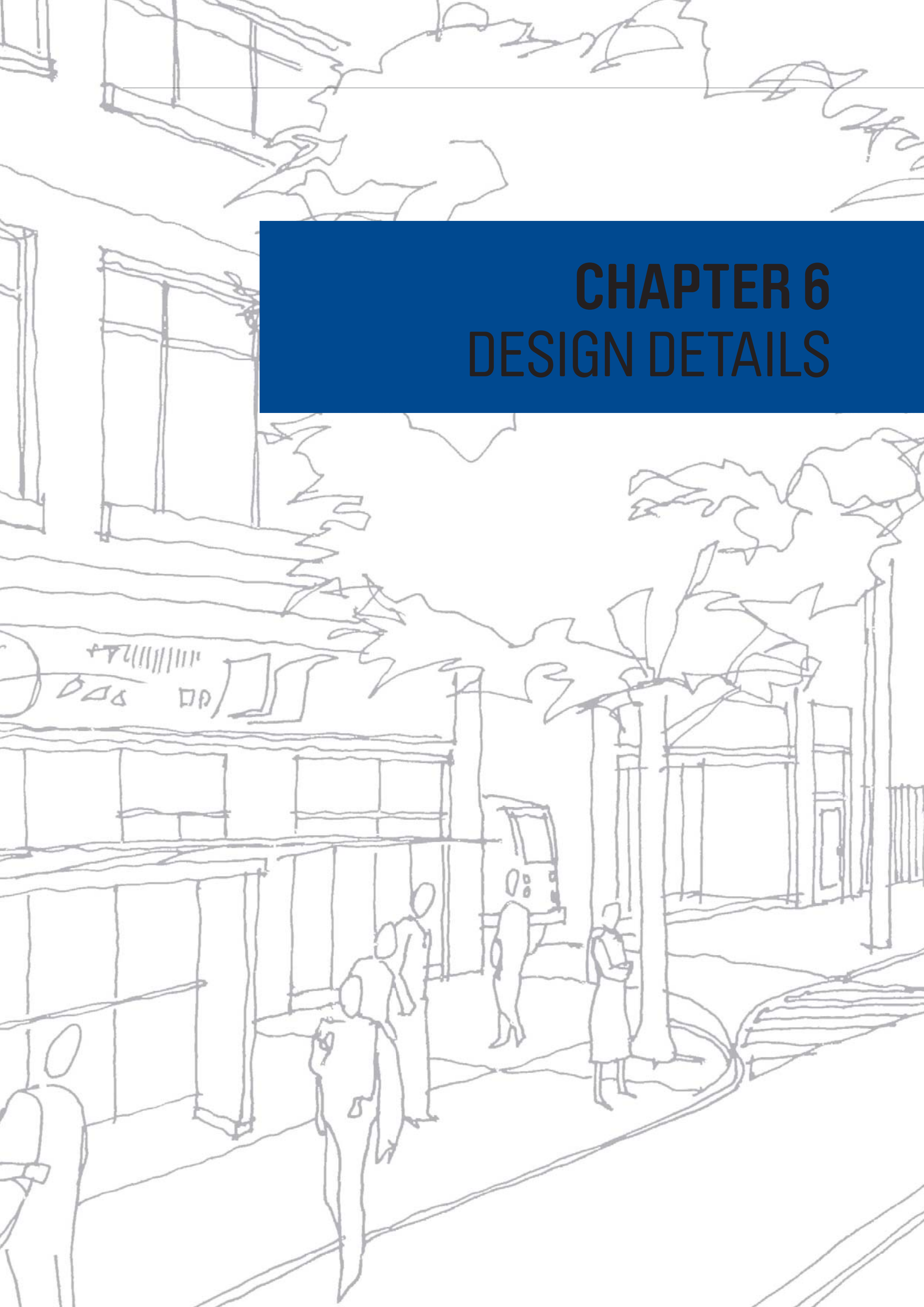
CHAPTER 6
DESIGN DETAILS



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6 DESIGN DETAILS

KEY POINTS OF THIS CHAPTER

- Design details of typical street elements including paving, kerb ramp, laneways, trees, and bus shelters
- Detailed design requirements for clear path of travel, and access facilities
- Footway gradients and levels

When designing a footway with all the required street elements, specific site conditions must be considered to ensure the desired character and functions can be achieved at the end of development process. This chapter provides detailed design and construction requirements for the typical street elements in typical street scenarios.

6.1 FOOTWAY ACCESSIBILITY

Footway design must adhere to Australian Standard requirements for equal access. These documents ensure that levels are consistent and structural elements such as buildings and street trees are arranged to facilitate the logical and safe flow of people. The following standards must be observed when designing public footways in the City.

Table 3.1 Access Standards applicable to Public Domain works

Name	Year	Application
AS1428.1	2009	Used as the best current information (under review June 2016)
AS1428.2	1992	Street Furniture
AS1428.4.1	2009	Tactile Ground Surface Indicators
AS1428.4.2	2016	Wayfinding
DSAPT	2009	For bus stops only
AS2890.6		Parking for People with Disabilities (PWD)
DSAPT (Disability Standards for Accessible Public Transport)	2002	Public Transport (under review June 2016)
DDA (Disability Discrimination Act)	1992	In the sense that discrimination extends beyond the issues covered by BCA

6.1.1 CLEAR PATH OF TRAVEL

In all street footpaths it is important that the path of travel is smooth and clear of encumbrances, including in-ground and overhanging elements. It should also be of a consistent width and location along the street and well-coordinated across intersections.

- Comply with Council's standards for the minimum Clear Path of Travel width, which varies according to location. Refer to Section 3.2.1 - Footways for the appropriate requirements at your location.
- Ensure that the Path of Travel is coordinated with neighbouring footpaths and that a cue/shoreline* is included to assist people with vision impairment.
- Ensure that path of travel is free of any encumbrances and is clear for a height of min 2000mm, and 2400mm on cycleways or shared pedestrian/cycle paths.

* Pedestrian with vision impairment and some senior citizens identify the path of travel by using a hard edge such as the building to guide them through the street. This practice is known as shore lining.

6.1.2 GRADIENTS & LEVELS

For access and easy walking, levels must be consistent and even within blocks and allow water to drain away from buildings. Correct cross falls must be considered at building concept design stage so that finished floor levels of a new buildings are adjusted to suit the street and topography, not the other way round. Localised dramatic changes in levels on the footpaths are not acceptable to suit new building entrance requirements.

- Coordinate footpath levels for smooth transition to surrounding public domain context and for consistent alignment of Path of Travel along the street.
- Ensure that cross falls along the path of travel are minimum 1% for drainage and maximum 2.5% for access and easy walking.
- Ensure that cross falls from building line to top of kerb achieve between 1-5% (maximum); 1-2.5% (preferred) (see Figure 6.1).
- Set finished floor level (FFL) of building to achieve recommended footpath cross falls and smooth transition between public and private land. Localised adjustment of levels to facilitate access must occur within the building, not on the public way.
- Achieve a continuous longitudinal fall along the property boundary and top of kerb alignments. Variations to this may be permitted to suit existing conditions subject to design approval.

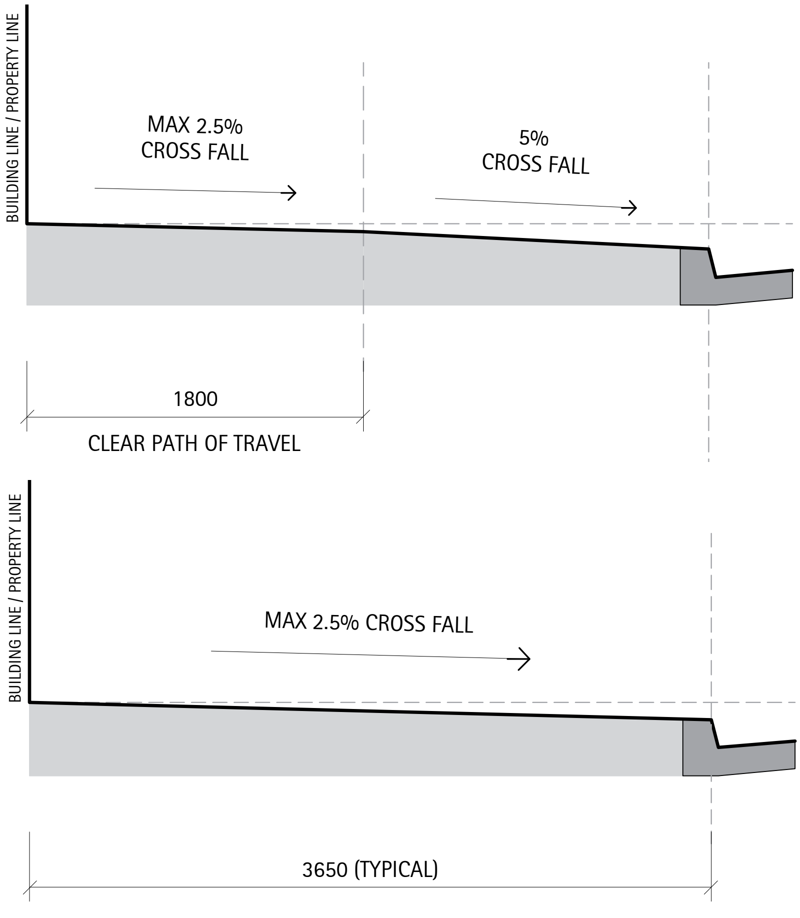


Figure 6.1 Typical Footway Cross Fall

6.1.3 BUILDING INTERFACE

Although generally privately owned, buildings impact on the quality of the public domain. The street-building interface is the zone within the private domain that visually or functionally impacts on the public street. It includes building entries, setbacks, terraces, awnings, and overhangs.

- Ensure that all stairs and ramps meet the requirements in AS1428.1.
- Ensure that any external stairs and ramps end 900mm inside the property boundary to allow for handrails and TGSIs. Protrusion of stairs, ramps, handrails, and TGSIs into the Path of Travel is not permitted (see Figure 6.2).
- Ensure that any external stairs coordinate lowest landing with footpath level and that risers are of equal height for their full width.

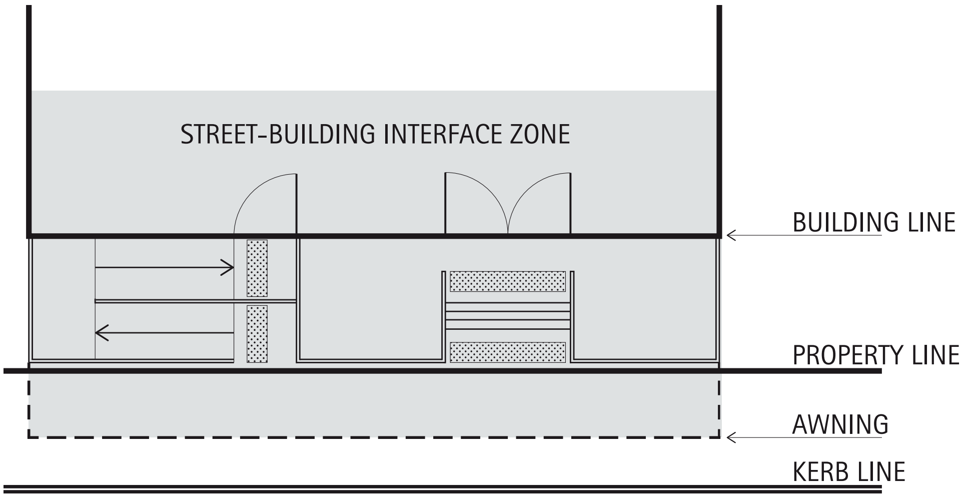


Figure 6.2 Street-building Interface

6.1.4 KERB RAMPS & TGSIS

Wider kerb ramps are preferred in CBD and town centre streets. 1800/2100mm wide kerb ramps should be used in the CBD and town centres, while 1500mm wide kerb ramps in all other streets. TGSIs should extend across the full width of 1500 ramps and across half the width of 2100 ramps, as shown in Figure 6.3 - 6.4.

Kerb ramps at signalised intersections shall also comply with the RMS design standards and seek approval from RMS prior to construction.

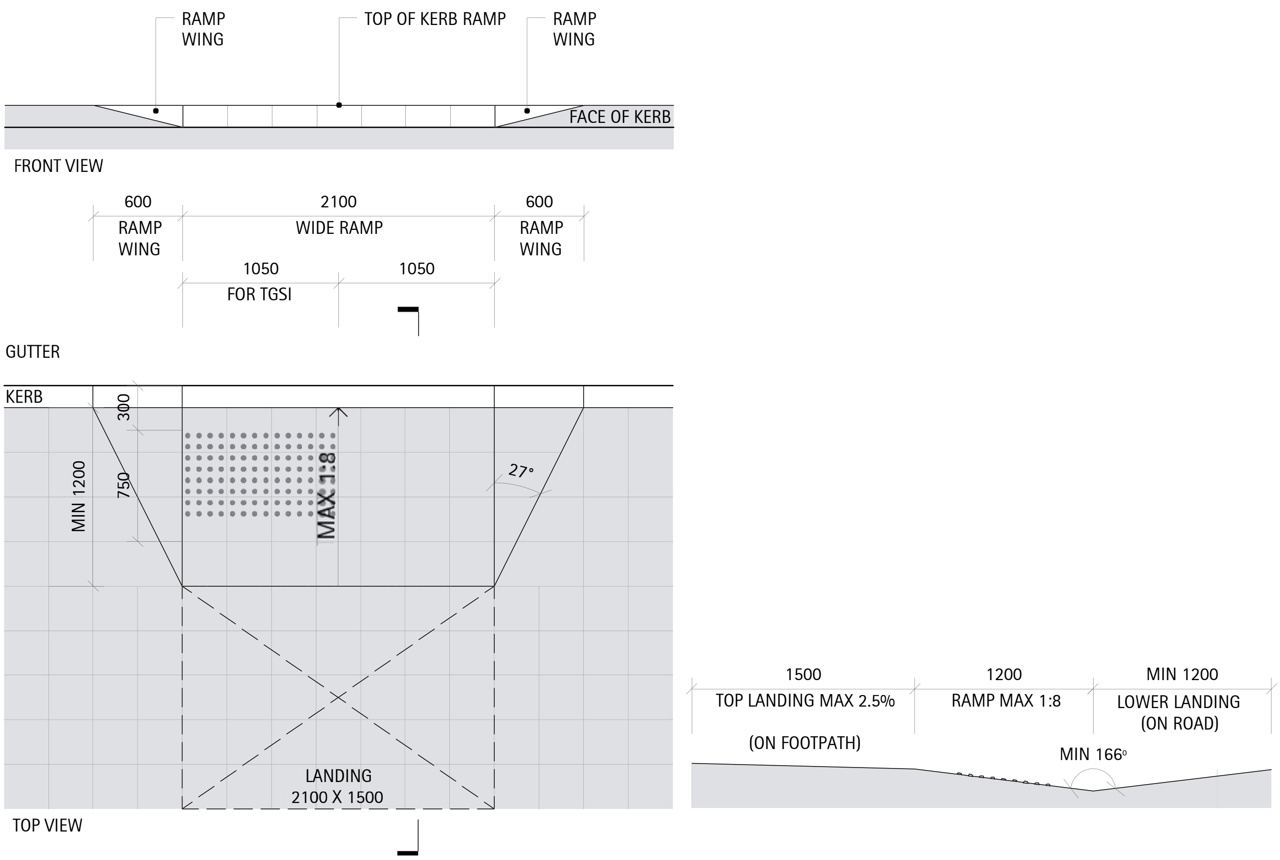


Figure 6.3 Kerb Ramp Layout: 2100 Wide

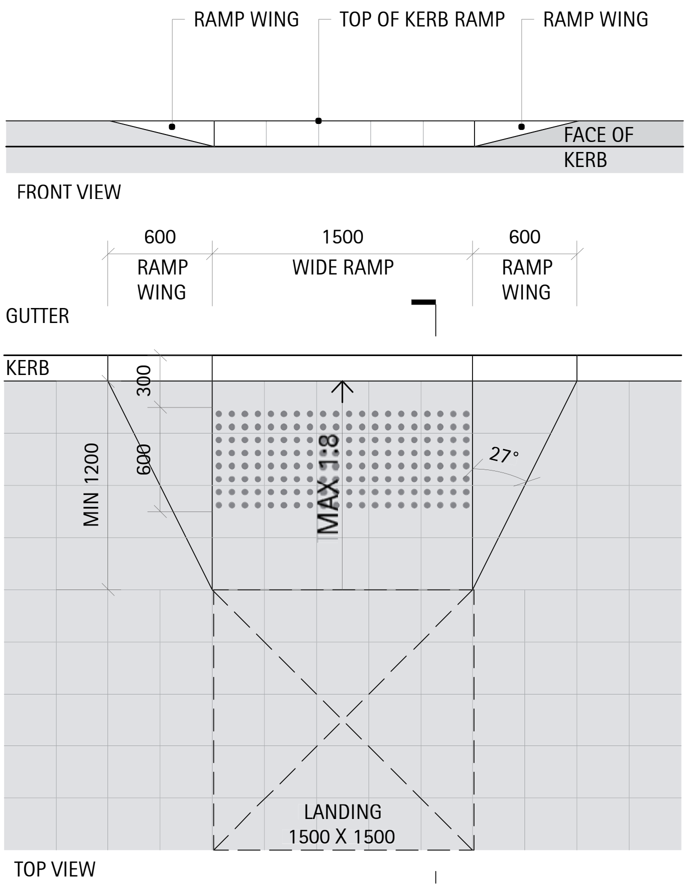


Figure 6.4 Kerb Ramp Layout: 1500 Wide

When the entire width of a kerb ramp is aligned with the face of kerb, the most preferred kerb ramps have 600mm wide ramp wings with 27° angle between wings and ramp, see Figure 6.5. This complies with the AS1428.1:2009 and matches with 300mm pavers grid.

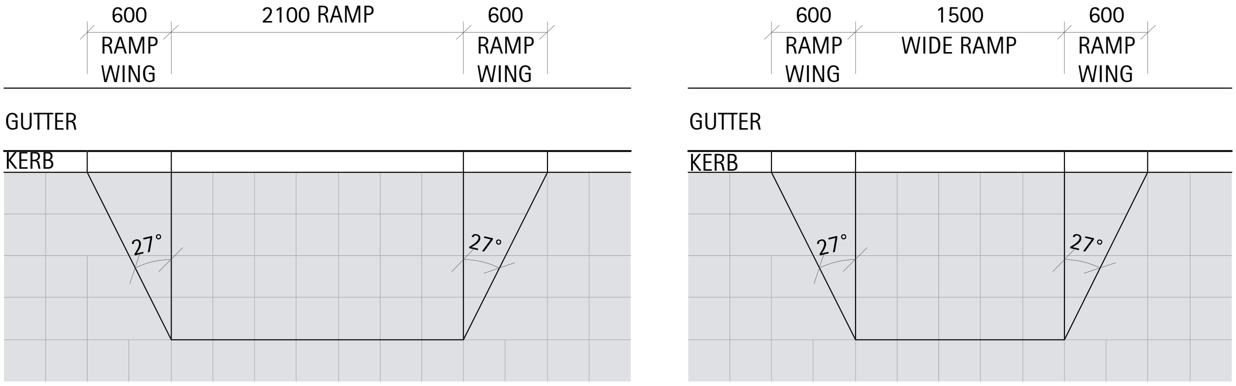


Figure 6.5 Ramp Wings when Ramp Aligned to Face of Kerb

In several cases the kerb ramps need to move away from the face of kerb. At such instances the ramp wings should match the 300mm pavers grid and simultaneously have a min 17° and a max 45° angle as shown in the Figure 6.6.

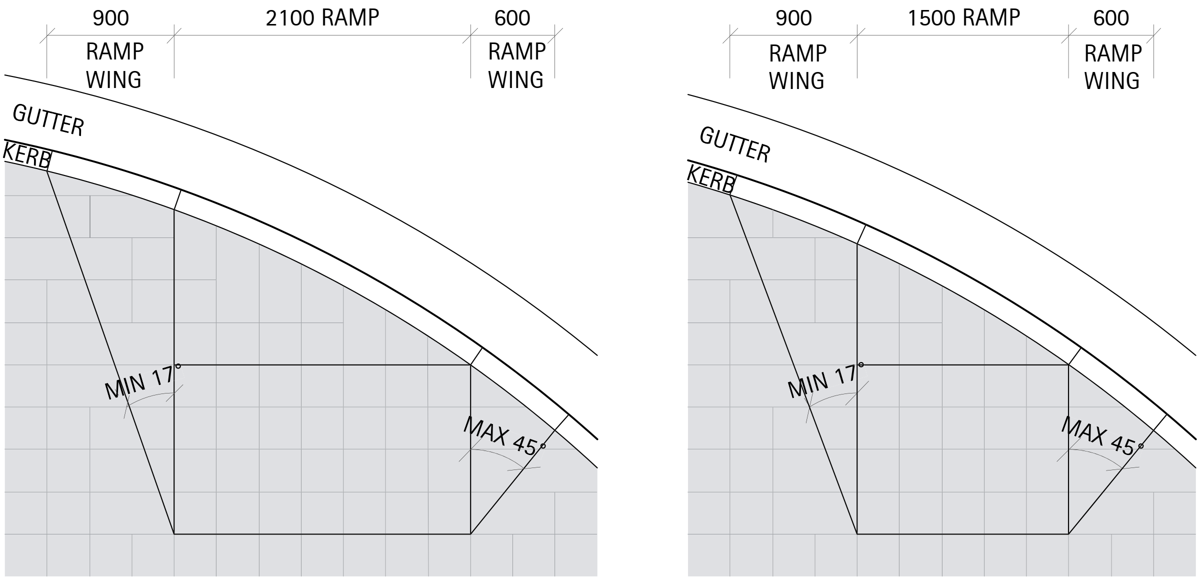


Figure 6.6 Ramp Wings when Ramp Not Aligned to Face of Kerb

For a high quality appearance and resolution of levels ensure that the minimum distance between the kerb ramps is 800 and minimum distance from face of kerb to building is 3000, as shown in Figure 6.7.

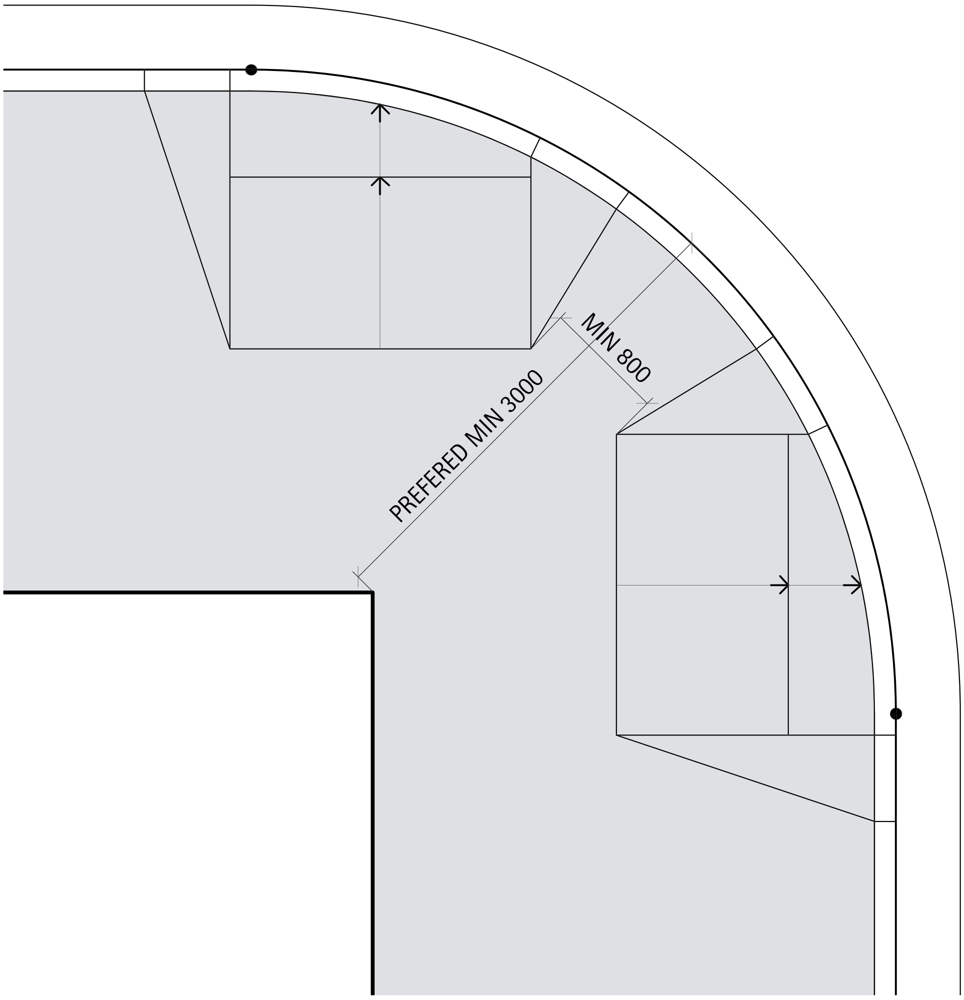


Figure 6.7   Kerb Ramp Arrangement Showing Minimum Distances

At some corners, Design may need to adjust the location of kerb ramps to suit the ramp opposite and/or conform to requirements. In some instances the kerb radii may need to be reduced for better pedestrian amenity or increased to accommodate large vehicles. This will impact on the layout of elements and pavers and applicants are advised to check with the City staff accordingly.

There are a range of kerb radii currently existing in the City between 1000 on lanes to 9000 or greater on narrow streets with large volumes of vehicles including buses. The size of the radius impacts on ramp locations, the width of path of travel and other streetscape elements. The following Figures 6.9-6.19 show typical arrangements of kerb ramps for varying kerb radii to optimise pedestrian amenity, equal access, paver layout and other streetscape elements.

