# Brisbane City Council

# Reference Specifications for Engineering Work

# S154 Traffic Signs and Roadside Furniture

## Amendment Register

|  |  |  |  |
| --- | --- | --- | --- |
| Ed/Rev Number | Section Number | Description | Date |
| 1.0 |  | Original issue.  Sections moved from Reference Specification for Civil Engineering Works S150 Roadworks.  Post (standard) installation requirements included. | Apr 2014 |
| 2.0 | General | Cross and external references updated and corrected | May 2016 |
| 1.2 | References updated – obsolete reference removed |
| 3.3.1 | Requirements for Temporary Signs update |
| 3.3.2 & 3.3.3 | Colour requirements for colour requirements updated |
| 4.1.1 | Requirements for Fixing clamps updated |
| 3.0 | General | Document name changed from ‘Reference Specifications for Civil Engineering Work’ to ‘Reference Specifications for Engineering Work’ | Mar 2021 |
| 3.3.1 | Reference to Standard Drawing BSD-3102 (Street Name Plate Setout (Sign Code G5-2)) added to Section 3.3.1 Sign Pate (Material and Fabrication). |
| 3.3.3 | Non-reflective materials – requirements for Non-reflective colours added to align with relevant Australian Standards (AS 1742 and AS 1743). |
| 3.3.4 | Signface material requirements – new Enhanced School Zone Speed Limit Sign type added to Table 3.1. |
| Signface material requirements – reference to Standard Drawing BSD-3102 added to Table 3.1. |
| 3.8 | Steel grade and material source for short sign posts (for example ‘KEEP LEFT’ (R2-3L) signs) updated. |
| 3.8.1 | Enhanced Loading Zone Sign Standards (Posts) included. |

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## GENERAL

### Section Control

Type of traffic control signs and other associated roadside furniture.

### Standards

|  |  |  |
| --- | --- | --- |
| Australian/New Zealand Standard | AS/NZS 1163 | Cold-formed structural steel hollow sections |
| Australian Standard | AS 1742 | Manual of uniform traffic control devices |
| Australian Standard | AS 1743 | Road signs – Specifications |
| Australian/New Zealand Standard | AS/NZS 1906.1 | Retroreflective materials and devices for road traffic control purposes – Retroreflective sheeting |
| Australian/New Zealand Standard | AS/NZS 3845.1 | Road safety barrier systems and devices |

### References

|  |  |  |  |
| --- | --- | --- | --- |
| Queensland Department of Transport and Main Roads |  | MUTCD | Queensland Manual or Uniform Traffic Control Devices |
| Queensland Department of Transport and Main Roads |  | TC Signs | Queensland Traffic Control (TC) Signs |
| Queensland Department of Transport and Main Roads | Design Guide |  | Design Guide for Roadside Signs |
| Queensland Department of Transport and Main Roads | Technical Specification | MRTS14 | Road Furniture |
| Queensland Department of Transport and Main Roads |  |  | Standard Drawings Roads Manual; |
| Queensland Department of Transport and Main Roads | Design Manual |  | Translink Public Transport Infrastructure Manual |
| Queensland Department of Transport and Main Roads | Design Manual |  | Translink Bus Network Infrastructure Signage Manual |
| Queensland Department of Transport and Main Roads | Technical Guide |  | A guide to signing cycle networks |
| Brisbane City Council |  |  | Standard Drawings |
| Brisbane City Council | Design Manual |  | Bicycle Signage Manual |
| Brisbane City Council | Design Manual |  | Transport Signs Manual |
| Brisbane City Council | Design Manual |  | Foreign Language Wayfinding Signage Manual |
|  | Design Manual |  | Moreton Bay Cycleway Signage Manual. |

Refer to the following other Reference Specifications for Engineering Work:

|  |  |
| --- | --- |
| S110 | General Requirements |
| S120 | Quality |
| S150 | Roadworks |
| S155 | Road Pavement Markings |

### Defintions

Traffic control device: Any sign, signal, pavement marking, or other installation placed or erected under authority of the *Queensland Transport Operations (Road Use Management) Act*, for the purpose of regulating, warning, or guiding road users.

