Standards Update and Cost Analysis

Executive Summary

The City of Edmonton's Complete Streets Design and Construction Standards (the Standards) are the primary tool for implementing the Complete Streets Policy. The Standards define how Edmonton's new and renewed streets are expected to be designed and built.

Not only do design choices influence user experience, these choices influence the short and long term costs incurred for construction, operation and maintenance. These costs are directly and indirectly borne by homebuyers and tax payers through their home purchases or annual taxes, keeping in mind that transportation network construction costs are only one of many factors that contribute to the overall cost of housing in Edmonton.

While it is critical that the Standards themselves are set carefully, ultimately, how a designer chooses to apply the Standards on an individual project or a whole neighborhood has a cascading effect on initial and ongoing costs. The cost impacts of the Standards influence different parties at various stages of an asset's lifecycle. In general, these costs can be broadly categorized as follows:

Initial construction costs:

- Developers incur the initial costs of construction of roads and associated infrastructure (utilities, lighting, landscaping) in support of new developments.
- The City of Edmonton incurs the costs of new construction for roads that are not the responsibility of developers.

Lifecycle costs:

- The City of Edmonton incurs the costs associated with ongoing renewal activities throughout the lifecycle of an asset. This includes ongoing renewal and reconstruction.

Operating costs:

- Property owners are responsible for snow and ice control activities and any associated costs for sidewalks adjacent to their properties, as per the Community Community Standards Bylaw 14600.

  Section 7 of the Community Standards Bylaw 14600 requires that property owners "maintain any sidewalk adjacent to land they own or occupy clear of all snow and ice."

- The City of Edmonton is responsible for snow and ice control costs for the City-owned, road and active pathway networks (including shared pathways).

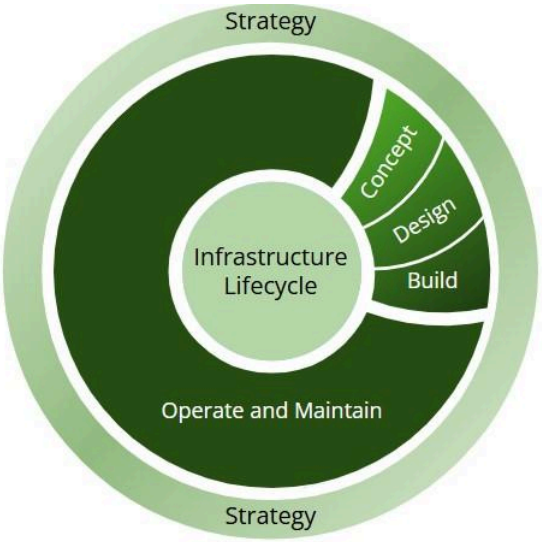
Maintenance costs:

- The City of Edmonton is responsible for the ongoing maintenance of the transportation network and costs associated with these activities (pothole repairs, slab levelling, replacement of sidewalk panels, etc).

Safety programs:

- The City of Edmonton is responsible for addressing accessibility gaps and safety issues in the transportation network.
- This includes Safe Mobility programs such as Street Labs, Safe Crossings, Safe Routes to School and Speed Humps and Tables.

The design and initial construction account for a small portion of the overall life of an asset. The vast majority of an asset's life is following the initial construction - the Operate and Maintain phase. That said, the decisions made in the initial design and construction phases have a significant impact on the overall lifecycle of the asset, its functionality and operational cost which are borne by the City of Edmonton and, in turn, Edmonton taxpayers.



As part of the process to update the Standards, a review was conducted to determine the broad cost impacts of the changes. The findings of the analysis are detailed in this attachment, with a summary provided in the table below and in Appendix A.

Initial construction costs	The updated Standards have the potential to increase or decrease the costs of initial construction. An exact impact to initial construction cost related to the updated standards is hard to define as it is highly dependent on choices made by the designer. ● *The degree of impact is dependent on the design choices made (i.e. width of roadway, parking vs no parking, traffic calming choices).* ● *Some design choices will result in cost savings during initial construction (i.e. adding curb extensions) while other choices will result in increased initial construction costs (i.e. raised crosswalk or wider road).* ● *Range of anticipated cost impact: -3 to +13 per cent*
Lifecycle costs	The updated Standards have the potential to increase or decrease the asset's lifecycle cost over 70 years based on decisions about how the local and collector road network is laid out and the cross-sections and other design features that are selected. The main drivers are the volume or quantity of public infrastructure and the quality to which they are constructed. ● *Range of anticipated lifecycle cost impact due to updated local and collector road cross-sections:* ○ *-7 to per cent for local roads* ○ *-4 to +10.6 per cent for collector roads* ● *Incorporating traffic calming elements during initial construction has a cost impact that varies based on the choices made when new assets and neighbourhoods are planned. Incorporating traffic calming elements into street design during initial construction not only benefits safety for all users and contributes to the goal of Vision Zero, it also reduces overall asset lifecycle costs because retrofitting these elements after initial construction is substantially more expensive.*
Operating costs	The addition of sidewalks on local roads in residential areas has no impact on snow and ice control costs for the City, as these activities are the responsibility of the adjacent property owner (Community Standards Bylaw 14600). Construction of shared pathways instead of sidewalks in situations where the City is expected to conduct snow and ice control substantially increases the City's operating costs. ● *The largest operating cost impact will be associated with the requirement for collector roads to include a shared pathway (where snow is cleared by the City) on one side and a sidewalk on the other side (as compared to a*