Streets Corner Plan: 3000 Radius 2100 Ramp

Tangent Point	Determined by geometry of 3650mm wide footpath and 3000mm corner radius
Ramp Size	2100mm (W) x 1200mm
Landing	Min. 2100 x 1500mm to match ramp width Same 2.5% cross fall as footpath for continuity
TGSI	Warning TGSI across min 1000mm of ramp Ramp sizes to locate TGSI 300mm from hazard

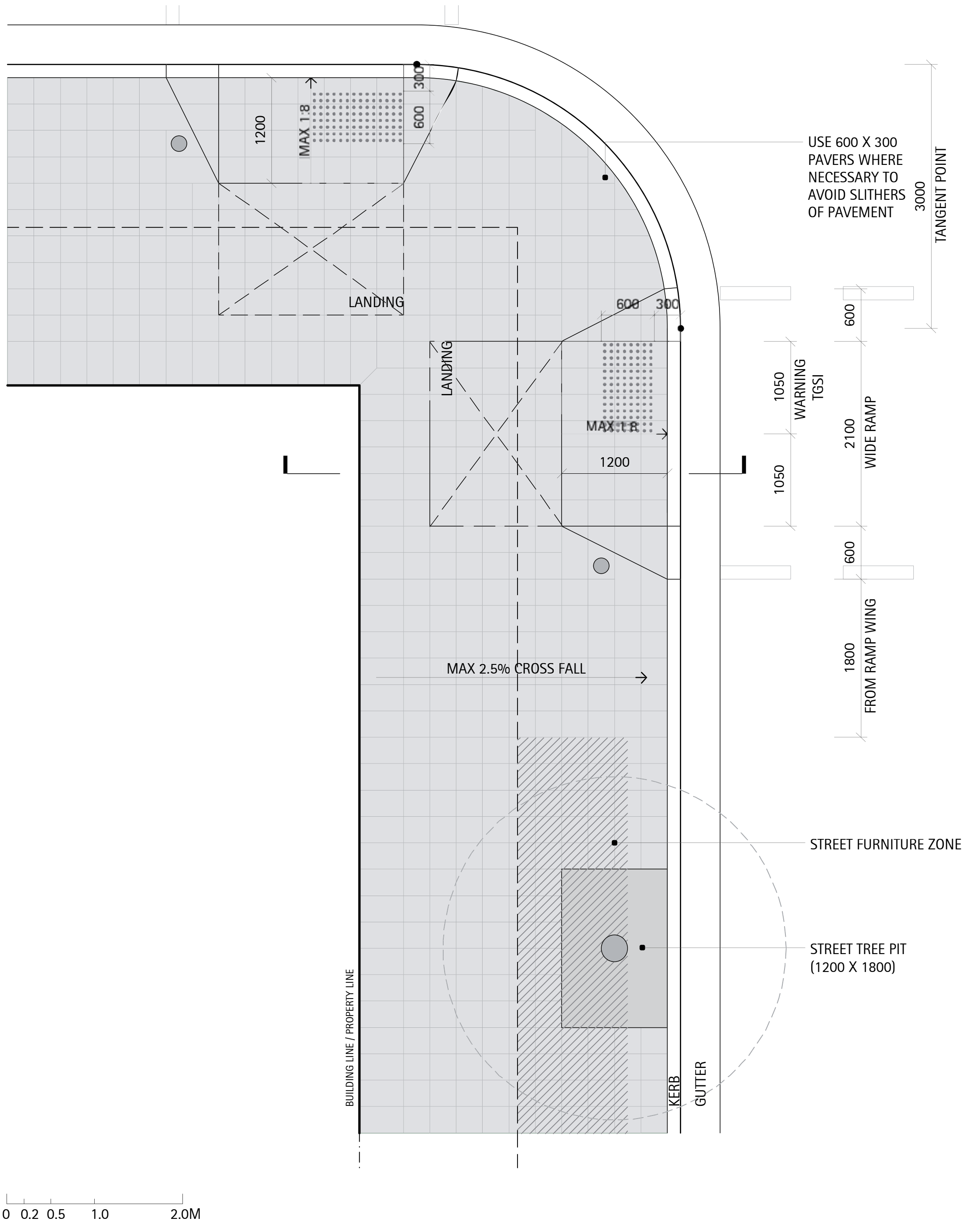


Figure 6.8 Streets Corner Plan: 3000 Radius 2100 Ramp

Streets Corner Plan: 3000 Radius 1500 Ramp

Tangent Point	Determined by geometry of 3650mm wide footpath and 3000mm corner radius
Ramp Size	1500mm (W) x 1200mm
Landing	Min. 1500 x 1500mm to match ramp width same 2.5% cross fall as footpath for continuity
TGSI	Warning TGSI across entire width of ramp Ramp sizes to locate TGSI 300mm from hazard

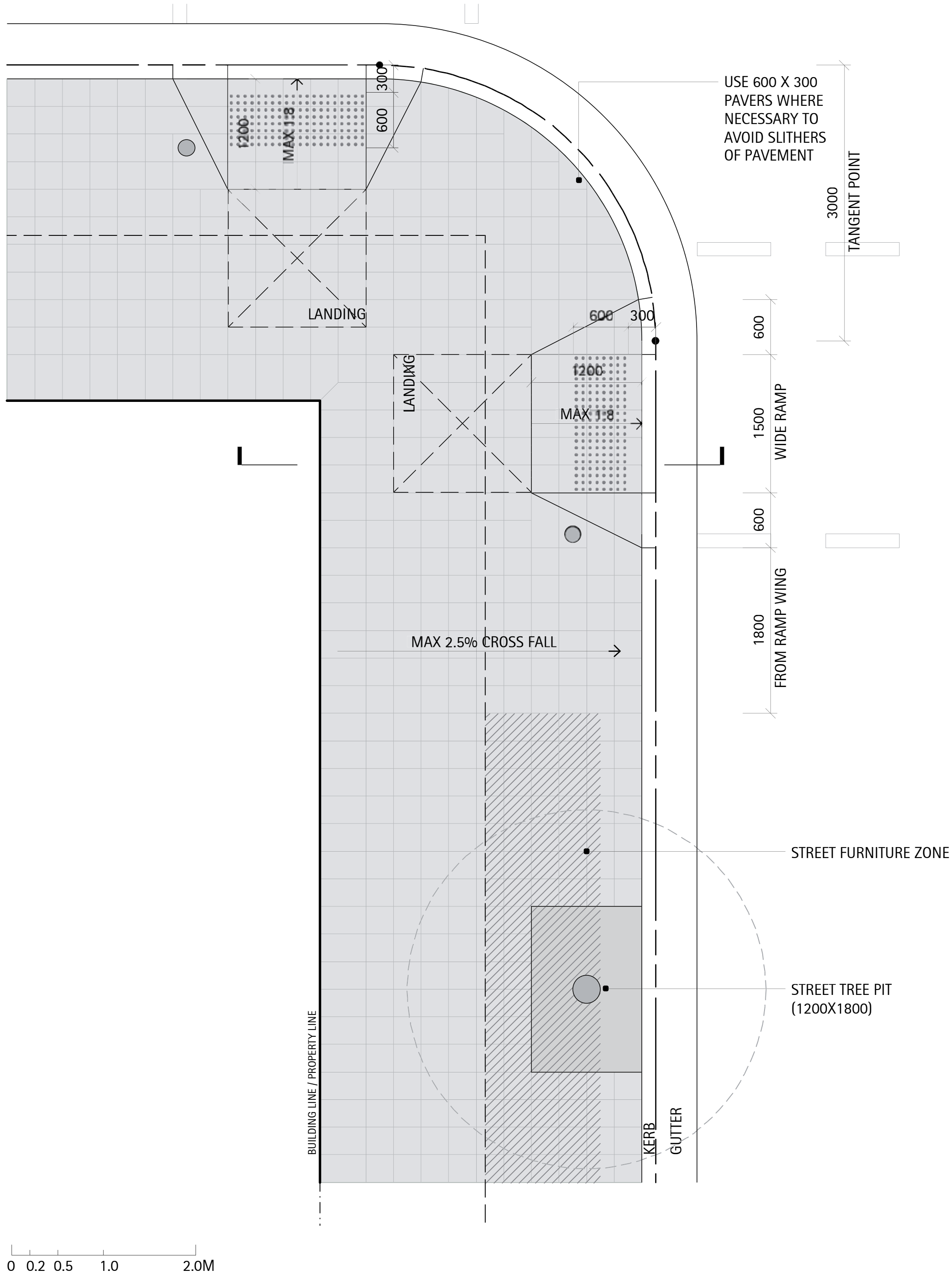


Figure 6.9 Streets Corner Plan: 3000 Radius 1500 Ramp

Streets Corner Plan: 4500 Radius 2100 Ramp

Tangent Point	Determined by geometry of 3650mm wide footpath and 4500mm corner radius
Ramp Size	2100mm (W) x 1200mm
Landing	Min. 2100 x 1500mm Same 2.5% cross fall as footpath for continuity
TGSI	Warning TGSI across min. 1000mm width of ramp Locate TGSI to be more in line with path of travel from boundary line

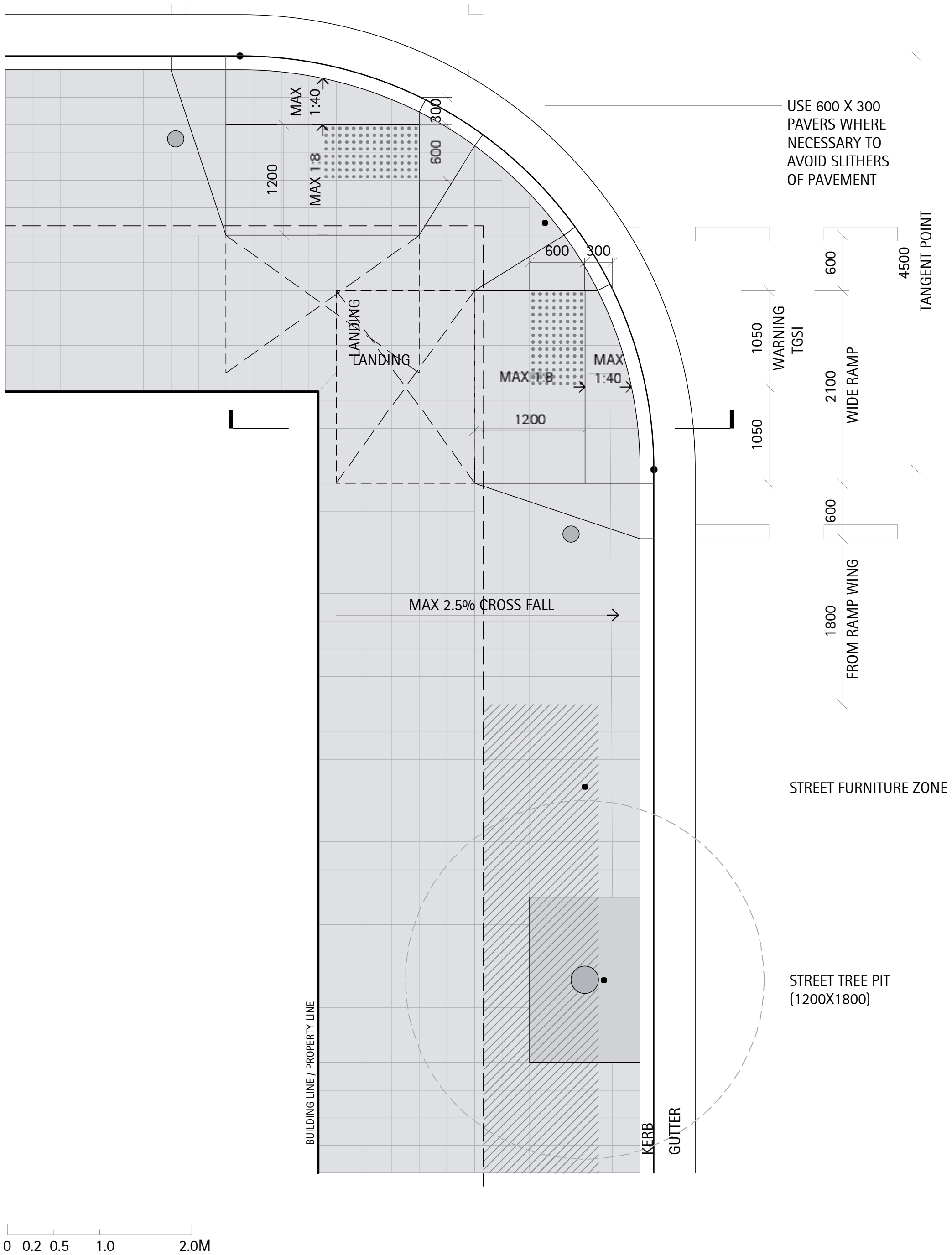


Figure 6.10 Streets Corner Plan: 4500 Radius 2100 Ramp

Streets Corner Plan: 4500 Radius 1500 Ramp

Tangent Point	Determined by geometry of 3650mm wide footpath and 4500mm corner radius
Ramp Size	1500/1800mm (W) x 1200mm
Landing	Min 1500 x 1500mm Same 2.5% cross fall as footpath for continuity
TGSI	Warning TGSI across entire width of ramp Locate TGSI to be more in line with path of travel from boundary line

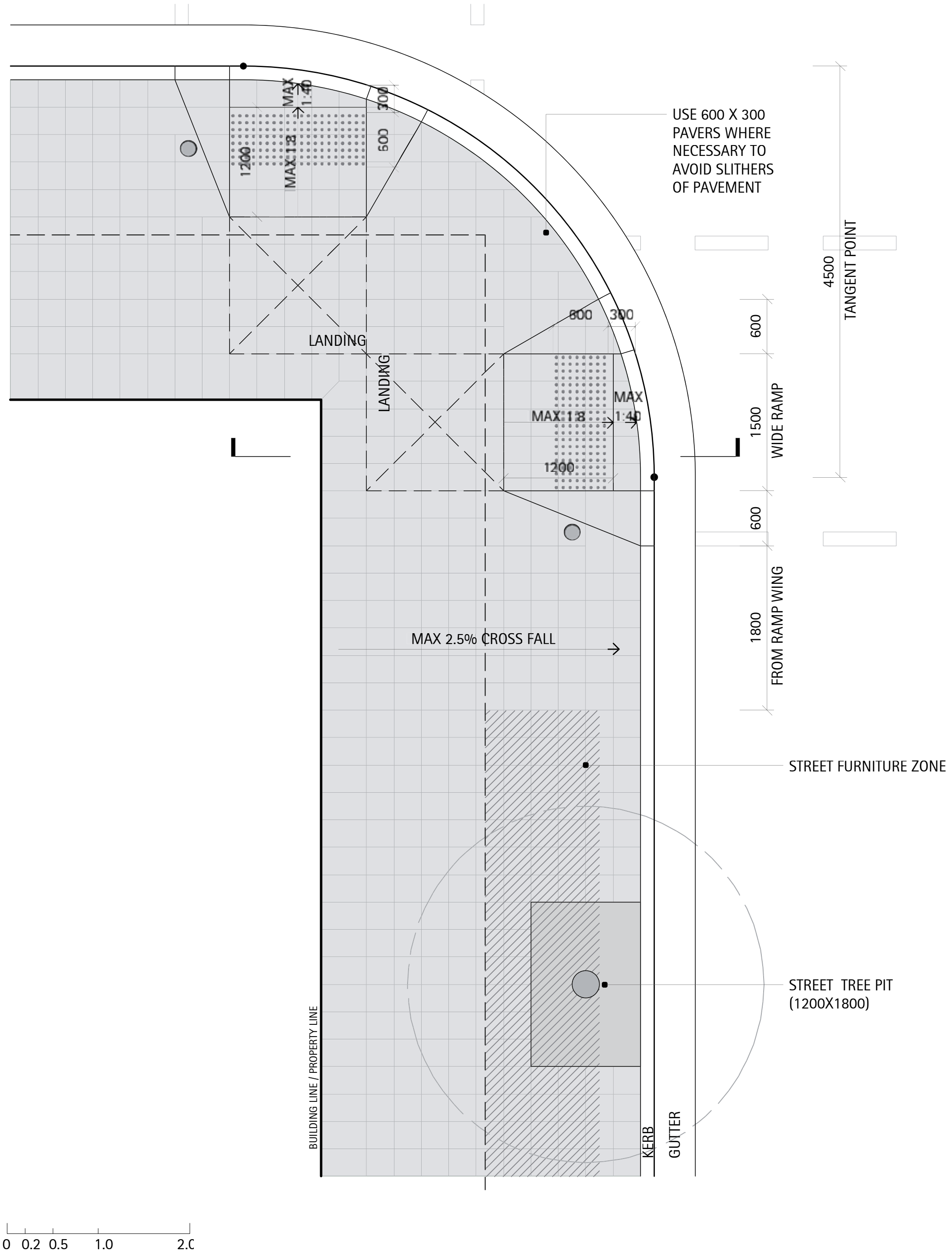


Figure 6.11 Streets Corner Plan: 4500 Radius 1500 Ramp

Streets Corner Plan: 6000 Radius 2100 Ramp

Tangent Point	Determined by geometry of 3650mm wide footpath and 6000mm corner radius
Ramp Size	2100 (W) X 1200mm
Landing	Min. 2100 X 1500mm Same 2.5% cross fall as footpath for continuity
TGSI	Warning TGSI across min. 1000mm width of ramp Provide warning + directional TGSI where ramp is away from path of travel

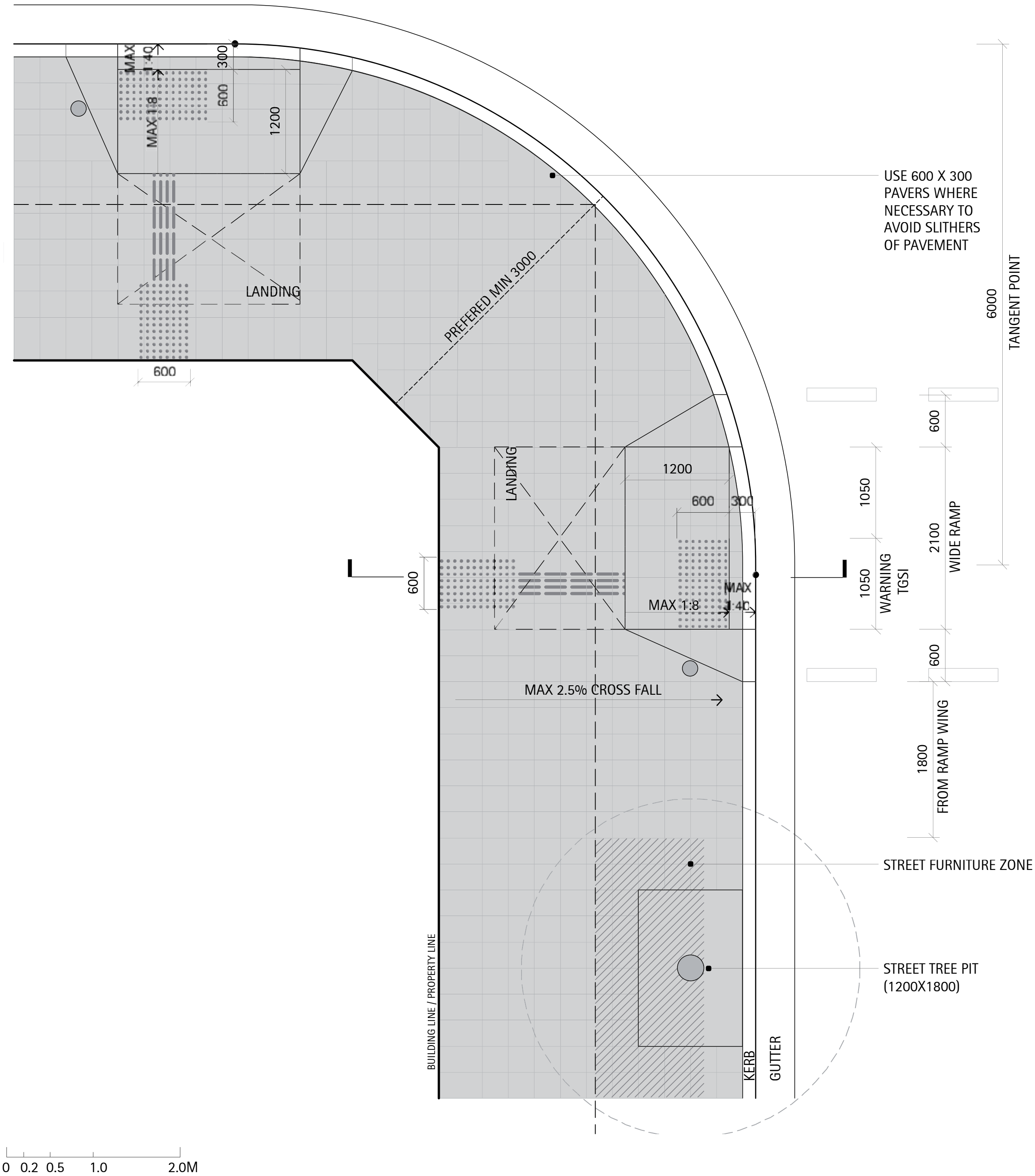


Figure 6.12 Streets Corner Plan: 6000 Radius 2100 Ramp

Streets Corner Plan: 6000 Radius 1500 Ramp

Tangent Point	Determined by geometry of 3650mm wide footpath and 6000mm corner radius
Ramp Size	1500/1800mm (W) x 1200mm
Landing	Min 1500 x 1500mm Same 2.5% cross fall as footpath for continuity
TGSI	Warning TGSI across min. 1000mm width of ramp Provide warning + directional TGSI where ramp is away from path of travel

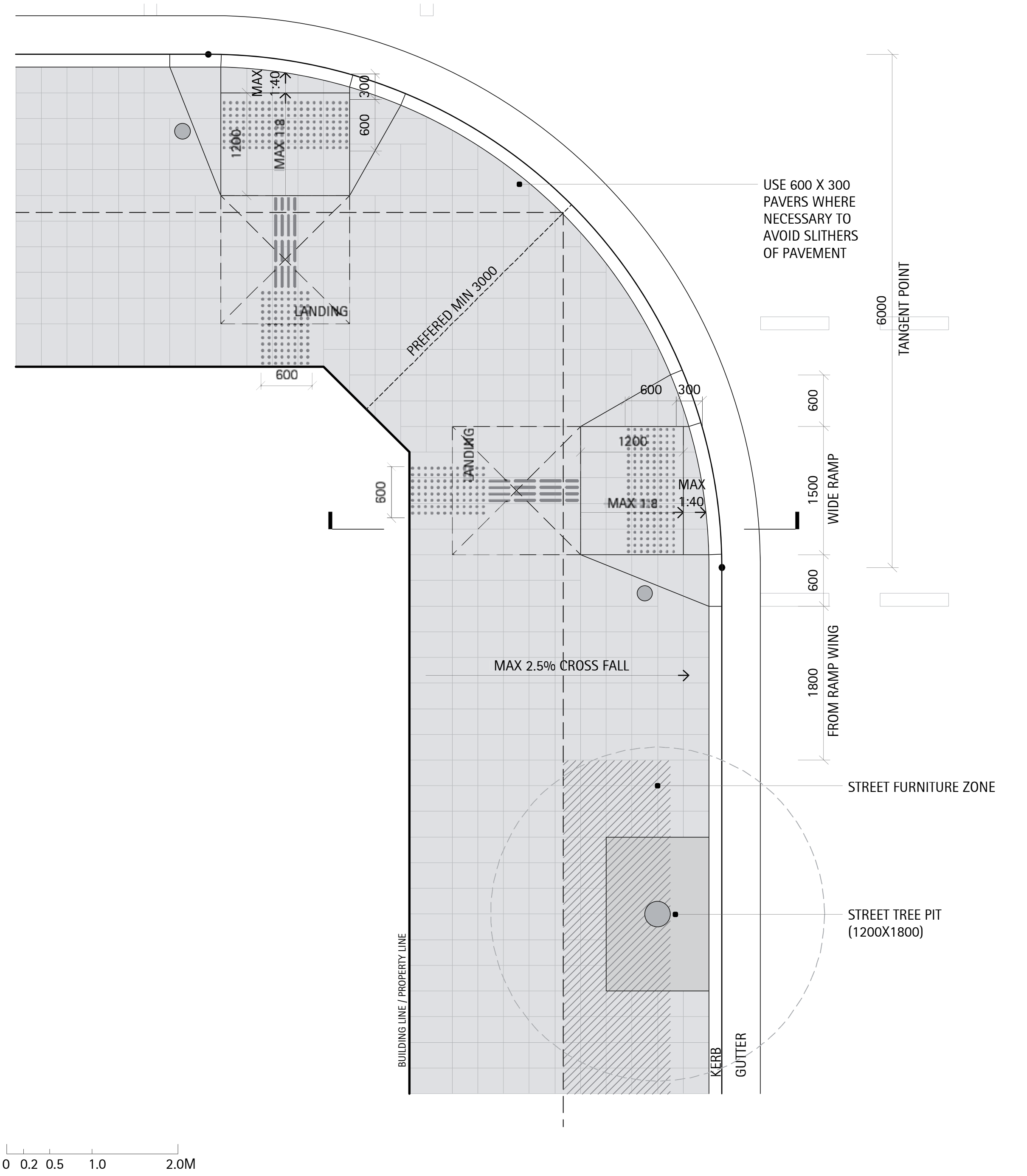


Figure 6.13 Streets Corner Plan: 6000 Radius 1500 Ramp

Streets Corner Plan: 9000 Radius 2100 Ramp

Tangent Point	Determined by geometry of 3650mm wide footpath and 9000mm corner radius
Ramp Size	2100mm (W) x 1200mm
Landing	Min. 2100 x 1500mm. Same 2.5% cross fall as footpath for continuity
TGSI	Warning TGSI across min. 1000mm width of ramp Provide warning + directional TGSI where ramp is away from path of travel

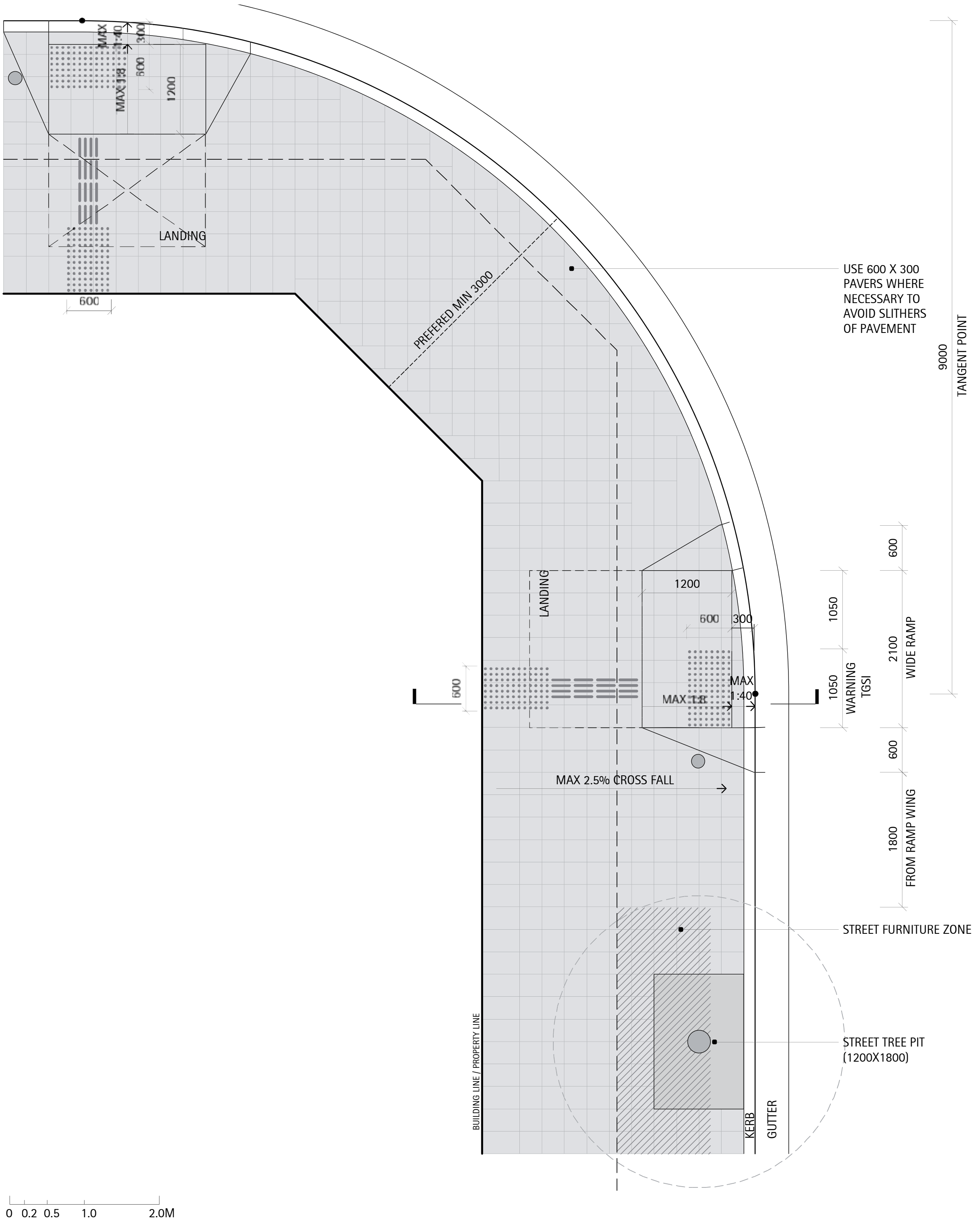


Figure 6.14 Streets Corner Plan: 9000 Radius 2100 Ramp

Streets Corner Plan: 9000 Radius 1500 Ramp	
Tangent Point	Determined by geometry of 3650mm wide footpath and 9000mm corner radius
Ramp Size	1500/1800mm (W) x 1200mm
Landing	Min. 1500 x 1500mm. Same 2.5% cross fall as footpath for continuity
TGSI	Warning TGSI across entire width of ramp Provide warning + directional TGSI where ramp is away from path of travel

