

# DESIGN STANDARDS FOR URBAN INFRASTRUCTURE

## STANDARD DRAWINGS

### DS9 TRAFFIC CONTROL DEVICES

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  <p><b>ACT GOVERNMENT</b></p> <p><b>DESIGN STANDARD</b> <b>URBAN INFRASTRUCTURE</b></p>	
Authorised: DIRECTOR, ROADS ACT <i>TG</i> 23/06/11 TONY GILL	
Drawn: MARTIN GORDON	Date 23/06/2011
Project Engineer: FRED IHEGIE / SNEZANA DIMITROVSKA	Date 23/06/2011
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Drawing No. DS9-COVER	Revision A

LINEMARKING GUIDE							
LINE TYPE	CAD CODE	LINE USE	LINE DIMENSION	LINE WIDTH	LINE COLOUR	TYPICAL RRPM SPACING	MATERIAL
DIVIDING LINES	S1	(i) RURAL ROADS		100	WHITE	24000	PAINT
	S1-12	(ii) ALL OTHER ROADS		100	WHITE	12000	PAINT
	SLL	(iii) LOCAL ROADS WHERE DELINEATION IS NOT REQUIRED		100	WHITE	NONE	PAINT
	S2	MULTILANE TWO-WAY CARRIAGEWAY IN URBAN AREA WITH NO MEDIAN AND WHERE PROPERTY & TRANSIT LANES ACCESS IS PERMITTED (ONLY TO BE USED WHERE APPROVED BY THE ROAD AUTHORITY)		150	WHITE	12000	PAINT
	S3	CYCLE OR FOOTPATH		50	WHITE	NONE	PAINT
BARRIER LINES	B1	BARRIER LINE (REFER DS9-30)		150	WHITE	IF & AS SPECIFIED	PAINT
	B2	PARKING BAY BARRIER LINE		80	WHITE	-	PAINT
	B3	RESERVE PARKING LINE, KEEP CLEAR, DISABLED PARKING SPACES, LOADING ZONES		80	YELLOW	-	PAINT
	B4	CROSSING IS PERMITTED IN ONE DIRECTION		80, 80 GAP, 80	WHITE	* 12000 ** 24000	PAINT
	B5	CROSSING IS NOT PERMITTED IN EITHER DIRECTION		80, 80 GAP, 80	WHITE	* 12000 ** 24000	PAINT
	B6	CYCLE OR FOOTPATH		50	WHITE	NONE	PAINT
LANE LINES	L1	RURAL ROADS & SUB-ARTERIAL		100	WHITE	24000	PAINT
	L2	ARTERIAL - NOT IN USE		-	-	24000	RPM's
	L3	ARTERIAL SPECIAL CONDITIONS - NOT IN USE		-	-	12000	RPM's
	L4	EXIT LANE MARKING ON ROUNDABOUTS		150	WHITE	IF & AS SPECIFIED	LLM
	L5	TRANSIT LANE		150	WHITE	* 12000 ** 24000	PAINT
	L6	RURAL ROAD CENTERLINE (ONLY TO BE USED WHERE APPROVED BY THE ROAD AUTHORITY)		100	WHITE	24000	PAINT
	L8	ARTERIAL		100	WHITE	24000	PAINT
	L9	ARTERIAL SPECIAL CONDITIONS		100	WHITE	12000	PAINT
	L5_12 & L5-24	TRANSIT LANE		150	WHITE	* 12000 ** 24000	PAINT
CONTINUITY LINES	C1	CONTROLLED INTERSECTIONS, SHORT TAPERS, TURNING LINE		150	WHITE	IF & AS SPECIFIED	LLM
	C2	BUS BAYS, DISABLED PARKING SPACES, LOADING ZONES AND TAXI RANKS		150	YELLOW	-	LLM
	C3	PARKING BAY		80	WHITE	-	PAINT
MERGE LINES	M1	MERGE AND DIVERGE SITUATIONS, LONG TAPERS, ACCELERATION & DECELERATION TAPERS		150	WHITE	IF & AS SPECIFIED	LLM
	M2	TYPICALLY USED TO THE LEFT OF AN M1 LINE AT A CYCLE STAND UP LANE OR WHERE APPROVED BY THE ROAD AUTHORITY TO PROVIDE GUIDANCE THROUGH SIGNALISED INTERSECTIONS		150	WHITE	NONE	LLM
EDGE LINES	E1	EDGE LINE LEFT HAND SIDE		150	WHITE	31000	PAINT
	E3	DIVIDED ROAD RIGHT HAND SIDE		150	WHITE	31000	PAINT
CROSS WALK LINES	XWL	AT TRAFFIC SIGNALS CONTROLLED INTERSECTIONS		150	WHITE	-	LLM
	SCS	CROSSING MARKS AT SCHOOL CROSSING		150	WHITE	-	LLM
	ZC	ZEBRA CROSSING STRIPES		600	WHITE	IF & AS SPECIFIED	LLM
STOP LINES	SL1	AT TRAFFIC SIGNALS AND SCHOOL CROSSINGS		500	WHITE	-	LLM
	SL2	AT PRIORITY INTERSECTIONS		300	WHITE	-	LLM
HOLD LINES	HL1	GIVE WAY AT CONTROLLED INTERSECTIONS		300	WHITE	-	LLM
TRANSVERSE BARS	TB	TRANSVERSE BAR SPEED REDUCTION MEASURE		600	WHITE	-	LLM

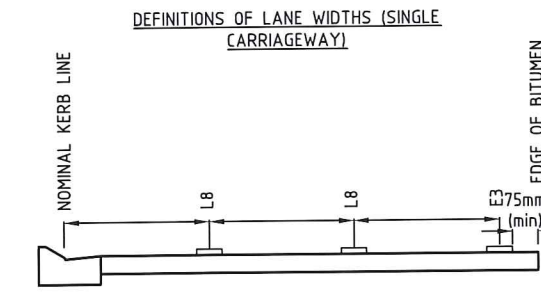
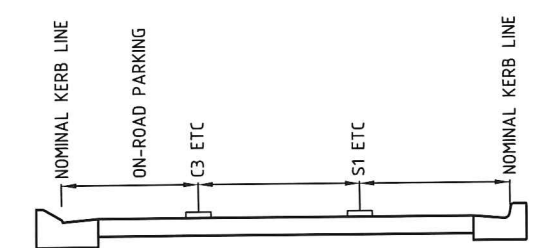
ALL LINEMARKING TO BE IN ACCORDANCE WITH THE PAVEMENT MARKING SPECIFICATION

SYMBOLS FOR RAISED PAVEMENT MARKERS			
MARKER OR TERM	COLOUR	CAD CODE	SYMBOL
NON RETRO REFLECTIVE RAISED PAVEMENT MARKER (NRPM) - NOT IN USE	WHITE	CPM	○
RETRO REFLECTIVE RAISED PAVEMENT MARKER (RRPM) UNIDIRECTIONAL	WHITE	RPM_WU	◻
	YELLOW	RPM_YU	■
	RED	RPM_RU	▽
	GREEN	RPM_GU	○
	GREEN SOLAR	RPM_GU_SOLAR	⊕
BIDIRECTIONAL	WHITE	RPM_WB	◻
	YELLOW	RPM_YB	■
	YELLOW	RPM_YBD	■
	BLUE	RPM_BB	+

NOTES:  
 -THE SYMBOLS FOR RRPM's ARE DERIVED FROM AS1742.2  
 -REFER DS13 FOR ON ROAD CYCLING DETAILS

LINEMARKING GUIDE  
 -YELLOW LINEMARKING USED FOR KEEP CLEAR AND DISABLED MARKINGS  
 -ALL UNITS IN mm, UNLESS SHOWN OTHERWISE  
 -RRPMs NOT TO BE USED ON PATHS UNLESS DETAILED OTHERWISE.  
 -LLM DENOTES LONG LIFE MATERIAL SUCH AS THERMOPLASTIC; COLD APPLIED PLASTIC CEMENT BASED PRODUCTS CAPABLE OF HAVING QUARTZ APPLIED.  
 -IN AREAS OF INDENTED BUS STOPS AND PARKING THE C2 AND C3 LINEMARKING SHALL BE PLACED ON THE THROUGH LANE SIDE OF THE OCI OR CONCRETE PAVING

LEGEND  
 \* WITH STREET LIGHTS  
 \*\* WITHOUT STREET LIGHTS



NOMINAL KERB LINE  
 REFER STD. DRG DS3-01 FOR NOMINAL KERB LINE LOCATION FOR VARIOUS KERB TYPES

ACT GOVERNMENT

DESIGN STANDARD  
 URBAN INFRASTRUCTURE

Authorised: DIRECTOR, ROADS ACT TONY GILL *TG*  
 Date: 23/06/2011

Drawn: MARTIN GORDON  
 Date: 23/06/2011

Project Engineer: FRED IHEGIE / SNEZANA DIMITROVSKA  
 Date: 23/06/2011

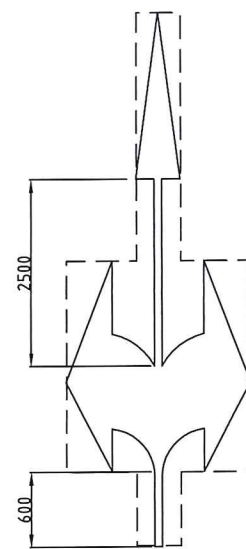
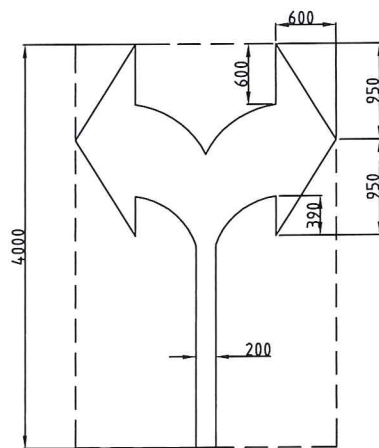
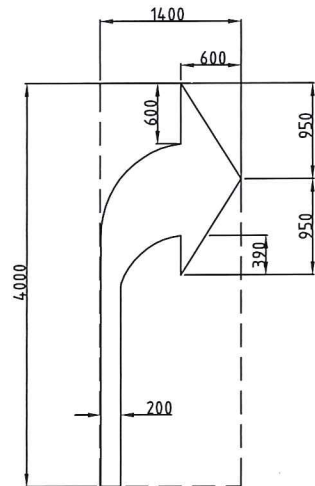
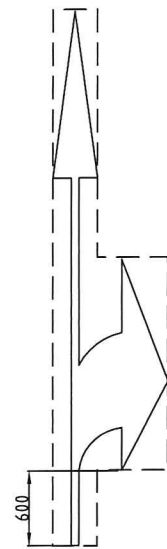
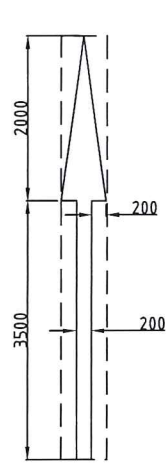
LINEMARKING TYPES

Scale: NTS Date: 23 JUNE 2011

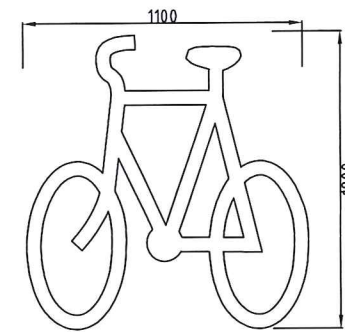
AutoCAD File: DS9-01.DWG

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Drawing No. DS9-01 Revision A

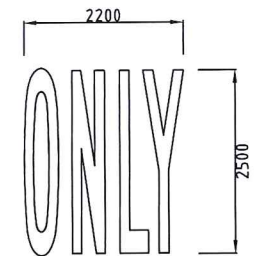


CAD CODE	AS	ASR,ASL	AR,AL	ARL	ASLR
AREA (BOQ CODE)	1.26m <sup>2</sup> (A1)	2.00m <sup>2</sup> (A2)	1.57m <sup>2</sup> (A3)	2.6m <sup>2</sup> (A7)	3.5m <sup>2</sup> (A8)



**BICYCLE PAVEMENT MARKING**  
CAD CODE: CYCLE

COLOR - WHITE USE - DELINEATION OF ON ROAD CYCLE LANES MATERIAL - PAINT (EXCEPT IN HIGH WEAR AREAS EG STAND UP LANES ADJACENT TO M1/M2) - REFER TO DS13



**PAVEMENT LETTERING**  
CAD CODE: ONLY

FOR USE WHERE TRAP LANES OCCUR. MARKING LOCATED MIDWAY BETWEEN PAVEMENT ARROWS.