	sidewalk on both sides per previous Standards). ● *The updated Standards have also given careful consideration to snow storage requirements, such as boulevards, which directly influence roadway operations and user experience.* Further, the addition of traffic calming elements such as curb extensions or raised crosswalks can slow snow clearing operations and impact costs. ● *The range of anticipated annual cost impact is not included as part of the cost comparisons in this report as costs will vary depending on the amount of added and/or adjacent shared pathways.*
Maintenance costs	Updated standards directly influence operation and maintenance costs (i.e. pothole repair, crack sealing, routine shared pathway and sidewalk repairs, fixing trip hazards, etc). The updated Standards have the potential for significant savings in operations and maintenance costs annually and over the whole asset lifecycle. ● *Range of anticipated cost impact annually:* ○ *-9 to 0 per cent for local roads* ○ *-25.5 to 0 per cent for collector roads*
Safety programs	Initial construction utilizing the updated Standards will contribute to the City's goal of Vision Zero by creating safe and walkable communities and contribute to overall savings for the City through the elimination of the need for the City to retrofit streets post-construction. ● *Safe Mobility installs between 10 and 15 Street Labs per year, with an average initial cost of $80,000 per installation plus ongoing maintenance until the project's adaptable materials are replaced with permanent infrastructure or removed.* ● *Ongoing maintenance of Street Labs varies by neighbourhood; average cost of maintenance of installations is $3,000 annually.* ● *Retrofitting streets after initial construction costs significantly more than it would cost if done during initial construction.*

Overview

Transportation infrastructure forms a large part of the City's asset inventory. After roads are constructed, the City is responsible for the long term stewardship of these assets throughout their lifecycle. The updated Policy and Standards are grounded in the affordability of the assets throughout their lifecycles to support the City's long term financial sustainability. Updates to the Standards for these assets aim to provide a better balance between initial construction costs and long term operations and maintenance costs, while providing more livable neighbourhoods for Edmonton residents.

While some elements of the update to the Standards have higher initial costs, these costs are offset by lifecycle benefits or improved quality of life for Edmontonians.

Cost Analysis Context

Analysis was completed comparing the cost impacts of the updated Standards (2025) to the 2018 Standards, examining changes in initial capital construction costs and ongoing lifecycle, operating and maintenance, and snow and ice control costs. A summary of this analysis is included in Appendix A.

The updated Standards include a variety of cross-section options for local and collector roads, any of which could be used by a designer depending on the context of the area and the elements incorporated into the design of a roadway. Designers can also utilize a combination of cross-section options. If the designer faces a unique circumstance or wishes to take a custom approach, they can propose different cross-sections through the design exception process. Such circumstances have not been examined as part of this assessment.

For the purposes of this report, analysis focused on understanding the difference in costs between existing cross-sections (per 2018 Standards) and the updated cross-sections in the updated Standards (2025 Standards). Appendix B includes the existing and updated cross-sections utilized in the cost analysis.

The analysis focuses on local roads and collector roads. Arterial roadways were not included in this analysis as the scope of the update to the Standards did not include significant changes for arterial roads.

Initial Construction Costs

Initial construction costs were determined based on City of Edmonton construction unit rates for capital projects constructed in 2024. The analysis applied consistent rates and thus the impact of unit rates is not expected to influence the analysis. The analysis is meant to give an idea of the magnitude of

the impact but could vary depending on market conditions or specific decisions made in design or construction.

The updated Standards include new local road cross-sections, each of which provide options to incorporate all the required infrastructure above and below ground, accommodated with different levels of complexity. For example, referring to the cross-sections in Appendix A, if Local Road Option 2 (Figure 3) was chosen instead of Local Road Option 1 (Figure 2), additional effort in planning is required to accommodate some of the above ground utility cubicle requirements while maintaining 1.8 metre sidewalks and parking on both sides of the roadway. On local roads, every meter of space counts, as there are ever increasing competing demands for the right-of-way.

For collector road cross-sections, Collector Road Option 1 (Figure 6) would accommodate parking on one side and a new shared pathway instead of a sidewalk on one side within the existing rights-of-way widths. Collector Road Option 2 (Figure 7) enables parking to be provided on both sides at the trade off of additional right-of-way requirements leading to increased costs.

