

Introduction

Transit stops are the gateways to a city's transit system. Thus, it is important that transit stops be located and designed that are safe, accessible, easily identifiable, and provide a level of comfort for its passengers.

This guideline presents the considerations for locating and designing bus stops within the context of Owen Sound. The purpose of the guideline is to provide clear directions on identifying the different components of a transit stop, how the stop should be located, and how specific amenities should be placed at stops.



The guidelines provide a more consistent and transparent process for designing bus stops and how bus stop amenities are provided. The application of these guidelines can help to provide a consistent experience for passengers (particularly important to persons with disabilities) as they can better manage boarding and alighting, improve rider confidence in using the system, and ultimately help to attract more riders.

While providing a consistent transit stop experience is important, the application of these guidelines need to be in context of the stop's surrounding area and should be sensitive to local area needs where required. Thus, it should be recognized that these are by definition guidelines aimed to provide a clear process for bus stop location, design and amenity provision. The provisions in these guidelines are not to be rigidly followed.

The guideline will structured as follows:

- Identifying bus stop locations
- Classifying the various stop types, and
- Applying typical designs for each stop type

Bus stop location and spacing

Locating bus stops

Local transit services for small urban areas such as Owen Sound typically plan for services that cover residents and workers within an average 400-metre walking distances to bus stops. To support this level of service coverage, local stops should generally be placed between 200 and 250 metres apart.

It is noted that strictly applying the stop distance guidelines for every bus stop would be a difficult task, as the guideline needs to adapt to local environment and safety considerations. To maximize pedestrian access and minimize walking distances, bus stops should be located in

highly visible locations along more well-travelled roads and corridors, particularly at points where it intersects with other roads.

The following sections explore some of the specific conditions to consider when locating bus stops.

Local environment considerations

Bus stops should be located next to major transit generators, such as hospitals, social services, seniors' residences, large employers, higher-density residential developments, retail uses, city facilities (e.g. community centres), as well as secondary and post-secondary schools.

Stops should also be placed where transit services intersect, as a means to accommodate passenger transfers. In the context of Owen Sound however, given the structure of the network and the coordination of schedules, it is most likely that passengers will transfer at the terminal.



In Owen Sound, a number of routes serve lower-density residential neighbourhoods. In these neighborhoods, preference should be made to locate stops between property frontages or where possible, on the perpendicular side of a residential frontage to minimize obstructions the stop may have on a residential property—this point is even more important when the proposed stop will include a shelter. At the same time however, stops should not be removed simply to mitigate community complaints related to nuisances generated by the stop—instead, ways need to be identified to address the identified concerns.

Busier arterial streets in Owen Sound generally include sidewalks on both sides of the roadway, however, quieter local streets tend to either have sidewalks only one side of the road or have no sidewalk at all. Bus stops should be located where it connects to the existing sidewalk network where at all possible.

To ensure safe and proper passenger boarding and alighting, on-street parking should be prohibited 18 metres in front of and 30 metres behind a bus stop.

Safety considerations

There are a number of conditions to meet to ensure safety of passengers and vehicle operations.

Bus stop should be located to provide adequate sight distance so that both bus operators and passengers at a bus stop are visible to each other. This allows not only the operator to more safely reduce speed to serve the stop, but also provides time for the waiting passenger to respond and be prepared to board the vehicle. Bus stop areas should be well lit to ensure operator-passenger visibility at night.

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Stops should also be located where there is access to safe street crossing. Previously it was identified that stops should be located at intersections where appropriate to maximize pedestrian access. Along particularly busier corridors with higher vehicle volumes and wider right-of-ways (two lanes in each direction), it is preferred that stops be located at controlled intersections (i.e. at signalized or all-way stop intersections).