Traffic sign: Signs used for controlling vehicular & pedestrian traffic on the road or for indicating areas of a road available or reserved for parking, where parking is restricted or prohibited, and where stopping is restricted on a part- or full-time basis.

## QUALITY

### Generally

The Superintendent responsible for the management of the quality of work under the contract must maintain a Quality Assurance System with third party accreditation to *AS/NZS /ISO 9001*.

Responsibility for preparation of an inspection and test plan may rest with the Contractor or the Superintendent. Where the Contractor is responsible for the plan, submit it to the Superintendent for approval. Where the Superintendent is responsible for the plan, submit it to the Principal for approval. Refer annexure.

### Inspections

Witness points

Give sufficient notice so that inspection may be made at the following stages:

* Traffic sign locations marked.
* Pavement marking set out ready for marking.

Hold points

Do not proceed without approval. Give sufficient notice so that inspection may be made at the following stages:

* Material compliance certificates.

### Samples

General

*Refer annexure*. Submit to the testing authority samples of the following:

* Each type of sheeting material.

### Contractor’s Submissions

* Pavement marking material to be used.

## TRAFFIC SIGNS

### General Requirement

Generally supply signs, poles and fitments to Queensland Department of Transport and Main Roads (DTMR) Technical Specification MRTS 14 Road Furniture, except where varied in this specification. All signs to be manufactured in accordance with current edition of the Queensland Manual of Uniform Traffic Control Devices (MUTCD issued by the Executive Director (Traffic and Road Use Management), Queensland Department Transport and Main Roads.

### Brisbane City Council Special Requirements

#### Reference and identity marking

All sign shall have painted, imprinted or indelibly marked in black onto the substrate on the reverse side of the sign in the lower right-hand corner the following details:

* the month and year of manufacture (15 mm high lettering);
* the class and manufacture’s code of material used as background on the sign (for example codes 3M, Ni, Ki, St, Re, Ad);
* an approved identification of the manufacturer's name (15 mm high lettering);
* the letters ‘BCC’ in 10-20 mm high lettering and/or Brisbane City Council corporate logo of size 50 mm high in the format as shown in Figure 1.1.

Figure 1.1 – Brisbane City Council Corporate Logo



### Materials AND FABRICATION

#### Sign plate

General plate requirements

For all sign types, except G5-2 (“Street Name”) signs, G5-10 (“No Through Road”) signs, Temporary signs and Roadworks signs, plates shall be manufactured from a 1.6 mm thick aluminium alloy sheet. The aluminium alloy shall be type 5251, temper H38 as specified in AS 1734.

For parking signs, the minimum size of sign plate to be used is 225 mm x 450 mm.

Street Name and “No Through Road” plates

For G5-2 (“Street Name”, refer *Standard Drawing BSD-3102*) and G5-10 (“No Through Road”) signs, sign blades shall be manufactured from one piece of 3 mm thick aluminium alloy plates with 16 mm diameter rolled edges top and bottom. The aluminium alloy shall be Type 6063, temper T5 as specified in AS 1734.

Sign blades to be rectangular with overall depth of 200 mm. Lengths vary from 500 mm to 1150 mm to suit the length of the applied legend.

Temporary and roadworks signs

For temporary and roadworks signs, plates shall be manufactured from 1.0 mm thick hot-dipped zinc coated, aluminium/zinc coated or colour bonded steel complying with the requirements of AS 1397 and DTMR Technical Specification MRTS 14 Road Furniture.

Alternative plate materials

Other materials, including polycarbonate materials, may be considered for approval by Council upon presentation of documentation demonstrating material strength and durability.

Plate finishing

The sign plate shall be deburred, free of cracks, tears and other surface blemishes. The deburred edges are to be true and smooth.

Tolerances on the overall dimensions of the sign plate shall be ±5 mm.

The maximum allowable warp, twist or other departure from flatness of the sign shall be 5 mm/metre in any direction.

#### Retroreflective materials

The retroreflective materials shall conform in colour to the requirements of AS 1743 and AS/NZS1906.1.

The photometric performance requirements for retroreflective materials shall be in accordance with AS/NZS 1906.1.

