

Roads

Master Specification

RD-PT-D1 Bus Operational Guidelines

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RD-PT-D1 Bus Operational Guidelines

1 Bus Stopping Areas

General

- 1.1 Bus stopping areas are an important interface between buses, passengers, adjacent vehicular traffic and the general public and as such are the first point of contact between bus passengers and the Adelaide Metro public transport network. The spacing, location and design of the bus stop including any provided passenger shelter significantly influence the operational efficiency of not only the bus service but also that of the local road network within this immediate area.
- 1.2 The location of bus stops is a complex matter, involving legal requirements, safety issues, kerb length and height requirements, stop spacing, residents', local government and Transport Planning desires and requirements. Some residents are particularly sensitive to the location of bus stops within their street. Great care must be taken in relation to the placement bus stopping areas.
- 1.3 The following headings summarise the guidelines available for the setup of passenger waiting areas and requirements of public transport vehicles currently being operated on the Adelaide Metro Network in this document:
 - a) traffic management;
 - b) bus stop waiting area;
 - c) passenger shelter; and
 - d) bus stop signage.
- 1.4 These Guidelines are provided in the interests of ensuring that the best possible public transport service is provided in connection with a safe, effective and efficient location and erection of Bus Stops and Passenger Shelters.
- 1.5 These guidelines are based on the Disability Standards for Accessible Public Transport 2002 made under the Disability Discrimination Act 1992 (DDA), the Australian Road Rules 1999 (ARR), Australian Standard AS 1742.2-2009, AS2890.1-1993, AS/NZS 1158.1.3:1997, the Guide to Engineering Practice Part 5, Intersections at Grade and current Public Transport Services Division (PTOP) vehicle operational requirements.

Responsibility

- 1.6 The Passenger Transport Act was proclaimed on 1 July 1994. The Act created the Passenger Transport Board (PTB), which was responsible for all land-based passenger transport services operating for a "fare or other consideration" in South Australia. This was the first time in South Australia that a single government agency had been responsible for overseeing all forms of land-based passenger transport. The Act repealed the metropolitan Taxi-Cab Act 1956 & the State Transport Authority Act 1974. The Board was solely responsible for the establishment of bus stopping places where public transport passenger vehicles may take up or set down passengers.
- 1.7 The PTB was replaced on 1 January 2004 with the Office of Public Transport (OPT) and most recently with the Public Transport Services Division (PTOP) of DPTI. The Minister of Transport has delegated the power of responsibility for the provision of public transport services and establishment of bus stopping locations under the amended Passenger Transport Act 1994 from 1 January 2004. The PTOP has sole responsibility for establishment and relocation of bus stopping locations in South Australia, under the Passenger Transport Act of 1994, and for the consultation process with any relevant road maintenance authority.
- 1.8 Service Contractors to the PTOP will be responsible for the erection of detour signage on the Contractor's own routes (outside of the City of Adelaide and interchange locations) where bus stops are not shared by other Operators, subject to the standards set out in their Contract.
- 1.9 Consistent with a co-operative relationship between PTOP and Contractors, bus stop management, in its broadest sense, must be managed to provide the best services for customers.

Bus Stop Styles

- 1.10 The design of bus stop signs shall at a minimum incorporate:
 - a) a pictogram;
 - b) an information plate;
 - c) words stating “Stop” followed by the:
 - i) bus stop number; and
 - ii) the Adelaide Metro logo.
- 1.11 Signs should be set at a minimum of 2 metres above the path of travel.
- 1.12 Bus stop poles shall have a minimum of 30% luminance contrast with background.
- 1.13 Bus stop signage is generally characterised by black lettering on a bright yellow background but other colours are also available (Go Zone, Roam Zone). This uniformity makes the bus stop signs easily identifiable.
- 1.14 Bus Stop signage indicates where buses will stop and acts as a valuable advertising medium in that it advises that a bus service actually operates along that street.
- 1.15 The bus stop numbering system in Adelaide, which generally radiates outward from the City is useful for passengers, drivers, and maintenance workers to identify an exact location along a particular road or street.
- 1.16 Uniformity in bus stop sign design to ensure that passengers can travel throughout Adelaide recognising a unified signage does not prevent Contractors from establishing an additional “identity” in Service Areas (refer to Customer service and Style Guide, Adelaide Metro Ticket System).

2 Council & Community Liaison

Bus Stop Responsibility

- 2.1 PTOP is responsible for the location, installation and maintenance of all bus stops.
- 2.2 The Council is responsible for the footpath area of all public roads, including street furniture.

Council & Community Liaison Process

- 2.3 The location and / or relocation of a bus stop should be discussed, and if possible agreed, between authorised PTOP and Council officers prior to the relocation. Where bus stops are to be placed upon private land, permission of the landowner and / or lessee must be obtained in writing.
- 2.4 The normal process involves:
 - a) PTOP proposal presented to council;
 - b) Council to provide comments on proposal back to PTOP within 28 days;
 - c) PTOP and Council conduct further discussion if required (this can also be a starting point if any enquiry to relocate a bus stop has come from an external source, i.e. Council, resident, etc.);
 - d) PTOP and Council finalise proposal agreement;
 - e) Council to advise local residents / land owners of PTOP proposal;
 - f) PTOP to allow up to a further 28 days for local residents / land owners for any comments; and
 - g) upon completion of this stage, PTOP to commence rollout of proposal.
- 2.5 The Council is responsible for the footpath area of all public roads and needs to be involved in ensuring that alighting areas are of sufficient height, adequately paved and free of obstruction to permit passengers with limited mobility and the elderly to safely board and alight.