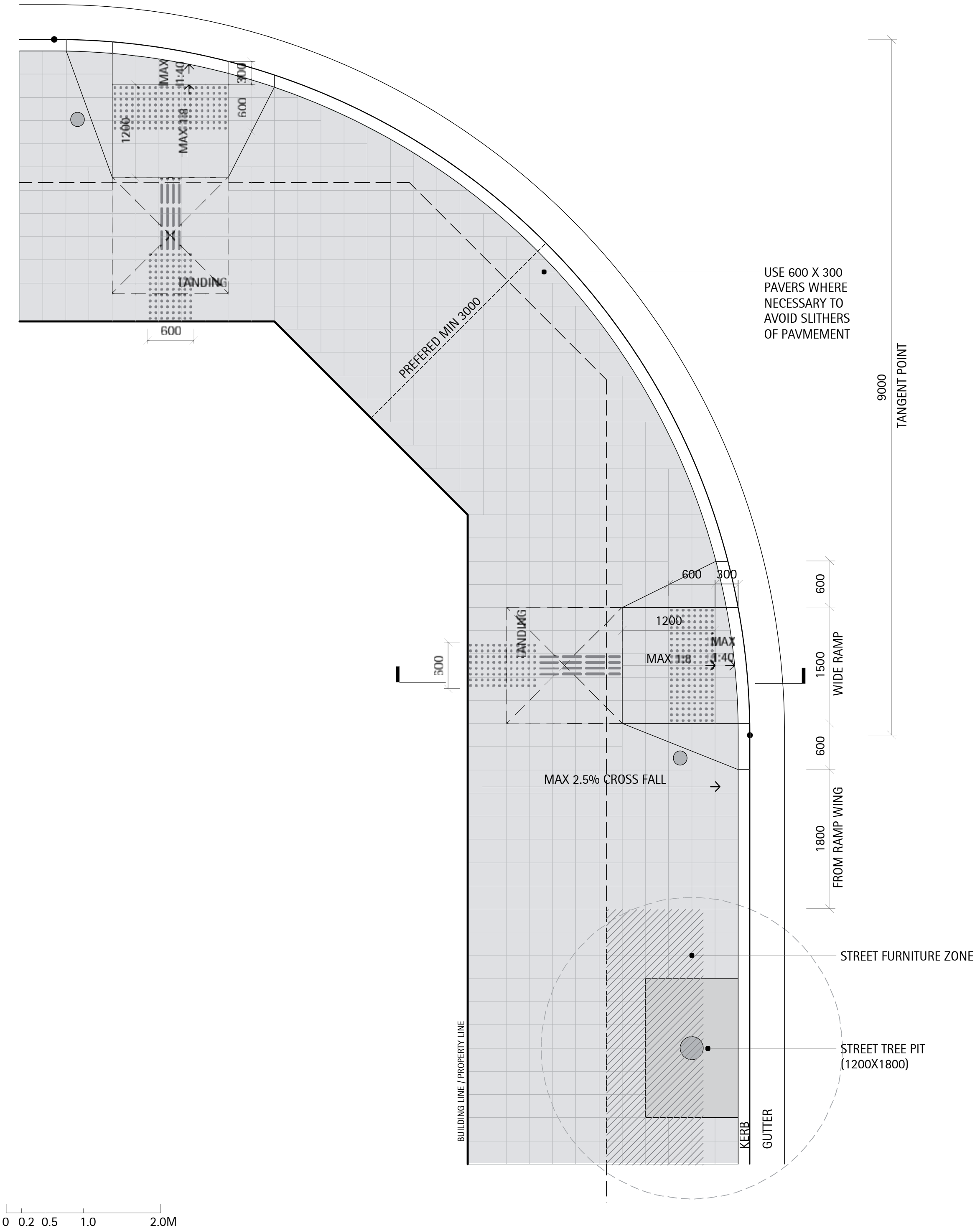


Figure 6.15 Streets Corner Plan: 9000 Radius 1500 Ramp

Streets Corner Plan: Kerb Extensions 2100 Ramp

Tangent Point	Determined by geometry of 3650mm wide footpath and 9000mm corner radius
Ramp Size	2100mm (W) x 1200mm
Ramp Gradient	Max. 1:8 (to 1:8.5) for 1200mm depth of ramp and max 1:40 for remainder
Landing	Min. 2100 x 1500mm. Same 2.5% cross fall as footpath for continuity
TGSI	Separate TGSI from kerb ramps Use directional TGSI to indicate change in direction Warning TGSI across min. 1000 x 600mm min 300mm from hazard

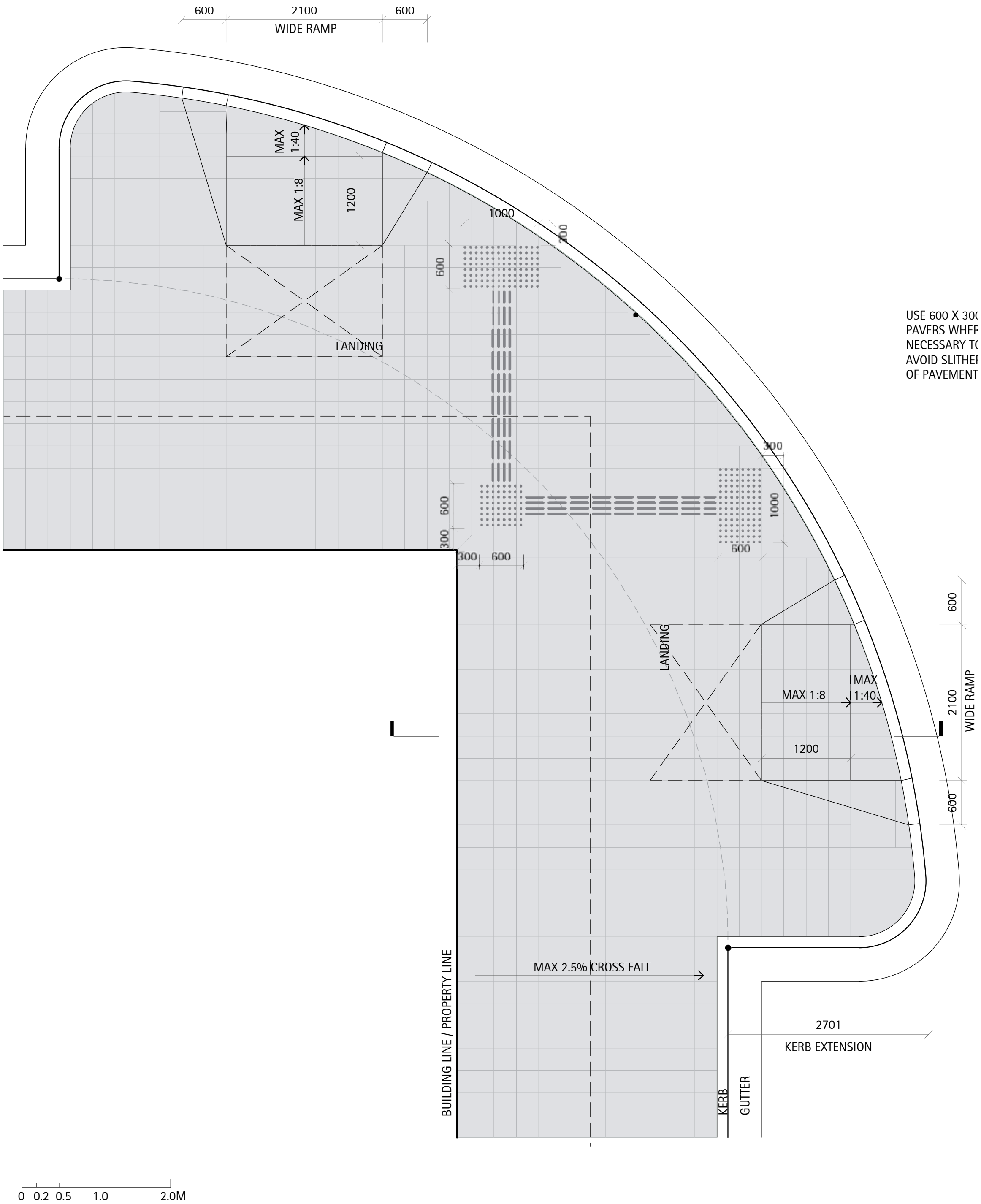


Figure 6.16 Streets Corner Plan: Kerb Extensions 2100 Ramp

Streets Corner Plan: Kerb Extensions 1500 Ramp	
Tangent Point	Determined by geometry of 3650mm wide footpath and 9000mm corner radius
Ramp Size	1500/1800mm (W) x 1200mm
Ramp Gradient	Max. 1:8 (to 1:8.5) for 1200mm depth of ramp and max. 1:40 for remainder
Landing	Min. 1500 x 1500mm. Same 2.5% cross fall as footpath for continuity
TGSI	Separate TGSI from kerb ramps Use directional TGSI to indicate change in direction Warning TGSI across min. 1000 x 600mm min. 300mm from hazard

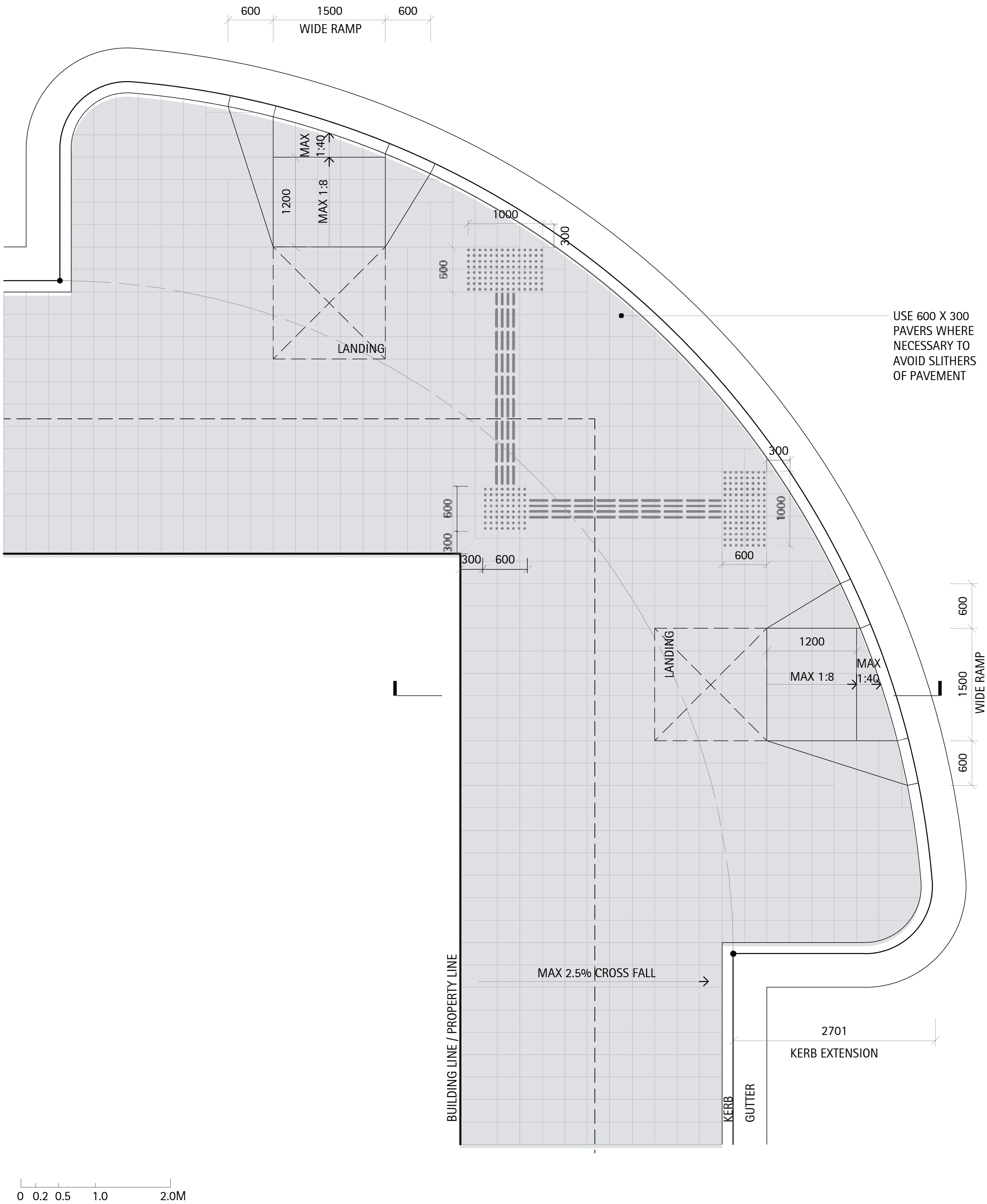
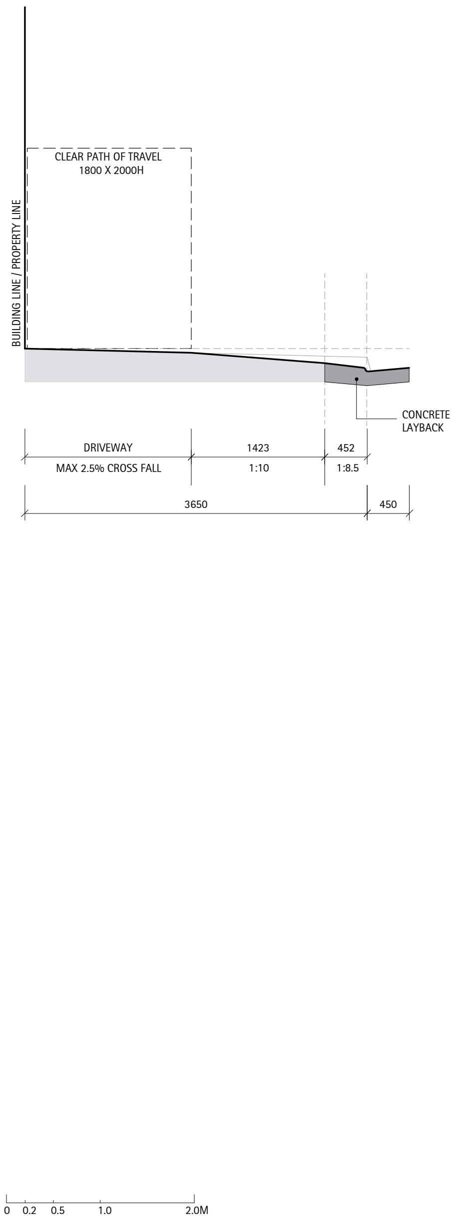


Figure 6.17 Streets Corner Plan: Kerb Extensions 1500 Ramp

Driveway Crossing Layout Plan & Section

Ramp	1:8.5 gradient
Driveway	Concrete pavers (max. 1:40 cross fall) Align pavers at 90° to kerb and building line
Note	All dimensions are in mm unless otherwise specified All ramps and paths to comply with relevant Australian Standards



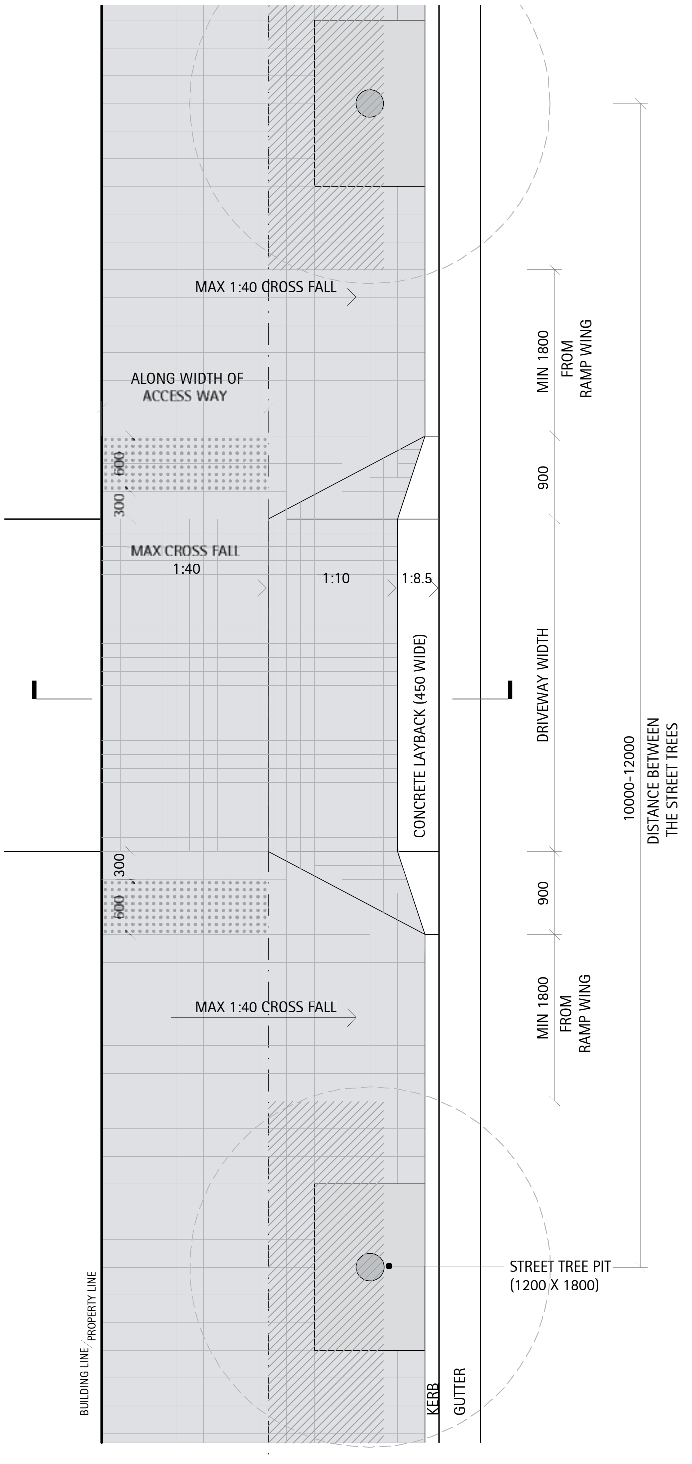


Figure 6.18 Driveway Crossing Layout Plan & Section

6.2 PAVEMENT LAYOUT

6.2.1 GRANITE PAVEMENT

The granite flagstone paving is used in selected CBD, and town centre streets. The material, size and specification must comply with the requirements in DS45.

FULL GRANITE TREATMENT - CBD & GRANVILLE TOWN CENTRE

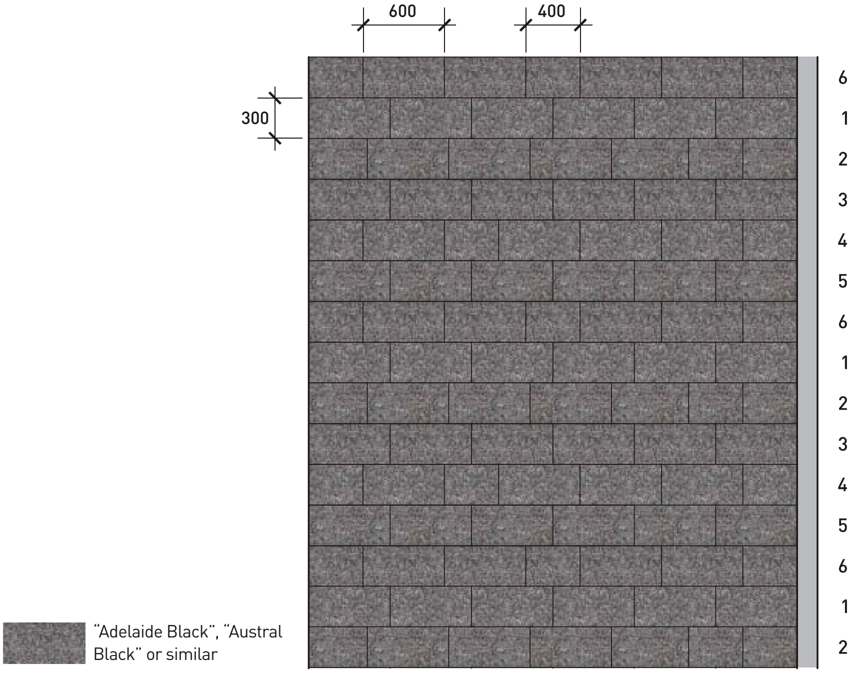


Figure 6.19 Granite Paving Layout_Full Granite_CBD & Granville Town Centre

FULL GRANITE TREATMENT - EPPING TOWN CENTRE

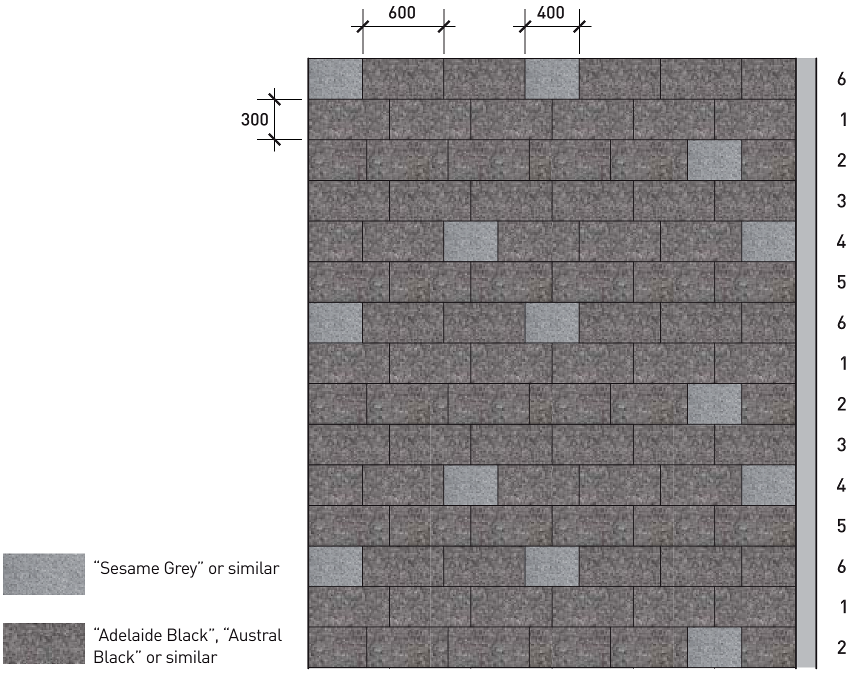


Figure 6.20 Granite Paving Layout_Full Granite_Epping Town Centre

FULL GRANITE TREATMENT - WESTMEAD TOWN CENTRE

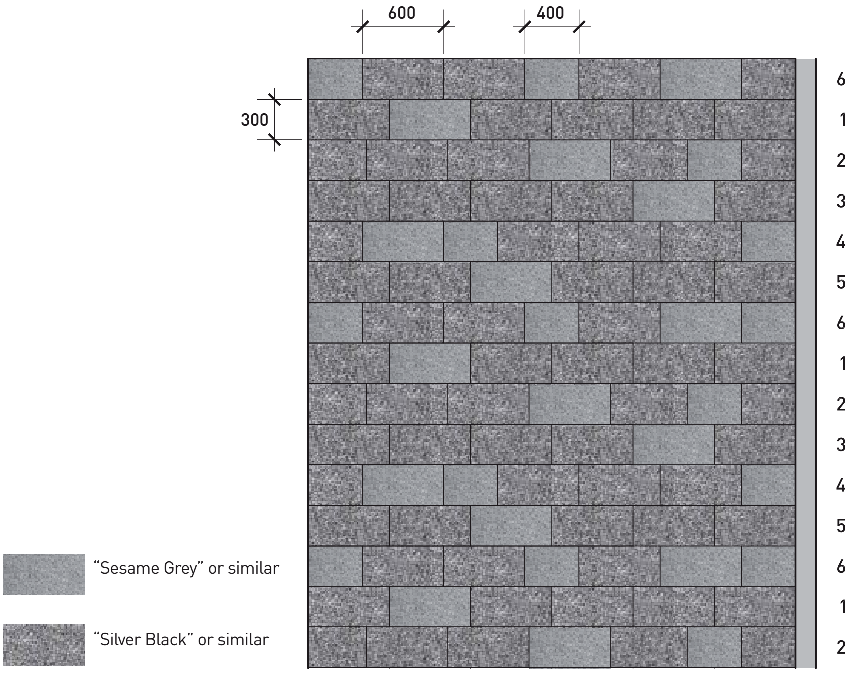


Figure 6.21 Granite Paving Layout_Full Granite_Westmead Town Centre

SECONDARY GRANITE TREATMENT - GRANVILLE TOWN CENTRE

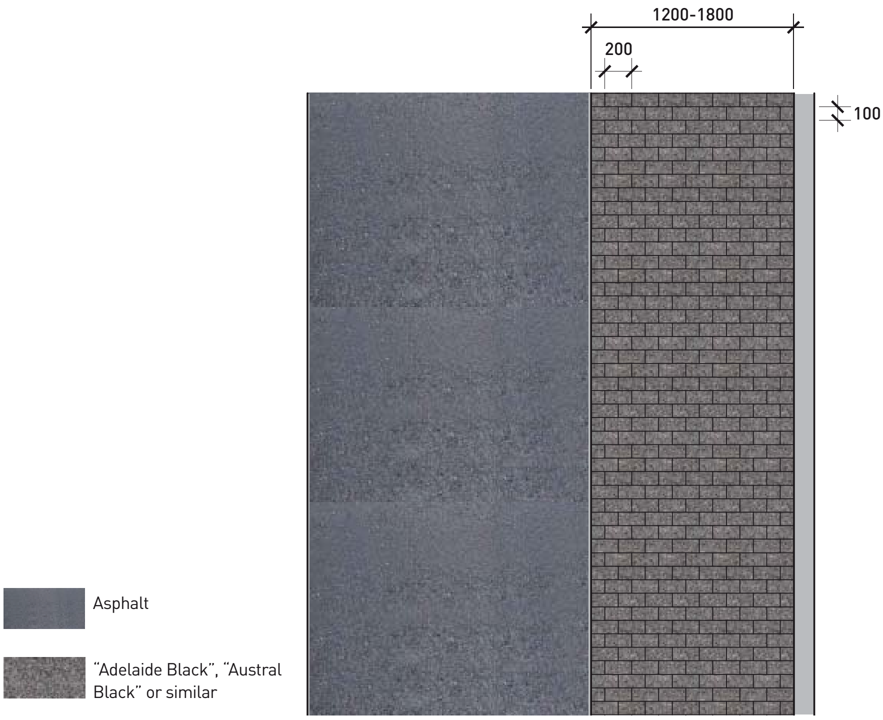


Figure 6.22 Granite Paving Layout_Secondary Granite_Granville Town Centre

6.2.2 CONCRETE UNIT PAVING

The 'City Centre Paving' is comprised of concrete unit pavers with consistent colour and texture. The material, size and specification must comply with the following:

- 300 x 300mm square paver 60mm thick on footpaths;
- 300 x 600mm paver used to make up odd dimensions and to avoid small cut pavers. Avoid cuts less than 150 X 150mm. Refer to Figure 6.23-6.24 'City Centre' Paving Layout A & B;
- Pavers are to be set out perpendicular to the kerb and the building line. Use 600 x 300mm pavers to make up the odd areas created by differing alignments. Refer to Figure 6.25 'City Centre' Paving Layout B;
- Material to be Pebblecrete Insitu Pty Ltd PPX544:35D – colour 'Alluvium'; and
- Pavers with any types of sealant finishes should comply with P5 slip resistance in general areas, and P4 in ramps steeper than 1:14 gradient, as specified in AS 4586:2013.