All sheeting, paints and transparent and opaque screening inks used in the manufacture of a sign shall be a fully approved product of the base sheeting manufacturer and show no loss of the colour coat with normal handling, cutting and application.

#### Non-reflective materials

Non-reflective sheeting

Non-reflective material used for figures, letters, symbols and borders shall be of uniform density and compatible with the background material, both in application and durability.

Non-reflective sheeting specified for backgrounds shall be of uniform density and shall be compatible with both the substrate material onto which the material is applied and with any retroreflective sheeting applied to the material

The sheeting surface shall be compatible with screening inks and show no loss of colour coat with normal handling, cutting and application.

Non-reflective colours

The colour of non-retroreflective road sign material shall conform to the requirements of AS 1743. and shall closely approximate the colours as defined in Table 3.0:

Table3.0 – Non-reflective Colour Requirements

| Colour | Colour AS 2700 | Pantone | RGB |
| --- | --- | --- | --- |
| Red | R13 Signal Red | 1805C | 170, 39, 47 |
| Green | G13 Emerald | 349C | 0, 105, 60 |
| Yellow | Y15 Sunflower | 108C | 238, 175, 48 |
| Brown | X65 Dark Brown | 4695C | 82, 45, 36 |
| Blue | B23 Bright Blue | 647C | 22, 87, 136 |
| Standard Green | G12 Holly Green | 3435C | 2, 71, 49 |

Paint

All paints used on signs shall be of premium quality from a reputable manufacturer. Paints shall be approved by the manufacturer for the relevant application and exposure conditions.

Pre-primed and pre-painted material, such as colour bonded steel or aluminium, yellow in colour as specified in AS 1743, shall be used for temporary signs. Alternatively, temporary signs shall receive at least one coat of yellow full gloss enamel paint applied in accordance with the paint manufacturer’s recommendations.

Screening inks and electro-cut films

Screening inks and electro-cut films shall be compatible with the paint, non-reflective sheeting or retroreflective sheeting used. The screening ink or electro-cut film shall be applied using materials and techniques recommended by the sheeting manufacturer.

All legends, diagrams and backgrounds in the colour red are to be screened with “Traffic Sign Red” (3M Code No. 882 if printing on Class 1) or equivalent product recommended by the sheeting manufacturer.

#### Signface material requirements

The minimum class of signface material is to be as described in Table 3.1.