Owen Sound holds unique terrain features where the Downtown has a low elevation with fairly dramatic terrain inclines to the east and west. Streets that accommodate transit service with these notable changes in elevation will require special consideration when identifying bus stop locations. Specific streets include:

- 8th Street (near 8th Avenue East and 6th Avenue West)
- 10th Street (near 6th Avenue East and 4th Avenue West), and
- 2nd Avenue West (near Harrison Park)
- 15th Street East (between 4th Street and 6th Street)



Locating a bus stop along these sloped areas is discouraged not only to avoid buses and other vehicles from stopping at these more dangerous locations, but also to reduce the degree of passengers needing to cross the roadway to access bus services. To support improved universal access, an accessible bus stop area should be relatively flat and should not have grades greater than 2 per cent both parallel and perpendicular to the curb.

Transit stop classes

There are generally two main types of cross sections in the City, urban and semi-urban, which are summarized in Table 1.

Table 1 Main cross-section types in Owen Sound



Urban cross-section
Fully paved surface, curbs and gutters, boulevard, sidewalk on at least one side of the roadway

Semi-urban cross-section
Paved surface with gravel shoulder, no curbs or gutters (sometimes swale) and sidewalk limited to one side or absent

The distinction between an urban and semi-urban cross-section is relevant because each require a unique set of treatments for constructing bus stops. However, urban street environment provides better base for establishing stop locations in terms of:

- sidewalk connectivity into adjacent neighbourhoods
- connection between street and sidewalk
- waiting area surfaces and space
- street lighting

Semi-urban settings typically lack at least one of these conditions. For example, urban cross-sections include a fully paved road surface with curbs—thus concrete bus pads would be needed to facilitate accessible boardings and alightings. However, given that semi-urban cross-sections include a gravel shoulder with no curbs, providing an elevated concrete platform would be required to offer accessible boardings and alightings. (In both scenarios however, specific assessments will still be required to ensure persons with disabilities have the adequate access between the bus stop and the larger surrounding community).

Aside from urban and semi-urban cross-sections, there are also considerations about the degree of bus stop amenities to include at each stop. Based on the scale and extent of Owen Sound’s transit network, three stop types have been identified: basic, enhanced, and shelter.

The three stop types are classified based on passenger activity levels identified on Owen Sound stop-by-stop ridership accounts. Table 2 summarizes the stop types and the amenities that would be included.

For all stop types, accessible bus stops should be provided where possible and appropriate given the local environmental conditions (e.g. space restrictions, slope issues). It is also important to consider the ‘accessible island’ effect whereby a stop may be accessible, but the connections to the larger pedestrian network is not available.

Table 2 Stop type definitions and proposed amenities

Stop Type	Criteria	Amenities included
Basic	<ul style="list-style-type: none"> All other locations Majority of stops in the network will be defined as basic stops 	<ul style="list-style-type: none"> Stop identification sign Static schedule information at selected locations
Enhanced	<ul style="list-style-type: none"> Medium volume boarding activity Adequate space for safe location of bench and/or other amenities 	<ul style="list-style-type: none"> Stop identification sign Static schedule information at selected locations Bench and/or improved waiting area Bench type and size may vary based on available space Improved sidewalk access
Shelter	<ul style="list-style-type: none"> Highest volume boarding activity Near major generators (apartments, retail, hospital, city facilities, etc.) Adequate space for safe location of shelter 	<ul style="list-style-type: none"> Stop identification sign Static schedule information Accessible shelter with bench Other amenities as desired

Transit stop designs

Basic stop design criteria

Basic stops will include the rudimentary elements of a bus stop, including a bus stop concrete pad, stop identification sign, and static schedule information at selected locations. This section will describe the design details of these three elements, based on Ontario Public Transit Association’s (OPTA) Design Guidelines for OPTA Accessible Transit Stops and Facilities in Ontario (2011), with some excerpts from the Metro Transit Universal Accessibility Plan (2011) and the York Region Transit Coordinated Street Furniture Urban Design Guidelines (2009).