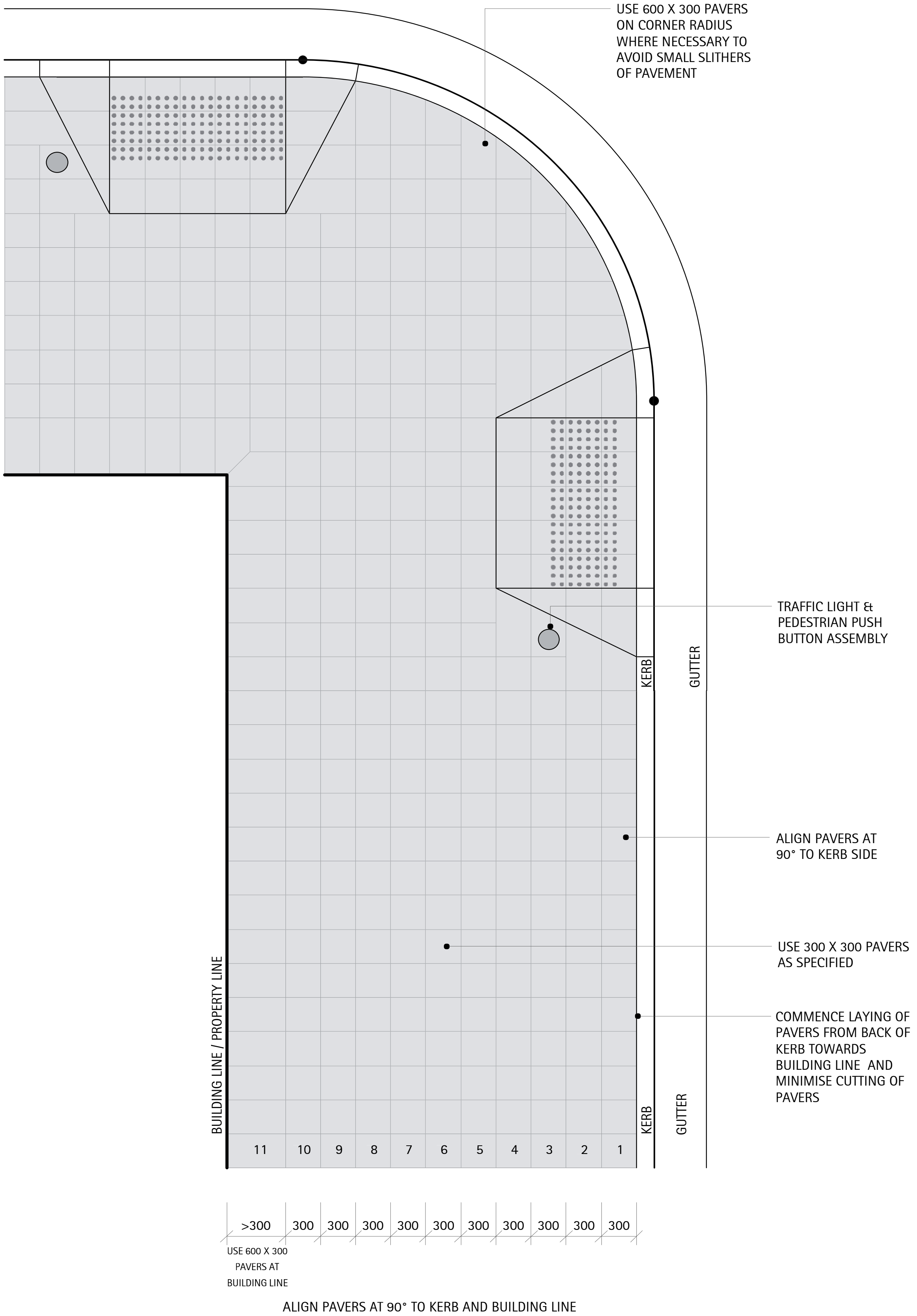


Figure 6.23 Standard 'City Centre Paving' - Layout A

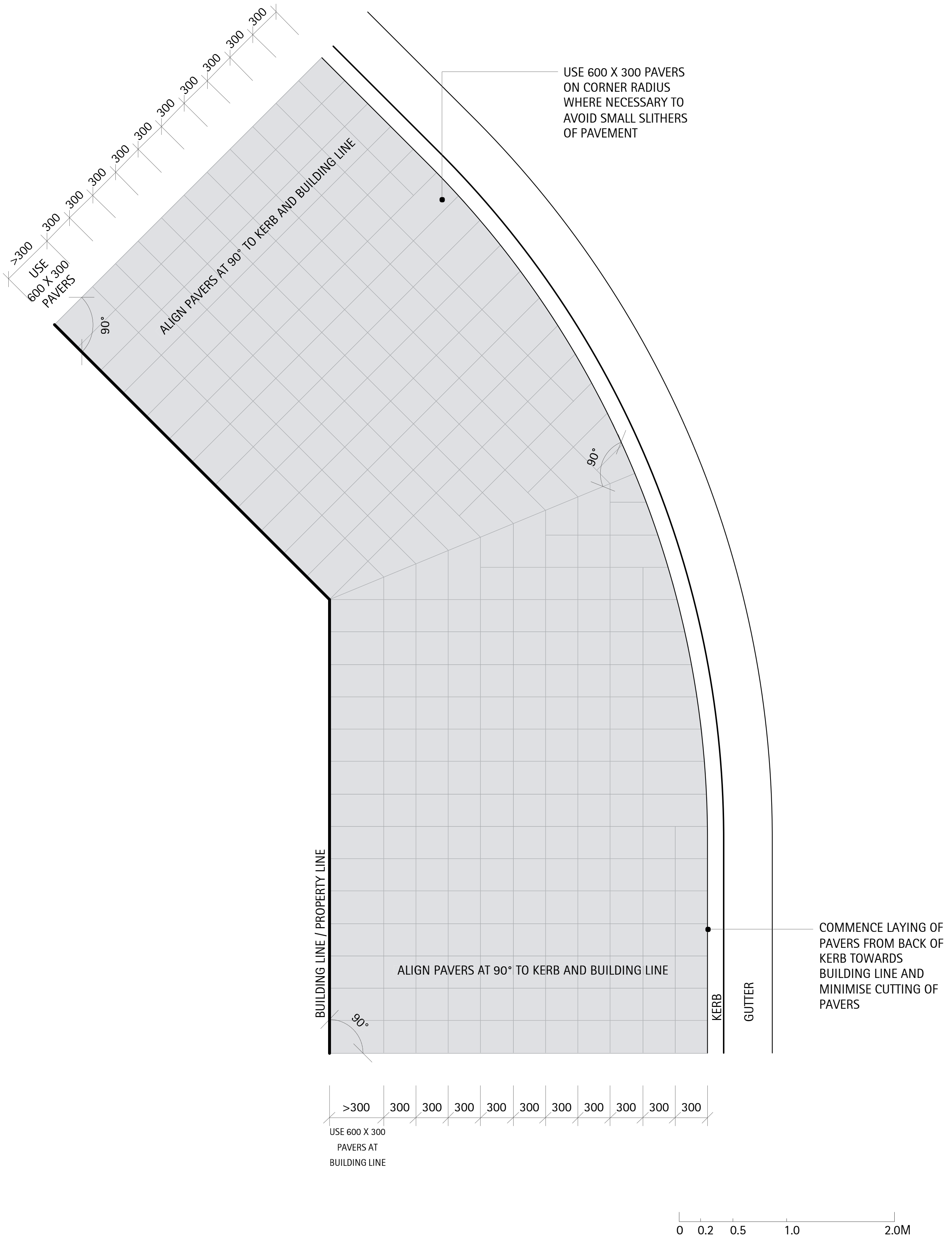


Figure 6.24 Standard 'City Centre Paving' - Layout B

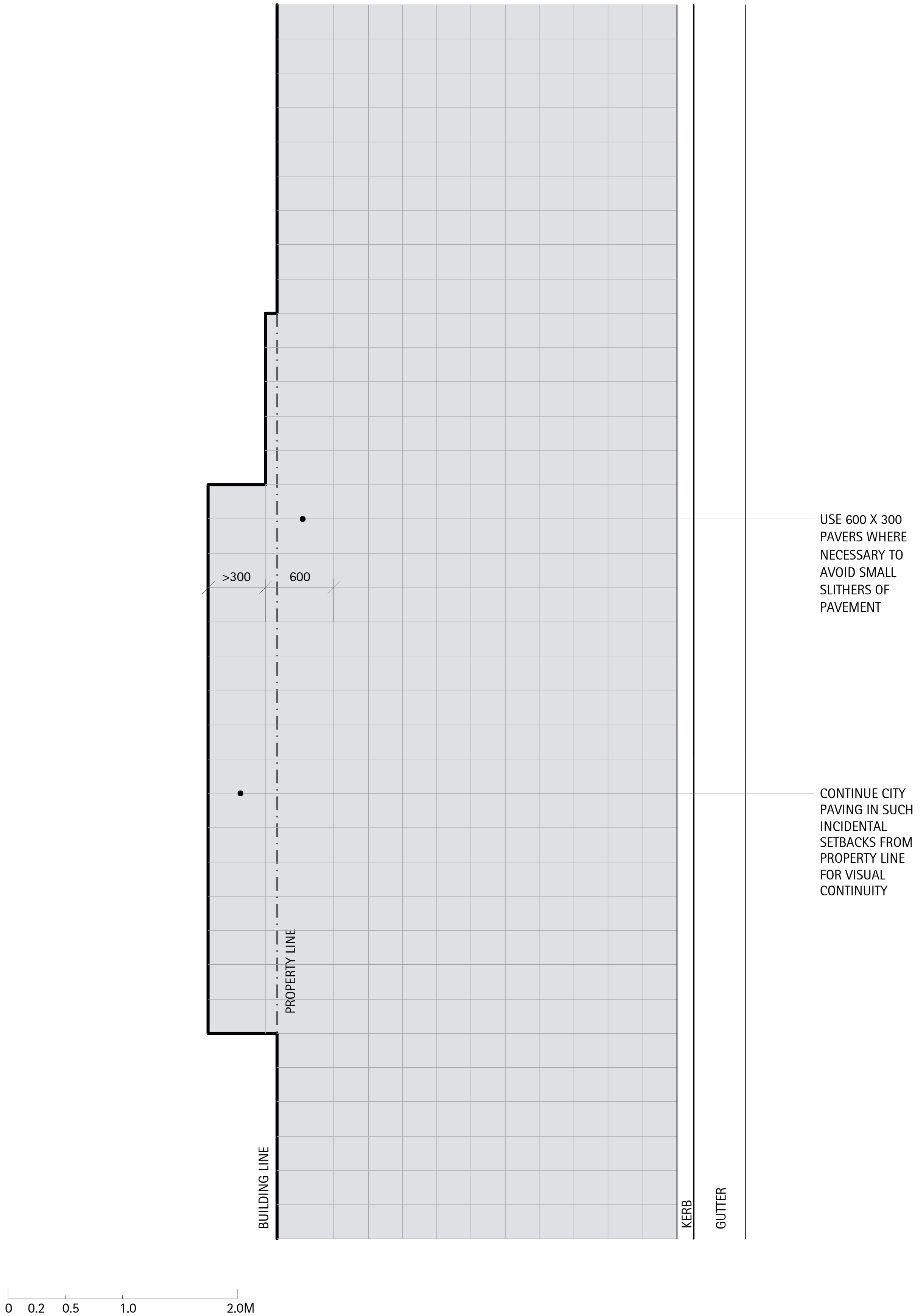


Figure 6.25 Standard 'City Centre Paving' - Layout C

6.2.3 PAVING MERGES

When different paving treatments need to merge in a street corner, the higher quality paving type is usually the primary treatment to be applied in the corner area. For instance, when the Full Granite treatment merges 'City Centre Paving', the Full Granite treatment shall be applied on the corner and finish after the intersection landing areas. An exceptional scenario is when the secondary granite paving merges full asphalt pavement, the asphalt should be used on the corner (see Figure 6.29).

The following diagrams indicates the treatments in the standard situations. The standard layouts may change subject to site conditions.

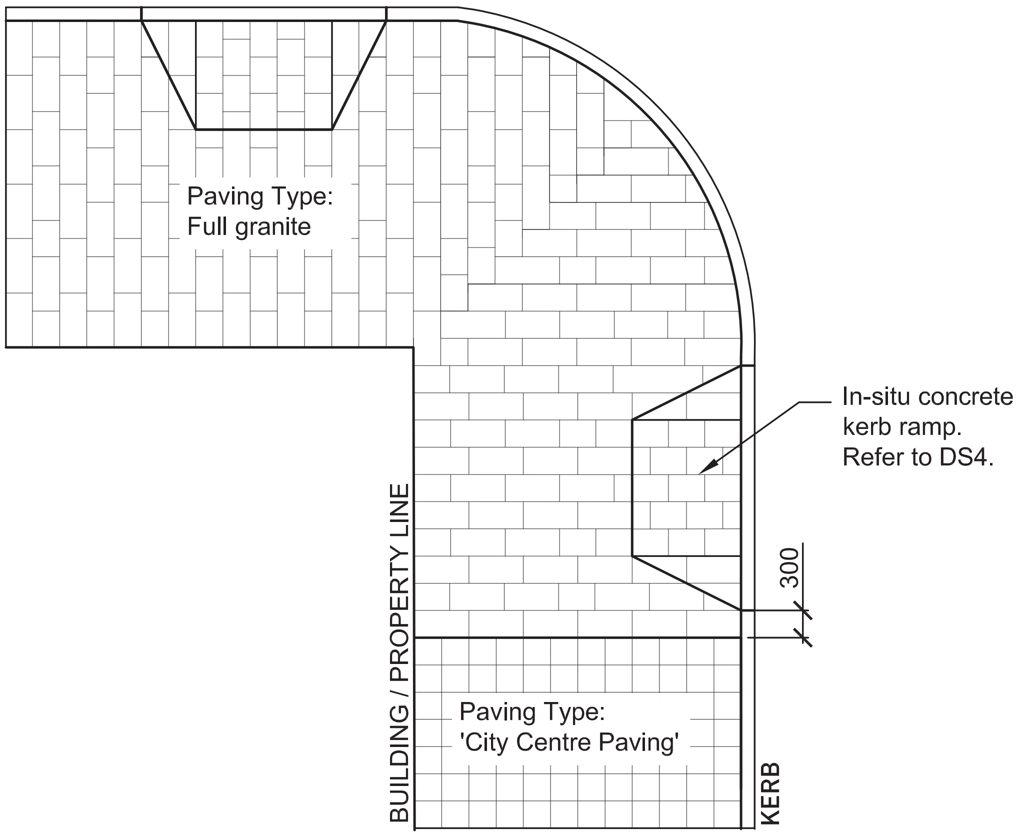


Figure 6.27 Paving merge - Full Granite and 'City Centre Paving'

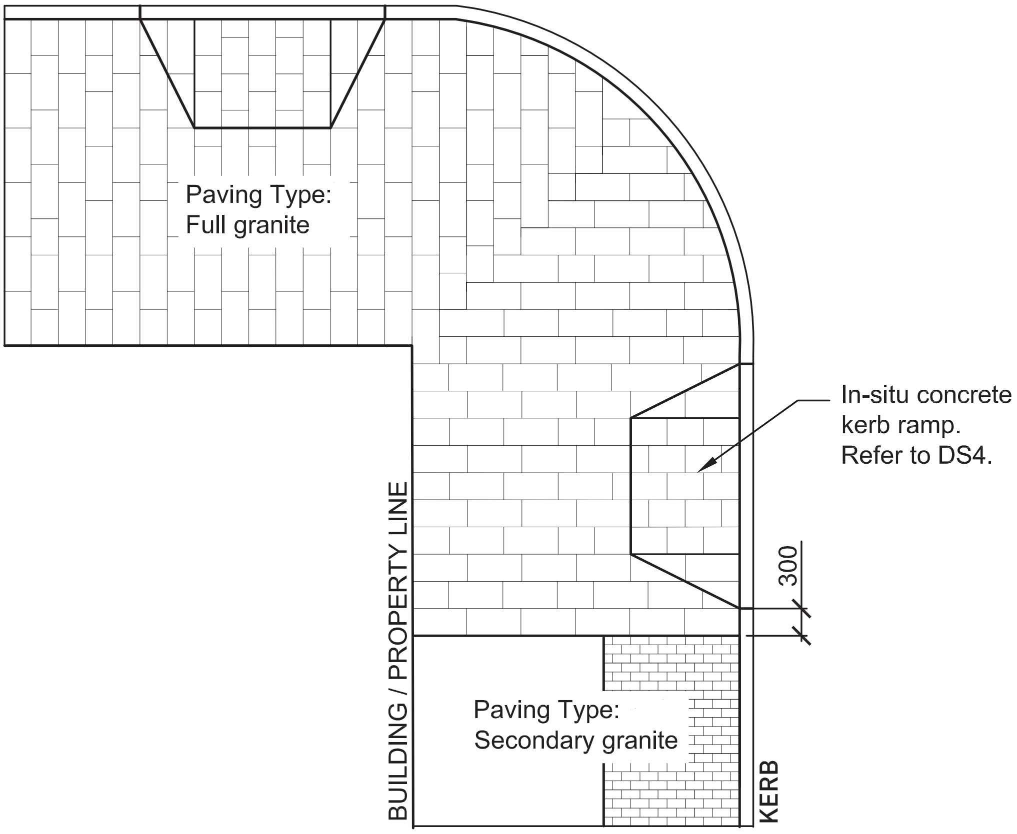


Figure 6.28 Paving merge - Full Granite and Secondary Granite

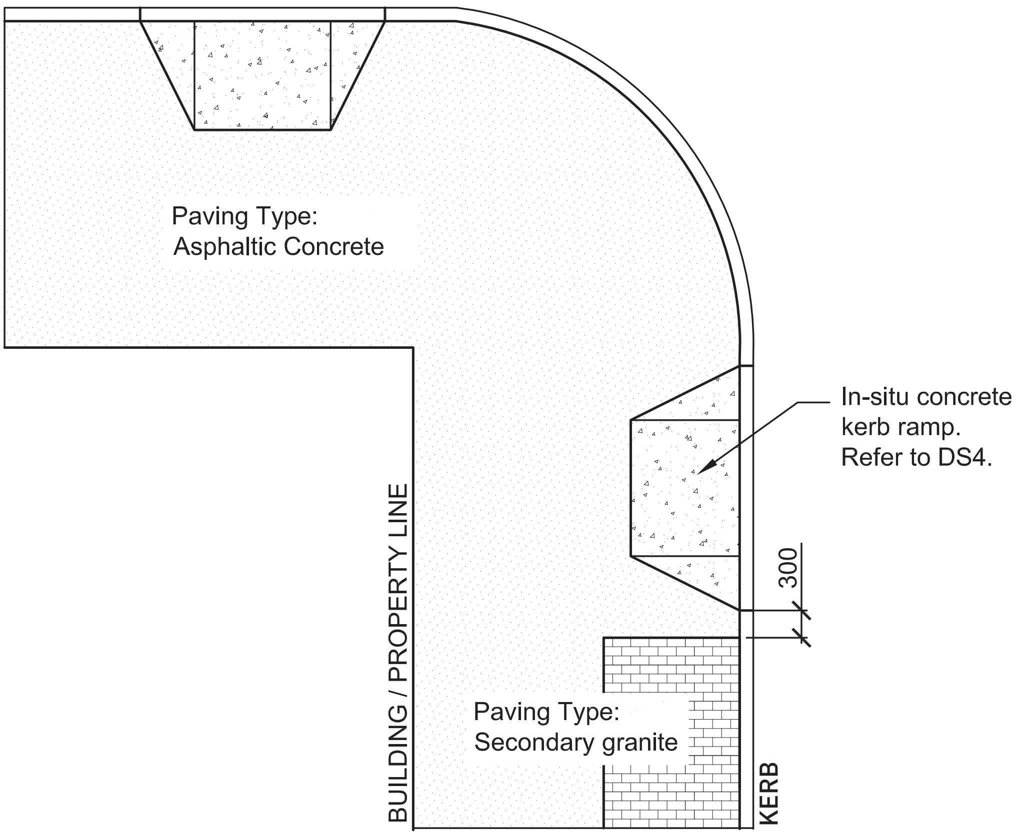


Figure 6.29 Paving merge - Full Granite and Secondary Granite

6.2.4 PIT LIDS & INFILLS

The footways incorporate many utilities and pit lids that need to be considered in the overall design. Pit lids should be made level with the new footpath and aligned to coordinate with the pavement joints. Wherever possible move utilities away from the kerb ramps to allow for the required gradients to be achieved. Refer Figure 6.30.

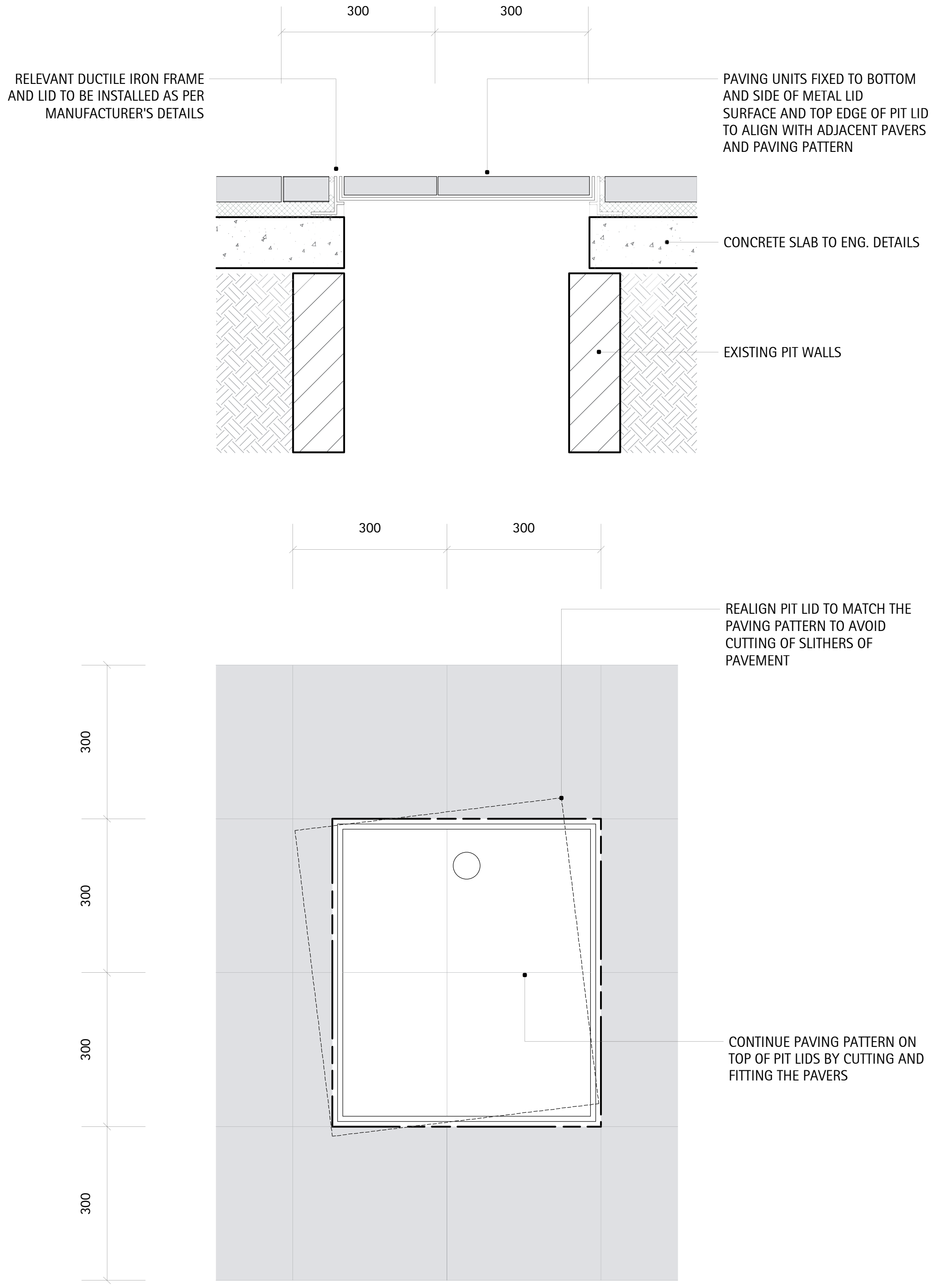


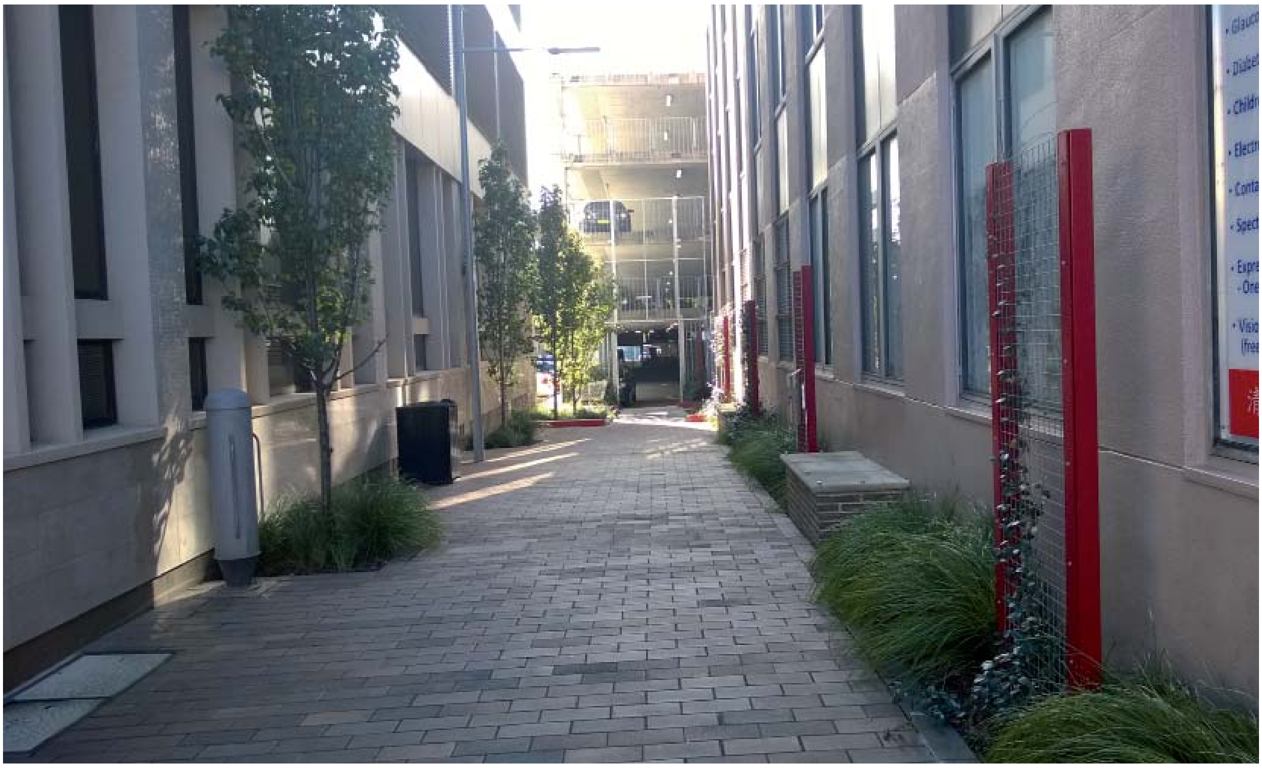
Figure 6.30 Pit Lids with Unit Paving

6.3 LANEWAYS

Most existing lanes in the City are either 3m or 6 - 7m wide, and there is little chance of widening these. There will be opportunities to create new lanes in the future and a variety of lane types are shown in the following pages. Refer to Section 3.3.8 - Laneways for geometry requirements when designing new laneways.

