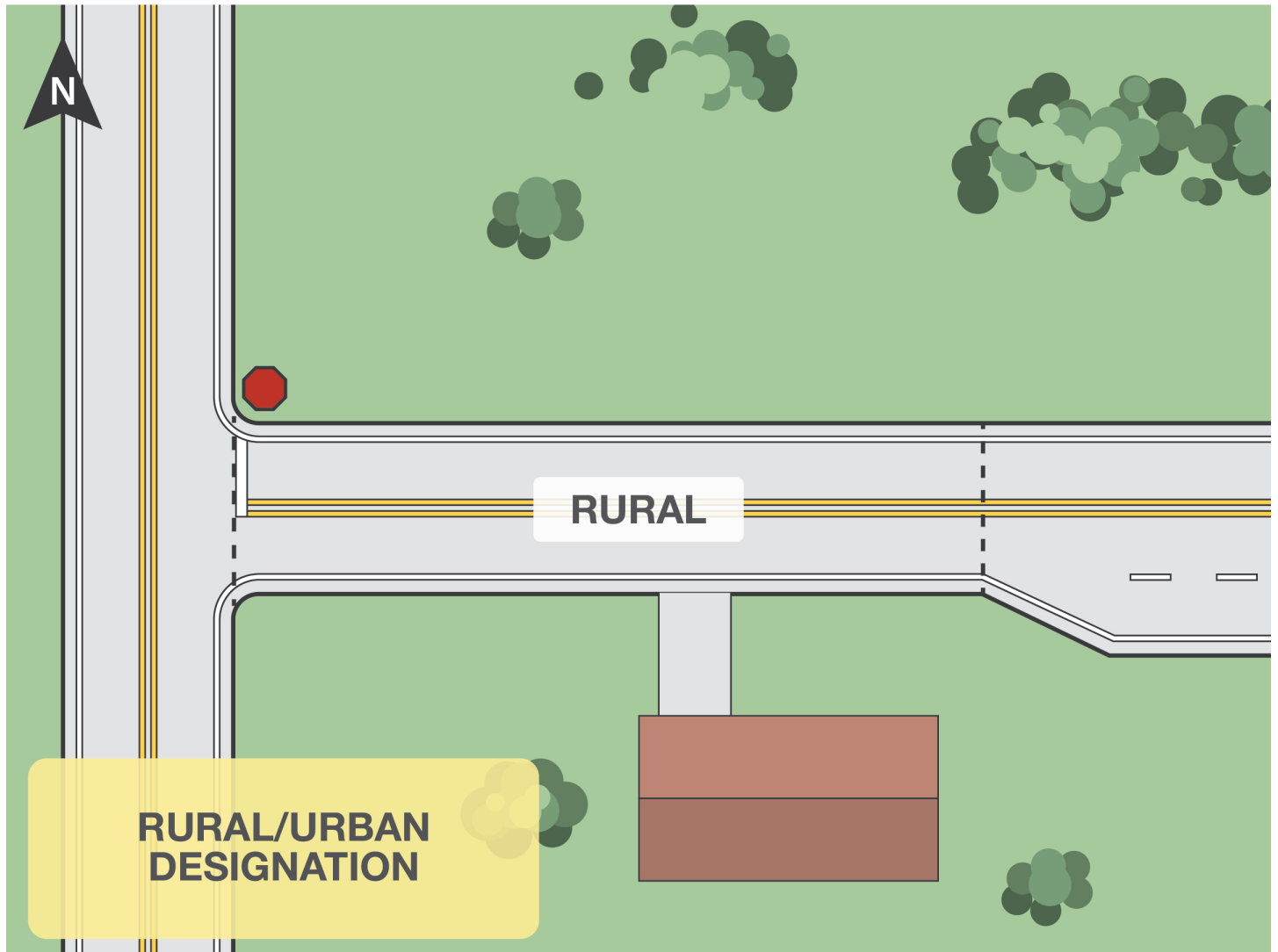
Roadway Segment

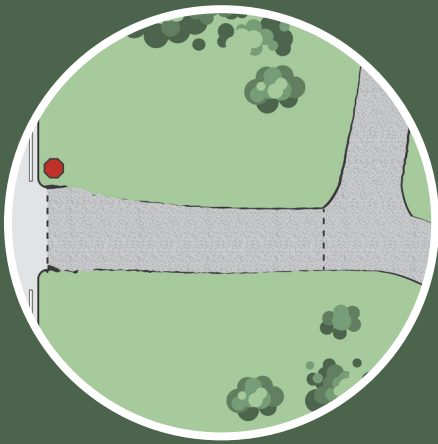
Rural/Urban Designation (20)

Definition: The rural or urban designation based on Census urban boundary and population.

Recommended Attributes:

1. Rural.
2. Urban (population > 5,000).





UNPAVED ROADS

Roadway Segment

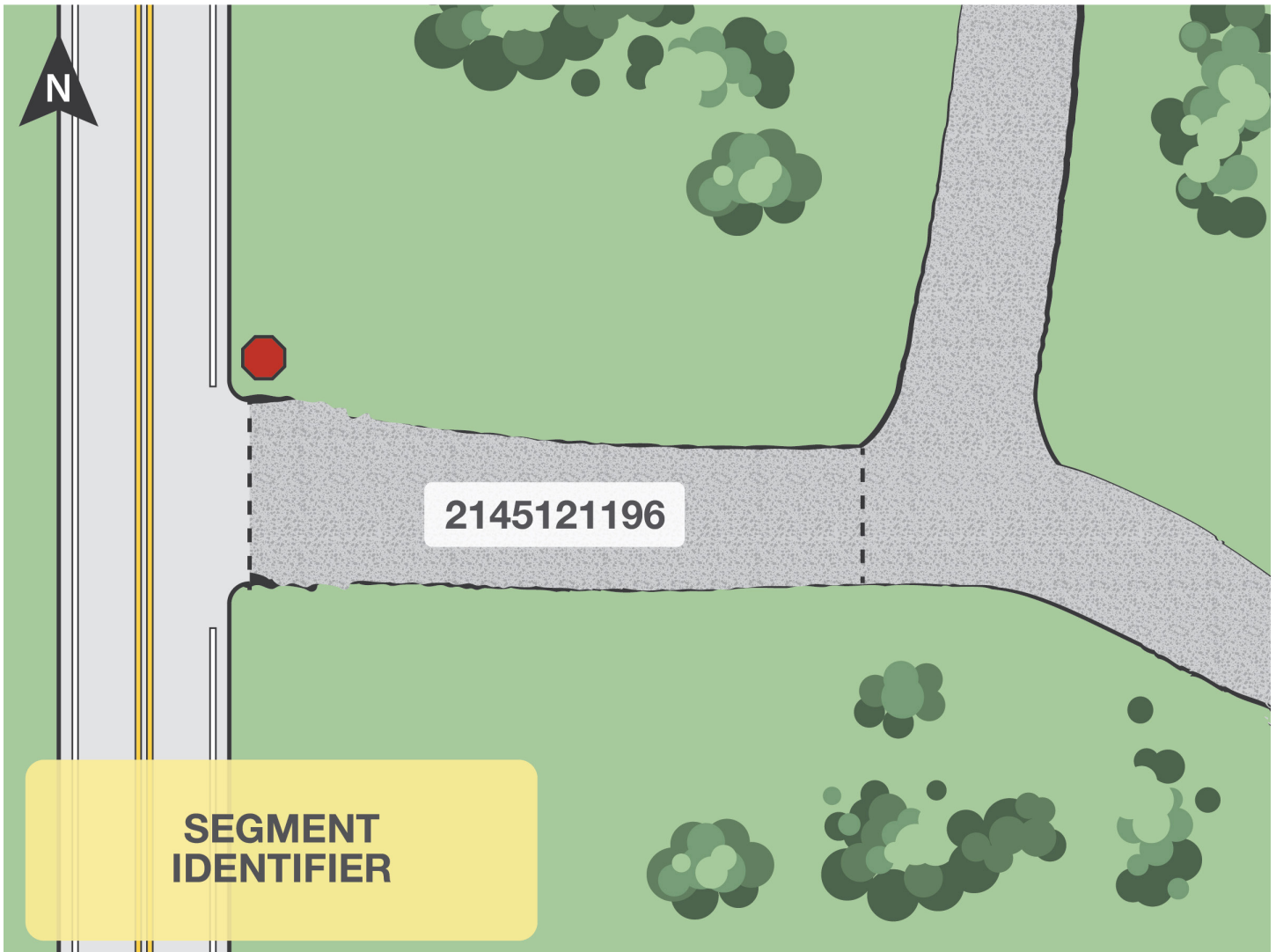
UNPAVED ROADS

Roadway Segment

Segment Identifier (12)

Definition: Unique segment identifier.

Recommended Attributes: Derived from other elements (e.g., combination of route number, county location and beginning and ending milepoints).