When comparing the updated Standards to the 2018 Standards (Base), the estimated cost impacts vary as shown below (depending on the cross-section selected):

- Local Roads: -3.0 to +2.8 per cent
- Collector Roads: +7.0 to +13.0 per cent

Table 1 - Initial Construction Cost Comparison

Local Roads		% Cost Difference between Cross-Sections
2018 Local Road Standard (Base)	Local Road 17m ROW[1], 9m Road, 1.8m Monowalks	n/a
Local Road Option 1	Local Road 17m ROW, 8m Road, 1.8m Blvd[2] walks	-3.0%
Local Road Option 2	Local Road 17m ROW, 9m Road, 1.8m Blvd walks	-0.3%
Local Road Option 3	Local Road 18m ROW, 9m Road, 1.8m Blvd walks	2.8%
Collector Roads		
2018 Collector Road Standard (Base)	Collector Road 20m ROW, 11.5m road, 1.8m Blvd walks	n/a
Collector Road Option 1	Collector Road 20m ROW, 9.3m road, 1.8m Blvd walk +3.0m Blvd	7.0%

[1] ROW - Right-of-way (width of the road right-of-way from property line to property line)
[2] Blvd - Boulevard (space between curb and sidewalk or pathway)

	SUP[3]	
Collector Road Option 2	Collector Road 21.5m ROW, 11.5m road, 1.8m Blvd walk +3.0m Blvd SUP	13.0%

In addition to the changes to the cross-sections, incorporating traffic calming elements during initial construction also has a cost impact. The cost impact varies depending on the choices made when new assets and new neighbourhoods are planned.

While there is an initial cost, these traffic calming elements support meeting 40 km/hr speed limits and enable walkability, accessibility and mode shift in neighbourhoods. Incorporating traffic calming elements into street design during initial construction not only benefits safety for all users and contributes to the goal of Vision Zero, it also reduces overall asset lifecycle costs because retrofitting these elements after initial construction is substantially more expensive.

To avoid the retroactive deployment of adaptable and retrofit measures along neighbourhood streets, the updated Standards require new neighbourhoods and neighbourhood renewal projects to be designed and constructed with these measures from the onset.

Table 2 - Traffic Calming

Traffic Calming Element	Initial Construction Cost[4]	Post Construction Retrofit Cost[5]
Raised Crossing (minor leg): Raised crosswalks are a vertical deflection consisting of two ramps and a flat crossing surface. The elevation of the raised crosswalk matches the walking or cycling approaches on either side of the roadway, creating a continuous level surface for people walking, wheeling or cycling.	$ 62,000	$135,000
Raised Crossing (mid-block): Raised mid-block crossings can be used to reduce the approach speed of people driving at a specific conflict location between intersections and increase awareness of a mid-block crossing. They may also be applied as part of a larger traffic calming strategy along a corridor.	$ 54,000	$125,000
Continuous Crossing: Continuous Crossings should be used along a corridor as a gateway treatment into a residential area and to clearly emphasize pedestrian and cyclist priority along a	$68,000	$148,000

[3] SUP - Shared Pathway (active transportation facility that accommodates walking, biking and rolling)
[4] Based on 2024 Unit Rates from City of Edmonton Capital Projects
[5] Based on 2024 Unit Rates from City of Edmonton Capital Projects

corridor through materials and grading. Continuous crossings minimize conflict between road users by encouraging better yielding behaviour and slower speeds entering and exiting a side street across a walking and or cycling facility.		
Raised Intersection: In locations that are suitable for raised crossings both along and across a corridor or where intersection operations are more complex, a raised intersection may be considered.	$325,000	$767,000
Curb Extensions: Curb extensions or bulb-outs extend the curb into or toward the Travelled Way at intersections and midblock crossings. Curb extensions are best located where there is existing or proposed on-street parking, corners with marked crosswalks in high activity areas, locations with demonstrated safety issues for people walking and wheeling, wide streets, school crosswalks, or mid-block crossings.	$ 9,500-$25,000[6]	$100,000
Speed Table: Speed humps and speed tables are raised traffic calming features which are placed between intersections to encourage slower vehicle travel. However, while both generally extend across the width of the travelled way and contain a similar height, speed humps differ from speed tables in having a shorter length, meaning a more abrupt change in elevation for passing vehicles.	$7,500	$7,500
Speed Hump	$3,000	$3,000
Traffic Diverter: A traffic diverter, also known as a directional diverter, can be used as a tool to lower traffic volumes using a roadway through a neighbourhood. It is most effective in a grid or hybrid grid type neighbourhood and is one of the tools that can be used to help support local street bikesways by allowing active transportation users to travel through but require vehicles to detour. A traffic diverter can also act as a two stage crossing for pedestrians and cyclists.	$44,000	$44,000

Lifecycle Costs

Analysis was completed to understand the impact of the updated standards on the lifecycle costs of transportation assets. The process was based on data from recently completed Integrated Infrastructure Management Plans (IIMP). The IIMP outlines typical interventions required over the life of an asset, such as a mill and overlay at 15 years, a mill and overlay with some concrete repair at 30 years, a

[6] Price can vary based on grading and existing topography which could add to drainage infrastructure costs

mill and overlay at 45 years, and a full reconstruction at 70 years for local and collector roadways.