Table 3.1 – Brisbane City Council Signface Material Requirements

| Sign Type and Application | | Minimum Class of Sign Material | | |
| --- | --- | --- | --- | --- |
| Legend | Background | Special Requirements |
| Regulatory Sign | | | | |
| STOP | R1-1 | Class 1W | Class 1W |  |
| GIVE WAY | R1-2 | N-R | Class 1W |  |
| Roundabout | R1-3 | N-R | Class 1W |  |
| Pedestrian Crossing | R3-1 | N-R | Class 1W | YG |
| Safety Zone | R3-2 | N-R | Class 1W | YG |
| Children Crossing | R3-3 | N-R | N-R | R |
| SCHOOL ZONE and Enhanced SCHOOL ZONE Speed Limit | R4-Q01,  R4-Q03  R4-Q04  TC1783 |  |  |  |
| Target Board | N/A | Class 1W | O |
| SCHOOL ZONE Panel | Screened | Class 1W | YG |
| Remainder of Sign | Screened | Class 1W |  |
| Parking Regulatory Signs*(1)* | R5 Series |  |  |  |
| Parking Restrictions, Clearways, No Stopping, No Parking, Special Zones (Taxi, Loading, Bus, Truck, Mail, Works, Permit) | R5-1 to R5-51, R5-Q04 and R5-Q05 | Screened | N-R |  |
| Other Parking Series Signs | Remainder R5 Series | N-R | Class 1W |  |
| Target Boards (Colour) |  | N/A | Class 1W | O or YG |
| Target Boards (Black) |  | N/A | N-R | BK |
| Brisbane City Council Special Sign Code ‘A’ | BSD-3103 | N-R | Class 1W*(2)* |  |
| All other regulatory signs |  | Class 1W | Class 1W |  |
| Warning Signs | | | | |
| Stop Sign Ahead | W3-1 | Class 1W | Class 1W |  |
| Roundabout Sign | W3-2 | Class 1W | Class 1W |  |
| Pedestrian Crossing Ahead | W6-2 | N-R | Class 1W | YG |
| CHILDREN | W6-3 | N-R | Class 1W | YG |
| SCHOOL | W6-4 | N-R | Class 1W | YG |
| SCHOOL (Auxiliary Plate) | W8-14 | N-R | Class 1W | YG |
| CROSSING AHEAD (Auxiliary Plate) | W8-22) | N-R | Class 1W | YG |
| BUS STOP (Auxiliary Plate) | W8-Q03A | N-R | Class 1W | YG |
| All other warning signs |  | N-R | Class 1W |  |
| Guide Signs | | | | |
| Advance, Intersection, Reassurance Direction and Advance Lane Signs |  | Class 1W | Class 1W |  |
| Tourist and Service Signs |  | Class 1W | Class 1W |  |
| Geographical Feature Sign | | N-R | Class 1W |  |
| General Street Name Signs | BSD-3102  (G5-2) | N-R | Class 1W# |  |
| Brisbane CBD Street Name Signs | N-R (W) | Class 1W# | BL |
| NO THROUGH ROAD (Supplementary Plate) | G5-10 | N-R | Class 1W | Y |
| Freeway Signs – all colour combinations | All Applications | Refer to *DTMR Technical Standard Annexure MRTS14A*.1 | |  |
| Overhead and gantry application |  | Class 1W | Class 1W |  |
| Traffic Instruction Signs: | G9*(3)* | Class 1W | Class 1W |  |
| General application |  | Class 1W | Class 1W |  |
| Miscellaneous Signs | | | | |
| Roadworks, Temporary and Special Hazard Signs | T Series | N-R | Class 1W |  |
| Hazard Markers | D Series | N-R | Class 1W |  |
| Delineators |  | Class 1A or  Corner Cube (Type A) | |  |
| Flood Gauge Markers | G9-22-1 to  G-22-3 | N-R | Class 1W# |  |

Legend:

|  |  |
| --- | --- |
| YG | Class 1W Fluorescent Yellow-Green |
| O | Class 1W Fluorescent Orange |
| R | Fluorescent Red |
| BL | Blue to match to AS 2700 B11-‘Rich Blue’ |
| Y | Yellow |
| BK | Black |
|  |  |
| N-R | Non-reflective. |
| For Parking Regulatory Signs, non-reflective background may be either powdercoated, screened or non-reflective vinyl sheeting. |
| N-R (W) | Non-reflective white |
| N/A | No special/extra requirements |
| *(1)* | Refer to “Brisbane City Council Kerbside Allocation Sign Codes” for BCC naming practice (*Standard Drawing BSD-3101*). |
| *(2)* | The associated Standard Drawings may show a minimum requirement for Class 1 material. Class 1W material is preferred for use on these signs. |
| *(3)* | G9 Series except Flood Depth Markers |

*Note: Signs with ‘Minimum Class of Sign Material’ shown as Class 1 maybe supplied/installed with Class 1W material as a substitute.*

*Any signs not specifically referred to in the above table are to be completed in minimum Class 1W material.*

### Substrate Preparation

#### Aluminium panels

Before application of the retroreflective or non-reflective sheeting and after completion of sheet metal works, the aluminium sign panel shall be thoroughly cleaned and degreased and shall be mechanically abraded in accordance with the requirements of the sheeting manufacturer. Chemical or Acid Bath Treatment shall not be used.

#### Zinc coated, aluminium/zinc coated or colour bonded steel

For zinc coated, aluminium/zinc coated or colour bonded steel panels, the panel shall be thoroughly cleaned and degreased and the surface primed with an approved primer in accordance with the paint manufacturer’s recommendations. Alternatively, if the zinc/aluminium steel sheeting material has been shop primed by the sheeting manufacturer, the panel shall be thoroughly cleaned and degreased.

#### Other substrate materials

Other substrate materials, if approved, are to be prepared as per manufacturer/supplier requirements.