UNPAVED ROADS

Roadway Segment

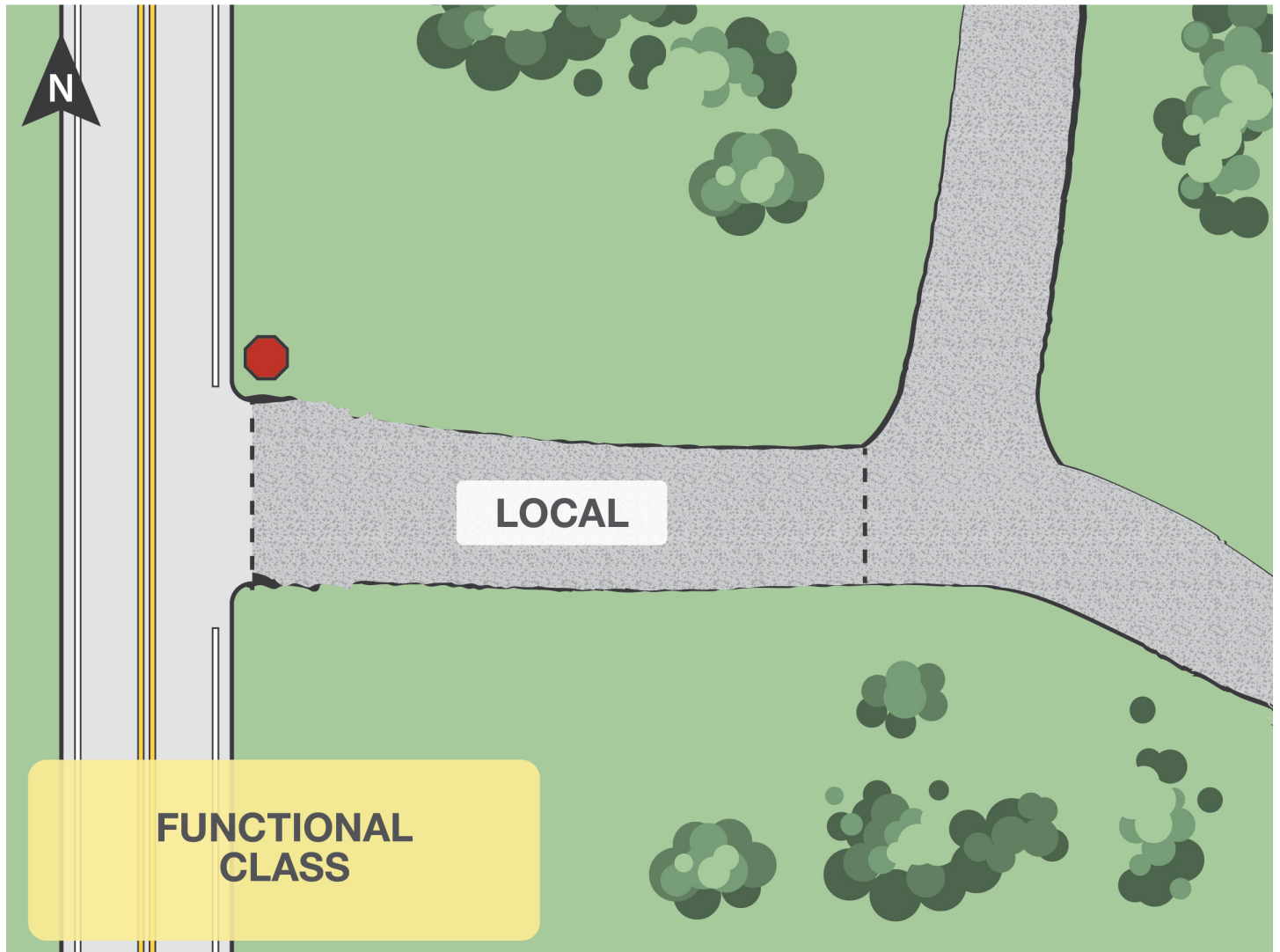


Functional Class (19)

Definition: The FHWA approved Functional Classification System.

Recommended Attributes:

- | | |
|---|---|
| 1. Interstate. | 7. Local. |
| 2. Principal arterial other freeways and expressways. | Note: This element has been changed since MIRE 1.0. |
| 3. Principal arterial other. | |
| 4. Minor arterial. | |
| 5. Major collector. | |
| 6. Minor collector. | |