- 2.6 All passenger transport services must now comply with the Disability Standards for Accessible Public Transport 2002, therefore liaison with council is required to ensure that bus stops are suitable for facilitating people who use wheelchairs so they are able to board and alight buses.

Bus Zone Signage

- 2.7 Councils are normally only asked to approve bus zones where there is likely to be a demand for cars parking too close to the stop (e.g. outside shops, schools, etc.). The length of the bus zone is determined by the PTOP and is based on the type and frequency of buses arriving at a particular location, otherwise 20 metres on the approach and 10 metres on the departure side will apply as per the Australian Road Rules 1992.

Good Neighbour Considerations

- 2.8 Bus stops are preferably located adjacent to side fences rather than property frontages, unless this will result in buses stopping immediately adjacent to house windows.
- 2.9 Bus stops should preferably be located away from house front doors and bedroom windows.
- 2.10 The bus stop post is preferably located at property boundaries, where this can be accommodated in relation to other obstructions.
- 2.11 New bus stops are preferably not located immediately adjacent to street-side impulse buying shops (delicatessens, newsagents, fast food, etc.); i.e. where there is no adjacent off-street parking. Where bus stops are already so located and complaints are not received, there is no requirement to relocate them; as such locations can assist passengers (shelter, security, etc.).

3 Traffic Management Considerations

Bus Stops in General

- 3.1 To provide a balance between passenger walking, accessibility and average vehicle speeds, Stops on Standard Services in populated areas are normally located on the basis of approximately 2-3 bus stops per kilometre or one, on average, every 400-500 metres. Spacing in general may vary depending on locations of pedestrian access points, aged citizens' complexes, shopping centres and carriageway gradient, etc. Spacing of stops up / down hilly gradients is preferably located between 300 and 400 metres.
- 3.2 Bus stops are preferably located on the departure side of side streets, then mid-block between side streets provided sufficient sight distance to allow exiting motorists to see on-coming traffic is available in this order.
- 3.3 Bus stops should be located where access can be obtained from the surrounding area by way of side streets, walkways and other potential pedestrian access points if possible.
- 3.4 Bus stops should not be located directly opposite each other on narrow local streets but can be offset by a minimum distance of 5 metres (front of bus facing opposite front of bus) or a minimum distance of 5 metres (rear of bus to opposite rear of bus). Rear to rear placement is preferred to allow for any future pedestrian crossing facility (i.e. pedestrian refuge).

Kerb Length of Bus Stop

- 3.5 The kerb length required for a bus stop is variable but a minimum of 12.5 metres (rigid bus) and 18 metres (articulated bus) is normal. Exceptions may be made where it is known that only midi or minibuses will be used, although 12.5 or 18 metres is preferred even in these cases as occasional use by larger buses may be required. Busy stops or terminus points may require space for two or more buses. This dimension does not include bus approach and departure dimensions (refer 3.9-3.114 & 3.12).

Location of Bus Stop Pole from Kerb Alignment

- 3.6 So that a bus operator is able to position the bus correctly in relation to waiting passengers, footpath obstructions, etc., the bus stop pole datum point (either a post, quad frame or an electricity / light pole) should be located directly adjacent the point at which the front of the bus is expected to stop.
- 3.7 The pole should be placed 400 mm from behind the kerb in metropolitan districts and 600mm from behind the kerb in Adelaide City (to avoid vehicle side mirrors) on the footpath in line with the front of the vehicle. Where there is an obstruction on the roadway (e.g. parking space) forward of the stop the pole should be placed a minimum of 5 metres back from that obstruction.
- 3.8 The dimension commences from the back of the kerb alignment.

Vehicle Pull In (Approach) Dimension

- 3.9 To enable the bus to pull in parallel to the kerb, with the first step of each door close enough to the kerb to enable a person with limited mobility to step directly between the first step and the footpath, the minimum distance from the closest obstruction (e.g. parked car) to the rear of the parked bus should be, for:
 - a) Mercedes articulated vehicles: 17 metres.
 - b) Scania articulated vehicles: 17 metres.
 - c) Other articulated vehicles: 11 metres.
 - d) Rigid (11-12.5 metre) vehicles: 7 metres.
 - e) Midi (10 metre) vehicles: 7 metres.
 - f) Smaller vehicles: Dependent on vehicle characteristics.
- 3.10 Where there is no obstruction (e.g. No Parking between an intersection and the stop or side road) this length is not required.
- 3.11 Under the Disability Standards for Accessible Public Transport 2002 this requirement is such that a bus can park so that a wheelchair ramp can be deployed to enable a standard mobility device to safely enter the vehicle.