Bus pad

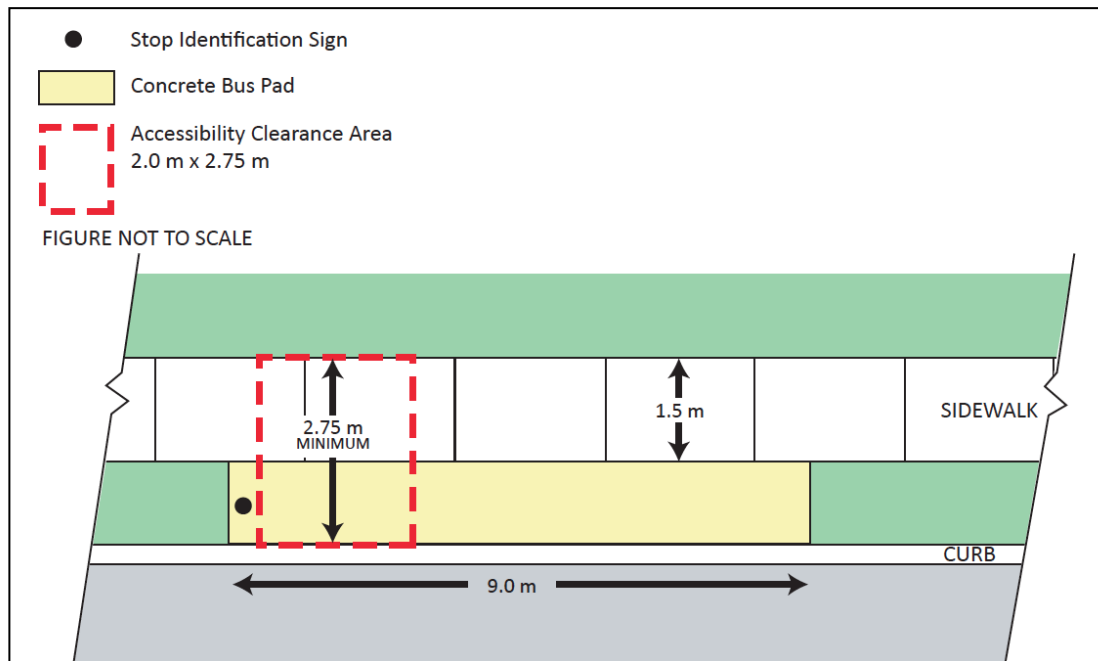
A bus pad is the bus stop area that provides the required surface (most typically a concrete surface) to facilitate passenger boarding, alighting and waiting. A standard bus pad should be

constructed with a minimum length of 9.0 metres to accommodate boarding and alighting via the front and rear doors and a clear 2.0 metre width parallel to the vehicle roadway, to the maximum extent allowed by legal or site constraints.

It is noted that the City of Owen Sound plans to purchase a fleet of smaller vehicles that would not have rear door access. Despite the use of this smaller vehicle, it is recommended that bus stops still be designed to accommodate larger conventional buses to develop a more 'future proof' system. Figure 1 illustrates the preferred concept of a basic stop.

