Pedestrian and Cycling Planning & Design Guidelines

YORK REGION
Transportation Services

York Region

version 2018

IBI Group in association with Vélo Québec Association

IBI

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TABLE OF CONTENTS

TABLE OF CONTENTS (CONTINUED)

1.0 Introduction and Context


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1.1 OVERVIEW

This document is intended to provide a comprehensive and easy-to-use manual for the planning and design of active transportation facilities in York Region. Active transportation facilities are defined as pieces of infrastructure that support travel by pedestrians, including those using mobility aids or devices, cyclists, rollerbladers, and other forms of self-propelled transportation. The guidelines are an update to the 2008 Planning & Design Guidelines developed as part of York Region's first Pedestrian & Cycling Master Plan, however this document reflects an emphasis on updated facility types, emerging design treatments for intersections and better integration with other York Region planning & design initiatives. In particular, these guidelines directly support the work of York Region's Designing Great Streets context sensitive design manual and policy directions stemming from the recently updated Transportation Master Plan.

Developing high quality active transportation facilities in York Region presents a unique set of challenges, including:

- Full range of conditions may be encountered along a particular corridor, from highly dense and urbanized to rural within several kilometres, requiring special consideration of transition zones
- Unique demand to accommodate goods movements as part of the regional mandate, which must be balanced with the desire for pedestrian-oriented design specifically through elements such as turning radii, lane widths etc.
- Balancing urban design elements including a desire for sustainable streets and streetscaping requirements with space for pedestrian and cyclists in regional/urban centres

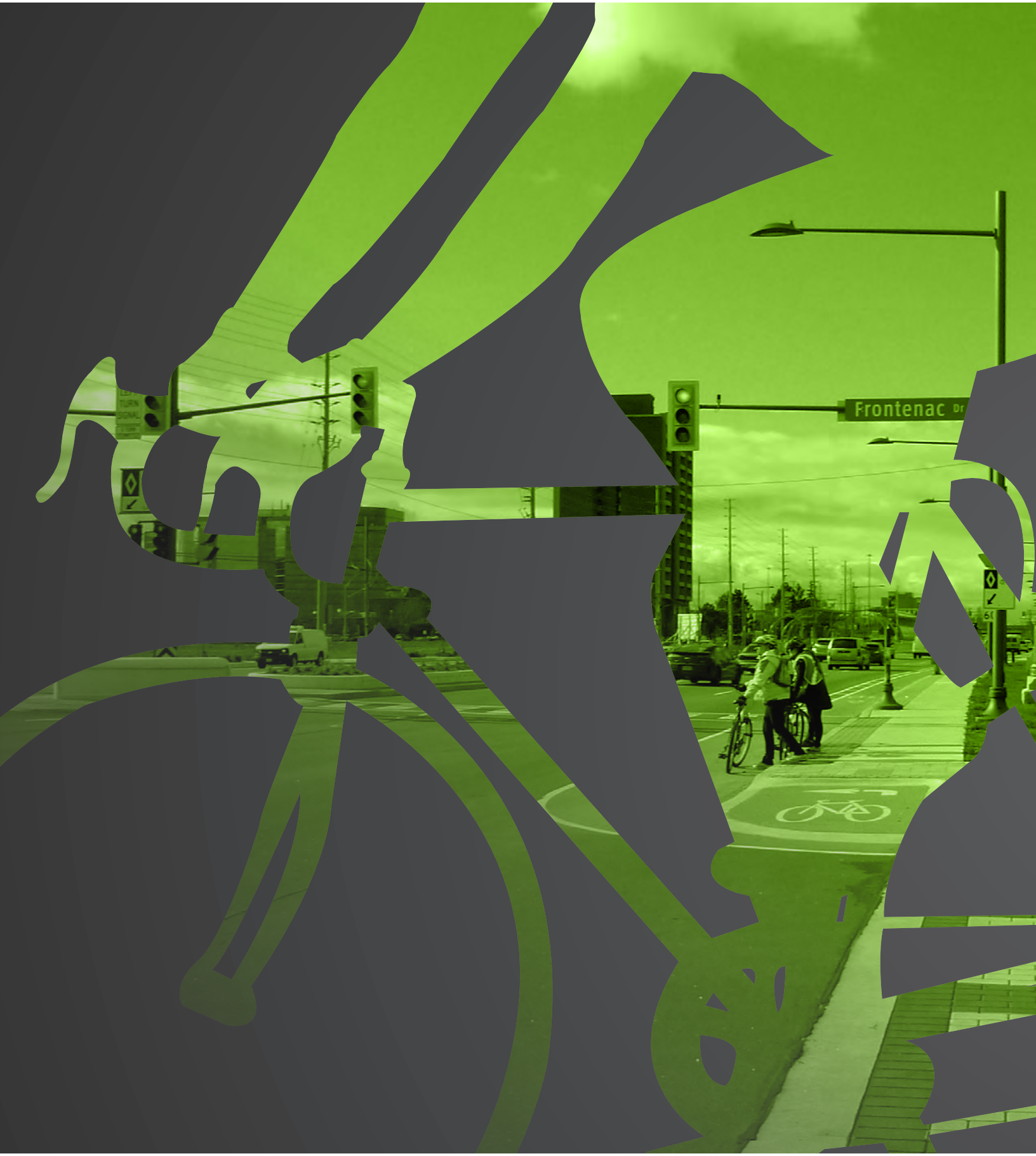
As a result, these guidelines seek to strike a balance in the often competing priorities for Regional roads, while providing high quality pedestrian and cycling facilities that are likely to attract new users. York Region is experiencing rapidly changing urban form and land pressures in many urban centres, and the potential for increasing levels of pedestrian and cycling ridership is high. Through consistent and continued efforts on a number of fronts (facility planning & design, wayfinding and maintenance), it is the intent of these guidelines to contribute to on-going growth in mode shares for active modes.

The guide was developed with consideration of relevant local and regional design standards and practices. The guide also draws on best practices and design guidance from other manuals and guidelines including OTM Book 15 and Book 18, VeloQuebec's Planning and Design for Pedestrians and Cyclists, NACTO's Urban Bikeway Design Guide, FHWA's Separated Bike Lane Planning and Design Guide, and the CROW Design Manual for Bicycle Traffic, amongst others.

Additional resources consulted during the development of this guideline are identified in Appendix A. It is not the intent of these guidelines to replace the detailed guidance provided in many of these resources, but to identify elements of particular applicability in York Region, and to present the scenarios most likely to occur within the Region. As with any other manual, practitioners are encouraged to consult several resources to ensure that a full breadth of options have been considered for each scenario.

1.2 USING THE GUIDELINES

These guidelines are intended to be straight forward and easy to use. The following summarizes the content of each section:	
Chapter 1: Introduction & Context	This section provides an overview of the operating conditions context in York Region and describes the purpose and application of these guidelines.
Chapter 2: Facility Selection Tool	This section provides an overview of the facility selection tool, which helps identify appropriate pedestrian and cycling facilities along various classifications of Regional roads.
Chapter 3: General Design Considerations	This chapter presents operating space requirements for pedestrian and cyclists, and provides an overview of the minimum and preferred design criteria referenced throughout this document.
Chapter 4: Pedestrian and Cycling Facilities	Based on the selection tool presented in Chapter 2, this chapter presents detailed cross-sections for each type of facility. These cross-sections are based on the road type and construction conditions (i.e. retrofit or new construction/reconstruction)
Chapter 5: Intersection Treatments	This section presents key principles to intersection design and includes treatments for signalized and unsignalized intersection treatments, including rural and urban applications. Specific treatments for freeway, roundabouts, facility transitions, railway, midblock and grade-separated crossings are also covered.
Chapter 6: Curbside Activity	This chapter covers interactions with transit facilities and treatments at driveways.
Chapter 7: Pavement Markings & Signage	This chaper summarizes information about the pavement markings and signage presented throughout the design examples.
Chapter 8: Signal Operations	This chapter provides considerations for signal phasing, timing and detection for active transportation.
Chapter 9: Network Amenities	This chapter covers network amenities such as street furniture, fences & railings, traffic calming, wayfinding and bicycle parking.
Chapter 10: Maintenance & Operations	This chapter covers routine and seasonal maintenance of pedestrian and cycling facilities, as well as accommodation of cyclists and pedestrians in temporary work zones.
Appendix A: References & Additional Resources	Appendix A provides an annotated listing of references including links to online content as available.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2.0 Facility Selection Tool


LEFT TURN SIGNAL
LEFT TURN SIGNAL
Cochrane Drive
2012
Cycle Safe
LUBS

2.1 OVERVIEW

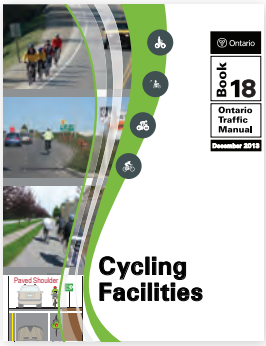
The facility selection tool has been developed to assist decision-makers in selecting the appropriate facilities to accommodate pedestrians and cyclists on Regional roads. The tool is based on best practices and draws heavily on the following resources:

York Region's Designing Great Streets

This context-sensitive design manual identifies six road typologies to reflect the Region's aspirations for the future Regional road network to integrate planned land use and built form:

- City Centre Street
- Avenue
- Main Street
- Connector
- Rural Road
- Rural Hamlet Road

These road typologies form the basis of the pedestrian and cycling facility selection tool for Regional road construction/reconstruction projects.



Ontario Traffic Manual Book 18 – Cycling Facilities (December 2013)

This manual provides guidance on both the planning and design of cycling facilities in the Ontario context, including a bicycle facility type three-step selection process. The type of cycling facilities recommended for York Regional roads align with recommendations in OTM Book 18. The tool identified in this chapter customizes the OTM Book 18 selection process, taking into consideration the conditions anticipated along Regional roads.

Basic principles for selecting active transportation facilities:

Comfort depends on…

- Traffic volume
- Traffic speed
- Presence of heavy vehicles (buses and trucks)
- For pedestrians on shared-use facilities, presence of cyclists
- Surface materials
- Streetscaping, trees & amenities

Safety depends on…

- Traffic speed in conflict zones (where pedestrian, cyclists, and motorists paths overlap or intersect)
- Visibility of users in conflict zones
- Other hazards along the facility
- Degree of separation between modes

Efficiency is the time and effort to travel, influenced by…

- Directness
- Connectivity
- Delays at intersections& crossings
- Being able to overtake slower users

Based on the principles noted above, Exhibit 2-1 presents general requirements for pedestrian and cycling facilities along typical Regional Roads. Recognizing that boulevard facilities (i.e. sidewalk and multi-use paths) currently fall under the jurisdiction of local municipalities, the design of specific corridors will be subject to municipal input.

Exhibit 2-1. General Requirements for Active Transportation facilities

GENERAL REQUIREMENTS		TYPES OF FACILITIES
Pedestrian facilities	• Recommended on all urban Regional roads • Generally required on both sides of the road if there is development or transit service on both sides • Operate two-way • In the absence of sidewalks, pedestrians are permitted to walk on the shoulder of rural roads (facing the traffic is suggested)	• Sidewalks • Multi-use paths • Paved shoulders
Cycling facilities	• Recommended on all Regional roads (traffic volumes and speeds are too high for shared-use of travel lanes) • Regional roads generally operate two-way so cycling facilities are provided on both sides operating one-way in the same direction as traffic • Multi-use paths operate two-way	• Bike lanes • Raised cycle tracks • In-boulevard cycle tracks • Multi-use paths • Paved shoulders

The selection tool has been developed specifically to address the common scenarios encountered in York Region along Regional roads. As a result, this selection tool is not intended to address all possible conditions, but rather, to reflect the typical situations to be encountered by planners and designers within the regional context.

There are other additional active transportation facilities which may have applications on municipal roadways throughout York Region, including:

- Bi-directional bike lanes or cycle tracks
- Advisory bike lanes
- Bicycle boulevards
- Signed and marked routes

The absence of additional guidance on these facilities reflects the context of Regional roads, where there are anticipated to be few applications of these lower-order facilities. However, municipalities within York Region are encouraged to pursue a variety of facility types as context permits.

2.2 USING THE TOOL

The first step in the process is identifying whether the project is a retrofit or whether it is new construction / reconstruction.

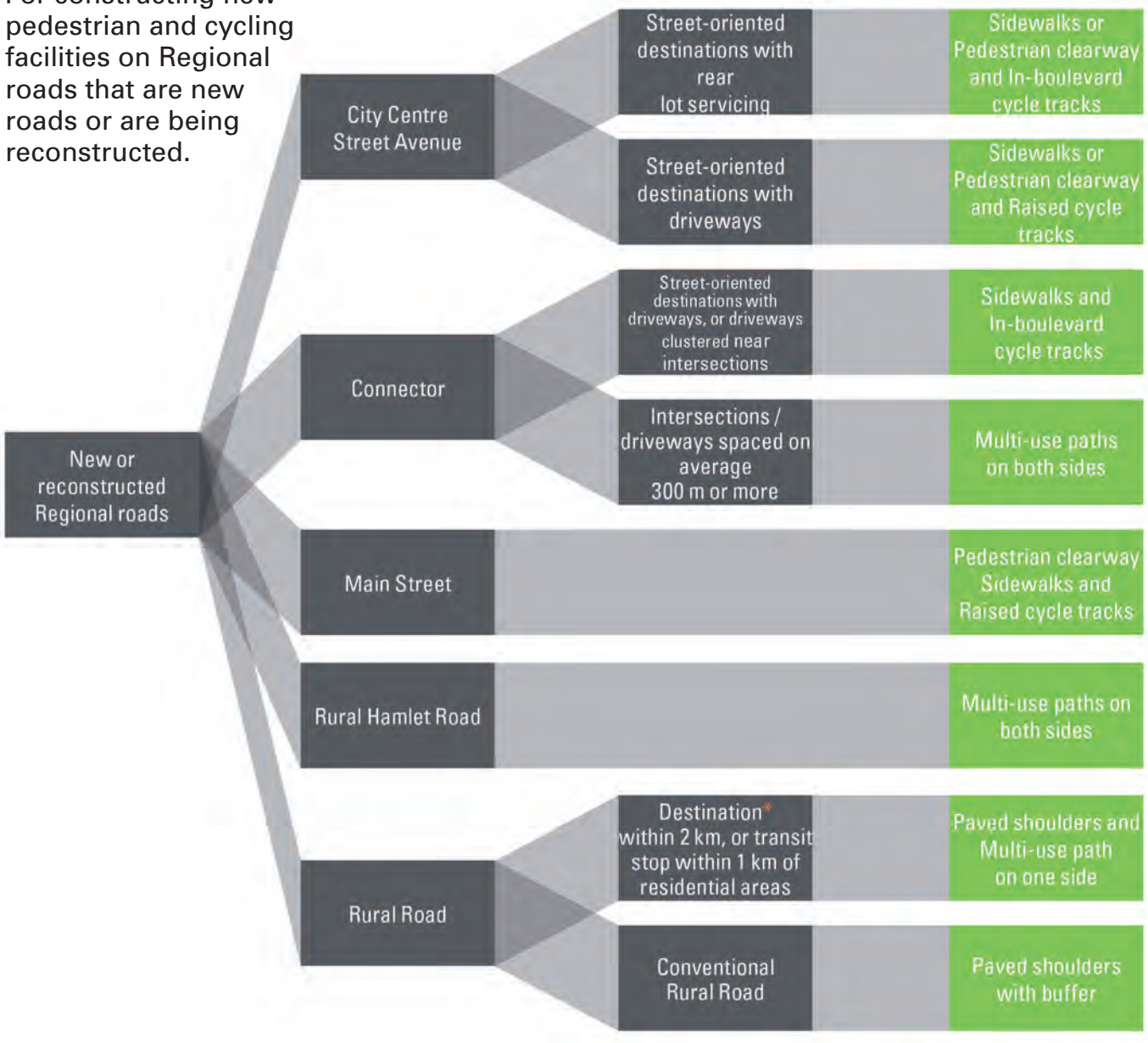
- A **road construction or reconstruction project** includes pedestrian and/or cycling facilities being built as part of a larger project to build a new Regional road or reconstruct an existing Regional road. A wider range of facilities can be considered. The selection tool is based on the Designing Great Streets Regional road typologies. The typologies reflect a wide variety of potential conditions, including indicating potential demand for active transportation facilities. As a result, these contextual factors are built into the facility selection tool.
- A **retrofit project** includes pedestrian and/or cycling facilities being added to an existing Regional road as a stand-alone project without major road construction taking place. These projects are often initiated in conjunction with road resurfacing projects. This type of implementation limits the types of facilities to those that fit within the boulevard and, do not affect the roadway pavement and curbs.

When applying the selection tool, the planning horizon should also be considered. Many corridors throughout York Region are rapidly evolving and selection of appropriate pedestrian and cycling facilities may be largely dependent on urbanization and transitioning land use. As a result, a **forward-looking** view of the corridor, which is consistent with the design parameters for the roadway itself and reflects surrounding land-use planning and built form, should be considered when applying the selection tool.

YORK REGION PEDESTRIAN AND CYCLING FACILITY SELECTION TOOL

DESIGNING GREAT STREETS: New Regional Roads or Regional Road Reconstructions with Pedestrian and Cycling Facilities

For constructing new pedestrian and cycling facilities on Regional roads that are new roads or are being reconstructed.

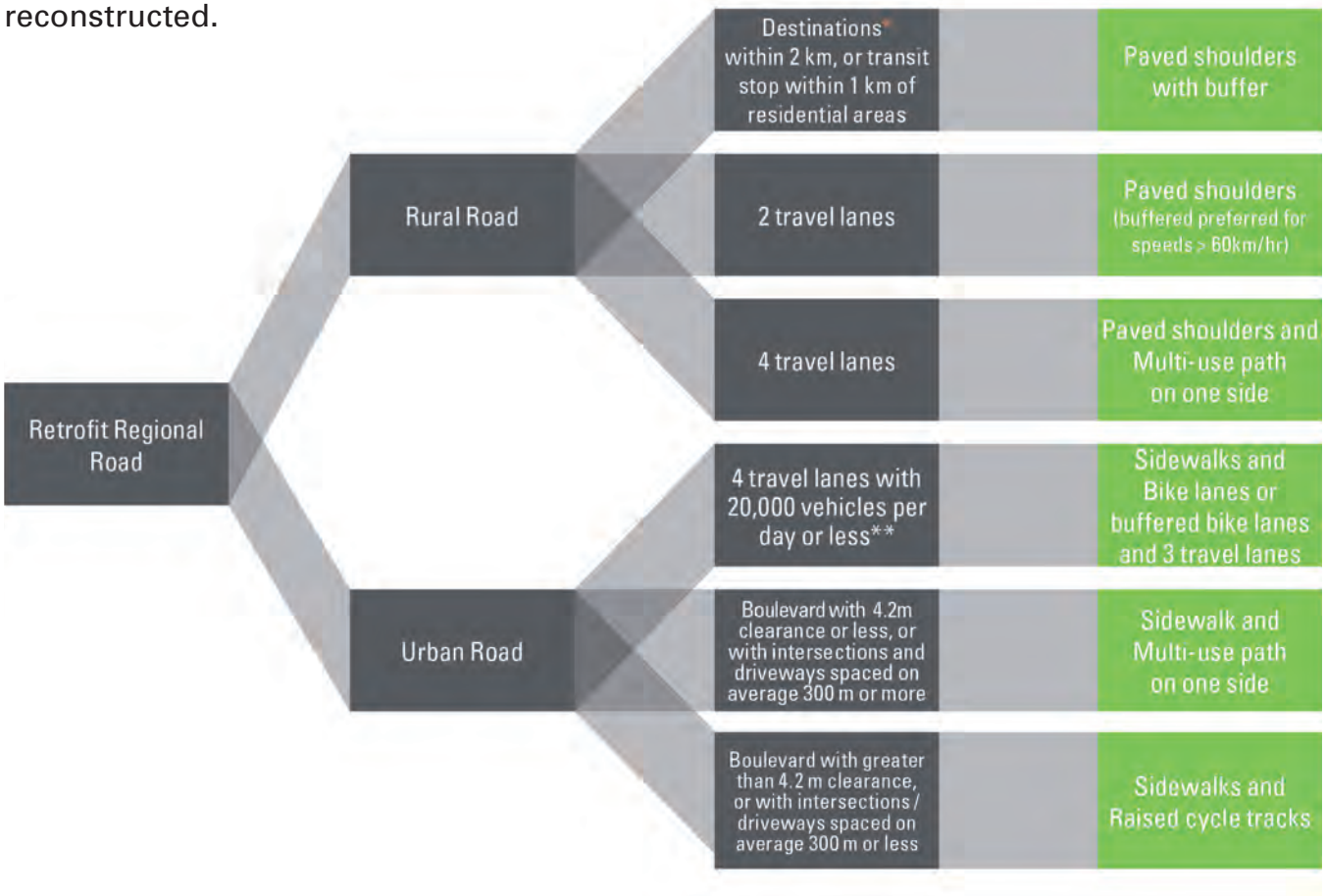


*Provide multi-use path connections from residential areas to destinations within 2 km such as community centres, libraries, and schools. These are examples of destinations that may be desirable to travel to by walking and cycling but are not intended to be exclusive. Other destinations near rural hamlets may also be considered.