Based on decisions related to the layout of the local and collector road network and the selected cross-sections, the updated design standards' impact on the asset's lifecycle cost over 70 years is broken down as follows:

Local Roads:

- -7.0 to 0.0 per cent for local roads
- Reduced lifecycle cost is possible if narrower roadway designs are used.

Collector Roads:

- -4.0 to +10.6 per cent for collector roads
- Increased lifecycle cost are due to the addition of shared pathway along the collectors

Table 3 - Lifecycle Cost Difference (Updated Standards vs 2018 Standard)

Local Roads		% Cost Difference between Cross-Sections
2018 Local Road Standard (Base)	Local Road 17m ROW[7], 9m Road, 1.8m Monowalks	n/a
Local Road Option 1	Local Road 17m ROW, 8m Road, 1.8m Blvd[8] walks	-7.0%
Local Road Option 2	Local Road 17m ROW, 9m Road, 1.8m Blvd walks	0.0%
Local Road Option 3	Local Road 18m ROW, 9m Road, 1.8m Blvd walks	0.0%
Collector Roads		
2018 Collector Road Standard (Base)	Collector Road 20m ROW, 11.5m road, 1.8m Blvd walks	n/a
Collector Road Option 1	Collector Road 20m ROW, 9.3m road, 1.8m Blvd walk +3.0m Blvd SUP[9]	-4.0%
Collector Road Option 2	Collector Road 21.5m ROW, 11.5m road, 1.8m Blvd walk +3.0m Blvd SUP	10.6%

[7] ROW - Right-of-way (width of the road right-of-way from property line to property line)
[8] Blvd - Boulevard (space between curb and sidewalk or pathway)
[9] SUP - Shared Pathway (active transportation facility that accommodates walking, biking and rolling)

Operating Costs

Snow and ice control is an important factor in ensuring Edmonton's infrastructure is usable for all seasons. Snow and ice control for sidewalks is the responsibility of the adjacent homeowners. As the City does not perform snow and ice control activities in such contexts, no anticipated impacts are expected.

The larger impact on snow and ice control in the updated Standards is associated with the requirement for new collector roads to include a shared pathway on one side and a sidewalk on the other (compared to the former requirement for a sidewalk on both sides).

While snow and ice control for sidewalks is generally the responsibility of adjacent property owners, shared pathways are more complex, requiring increased involvement from the City in some snow and ice control activities in some circumstances. For example:

- For new infrastructure or an existing sidewalk that was not previously cleared by the City, adding this inventory would result in a net new increase in snow and ice control costs for that area. Additional snow and ice control equipment and personnel would be needed for every additional 30 km of added inventory.
- In circumstances where the City performs snow and ice control for an existing sidewalk and the sidewalk is converted to a shared pathway, the additional width results in a net new snow and ice control cost increase due to the add on one side. Additional snow and ice control equipment and personnel would be needed for every additional 60 km.

Maintenance Costs

Updated standards directly influence ongoing maintenance costs. Maintenance activities are required to maintain an asset in between renewal projects and could include, but are not limited to, pothole repair, crack sealing, spot shared pathway and sidewalk repairs, fixing trip hazards, etc.

Based on decisions related to the layout of the local and collector road network and the selected cross-sections, the updated design standards' impact on the maintenance costs in a single year is estimated to range from -25.5 per cent to +0.0 per cent, broken down as follows:

Local Roads:

- -9.0 to +0.0 per cent for local roads

Collector Roads:

- -25.5 to +0.0 per cent for collector roads

Table 4 - Maintenance Cost Comparison

	Local Roads	% Cost Difference between Cross-Sections
2018 Local Road Standard (Base)	Local Road 17m ROW[10], 9m Road, 1.8m Monowalks	n/a
Local Road Option 1	Local Road 17m ROW, 8m Road, 1.8m Blvd[11] walks	-2.2%
Local Road Option 2	Local Road 17m ROW, 9m Road, 1.8m Blvd walks	0.0%
Local Road Option 3	Local Road 18m ROW, 9m Road, 1.8m Blvd walks	0.0%
	Collector Roads	
2018 Collector Road Standard (Base)	Collector Road 20m ROW, 11.5m road, 1.8m Blvd walks	n/a
Collector Road Option 1	Collector Road 20m ROW, 9.3m road, 1.8m Blvd walk +3.0m Blvd SUP[12]	-25.5%
Collector Road Option 2	Collector Road 21.5m ROW, 11.5m road, 1.8m Blvd walk +3.0m Blvd SUP	-12.5%

Safety Programs

The Street Lab program enables neighbourhood traffic calming improvements outside our Neighbourhood Renewal program. Over half (61 per cent) of Street Lab installation requests made by Edmontonians in 2024 are from newer developments and interest in this program continues to be strong across all parts of our city.