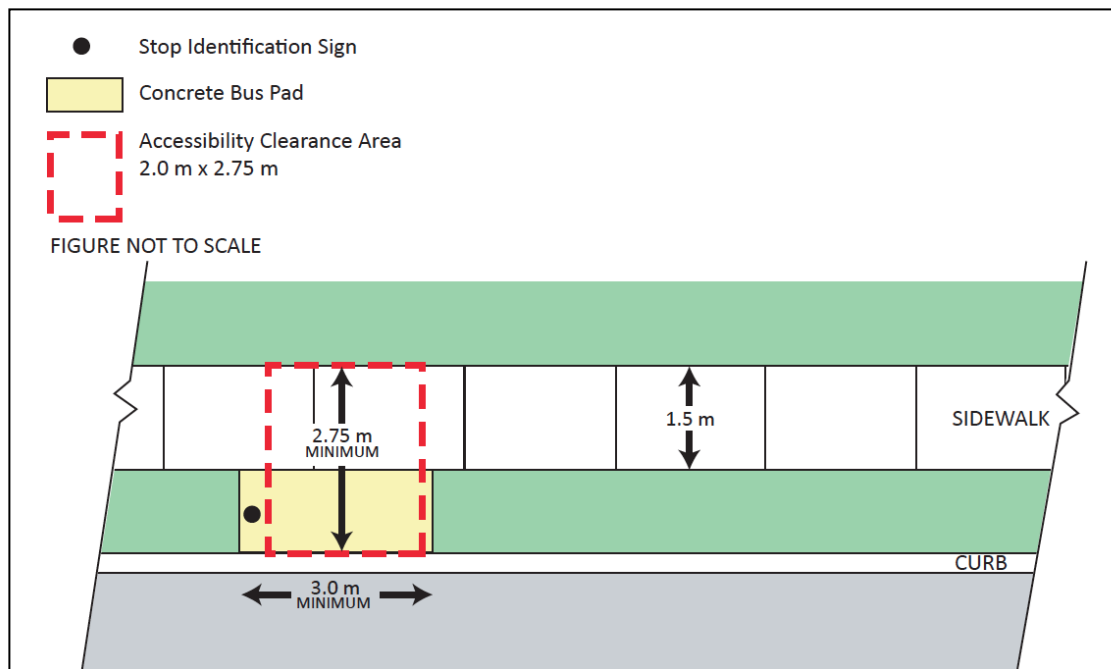
An accessibility clearance area is established to allow for the majority of persons with scooters and wheelchairs to navigate and for the boarding ramp to deploy on equipped vehicles. This must be clear of all obstacles and be connected to streets and sidewalks. The accessibility clearance area has a minimum length (the distance parallel to the roadway) of 2.0 metres and a depth (the perpendicular distance from the edge of the roadway) of at least 2.75 metres.

Figure 1 Basic stop with preferred stop area



There may be community, environmental, or space constraints where a standard bus pad cannot be constructed. In these cases, hard surfaced landings should be provided that line up with at least the front doors for passenger boarding and alighting. To accommodate the needed accessibility clearance, these bus pads should provide a minimum length of 3.0 metres and a depth of at least 2.75 metres. Figure 2 shows a concept of a basic stop with minimum pad area.

Figure 2 Basic Stop with minimum pad area



Stop identification sign

Stop identification pole and sign are the primary way of identifying a stop. Thus, they need to be clearly visible.

From the stop inventory assessment, it was noted that some bus stop signs were affixed on light standards or utility poles that were a far distance away from the roadside—making it difficult to spot for both passengers and transit operators. Thus, the stop pole should be located 0.45 metres from the back of the face of the curb.

Additionally, bus stop signs in the current network are only affixed on one side of the pole—the side that can only be seen by vehicles in the direction of travel. It is recommended that bus stop signs also be affixed on both sides of the bus pole or designed to provide 360-degree visibility to ensure greater visibility of the bus stop for passengers.

The stop identification pole should be located at a standard or uniform position at all stops to help serve as a point of reference for those with disabilities, particularly the visually impaired. The design of each pole and sign should be consistent throughout the transit system as to provide a strong visual identity for the system and to provide clarity to transit users.

Enhanced stop design criteria

Where additional amenities are desired or appropriate, the stop may be designated as an enhanced stop. These stops should have all of the design criteria as a basic stop, with the following considerations for amenities. Stops may be designated for enhanced treatments in response to specific customer needs and may include seating and customer information.

Seating and benches

Seating and benches should generally have a seating or bench surface with a height of 0.43 metres to 0.50 metres above the surrounding grade and a depth of be 0.46 metres to 0.51 metres. The length of the bench should have a minimum length of 1.1 metres to comfortably accommodate two passengers. The bench itself should have a back rest and provide one arm rest opposite of the wheeled mobility device parking space.