### Sheeting Application

Retroreflective and non-reflective sheeting shall be applied to the face of the sign blank as specified by the sheeting manufacturer.

All signs shall be finished with the appropriate class of reflective or non-reflective materials as indicated in Table 3.1. The reflective or non-reflective background shall be applied in one piece with no horizontal or vertical joins.

All letters, arrows, symbols and borders shall be applied by:

* A screen-printing process and/or
* Applying pre-cut retroreflective or non-reflective material and/or
* Electro-cut translucent film

Screening may be accomplished either before or after application of the sheeting to the sign blank.

Reflectorised signs shall not be clear coated, except where recommended by the manufacturer of the reflective sheeting.

### Provision For Mounting Signs

#### Sign plates 400 mm or greater in depth

Provide two 11 mm x 11 mm square holes punched cleanly through sign substrate 305 mm apart centred on the vertical axis.

#### Sign plates less than 400 mm in depth

Provide two 11 mm x 11 mm square holes punched cleanly through sign substrate. Holes to be located between the sign legend and border centred on the vertical axis.

#### Street Name and “No Through Road” signs

End mounted signs to be manufactured with two 11 mm diameter holes in the post-end vertical axis of the sign blanks. These holes shall be drilled at 117 mm centres, centred in the vertical axis and located 20 mm from the vertical edge of the plate. Refer *Standard Drawing BSD-3102* for street name signs.

Centre mounted signs to be manufactured without mounting hole. Sign blank length to match length of finished sign.

#### Extrusions for stiffening large signs

Stiffening braces are required for hazard boards, guide signs and other signs as directed. Extrusions to be Type 1, Type 2A or Modified Type 2A to DTMR Standard Drawing SD1369 and are to be fixed horizontally at maximum 305 mm centres vertically up the sign.

Sign plates shall be fitted to stiffener rails by either:

* 4.8 to 5 mm diameter monel or stainless-steel rivets;
* 4.0 mm blind aluminium head rivets;
* Self-piercing riveting systems;

The heads of rivets or other similar fixings shall be coloured to match the surrounding material

The maximum spacing of mechanical fixings shall be 200 mm and the distance from the first fixing to the edge of the stiffener shall be no greater than 30 mm or as specified by the suppliers of the fixing system. An additional fixing 20 mm from the first fixing shall be applied. An exception to this is the use of a self-piercing riveting system, for which the maximum fixing spacing shall be 250 mm.

Signs up to both 950 mm in width (measured horizontally) and 1000 mm in depth do not require stiffener rails unless specified. Signs that are wider than 950 mm measured horizontally and less than 1000 mm in depth require a minimum of two stiffener rails. Signs narrower than 950 mm in width measured horizontally and greater than 1000 mm in depth require stiffeners spaced as per Table 3.2.

Warning signs that are equal to and greater than 750 mm x 750 mm measured diagonally, shall include stiffener rails.

Number of stiffening rails per sign size shall be at location shown in Table 3.2.

Table 3.2 – Stiffening Rail Locations

| Sign Depth (mm) | Minimum Number of Stiffeners  (Modular Construction) |
| --- | --- |
| 330 to 800 | 2*(1)* |
| 825 to 1300 | 3*(1)* |
| 1325 to 1400 | 4 |
| 1425 to 1925 | 5 |
| 1950 to 2400 | 6 |
| 2425 to 2600 | 7 |
| 2625 to 3125 | 8 |
| 3150 to 3600 | 9 |
| 3625 to 3800 | 10 |
| 3825 to 4325 | 11 |
| 4350 to 4800 | 12 |
| 4825 to 5000 | 13 |
| 5025 to 5525 | 14 |
| 5550 to 6000 | 15 |
| 6025 to 6200 | 16 |
| 6225 to 6725 | 17 |
| 6725 to 7200 | 18 |
| 7225 to 7400 | 19 |
| 7425 to 7925 | 20 |
| 7950 to 8400 | 21 |

*(1) Required only for signs wider than 950 mm and warning signs in accordance with Clause 3.3.4.*

### BRISBANE CITY COUNCIL SPECIFIC SignAGE

#### Street Name signs

100 mm series ‘D’ letters with narrow spacing are to be used, except for the smaller letters in the abbreviation of Street, Road, etc. where letters shall be 75 mm series ‘D’. Abbreviations are to be as per the Manual of Uniform Traffic Control Devices. Street house number range numerals are to be 50 mm series ‘D’ numerals.