Many other Safe Mobility programs, such as Safe Crossings, Safe Routes to School and Speed Humps and Tables also make improvements in neighbourhood spaces that have become standard and expected by the public. Integrating safety features such as curb extensions, traffic diverters and raised crossings into the Standards will positively impact this issue, reducing the need for this retrofit work in the future.

Depending on the scope and scale of the project, Street Lab installation initially costs approximately $80,000, plus ongoing maintenance until the project's adaptable materials are replaced with permanent infrastructure or removed.

[10] ROW - Right-of-way (width of the road right-of-way from property line to property line)
[11] Blvd - Boulevard (space between curb and sidewalk or pathway)
[12] SUP - Shared Pathway (active transportation facility that accommodates walking, biking and rolling)

The average annual maintenance cost annually for each Street Lab is approximately $3,000.

Summary

Careful consideration has been given to avoid a blanket requirement for design features such as curb extensions; context is being provided as to where they will be required. Overall, the changes to the standards are meant to provide clear expectations of traffic calming infrastructure for all new developments. Similarly, the expectations for those constructing roads in new developments are aligned with expectations for infrastructure that undergoes reconstruction by the City. Designers still have flexibility through the design exception process if they prefer to do more or to adjust their approach.

Appendix A - Cost Analysis Summary

Cross-Sections	Cross-Section Features				% Cost Difference between Cross-Sections		
Local Roads	Right of Way	Carriageway	Sidewalk, Shared Pathway	Parking	Initial Construction	Lifecycle	Operations & Maintenance
2018 Local Road Standard (Base Case)	17m	9m	1.8m mono, both sides	Both Sides	n/a	n/a	n/a
Local Road Option 1	17m	8m	1.8m blvd, both sides	One Side	-3.0%	-7.0%	-2.2%
Local Road Option 2	17m	9m	1.8m blvd, both sides	Both Sides	-0.3%	0.0%	0.0%
Local Road Option 3	18m	9m	1.8m blvd, both sides	Both Sides	2.8%	0.0%	0.0%
Collector Roads							
2018 Collector Road Standard (Base Case)	20m	11.5m	1.8m blvd, both sides	Both Sides	n/a	n/a	n/a
Collector Road Option 1	20m	9.3m	1.8m blvd, 3.0m shared pathway	One Side	7.0%	-4.0%	-25.5%
Collector Road Option 2	21.5m	11.5m	1.8m blvd, 3.0m shared pathway	Both Sides	13.0%	10.6%	-12.5%