Customer information

Greater customer information should be included at enhanced stops, which provide the name or location of the stop should be prominently displayed at each stop. The stop could identify the intersecting street name for stops at intersections. For midblock stops, name of major ridership generators or address of an adjacent location could be used. Additionally, the static schedule of bus arrival times should be affixed to the stop identification pole.

Other bus stop amenities

Other amenities are commonly located at bus stops, though careful attention is required to ensure that the placement of these amenities does not become an obstruction for persons with disabilities. Other amenities include: garbage and recycling receptacles, newspaper vending machines, and bicycle racks.

Shelter stop design criteria

Where shelters are desired or appropriate, the stop may be designated as a shelter stop. Shelters should meet the design criteria as a basic stop, along with the design considerations for amenities as described for enhanced stops. In addition, shelters provided at these locations should meet the following criteria.

Shelters should be installed or positioned as to provide an accessible exterior route from the shelter to adjacent sidewalks, streets, or pedestrian paths and the passenger zone. It should have a minimum clear floor area that is 1.0 metres wide and 1.25 metres deep entirely within the perimeter of the shelter to accommodate a wheelchair or a scooter. Figure 3 and Figure 4 shows how a shelter is placed on a street with and without a boulevard.

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Figure 3 Shelter stop with boulevard

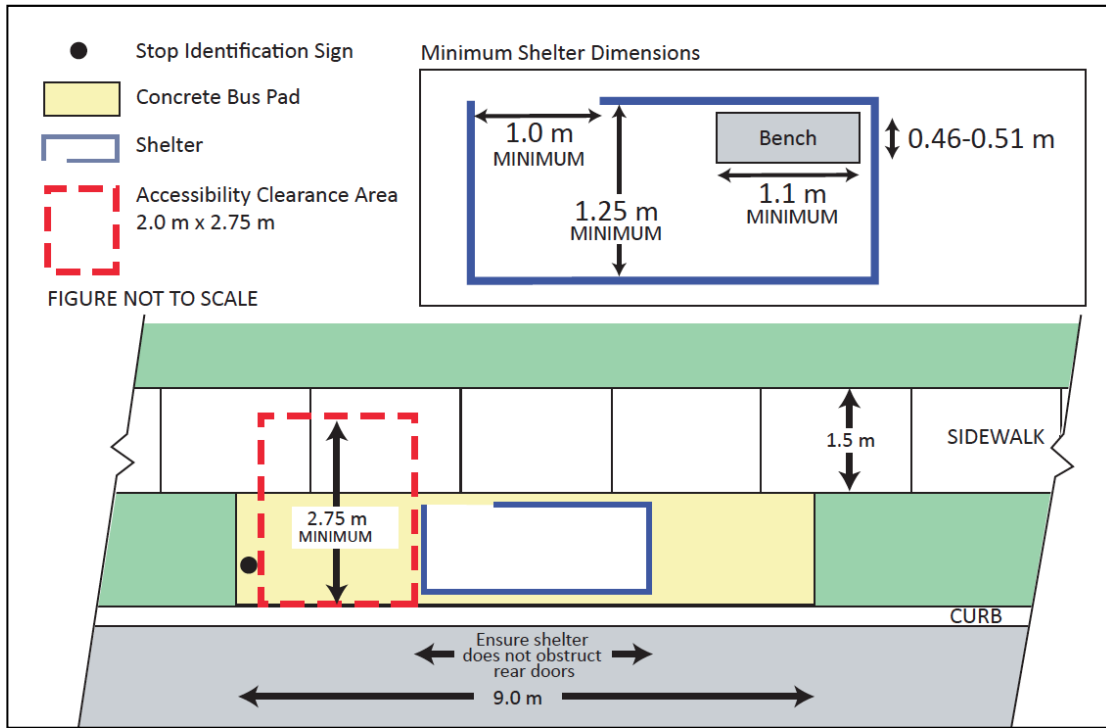
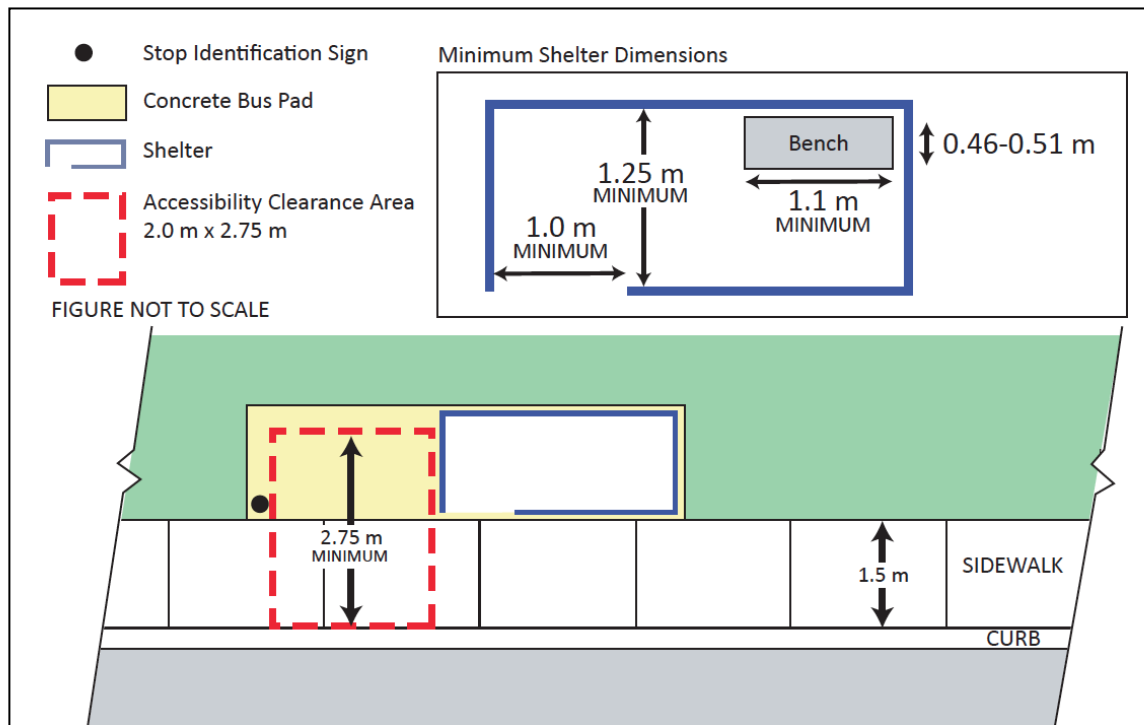


Figure 4 Shelter stop without boulevard



Within the shelter, it should provide a lighting level of not less than 100 lux, which could be provided by adjacent street lighting or lighting integrated into the shelter. Shelters should be designed to have transparent sides for at least three sides for visibility and security. Glass panels should be marked with a distinctive pattern such as horizontal contrasting strips to indicate the presence of the panels.

To prevent restricted sightlines for passengers inside a bus shelter, any shelters with advertising panels must be placed downstream of the traffic flow.

Where possible system maps and general system information should be posted in all bus shelters. Maps and schedules should be easily readable by persons using mobility devices and, to the greatest extent possible, persons with visual impairments.

Semi-urban setting design criteria

In semi-urban cross-section settings where the road cross-section does not include a curb and sidewalks access is limited or non-existent, the urban criteria should still be applied to the extent possible with some distinct considerations described in the section.