Where the length of the street name blade length may exceed 1150 mm, series ‘C’ lettering is to be used to reduce congestion on the sign.

The top of the legend shall ***always*** be positioned 5 mm from the top of the reflective sheeting whether street numbers are available or not.

General street name signs, sign is to have white background with black lettering and include a monochrome Council logo and black and white cleat on standard (post) end of sign. For CBD street name signs, sign is to have blue background with white lettering and include a colour Council logo and cleat on standard (post) end of sign. Refer Standard Drawing BSD-3102 for detail.

The following examples of spacings are to be observed between the street name and any abbreviation which follow [such as Rd or Av etc]:

* Between an E [being an upright letter on the right side], followed by an E [being an upright letter on the left face] – a spacing of 80 mm between the closest points.
* Between an E [being an upright letter on the right side], followed by an A [being a right sloping letter on the left face] – a spacing of 75 mm between the closest points.
* Between a V [being a right sloping letter on the right side], followed by a W [being a left sloping letter on the left side] – a spacing of 70 mm between the closest points. The same spacing would apply for an L followed by an A.
* The space above the street name, the space between the name and numbers, and the space below the numbers, shall be equal. The space bar between the numbers shall have the following characteristics, and be located as follows:
* Space bars shall be 4 mm high by 50 mm long.
* The spacing between the numbers and the space bar shall be 50 mm.
* The lettering shall not be positioned closer than 30 mm from the end of the retro reflective sheeting [not applicable to the top and bottom of the sign]. The entire wording is to be centrally positioned on the retro reflective sheeting.

#### “No Through Road” signs (G5-10)

As for street name signs, 850 mm long.

#### Brisbane City Council kerbside allocation sign codes

The Brisbane City Council makes departures in sign design for kerbside control signs from AS 1742 and the *MUTCD*. These departures are known as kerbside allocation sign codes and are detailed on Standard Drawing BSD-3101. Sample parking plate layouts are shown on Standard Drawings BSD-3105 to BSD-3113 inclusive.

#### Bikeway wayfinding and direction signage

Bikeway wayfinding and direction signage to conform to the Brisbane City Council Bicycle Network and Local Facility Directional Signage Manual and the Moreton Bay Cycleway Signage Manual.

#### Bus stop signs

Bus stop signs to conform to the following requirements:

* Brisbane City Council ‘J’ Pole and ‘Flag’ information signs: *Brisbane City Council Transport Signs Manual* and Standard Drawing BSD-3104;
* Brisbane City Council ‘Flag’ sign: Translink Transit Authority Standard Drawing TL0015 (Superseded) (Refer Appendix ‘A’); *and*
* Other bus stop signage: DTMR Translink Bus Network Infrastructure Signage Manual.

### Traffic Sign Standards (POSTS)

Posts for road signs shall generally be circular hollow section (CHS) unless specifically shown otherwise in the design documentation.

Traffic signs standards 2.8 m, 3.2 m and 3.8 m long with a total area of attached signs less than 1.0 m2 with a maximum sign width of 1000 mm shall be manufactured to Standard Drawing BSD-7122 from galvanised, CHS Grade C350L0, 60.3 x 2.3 to AS/NZS 1163.

Traffic sign standards 4.65 m long with a total area of attached signs less than 1.0 m2 with a maximum sign width of 1000 mm shall be manufactured to Standard Drawing BSD-7122 from galvanised, CHS Grade C350L0, 60.3 x 2.9 to AS/NZS 1163.

Short sign standards (for example ‘KEEP LEFT’ (R2-3L) signs) shall be manufactured to Standard Drawing BSD-7122 from either:

* New stock: Galvanised, CHS Grade C250L0, 48.3 x 2.9 to AS/NZS 1163; or
* Recycled/recovered stock: Cut to length recycled (damaged) traffic sign standards.