YORK REGION PEDESTRIAN AND CYCLING FACILITY SELECTION TOOL

Retrofitting Regional Roads with Pedestrian and Cycling Facilities

For retrofitting pedestrian and cycling facilities to Regional roads that are not being reconstructed.



Other factors to consider when retrofitting an existing roadway:

- Land-use & context - in areas of lower density, multi-use paths may be more appropriate than cycle tracks and sidewalk
- Existing trees - every effort should be made to prevent or mitigate impacts to existing mature trees

**A four-lane roadway carrying less than 20,000 vehicles per day is a strong candidate for a road diet, subject to additional operational considerations.

For further information on the applicability and potential benefits of road diets, see the FHWA's Road Diet Informational Guide.


TIMES
ROGERS

3.0 General Design Considerations

3.1 USER CHARACTERISTICS

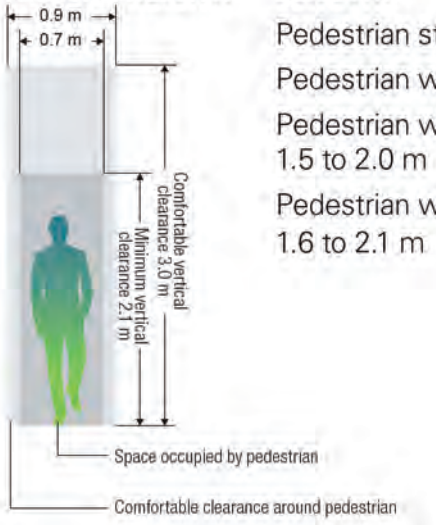
Understanding the operating characteristics of users of pedestrian and cycling facilities is essential to planning and designing high quality facilities. This ensures that not only people who already walk and bicycle will be served well, but also helps attract people who are interested in walking and bicycling. General characteristics of pedestrians and cyclists to consider when designing their facilities are presented in the following sections 3.1.1 -3.1.3. The characteristics of other users, and equipment, such as in-line skaters, skateboards, scooters, e-bikes, tandems, etc. generally fall within these ranges.

Pedestrian and cycling facilities must also accommodate maintenance vehicles. For facilities separated from the roadway, equipment used may differ from those deployed to maintain the roadway. This will affect the width of the facilities, pavement and structural design for live loads, and overhead clearance.

3.1.1 Pedestrians

OPERATING SPACE OF PEDESTRIAN:

WIDTH & HEIGHT:



LENGTH:

Pedestrian stride: 0.5 to 1.0 m

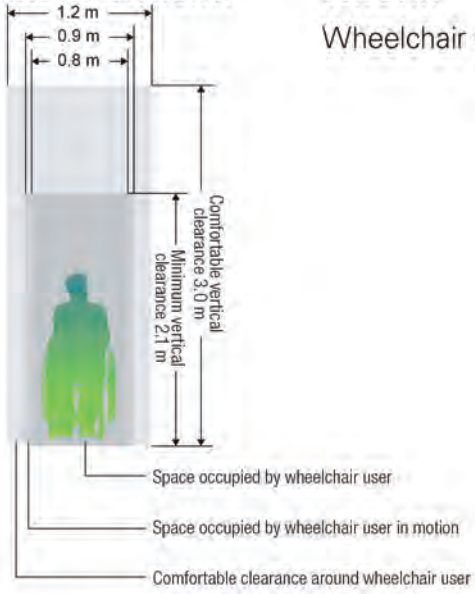
Pedestrian with guide dog: 1.0 m

Pedestrian with guide cane: 1.5 to 2.0 m

Pedestrian with stroller: 1.6 to 2.1 m

OPERATING SPACE OF WHEELCHAIR USER:

WIDTH & HEIGHT:



LENGTH:

Wheelchair user: 1.4 m

OPERATING SPEED (ON FLAT GRADE):

Mobility-impaired pedestrian: 0.3 m/s or more

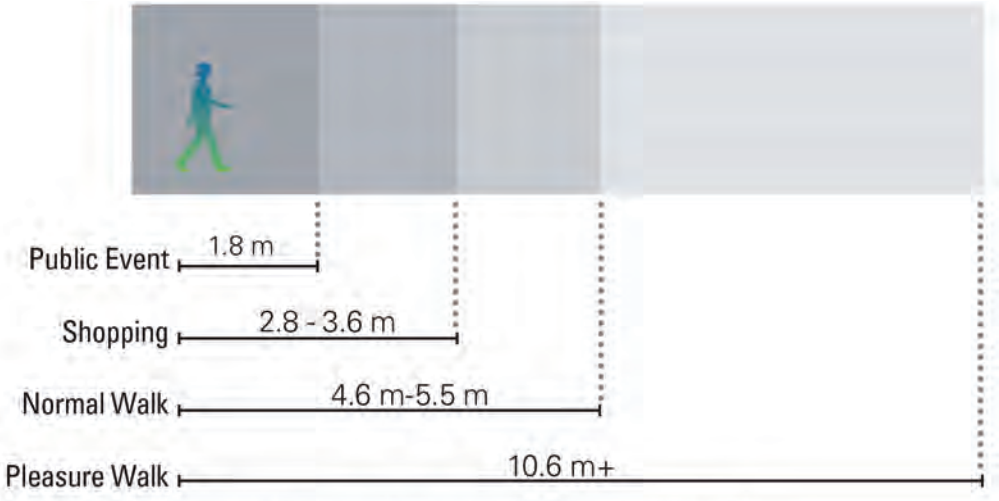
Senior and child pedestrian: 0.9 to 1.6 m/s

Able-bodied adult pedestrian: 1.2 to 2.1 m/s

Runners: 3 km/h to 18 km/h or more

SPATIAL BUBBLE FOR PEDESTRIANS

The spatial bubble refers to the preferred distance of unobstructed forward vision one experiences while walking in various cases.

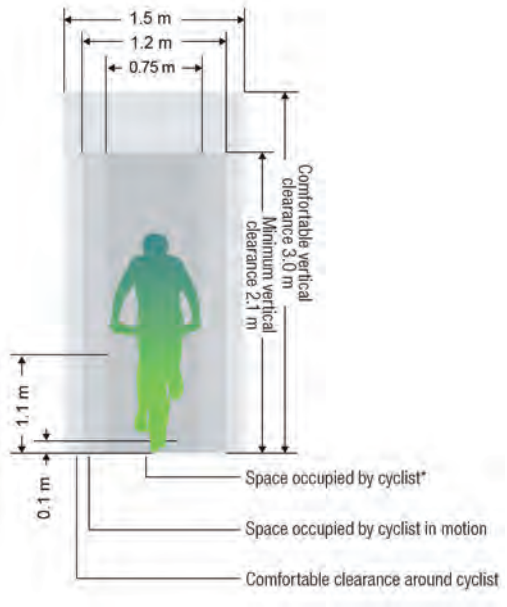


Source: Adapted from American Association of State Highway and Transportation Officials, Guide for the Planning, design and operation of Pedestrian Facilities, July 2004

3.1.2 Cyclists

OPERATING SPACE OF CYCLIST

WIDTH & HEIGHT:



**Note that for a cyclist carrying a trailer-bike or trailer, the space occupied by the cyclist may increase to up to 0.80 m.*

Source: Adapted from AASHTO Guide to Bicycle Facilities, 4th Edition and OTM Book.

LENGTH:

Child bicycle: 1.5 m
Adult bicycle: 1.8 m
Tandem bicycle: 2.75 m
Bicycle with trailer-bike or trailer: 3.0 m

OPERATING SPEED (ON FLAT GRADE):

Unstable under 5 km/h

Weaves side to side for balance (typical speed for young children): 6 to 10 km/h

Cruising speed for most cyclists: 11 to 20 km/h

Continual, moderate effort: 21 to 25 km/h

More intense effort: 30 km/h

Competitive cyclists: 40 to 65 km/h (sprint)

TURNING RADII

Radii for cyclists is dependent on travel speed and lean angle, however the formula below can be applied to calculate an appropriate radius, based on the operating speed:

$$R = \frac{0.0079V^2}{\tan\mathcal{O}}$$

R = minimum radius (m)
V = design speed (km/hr)
$\mathcal{O}$ = lean angle from the vertical (°) - typical max of 20°

Source: Adapted from AASHTO Guide to Bicycle Facilities, 4th Edition

3.1.3 Maintenance Vehicles

Maintenance vehicles for facilities separated from the roadway:
Tractor width: 1.1 to 1.2 m typical
Blade/sweeper width: 1.2 to 1.8 m typical

For additional details on maintenance, please refer to Chapter 10.

3.2 DESIGN CRITERIA CONDITIONS

The design elements presented in subsequent sections of this guideline provide a typical set or range of criteria that may be applied to most Regional road conditions. Planners and designers are responsible for exercising good professional judgement and experience in the best interests of public health, accessibility and safety. Where a design solution is proposed that does not comply with these guidelines, a more rigorous justification of the design decisions should be provided along with incorporating appropriate mitigation measures.

The design criteria for pedestrian and cycling facilities are provided in this guideline for minimum and preferred conditions. Determining the appropriate design criteria will require an understanding of the local conditions. The preferred design criteria should be the starting points, and any design criteria below them should be justified by the presence of one or more local conditions described below.

For any given Regional road corridor or regionally-significant trail corridor, it is possible to have segments of the pedestrian and/or cycling facilities with different design criteria depending on the local conditions.

Exhibit 3-1. Design Criteria Conditions:

Design Criteria Condition	Description	Potential Local Conditions
Preferred	▸ Establishing quality facilities for Regional roads and corridors ▸ Starting point for all designs	No justification required
Minimum	▸ Any dimensions less than the preferred ▸ Absolute minimum[1] but not less than the minimum width that can be maintained by available equipment ▸ Apply to short segments of a corridor where necessary or practicable only, where the constraining feature or condition exists	Justification required: ▸ Localized constraint: environmental, heritage, cultural or archeological ▸ Limited property ▸ Utility or localized fixed object with high cost to relocate

Note 1: For exterior paths of travel, as per AODA Regulation 413/12, exceptions to the standards are permitted where:

- The requirements, or some of them, would likely affect the cultural heritage value or interest of a property identified, designated or otherwise protected under the Ontario Heritage Act as being of cultural heritage value or interest.
- The requirements, or some of them, would affect the preservation of places set apart as National Historic Sites of Canada by the Minister of the Environment for Canada under the Canada National Parks Act (Canada).
- The requirements, or some of them, would affect the national historic interest or significance of historic places marked or commemorated under the Historic Sites and Monuments Act (Canada).
- The requirements, or some of them, might damage, directly or indirectly, the cultural heritage or natural heritage on a property included in the United Nations Educational, Scientific and Cultural Organization's World Heritage List of sites under the Convention Concerning the Protection of the World Cultural and Natural Heritage.
- There is a significant risk that the requirements, or some of them, would adversely affect water, fish, wildlife, plants, invertebrates, species at risk, ecological integrity or natural heritage values, whether the adverse effects are direct or indirect.
- It is not practicable to comply with the requirements, or some of them, because existing physical or site constraints prohibit modification or addition of elements, spaces or features, such as where increasing the width of the exterior path would narrow the width of the adjacent highway or locating an accessible pedestrian signal pole within 1.5 m of the curb edge is not feasible because of existing underground utilities.

4.0 Pedestrian and Cycling Facilities

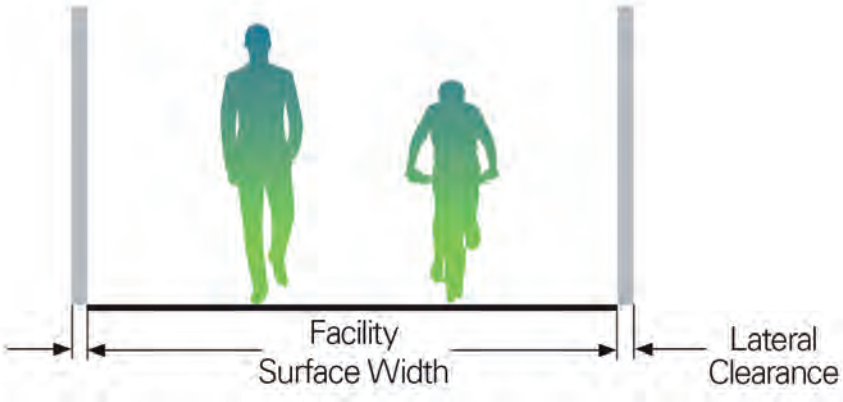
4.1 OVERVIEW

This guideline presents design criteria for high-quality facilities for Regional corridors and regionally-significant trails. The preferred and minimum widths of facilities presented in this chapter generally meet or exceed widths presented in other professional guidelines. Regional roads generally carry high volumes (more than 10,000 vehicles a day), high speed traffic (typically more than 50 km/h) relative to pedestrian and cyclist speeds, and a mix of traffic including large buses and trucks. It is imperative that quality facilities are planned and designed along Regional roads that not only accommodate people who walk and bicycle today, but also are seen as comfortable, safe and efficient by potential new users of these facilities.

For each active transportation facility presented in Chapters 4.2 - 4.4, the dimensions shown represent surface facility widths. Additional operating space is required beyond the width of the facilities (refer to Exhibit 4-1). Detailed guidance on these lateral clearances is provided in Chapter 4.5, and must be considered in the facility planning and design process.

As noted in Section 3.1, boulevard facilities (i.e. sidewalk and multi-use paths) currently fall under the jurisdiction of local municipalities, so the design of specific corridors will be subject to municipal input.

Exhibit 4-1. Active Transportation Facility Surface Width & Clearances



4.2 PEDESTRIAN FACILITIES

Pedestrian clearway in hardscaped boulevard

Sidewalk in grass boulevard

Pedestrian facilities consist of a sidewalk or pedestrian clearway within the boulevard. The pedestrian clearway differs from the sidewalk in that it is the pedestrian zone within the boulevard specifically intended for travel i.e. excludes the frontage zone, furnishing zone or other areas with encroachments. It may be more difficult to distinguish the clearway within a hardscaped boulevard compared to a sidewalk that is bordered by grass. However, creating designs that respect this area is essential to maintaining an accessible area free of hazards and obstructions for pedestrians of all ages and abilities.

A pedestrian clearway can be distinguished within a hardscaped boulevard by tonal colour or surface texture. This defines the area to be kept free of obstacles such as sidewalk signs, patios, mailboxes, and other furnishings that are temporarily or permanently placed in the boulevard.

The width of pedestrian facilities presented in this chapter exceed the standard minimum widths required by the Accessibility for Ontarians with Disabilities Act (AODA), Ontario Regulation 413/12 (refer to Exhibit 4-2), in recognition of the characteristics of Regional roads.

Exhibit 4-2. Minimum Requirements for Accessible Exterior Paths of Travel

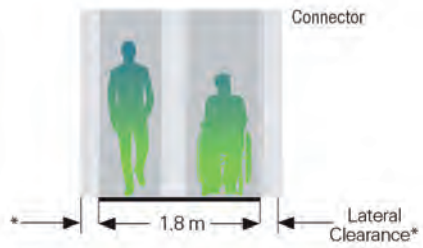
Design Element	Standard	Notes/Considerations
Exterior Path of Travel (Sidewalk, Walkway etc.)		
Clear Width	1500 mm MIN	
Clear width - level landing adjacent curb ramp	1200 MIN	
Clear width– entrance to exterior path of travel	850 mm MIN	Where bollards or other features create an entry way

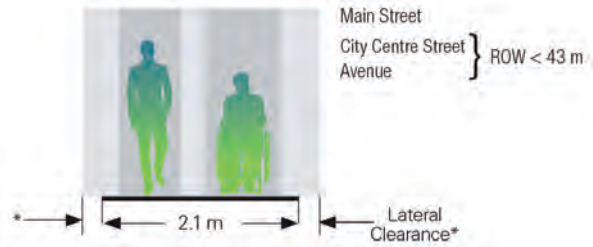
Minimum and preferred pedestrian clearway widths are summarized in Exhibit 4-3 for new roads or reconstruction and in Exhibit 4-4 for retrofit projects.

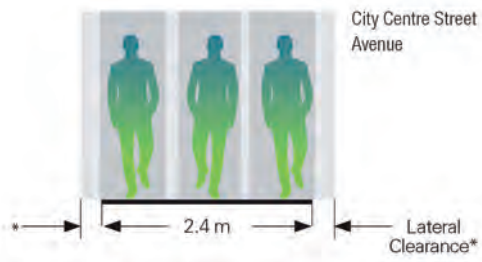
DESIGNING GREAT STREETS – NEW ROADS OR RECONSTRUCTION

Exhibit 4-3. Minimum and preferred pedestrian clearway widths

MINIMUM







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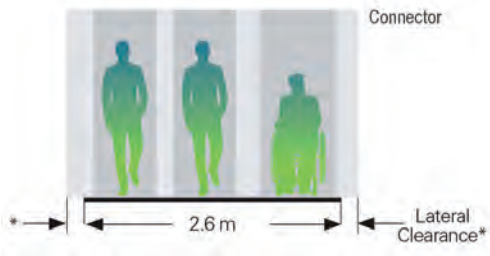
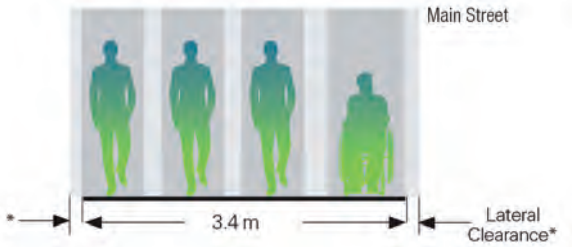
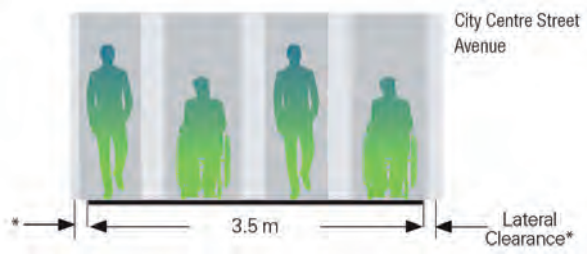


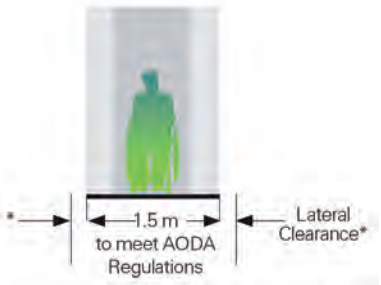




RETROFIT

Exhibit 4-4. Minimum and preferred pedestrian clearway for retrofit projects

MINIMUM



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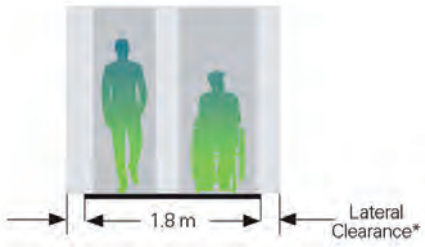


*See Chapter 4.5 Clearances

4.3 CYCLING FACILITIES

Four types of cycling facilities, in addition to multi-use paths (see Chapter 4.4), are generally expected to apply to Regional roads.

Cyclist on a paved shoulder on a Regional road

Bicycles lanes on Regional roads

Paved shoulders function to support the pavement structure of the adjacent roadway and prevent erosion, accommodate stopped and emergency vehicles, can be used by pedestrians when there are no other pedestrian facilities present, and bicycles are permitted to be operated on the shoulder. A buffer can be provided between the paved shoulder and the adjacent travel lane increasing the comfort of cyclists particularly on rural roads with truck traffic that operate above 70 km/h. Trucks create a lateral thrust from air turbulence when passing cyclists. Rumble strips that create noise to alert motorists that they have driven into the buffer / shoulder can also be provided in the buffer if designed with cyclists in mind. Where desired, rumble strips should be carefully designed as they can be uncomfortable for cyclists to ride on, can restrict their movement around debris in the shoulder, or may even cause a fall if they are too deep and wide. In addition to shifting the rumble strips into the buffer, rumble strips should incorporate certain measures such as intermittent gaps to allow cyclists to safely move between the shoulder and travel lanes as necessary, as well as reducing the size and depth of the rumble strip in case a cyclist is forced to ride over one.

Bicycle lanes (with or without a buffer) are a portion of the roadway designated by signs supplemented by pavement markings for the exclusive use by cyclists. They typically operate in the general direction of travel on the right side of the roadway. A painted buffer can be provided to separate the bicycle lane from the adjacent travel lane increasing the comfort of cyclists somewhat, or between the bicycle lane and parking lane marking the door-opening zone. Bi-directional bicycle lanes can be implemented on streets that operate one-way or generally have few intersections or driveways on that side. Conditions that support bi-directional bicycle lanes are generally not found on Regional roads.

Many regional roads currently have bicycle lanes, and they will be considered for retrofit projects. However, moving forward, separated facilities are generally preferred given the context of Regional roads (high speed, high volume roadways).

Raised cycle track in the City of Toronto

In-boulevard cycle tracks provide comfort and safety for cyclists

Raised cycle tracks are immediately adjacent to the roadway separated by a curb or concrete median. They provide improved separation from traffic than bicycle lanes, increasing the comfort and safety of cyclists. They also provide better visibility between motorists and cyclists at driveways and intersections compared to facilities farther in the boulevard, so are preferred when driveway and intersection spacing is typically less than 300 m. Generally cycle tracks are designed to operate in the general direction of travel, with one on each side of the street.