**OTHER WORD MESSAGES USED ON ROAD PAVEMENTS**

ALL PAVEMENT MESSAGES ON 80 Km/H (OR LOWER) SPEED ROADS ARE TO BE 3000 HIGH UNLESS OTHERWISE STATED. REFER AS1742.2 FOR COMMONLY USED WORD MESSAGES AND FOR HOW MESSAGE IS ARRANGED. OTHER WORD MESSAGES MAY BE APPROVED BY THE ROAD AUTHORITY

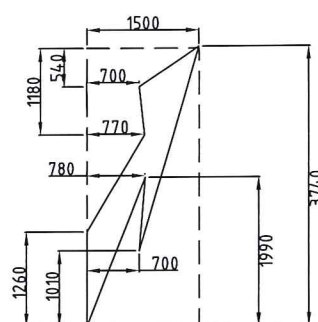
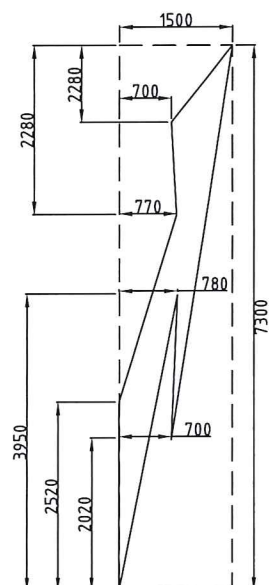
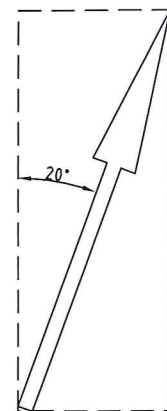
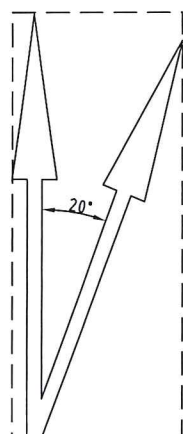
- TRAFFIC SIGNALS
- HEAVY VEHICLES ONLY
- SCHOOL SCHOOL
- CROSSING SCHOOL X
- SLOW STOP GIVE WAY
- KEEP CLEAR PED
- CROSSING PED X LOW
- SPEED LANE BUS LANE
- TRUCK LANE TRANSIT
- LANE / TL RIGHT(LEFT)
- TURN ONLY

**INTERSECTION PAVEMENT ARROWS**

GENERALLY FOR USE ON INTERSECTION APPROACHES WHERE SIGNALS OR TRAP LANES OCCUR AND AT ROUNDABOUTS. USE OF THE SPECIAL TYPE INTERSECTION PAVEMENT ARROWS DETAILED IN AS1742.2 IS ALSO PERMITTED

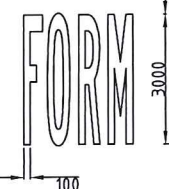
**SPECIAL PAVEMENT ARROWS**

FOR DIMENSIONS REFER TO PAVEMENT ARROW A1. TYPICALLY USE ON APPROACH TO WIDE MEDIAN TO PROVIDE ADVANCE WARNING OF EXCLUSIVE TURNING LANES

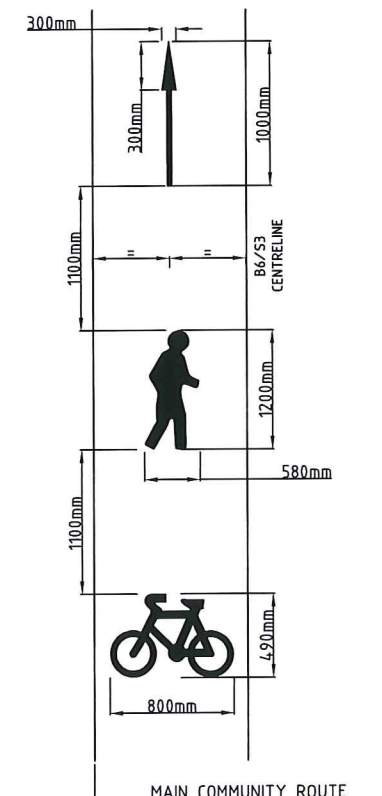


CAD CODE	ASD	AD	AM	AMU
AREA	2.52m <sup>2</sup> (A5)	1.26m <sup>2</sup> (A6)	2.9m <sup>2</sup> (A4)	0.7m <sup>2</sup> (A9)
			<b>RURAL</b>	<b>URBAN</b>

**LANE CHANGE PAVEMENT ARROWS**



**FORM ONE LANE**  
CAD CODE: FOL



REFER FIGURE 3.1 AS 1742.9 FOR BICYCLE AND PEDESTRIAN PAVEMENT SYMBOLS AND ARROWS FOR PATHS

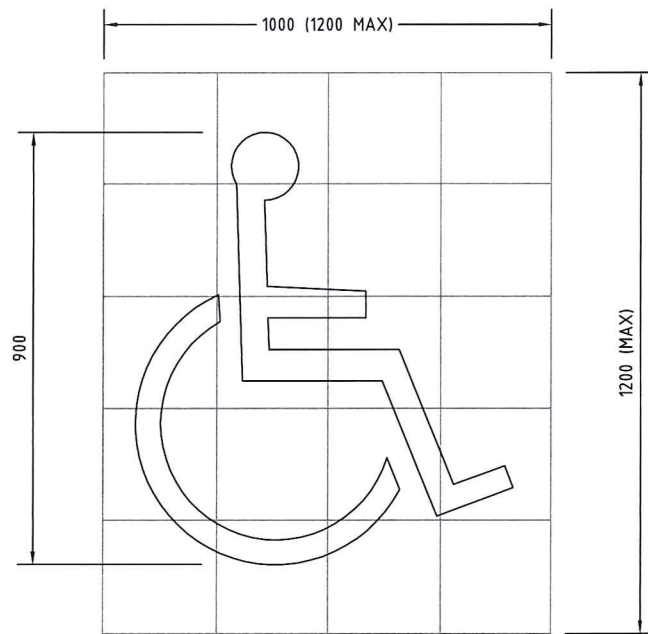
**TYPICAL PAVEMENT SYMBOL ASSEMBLY**

**NOTES**

- ALL LETTERING AND PAVEMENT ARROWS ARE TO BE APPLIED USING LONG LIFE MATERIAL (LLM) AND SHALL BE CENTERED WITHIN THE LANE WIDTH
- ALL LINEMARKING TO BE IN ACCORDANCE WITH AS 1742.

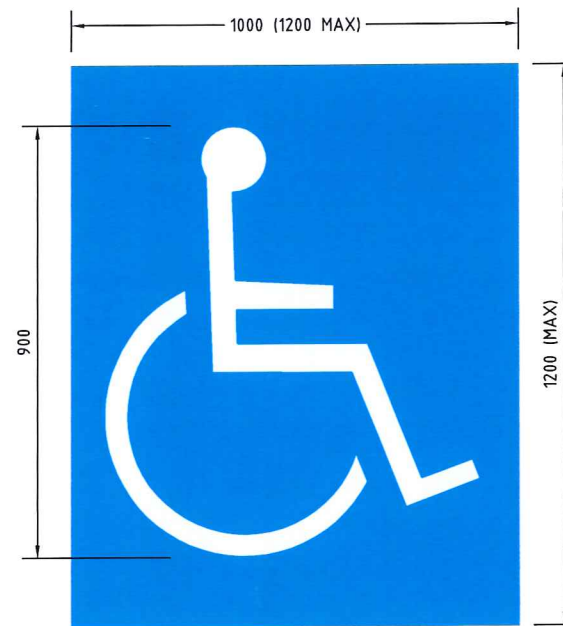
NOTE  
ALL DIMENSIONS SHOWN ARE IN mm UNLESS SHOWN OTHERWISE

<p><b>ACT GOVERNMENT</b></p> <p><b>DESIGN STANDARD</b> <b>URBAN INFRASTRUCTURE</b></p>	
Authorised:	DIRECTOR, ROADS ACT TONY GILL
Drawn:	MARTIN GORDON
Date:	23/06/2011
Project Engineer:	FRED IHEGIE / SNEZANA DIMITROVSKA
Date:	23/06/2011
<b>PAVEMENT MESSAGES</b>	
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Revision:	A



GRID OF STANDARD SYMBOL

(VARIATIONS OF 100mm TO SUIT MANUFACTURERS TEMPLATE MAYBE ACCEPTABLE)