The laneway types discussed in this section are:

- Shared zone (6m)
- Shared zone (10m)
- Service lane (6m)
- Service lane (10m)
- Pedestrian lane
- Entrance threshold



6.3.1 PEDESTRIAN LANES

Pedestrian Lanes: 3000 Wide

Lane Type	Lane for pedestrians only
Clear Path of Travel	Min. 1200mm wide (1500mm preferred) and 2400mm high
Furniture Zone	Furniture zone to allow for seating and/or landscape WSUD area
Pavers	Refer to Chapter 4 Align pavers at 90° to kerb and building line
Cross fall	Max 2.5% cross fall to the centre
Pit Lids	Pit lids must be pedestrian safe and preferably match the surrounding pavement
Lighting	Cantilevered lighting is preferred Pole type and lighting level refer to Chapter 4
Awnings and entrance canopies	To be cantilevered
Notes	All dimensions are in mm unless otherwise specified

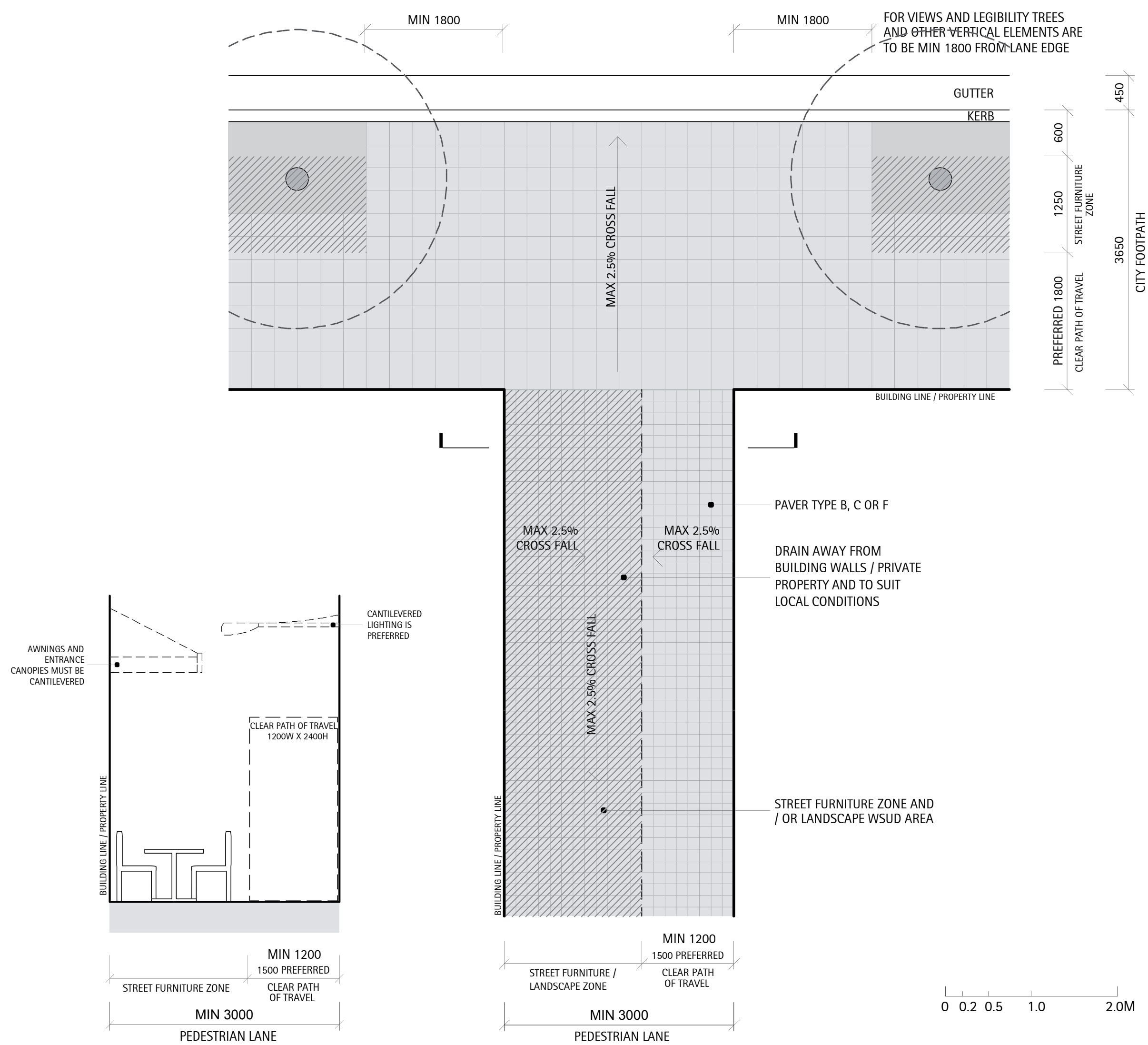


Figure 3.31 Typical Design for Pedestrian Lane: 3000 Wide

6.3.2 SERVICE LANES

Service Lanes: 6000 Wide

Lane Type	Lane for vehicular traffic Entrance to lane is to be narrowed to slow traffic down
Maximum speed of vehicular traffic	Refer to TfNSW safer speeds policy and guidelines
Ramp Size	1500/1800 (wide) x 1200mm
Ramp Location	Coordinate ramps with path of travel Align ramps to match pavers
Ramp Gradient	Max. 1:8 (to 8.5) For 1200mm depth of ramp and max 1:40 for remainder
landing	Min. 1500 x 1500mm with same 2.5% Cross fall as footpath continuity
tgsi	Hazard tactiles across entire width of ramp
PAVERS	Refer to Chapter 4 Align pavers at 90° to kerb and building line
Lane Cross Fall	One way preferred (max 2.5%) or to suit local conditions
Pit Lids	Pit lids must be pedestrian vehicular safe and preferably match the surrounding pavement
Lighting	Cantilevered lighting is preferred and at a height to allow for truck access and to meet lighting design safety Pole type and lighting level refer to Chapter 4
Awnings and Entrance Canopies	To be cantilevered and setback 600mm from carriageway
Advice for Use	This treatment has been included mainly as a potential treatment for existing service lanes to provide improved appearance and traffic calming at entrance and for lanes with high traffic volumes
Notes	Design may vary depending on whether it is a 1-way or 2-way lane for vehicle movements All dimensions are in mm unless otherwise specified

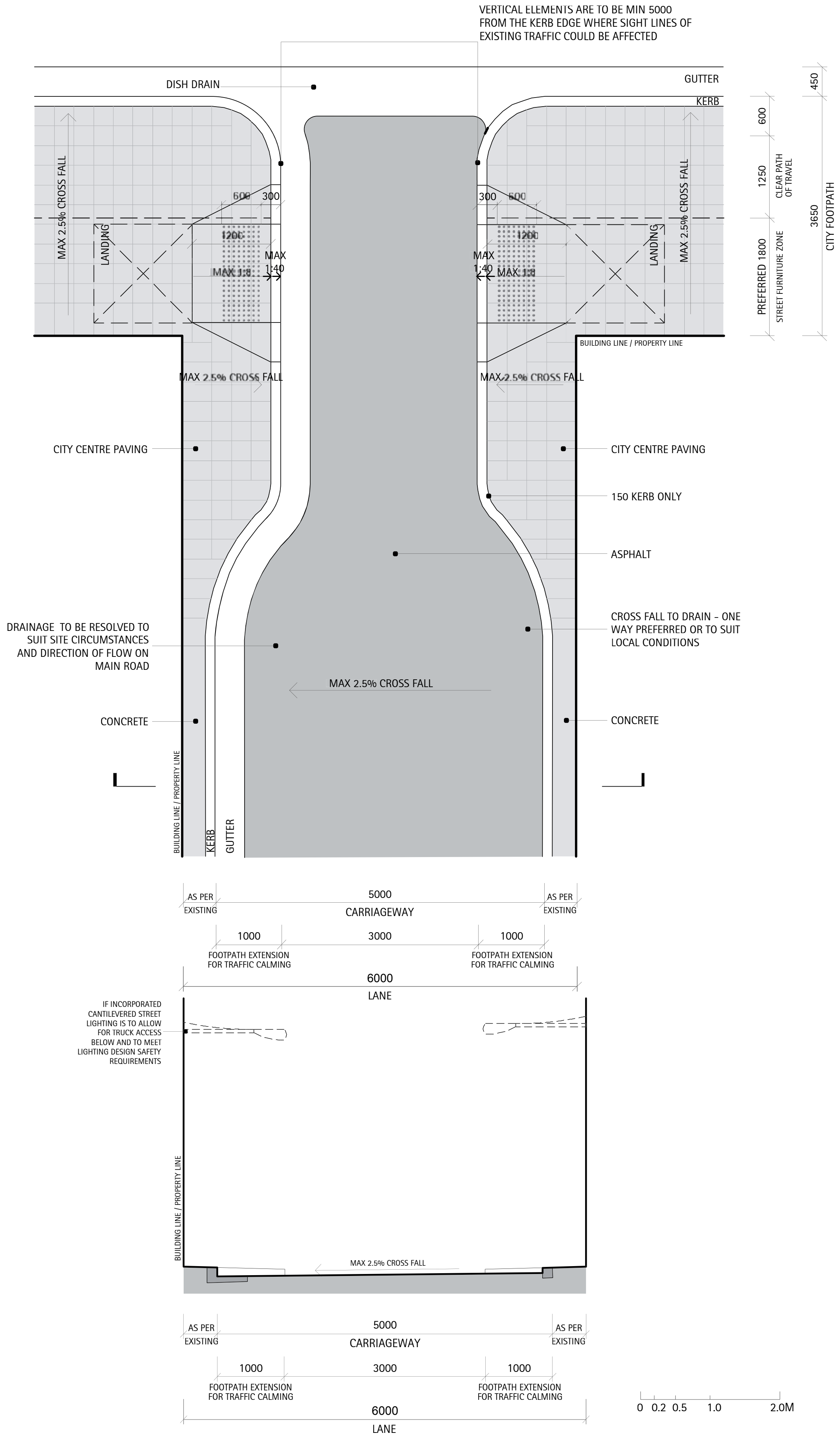


Figure 6.32 Typical Design for Service Lane: 6000mm

Service Lanes: 10000 Wide

Lane Type	Service Lane
Maximum Speed of Vehicular Traffic	Refer to TfNSW safer speeds policy and guidelines
Clear Path of Travel	To be a minimum of 1200 wide (1500 preferred) and 2400 high
Ramp Size	1500/1800 (wide) x 1200mm
Ramp Location	Coordinate ramps with path of travel Align ramps to match pavers
Ramp Gradient	Max 1:8 (to 8.5) for 1200mm depth of ramp and max 1:40 for remainder
Landing	Min 1500 x 1500mm with same 2.5% cross fall as footpath continuity
TGSI	Hazard tactiles across entire width of ramp
Pavers	Refer to Chapter 4 Align pavers at 90° to kerb and building line
Lane Cross Fall	One way preferred (max 2.5%) or to suit local conditions
Pit Lids	Pit lids must be pedestrian vehicular safe and preferably match the surrounding pavement
Lighting	Cantilevered lighting is preferred and at a height to allow for truck access and to meet lighting design safety Pole type and lighting level refer to Chapter 4
Awnings and Entrance Canopies	To be cantilevered and set back 600mm from carriageway
Advice for Use	This treatment has been included mainly as a potential treatment for existing service lanes to provide improved appearance and traffic calming at entrance and for lanes with high traffic volumes
Additional Notes	Design may vary depending on whether it is a 1-way or 2-way lane for vehicle movements All dimensions are in mm unless otherwise specified

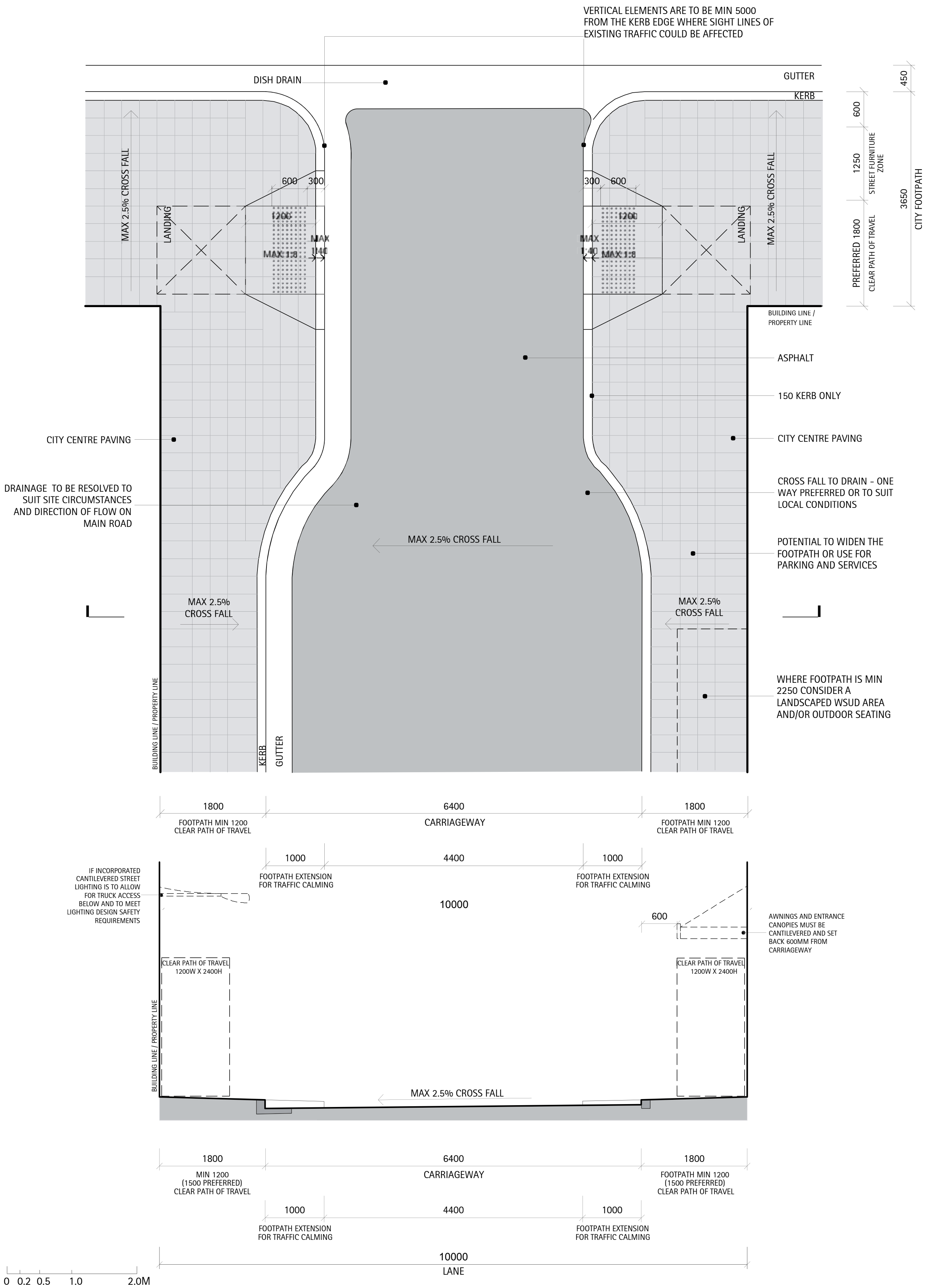


Figure 6.33 Typical Design for Service Lane: 10000mm

6.3.3 SHARED ZONE

Shared Zones: 6400 Wide

Lane Type	Shared zone for pedestrian and vehicular traffic.
Maximum Speed Of Vehicular Traffic	10 km/h
TGSI	Provide hazard warning and directional TGSI as indicated on plan.
Furniture Zone	Street furniture zone to allow for seating and/or landscape WSUD area.
Pavers - Shared Zone	Small dimensioned paving within the shared zone to differentiate it from the surrounding road network. Refer to Chapter 4 Align pavers at 90° to kerb and building line.
Lane Cross Fall	Max 2.5% cross fall to gutter
Pit Lids	Pit lids must be pedestrian vehicular safe and preferably match the surrounding pavement.
Lighting	Cantilevered lighting is preferred and at a height to allow for truck access and to meet lighting design safety. Pole type and lighting level refer to Chapter 4
Awnings And Entrance Canopies	To be cantilevered and set back 600mm from carriageway.
Signage	Shared zone signage required conforms to TfNSW Shared Zone Guidelines and policy.
Notes	Design and installation should comply with TfNSW Shared Zone Guidelines. Design may vary depending on whether it is a 1-way or 2-way lane for vehicle movements. A consent from RMS needs to be obtained prior to the construction. All dimensions are in mm unless otherwise specified.

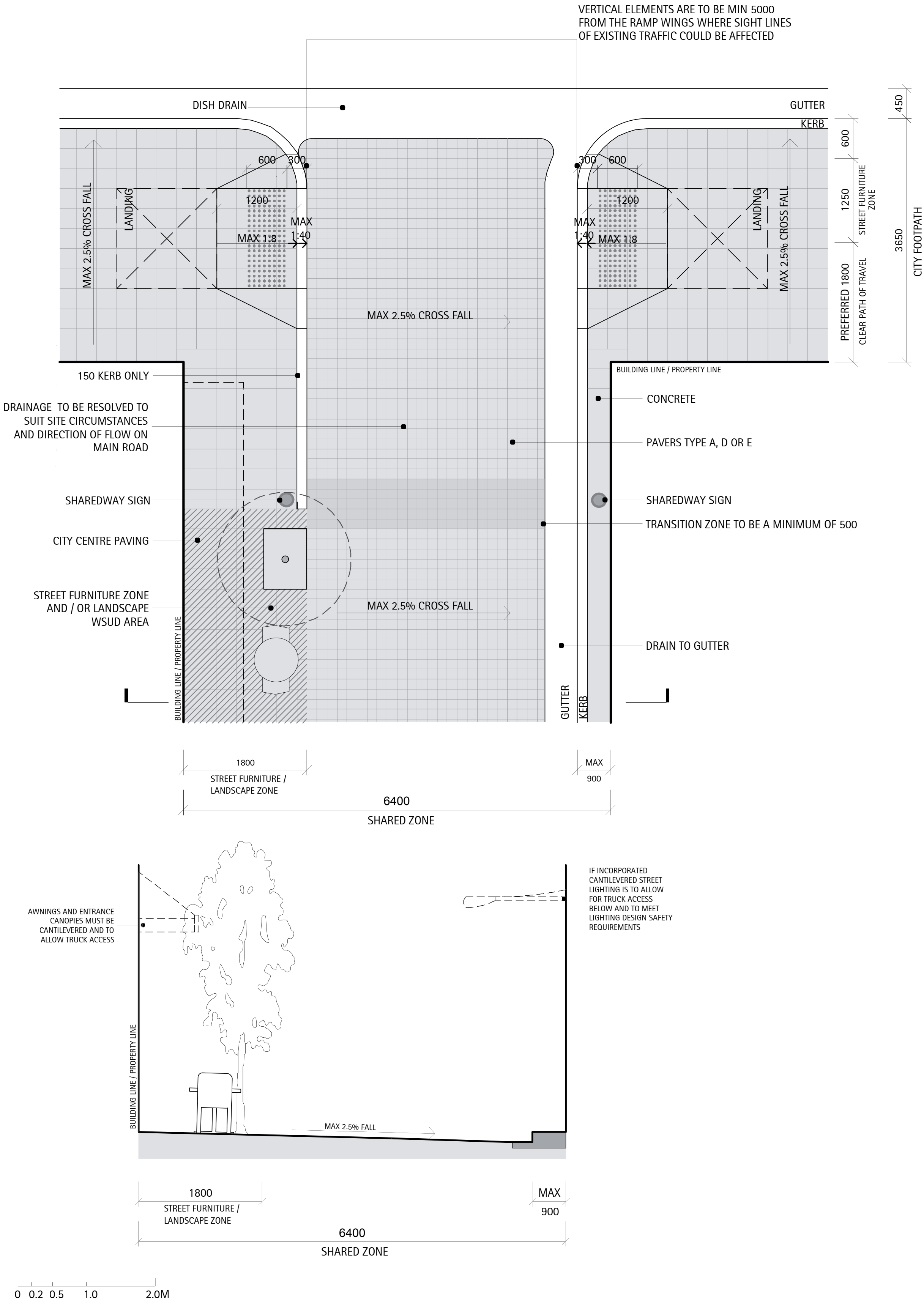


Figure 6.34 Typical Design for Shared Zone: 6400mm

Shared Zones: 10000 Wide

Lane Type	Shared lane for pedestrian and vehicular traffic
Maximum Speed Of Vehicular Traffic	10 km/h
TGSI	Provide hazard warning and directional TGSI as indicated on plan
Furniture Zone	To allow for seating and/or landscaped WSUD area
Pavers	Refer to Chapter 4 Align pavers at 90° to kerb and building line
Lanes Cross Falls	Max 2.5% cross fall to gutter
Pit Lids	Pit lids must be pedestrian vehicular safe and preferably match the surrounding pavement.
Lighting	Cantilevered lighting is preferred and at a height to allow for truck access and to meet lighting design safety. Pole type and lighting level refer to Chapter 4
Awnings And Entrance Canopies	To be cantilevered and set back 600mm from carriageway
Signage	Shared zone sign age required conforms to RMS shared zone guidelines and policy
Notes	Design and installation should comply with TfNSW Shared Zone Guidelines. Design may vary depending on whether it is a 1-way or 2-way lane for vehicle movements. A consent from RMS needs to be obtained prior to the construction. All dimensions are in mm unless otherwise specified.