UNPAVED ROADS

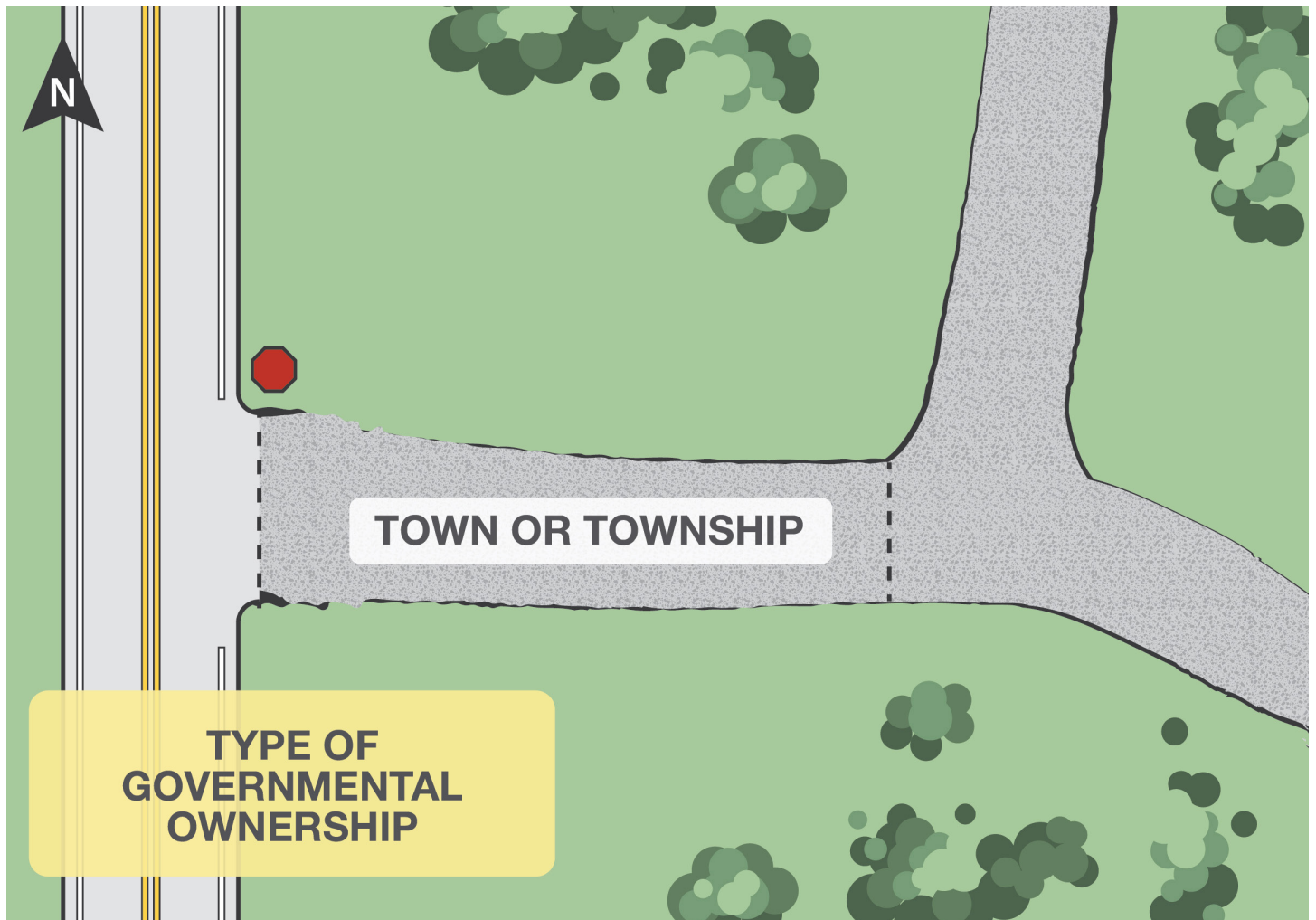
Roadway Segment

Type of Governmental Ownership (4)

Definition: The entity that has legal ownership of a roadway.

Recommended Attributes:

- | | | | |
|---|--|----------------------------------|--------------------------------|
| 1. State Highway Agency. | 7. Other State Agency. | 14. Indian Tribe Nation. | 21. Bureau of Land Management. |
| 2. County Highway Agency. | 8. Other Local Agency. | 15. Other Federal Agency. | 22. Bureau of Reclamation. |
| 3. Town or Township Highway Agency. | 9. Private (other than Railroad). | 16. Bureau of Indian Affairs. | 23. Corps of Engineers. |
| 4. City or Municipal Highway Agency. | 10. Railroad. | 17. Bureau of Fish and Wildlife. | 24. Air Force. |
| 5. State Park, Forest, or Reservation Agency. | 11. State Toll Authority. | 18. U.S. Forest Service. | 25. Navy/Marines. |
| 6. Local Park, Forest, or Reservation Agency. | 12. Local Toll Authority. | 19. National Park Service. | 26. Army. |
| | 13. Other Public Instrumentality (e.g. Airport). | 20. Tennessee Valley Authority. | 27. Other. |