In-boulevard cycle tracks are located between the pedestrian clearway or sidewalk and the planting zone. Comfort and safety of cyclists is increased significantly by being offset farther from traffic, however, special treatment of driveways and intersections is recommended to address poor visibility between motorists and cyclists as they approach the conflict area. Cycle tracks are typically designed to operate in the general direction of travel, with one track on each side of the street.

Shared roadways or shared lanes are generally not recommended for Regional roads. The volume and speed of traffic are too high to support cyclists sharing the travel lane with motorists. They may be considered only under exceptional circumstances when motorists' operating speeds can be lowered to 40 km/h or less. Planners and designers should carefully consider the design recommendations in Ontario Traffic Manual Book 18: Cycling Facilities (December 2013) when developing shared roadway projects. Although the Region does have some existing shared routes, these are considered interim applications.

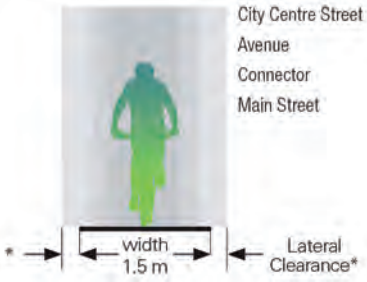
Minimum and preferred cycling facility widths are summarized in Exhibit 4-5 for new roads or road reconstruction (Designing Great Streets) and in Exhibit 4-6 for retrofit corridors. All facility widths are for uni-directional facilities.

DESIGNING GREAT STREETS – NEW ROADS OR RECONSTRUCTION

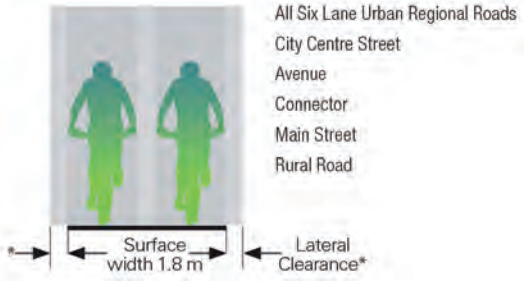
Exhibit 4-5. Minimum & Preferred Cycling Facility Widths

CYCLE TRACKS (IN-BOULEVARD OR RAISED)

MINIMUM

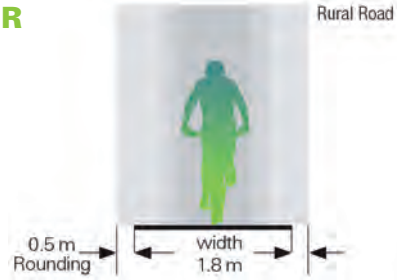


PREFERRED



PAVED SHOULDER

MINIMUM



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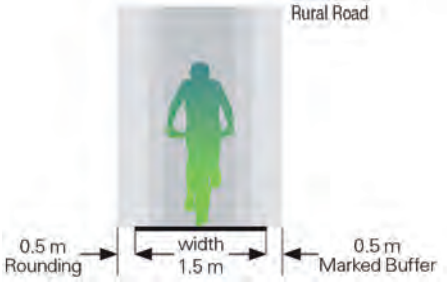
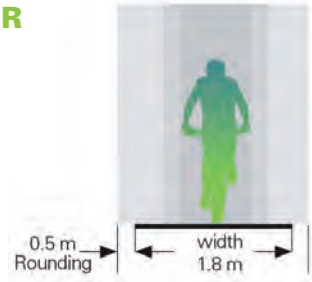


RETROFIT

Exhibit 4-6. Minimum & Preferred Cycling Facility Widths (Retrofit)

PAVED SHOULDER

MINIMUM



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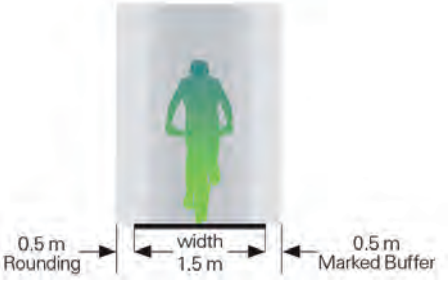
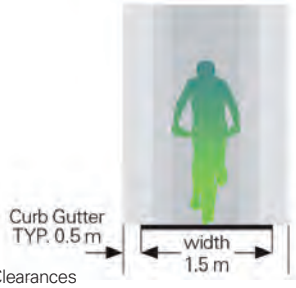
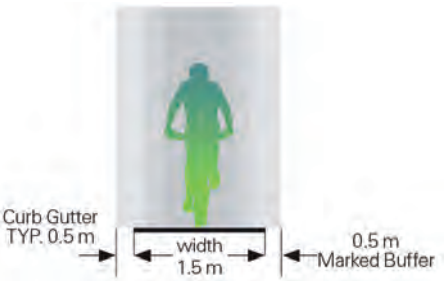


BIKE LANE

MINIMUM



PREFERRED



*See Chapter 4.5 Clearances

4.4 MULTI-USE PATHS

Multi-use paths in the boulevard along Regional roads are designed to be shared by pedestrians, cyclists, and other forms of active transportation such as in-line skating, skateboarding, scootering, etc. Cyclists are the design user for these facilities (from a geometric perspective) since they are at the higher end of operating space and speed. Destinations accessed by Regional roads are typically found on both sides of the road. For these major corridors, multi-use paths are required on both sides of the road, otherwise cyclists will use the sidewalk, which they are generally prohibited from riding on, to get to their destination.

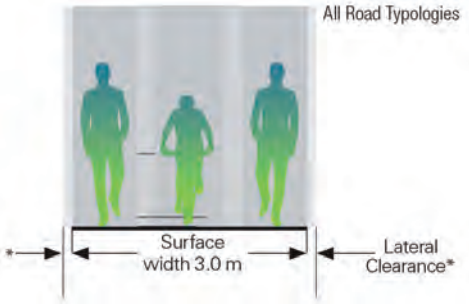
York Region has identified regionally-significant trails intended to support a wide range of active transportation. These multi-use paths are located in corridors that are independent from roadways, such as parks, conservation areas, abandoned or active railway corridors, hydro corridors, etc. As such, they are implemented in areas that have broader conditions to be considered during design, such as steep slopes, thick vegetation, sensitive resources, flooding, etc. Not all multi-use paths need to meet the requirements of this guideline; however, those intended to function as part of the overall active transportation network connecting to facilities on or along roads, are recommended to follow these guidelines.

Photo credit: York Region

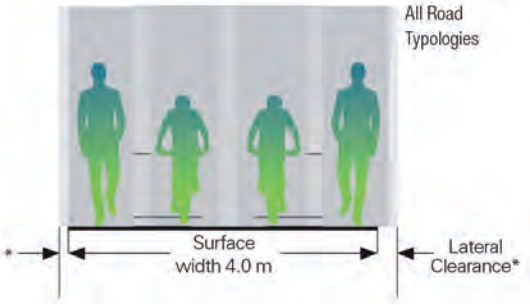
Minimum and preferred multi-use path widths are summarized in Exhibit 4-7. These will apply for both new construction and retrofit projects.

Exhibit 4-7. Minimum & Preferred Multi-use Path Widths

MINIMUM MULTI-USE PATH WIDTH



PREFERRED MULTI-USE PATH WIDTH



Despite the minimum widths noted above, an absolute constrained minimum of 2.4-2.7 m may be applied for short sections of path to avoid costly relocation of existing utility poles or widening of existing structures.

4.5 CLEARANCES

Additional operating space is required beyond the width of the facilities provided in Sections 4.2 to 4.4. These buffers and clearances are required for a number of reasons:

- **Lateral clearance:** Additional useable width or "elbow room" is required to account for the comfortable operating space beyond the essential surface on which people walk or bicycle. This space can be used for other purposes as long as it is does not contain hazards for people who may encroach on the area. For example, it can be hardscaped or contain grass or low plantings. It should not include vertical surfaces higher than 75 mm. Lateral clearance around pedestrian and cycling facilities also help to provide spaces for snow storage during the winter months.
- **Frontage zone:** Pedestrians do not typically walk immediately adjacent buildings and walls so a frontage zone is needed to improve comfort and usability. For buildings fronting sidewalks or pedestrian clearways, space is required for doors to open outward. A 0.6 m wide frontage zone is typically needed between the pedestrian clearway and buildings. This may be included in the road right-of-way width if the buildings have zero setback, or may be accounted for in the adjacent property if the building setback is 0.6 m or more.
- **Clearance to hazards:** Shy distance or clearances are required between users of any facility and potential hazards or objects. Clearances are required between the facility and vertical objects such as walls, railings, fences, trees, planters, streetlights, hydro poles, sign posts, parking metres, hydrants, transit shelters, vertical curbs (both higher than the facility that a pedal could strike and lower than a facility that someone could fall off of), street furniture, bicycle parking racks, etc. An exception is the post or pole for push-buttons to active traffic control signals. These must be accessible, i.e. adjacent the facility so as to be accessible to users, but must not block the operating space of the facility.
- **Door zone:** A door zone adjacent parking lanes is required to allow for the opening door of the parked vehicle adjacent pedestrian and cycling facilities. The provision of a door zone not only keeps users on pedestrian and cycling facilities out of the way of doors opening near their path, it also provides a place for people and goods to disembark and alight the vehicle. It is critical adjacent cycling facilities due to the higher speed of cyclists at which they may strike an opening door and the resulting injuries or death from a crash. People new to cycling or with little training often ride close to parked cars, underestimating the potential danger. Where parking turn-over is higher and vehicle sizes vary, such as in commercial areas and downtowns, a wider door zone up to 1.2 m wide is recommended; where turn-over is lower and vehicles are predominantly passenger cars, such as near residences and offices, then a minimum door zone could be used.

A summary of clearances is provided in Exhibit 4-8, with illustrative photos shown in Exhibit 4-9.

Exhibit 4-8. Summary of Clearances Adjacent to Active Transportation Facilities

Type of Clearance	Type of Facility	Width	Notes	Exclusions
Continuous, linear clearances				
Frontage zone	All facilities	Typ. 0.6 m	May be within or outside the road right-of-way	
Lateral clearance	Multi-use trails and in-boulevard cycle tracks	Min. 0.5 m	Includes face of curb, fences, guide rails, railings, retaining walls, etc.	• Plantings or other soft-scape not more than 100 mm high may be located within the lateral clearance • Non-linear, fixed objects may be located within the lateral clearance as long as clearances to hazards are met (see below)
	Raised cycle tracks	Min. 0.5 m to face of curb	Face of curb is 100 mm or more below the surface of the cycle track	
	Bike lane or buffered bike lane	Min. 0.25 m to face of barrier curb	Face of curb is 100 mm or more above the surface of the bike lane	
Accessibility clearance	Clearance should be provided between the accessible path of travel for pedestrians and shared-use or cycling facilities to guide pedestrians away from the area of potential conflicts. Research into this guidance is on-going and standards may be identified locally in consultation with accessibility committees. Shared streets research suggests a minimum width of 0.3 m for directional indicators parallel to the direction of travel.			
Clearance to hazards				
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	All facilities	Min. 0.25 m	Planters, seating, hydrants, shorter bollards, etc.	
Lateral clearance to non-linear, fixed objects more than 750 mm high	All facilities	Min. 0.5 m	Utility poles, sign posts, trees, parking meters, furnishings, transit shelters, bike racks, etc.	
Lateral clearance for door zone adjacent parking lanes	Raised cycle tracks	Min. 1.0 m to face of curb		Non-linear, fixed objects such as parking meters may be located within the lateral clearance as long as clearances to hazards are met (see above)

Exhibit 4-9. Sample of Clearance Requirements

Examples of Clearance Requirements

Operating space is required beyond the edge of the bikeway especially for cyclists when passing

Poorly-defined frontage zone and pedestrian clearway

Well-defined frontage zone and pedestrian clearway

Clearance is provided between the multi-use path and adjacent fence.

Cyclists need space to travel past the opening doors of parked cars

4.6 SURFACE COURSE

The surface selected for a cycling facility can substantially impact the comfort of a rider. The following factors are considered important in the surface of pedestrian and cycling facilities:

- **Smooth, even surface** – The surface should provide a comfortable facility for walking and cycling, as appropriate
- **Maintainability** – Surfaces should be conducive to year-round maintenance wherever the facility is intended to support commuting activity
- **Aesthetic/Context Sensitivity** – Surface materials should not unduly impact the surrounding landscapes or disturb the natural environment
- **Meet or exceed AODA standards** – Depending on the type of facility (exterior path of travel or recreational trail), AODA requires different levels of accommodation. However, the basic principle of providing a facility that is firm, stable and slip-resistant helps users of all abilities.
- **Sustainability & LID** - Consideration should also be given to the opportunity to provide permeable pavement types that meet the factors identified above, recognizing the desire of York Region to design facilities that are sustainable and sensitive to the surrounding environment.

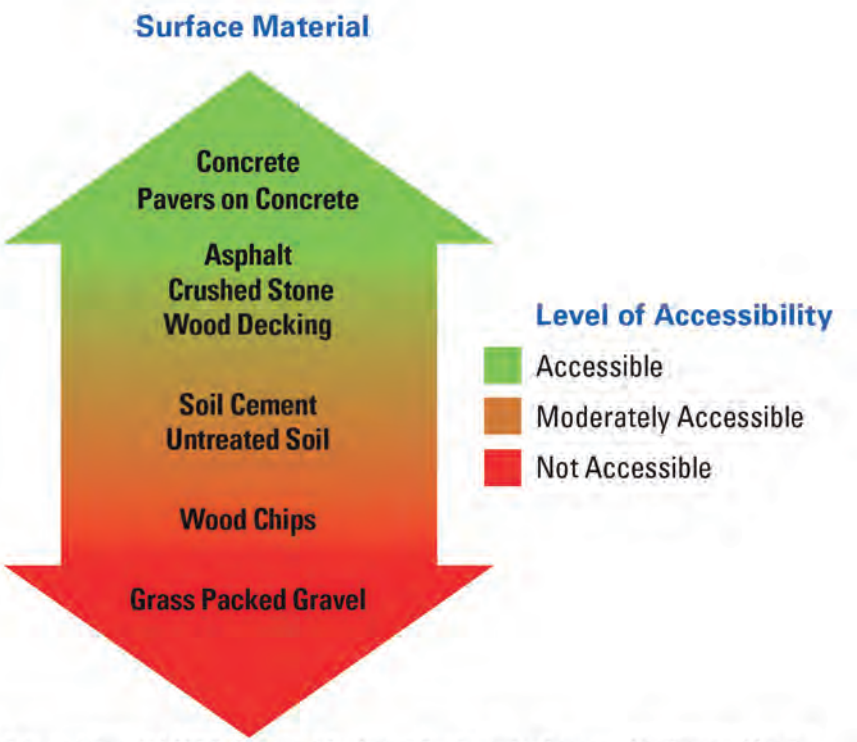
The following surface types may be considered for cycling or pedestrian facilities within York Region:

- Limestone screenings/crushed stone may be appropriate on trails or footpaths through sensitive/natural areas. They may be preferred where a path is primarily intended for walking or running as they can be softer for shock absorption. The use of screenings may also be appropriate for interim facilities due to a lower capital cost. However, gravel requires more on-going maintenance and can erode in areas with slopes or near water sources. These facilities can be difficult to maintain during winter months and it can be challenging to ensure that they meet AODA regulations.
- Asphalt (with a granular or concrete base) is the most common type of material used for multi-use facilities due to its relatively inexpensive cost and smooth surface. Asphalt paths can have a higher impact on the surrounding environment due to the need for increased depth of excavation for base materials (compared to concrete and stonedust).

- Concrete facilities also have potential to provide a high quality surface course for pedestrian and cycling facilities. Although concrete facilities represent a higher upfront capital investment, they can provide a highly durable smooth surface. Where concrete facilities will be used by cyclists and other users on wheels such as roller bladers or skateboarders, joints should be saw-cut. One potential challenge with concrete facilities is a more limited selection of durable pavement markings that maintain durability on concrete (refer to Section 10 of this guide).

Where a facility will be designated for multi-use, asphalt or concrete are the preferred materials. Various other types of traditional surface materials should generally be avoided due to their reduced accessibility (refer to Exhibit 4-10).

Exhibit 4-10. Accessibility of Various Materials



Adapted from GAATES Illustrated Technical Guide to the Accessibility Standard for the Design of Public Spaces

In addition to surface course, careful consideration should be given to base materials, as structural soils or soil cells may be required under active transportation facilities to support tree root growth.

4.7 GRADES

For sidewalks or multi-use paths along Regional roads, the grade should not exceed 5% per AODA standards. Limiting the slope ratio to 5% will help pedestrians with restricted mobility to navigate pedestrian routes independently. One exception to this is locations where the facility is a sidewalk adjacent a roadway with slope greater than 5%. In these cases, the sidewalk grade can match, but not exceed, the slope of the adjacent roadway.

For facilities accommodating cyclists, grades greater than 5% should be avoided. A maximum of 3% is desirable, especially for long uphill grades. Where possible, on long steep grades, it is desirable to introduce relatively flat rest areas approximately every 100 metres of horizontal distance. Where one-way bicycle operation is proposed and cyclists will be travelling in the downhill direction, steeper and/or longer grades are not as much of a concern. It should be recognized; however, that speeds and stopping distances increase when travelling downhill and that the available sight distances must be checked accordingly. Signage to identify steep slopes may be considered for slopes steeper than 10% over stretches of 50 m or more (refer to Section 7 for more detail).

Most cyclists, especially utilitarian cyclists, prefer to ride on relatively flat routes to avoid climbing hills. When hills must be climbed, cyclists tend to require a wider operating area to accommodate the increased side-to-side movement or "wobble" that often occurs when exerting the additional effort necessary to power up a hill.

In these cases, an additional of width of up to 0.5 m should be considered on steep hills with grades exceeding 8%, where feasible. In locations where steep grades cannot be avoided, such as in environmentally sensitive areas where recommended grades cannot be implemented without extensive cut or fill procedures, steps and ramps that meet AODA requirements should be provided nearby as alternate routes.

4.8 CROSS SLOPES

According to AODA requirements, exterior paths of travel are required to have a maximum cross-slope of 5% (1:20) for any paved surfaces. In general, sidewalks should be targeted at 2% where no major constraints are present.

Where facilities are shared with cyclists, cross slopes of no more than 2% (1:50) are recommended. While two-wheeled bicycles are generally unaffected by cross slope, steeper cross-slopes can become very uncomfortable for tricycles, or bikes with trailer. A steeper cross-slope of up to 8% for cycling facilities may be considered over limited distances where site conditions are challenging.

4.9 DESIGNING GREAT STREETS

When **constructing new Regional roads or reconstructing existing Regional roads**, pedestrian and cycling facilities are to be included based on York Region's Designing Great Streets typologies.

York Region's Designing Great Streets

York Region's context-sensitive guidelines, **Designing Great Streets: Building Roads that Build Community**, is to be used as a toolbox for road designers to improve future planning and design of Regional streets and to better serve the needs of the community.

Designing Great Streets requires an approach that is collaborative, interdisciplinary and context sensitive. It is intended to lead to customized outcomes to improve mobility and safety while preserving the scenic, historical and cultural elements of the community. These context-sensitive guidelines are intended to provide a menu of many possible solutions, so that there is not a one-size fits all solution for roads. This will mean that there could be various potential solutions for the same road as that road operates through different communities. As a result, the guidelines will help inform the functional planning process to provide better design of future roads as part of the Environmental Assessment (EA) and detailed design processes.

Six road typologies have been identified that reflect the Region's aspirations for the future Regional road network:

1. City Centre Street
2. Avenue
3. Main Street
4. Connector
5. Rural Road
6. Rural Hamlet Road

The vision for York Region's Designing Great Streets: to create vibrant streets for York Region that provide a range of safe and reliable transportation options, while being sensitive to the adjacent land uses and the needs of the community.

From Designing Great Streets: Building Roads that Build Community (2019 update)

Designing Great Streets Cross-sections

Cross-sections illustrating the pedestrian and cycling facilities have been developed for the six Regional road typologies and their various configurations. These cross-sections establish the preferred and minimum width of pedestrian and cycling facilities. They take into consideration the overall width of the road right-of-way and the width of the following elements established through Region policies, guidelines and processes:

- Roadway including the travel lanes, median, and transitway
- Edge zone consisting of the curb and gutter, and maintenance strip
- Boulevard including the planting zone or furniture zone, placement of utilities, and building frontage zone if included in the right-of-way

Cross-sections are shown for one-half of the right-of-way only – duplicate pedestrian and cycling facilities should be provided on both sides of the road unless noted.

Information on cross-section elements, other than the pedestrian and cycling facilities, should be obtained from the associated design guidelines for those elements including:

- **Rapid Transit** -York Region Rapid Transit Corporation Design Guidelines
- **Plantings, Furnishings & Maintenance Strips** - Street Tree Preservation and Planting Design Guidelines, YRT Co-ordinated Street Furniture Urban Design Guidelines, Streetscape Standards & Details
- **Roadway elements (travel lanes, parking lanes, medians etc.)** - Designing Great Streets, York Region Road Design Guidelines, Access Guidelines for Regional Roads
- **Accessibility** - Accessibility for Ontarians with Disabilities Act, 2005, S.O. 2005, c. 11 (Consolidated 2016), YR Standard Drawings

Although specific notes are indicated on cross-sections, the following are general comments applied to cross-section:

- Please refer to streetscape standards and details regarding the maintenance strip as it may consist of soft or hardscaped features depending on the roadway context
- In cases where additional width is available in the boulevard through reductions in vehicular lane widths, this width can be added to the pedestrian and cycling facilities or other uses benefiting the corridor (i.e. streetscaping, street trees etc.)