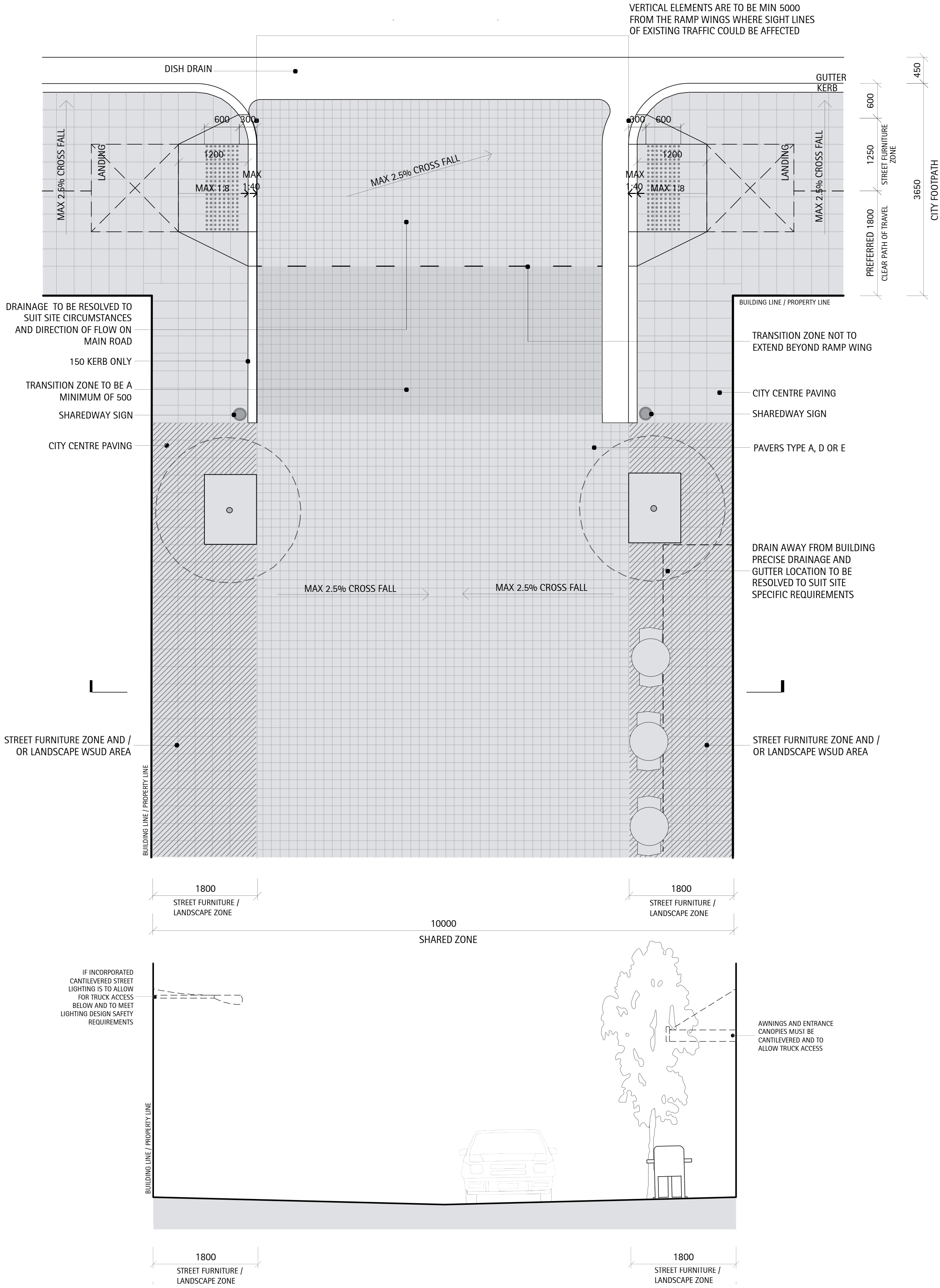


Figure 6.35 Typical Design for Shared Zone: 10000mm

6.3.4 ENTRANCE THRESHOLD

Entrance Threshold: Service Lanes

Lane Type	Lane for vehicular traffic max. 45 cars per hour
Maximum Speed Of Vehicular Traffic	Refer to TfNSW safer speeds policy and guidelines
TGSI	Provide hazard warning and directional TGSI as indicated on plan
Street Tree Pit	Vertical elements are to be a minimum of 5000mm from the ramp wings where sight lines of existing traffic are affected.
Pavers	Refer to Chapter 4 Align pavers at 90° to kerb and building line
Lane Cross Fall	Traffic calming area - to drain water away from buildings walls / private property and to suit local conditions Lane - one way preferred (max. 2.5%) or to suit local conditions
Lighting	Cantilevered lighting is preferred and at a height to allow for truck access and to meet lighting design safety. Pole type and lighting level refer to Chapter 4
Awnings And Entrance Canopies	To be cantilevered and set back 600mm from carriageway
Signage	Shared zone signage not applicable as does not conform to TfNSW Shared Lane Guidelines
Advice for Use	This treatment has been included mainly as a potential treatment for existing service lanes to provide improved appearance and traffic calming at entrance
Additional Notes	Design may vary depending on whether it is a 1-way or 2-way lane for vehicle movmements. Designers should seek guidance in the intial stage to check what RMS approvals will be required and should obtain approval from RMS and/or City of Parramatta Traffic Committee prior to obtaining a final approval from council. All dimensions are in mm unless otherwise specified.

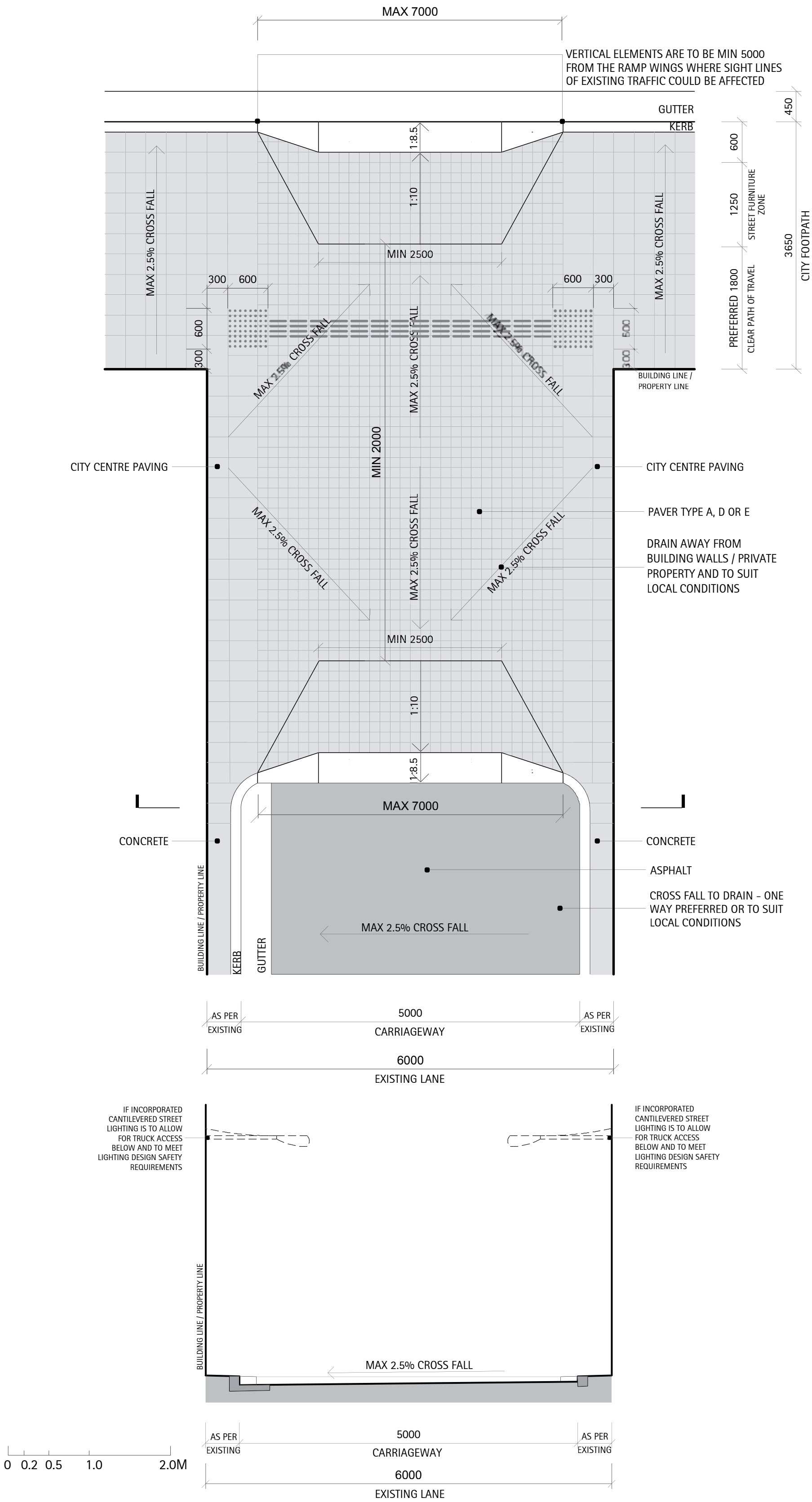
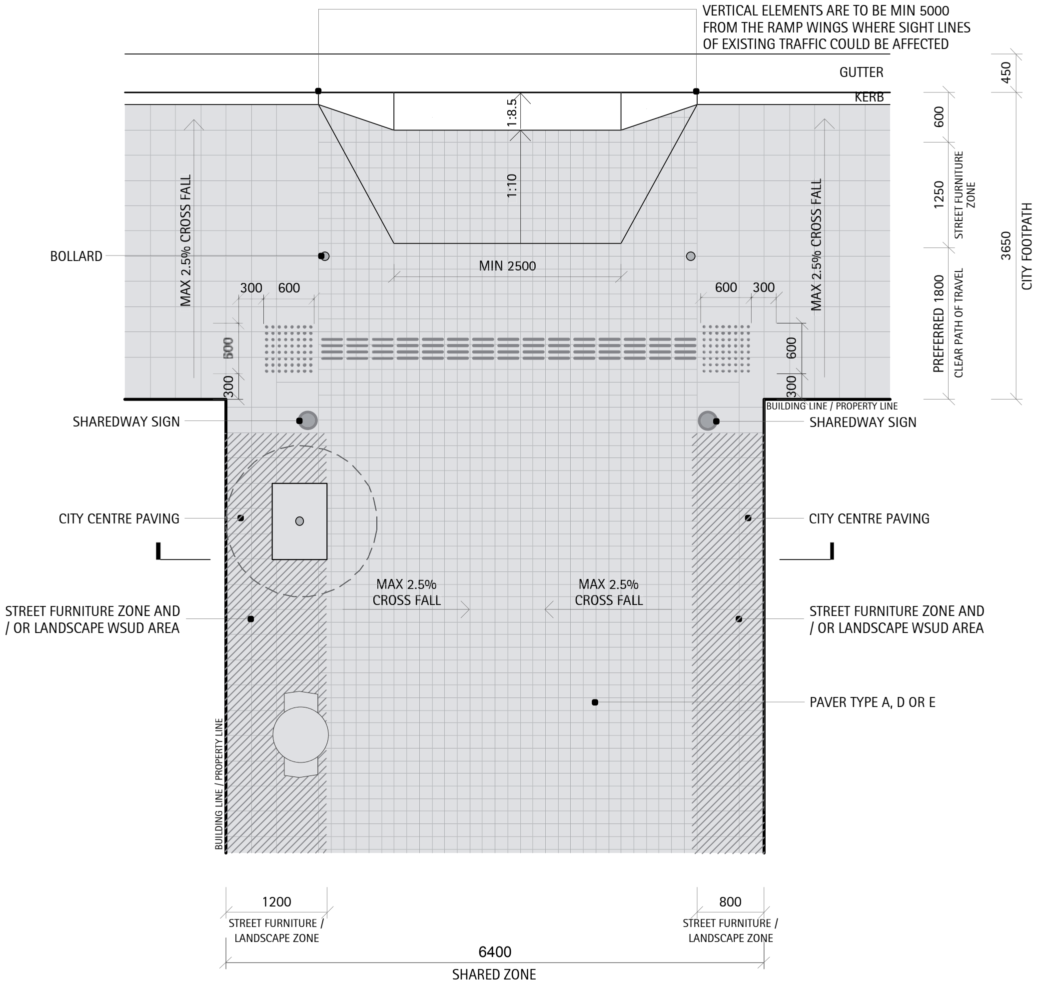


Figure 6.36 Typical Design for Threshold in Service Lanes

Entrance Threshold: Shared Zones

Lane Type	Shared lane for pedestrian and vehicular traffic max. 45 cars per hour
Maximum Speed of Vehicular Traffic	10 km/h
TGSI	Provide hazard warning and directional TGSI as indicated on plan
Street Furniture Zone	Street furniture zone to allow for seating and/or landscape WSUD area
Street Tree Pit	Vertical elements are to be a min. of 5000mm from the ramp wings where sight lines of existing traffic are affected
Pavers	Refer to Chapter 4 Align pavers at 90° to kerb and building line
Lane Cross Fall	Max. 2.5% cross fall to gutter
Lighting	Cantilevered lighting is preferred and at a height to allow for truck access and to meet lighting design safety. Pole type and lighting level refer to Chapter 4
Awnings and Entrance Canopies	To be cantilevered and set back 600mm from carriageway
Signage	Shared zone signage required conforms to tfnsw shared zone guidelines and policy
Notes	Design may vary depending on whether it is a 1-way or 2-way lane for vehicle movements. Designers should seek guidance in the initial stage to check what RMS approvals will be required and should obtain approval from RMS and/or parramatta traffic committee prior to obtaining approval from council. All dimensions are in mm unless otherwise specified.