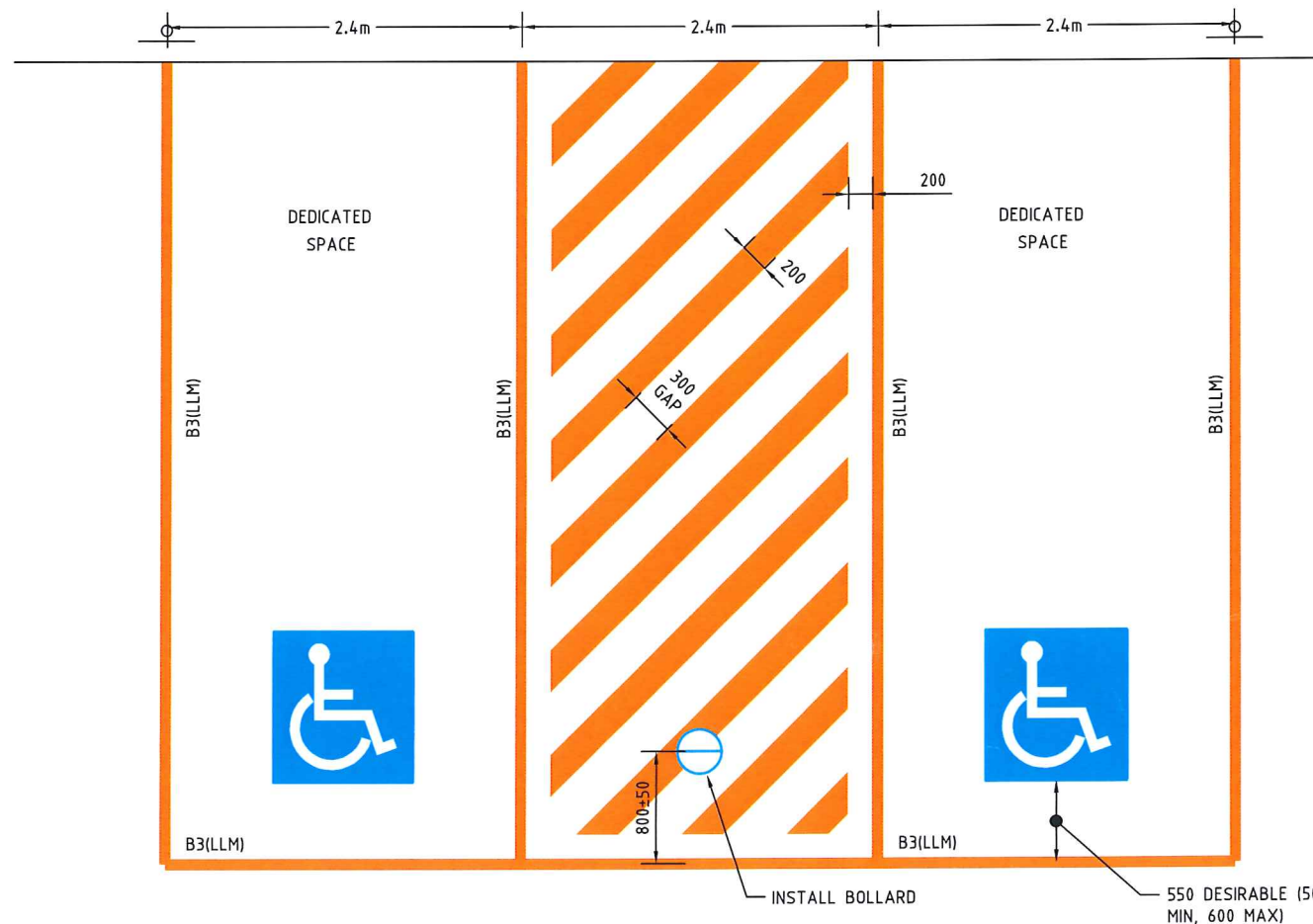


DISABLED SYMBOL FOR PAVEMENTS



CAD CODE: DISABLED-WB COLOR: WHITE ON ULTRA MARINE BLUE

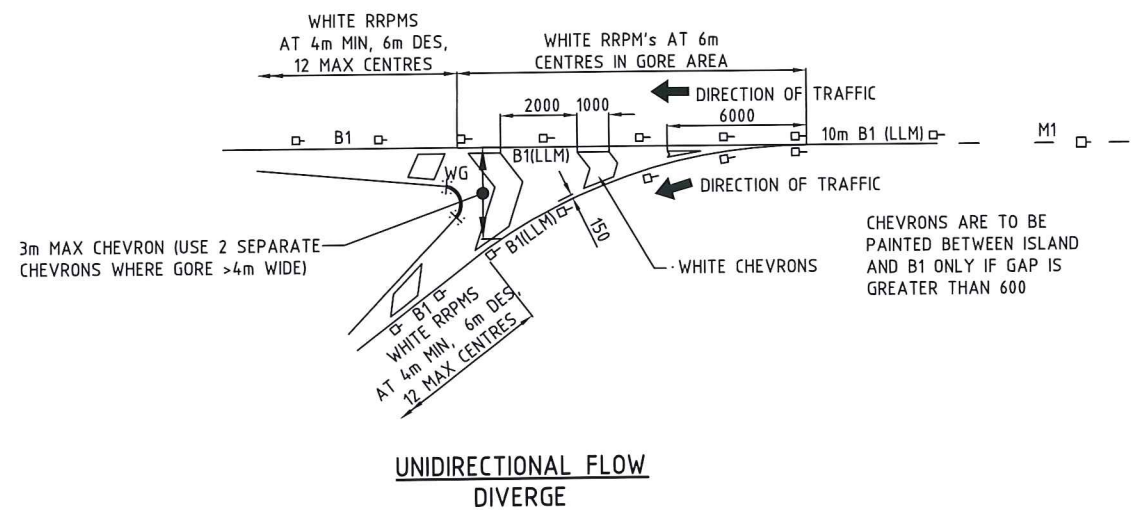
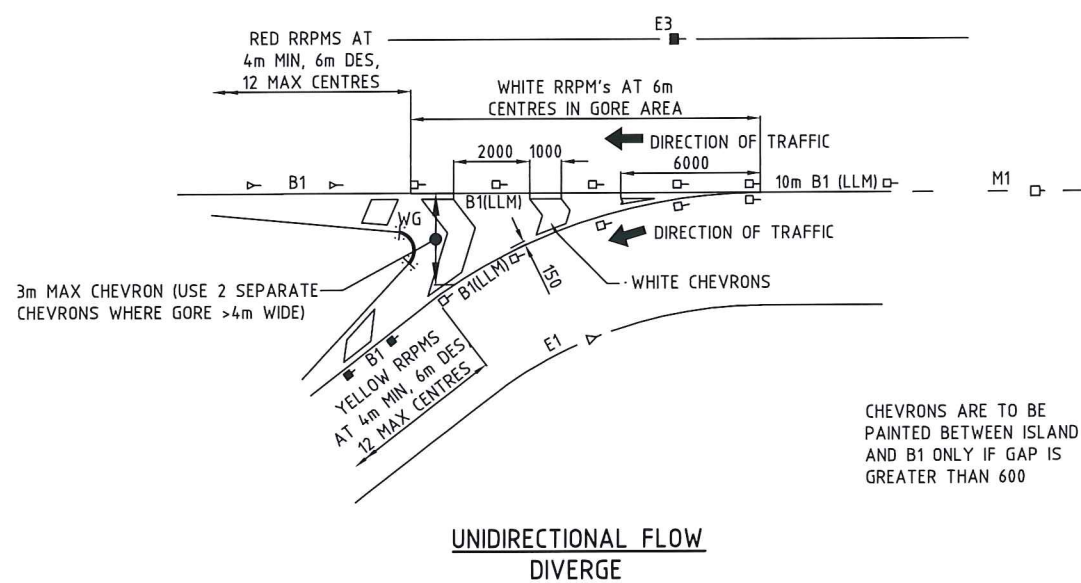
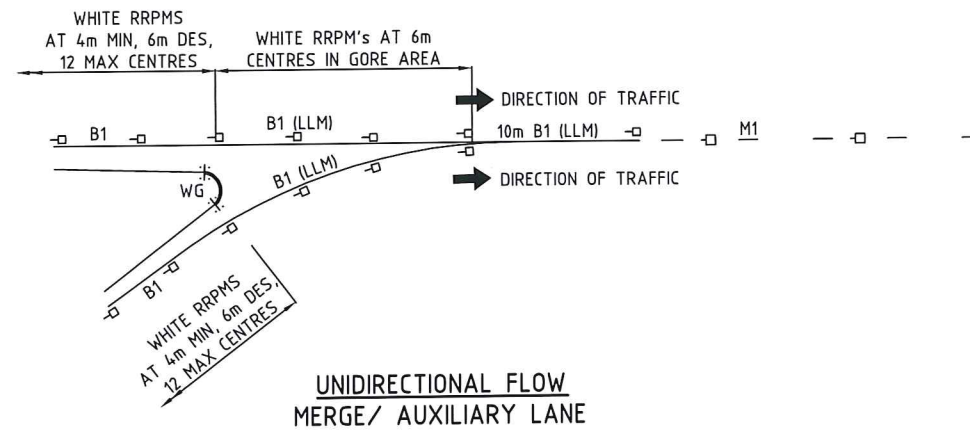
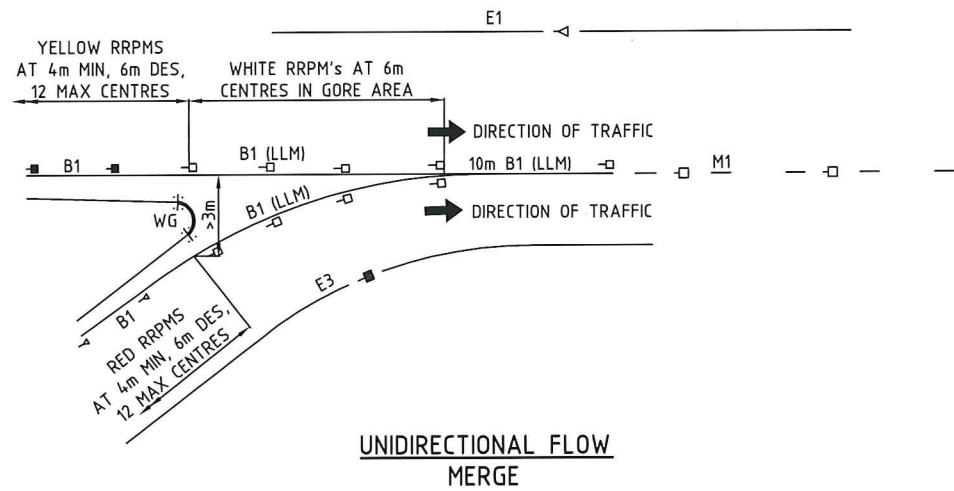
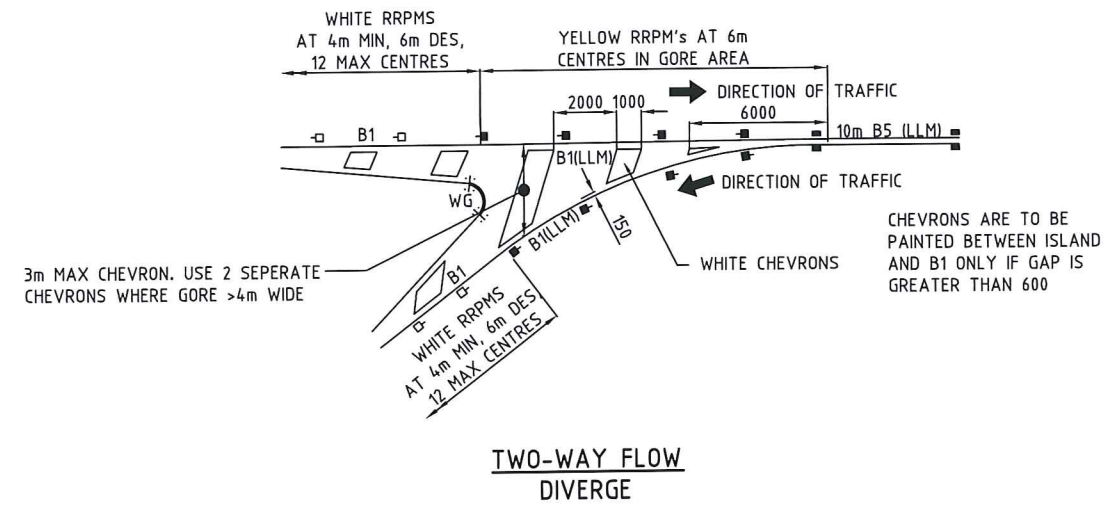
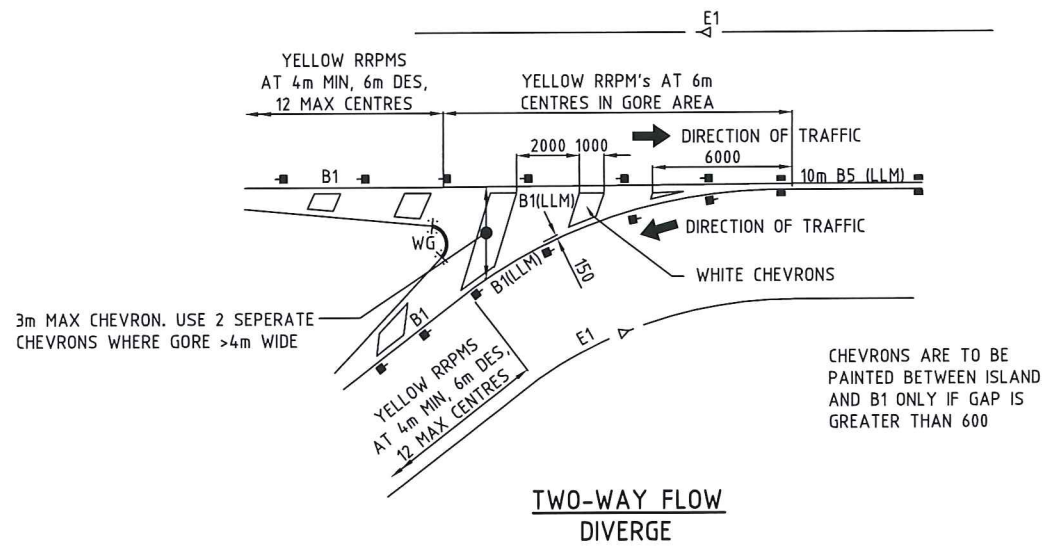
DISABLED BAY NOTES:

1. CORE EXISTING ASPHALTIC CONCRETE PAVEMENT AND INSTALL APPROVED SLEEVED CONCRETE BOLLARD PAINTED WHITE WITH REFLECTIVE GLASS BEADS APPLIED TO THE ENTIRE BOLLARD SURFACE OR 900mm HIGH, 76.1 OD STEEL BOLLARDS WITH 12mm THICK 150mm SQUARE BASE PLATES FASTENED WITH 4 x 100mm MIN LENGTH M12 ANCHORS. THE BOLLARDS SHALL BE POWDER COATED 'HAZARD' YELLOW. THE CONTRACTOR SHALL APPLY CLASS 1 REFLECTIVE TAPE TO THE FULL BOLLARD CIRCUMFERENCE - 100mm DEEP BAND OF WHITE TAPE ABOVE 275mm DEEP AND OF RED TAPE. APPLY 100mm DEEP BAND OF WHITE TAPE BELOW RED TAPE. BASE PLATES SHALL BE SECURELY FIXED TO CONCRETE PAD TO MANUFACTURERS INSTRUCTIONS
2. APPLY 200mm WIDE YELLOW PAINTED CHEVRONS WITH 300mm GAP BETWEEN BARS.
3. APPLY AN APPROVED NON SLIP AGGREGATE AND GLASS BEAD MIX TO CHEVRON AND DISABLED LOGO MARKINGS.
4. CHEVRONS AND DISABLED MARKINGS SHALL BE IN ACCORDANCE WITH AS2890.6:2009.
5. ANGLE DISABLED PARKING BAYS SHOULD BE AVOIDED, BUT WHEN NECESSARY SHALL BE DESIGNED TO THE APPROVAL OF THE ROAD AUTHORITY.