4.9.1 City Centre Street

Envisioned to become the Region's most urban, dense, mixed-use places

City Centre Streets run through the Region's most urbanized and dense mixed-use areas, including Urban Growth Centres and Regional Centres. City Centre Streets prioritize transit and active transportation modes to the greatest extent possible. These roads are critical in supporting the planned function, density, range and mix of uses in urbanizing contexts throughout the Region, and in providing choice to a growing number of residents, workers and visitors. An example of a City Centre Street Centre is Yonge Street through North York City Centre.

City Centre Streets include street-oriented buildings and a wide diversity of uses. As a result, they will experience high levels of pedestrian and cycling activity as well as transit ridership. City Centre Streets, therefore, will increasingly accommodate dedicated transit or transit priority facilities. There may be opportunities to reduce the number and width of vehicle travel lanes, to dedicate more space to pedestrian and cycling facilities. Passive traffic calming elements, on-street parking, wide sidewalks and highly porous street connections will serve to support a high quality public realm, on-street commercial uses and amenity space.

Pedestrian Facility

- Pedestrian clearway both sides of the street

Cycling Facilities

- Raised cycle tracks with street-oriented destinations with driveways
- In-boulevard cycle tracks with street-oriented destinations with rear lot servicing

From: Designing Great Streets: Building Roads that Build Community

The following cross-sections are illustrated for City Centre Streets:

36m ROW[1]

- Pedestrian clearway & raised cycle tracks with 4 travel lanes + on-street parking
- Pedestrian clearway & in-boulevard cycle tracks with 6 travel lanes
- Pedestrian clearway & raised cycle tracks with 6 travel lanes

45m ROW

- Pedestrian clearway & raised cycle tracks with 4 travel lanes + rapid transit

60m ROW

Per the Designing Great Streets guidelines, ROWs on City Centre Streets can be as high as 60 m. In those cases, consideration should be given to increasing the width of the pedestrian and cycling facilities, as well as the planting and furnishing zones beyond the dimensions identified in these guidelines in a thoughtful manner, considering local context and conditions.

[1] Constrained condition- most City Centre streets are intended for 43 m+ ROW. In these constrained instances, no frontage zone is shown in the cross-sections. In reality, where adjacent land use is commercial, the frontage zone will encroach on the pedestrian

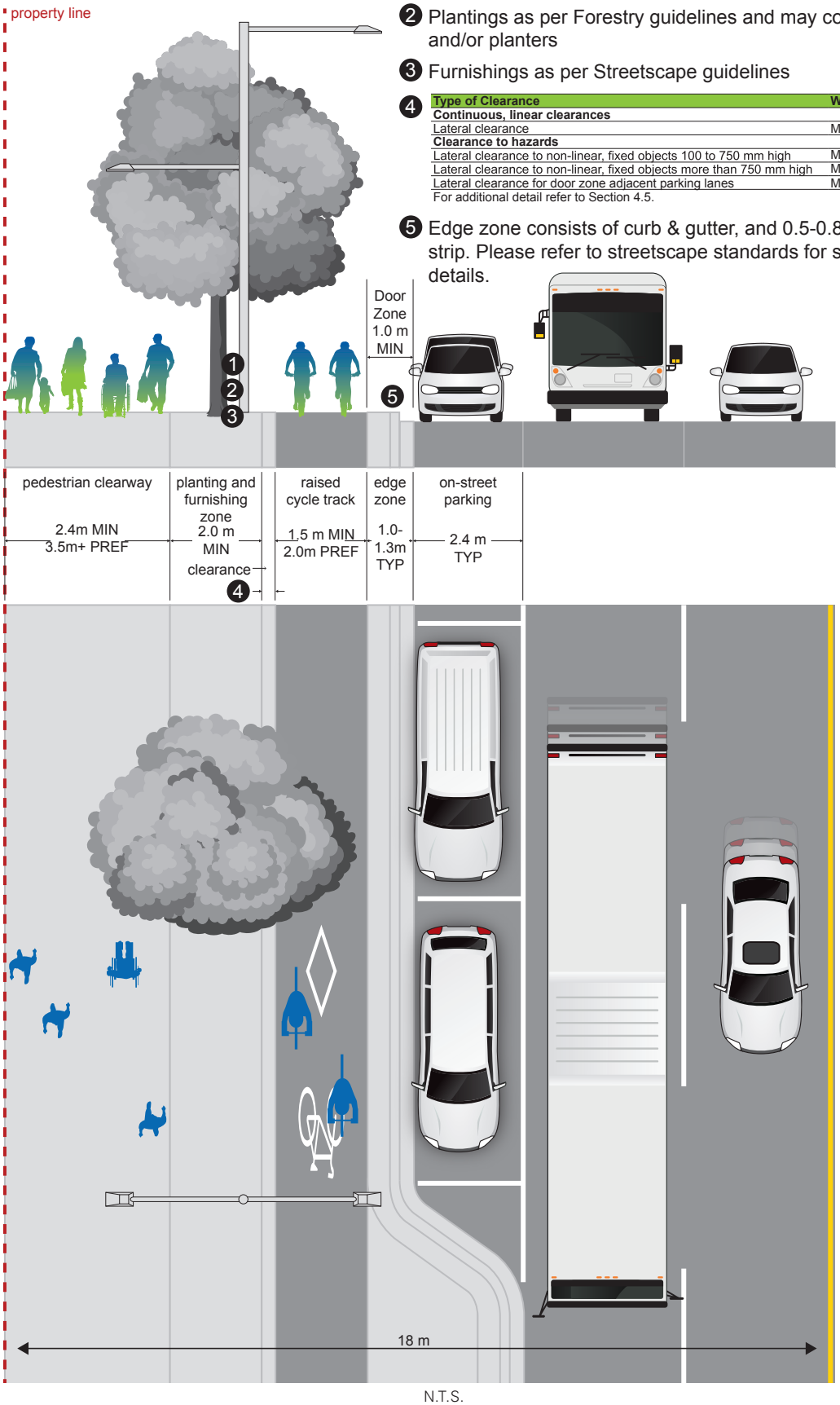
Exhibit 4-11. City Centre Street (36 m ROW) - Pedestrian clearways and raised cycle tracks with four travel lanes and on-street parking

1. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
2. Plantings as per Forestry guidelines and may consist of trees and/or planters
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m to face of curb
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m
Lateral clearance for door zone adjacent parking lanes	Min. 1.0 m to face of curb

For additional detail refer to Section 4.5.

5. Edge zone consists of curb & gutter, and 0.5-0.8m maintenance strip. Please refer to streetscape standards for specifications and details.



The focus of the dimensions is the active transportation facilities only.

N.T.S.

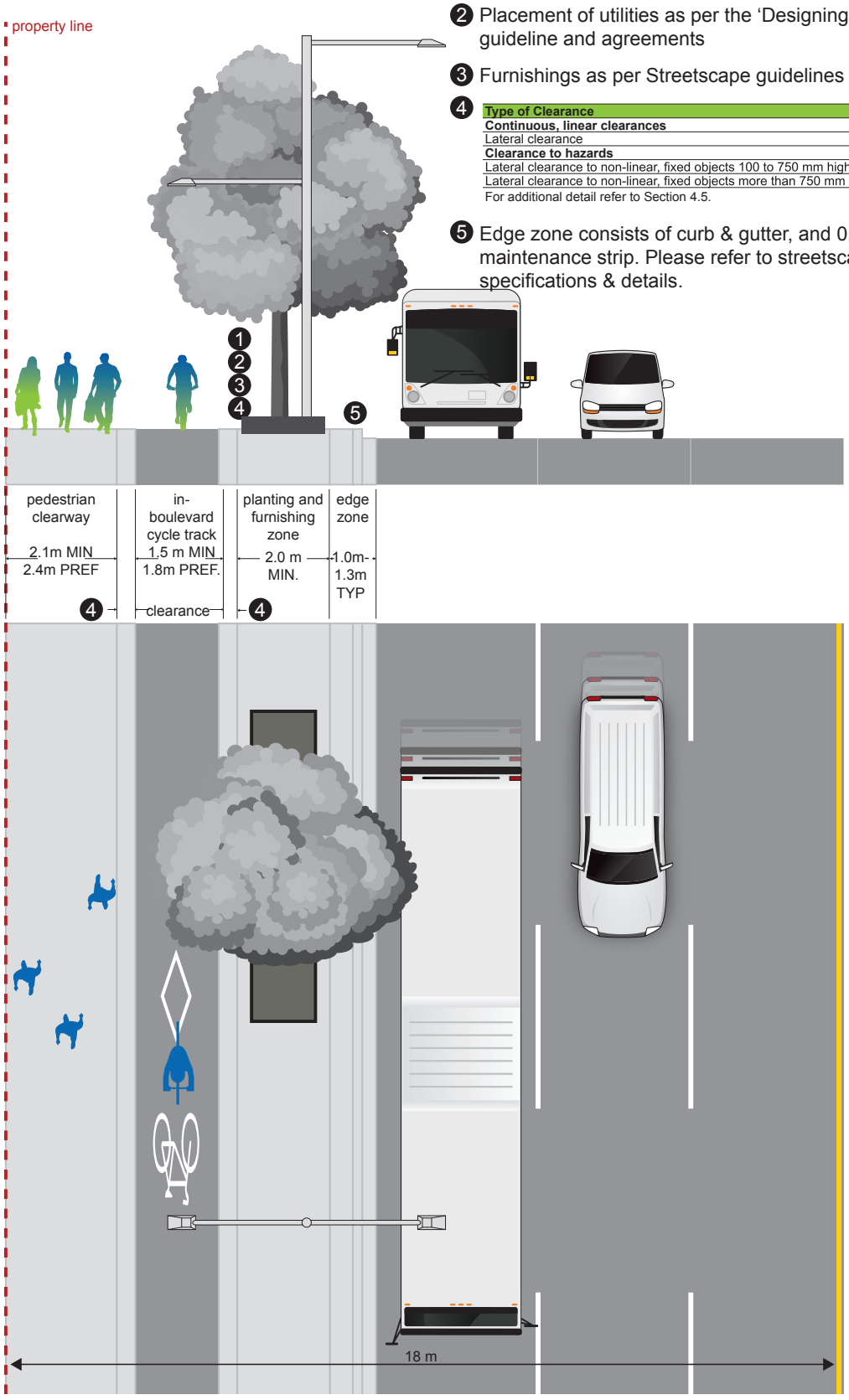
Exhibit 4-12. City Centre Street (36 m ROW) - Pedestrian clearways and in-boulevard cycle tracks with six travel lanes

1. Plantings as per Forestry guidelines and may consist of trees and/or planters. Minimum 350mm high planter wall is required to guard trees against salt splash where offset from face of curb is 2m.
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

For additional detail refer to Section 4.5.

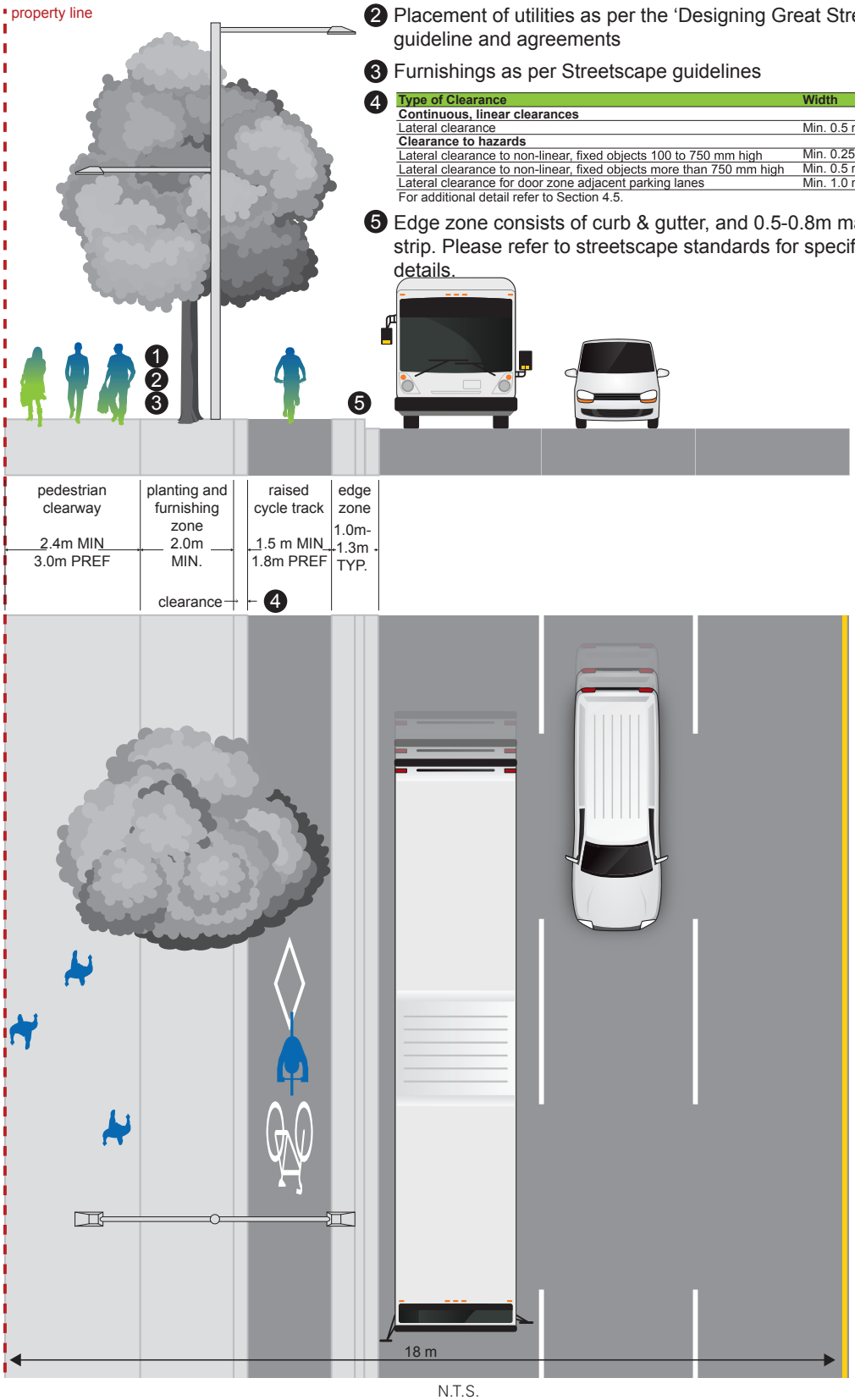
5. Edge zone consists of curb & gutter, and 0.5-0.8m wide maintenance strip. Please refer to streetscape standards for specifications & details.



The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-13. City Centre Street (36 m ROW) – Pedestrian clearways and raised cycle tracks with six travel lanes



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

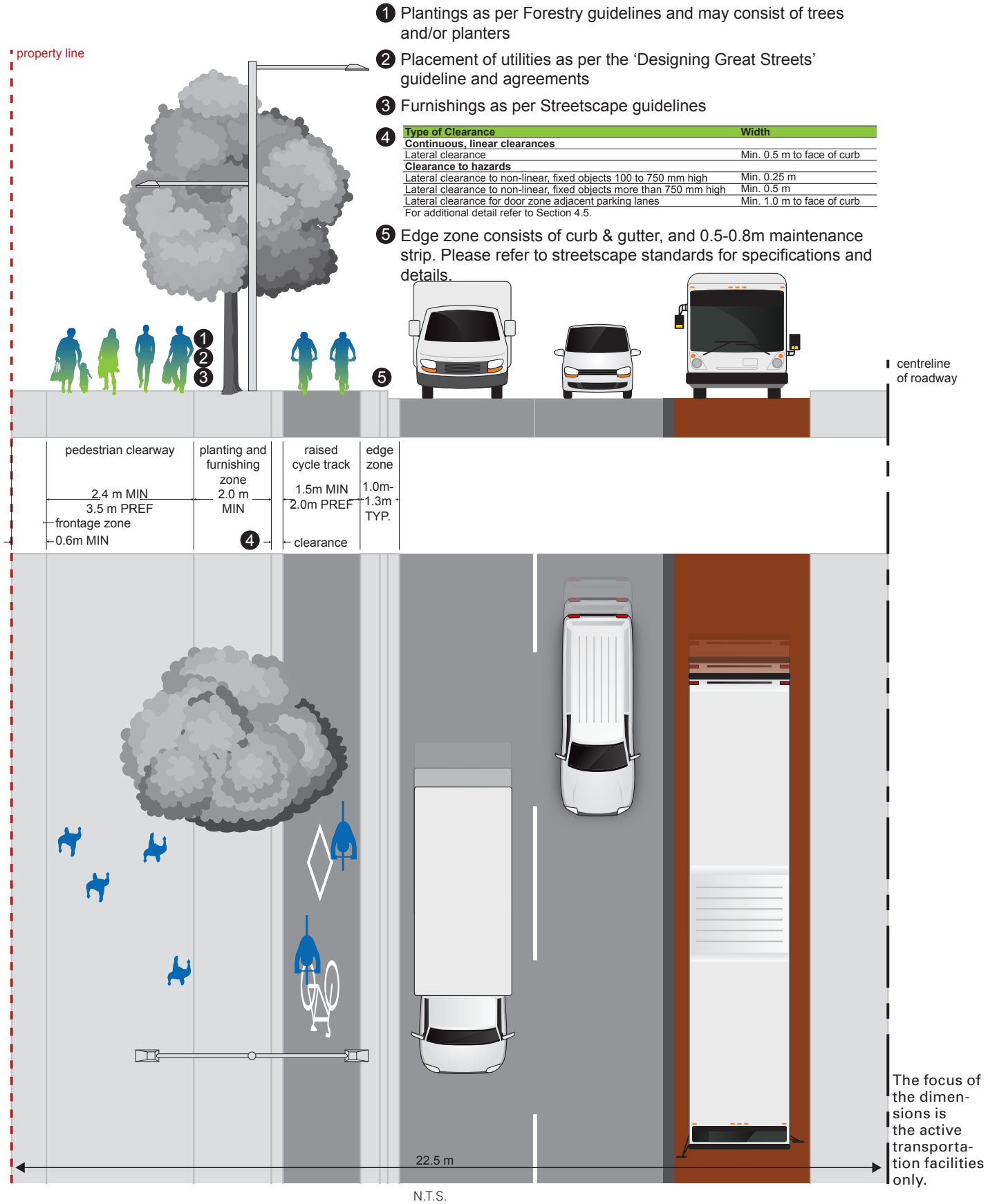
Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m to face of curb
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m
Lateral clearance for door zone adjacent parking lanes	Min. 1.0 m to face of curb

   For additional detail refer to Section 4.5.
5. Edge zone consists of curb & gutter, and 0.5-0.8m maintenance strip. Please refer to streetscape standards for specifications and details.

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-14. City Centre Street (45 m ROW) – Pedestrian clearways and raised cycle tracks with four travel lanes and rapid transit



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m to face of curb
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m
Lateral clearance for door zone adjacent parking lanes	Min. 1.0 m to face of curb

   For additional detail refer to Section 4.5.
5. Edge zone consists of curb & gutter, and 0.5-0.8m maintenance strip. Please refer to streetscape standards for specifications and details.

The focus of the dimensions is the active transportation facilities only.

N.T.S.


vivanext

4.9.2 Avenue

A vibrant urban context balanced with priority for all modes of active transportation

Avenues are designed to support transit and active modes of transportation, as well as high levels of vehicle and goods movement. They may be flanked by areas that are transitioning from large format retail to medium- to high density street-oriented development, increasing in density near transit nodes and growth centres. An example of an Avenue is Highway 7 through the Vaughan Metropolitan Centre or Davis Drive through Newmarket in York Region.

As Avenues are found in urban contexts, they will prioritize transit and active transportation modes. In contrast to City Centre Streets, however, they may have a greater vehicle carrying capacity, and may be wider, possibly including a landscaped median or additional lanes. The adjacent urban or semi-urban context and associated high levels of pedestrian activity call for protected cycling infrastructure (i.e. cycle track) and boulevard pedestrian amenities.