Vehicle Pull Out (Departure) Dimension

- 3.12 The minimum distance from the front of the bus to the closest obstruction (e.g. parked car) forward of the vehicle should be 5 metres (all vehicles) to allow sufficient space for the bus to pull out from the kerb. Where there is no obstruction on the departure side of the bus stop (e.g. Designated No Parking, property crossover or signalised intersection) this length may not be required.

Distance of Bus Stop Prior to Right Turn Movement

- 3.13 The minimum distance of a bus stop from an intersection or junction at which a bus is to make a right hand turn after departing the stop depends to a large degree on the location.
- 3.14 In a narrow local residential type street with one lane in each direction, the distance can be a minimum of 10 metres from the kerb alignment, but should preferably be a minimum of 30 metres on a 50 kilometre road or 40 metres on a 60 kilometre road (AS 1742.2-1994) measured from the centre point of the local residential connecting side road or street.
- 3.15 On busy roadways (signalised and un-signalised intersections) the preferable minimum distance increases to:
 - a) Single lane: 150 metres.
 - b) 2 lanes: 200 metres.
 - c) 3 lanes: 300 metres.
- 3.16 This dimension starts in these instances from either the kerb alignment at a non-signalised intersection or junction or from the painted on-ground stop bar at signalised intersections or junctions.

Distance of Bus Stop Prior to Left Turn Movement

- 3.17 The distance of a bus stop from an un-signalised intersection or junction at which a bus is to make a left turn movement can be a minimum of 10 metres from the kerb alignment, but should preferably be a minimum of 30 metres on a 50 kilometre road or 40 metres on a 60 kilometre road (AS 1742.2-1994) for all vehicles measured from the centre point of the local residential connecting side road or street.
- 3.18 The turn left lane commences from the arrow painted on the roadway, not the taper point. For buses only preceding straight ahead a bus stop in the left lane prior to the location of the painted on road arrow is acceptable, as a bus leaving such a stop is merely changing lanes.

Distance of Bus Stop from Side Streets / Roads

- 3.19 First preference should be to position the bus stop on the departure side of the side street / road to remove any sight distance issues. In this instance the minimum distance is 28 metres from the departure side of the kerb alignment (this allows for one articulated bus).
- 3.20 Bus stops can be located a minimum distance of 10 metres on the approach side to the nearest side streets / roads (ARR) measured from the kerb alignment but is preferable that AS.1742.2-2009 should apply where a minimum of 30 metres on a 50 kilometre road or 40 metres on a 60 kilometre road, measured from the centre point of the local residential connecting side road or street should apply. This allows the placement of passenger shelters to be installed at a distance that will not restrict vehicle movements.
- 3.21 Mid-block bus stops can be located in accordance with normal procedures (refer item 3.31-3.34).

Distance of Bus Stop Prior to Shopping Centre Entry & Exit Driveways

- 3.22 Bus stops (i.e. the front or rear of the stopped vehicle) can be located a minimum distance of 10 metres from the kerb alignment when no infrastructure is provided on the footpath. When infrastructure is provided on the footpath (passenger shelters in particular) then AS.2890.1-1993 should apply where a minimum of 40 metres on a 50-kilometre road or 55 metres on a 60-kilometre road, measured from the centre point of the car park roadway. If these dimensions are unable to be achieved then AS.1742.2-1994 should apply (refer 3.19-3.21).

Distance of Bus Stop from Signalised Intersections & RTPI System

- 3.23 Bus stops can be located a minimum of 20 metres from the approach stop bar or 38 metres (minimum for articulated bus, or 32.5 metres for a rigid bus) on the departure side of tramway / railway crossing or traffic signals with painted stop bars.
- 3.24 Bus stops should be located 150 – 200 metres on the approach side of the signals or stop bar so that they can pick up / set down passengers without being obstructed by a traffic queue and to allow greater response time in line with the requirements of the Real Time Passenger Information & Bus Priority System (RTPI). Bus stops therefore should also be located 150 – 200 metres on the departures side of the signals.
- 3.25 Bus stops are located in such a way as to avoid accidents to passengers on the vehicle caused by the bus stopping suddenly at signals when passengers are waiting to alight, or rear-end collisions caused when motorists are not expecting a bus to stop again after moving through an intersection. This practice also avoids the queuing of vehicles across the intersection.

Distance of Bus Stop from Signalised Pedestrian Crossings, Pedestrian Refuges & Marked Foot Crossing

- 3.26 Bus stops can be located a minimum of 20 metres before the stop bar or a minimum of 10 metres on the departure side of a signalised pedestrian crossings (ARR 172) or 20 metres before the crossing marking and 3 metres on the departures side of the crossing (ARR 173).
- 3.27 It is preferred that bus stops be located on the departure side of signalised pedestrian crossings and pedestrian refuges at a minimum distance of 28 metres (ARR 170 (3) plus bus length) which allows for an articulated bus.

- 3.28 Bus stops can also be located a minimum 30 metres prior to signalised pedestrian crossing stop bars and pedestrian refuges to provide reasonable pedestrian sight distance of approaching vehicles but not preferred.
- 3.29 There is no legal minimum for unofficial pedestrian crossings (e.g. in shopping centres), but 20 metres on the approach side and 28 metres on the departure side is still preferred as above.