Footings shall comply with *Section 4.2* and *Section 4.3* of this Reference Specification.

For other signs, the size of posts and numbers of posts for each sign shall be as shown in the design documentation. CHS shall be Grade 250/350/450L0 to *AS/NZS* *1163* as shown in the design documentation.

The location and height of signs shall comply with the requirements of the *MUTCD*.

The spacing of posts and footings for posts shall be as shown in the design documentation.

Slip bases and fuse plates for posts, where required, shall be fabricated in accordance with the details shown on *DTMR Standard Drawings SD1365* and SD*1368*.

Steel posts, stays and rails shall comply with the requirements of *AS/NZS* *1163* and galvanised in accordance with *AS/NZS* *4680*.

#### Enhanced Loading Zone Signs standards (posts)

Enhanced Loading Zone signs standards materials for the following Council signs to comply with the requirements for the Traffic signs standards.

* Enhanced Commercial Loading Zone (CLZ) sign;
* Enhanced Passenger and Commercial Loading Zone (PCLZ) sign;
* Enhanced Passenger Loading Zone (PLZ) sign; and
* Enhanced School Loading Zone (SLZ) sign.

## INSTALLATION OF TRAFFIC SIGNS

### Sign Fixing

#### Fixing clamps

Traffic signs – Two-piece extruded aluminium bracket: single (Type TD1) or double (Type TD2) sided or equivalent.

Parking signs – Two-piece pressed metal bracket (single or double sided) or equivalent (Type TD1 or TD2).

End mounted street name and no through road signs – Two-piece aluminium fixing bracket with:

* Overall length: 169 mm
* Two Ø11 mm holes to match standard street name sign – refer BSD-3102;
* To suit 60NB post;
* Single blade – Bracket for Single Sign: Type AL18 or equivalent;
* Two-way blade – Bracket Double Signs: Type AL28 or equivalent;
* Three-way blade – Bracket for Triple Signs: Type AL38 or equivalent.

Centre mounted street name signs – Post clamp with top and bottom holding bracket or equivalent to suit 200 mm blade extrusion.

Direction signs – 50NB (60 mm OD), 65NB (76 mm OD), or 80NB (89 mm OD) sign fixing saddle clamps or brackets.

#### Other fixing methods

Fixing to timber poles (electricity/utility poles) – 10 mm x 35 mm galvanised coach bolts (fix through sign only) or 10 mm x 90 mm galvanised coach bolts (fix through sign and stiffening extrusion)

Fixing to steel poles (>80 mm diameter, electricity/utility poles) – 13 mm wide ‘Band-it’ stainless steel strapping or approved equivalent.

### Sign Ferrules

Sign ferrules shall be constructed in accordance with Council requirements from galvanised CHS Grade C250, 60.3 x 4.5 to AS/NZS 1163.

Ferrules shall be installed with the bottom of the bolt holes 25 mm above the surface of the traffic island. They shall be placed so that the bolt shall be parallel to the sign plate and so that the sign is square to the oncoming traffic.

### Standards (POSTS) Installation

#### **Single post installations**

Signs are generally to be installed in the same position as existing signs. If this position is no longer suitable (for example the sign is obscured by trees) or installation of the sign in the existing location conflicts with directions issued elsewhere, contact Council concerning alternative placement of the sign. Minor tree trimming may be necessary to provide a clear view of any sign.

Sign standards (posts) shall be installed at an angle of 90 degrees to the horizontal in all directions as measured with a spirit level. A maximum tolerance of two degrees from vertical will be deemed acceptable.

Standards (posts) shall be placed laterally so that the outer edge of the sign is not less than 300 mm from the face of the kerb.

“KEEP LEFT” (R2-3L) signs shall be installed in ferrules at a distance of 3 m from the nose of a traffic island, square to and facing traffic approaching the island.

Hazard markers are to be installed so that the outer edge of the sign is not less than 300 mm from the face of the kerb. These are to be installed square to the oncoming traffic, which may not necessarily be square to the kerb.

50 mm NB standards

For normal ground conditions and no constructed surface (concrete path for example), minimum 450 mm deep post spike maybe used.