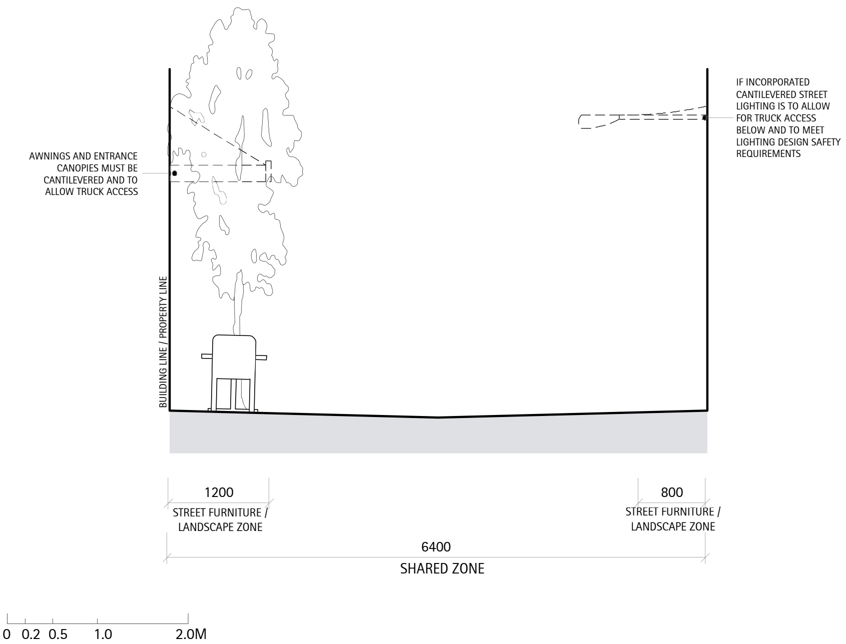


Figure 6.37 Typical Design for Threshold in Shared Zones

6.4 TREES & PLANTING

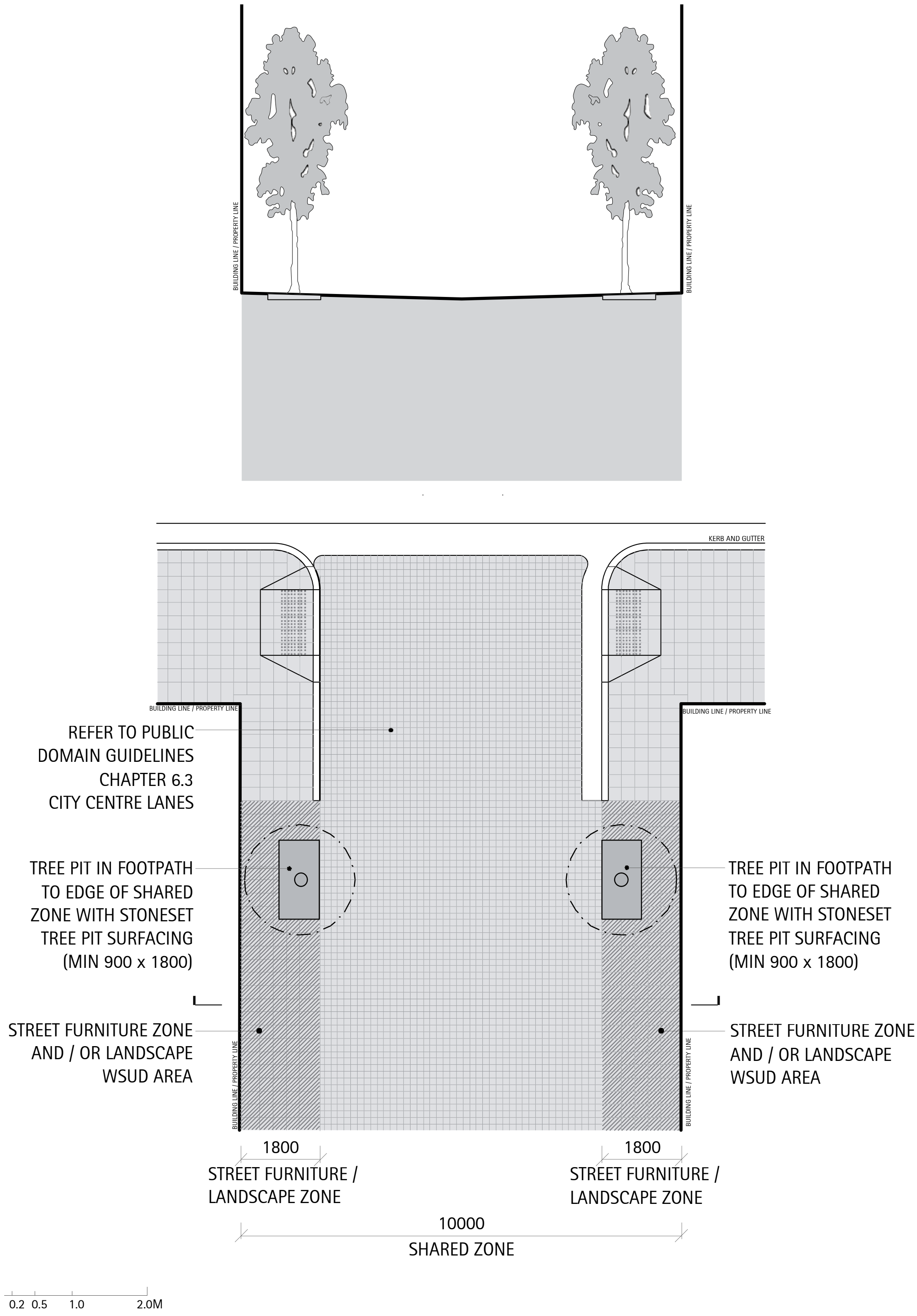


Figure 6.38 Street Tree Typical Pit Location: 10000mm Lane

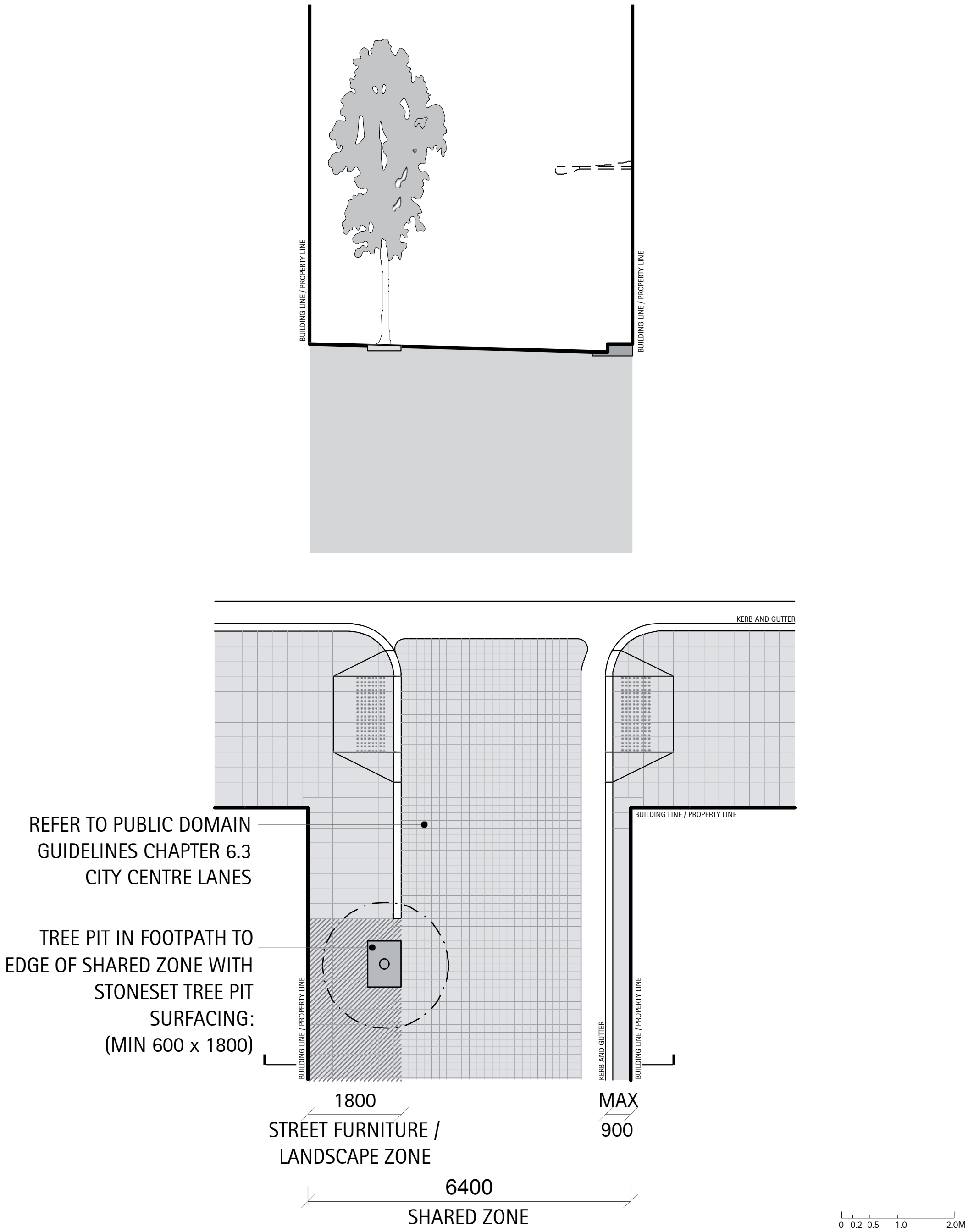


Figure 6.39 Street Tree Typical Pit Location: 6400mm Wide Lane

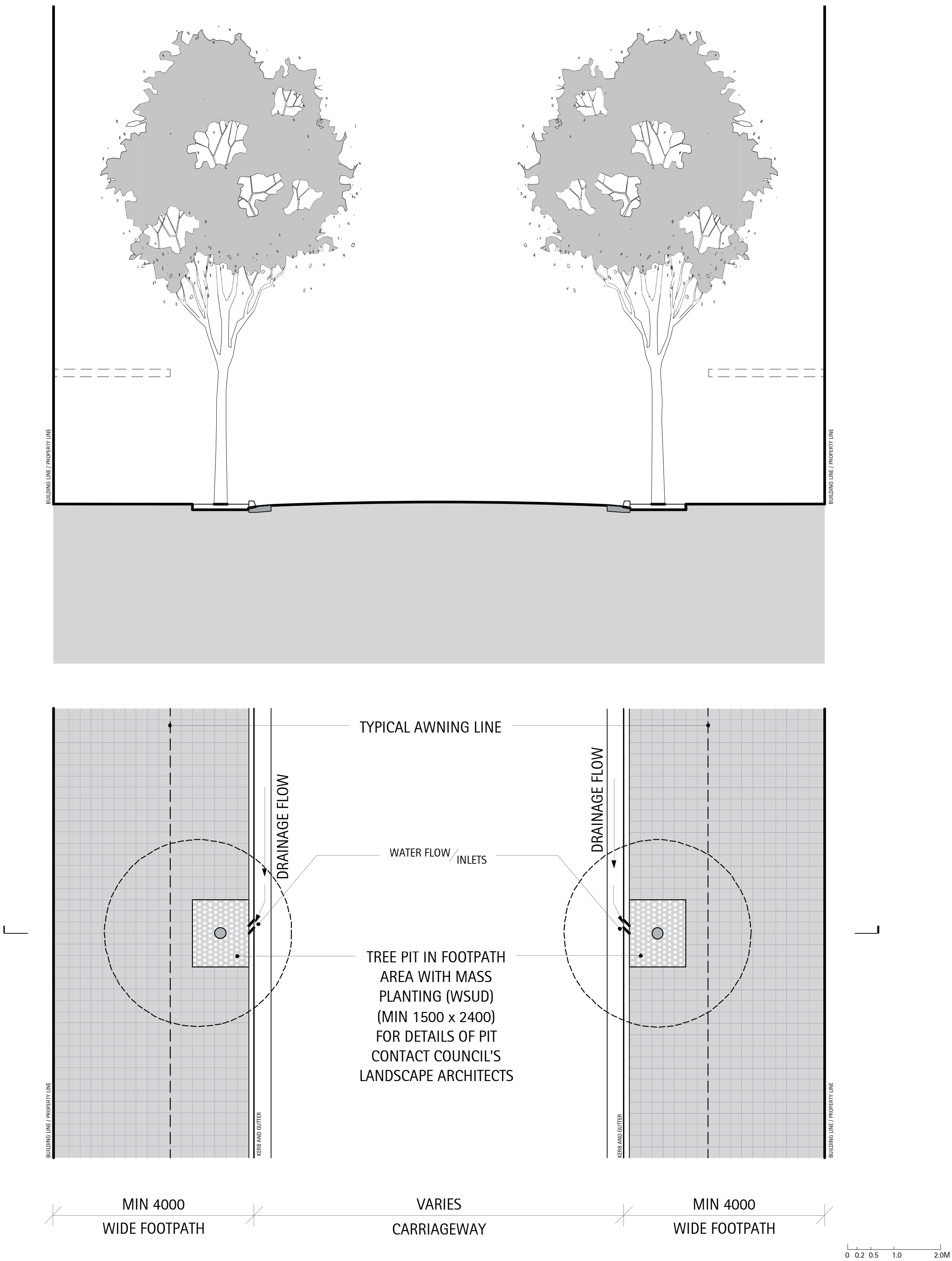


Figure 6.40 Street Tree Typical WSUD Pit Location in Footpath > 4000

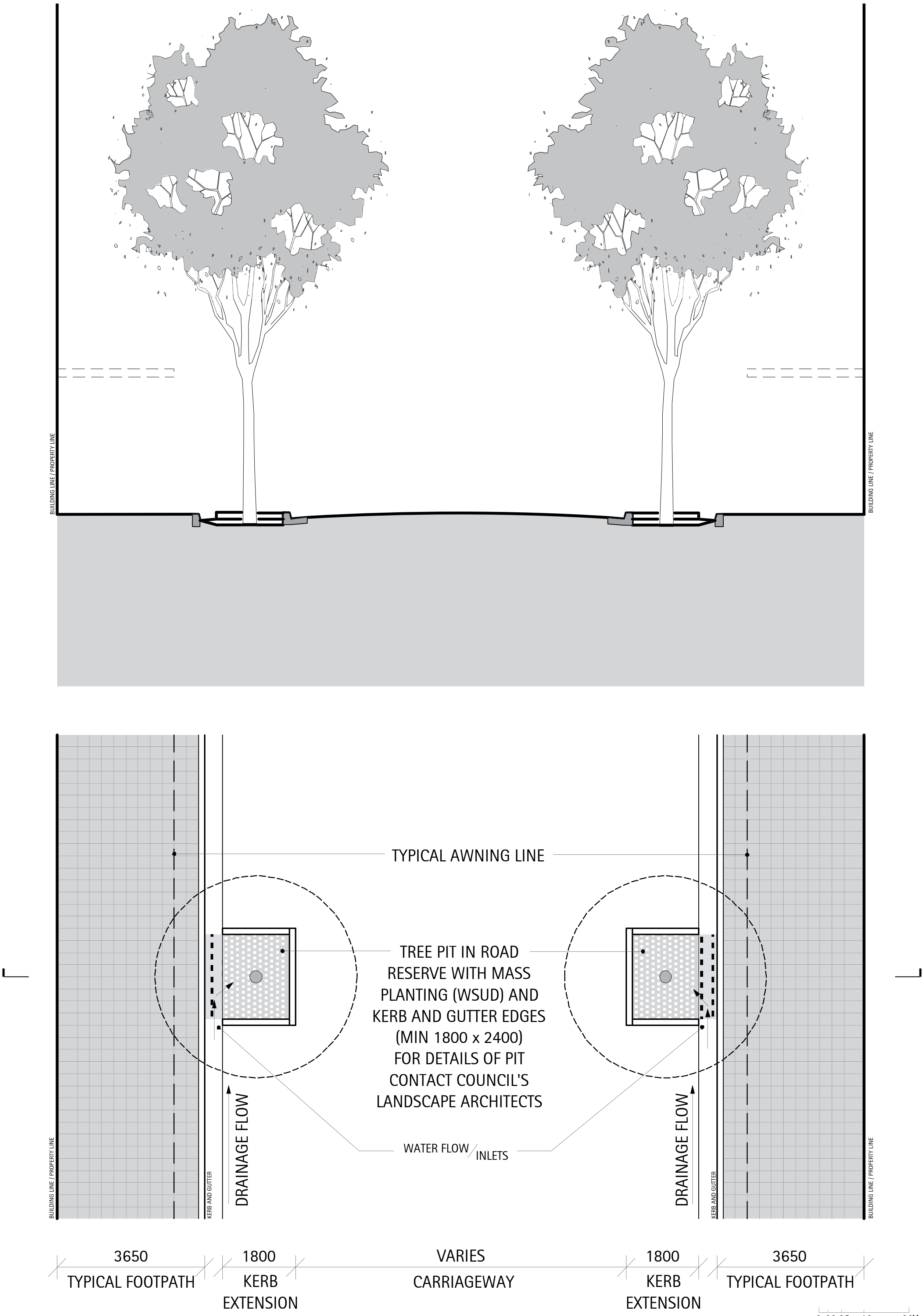


Figure 6.41 Street Tree Typical WSUD Pit Location in Roadway

6.5 FURNITURE

6.5.1 BIKE RACKS

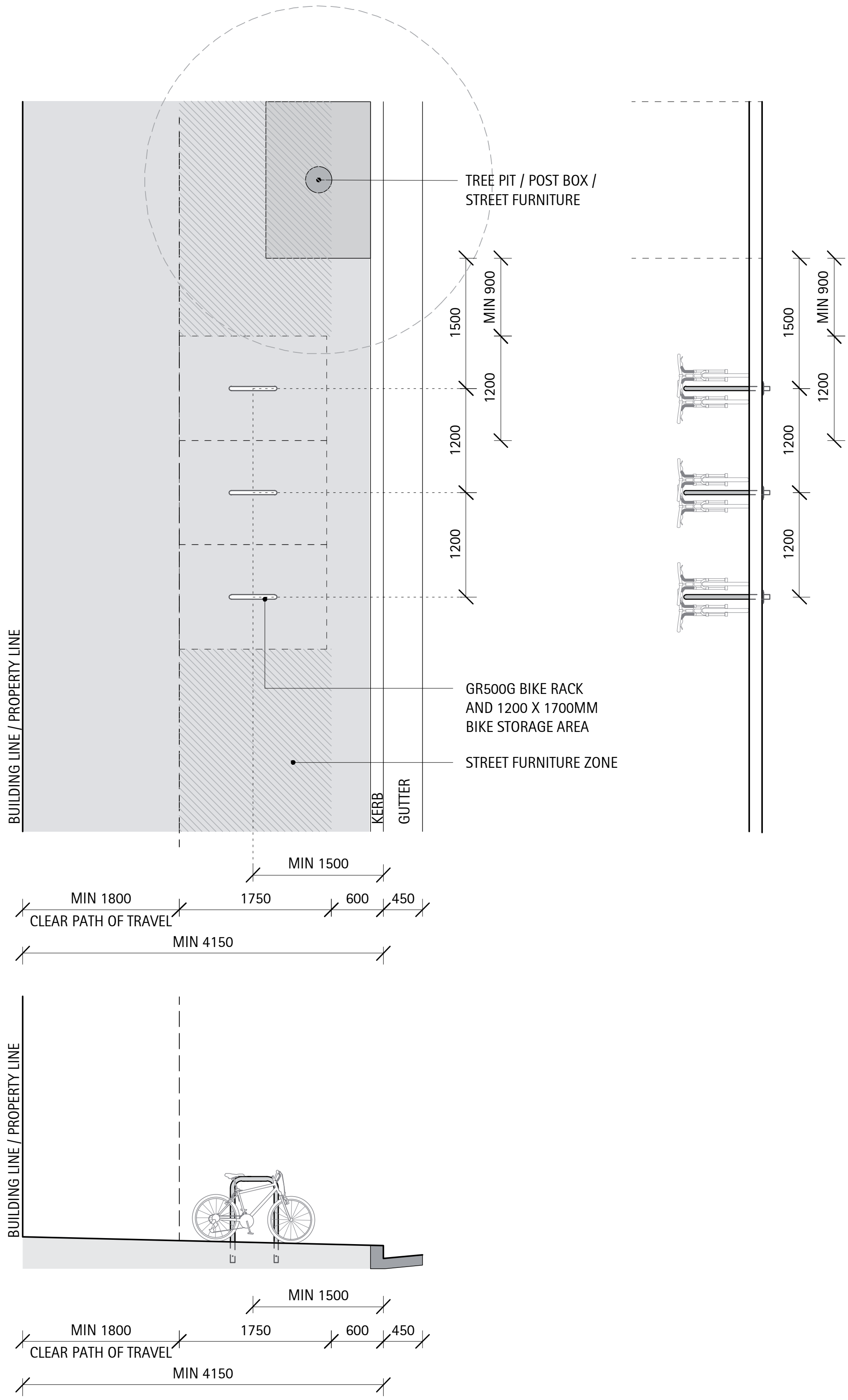


Figure 6.42 Bike rack layout option A - most preferred for CBD, Centres and any wider footpaths

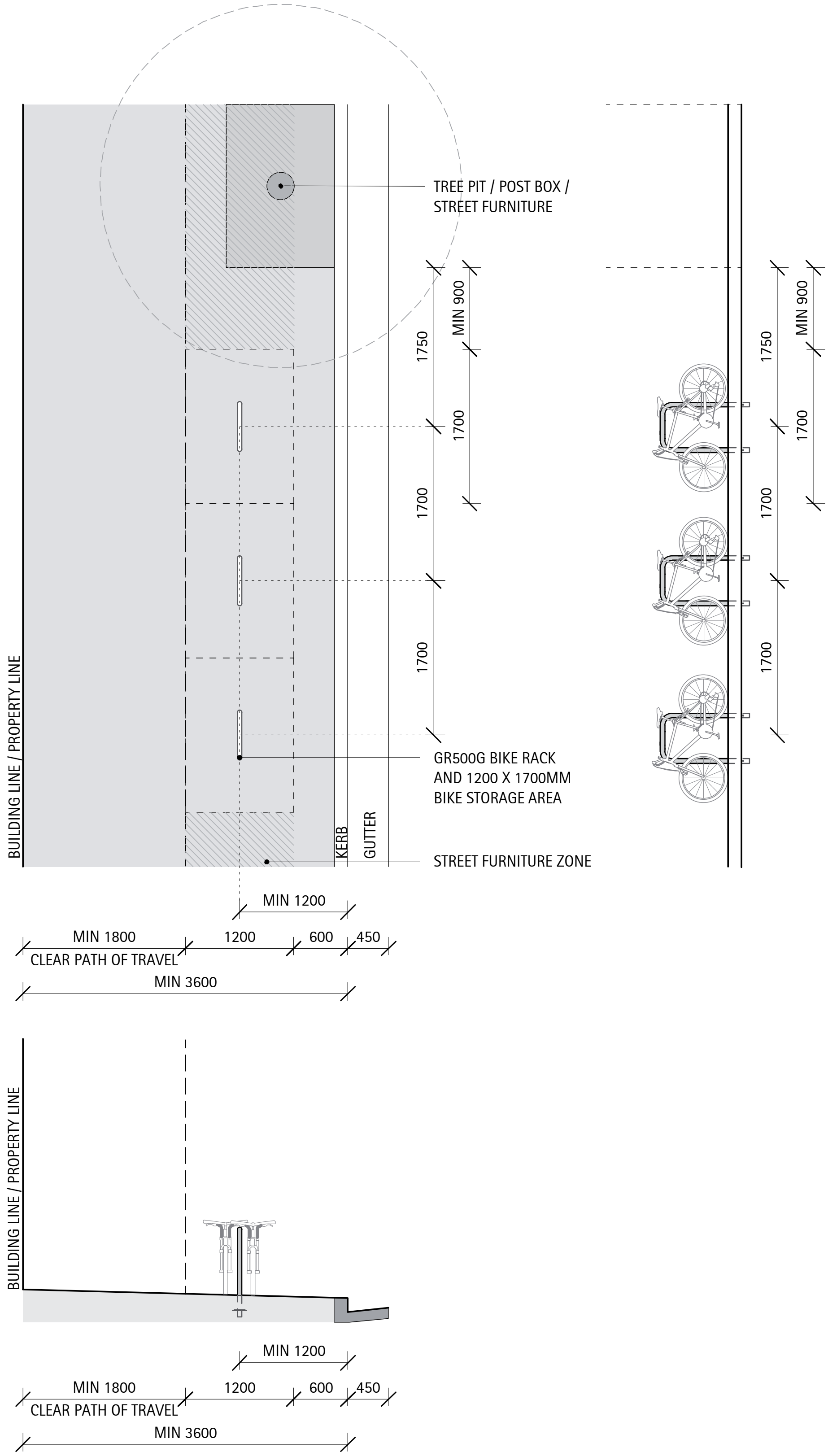


Figure 6.43 Bike Rack Layout Option B - less preferred for CBD, Centres and standard footpaths

6.5.2 BUS STOPS & SHELTERS

The bus stops are to be set out as per the following:

- The Bus Sign sets out where the bus will stop and must be located in relation to the Boarding Area and the Bus Stop Pad, as shown in Figure 4.1;
- The Boarding Area is to have a 2070mm X 1540mm unobstructed firm level area to facilitate boarding and disembarking of the bus passengers;
- The TGSIs provided at the Boarding Area are to be 600mm wide;
- The area at the edge of the Bus Stop Pad along the kerb is to be unobstructed to facilitate egress;
- Bus Stop Pad to be fully paved for 9000mm X Footpath Width, provided with or without bus shelter / seats as necessary (Refer to layouts shown in Figures 4.2-4.9 for a range of conditions);
- Bus Sign to be 600-800mm wide and located 300mm away from face of kerb and Boarding Area.; and
- Adjacent paths that connect to Bus Stop Pad are to be minimum 1200mm wide and should join Bus Stop Pad at right angle.

Standard Bus Stop Set Out Plan

TGSI	Directional + warning indicators (600 wide)
Cross Fall	Max. 2.5%
Bus Stop Sign	Min. 300 clear from face of kerb Min. 300 clear from boarding AREA
Adjacent Path	Min. 1200 wide Join path to bus stop pads at right angle
Note	All dimensions are in mm unless otherwise specified

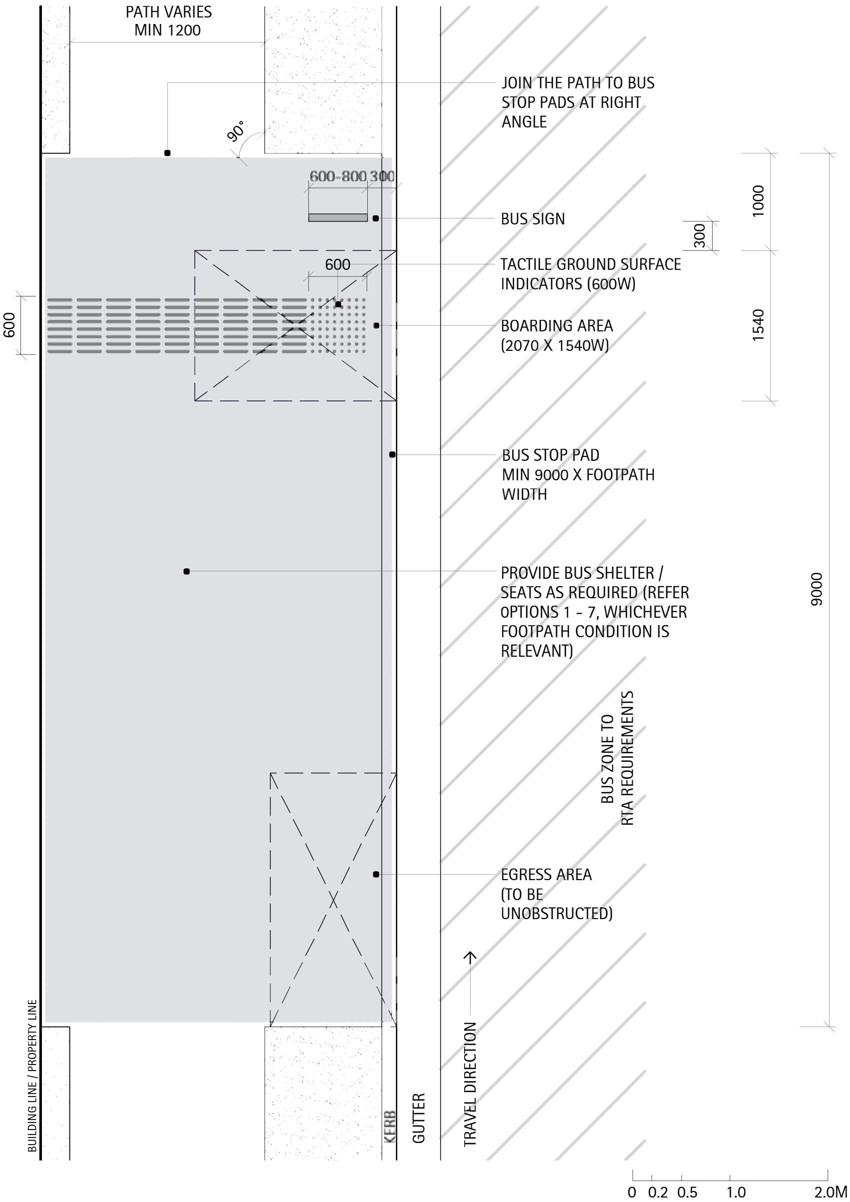


Figure 6.44 Standard Bus Stop Set Out Plan

The preferred layout for bus shelters allows passage to both sides of the shelter. Typical footpaths in Parramatta are 3650mm wide and the ideal clearances are not achievable when the Adshel Classic Bus Shelter is used. Wherever possible footpaths should be widened to accommodate this and where footpaths are 4155mm wide or greater the layout shown in Figure 6.49 is to be used.

BUS SHELTERS ON STANDARD FOOTWAYS

Layouts shown in Figures 6.45 - 6.48 apply to bus stops on standard footpaths. For locations where the footpath cannot be widened, the layout shown in Figure 6.45 should be followed which provides the minimum distance to both sides of the bus shelter.

Where procurement arrangements allow and on high volume standard footpaths it is recommended that the layout shown in Figure 6.46 is followed. This provides passage to both sides of the bus shelter as well as the preferred more generous area between the bus shelter and the kerb. Figure 6.46 layout requires a narrow bus shelter to be procured.

There are also locations where the footpath abuts a wall or fence rather than a property requiring access. These locations are adjacent to the railway and/or parks. In these instances clear passage to the rear of the bus shelter is not necessary and the layout shown in Figure 6.47 can be used which provides the preferred more generous area between the bus shelter and kerb and incorporates the standard Adshel Classic Bus Shelter. On streets with awning protection and less used bus stops, bus shelters are generally not used. In these instances provide tactiles, bus sign and seat(s) as shown in the Figure 6.48 layout.

Bus Shelter on Standard Width Footpath: Adshel Classic

Paving	Fully paved on bus stop pad
Boarding Area	Unobstructed firm level - 2070 x 1540w minimum
Bus Stop Pad	Min 9000l x footpath width
Bus Shelter Type	Adshel Classic - 1355 (deep) x 3820 x 2645h
Bus Shelter Set Out	Preferred 1200 from the face of kerb
Clear Path of Travel	Min 1000 along the building line
TGSI	Directional + warning indicators (600w)
Cross Fall	Max 2.5%
bus stop sign	Min 300 clear from face of kerb Min 300 clear from boarding area
Adjacent Path	Min 1200 wide Join path to bus stop pads at right angle
Note	All dimensions are in mm unless otherwise specified

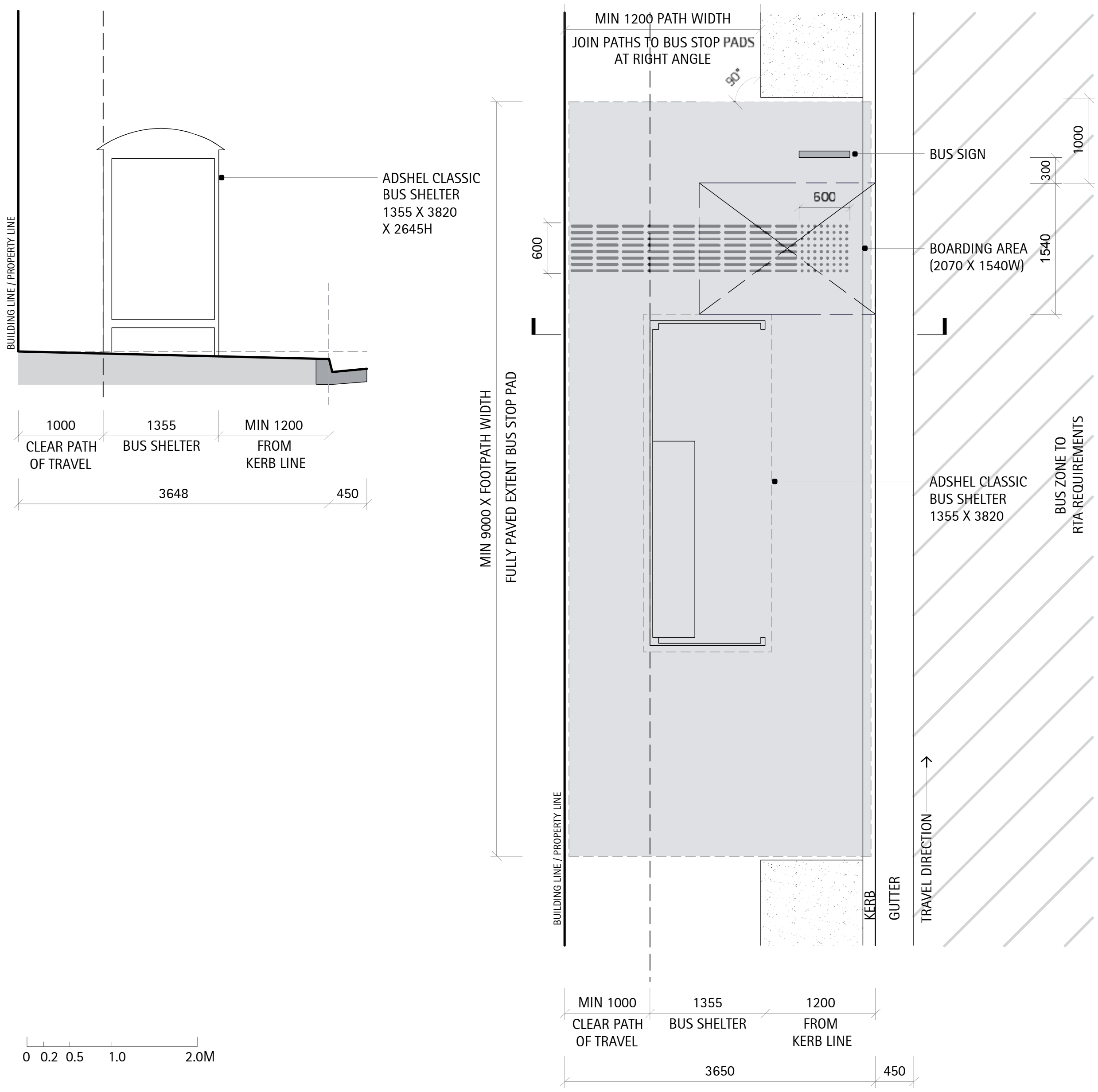


Figure 6.45 Bus Shelter on Standard Width Footpath: Adshel Classic

Bus Shelter on Standard Width Footpath: Adshel 'Mini' Classic

Paving	Fully paved on bus stop pad
Boarding area	Unobstructed firm level - 2070 x 1540w minimum
Bus Stop Pad	Min 9000l x footpath width
Bus Shelter Type	Adshel Mini - 1075 (D) X 2620 X 2705 (H)
Bus Shelter Set Out	1575 (min. 1200) from the kerb face
Clear Path of Travel	Min. 1000 along the building line
TGSI	Directional + warning indicators (600 wide)
Cross Fall	Max. 2.5%
Bus Stop Sign	Min. 300 clear from face of kerb Min. 300 clear from boarding area
Adjacent Path	Min 1200 wide Join path to bus stop pads at right angle
Note	All dimensions are in mm unless otherwise specified

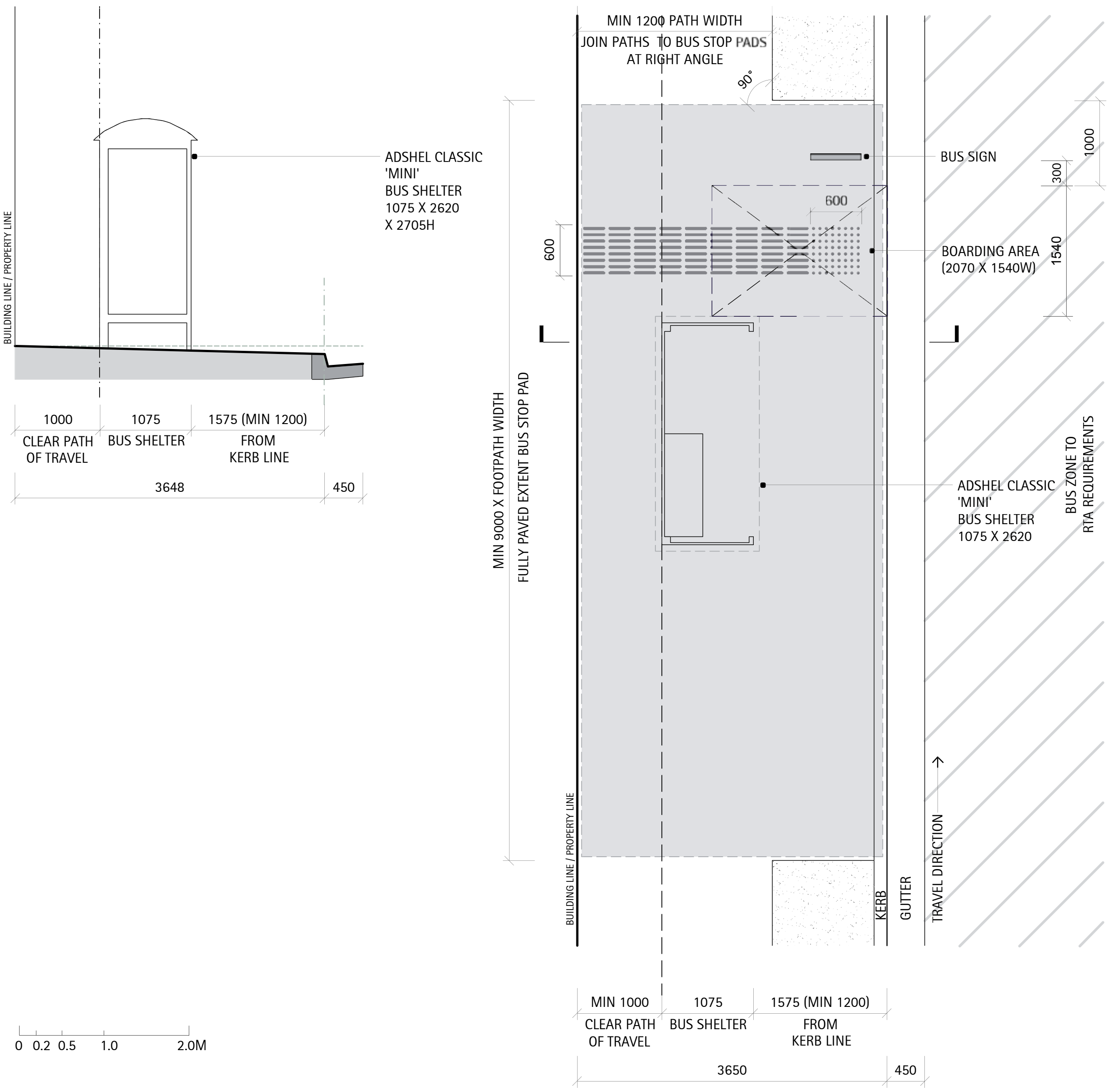
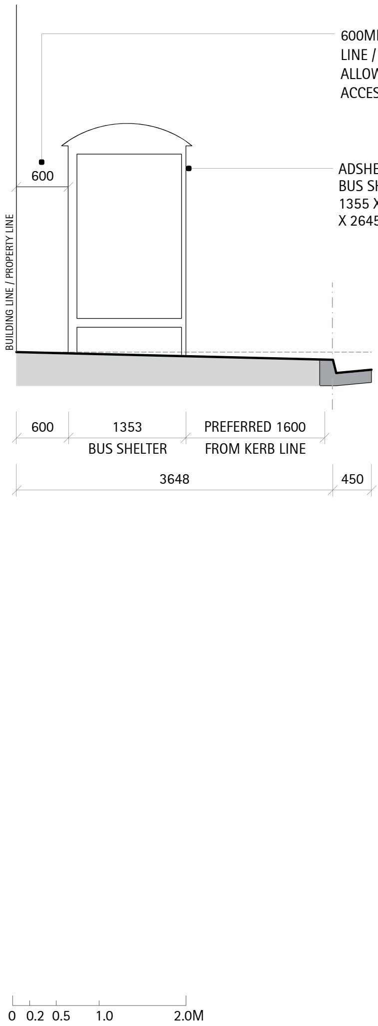


Figure 6.46 Bus Shelter on Standard Width Footpath: Adshel 'Mini' Classic

Bus Shelter on One Sided Streets with Standard Width Footpath: Adshel Classic

Set out for standard width footpath - one sided streets next to parks &/ railway

Paving	Fully paved on bus stop pad
Boarding Area	Unobstructed firm level - 2070 x 1540w minimum
Bus Stop Pad	Min.9000 (L) x footpath width
Bus Shelter Type	Adshel Classic - 1355 (D) X 3820 X 2645 (H)
Bus Shelter Set Out	Preferred 1600 from kerb face
Clear Path of Travel	N.A.
TGSI	Directional + warning indicators (600 wide)
Cross Fall	Max 2.5%
Bus Stop Sign	Min 300 clear from face of kerb Min 300 clear from boarding AREA
Adjacent Path	Min 1200 wide Join path to bus stop pads at right angle
Note	All dimensions are in mm unless otherwise specified Locate bus shelters 600mm from building line/property line to allow for cleaning access