Pedestrian Facility

- Pedestrian clearways on both sides of the street

Cycling Facility

- Raised cycle tracks with street-oriented destinations with driveways
- In-boulevard cycle tracks with street-oriented destinations with rear lot servicing

From: Designing Great Streets: Building Roads that Build Community

The following cross-sections are illustrated for Avenues:

36 m ROW[1]

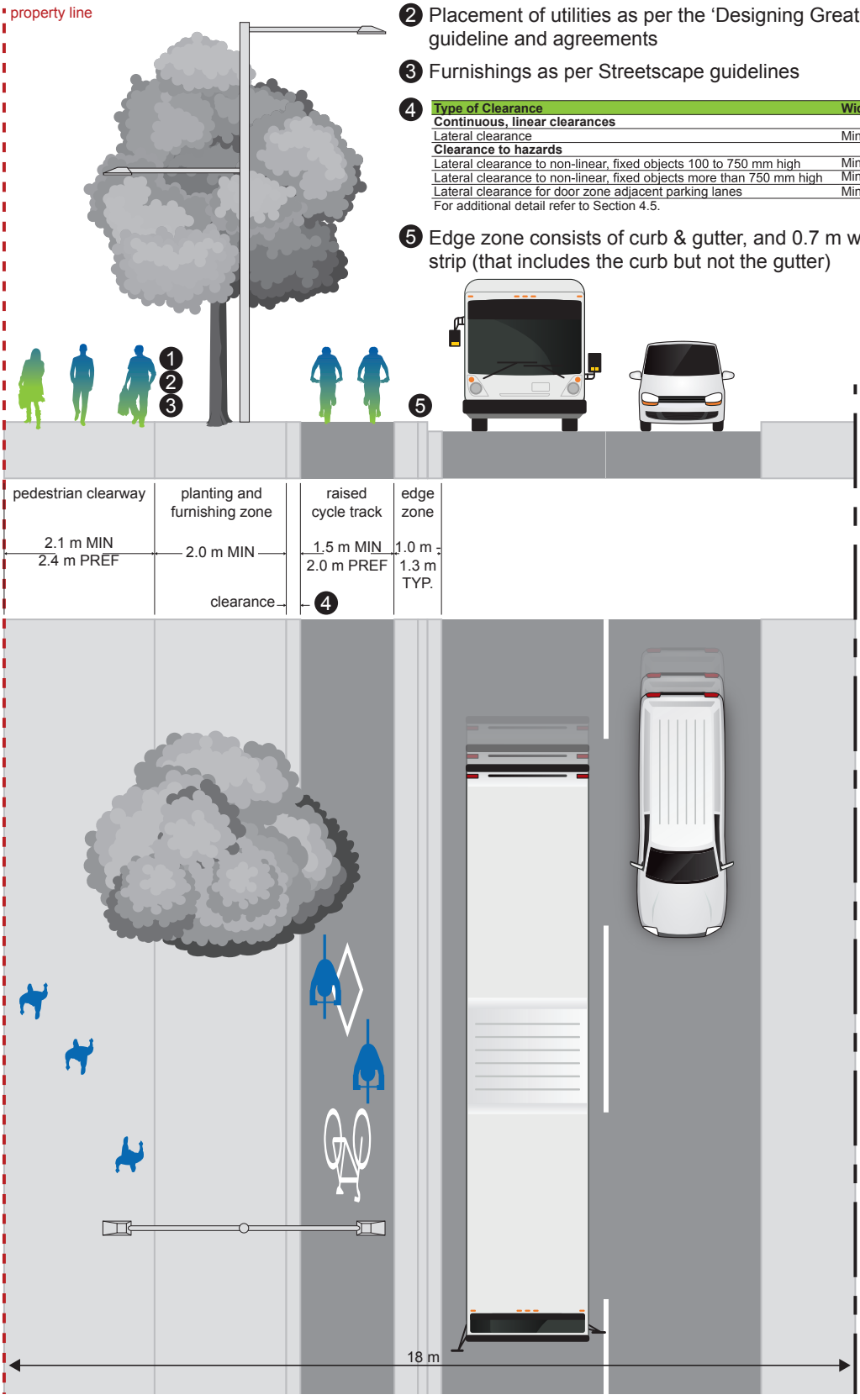
- Pedestrian clearway & raised cycle tracks with 4 travel lanes + median
- Pedestrian clearway & raised cycle tracks with 6 travel lanes
- Pedestrian clearway & in-boulevard cycle tracks with 6 travel lanes

45m ROW

- Pedestrian clearway & raised cycle tracks with 4 travel lanes + rapid transit

[1] Constrained condition- most Avenues are intended for 43 m+ ROW. In these constrained instances, no frontage zone is shown in the cross-sections. In reality, where adjacent land use is commercial, the frontage zone will encroach on the pedestrian clearway, which should be sized accordingly.

Exhibit 4-15. Avenue (36 m ROW) – Pedestrian clearways and raised cycle tracks with four travel lanes and median



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m to face of curb
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m
Lateral clearance for door zone adjacent parking lanes	Min. 1.0 m to face of curb

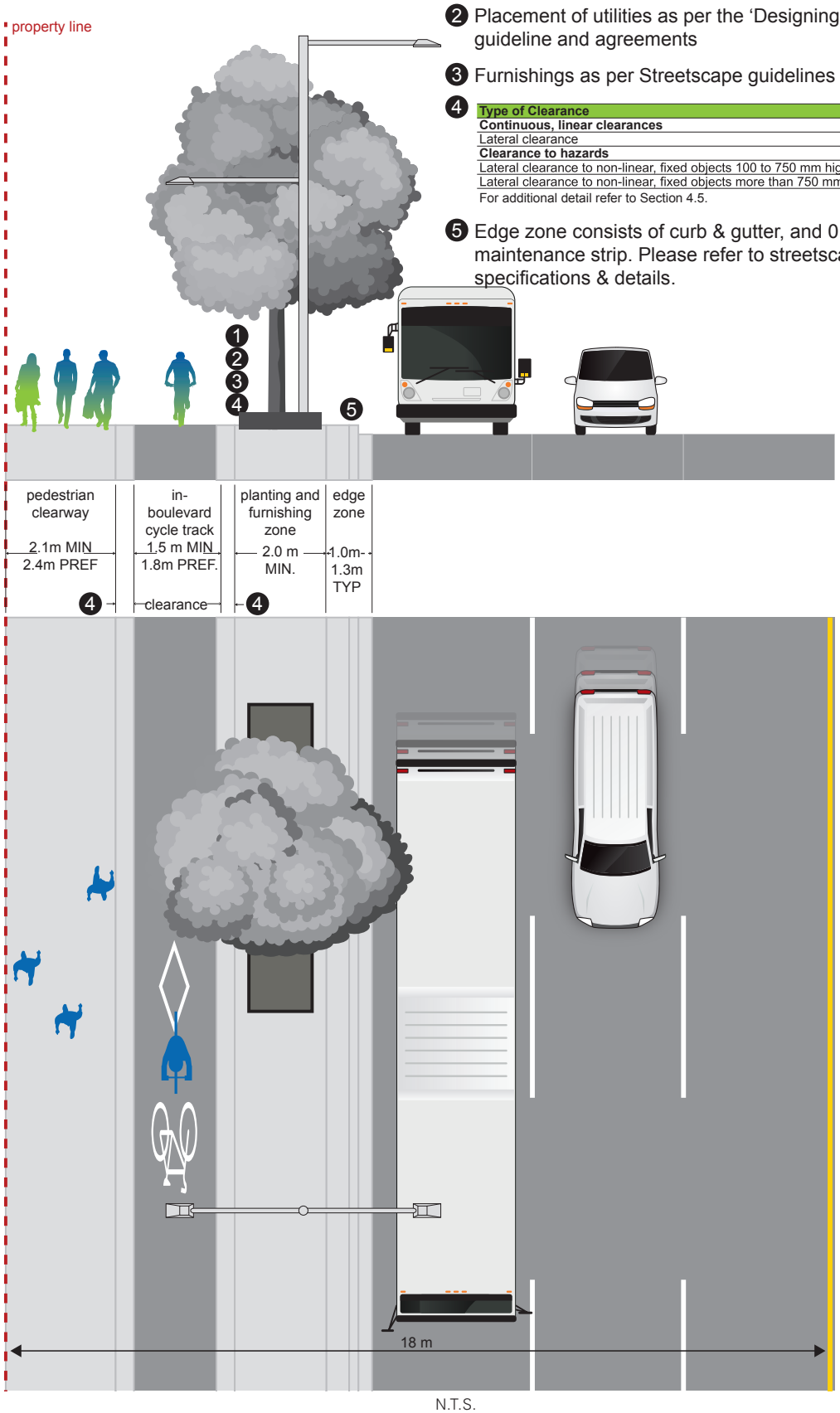
For additional detail refer to Section 4.5.

5. Edge zone consists of curb & gutter, and 0.7 m wide maintenance strip (that includes the curb but not the gutter)

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-16. Avenue (36 m ROW) – Pedestrian clearways and in-boulevard cycle tracks with six travel lanes



1. Plantings as per Forestry guidelines and may consist of trees and/or planters. Minimum 350mm high planter wall is required to guard trees against salt splash where offset from face of curb is 2m.
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

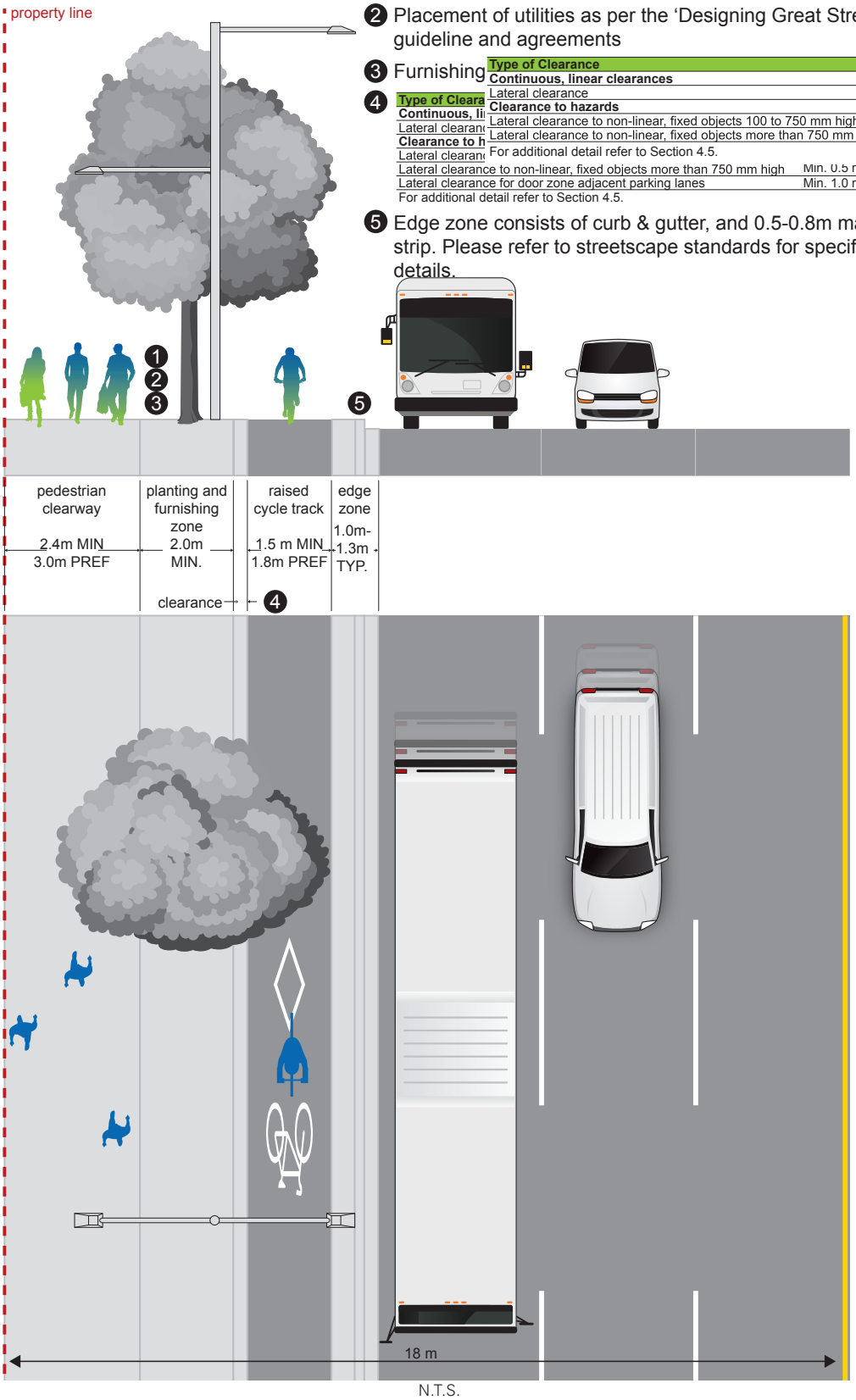
For additional detail refer to Section 4.5.

5. Edge zone consists of curb & gutter, and 0.5-0.8m wide maintenance strip. Please refer to streetscape standards for specifications & details.

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-17. Avenue (36 m ROW) – Pedestrian clearways and raised cycle tracks with six travel lanes



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishing
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m
For additional detail refer to Section 4.5.	

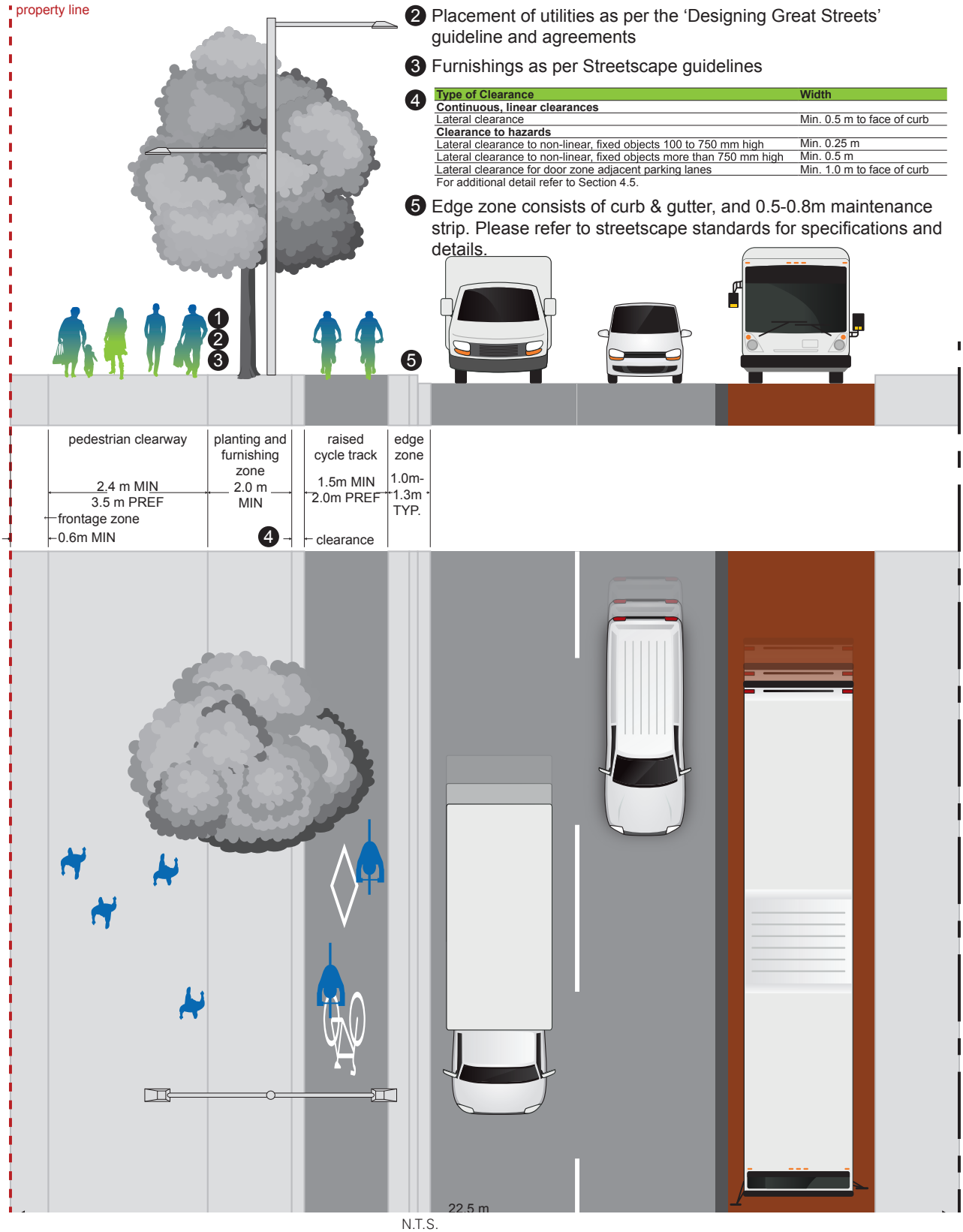
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m
Lateral clearance for door zone adjacent parking lanes	Min. 1.0 m to face of curb
For additional detail refer to Section 4.5.	

5. Edge zone consists of curb & gutter, and 0.5-0.8m maintenance strip. Please refer to streetscape standards for specifications and details.

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-18. Avenue (45 m ROW) - Pedestrian clearways and raised cycle tracks with four travel lanes and rapid transit



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m to face of curb
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m
Lateral clearance for door zone adjacent parking lanes	Min. 1.0 m to face of curb

For additional detail refer to Section 4.5.

5. Edge zone consists of curb & gutter, and 0.5-0.8m maintenance strip. Please refer to streetscape standards for specifications and details.

The focus of the dimensions is the active transportation facilities only.

N.T.S.

4.9.3 Main Street

Support for established street-oriented built form with an urban, pedestrian-focused street

Main Streets are found in smaller urban settings, like Keele Street and King Road through the central portion of King City, and often include a main street and/or a historical building fabric and small-scale street-oriented built form, surrounded by stable residential neighbourhoods. Though these areas are not necessarily dense, they have an urban and active character that serves important needs in the community.

The pedestrian and mixed-use character of Main Streets will be strengthened through road and boulevard design. Bike lanes or cycle tracks, wide sidewalks, on-street parking, mid-block crossings and land-use transition zones will support infill development and limited intensification. However, accommodating these desirable elements may be a challenge given that Main Street buildings often create constraints to design within a narrow rights-of-way. Retaining a narrow street and boulevard width, promoting transit priority presence and limited goods movement will help to preserve and strengthen the character of Main Streets.

Pedestrian Facility

- Pedestrian clearway or sidewalk on both sides of the street

Cycling Facility

- Raised cycle tracks with street-oriented destinations with driveways

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Cross-sections are not provided for Main Streets because of the wide range of local conditions encountered. Pedestrian and cycling facilities should be designed based on the facility widths provided in Sections 4.2 to 4.4.

From: Designing Great Streets: Building Roads that Build Community

4.9.4 Connector

Generous landscaped boulevards, enhanced transit and active transportation elements for stable neighbourhoods

Connectors prioritize goods and vehicle movement, while also being transit and active transportation-supportive. They are predominantly residential, with small- to medium scale built form that is typically set back from the street. An example is Dufferin Street between Steeles Avenue and Rutherford Road in York Region.

Connectors are wider streets with a generous green boulevard.
A key opportunity on these streets is to enhance vehicle movement, through uninterrupted flow and reduced permeability. There is also opportunity for dedicated transit facilities or transit priority lanes. In residential areas, multi-use paths provide safe movement for pedestrians, cyclists and other modes of active transportation.