TYPICAL ARRANGEMENT 90° PARKING

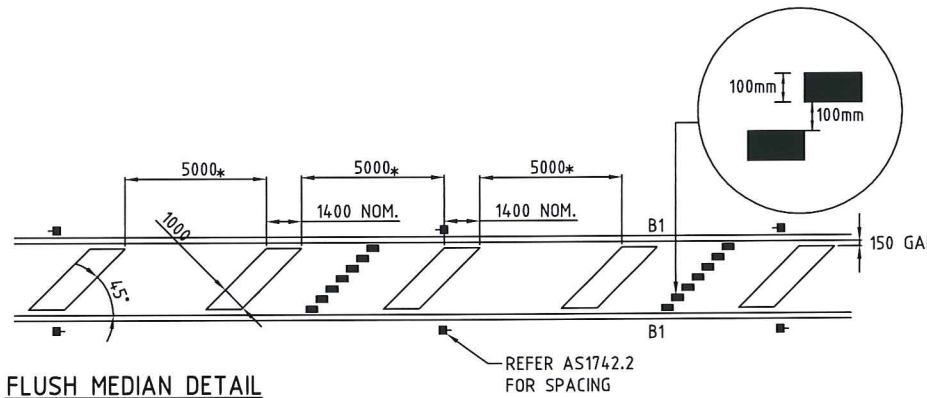
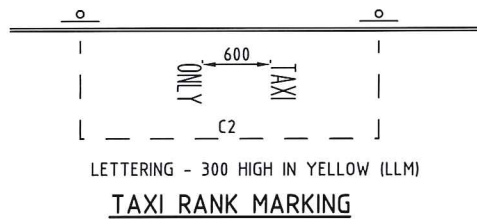
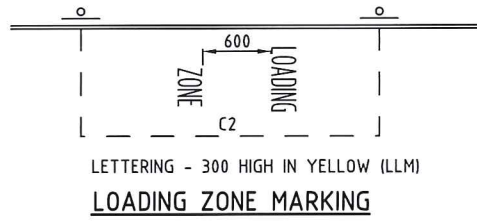
 <b>ACT GOVERNMENT</b> 	
<b>DESIGN STANDARD URBAN INFRASTRUCTURE</b>	
Authorised: DIRECTOR, ROADS ACT <i>TSG</i> TONY GILL <i>28/6/11</i>	
Drawn: MARTIN GORDON	Date 23/06/2011
Project Engineer: FRED IHEGIE / SNEZANA DIMITROVSKA	Date 23/06/2011
<b>LINEMARKING DISABLED ZONES</b>	
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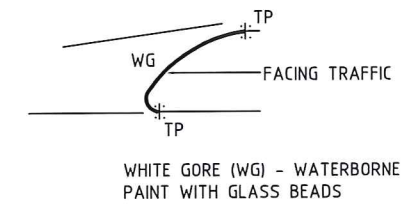
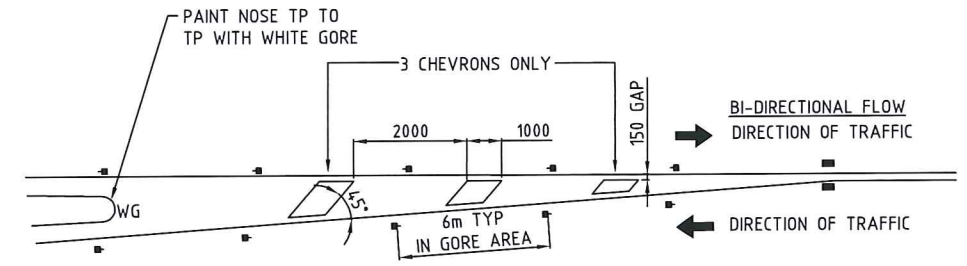
**RRPM's AT LARGE TRAFFIC ISLANDS/EXPRESSWAY RAMPs**  
(ANY SIDE >12m LONG)

**RRPM's AT SMALL TRAFFIC ISLANDS**  
(ALL SIDES <=12m LONG)

  <p><b>ACT GOVERNMENT</b></p>	
<p><b>DESIGN STANDARD URBAN INFRASTRUCTURE</b></p>	
Authorised:	DIRECTOR, ROADS ACT TONY GILL
Drawn:	MARTIN GORDON
Project Engineer:	FRED IHEGIE / SNEZANA DIMITROVSKA
<p><b>RRPM's AT TRAFFIC ISLANDS</b></p>	
Scale	Date
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DS9-04	A



INSTALL DIAGONAL ROWS BI-DIRECTIONAL YELLOW RRPM'S BETWEEN EVERY SECOND CHEVRON. PROVIDE 100mm GAP BETWEEN RRPM'S. FACE OF RRPM TO BE NORMAL TO DIRECTION OF TRAVEL. FLUSH MEDIAN IS TYPICALLY USED ON THE APPROACH TO AN OBSTRUCTION THAT IS OVER A CREST OR IN AREAS OF POOR SIGHT DISTANCE

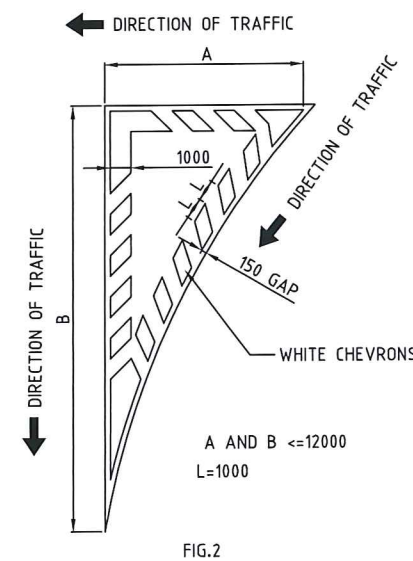
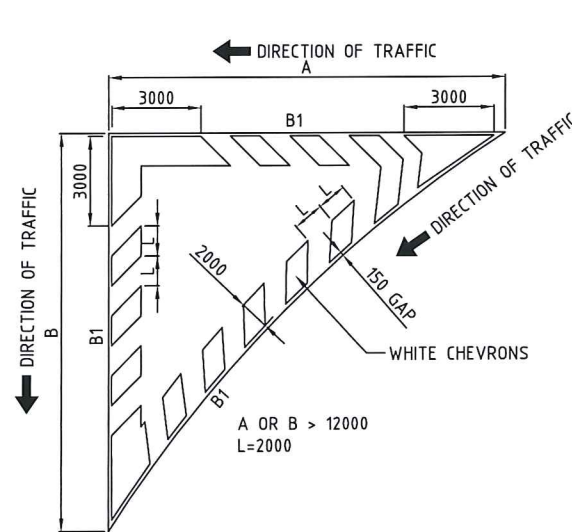


NOTES

- FOR TRIANGULAR ISLANDS WITH EACH SIDES  $\leq 5\text{m}$  ALL KERB LENGTHS TO BE PAINTED WITH WHITE GORE (WG)
- FOR PEDESTRIAN ISLANDS  $\leq 10\text{m}$  LENGTH ALL KERB LENGTHS TO BE PAINTED WITH WHITE GORE (WG)
- UNLESS APPROVED OTHERWISE ALL LETTERING SHALL BE IN ACCORDANCE WITH AS1742.2

NOTE

ALL DIMENSIONS SHOWN ARE IN mm UNLESS SHOWN OTHERWISE

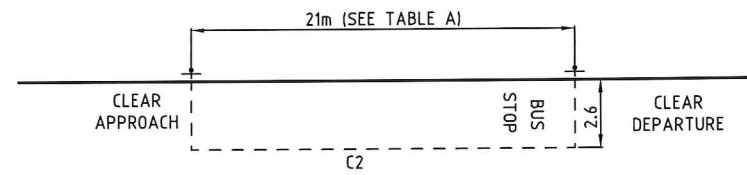


TYPICAL TREATMENT - PAVEMENT MARKING FOR CHEVRONS  
REFER TO AS.1742 PART 2 FOR RRPM SPACING.

 <b>ACT GOVERNMENT</b>  <b>DESIGN STANDARD</b> <b>URBAN INFRASTRUCTURE</b>	
Authorised: DIRECTOR, ROADS ACT TONY GILL	<i>TG</i> <i>23/06/11</i>
Drawn: MARTIN GORDON	Date 23/06/2011
Project Engineer: FRED IHEGIE / SNEZANA DIMITROVSKA	Date 23/06/2011
<b>MISCELLANEOUS</b> <b>LINEMARKING</b> <b>DETAILS</b>	
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**TABLE A**

BUS STOP LENGTH - SINGLE BUS		
APPROACH	DEPARTURE	LENGTH (m)
CLEAR	CLEAR	21m
CLEAR	OBSTRUCTED	24m
OBSTRUCTED	CLEAR	34m
OBSTRUCTED	OBSTRUCTED	46m



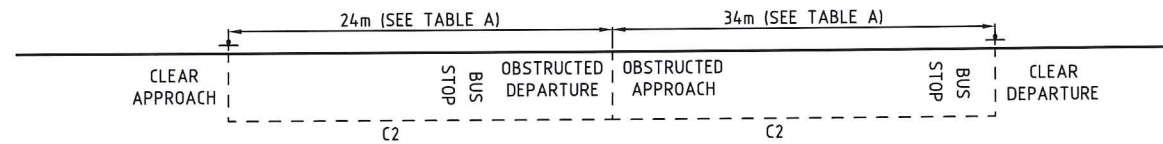
**SINGLE BUS STOP**



LETTERING - 600 HIGH IN YELLOW (LLM)

**BUS STOP MARKING**

CAD CODE: BUSBAY



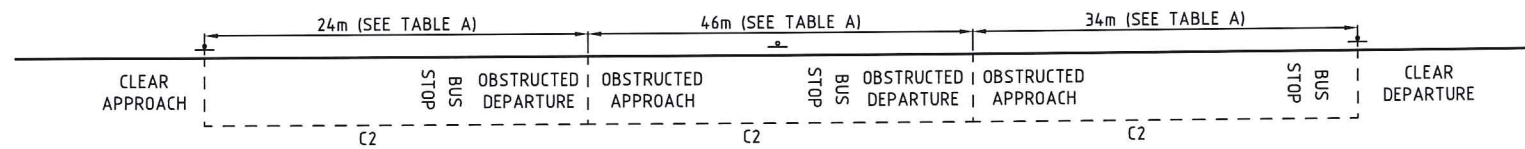
**DOUBLE BUS STOP**



**TYPICAL PAVEMENT LETTERING**

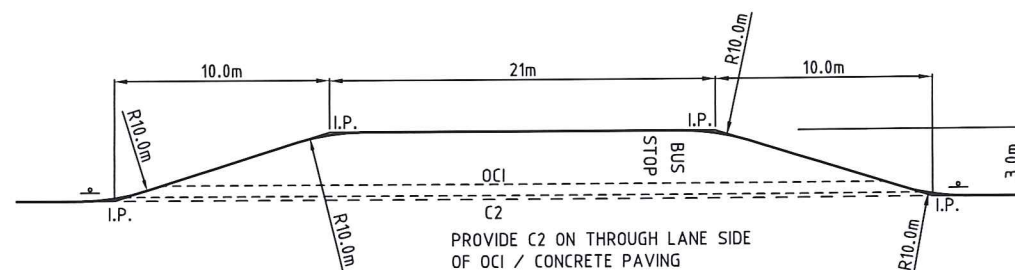
CAD CODE: BUSSTOP

USE SAME SPACING FOR KEEP CLEAR



**TRIPLE BUS STOP**

**BUS STOP CONFIGURATIONS**



PROVIDE C2 ON THROUGH LANE SIDE OF OC1 / CONCRETE PAVING

**SINGLE BUS LAYBY CONFIGURATION**

ACT GOVERNMENT



**DESIGN STANDARD  
URBAN INFRASTRUCTURE**

Authorised: DIRECTOR, ROADS ACT TONY GILL		<i>TG</i> 20/6/11
Drawn: MARTIN GORDON	Date 23/06/2011	
Project Engineer: FRED IHEGIE / SNEZANA DIMITROVSKA	Date 23/06/2011	

**BUS STOP  
DETAILS**

Scale NTS	Date 23 JUNE 2011
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AutoCAD File  
DS9-06.DWG