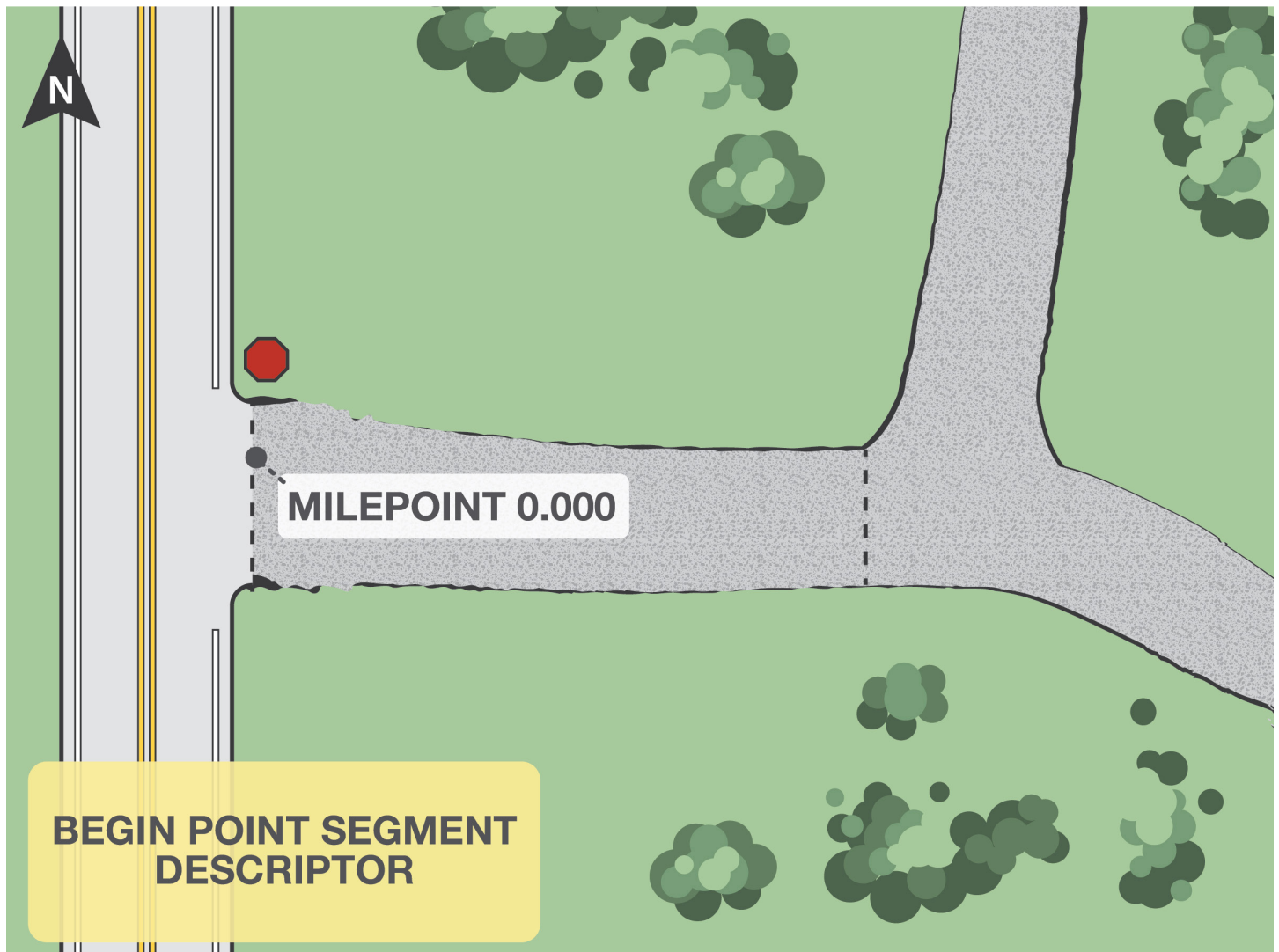
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Roadway Segment

Begin Point Segment Descriptor (10)

Definition: Location information defining the beginning of the segment.

Recommended Attributes: Begin point will be defined by the user agency. Generally, this will be based on homogeneity of chosen attributes throughout the segment. Begin point segment descriptors can be either linked to a Linear Reference System (e.g., Route-beginning milepoint, Route-ending milepoint) or to a spatial data system (i.e., longitude/latitude for begin and end points). Street address could also possibly be used for urban areas. The descriptor types used must be common across all MIRE files and compatible with crash data location coding.