Buses Stopping Over Driveways

- 3.30 Buses are permitted to stop across or adjacent to driveways / crossovers, as they are not likely to stop other than for a short time to pick up and set down passengers. However, they are preferably not so located where this can be avoided. Regard should be had to the location of bus doors so that passengers can safely board / alight from the kerb as passengers should not board or alight a bus onto the driveway or crossover.

Allowance for Bus Entry / Exit Doors

- 3.31 To allow free passage to or from all combinations of bus doors, in regards to adjacent street furniture, trees, posts, etc. then the following clear dimensions apply:
- 0.0 to 2.0 metres from the front of the bus (all front door combinations);
 - 5.0 to 8.0 metres from the front of the bus (all rigid rear and articulated middle doors); and
 - 12.0 to 14.0 metres from the front of the bus (all articulated rear doors).
- 3.32 The last dimension is less important if articulated buses are rarely used on the bus route but should still be designed in where possible.
- 3.33 These dimensions can vary where mini or midi vehicles, which are not from the standard Government fleet, are used.
- 3.34 In this instance consultation with the PTOP is required.

Distance of Obstructions from Kerb Line Due to Bus Rear End Swing

- 3.35 Street furniture, trees, hydrants, mail boxes, etc. adjacent the bus stop space need to be located a minimum of 700 mm from the kerb alignment and preferable 1000mm to allow for rear swing of a bus. This also applies to Frangible street lighting posts as per AS/NZS 1158.1.3:1997.

Minimum Width of Platform Area Adjacent a Bus Stop

- 3.36 A minimum width of 2.5 metres of combined footpath or platform waiting area adjacent a standard bus stop to safely allow pedestrians to pass waiting passengers and to allow the deployment of wheelchair ramps from public transport vehicles is required. This will also allow for the placement of non-advertisement fitted passenger shelters or cantilevered type of passenger shelters.
- 3.37 A combined platform waiting area footpath width of at least 4 metres is required with the placement of larger shelters that are incorporated with advertisement panels or at locations where a larger than normal number of passengers regularly catch public transport services (i.e. bus interchanges).
Manoeuvring Areas and Footpath Widths
- 3.38 The minimum width of a Continuous Accessible Path of Travel (CAPT) is 1800mm. If this width is not available, 1200mm is permissible providing a passing area is provided at least every 6 metres for 2 metres along any two way access path that is less than 1800 mm wide.
- 3.39 The minimum required manoeuvring area at the bottom of ramp from bus is 2070mm in direction of travel x 1540 mm.

Minimum Roadway Widths

- 3.40 The following minimum roadway dimensions are required for buses to safely traverse streets / roads.

Local Streets & Roads (one lane in each direction)

- 3.41 11 metres of road pavement minimum; 12 metres preferred; or

- 3.42 9 metres of road pavement with no car parking on one side of the road / street; or
- 3.43 9 metres of road pavement with indented car parking bays on one side of the road / street; or
- 3.44 7 metres of road pavement with indented car parking bays on both sides of the road / street.
- 3.45 These dimensions allow for footpath widths of min 2.5 metres on both sides of a road / street and are based on no solid centre medians or painted bike lanes being present.

Collector & Arterial Roads

- 3.46 11.4 metres of road pavement minimum, 12 metres preferred.

Freight Routes

- 3.47 12 metres of road pavement minimum.

Through Movements – No Stopping

- 3.48 The minimum dimension for bus straight movements on a carriageway is 3.3 metres but a width of 3.5 metres is preferred due to variations in bus side mirror depths.
- 3.49 The minimum dimension for bus turns right or left movements on a carriageway is 3.3 metres but a width of 3.5 metres is preferred due to rear end vehicle swing. The majority of rear end swing occurs within a junction or intersection.

Bus Stopping - Interchanges

- 3.50 With a central platform, a minimum of two lanes in one direction is required at:
 - a) 7.0 metres minimum of road pavement – one way; or
 - b) 7.5 metres preferred of road pavement width – one way.
- 3.51 With any side platform(s), a minimum of four lanes is required to allow dual directional flow at:
 - a) 15 metres minimum of road pavement width.
- 3.52 A further side platform would then be provided on the furthest edge of the road pavement.

Bus Stopping - City Streets / Roads

- 3.53 Same as Bus Stopping – Interchanges but applied to both sides of the street / road.
- 3.54 All above dimension for stopping buses allow a departing bus to safely manoeuvre around a stationary bus located directly in front without the need to cross over a dividing traffic lane with vehicles moving in the same direction or into the flow of oncoming vehicles travelling in the opposite direction.

Minimum Roadway Widths

- 3.55 A minimum lane width of 3.2 metres is required for the safe manoeuvring of both articulated and rigid buses, however a lane width of 3.5 metres is preferred, in particular for dedicated bus lanes. These widths apply to kerbside lanes where the majority of buses travel, however these requirements should be applied to any lane in which are bus will operate in (e.g. middle and outside lane bus lanes).