Latest Revision Details  
A REVISIONS DUE TO UPDATE OF AS1742.2

Drawing No. DS9-06	Revision A
-----------------------	---------------



600

KEEP LEFT / RIGHT SIGN  
R2-3

BLADE SHAPE MAY CHANGE

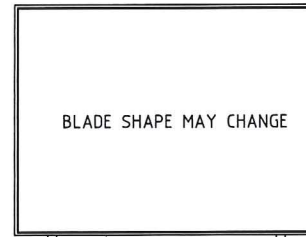
1500 RURAL 2000 URBAN  
2500 IN PEDESTRIAN AREAS

FLOOD WARNING SIGN  
HAZARD MARKERS  
ONE WAY SIGNS



1500 RURAL 2000 URBAN

ALL OTHER SIGNS  
NOT SPECIFICALLY  
MENTIONED



BLADE SHAPE MAY CHANGE

AS PER GUIDE  
SIGN INVENTORY  
FORM

GUIDE DIRECTION SIGN

BLADE SHAPE MAY CHANGE

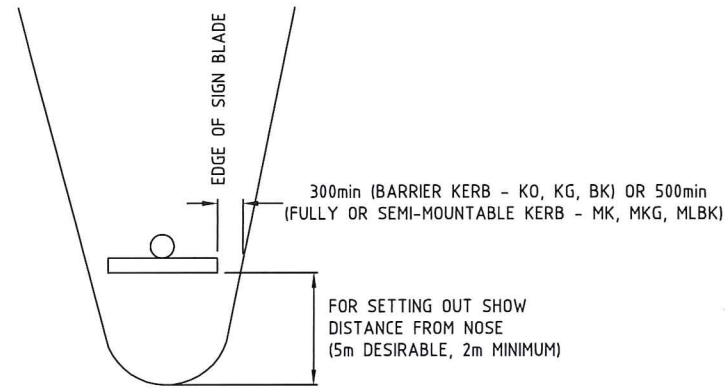
BLADE SHAPE MAY CHANGE

MOUNT BLADES SIDE BY  
SIDE WHERE USING TWO  
SIGNS (FOR THREE SIGNS  
AS DEPICTED)

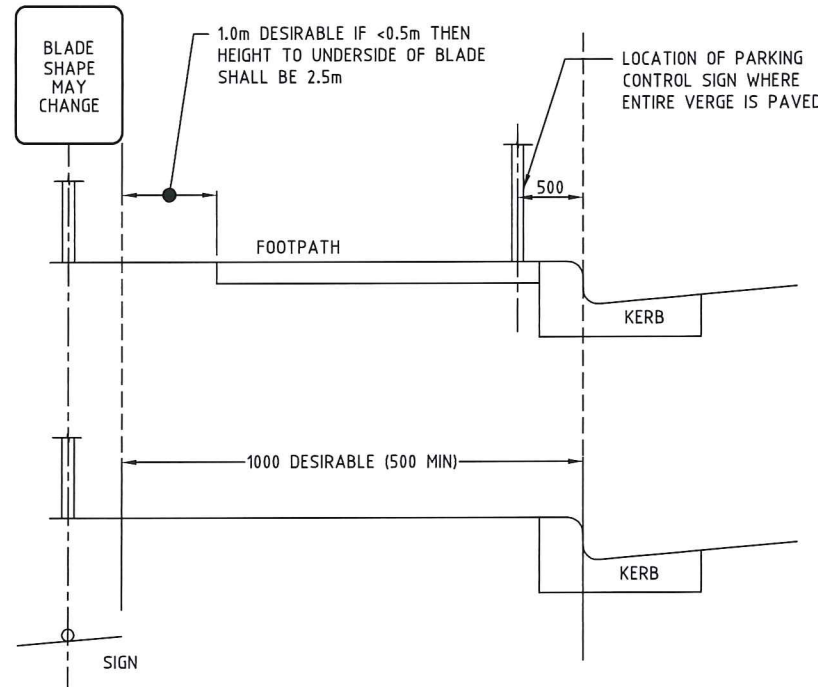
2500 MIN IN PEDESTRIAN AREAS

PEDESTRIAN AREAS

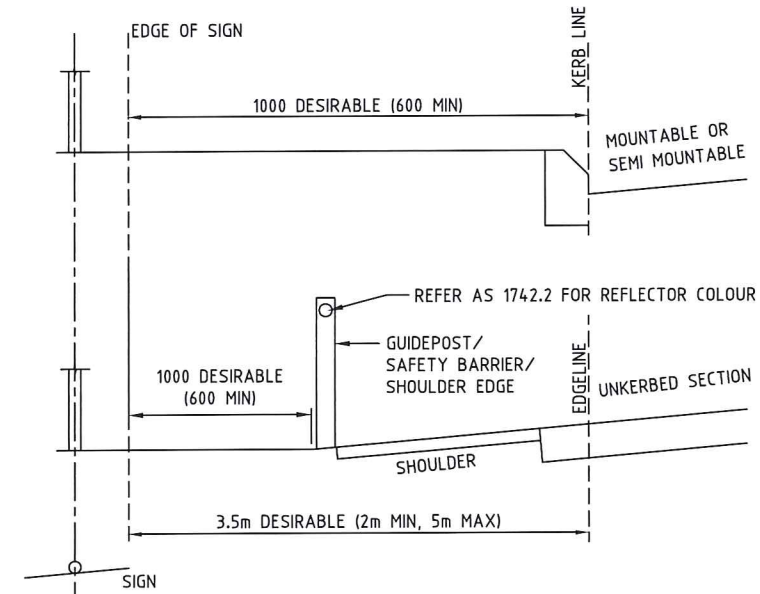
SIGN MOUNTING HEIGHT



DETAIL OF MINIMUM CLEARANCE FOR MEDIAN SIGN



LATERAL PLACEMENT OF SIGNS URBAN AREA TYPICAL



LATERAL PLACEMENT OF SIGNS ARTERIAL AND RURAL ROADS TYPICAL

NOTES

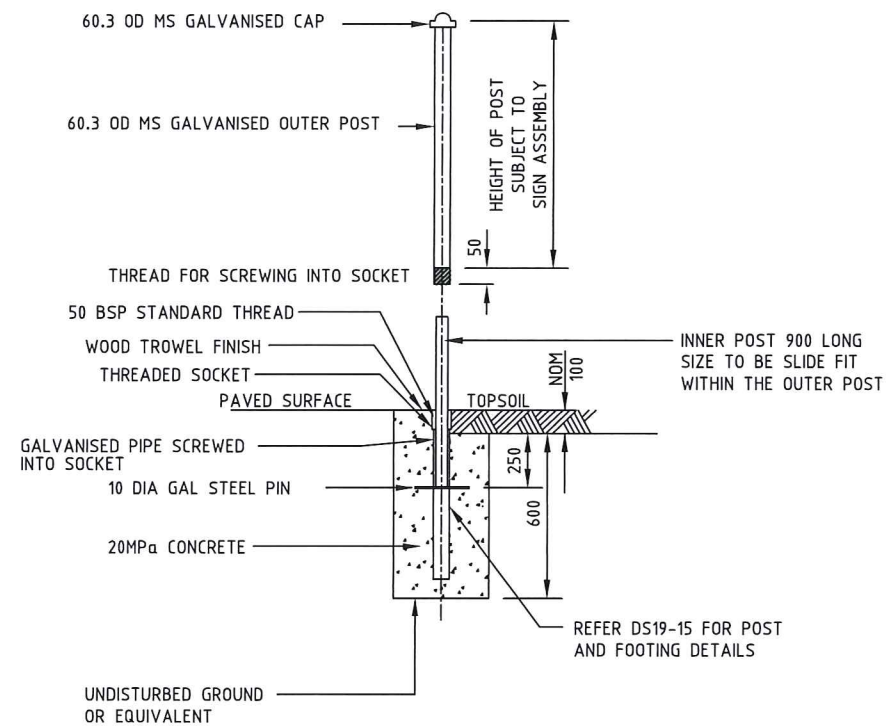
1. FOR GUIDE SIGN LOCATIONS/DETAILS REFER TO GUIDE SIGN INVENTORY FORM.
2. POSTS FOR GUIDE SIGNS REFER TO DS9-15.
3. SIGN HEIGHTS NOMINATED ARE MINIMUMS AND REFER TO THE HEIGHTS OF THE LOWEST SIGN IN A GROUP ON THE POST(S). HEIGHTS SHALL BE ERECTED TO A TOLERANCE OF -0mm +100mm
4. HEIGHTS SHOWN ARE GUIDELINES ONLY. FOR SPECIFIC APPLICATIONS AND FOR LONGITUDINAL PLACEMENT REFER TO AS 1742.2.
5. FOR ALL MULTIPOST SIGNS-REFER SPECIFICATION FOR STIFFENER AND SUPPORT DETAILS.
6. ALL DIMENSIONS SHOWN ARE IN MM UNLESS SHOWN OTHERWISE.

NOTE  
ALL DIMENSIONS SHOWN ARE IN mm UNLESS SHOWN OTHERWISE

<p><b>ACT GOVERNMENT</b></p> <p><b>DESIGN STANDARD URBAN INFRASTRUCTURE</b></p>	
<p>Authorised: DIRECTOR, ROADS ACT TONY GILL</p>	<p>Date 23/06/2011</p>
<p>Drawn: MARTIN GORDON</p>	<p>Date 23/06/2011</p>
<p>Project Engineer: FRED IHEGIE / SNEZANA DIMITROVSKA</p>	<p>Date 23/06/2011</p>
<p><b>VERTICAL AND LATERAL SIGN LOCATION</b></p>	
<p>Scale NTS</p>	<p>Date 23 JUNE 2011</p>
<p>AutoCAD File DS9-11.DWG</p>	
<p>Latest Revision Details A REVISIONS DUE TO UPDATE OF AS1742.2</p>	
<p>Drawing No. DS9-11</p>	<p>Revision A</p>

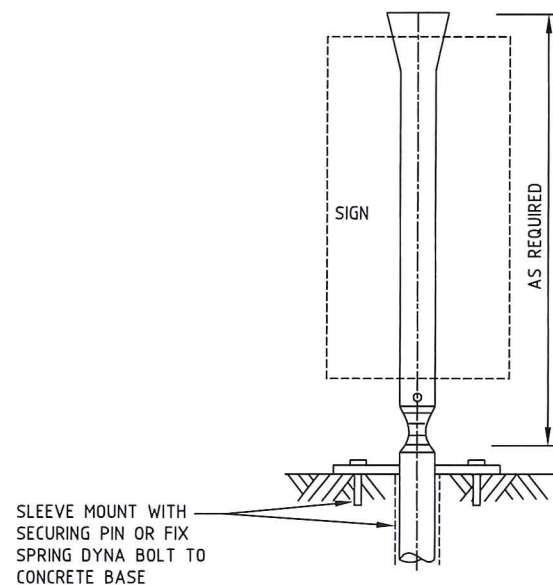
NOTE: WHERE PRACTICABLE THE DESIRABLE LATERAL OFFSETS SHOULD BE USED. AT TRAFFIC ISLANDS TO ALLOW FOR OVERHANG OF TURNING VEHICLES THE DESIRABLE OFFSETS MAY NEED TO BE INCREASED.