Pedestrian Facilities

- Sidewalk on both sides of the street
- Pedestrian clearway on both sides of the street for six lane Connectors

Cycling Facility

- In-boulevard cycle track with street-oriented destinations with rear lot servicing

Shared Facility

- Multi-use path on both sides of the street

From: Designing Great Streets: Building Roads that Build Community

The following cross-sections are illustrated for Connectors:

36 m ROW

- Pedestrian clearway & in-boulevard cycle tracks[1] with 4 travel lanes & median
- Multi-use path with four travel lanes & median
- Multi-use path with six travel lanes

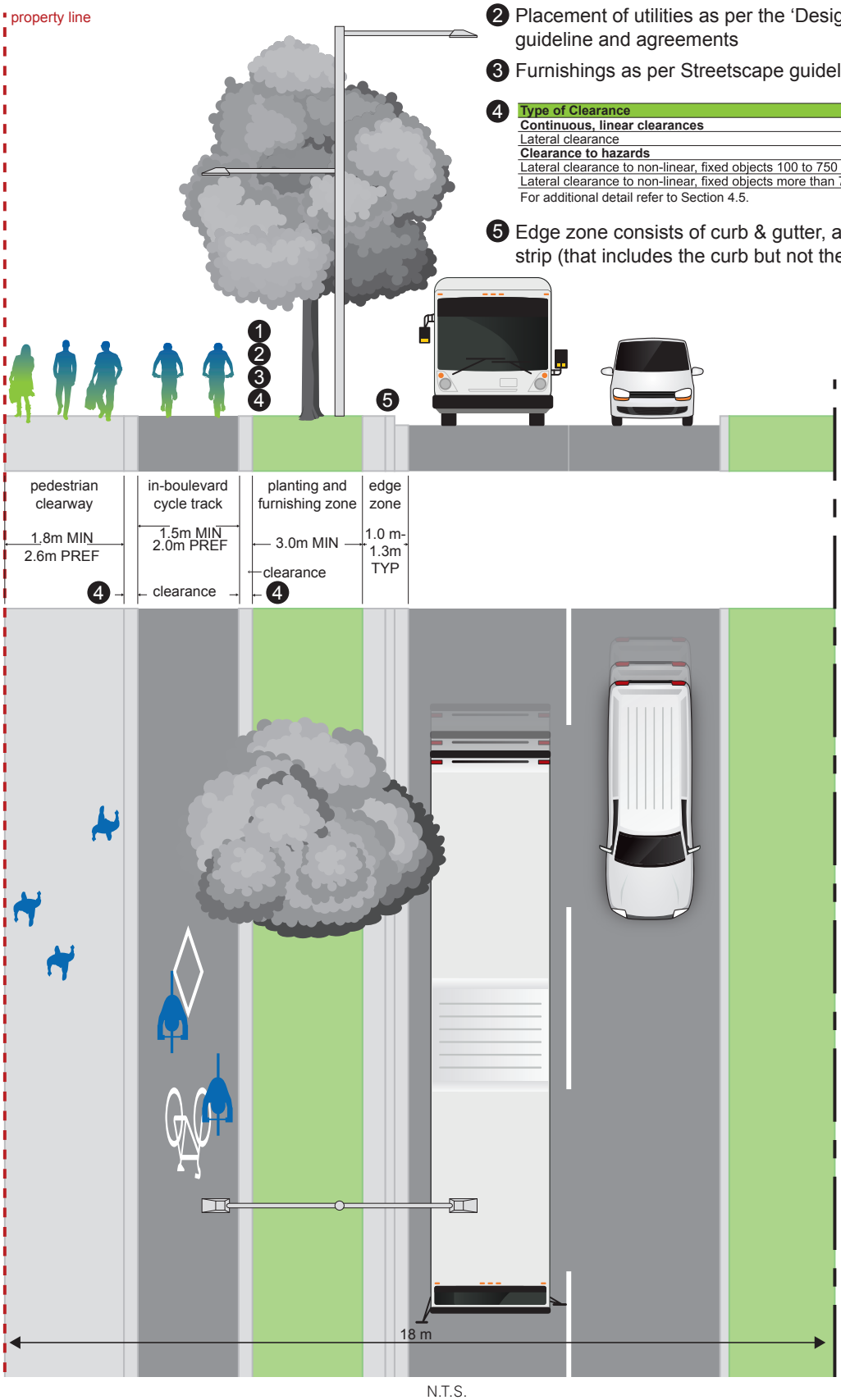
45 m ROW

- Pedestrian clearway & in-boulevard cycle tracks[1] with 4 travel lanes + rapid transit
- Multi-use path with 4 travel lanes + rapid transit

[1] The option of providing in-boulevard cycle tracks and pedestrian clearway rather than a multi-use path should be considered where higher volumes of pedestrians or cyclists are anticipated along the connector (such as to connect to a major destination like a major employer or high school). TAC's Geometric Design Guide for Canadian Roads suggests that separating pedestrian and cycling facilities are especially critical where:

- there are greater than 20% pedestrian users and total volumes are greater than 33 persons per hour per metre of path width; or
- where there are less than 20% pedestrian users and total volumes are greater than 50 persons per hour per metre of path width.

Exhibit 4-19. Connector (36 m ROW) – Sidewalks and in-boulevard cycle tracks with four travel lanes and median



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

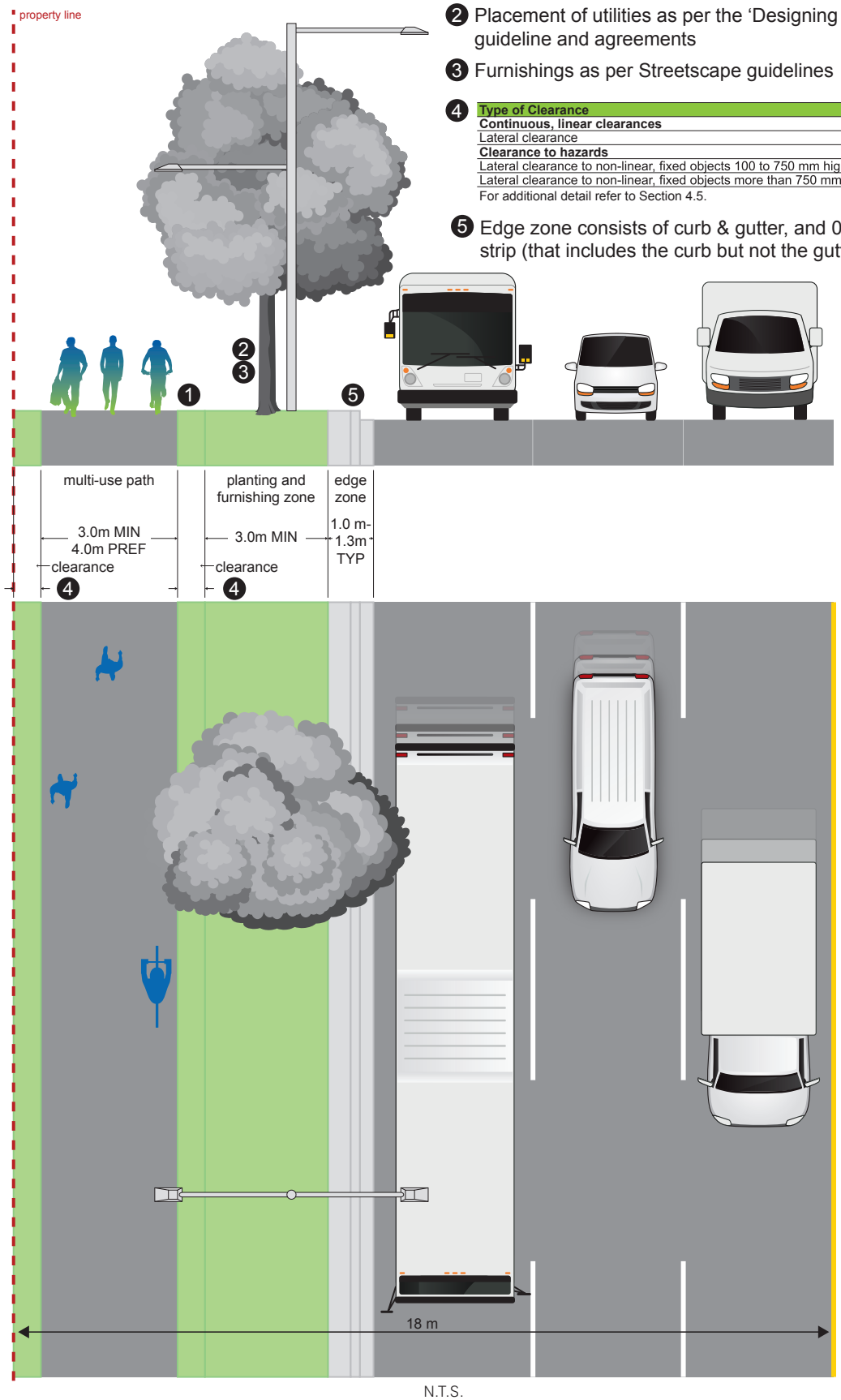
For additional detail refer to Section 4.5.

5. Edge zone consists of curb & gutter, and 0.7 m wide maintenance strip (that includes the curb but not the gutter)

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-20. Connector (36 m ROW) – Multi-use paths with six travel lanes



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

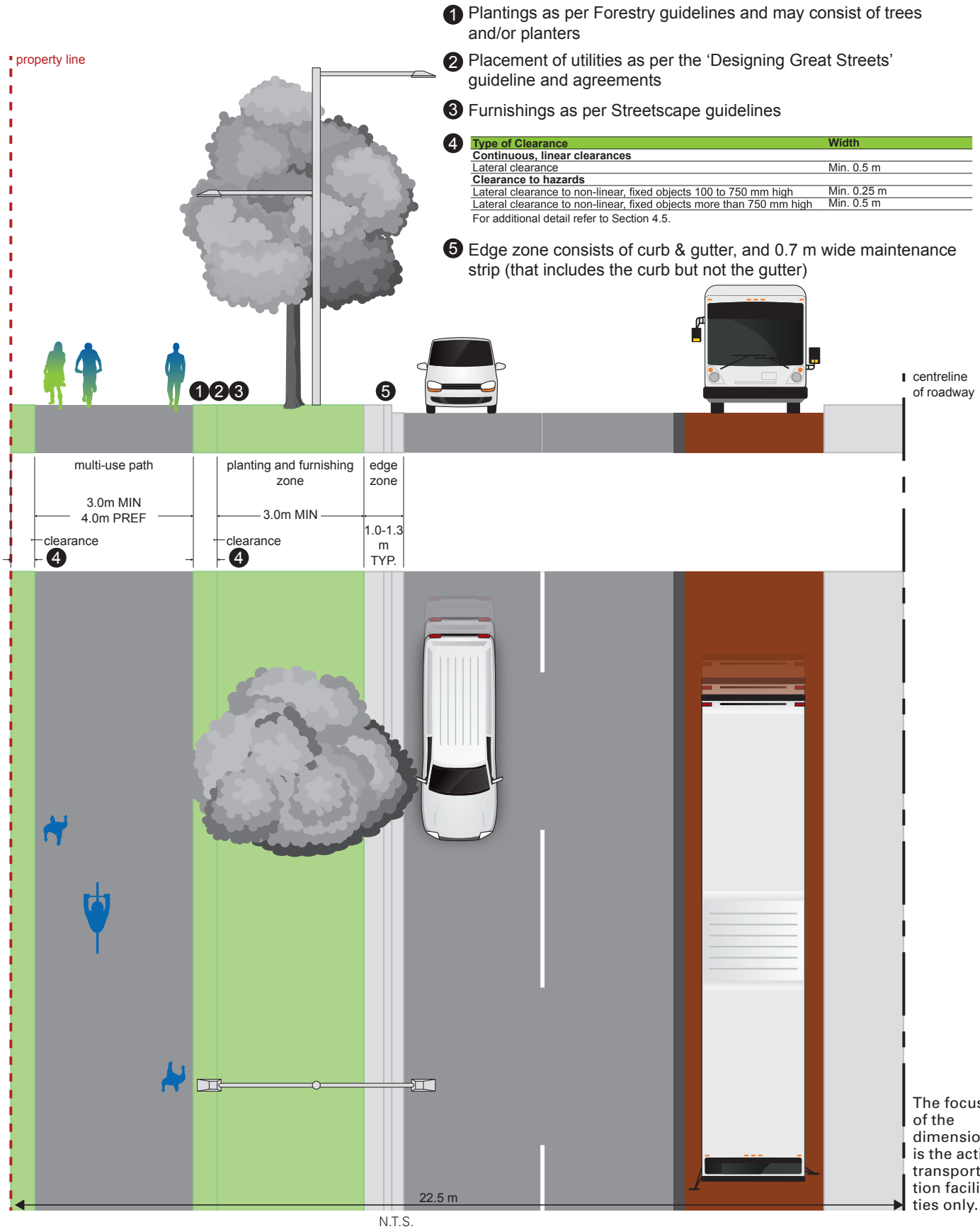
For additional detail refer to Section 4.5.

5. Edge zone consists of curb & gutter, and 0.7 m wide maintenance strip (that includes the curb but not the gutter)

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-21. Connector (45 m ROW) - Multi-use paths with four travel lanes and rapid transit



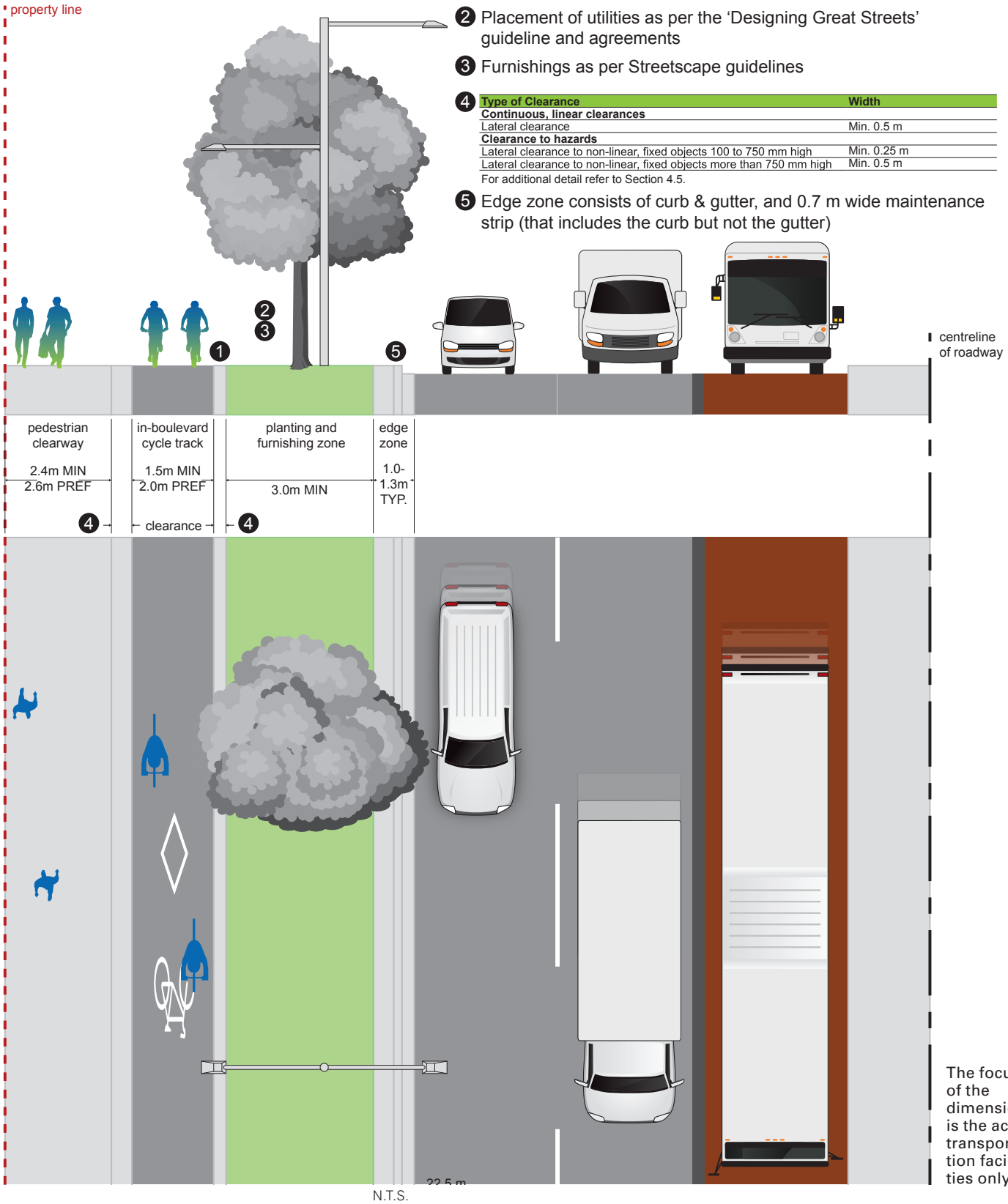
1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

   For additional detail refer to Section 4.5.
5. Edge zone consists of curb & gutter, and 0.7 m wide maintenance strip (that includes the curb but not the gutter)

The focus of the dimensions is the active transportation facilities only.

Exhibit 4-22. Connector (45 m ROW) - Sidewalks and in-boulevard cycle tracks with four travel lanes and rapid transit



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

   For additional detail refer to Section 4.5.
5. Edge zone consists of curb & gutter, and 0.7 m wide maintenance strip (that includes the curb but not the gutter)

N.T.S.

The focus of the dimensions is the active transportation facilities only.


Aquitaine Ave
Trelawny Cir

4.9.5 Rural Road

Safe, efficient vehicle movement through rural agricultural fabric

A large part of York Region is served by Rural Roads, which play an important role for agricultural and goods movement. Rural Roads, such as Davis Drive between York-Durham Line and Highway 404, move through much of the Region's typical agricultural fabric. Traffic and goods movement dominate, though cycling and transit facilities may also be present.

Rural Roads prioritize vehicle movement for private vehicles, goods or agricultural uses. They are not porous and provide for an uninterrupted flow of traffic. They may be flanked by typical agricultural rural fabric or clusters of low density residential, industrial or other uses. As these are rural roadways, paved shoulders may be used for cycling, or multi-use paths may be incorporated in the cross-section to provide a higher order pedestrian and cycling facility.

Pedestrian Facility – None; pedestrians are permitted to walk on the shoulder facing traffic

Cycling Facility – Paved shoulder with buffer and optional rumble strip

Shared Facility - Multi-use path on one side of the road (optional and context-specific)

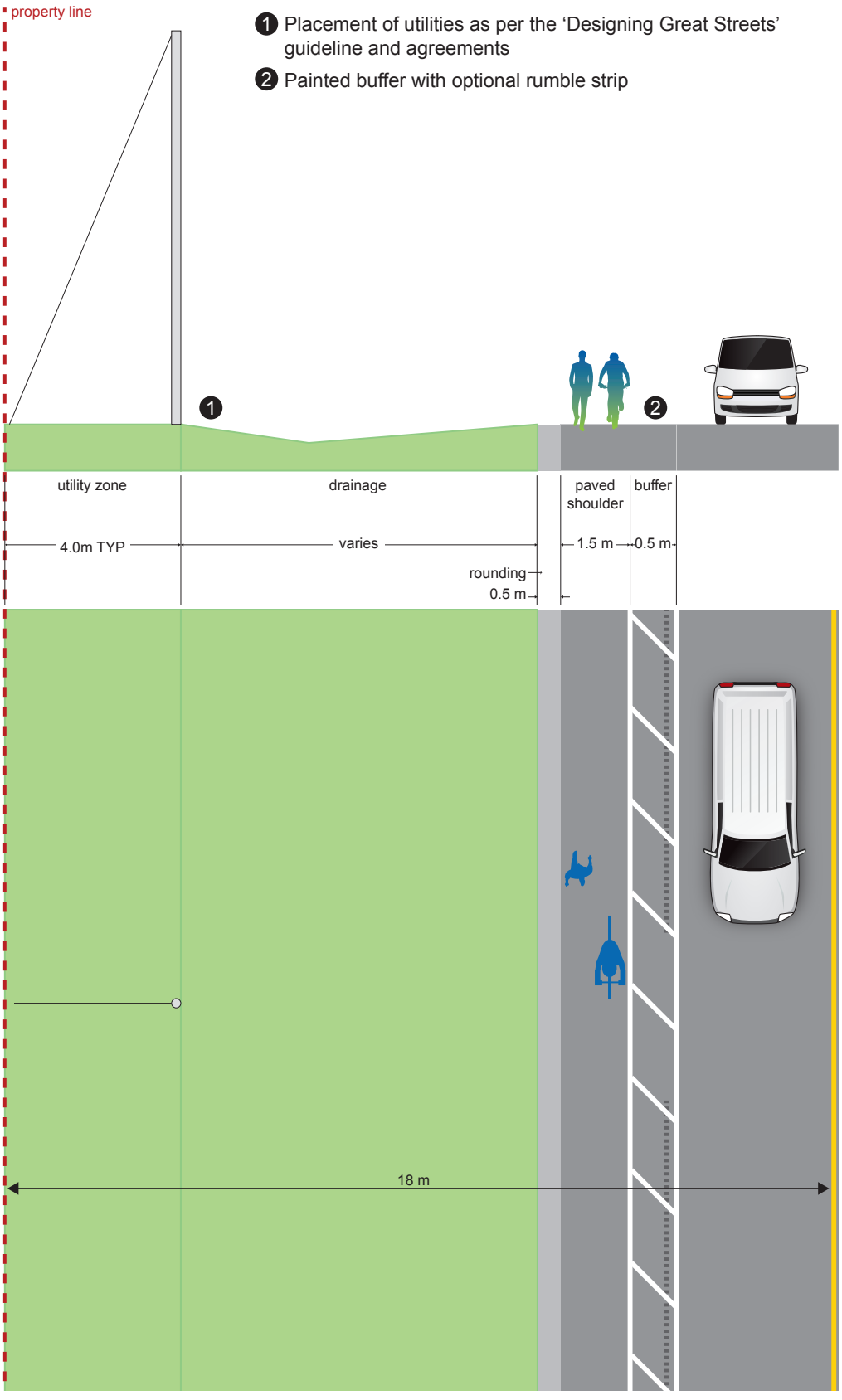
The following cross-sections are illustrated for Rural Roads:

36m ROW

- Paved shoulders with two travel lanes
- Paved shoulders with four lanes and optional multi-use path on one side

From: Designing Great Streets: Building Roads that Build Communities

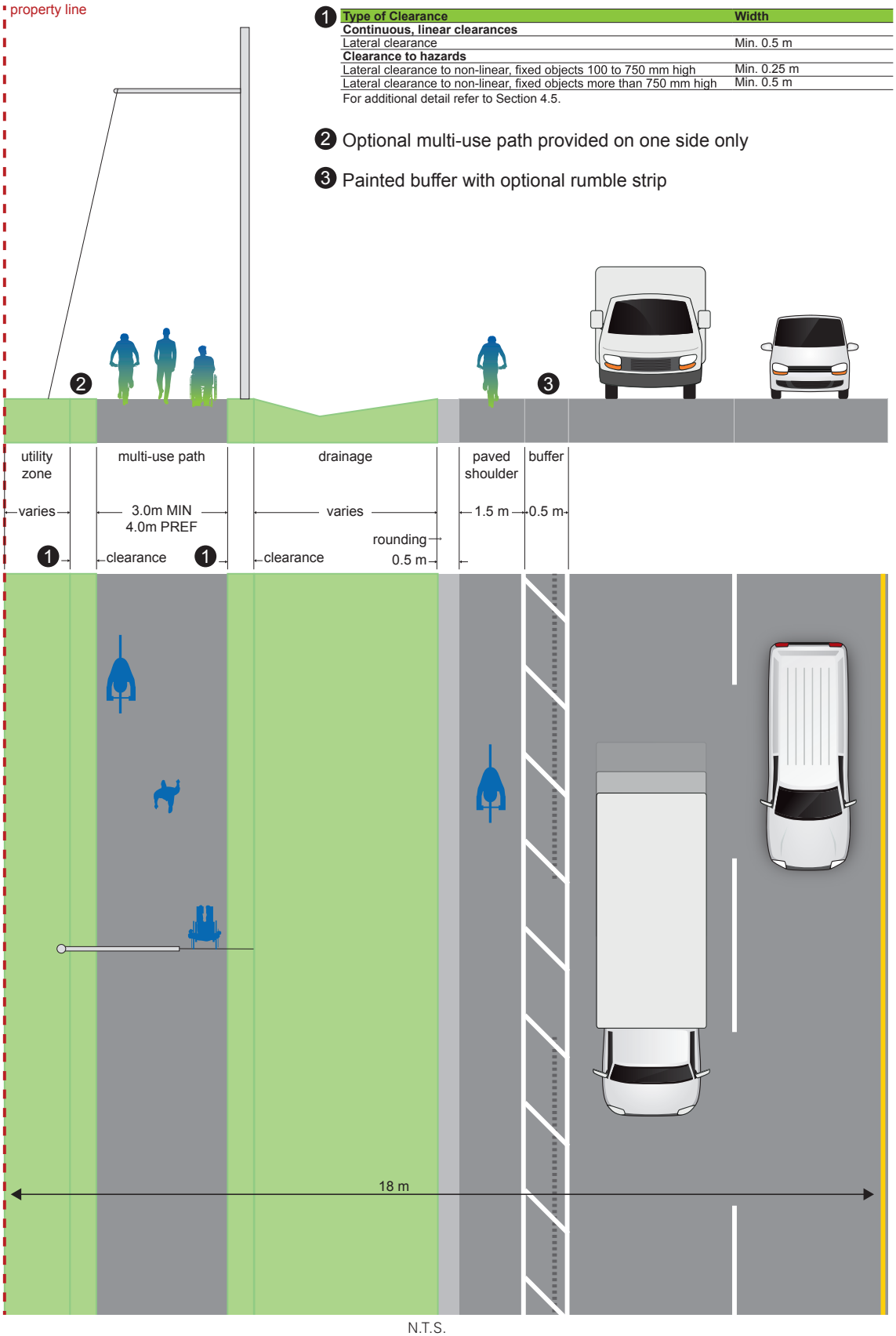
Exhibit 4-23. Rural Road (36 m ROW) – Paved shoulders with two travel lanes



The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-24. Rural Road (36 m ROW) – Optional multi-use path on one side only (if required) and paved shoulders with four travel lanes



The focus of the dimensions is the active transportation facilities only.