Bus Stops on Curved Roadways

- 3.56 Bus stops should not be located on left curves on single lane carriageways where a bus operator cannot see traffic approaching from the rear. Where the bus has its own lane (dual lane carriageway) and good sight distance, and a bus operator does not need to re-enter the flow of traffic then a bus stop may be installed, provided a minimum distance of 100 metres clear sight distance can be provided (ARR Part 12, Division 6, Rule 193).
- 3.57 Bus stops should preferably not be located on sharp curves or bends.

- 3.58 Bus stops in non-built up areas on right hand curves or bends are acceptable provided a minimum distance of 100 metres sight distance is provided (ARR Part 12, Division 6, Rule 193).

Bus Stops in Hilly Areas

- 3.59 Bus stops are preferably not located on steep hills (especially up-grades). Bus stops are preferably located on the top of a crest, at a location at which the rear of the stopped bus can be seen from an approaching vehicle.

Bus Stops in Indented Bus Bays

- 3.60 The PTOP generally does not request or accept the provision of indented bus bays due to the reduction in bus operational efficiency that results.
- 3.61 The justification and design for the provision of an indented bus bay at a particular site has been set down in DPTI Road Design Standards and Guidelines via "GD 800 Indented Bus Bays". This document has been agreed on between SAPTA operations areas as acceptable when the need to provide one is essential (refer Appendix 5.1-5.8).

Bus Stops Opposite Each Other

- 3.62 Bus stops should not be located directly opposite each other on single carriage roadways unless the specific intention is to reduce traffic vehicle movements along this carriageway. This is in conjunction with the relevant local council and their requirements.
- 3.63 Stops and indented bus bays should be off-set to allow for the setup of safe pedestrian / passenger crossing points. This provides all pedestrians / passengers with a crossing location between the rear end of opposing buses.
- 3.64 Ideally a 5 metre allowance between opposite rear ends is required. If opposing stop locations are contained in approved bus bays then the crossing point (pedestrian refuge, or no official crossing identifier) is contained within the vehicles pull in (approach) dimension (refer item 3.9-3.11).

Timepoint Bus Stops Locations

- 3.65 Timepoint bus stops are used both as a point of reference for passengers to plan their journey in regards to bus departure times, as well as being used as reference point where the on-time running of individual trips can be audited for service improvement and timetable development purposes. A service running ahead of schedule is obligated to wait at the timepoint location until the time published in the timetable for that specific trip. This method of timetable structuring ensures that passengers are not left behind due to early running services. To ensure that timepoints do not cause undue traffic congestion it is recommended that:
- timepoints be located such that through traffic is not affected, i.e., indented / painted bays, wide lanes, etc.;
 - timepoints be located away from major intersections (minimum of 100m) unless through traffic is unaffected;
 - timepoints have a minimum 18m kerb length to cater for articulated buses to avoid buses parking across driveways for extended periods;
 - pairs can be staggered on either side of road to achieve recommendations;
 - timepoints should be located no more than 10-15 minutes apart (excluding express services); and
 - when separation is 5 minutes or less, rationalisation of timepoints should be considered.

4 Passenger Waiting Areas & Infrastructure

Passenger Shelter Provision and Ownership

- 4.1 The responsibility for the ongoing maintenance of DPTI owned Passenger Shelters currently sits with Road and Marine Assets (RAMA), within the Asset Management Directorate. All approvals for the

- installation of additional or replacement passenger shelters must be approved by RAMA prior to entering into any commitments with any other parties.
- 4.2 Currently there are four approaches to Passenger Shelter ownership and maintenance:
- a) **Council Owned.** The vast majority of passenger shelters in the state are fully owned and maintained by local government.
 - b) **Commercial.** These Shelters are installed by advertising companies such as Adshel. The commercial organisation that installed the Shelter has total responsibility for that Shelter. There may exist commercial agreements with Councils or others for ongoing revenue.
 - c) **Council Grant Scheme.** These Shelters were installed by local government with funds provided by DPTI through a grant application process. Deeds prescribe that the responsibility for day to day maintenance responsibilities (graffiti, litter, cleaning, minor repairs, etc.) lies with Council but responsibility for major works (e.g. major tree damage, vehicle impact, or end of life replacement) lies with DPTI. Shelters are generally located on Council footpaths with each Council selecting its own design. Council is also responsible for all other non-operational elements of the Bus Stop, e.g. paving, ramps, tactiles, bins, etc.
 - d) **DPTI Owned.** A small number of Shelters are DPTI owned and maintained. Full responsibility lies with DPTI. Typically these are located within DPTI bus interchanges and park and ride facilities.