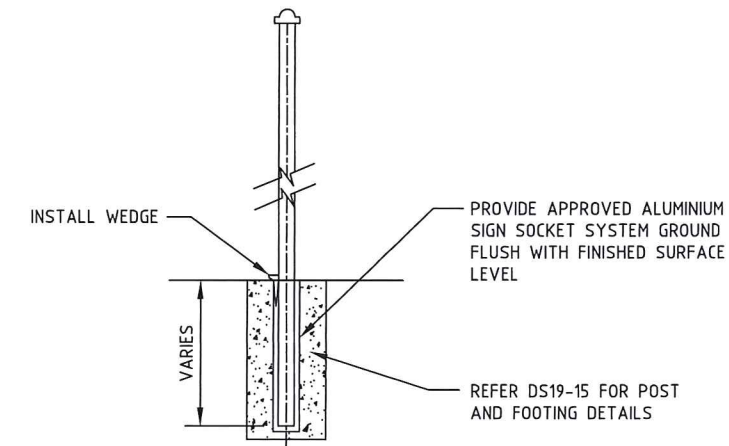


**THREADED POST AND FOOTING DETAIL**

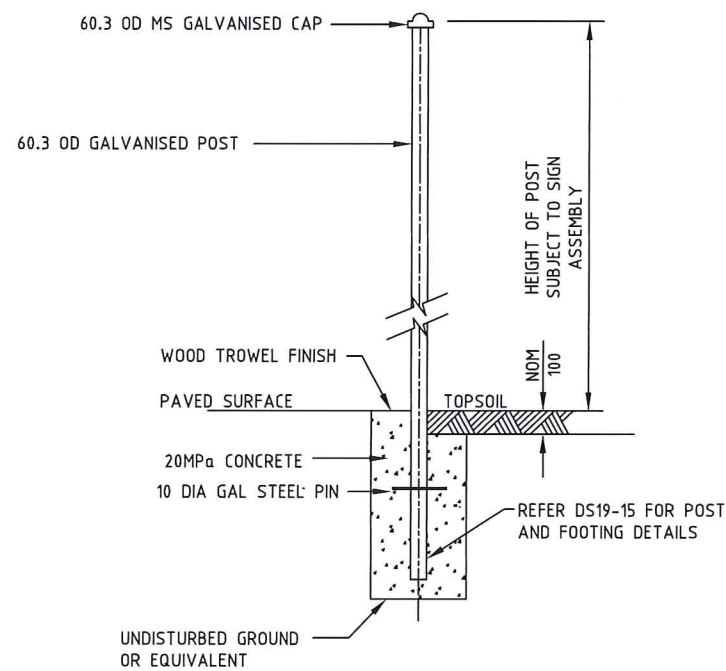
RESTRICTED USE - REFER ROAD SIGN SPECIFICATION



**IMPACT RECOVERY SYSTEM LOW MAINTENANCE FOOTING SYSTEMS**

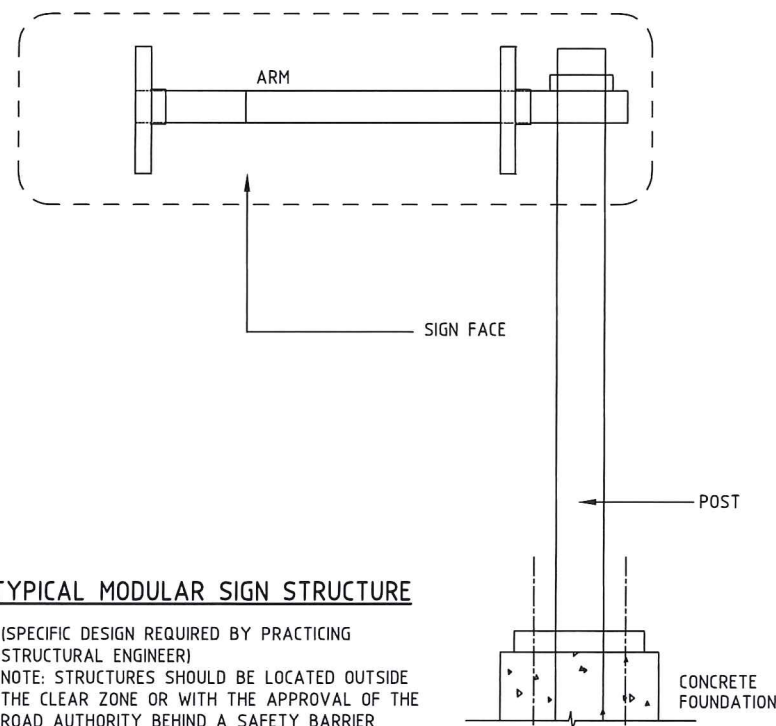


**ALUMINIUM GROUND SOCKET SYSTEM**



**DIRECT BURIED POST AND FOOTING DETAIL FOR SMALL SIGN ASSEMBLIES**

(REFER DS9-15 FOR POST AND FOOTING SIZES)





**TYPICAL MODULAR SIGN STRUCTURE**

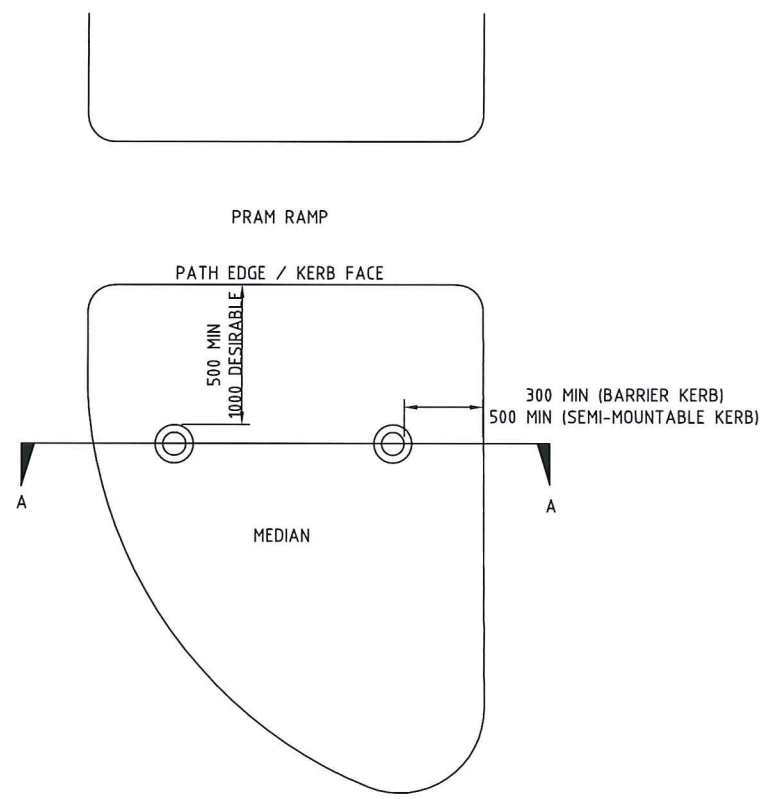
(SPECIFIC DESIGN REQUIRED BY PRACTICING STRUCTURAL ENGINEER)  
NOTE: STRUCTURES SHOULD BE LOCATED OUTSIDE THE CLEAR ZONE OR WITH THE APPROVAL OF THE ROAD AUTHORITY BEHIND A SAFETY BARRIER

**FRANGIBLE POSTS:**

LARGE POSTS THAT ARE NOT CONSIDERED FRANGIBLE SHALL BE LOCATED 1m MINIMUM BEHIND SAFETY BARRIERS OR OUTSIDE OF THE CLEAR ZONE (MAX LATERAL SIGN OFFSET APPLICABLE). WHERE THESE PROVISIONS CANNOT BE MET FRANGIBLE POSTS SHALL BE USED. REFER DS9-15 FOR POSTS CONSIDERED FRANGIBLE.

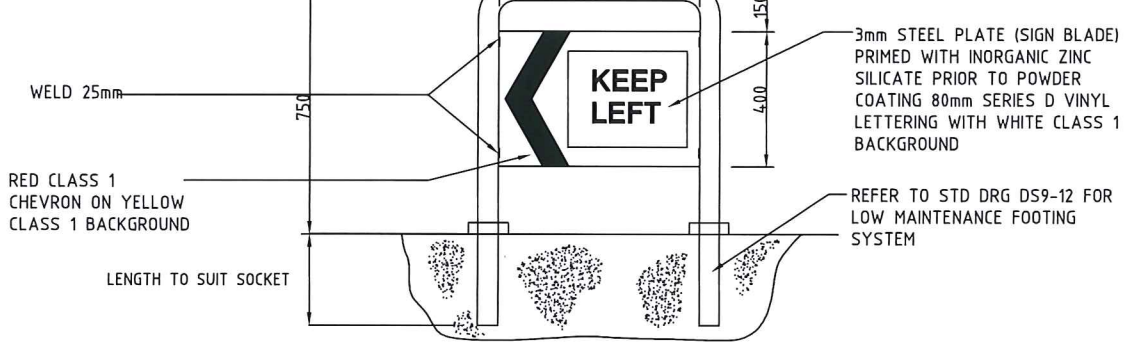
NOTE  
ALL DIMENSIONS SHOWN ARE IN mm  
UNLESS SHOWN OTHERWISE

  <p><b>ACT GOVERNMENT</b></p>	
<p><b>DESIGN STANDARD URBAN INFRASTRUCTURE</b></p>	
<p>Authorised: DIRECTOR, ROADS ACT TONY GILL</p>	
Drawn:	Date
MARTIN GORDON	23/06/2011
Project Engineer:	Date
FRED IHEGIE / SNEZANA DIMITROVSKA	23/06/2011
<p><b>ENDORSED SIGN SYSTEM</b></p>	
Scale	Date
NTS	23 JUNE 2011
<p>AutoCAD File DS9-12.DWG</p>	
<p>Latest Revision Details A DS9 UPDATE</p>	
Drawing No.	Revision
DS9-12	A



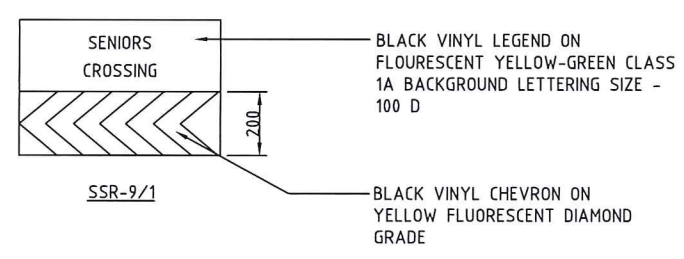
PLAN  
NTS

60.3 O.D. x 3.6mm GRADE 250 GALV PIPE FRAME OR PIPE WITH MATCHING 90° LONG RADIUS BENDS BUTT WELDED AND GROUND FLUSH, FINISH ALL DISTURBED AREAS WITH INORGANIC ZINC SILICATE PRIMER PRIOR TO POWDER COATING. COLOUR OF POWDER COATING ON COMPLETED FRAME & SIGN BLADE TO MATCH BACKGROUND COLOUR OF SIGN.