Appendix B - Cross-Sections

Figure 1: 2018 Local Road Standard (Base) - 17m ROW, 9m Road with 1.8m Monowalks

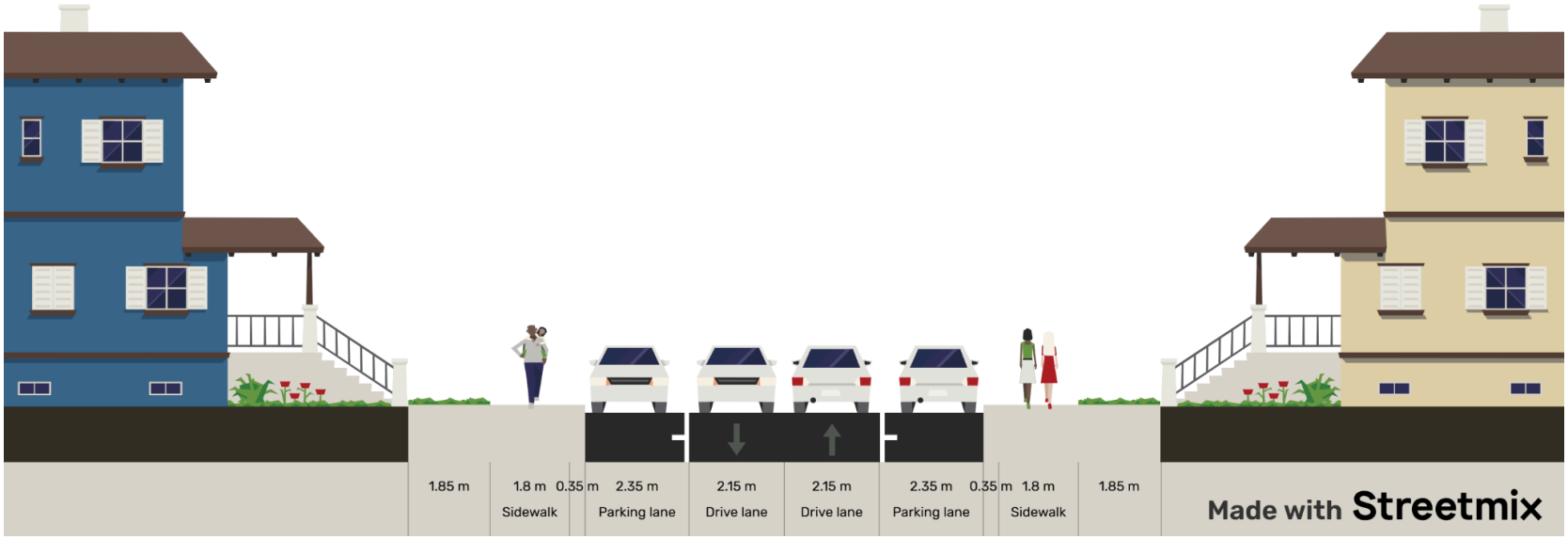


Figure 2: Local Road Option 1 - 17m ROW, 8m Road with 1.8m Boulevard walks

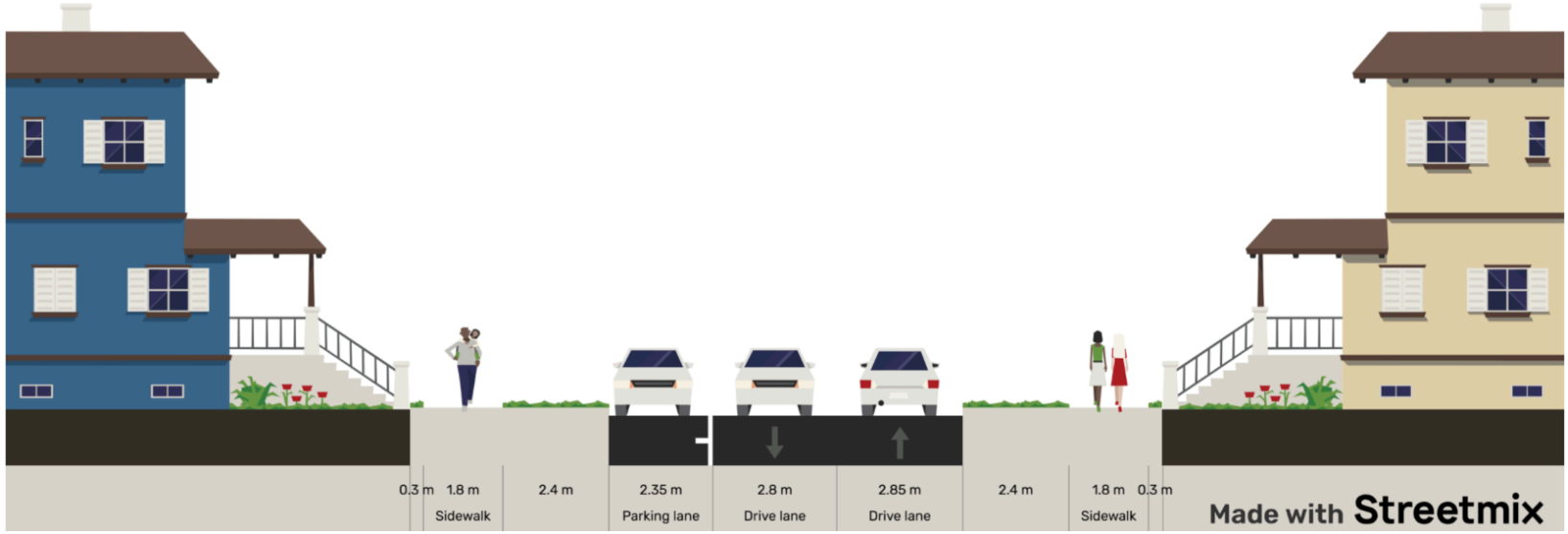