N.T.S.

4.9.6 Rural Hamlet Road

Small rural communities with street-oriented built form

Rural Hamlet Roads run though small communities throughout York Region. They serve residents working or living in the area and motorists and goods vehicles travelling through the Region. Hamlets are often centred around an intersection, and include a small number of commercial or other uses that serve the community. An example of a Rural Hamlet Road would be Leslie Street near Mt. Albert Road in the community of Sharon.

In contrast with Rural Roads, Rural Hamlet Roads slow traffic and become more porous through small, "four-corners" settlements. These roads will be designed to support the local community, as well as active transportation, and should include multi-use paths. As they are associated with clusters of low density residential or commercial plots with a small-scale street-oriented built form, boulevards should include street trees, on-street parking and other amenities to support local community and retail activity.

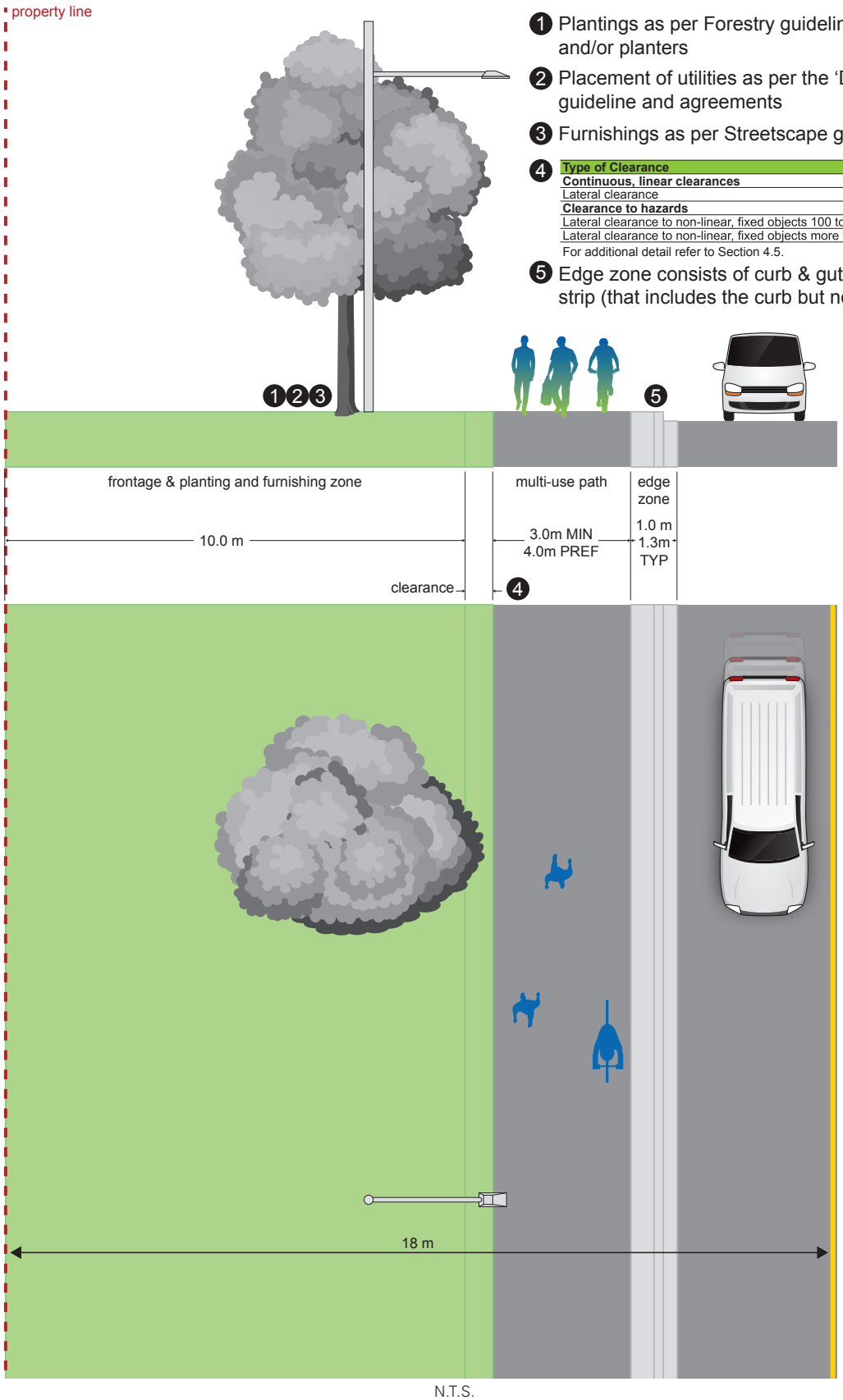
The following cross-sections are illustrated for Rural Hamlet Roads:

36 m ROW[1]

- Multi-use path with two travel lanes (Configuration A)
- Multi-use path with two travel lanes (Configuration B)
- Multi-use path with two travel lanes and on-street parking

From: Designing Great Streets: Building Roads that Build Community

Exhibit 4-25. Rural Hamlet Road (36 m ROW)– Multi-use path with two travel lanes (A)



1. Plantings as per Forestry guidelines and may consist of trees and/or planters
2. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
3. Furnishings as per Streetscape guidelines
4.

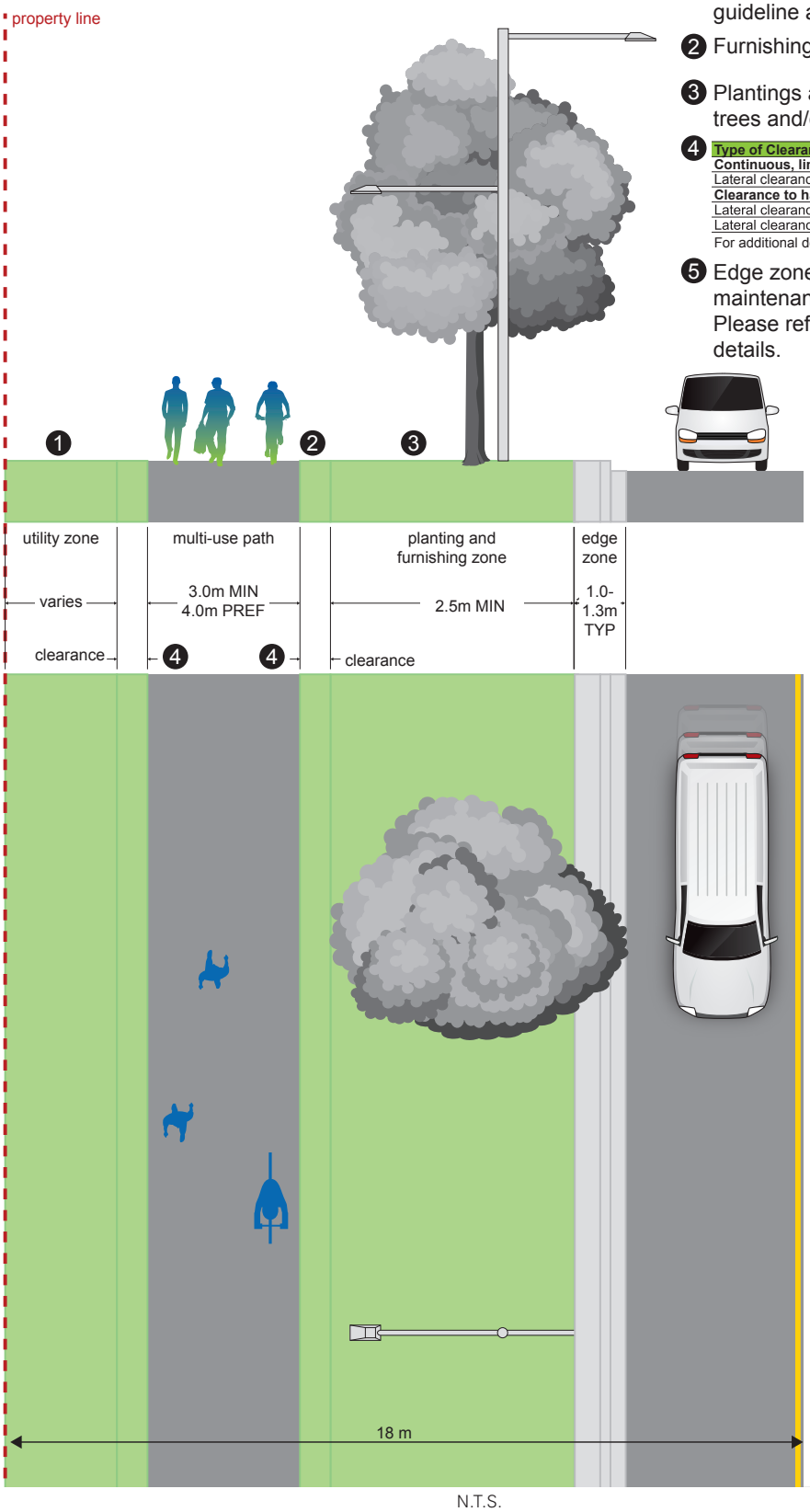
Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

   For additional detail refer to Section 4.5.
5. Edge zone consists of curb & gutter, and 0.7 m wide maintenance strip (that includes the curb but not the gutter)

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-26. Rural Hamlet Road (36 m ROW)– Multi-use path with two travel lanes (B)



1. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
2. Furnishings as per Streetscape guidelines
3. Plantings as per Forestry guidelines and may consist of trees and/or planters
4.

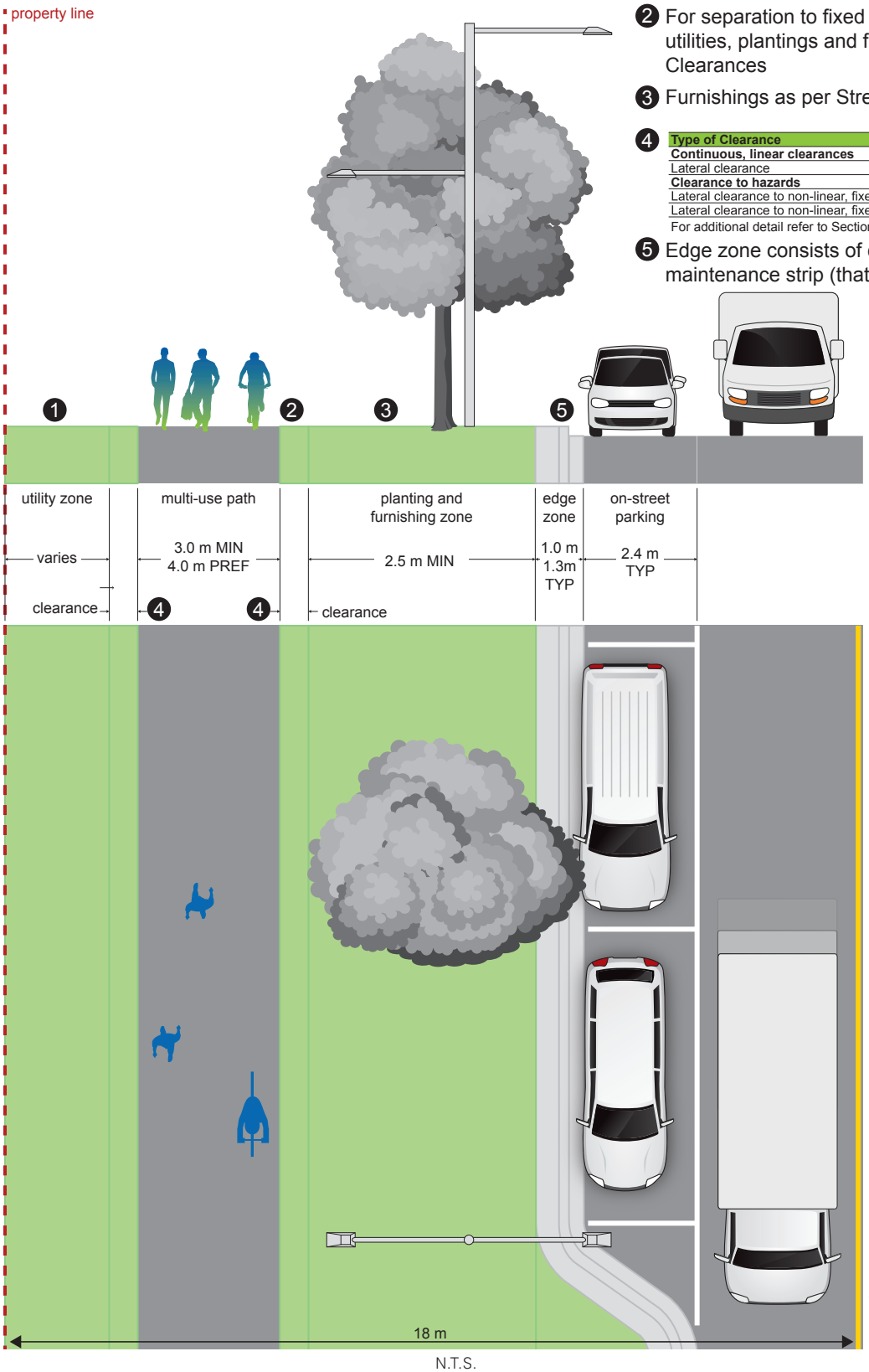
Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

   For additional detail refer to Section 4.5.
5. Edge zone consists of curb & gutter, and 1.0 m wide maintenance strip (that includes the curb but not the gutter) Please refer to streetscape standards for specifications & details.

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-27. Rural Hamlet Road (36 m ROW) – Multi-use path with two travel lanes and on-street parking



1. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
2. For separation to fixed objects such as above-ground utilities, plantings and furnishings, see Section 4.5 Clearances
3. Furnishings as per Streetscape guidelines
4.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

   For additional detail refer to Section 4.5.
5. Edge zone consists of curb & gutter, and 0.7 m wide maintenance strip (that includes the curb but not the gutter)

The focus of the dimensions is the active transportation facilities only.

N.T.S.

4.10 RETROFITTING REGIONAL ROADS

When retrofitting pedestrian or cycling facilities to existing Regional roads, i.e. not as part of Regional road reconstruction projects, consideration is given to limiting the cost of construction and impacts of the retrofit.

Retrofit projects generally avoid widening roadways and reconstructing curb and gutters and associated stormwater infrastructure. Retrofit projects also need to consider impacts to roadway capacity and on-street parking, and avoid relocating above and below-ground utilities in order to control costs and limit impacts. The preservation of existing street trees should also be a key consideration when evaluating the location of new pedestrian and cycling infrastructure, in accordance with York Region's Forest Management Plan and canopy cover targets.

Retrofit facilities may include:

Pedestrian Facilities

- Sidewalks on one or both sides of the street added within the existing boulevard

Cycling Facilities

Road Reconfiguration

- Bike lanes installed as part of a road reconfiguration from four travel lanes to two travel lanes with a centre two-way left-turn lane or medians when traffic volumes are 20,000 vehicles per day or less
- Buffered bike lanes installed as part of a road reconfiguration as above

Boulevard Modification

- Raised cycle tracks installed behind the existing curb and gutter

Rural Road Retrofit

- Paved shoulders installed on existing granular shoulders on rural roads with two travel lanes
- Paved shoulders with buffer installed on existing granular shoulders on rural roads with four travel lanes

Shared Facilities

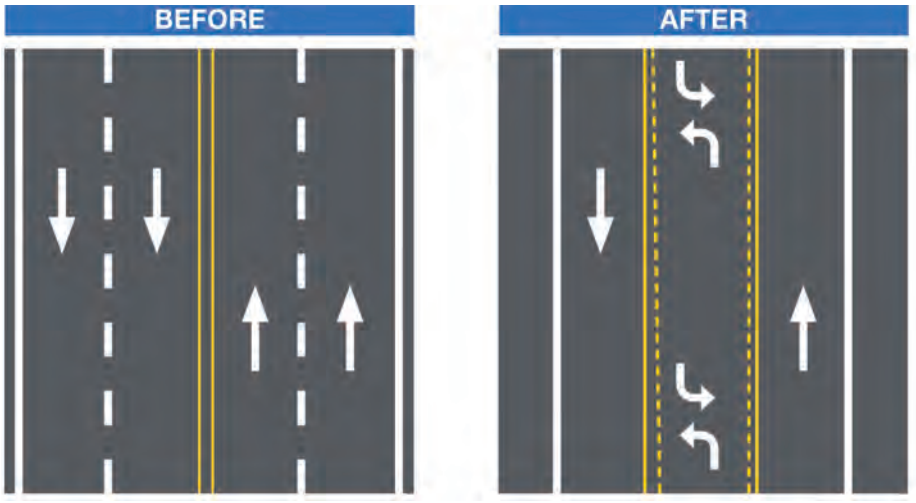
- Multi-use path on one or both sides of the street constructed within the existing boulevard

Information on cross-section elements other than the pedestrian and cycling facilities should be obtained from the associated design guidelines for those elements. Cross-sections are shown for one-half of the right-of-way only – duplicate pedestrian and cycling facilities should be provided on both sides of the road unless noted.

Road Reconfiguration

In the following retrofit examples shown in Exhibit 4-29 and Exhibit 4-30, roadways with four or more existing travel lanes are reconfigured with a two way left-turn lane and bike lanes or buffered bike lanes (refer to Exhibit 4-28). This type of lane reconfiguration is a Schedule A+ (Pre-approved) project under the Municipal Class EA process.