For permanent sign installation where constructed surface exists cleanly punch hole through surface and install in minimum 300 mm deep concrete footing. Reinstate surface neatly to match existing.

For temporary sign installation where constructed surface exists, either cleanly punch hole through surface and install in minimum 300 mm deep rammed earth footing or weld 100 mm x 100 mm x 10 mm flat plate to bottom of standard and use either ‘dyna-bolt’ or ‘chemset’ type fixings to fix to surface.

Post caps

Plastic caps: Provide plastic post caps to all 50 mm NB standards that are below 1.8 m in height.

Galvanised steel caps: Provide galvanised steel post caps to all standards greater than 50 mm NB and below 1.8 m in height.

Do not provide post caps to standards greater than 1.8 m in height.

#### Other sign installations

Sign installations not covered by this specification are to be installed to the relevant DTMR Guidelines, Specifications and Standard Drawings.

#### Mounting of traffic signs

All traffic signs are to be mounted such that the lower edge of the lowest sign is not less than 2.1 m above the level of the footpath. The following exceptions are made to this requirement:

* Keep Left signs and hazard markers shall be installed with the lower edge of the sign 525 mm above the island or footpath surface.
* Give Way signs shall be mounted such that the lower edge of the sign is not less than 1.9 m above the level of the footpath.

The top edge of the upper most sign on all standards shall be level with the bottom of the pipe cap.

Signs other than parking signs shall be angled approximately five (5) degrees away from normal to the road to avoid specular reflection as per *Clause 1.12.5.3 of Part 1* of the *MUTCD*. Parking signs are to be angled between 20 degrees and 45 degrees to the face of kerb, facing approaching traffic.

#### Public utility authority services

The actual position, location and depth of any established utility services must be determined prior commencing any excavation of any site.

Should any service be damaged during the course of the works, the installer shall immediately notify the Service Authority concerned. The installer or their agent shall bear the cost of reinstating any service damaged, and shall assume liability for, and indemnify Council against any claim, action or proceeding by the Service Authority concerned to recover consequential damages.

#### Redundant standards and footings

Redundant standard footings: Standards are cut off at ground level and/or hammered below ground level and then backfilled or surface reinstated neatly to match existing.

Redundant bolted footing: Bolts are to be cut off at ground level and ground to be flush with ground surface.

## WARRANTY CLAIMS

If a sign needs to be replaced due to faulty retro-reflective material and irrespective whether the sign manufacturer is in business or not, the manufacturer of the retro-reflective sheeting used in producing the failed sign shall undertake the replacement or repair including all labour and material involved at the time of replacement as per certification confirming acceptance of this condition signed by an authorised corporate officer of the retro-reflective sheeting manufacturer.

These warranties shall not apply to signs damaged by vandalism, the effect of improper maintenance and cleaning practices, inadequate storage conditions and accidental damage caused by vehicle accident or other events.

## ASSOCIATED ROADSIDE FURNITURE

### Road Edge Guide Posts

Comply with Standard Drawing BSD-7121 and the relevant requirements of *D*TMR Technical Specification *MRTS 14 Road Furniture*.

### Steel Beam Guardrail

Components and general installation to comply with the relevant requirements of *DTMR Technical* Specification MRTS 14 Road Furniture*.* Testing requirements to conform to AS/NZS 3845.1.

### Non-Flared Gating Guardrail End Terminals

Comply with the relevant requirements of DTMR ‘Road Safety Barrier Systems & End Treatments’ Manual and requirements of United States American Association of State Highway and Transportation Officials (AASHTO)/Federal Highway Administration (FWHA) Manual for Assessing Safety Hardware (MASH) Test Level 2 (TL2 – certified up to 70kph) or Test Level 3 (TL3 – certified up to 100kph), dependent upon application. Evidence of testing and compliance to be submitted for approval.

### Energy Absorbing Bollard (Including Guardrail End Terminals)

Submit independent evidence of testing showing end terminal system rated to (or above) 60 kph for installation in an urban environment.

## APPENDIX ‘A’ – TRANSLINK TRANSIT AUTHORITY STANDARD DRAWING TL0015 (SUPERSEDED)