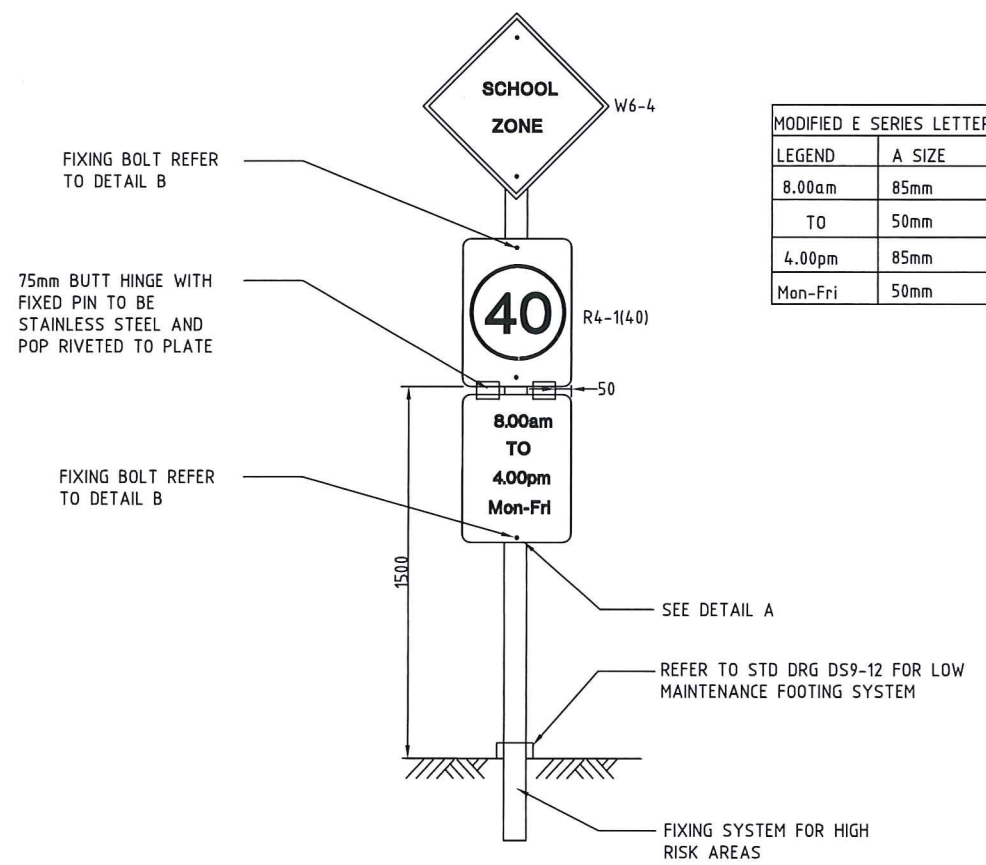


SECTION A-A  
R2-3/1

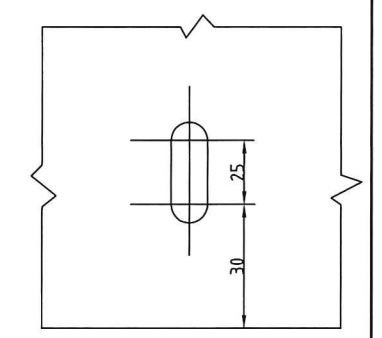
WHERE POSSIBLE THESE SIGNS SHOULD BE LOCATED CENTRALLY ON THE ISLAND



SSR-9/1



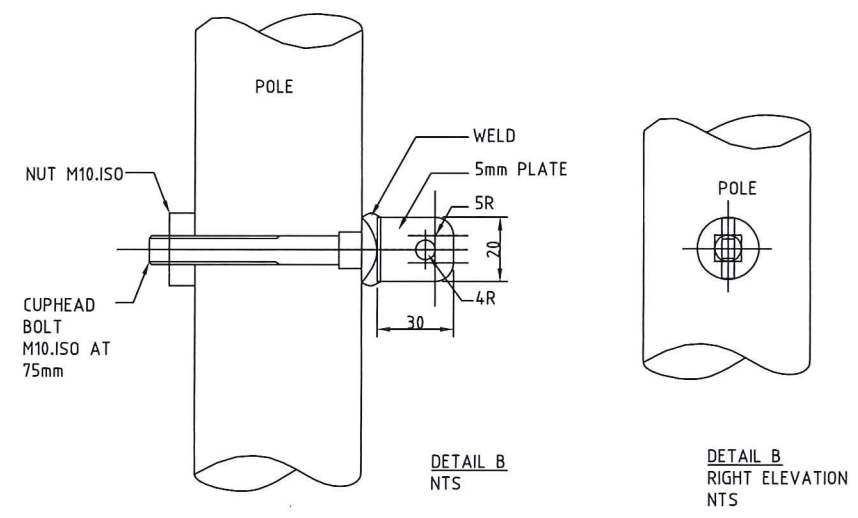
MODIFIED E SERIES LETTERS		
LEGEND	A SIZE	B SIZE
8.00am	85mm	100mm
TO	50mm	80mm
4.00pm	85mm	100mm
Mon-Fri	50mm	80mm



DETAIL A  
NTS

NOTE: PADLOCK TO BE SUPPLIED BY THE ROAD AUTHORITY

R4-B(ACT)(A)  
NTS



NOTE - ALL DIMENSIONS SHOWN ARE IN mm UNLESS SHOWN OTHERWISE

- BOLT AND BRACKET TO BE HOT DIP GALV OR AUTHENTIC STAINLESS STEEL
- IF GALV MATERIAL IS USED THEN ALL INTERNAL HOLE DIAMETERS SPECIFIED SHALL BE FINISHED SIZE AFTER HOT DIPPED GALVANIZING

**ACT GOVERNMENT**

**DESIGN STANDARD  
URBAN INFRASTRUCTURE**

Authorised: DIRECTOR, ROADS ACT  
TONY GILL

Drawn: MARTIN GORDON Date: 23/06/2011

Project Engineer: FRED IHEGIE / SNEZANA DIMITROVSKA Date: 23/06/2011

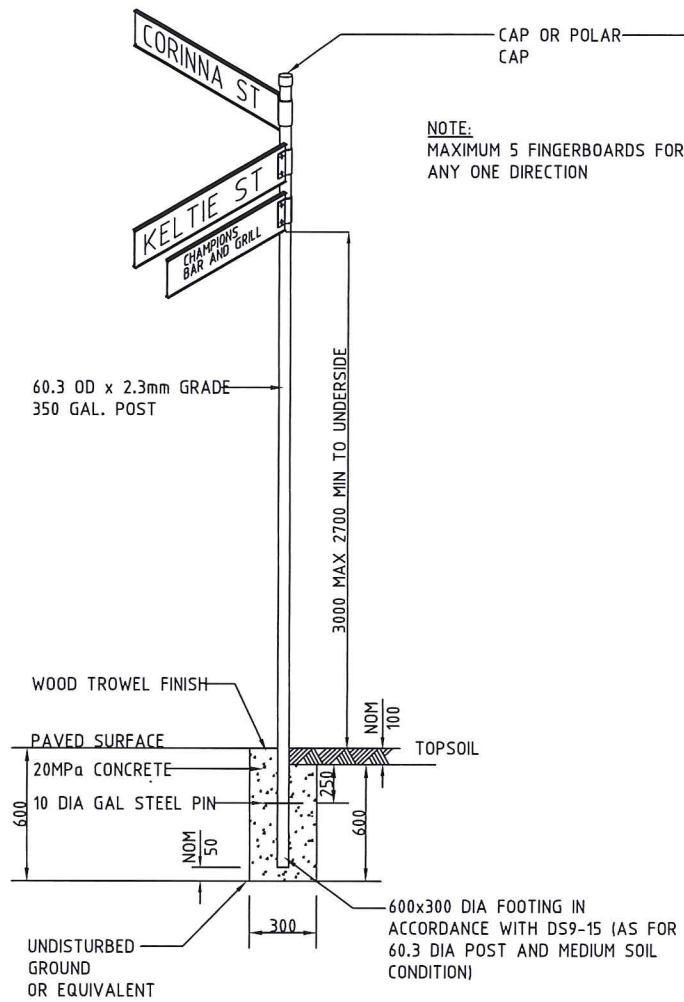
**SPECIAL SIGNS**

Scale: NTS Date: 23 JUNE 2011

AutoCAD File: DS9-13.DWG

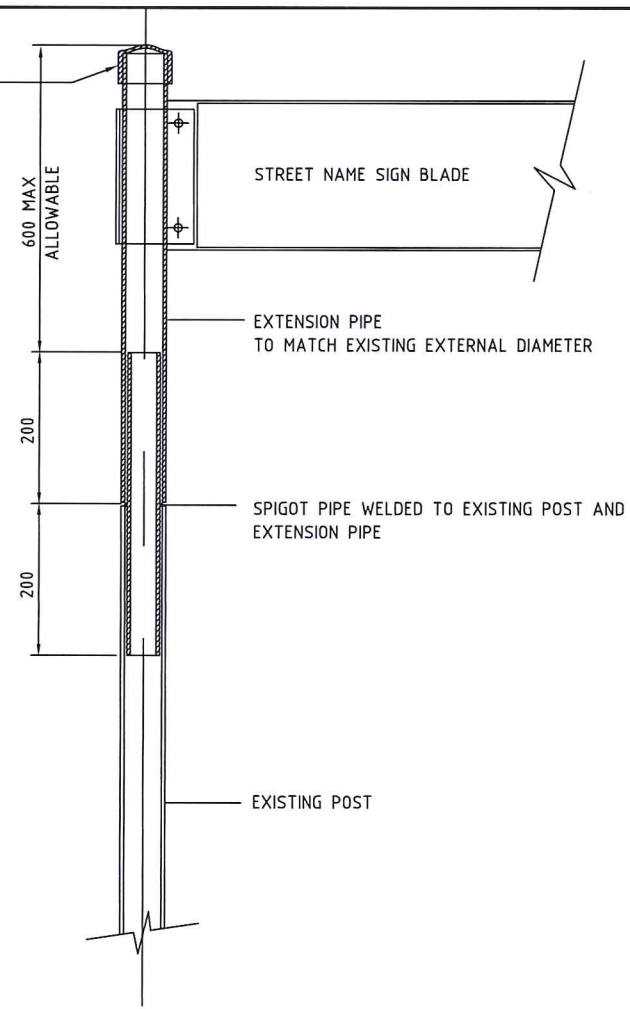
Latest Revision Details: A DS9 UPDATE

Drawing No. DS9-13 Revision: A

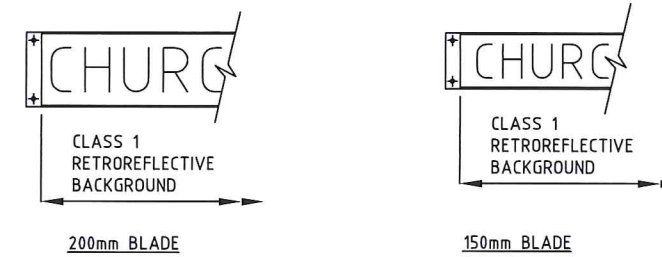


**TYPICAL STREET NAME SIGN INSTALLATION DETAIL**  
SCALE 1:20  
REFER DS9-15 TO CONFIRM POST AND FOOTING SIZES

NOTE:  
MAXIMUM 5 FINGERBOARDS FOR ANY ONE DIRECTION

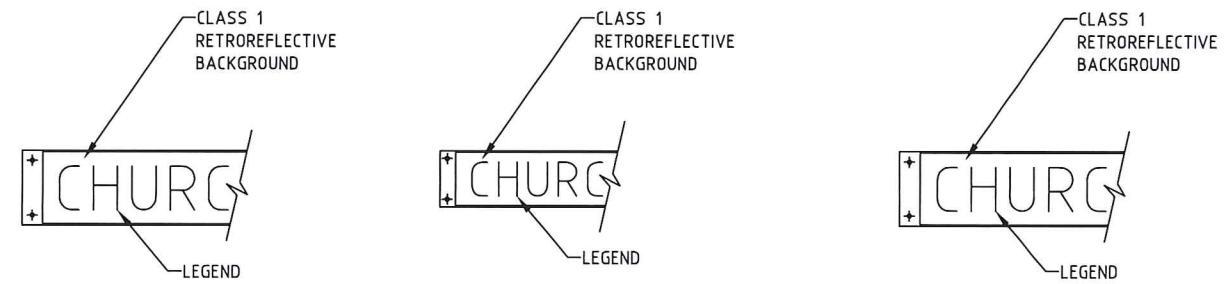


**POST EXTENSION DETAIL**  
SCALE 1:20



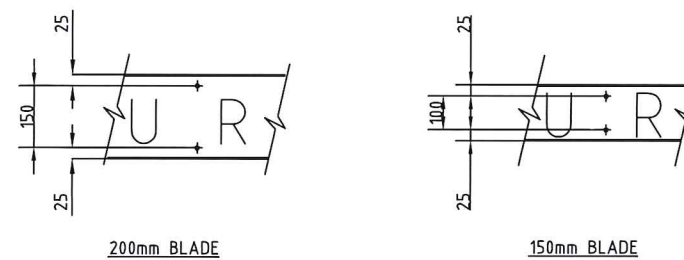
SCALE 1:10

**1. END MOUNTING TO 60.3mm O.D. GAL. POSTS**



SCALE 1:10

**2. END MOUNTING TO STEEL COLUMNS (BAND-IT FIXING)**

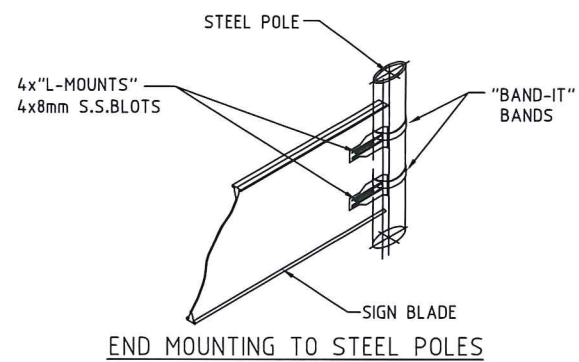


SCALE 1:10

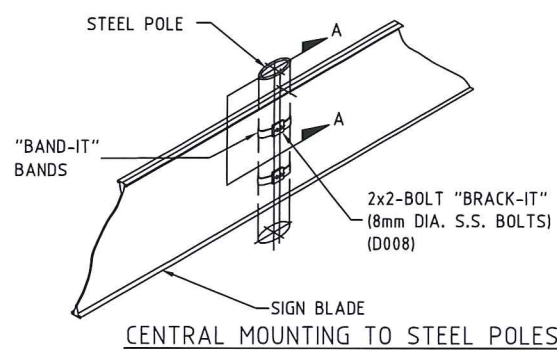
**3. CENTRAL MOUNTING TO STEEL COLUMNS (BAND-IT FIXING)**

200mm HIGH SIGN BLADES SHOULD BE USED ON ROADS WITH A SIGNED SPEED RESTRICTION OF  $\geq 70\text{km/h}$

NOTE:  
11mm DIA. HOLES TO SUIT 10mm DIA. GAL. BOLTS OR 9mm DIA. HOLES TO SUIT 8mm DIA. S.S. BOLTS.  
HOLES TO BE AT 25mm FROM EDGE TO CENTRE