Figure 3: Local Road Option 2 - 17m ROW, 9m Road with 1.8m Boulevard walks

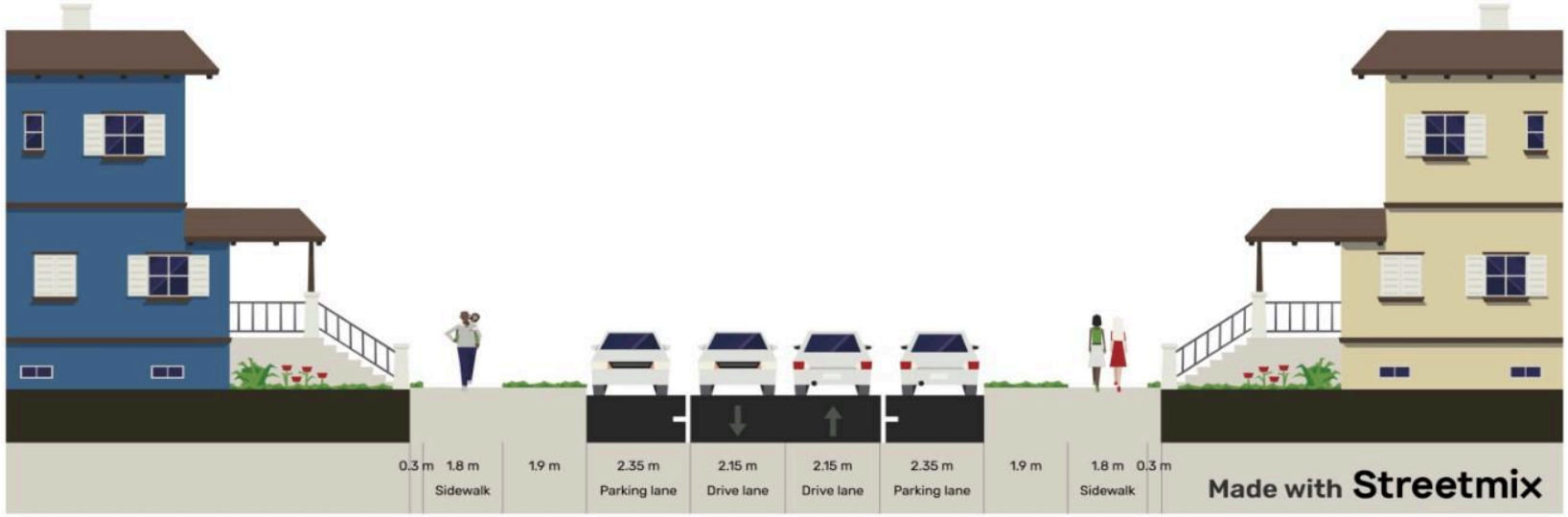


Figure 4: Local Road Option 3 - 18m ROW, 9m Road with 1.8m Boulevard walks

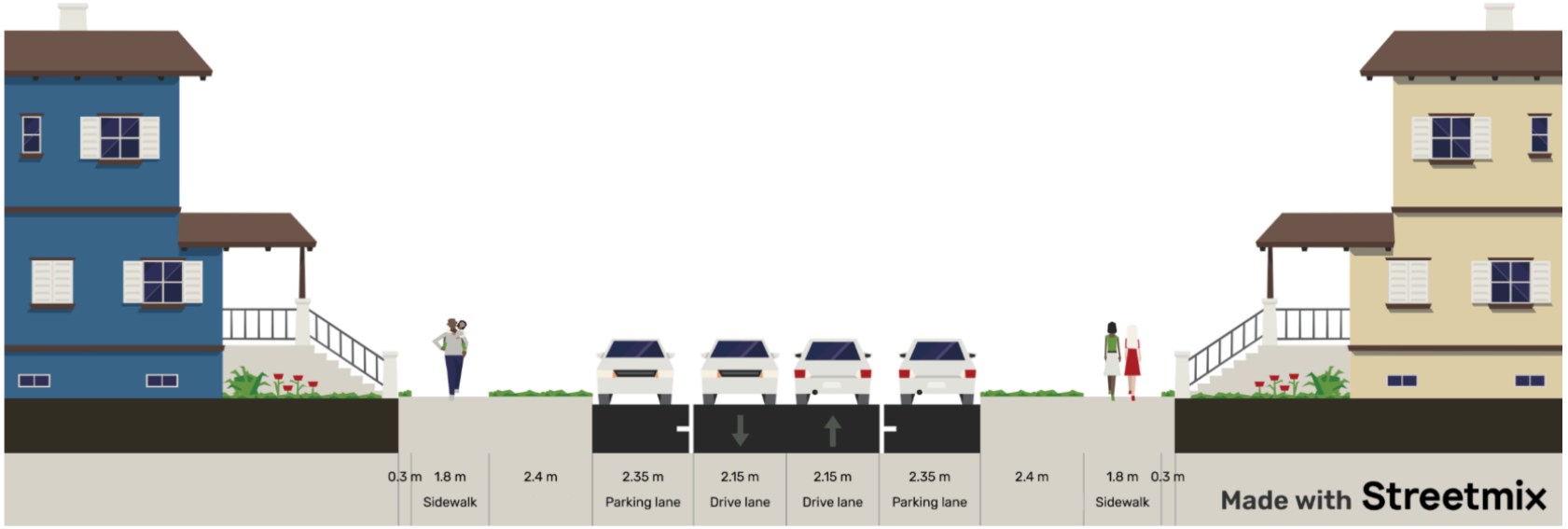


Figure 5: 2018 Collector Road Standard (Base) - 20m ROW, 11.5m Road with 1.8m Boulevard walks