Criteria for Installing New or Replacement Passenger Shelters

- 4.3 There is no current funding for the ongoing maintenance of DPTI Owned and the Council Grant Scheme Passenger shelters. Consequently, there is no funding to maintain any replacement or additional shelters.
- 4.4 Before any additional or replacement shelters are installed at least one of the following requirements must be met:
- a) A formal commercial agreement (e.g. current Adshel model) for the responsibilities for all ongoing maintenance and ownership must be entered into for the life of the asset for all additional or replacement assets;
 - b) The ownership and full responsibility for any additional or replacement shelters must be permanently transferred to the Council as part of the wider project asset handover agreements;
 - c) A formal Deed or other agreement for the life of the asset must be entered into with any other relevant stakeholder(s) to cover all responsibilities for ownership and all ongoing maintenance for any additional or replacement shelters; or
 - d) An ongoing maintenance funding stream must be provided by the project or initiative which is introducing the additional or replacement asset. RAMA must be engaged to ensure access is available to sufficient funds to meet all maintenance and ownership responsibilities for the life of the asset.
- 4.5 DPTI's preferred model is to enter into a commercialisation agreement (4.1 – 4.2 above) for any additional or replacement shelters. This option has the potential to create revenue or offset other shelter maintenance costs for DPTI as well as meeting any maintenance requirements for the life of the asset. For any assistance in this area the DPTI Commercial Manager within Investment Services can provide assistance.
- 4.6 If a commercialisation agreement to fully fund the installation together with all responsibilities for ownership and all ongoing maintenance of any additional or replacement shelters cannot be secured, the only alternative arrangement acceptable to DPTI is to secure a Deed or other agreement with a Council or other Stakeholder that has an interest in the installation of the asset. This Deed must be for all of the ongoing ownership and maintenance responsibilities including replacement for any reason.
- 4.7 The proposed bus shelter **MUST NOT BE INSTALLED** if:
- a) either a Commercialisation Agreement or a Deed (as described above) to fund the installation of any additional or replacement shelters, together with all responsibilities for ownership and all ongoing maintenance of the assets, cannot be secured; or

- b) maintenance responsibility for the additional or proposed shelter will lie with DPTI.

Passenger Shelter Criteria

- 4.8 Provided that the funding requirements set out in “4.3 - 4.7 Criteria for Installing New or Replacement Passenger Shelters” are met, the following criteria is recommended when considering the need for a Passenger Shelter at a Bus Stop.
- 4.9 The Placement of passenger shelters requires consideration of three major factors:
- the number of boarding and / or transferring passengers at a specific bus stop;
 - the frequency of services at the bus stop; and
 - the percentage of elderly and disabled persons using it.
- 4.10 As a general principle, passenger shelters are usually considered at bus stops that serve 300 or more boarding and / or transferring passengers per week. The following table can be used as a guide when considering the combined effect of passenger numbers and service frequency.

Table RD-PT-D1 4-1 Passenger numbers and service frequency

Number of Passengers per Week	Average Peak Period Frequency of Services		
	Less than 4 per hr	5 to 11 per hr	More than 12 per hr
500 or more	1	1	1
400 to 499	2	2	3
350 to 399	2	3	4
300 to 349	3	3	4

- 4.11 If more than 50% of the average daily number of passengers is elderly and / or persons with disabilities then the number of passengers per week figures will be one-half of the values shown.
- 4.12 It should be noted that passenger shelters may also be considered where special circumstances exist or commercial interest is indicated.

Design of Passenger Shelters

- 4.13 Shelters must take into account the needs of people with disabilities. Shelters should provide weather protection for all passengers including wheelchair users (refer Bus Shelters and Seating Performance Criteria).

Positioning of Passenger Shelters

- 4.14 Preference is for the shelter to be located between front and centre doors at a dimension of 7.5 metres from the end of the shelter to the bus stop post, and at least 1200 mm from the back of the roadside kerb unless there is some other obstruction and in this case, shelters are desirably then placed forward of the bus stop. In such a case a minimum distance from kerb to shelter of 1200 mm is still recommended to accommodate DDA requirements for wheelchairs.
- 4.15 Shelters should preferably face away from the prevailing south-westerly weather depending on shelter design, unless this will result in waiting passengers viewing front windows of private houses. The shelter should be situated so that waiting passengers can see an approaching bus, and the bus driver can see them.
- 4.16 Shelters should be located so that they do not cause sight distance problems for motorists (AS 1742.2-2009 should apply) exiting from side streets / roads but this is reliant on actual bus stop locations.

Height of Overhead Interchange Roofing

- 4.17 Overhead roofing should be high enough to safely allow the passage of buses allowing for modern day air conditioning units and up-right exhaust stacks.
- 4.18 The preferred ground to roof height clearance is 4.5 metres.

- 4.19 A minimum height of 3.6 metres will allow vehicles to still pass underneath with minimum clearance.