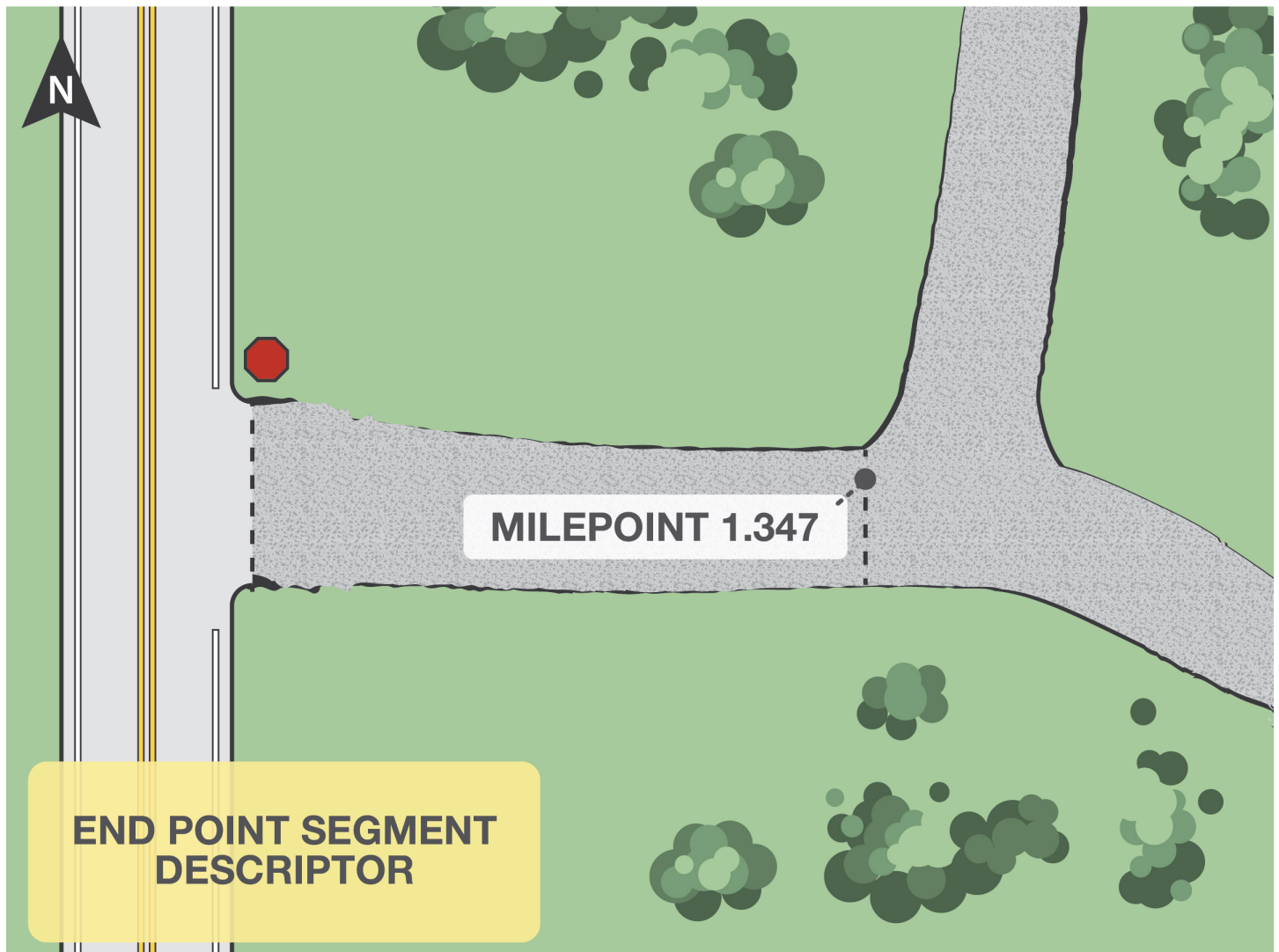
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Roadway Segment

End Point Segment Descriptor (11)

Definition: Location information defining the end of the segment.

Recommended Attributes: End point will be defined by the user agency. Generally, this will be based on homogeneity of chosen attributes throughout the segment). End point segment descriptors can be either linked to a Linear Reference System (e.g., Route-beginning milepoint, Route-ending milepoint) or to a spatial data system (i.e., longitude/latitude for begin and end points). Street address could also possibly be used for urban areas. The descriptor types used must be common across all MIRE files and compatible with crash data location coding.





U.S. Department of Transportation
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