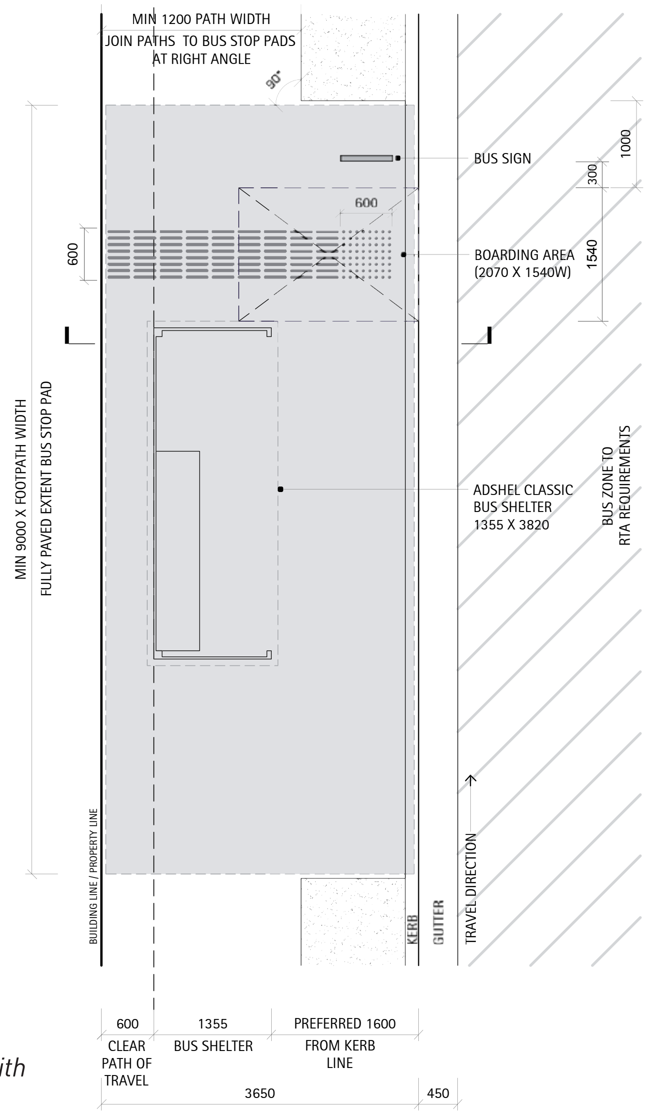
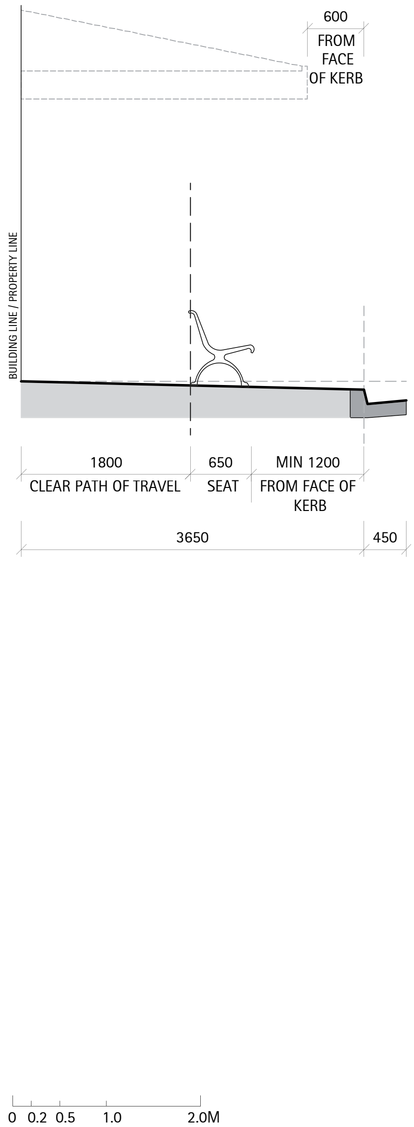


Figure 6.47 Bus Shelter on One Sided Streets with Standard Width Footpath: Adshel Classic

Bus Stop on Standard Width Footpath without Shelter

Paving	Fully paved on bus stop pad
Boarding Area	Unobstructed firm level - 2070 x 1540 (W)
Bus Stop Pad	Min. 9000 (L) x footpath width
Bus Shelter Type	N.A.
Bus Shelter Set Out	N.A.
Clear Path of Travel	Retain clear path of travel as required in Chapter 3
TGSI	Directional + warning indicators (600 wide)
Cross Fall	Max. 2.5%
Bus Stop Sign	Min. 300 clear from face of kerb Min. 300 clear from boarding AREA
Adjacent Path	Min. 1200 wide Join path to bus stop pads at right angle
Furniture	Provide seats as per passenger volume
Note	All dimensions are in mm unless otherwise specified



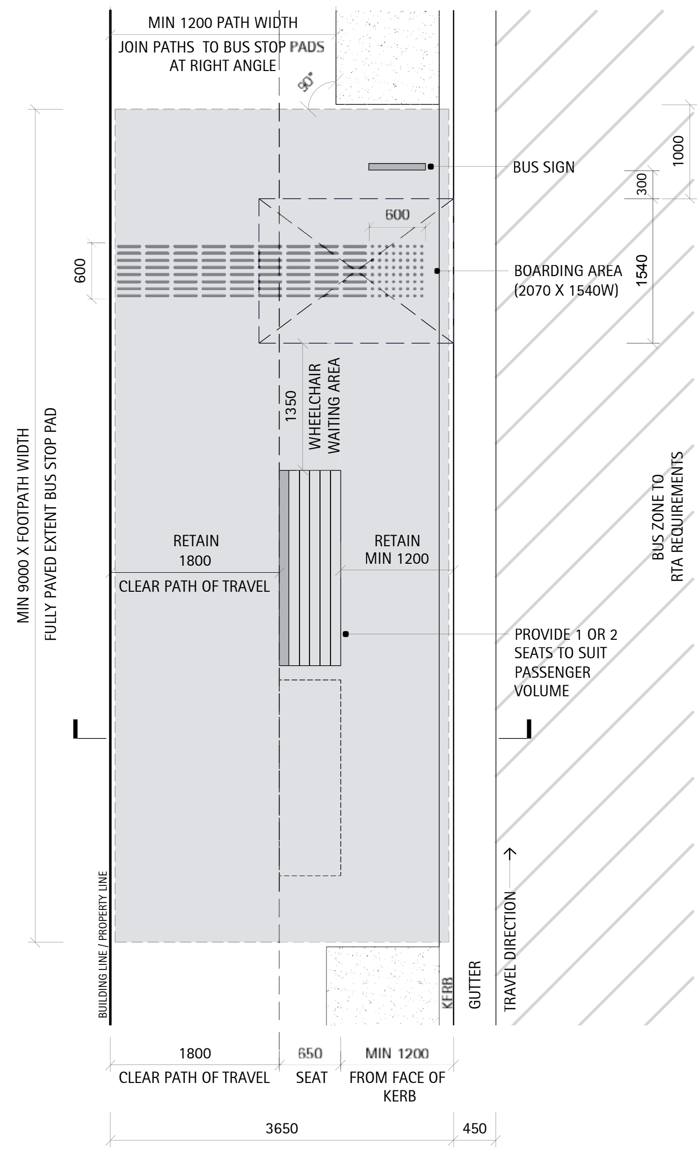


Figure 6.48 Bus Stop on Standard Width Footpath without Shelter

BUS SHELTERS ON WIDE FOOTWAYS

Bus Shelter on Wide Footpath ≥ 4155: Adshel Classic (Preferred Solution)	
Paving	Fully paved on bus stop pad
Boarding Area	Unobstructed firm level - 2070mm x1540mm wide minimum
Bus Stop Pad	Min. 9000l x footpath width
Bus Shelter Type	Adshel Classic - 1355 (D) x 3820 x 2645 (H)
Bus Shelter Set Out	Preferred 1600 from the kerb face
Clear Path Of Travel	Preferred 1200 along the building line to be centred in boarding area
TGSI	Directional + warning indicators (600 wide)
Cross Fall	Max. 1 in 40
Bus Stop Sign	Min. 300 clear from face of kerb Min. 300 clear from boarding area
Adjacent Path	Min. 1200 wide Join path to bus stop pads at right angle
Note	All dimensions are in mm unless otherwise specified

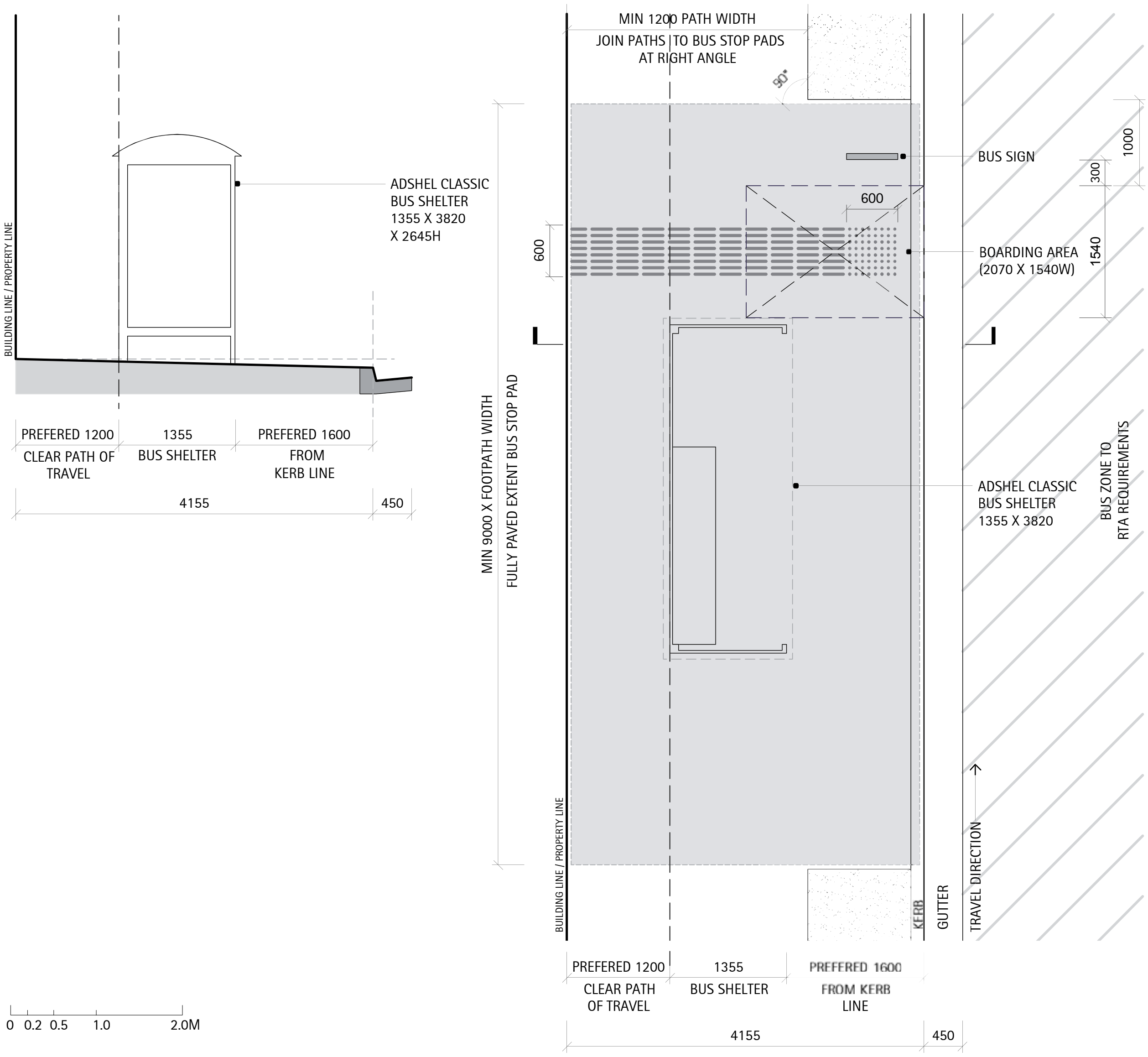


Figure 6.49 Bus Shelter on Wide Footpath ≥ 4155: Adshel Classic (Preferred Solution)

BUS SHELTERS ON NARROW FOOTWAYS

Bus Shelter on Narrow Footpath < 3650 (>3275): Adshel 'Mini' Classic

Paving	Fully paved on bus stop pad
Boarding Area	Unobstructed firm level - 2070 x 1540 (W)
Bus Stop Pad	Min 9000 (L) x footpath width
Bus Shelter Type	Adshel Mini - 1075 (D) x 2620 x 2705 (H)
Bus Shelter Set Out	Min. 1200 from the face of kerb
Clear Path of Travel	Min. 1000 along the building line
TGSI	Directional + warning indicators (600 wide)
Cross Fall	Max. 2.5%
Bus Stop Sign	Min. 300 clear from face of kerb Min. 300 clear from boarding AREA
Adjacent Path	Min. 1200 wide Join path to bus stop pads at right angle
Note	All dimensions are in mm unless otherwise specified

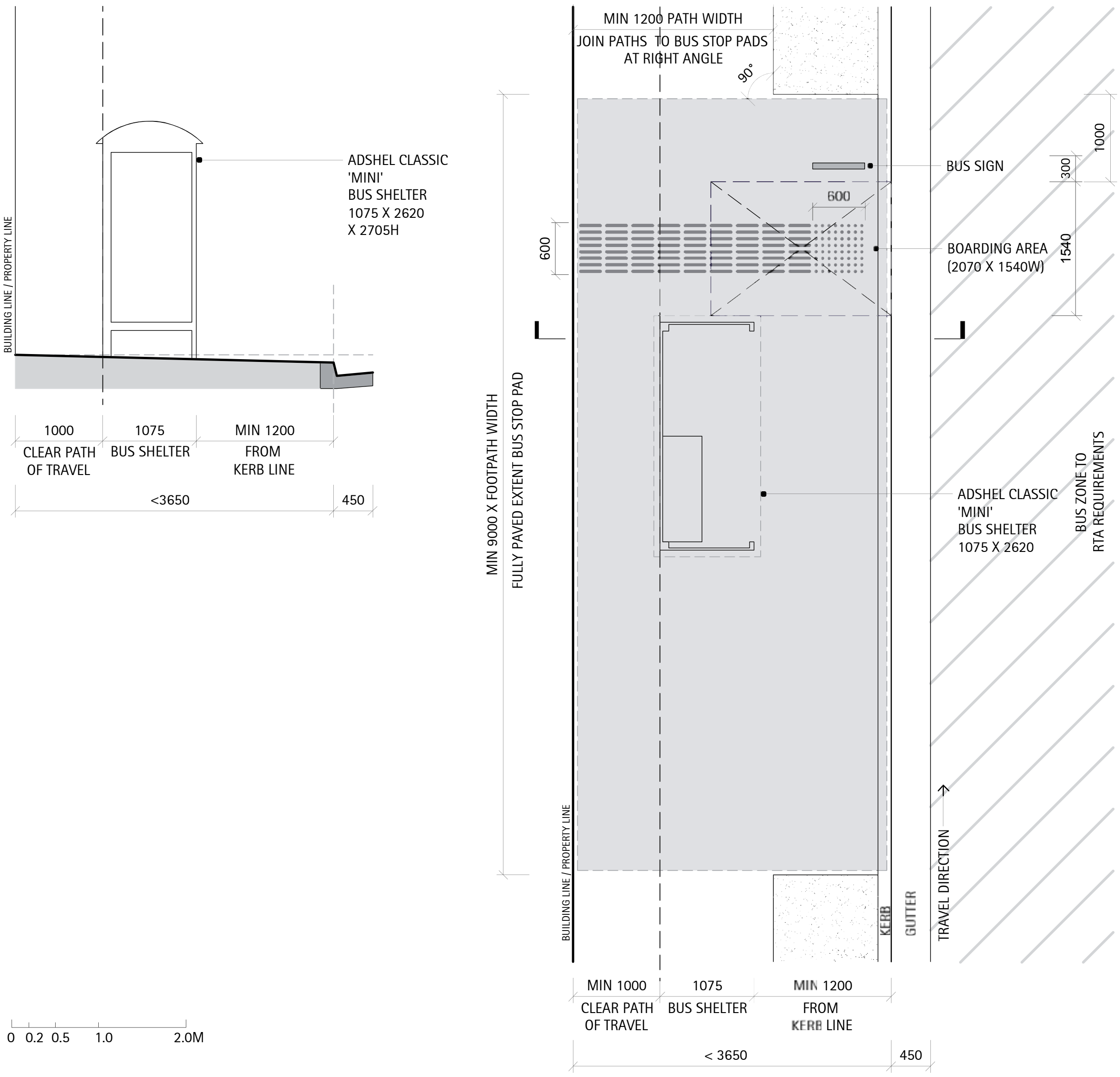


Figure 6.50 Bus Shelter on Wide Footpath ≥ 4155: Adshel Classic (Preferred Solution)

Bus Shelter on Narrow Footpath ≤ 3275mm: Adshel 'Mini' Classic

Paving	Fully paved on bus stop pad
Boarding Area	Unobstructed firm level - 2070 x 1540 (W)
Bus Stop Pad	Min. 9000 (L) x footpath width
Bus Shelter Type	Adshel Mini - 1075 (D) X 2620 X 2705 (H)
Bus Shelter Set Out	Min. 1200 from face of kerb
Clear Path of Travel	N.A.
TGSI	Directional + warning indicators (600 wide)
Cross Fall	Max. 2.5%
Bus Stop Sign	Min. 300 clear from face of kerb
	Min. 300 clear from boarding area
Adjacent Path	Min. 1200 wide
	Join path to bus stop pads at right angle
Note	All dimensions are in mm unless otherwise specified
	Locate bus shelter 600 from building line/property line to allow for cleaning access

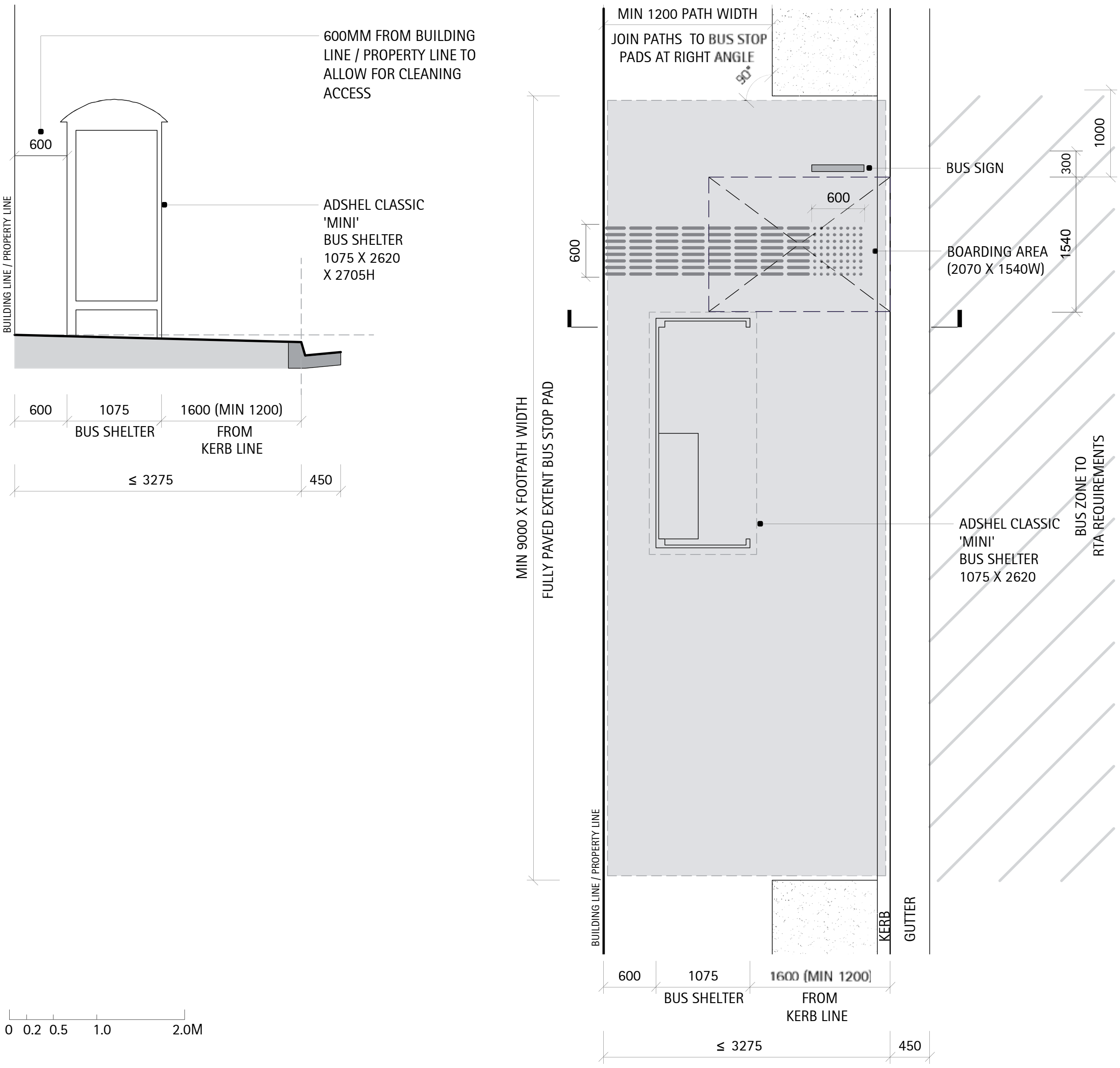


Figure 6.51 Bus Shelter on Narrow Footpath ≤ 3275mm: Adshel 'Mini' Classic

BUS SHELTER ON SHARED PATHS

Shared pedestrian and cycle paths should be located to the rear of bus shelters/seats (see Figure 6.52). The shared path area may be reduced to a minimum of 1.8m, with a minimum of 1m behind bus shelter/seats subject to Council's approval.

Bus Shelter on Shared Path: Adshel Classic

Paving	Fully paved on bus stop pad
Boarding Area	Unobstructed firm level - 2070 x 1540 (W)
Bus Stop Pad	Min. 9000l x footpath width
Bus Shelter Type	Adshel Classic - 1355 (D) x 3820 x 2645 (H)
Bus Shelter Set Out	Preferred 1200 from kerb face
Clear Path of Travel	Min. 1000 along the building line
TGSI	Directional + warning indicators (600 wide)
Cross Fall	Max. 2.5%
bus stop sign	Min. 300 clear from kerb face Min. 300 clear from boarding AREA
Adjacent Path	Min. 1200 wide Join path to bus stop pads at right angle
Note	All dimensions are in mm unless otherwise specified

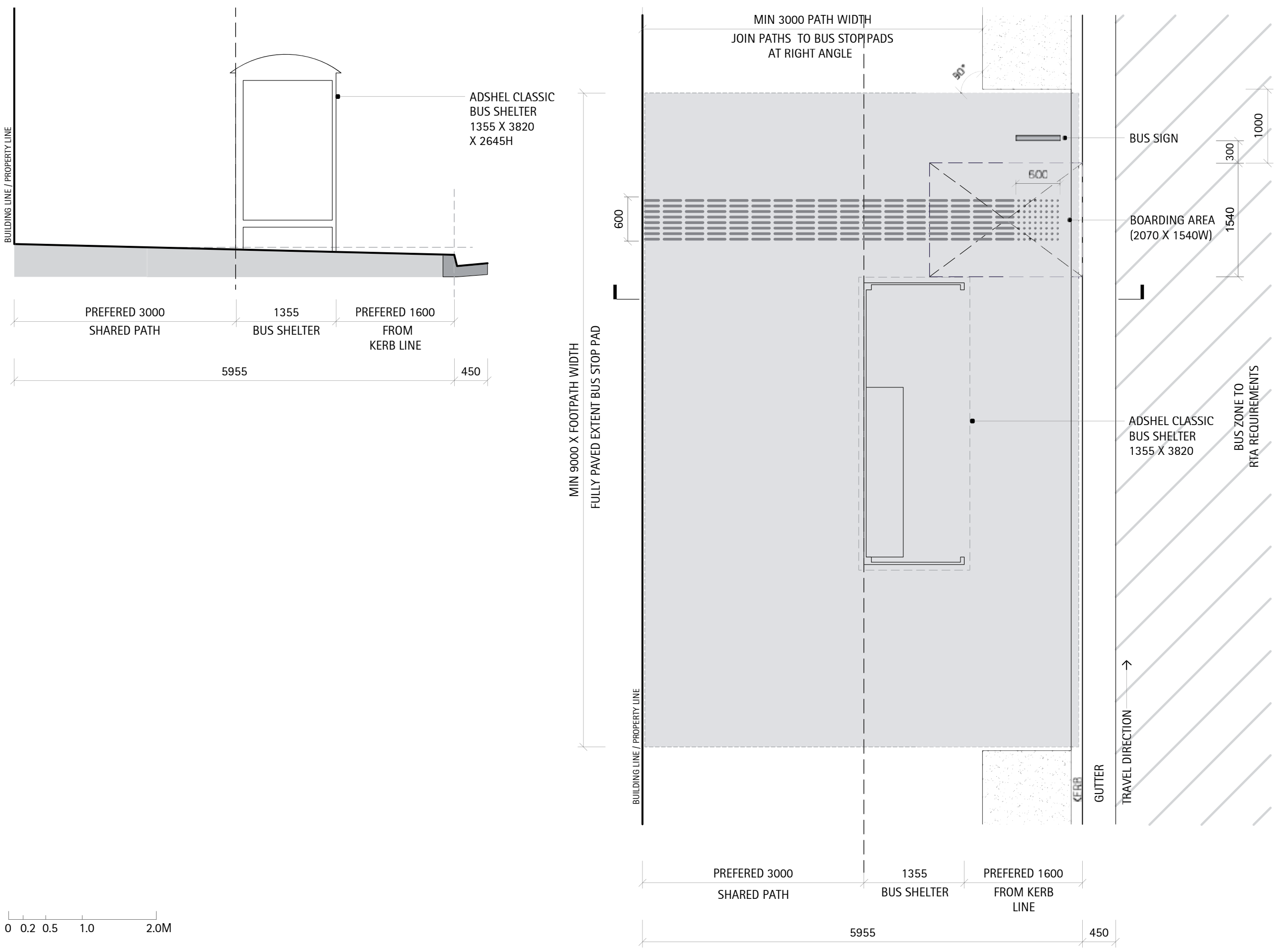


Figure 6.52 Bus Shelter on Shared Path: Adshel Classic

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URBAN DESIGN TEAM
JULY 2017