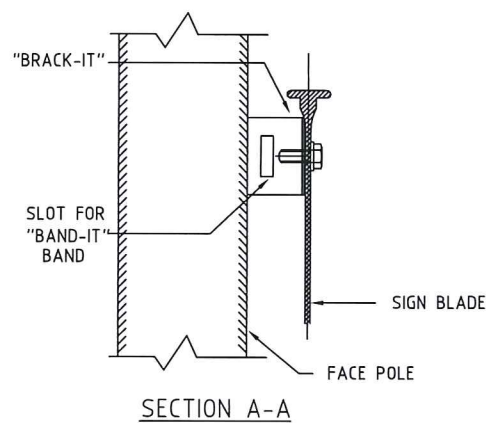


**END MOUNTING TO STEEL POLES**





**CENTRAL MOUNTING TO STEEL POLES**

**"BAND-IT FIXINGS"**



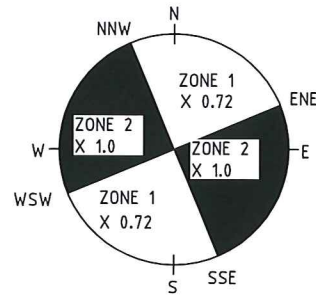
**SECTION A-A**

NOTE  
ALL DIMENSIONS SHOWN ARE IN mm UNLESS SHOWN OTHERWISE

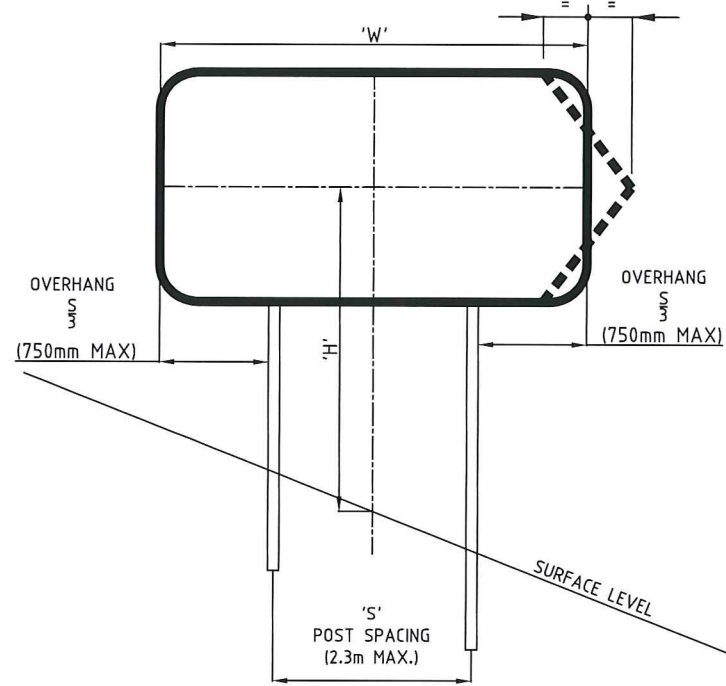
  <p><b>ACT GOVERNMENT</b></p> <p><b>DESIGN STANDARD</b> <b>URBAN INFRASTRUCTURE</b></p>	
Authorised: DIRECTOR, ROADS ACT TONY GILL	
Drawn:	Date
MARTIN GORDON	23/06/2011
Project Engineer:	Date
FRED IHEGIE / SNEZANA DIMITROVSKA	23/06/2011
<b>FINGER BOARDS</b>	
Scale	Date
NTS	23 JUNE 2011
AutoCAD File DS9-14.DWG	
Latest Revision Details A DS9 UPDATE	
Drawing No.	Revision
DS9-14	A

**POST SIZING PROCEDURE**

1. CALCULATE SIGN BLADE AREA (m<sup>2</sup>).
2. CALCULATE HEIGHT ('H') IN METRES FROM FINISHED SURFACE LEVEL TO THE CENTRE OF THE AREA OF BLADE.
3. MULTIPLY THE SIGN BLADE AREA (m<sup>2</sup>) BY THE HEIGHT TO THE CENTRE OF AREA (H) TO OBTAIN THE MOMENT.
4. DETERMINE THE SIGN FACE DIRECTION AND USING THE BLADE ORIENTATION FACTOR COMPASS MULTIPLY THE MOMENT BY THE ORIENTATION FACTOR (1 OR 0.72) TO OBTAIN THE FACTORED MOMENT.
5. DETERMINE THE NUMBER OF POSTS REQUIRED (MAX. SPAN OF BLADE BETWEEN POSTS 2.3m - MAX BLADE OVERHANG 0.75m).
6. DIVIDE THE FACTORED MOMENT BY THE NUMBER OF POSTS TO OBTAIN THE DESIGN MOMENT OF EACH POST.
7. LOOK UP IN THE TABLE OPPOSITE FOR THE MOMENT WHICH IS GREATER BUT NEAREST TO THE CALCULATED MOMENT PER POST. THIS IS THE REQUIRED POST OUTSIDE DIAMETER, WALL THICKNESS, STEEL GRADE AND FOOTING SIZE REQUIRED.



**BLADE ORIENTATION FACTOR**



POST SPACING 'S'  
 (2 POSTS) = W/1.66  
 (3 POSTS) = W/2.66  
 (4 POSTS) = W/3.66  
 (5 POSTS) = W/4.66  
 OVERHANG (POST TO BLADE EDGE) = S/3

**DIMENSIONAL DETAILS**

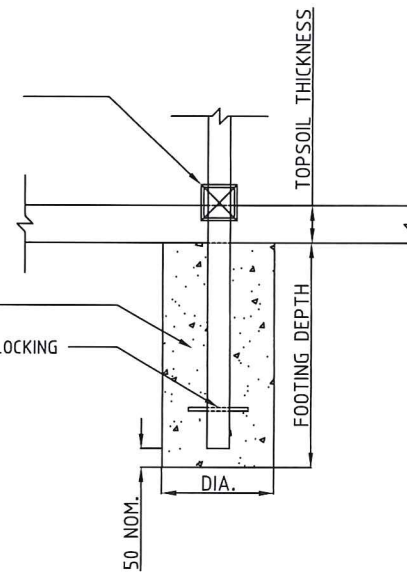
**STEEL POSTS CONSIDERED AS FRANGIBLE**

OPERATING SPEED, km/h	MAX. MOMENT kNm
<60	7.90
60 TO 80	3.95
>80	3.01

IF THE POST REQUIRES A GREATER DESIGN MOMENT THEN A FRANGIBLE POST SHALL BE USED. FRANGIBLE POST SYSTEMS SHALL BE TO THE APPROVAL OF THE ROAD AUTHORITY. AN APPROVED FRANGIBLE POST SYSTEM IS DETAILED AT [http://www.tmr.qld.gov.au/~media/business-and-industry/technical-standards-and-publications/standard-drawings-roads-manual/standard-drawings-roads-manual-part-8/sdrm\\_1365.pdf](http://www.tmr.qld.gov.au/~media/business-and-industry/technical-standards-and-publications/standard-drawings-roads-manual/standard-drawings-roads-manual-part-8/sdrm_1365.pdf)

REFER SPECIFICATION FOR POST MOUNTING REQUIREMENTS

20 MPa CONCRETE  
 PROVIDE 10mm DIA. GALV. LOCKING PIN (FOR SINGLE POST SIGN ASSEMBLIES ONLY)



**FOOTING DETAILS**

**NOTES**

1. DESIGN WIND PRESSURE = 1 KPa
2. MAXIMUM SPACING OF POSTS <= 2.3m., REFER SPECIFICATION FOR STIFFENER DETAILS. ENSURE CORRECT STEEL GRADE IS USED.
3. ALL POSTS ARE TO BE GALVANISED.
4. FOOTING DEPTH IS EMBEDMENT LENGTH INTO SOIL STRENGTH CATEGORY TABULATED. DISREGARD LOOSE TOPSOIL AND FILL WHEN MEASURING FOOTING DEPTH.
5. UNLESS OTHERWISE DIRECTED, POSTS ARE TO BE CENTRED ALONG THE LOWER EDGE OF ALL SIGN BLADES.

Moment kNm	Outside Dia. (mm) OD	Wall Thickness (mm) OD	Steel Grade	Footing Diameter	Footing Depth (mm) and Soil Condition		
					Poor	Medium	Sound
2.44	60.3	2.3	350	300 Ø	700	600	450
2.61 *	60.3	3.6	250	300 Ø	750	600	450
3.01	60.3	2.9	350	300 Ø	800	600	500
3.16	60.3	4.5	250	300 Ø	800	700	500
3.95	76.1	2.3	350	300 Ø	900	750	600
4.26 *	76.1	3.6	250	300 Ø	950	750	600
5.20 *	76.1	4.5	250	300 Ø	1050	800	650
5.36	76.1	3.2	350	300 Ø	1050	800	650
6.10	88.9	2.6	350	300 Ø	1100	850	700
6.49 *	88.9	4.0	250	300 Ø	1150	900	700
7.41	88.9	3.2	350	300 Ø	1250	950	750
7.93	88.9	5.0	250	300 Ø	1250	1000	750
8.58	101.6	4.0	250	450 Ø	1100	850	650
10.50	101.6	5.0	250	450 Ø	1200	950	750
12.20	114.3	4.5	250	450 Ø	1300	1000	800
14.40	114.3	5.4	250	450 Ø	1300	1100	800
20.40	139.7	5.0	250	450 Ø	1650	1300	1050
28.80	165.1	5.0	250	600 Ø	2000	1550	1250
31.00	165.1	5.4	250	600 Ø	2100	1650	1300

\* NON ECONOMIC SECTION - WHERE POSSIBLE - USE THE NEXT LISTED SECTION OF HIGHER CAPACITY.  
 NB: AVAILABILITY OF POST MATERIAL VARIES FROM TIME TO TIME - CHECK BEFORE SPECIFYING

**SOIL DEFINITIONS:**

- POOR: SOFT CLAY, SILT, POORLY COMPACTED SOILS, LOCATIONS WHICH MAY BE SATURATED FOR PART OF THE YEAR.
- MEDIUM: COMPACTED MEDIUM PLASTICITY CLAY, WELL BONDED SANDY SOIL, BONDED SAND AND GRAVEL WITH REASONABLE SURFACE WATER DRAINAGE.
- SOUND: HARD LOW PLASTICITY CLAY, WELL COMPACTED ROCKY SOIL, WELL BONDED SAND AND GRAVEL WITH GOOD SURFACE AND SUBSURFACE WATER DRAINAGE.

NOTE: THESE VALUES ARE A GUIDE ONLY - SOIL CONDITIONS FOR EACH FOOTING ARE TO BE ASSESSED BY SUITABLY QUALIFIED PERSONNEL.

**POST SIZING CALCULATION METHODOLOGY**

SIGN TYPE / NO.	SIGN BLADE AREA (m <sup>2</sup> )	HEIGHT 'H' m (FROM GROUND TO CENTRE OF BLADE)	UN-FACTORED MOMENT	ORIENTATION FACTOR	FACTORED MOMENT	NO. OF POSTS	MOMENT PER POST	POST SIZE (OD) GRADE & WALL THICKNESS	FOOTING DIAMETER AND DEPTH

**NOTE**

ALL DIMENSIONS SHOWN ARE IN MM UNLESS SHOWN OTHERWISE

**ACT GOVERNMENT**

**DESIGN STANDARD URBAN INFRASTRUCTURE**

Authorised: DIRECTOR, ROADS ACT TONY GILL

Drawn: MARTIN GORDON Date: 23/06/2011

Project Engineer: FRED IHEGIE / SNEZANA DIMITROVSKA Date: 23/06/2011

**SIGNPOST AND FOOTING DETAILS**

Scale: NTS Date: 23 JUNE 2011

AutoCAD File: DS9-15.DWG

Latest Revision Details: A DS9 UPDATE

Drawing No: DS9-15 Revision: A