Exhibit 4-28. Lane Reconfiguration



Adapted from the FHWA's Road Diet Information Guide

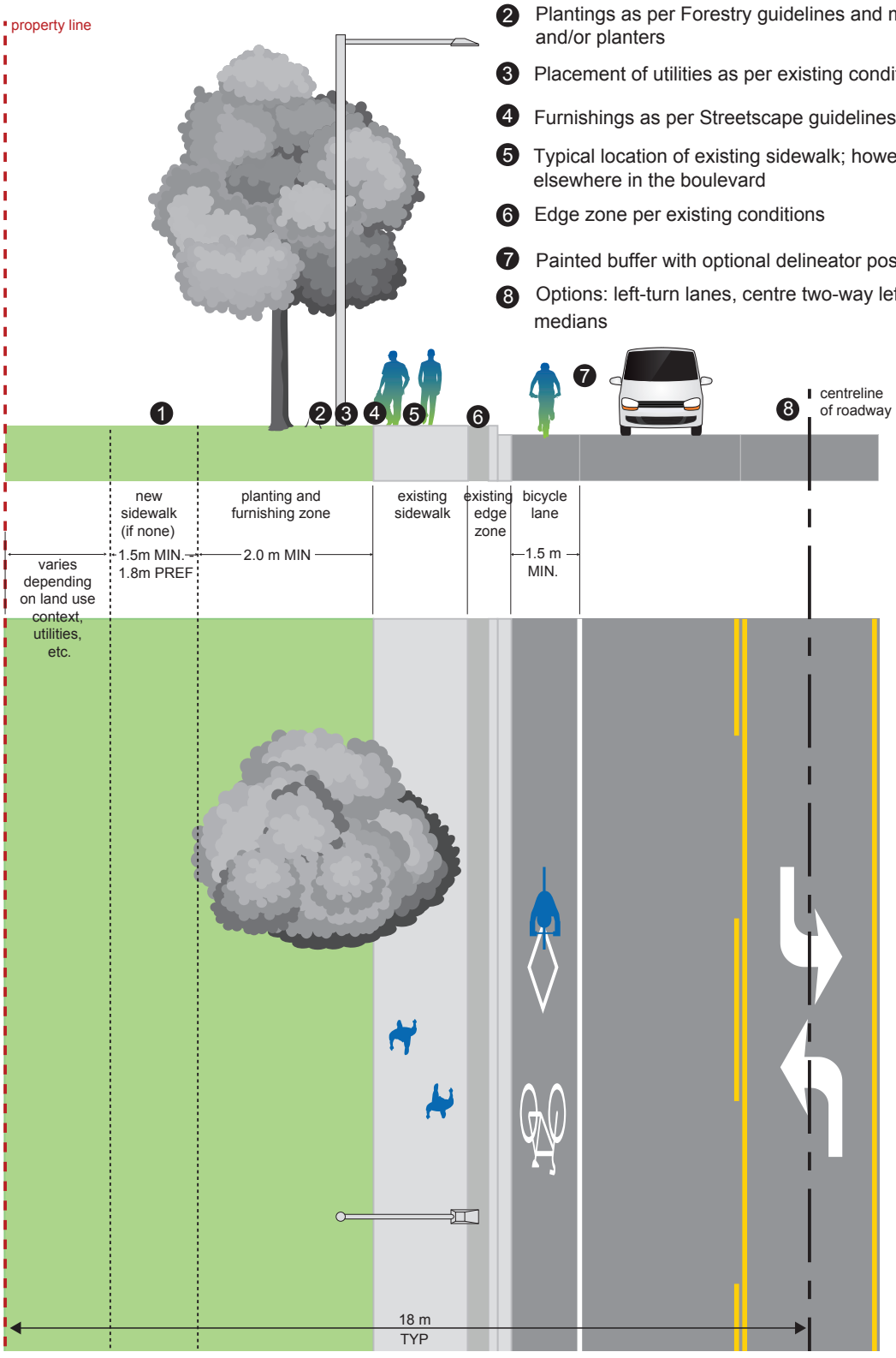
As noted, the application of these road diets is dependent on roadway volumes and other operational factors.

Key criteria are noted below:

- Annual Average Daily Traffic - Roadways with AADT of 20,000 vpd or less may be good candidates for a Road Diet and should be evaluated for feasibility
- Peak Hour/Peak Direction Traffic - Typically considered for roadways with at or below 750 vehicles per hour per direction (vphpd) during the peak hour
- Turning Movements
- Impacts to Transit
- Goods Movement

For further information on road diets, see FHWA's Road Diet Information Guide.

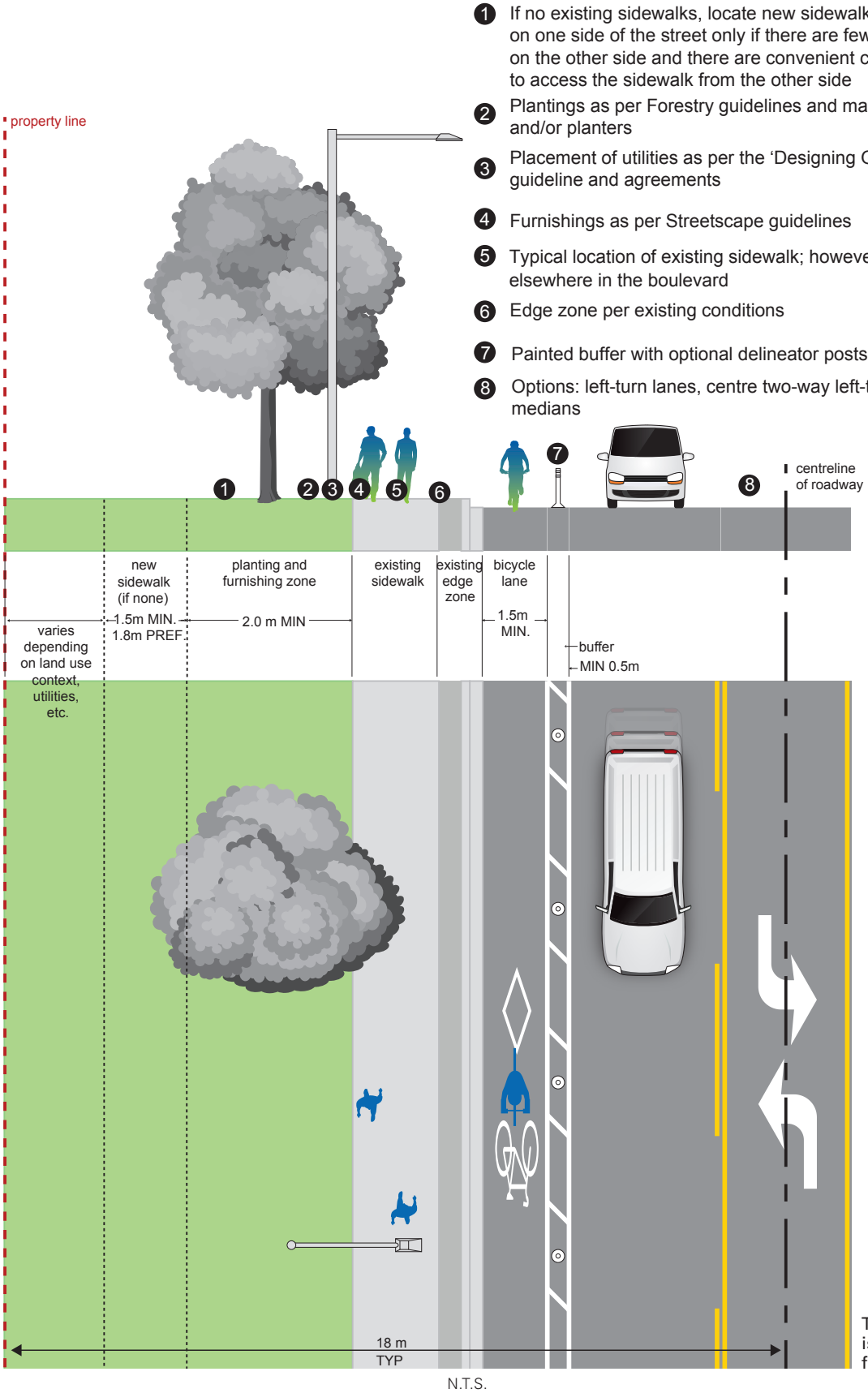
Exhibit 4-29. Retrofit (36 m ROW) - Bike lanes installed as part of a road reconfiguration from four travel lanes to two travel lanes with a centre two-way left-turn lane or medians



1. If no existing sidewalks, locate new sidewalk in bouelvard. Locate on one side of the street only if there are few destinations located on the other side and there are convenient crossings of the street to access the sidewalk from the other side
2. Plantings as per Forestry guidelines and may consist of trees and/or planters
3. Placement of utilities as per existing conditions
4. Furnishings as per Streetscape guidelines
5. Typical location of existing sidewalk; however it may be located elsewhere in the boulevard
6. Edge zone per existing conditions
7. Painted buffer with optional delineator posts
8. Options: left-turn lanes, centre two-way left-turn lane (shown), or medians

The focus of the dimensions is the active transportation facilities only.

Exhibit 4-30. Retrofit (36 m ROW) - Buffered bike lanes installed as part of a road reconfiguration from four travel lanes to two travel lanes with a centre two-way left-turn lane or medians

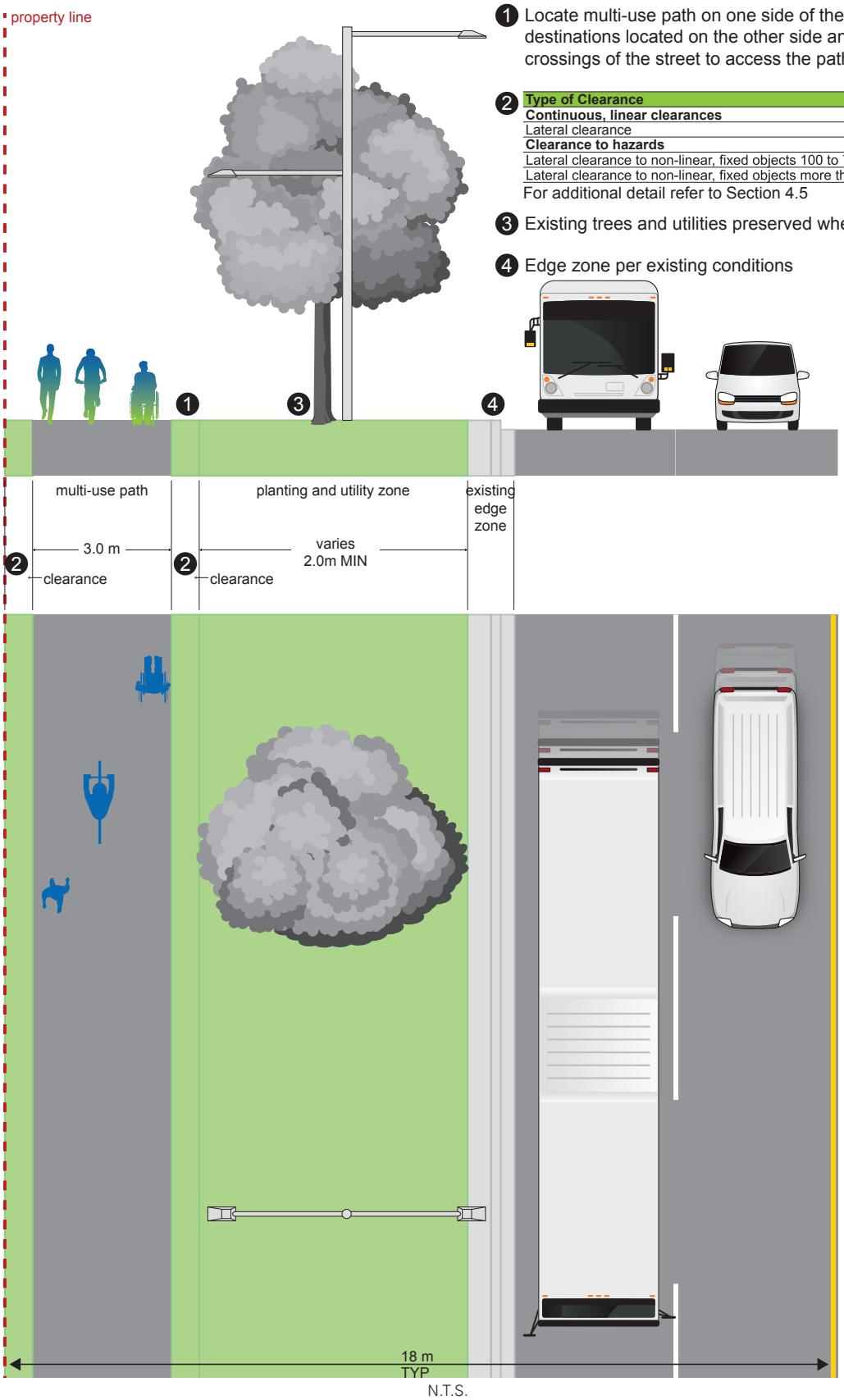


1. If no existing sidewalks, locate new sidewalk in bouelvard. Locate on one side of the street only if there are few destinations located on the other side and there are convenient crossings of the street to access the sidewalk from the other side
2. Plantings as per Forestry guidelines and may consist of trees and/or planters
3. Placement of utilities as per the 'Designing Great Streets' guideline and agreements
4. Furnishings as per Streetscape guidelines
5. Typical location of existing sidewalk; however it may be located elsewhere in the boulevard
6. Edge zone per existing conditions
7. Painted buffer with optional delineator posts
8. Options: left-turn lanes, centre two-way left-turn lane (shown), or medians

The focus of the dimensions is the active transportation facilities only.

N.T.S.

Exhibit 4-31. Retrofit (36 m ROW) - Multi-use path constructed on one or both sides of the street in the boulevard



1. Locate multi-use path on one side of the street only if there are few destinations located on the other side and there are convenient crossings of the street to access the path from the other side

2.

Type of Clearance	Width
Continuous, linear clearances	
Lateral clearance	Min. 0.5 m
Clearance to hazards	
Lateral clearance to non-linear, fixed objects 100 to 750 mm high	Min. 0.25 m
Lateral clearance to non-linear, fixed objects more than 750 mm high	Min. 0.5 m

For additional detail refer to Section 4.5

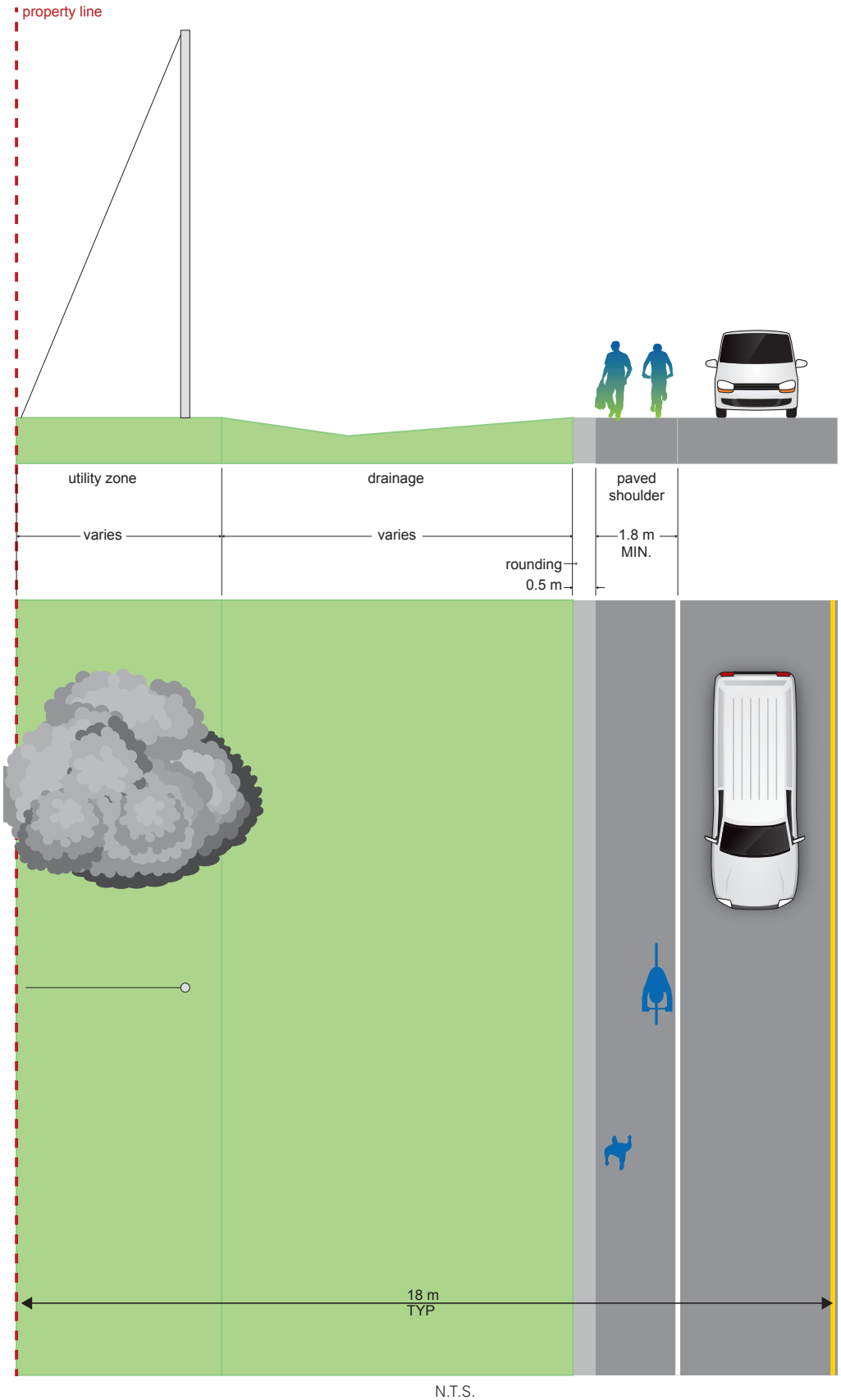
3. Existing trees and utilities preserved where possible

4. Edge zone per existing conditions

The focus of the dimensions is the active transportation facilities only.

N.T.S.

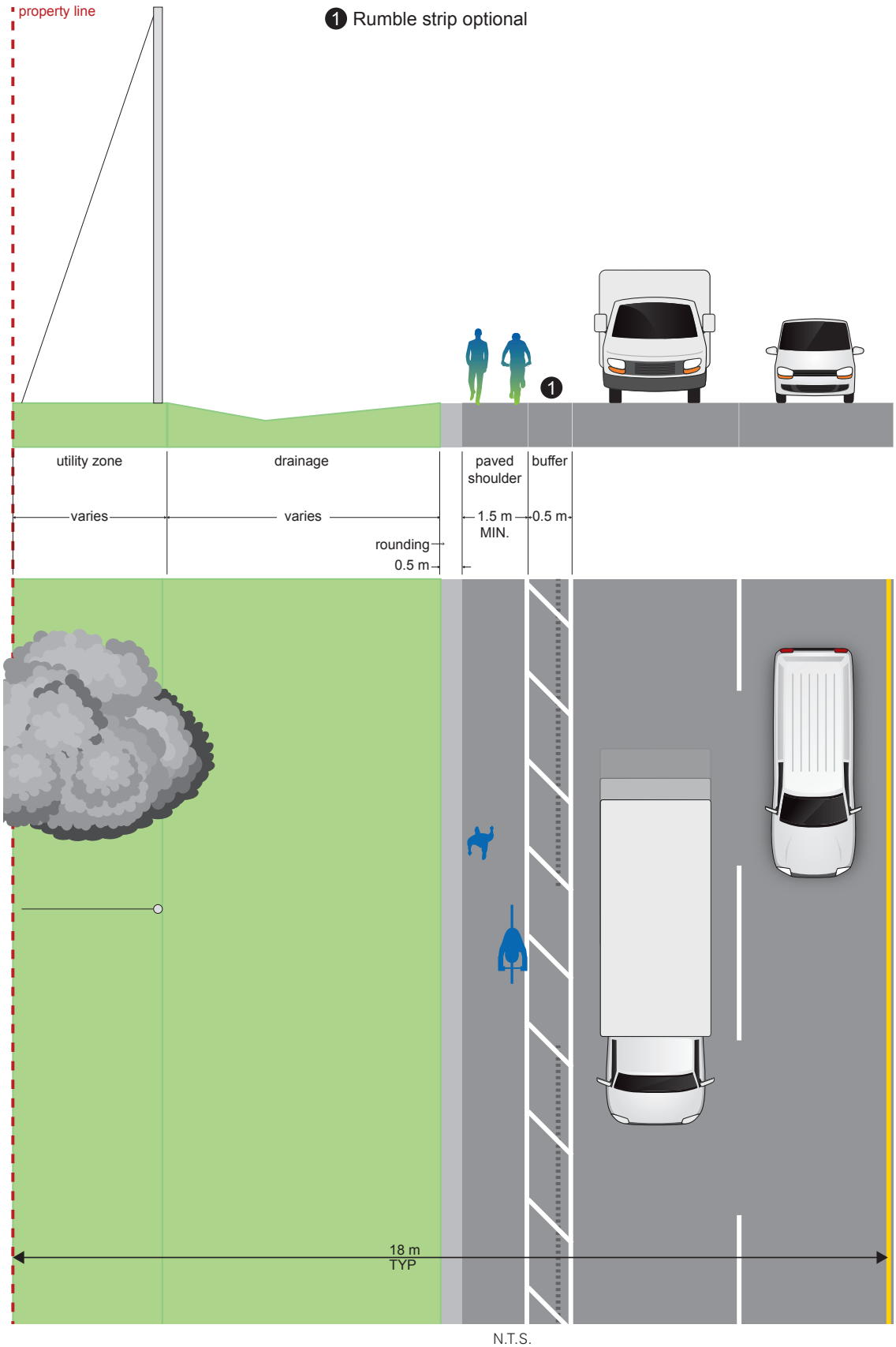
Exhibit 4-32. Retrofit (36 m ROW) – Paved shoulders installed on existing granular shoulders on rural roads with two travel lanes



N.T.S.

The focus of the dimensions is the active transportation facilities only.

Exhibit 4-33. Regional Road Retrofit (36 m ROW) – Paved shoulders with buffer installed on existing granular shoulders on rural roads with four travel lanes



The focus of the dimensions is the active transportation facilities only.

N.T.S.