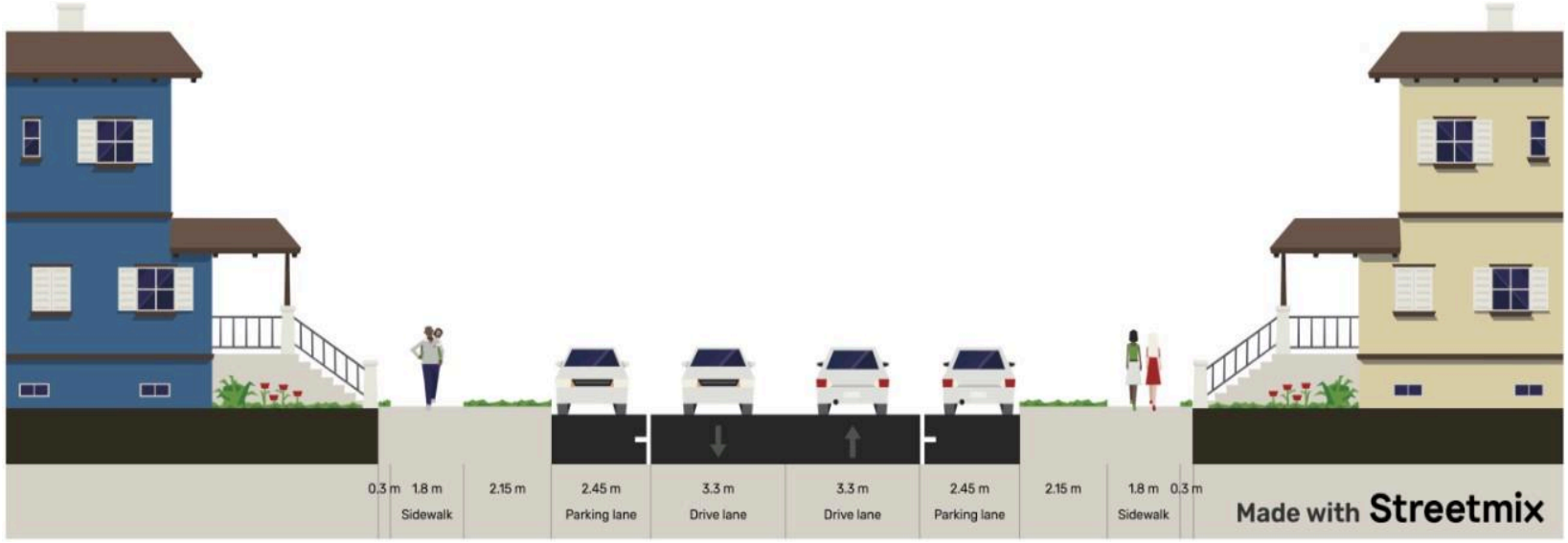


Figure 6: Collector Road Option 1 - 20m ROW, 9.3m Road with 1.8m Boulevard walk and 3.0m Boulevard Shared Pathway

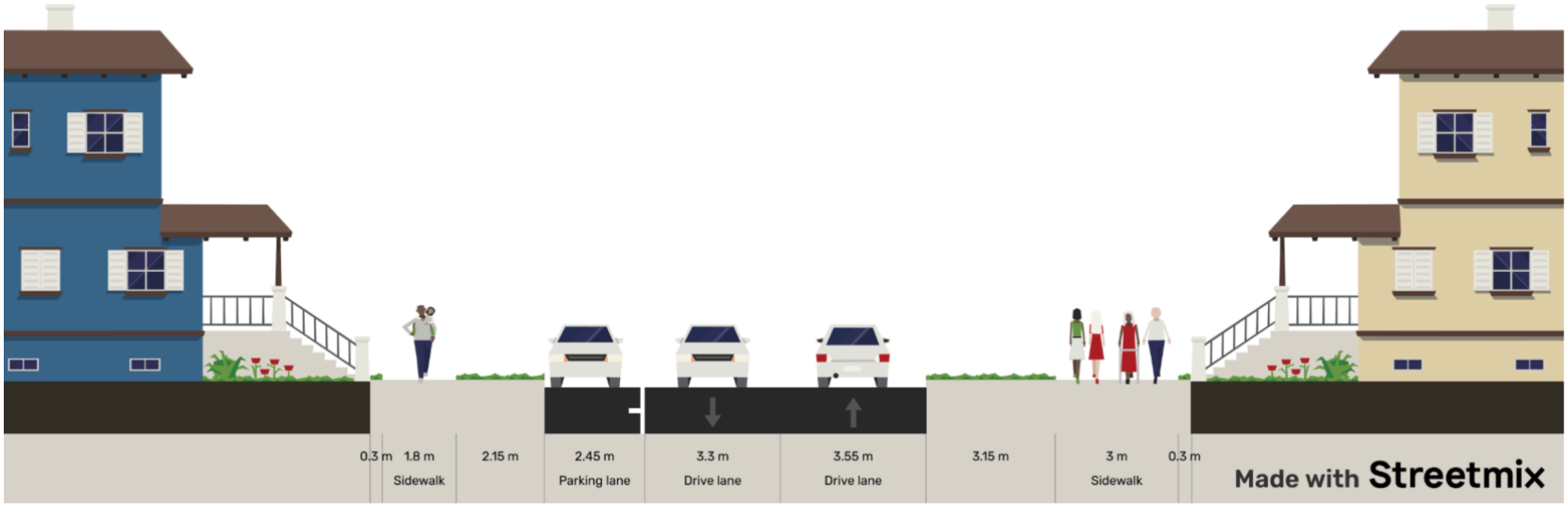


Figure 7: Collector Road Option 2 - 21.5m ROW, 11.5m Road with 1.8m Boulevard walk and 3.0m Boulevard Shared Pathway