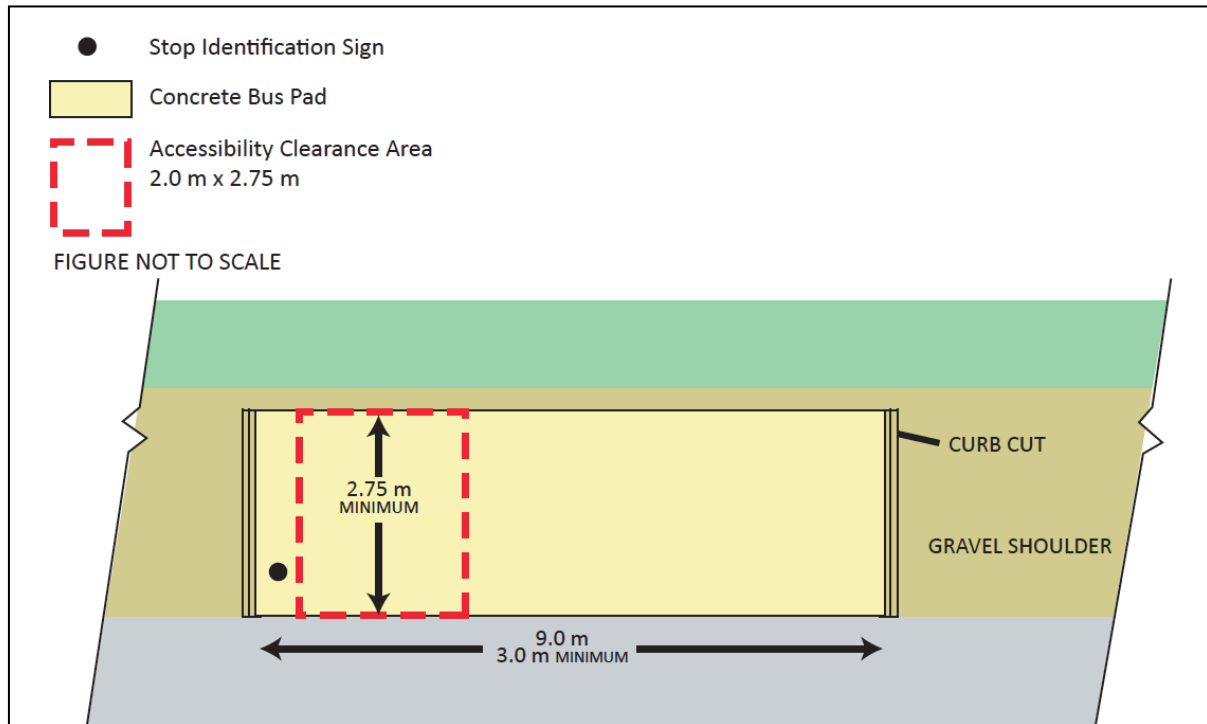
As discussed previously (see Paragraph 3.3), the passenger boarding and alighting area should comprise a raised surface providing access to at least the front door boarding area. Curb cuts at both upstream and downstream ends of the hard surface should be provided and the gravel shoulder in the area should be compacted and stabilized.

To provide an accessible stop (similar to what is proposed for bus pads with site constraints, as discussed in Paragraph 4.5) , the bus pad surface should provide a minimum length of 3.0

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metres and a depth of at least 2.75 metres, excluding the additional area needed for curb cuts. The buspad area should be ideally longer to provide increased passenger circulation space on the hard surface. Figure 5 shows a basic stop for a semi-urban cross-section.

Figure 5 Basic Stop (Semi-urban)



Where this design is used for enhanced stop amenities or a shelter, all additional amenities should be accommodated by expanding on the minimum dimensions identified above. These amenities should be located behind the bus pad, and not restrict the dimensions as shown.

The hard surface of the stop can comprise of pavers in a precast frame, asphalt in a timber frame or similar.

Transit stops adjacent to ditches or swales should incorporate direct, level connections leading from the sidewalk to the edge of the curb where applicable.