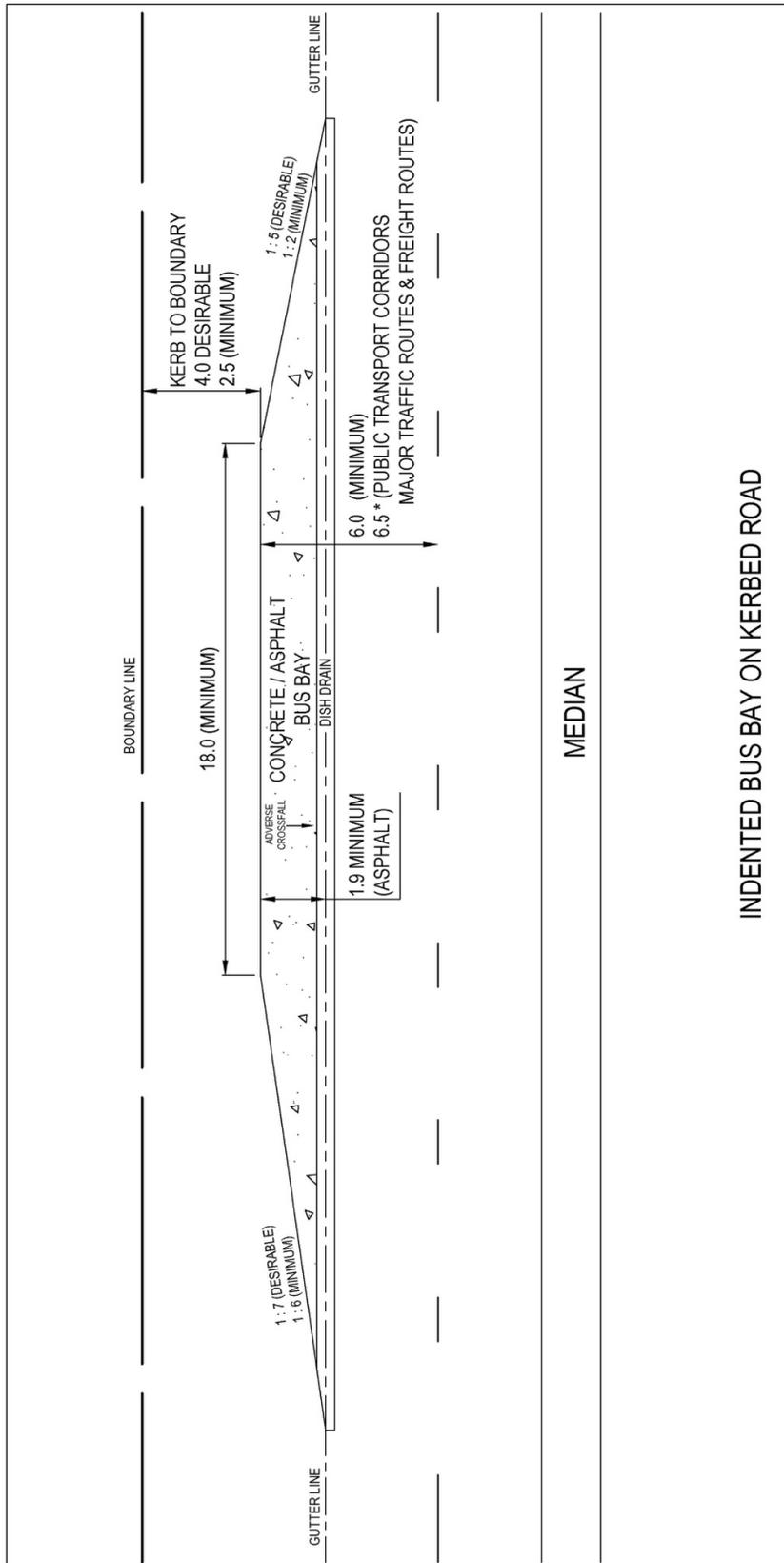
Height of Bus

- 4.20 The maximum height for a Government bus is 3.4 metres measured from natural ground level to the highest section of roof.
- 4.21 In some instance buses can be as high as 4.3 metres, in the case of double deckers expect nothing smaller.

5 Guidelines for Indented Bus Bays

- 5.1 The warrant or justification for an indented bus bay at a particular site shall be determined by the Client / Planner, in consultation with the division Public Transport Services Division (PTOP) of DPTI.
- 5.2 The detailed location of indented bus bay on any kerbed arterial roads shall be determined by the Project Manager in consultation with the PTOPT.
- 5.3 The detailed design of the indented bus bay relating to the length, width and cross fall on any kerbed arterial road shall be determined with respect to the resultant effect on underground services, bus operator comfort and safety, passenger comfort and safety, adjacent pedestrian movements, and pavement drainage and maintenance.
- 5.4 The detailed design of the indented bus bay shall be determined by the Project Manager in consultation with the PTOPT.
- 5.5 The PTOPT favours a width 6.0m from the line marking of the kerbside lane when no bicycle lane is present as this allows:
- all Public Transport vehicle types to stand parallel to the kerb without standing on the water table; and
 - allows other traffic to safely pass the stationary bus.
- 5.6 The 6.5 m width from the line marking of the kerbside lane when no bicycle lane is present is recommended where:
- Kerbside lane is a Bus lane;
 - Kerbside lane is a freight lane; or
 - Kerbside lane carries significant percentage of commercial vehicles.
- 5.7 If a bicycle lane is present or is planned to be installed on a roadway or street that accommodates a public transport bus then a public transport bus shall sit on the edge of the outer bicycle lane line marking between the bicycle lane and the near side kerbside lane.
- 5.8 The PTOPT will only accept the provision of an indented bus bay if a minimum of 2.5 metres of passenger waiting area can be provided adjacent to the bus stop post location (in all cases) and running parallel for the entire length of the indented bus bay.

Figure RD-PT-D1 5-1 Indented Bus bay Detail



6 Bus Shelter & Seating Performance Criteria

6.1 Shelter & Seating Performance Specifications:

- a) 0.5 square metres space per standing passenger per shelter;
- b) shelter from inclement weather & sun for at least 5 / 6 seated passengers and 5 / 6 standing passengers at all stops on arterial roads;
- c) shelter for at least 3 / 4 seated passengers and 3 / 4 standing passengers at all stops on collector and local roads;
- d) shelter and shade from inclement weather and the sun of 800 mm x 1300 mm for a mobility device must be provided;
- e) a minimum of 2 allocated spaces or 5% of the area must be available for passengers with disabilities if required;
- f) lighting to AS 1428.2 from sunset to midnight where there is no adjacent street lighting to be considered;
- g) walls which will allow waiting passengers surveillance of the surrounding area;
- h) walls which will allow waiting passengers and approaching bus drivers to observe each other;
- i) accessibility to the requirements of the Disability Standards for Accessible Public Transport 2002;
- j) access through the front and central doors on the kerb side of the bus for passengers who use mobility devices such as wheelchairs or walkers;
- k) information display units if placed within the shelter are visible and readable by either seated or standing passengers;
- l) colour theme identifying with Council needs;
- m) smooth surfaces;
- n) durable low maintenance, graffiti and vandal resistant materials; and
- o) rubbish bins / clocks / phones / help phones to be considered.

6.2 Shelter & Seating Placement Specification:

- a) designed and installed in a manner which minimises the amount of street furniture;
- b) highly visible during the day;
- c) visible at night;
- d) acceptable to local councils and their communities as having incorporated good urban design principles;
- e) compliant with all necessary Council planning requirements;
- f) functional and present a desirable image for public transport;
- g) located within the standards and guidelines approved by the PTOP of the existing / relocated bus stop post;
- h) located in a position which is operationally acceptable so as to conform to the PTOP Bus Operations Guidelines.

7 Bus Stop Details

Figure RD-PT-D1 7-1 Bus Stop pad Layout

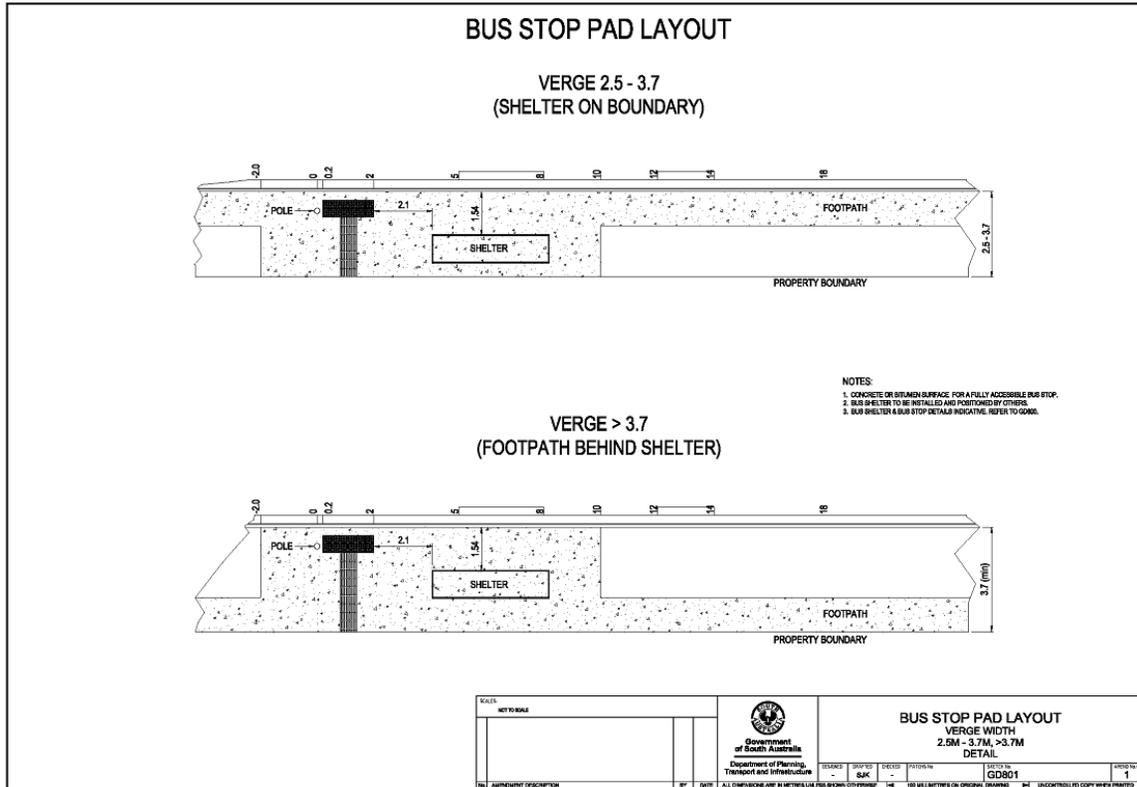


Figure RD-PT-D1 7-2 Spoon Drain Detail

