MS01 Drawing with Text Council logo include design to be supplied in diagram

1. SPECIFICATION

1.1 The Supplier must ensure the use of CE approved materials and that they are accredited to BS EN 12899 and are awarded a certificate of conformity/declaration of performance by a notified certification body.

1.2 As per the requirements of the Construction Products Regulation (89/106/EEC) and Annex ZA of BS EN 12899-1:2007, all permanent signs, base materials, posts and all component parts supplied under this contract must be supplied to the Council with a CE mark.
The Supplier must ensure that any products supplied through this contract come from a manufacturer that has a EC Certificate of conformity/Declaration of Performance awarded by an appropriate certification body, allowing them to fix the CE mark to their products.

1.3 The Supplier must submit a set of working drawings or sample, if requested by the Council, prior to the commencement of manufacture of the permanent signs. These drawings must include details of the vinyl sheeting to be used, including manufacturer's name, grade, type, serial number and colour. Details of the sign framing fixing and mounting must also be shown in addition to whether the sign has a base plate of aluminium or composite material. If composite material is used then full details must be supplied to the Engineer.

1.4 With regard to Class RA2/R2 material. If necessary, the Council may stipulate the type of material required, either glass bead material in accordance with the various parts of BS EN 12899-1: 2007 or microprismatic material in accordance with a relevant European Technical Approval (ETA). However, if no such stipulation is made then the Supplier may supply signs of either material, provided the performance requirements are achieved. Where microprismatic materials are being utilised, the Supplier must provide evidence of the appropriate ETA certification for the microprismatic materials being supplied, as per the National Annex BS EN 12899-1:2007. A minimum of 12 years guarantee shall be provided to any microprismate materials.

1.5 Finished sign substrates must be clearly and durably marked on the back in accordance with 9.2 of BS EN 12899-1:2007 and must also include at least the following information:
· the month and the last two digits of the year of manufacture;
· the name, trademark or other means of identification of the manufacturer or supplier;
· the Class of reflective material;
· the type of sign plate material products;
· reference to the harmonised technical specification;
· CE marking on materials used;
· number of EC Certificate of Conformity/Declaration of Performance of the manufacture.
The markings must be in characters legible at a normal reading distance (i.e. 18 - 20 inches) such that the total area of the marking does not exceed 30cm2 and must be sufficiently durable to last the expected life of the sign.

1.6 The Supplier must make available the following product information as per 9.3 of BS EN 12899-1:2007:
· instructions on the assembly and erection of the sign;
· details of any limitations on location or use;
· instructions on the operation, maintenance and cleaning of the sign, including lamp replacement procedures in required.
· details of the assumed sign mounting positions, including the number or assumed supports and the spacing between them.
This information must be supplied with a completed Product Compliance Certification Form.

1.7 Components of signs must conform to a European Standard as detailed in BS EN 12899-1:2007. Verification of conformity will be required for any component of signs and the Certificate of Conformity/Declaration of Performance in accordance with Annex ZA of BS EN 12899-1:2007 shall be made available.

2. SIGN PLATES

2.1 Sign plates must be manufactured from 3mm thick sheet aluminium to BS EN 12899-1:2007, extruded aluminium sections or from a composite product to BS EN 12899-1:2007, with appropriate CE Marking. The Council may specify a particular material if required.

2.2 Joints must be kept to a minimum. Sign plate and channel combinations used must meet the requirements of BS EN 12899-1:2007 and the NI structural stability requirements contained within this specification.

2.3 The Council is at liberty to, and may at any time, request evidence that the materials used for manufacturing the sign plate materials conform to BS EN 12899-1:2007. If requested, the Supplier must provide this information to the Council within 5 working days.

2.4 If during the course of the contract, the Supplier utilises new materials and/or manufacturers for any elements of signs, post or their component parts, they must forward evidence, confirming their adherence to BS EN 12899-1:2007 (certificates etc), to the Council for review and approval prior to manufacture. Proof of CE certification must also be forwarded to the Council.
5.5 Edges of sign plates must conform to BS EN 12899-1:2007 table 14 class E1.

2.5 All sign plate edges shall be suitably machined to remove sharp edges with corners chamfered to prevent cuts or abrasions.

3.1 Colour/luminance - The chromaticity and luminance for Nonretroreflective signs must conform to the requirements provided in table 16 NR1 of BS EN 12899-1:2007.

3.2 Colour/luminance The Chromaticity and Luminance for retroreflective signs must conform to either, the requirements provided in table 1 Class CR1 of BS EN 12899-1:2007, or, to the requirements in table 4 of BS 8408:2005 for microprismatic reflective material.

3.3 Non retroreflective transilluminated sign colours must conform to table 18 class B2 of BS EN 12899-1:2007.

3.4 The minimum initial coefficient of retroreflection RA of retroreflective signs when measured in accordance with the procedure in CIE 54.2, and used in all locations other than those where high-performance materials are required must conform to BS EN 12899-1:2007 table 4 Class RA2, Table NA.1A Class R2, the requirements of a valid ETA or table 3 Class RA1 of BS EN 12899-1:2007. At locations where high performance materials are required materials must conform to Table NA.1B class R3B of BS EN 12899-1:2007.
3.5 Transilluminated signs must conform to the requirements of Class L1 contained in table 19 of BS EN 12899-1:2007.

3.6 The luminance contrast of transilluminated signs, as determined by the ratio of the contrast colour to the luminance of the colour, must conform to the requirements of table 20 of BS EN 12899-1 :2007

3.7 The Performance of microprismatic sign face materials must conform to BS 8408: 2005, Table I.4 minimum 1.0 or 3.0 as appropriate.

3.8 Externally illuminated signs must conform to the requirements of Class E3, Table 22 of BS EN 12899-1:2007

3.9 For each colour of transilluminated signs the uniformity of luminance, determined by the ratio of the lowest to the highest level measured at any part of the sign, must conform to the requirement shown in Table 1 below.

Table 1

For signs with an area not exceeding 1.5m2	Class U3, Table 21 of BS EN 12899-1:2007
For signs with an area not exceeding 1.5m2 and with a height to width ration less that 2:5	Class U2 Table 21 of BS EN 12899-1:2007
For signs with an area exceeding 1.5m2 and with a height to width ration greater that 2:5	Class U1, Table 21 of BS EN 12899-1:2007

3.10 For each colour externally illuminated signs, the uniformity of luminance, determined by the ratio of the lowest to the highest level measured at any part of the sign, must conform to the requirements shown in Table 2 below.

Table 2
For signs with an area not exceeding 1.5m2Class UE3, Table 23 of BS EN 12899-1:2007
For signs with an area exceeding 1.5m2 and with a height to width ration less than 2:5 Class UE2 Table 23 of BS EN 12899-1:2007
For signs with an area exceeding 1.5m2 and with a height to width ration greater that 2:5 Class UE1, Table 23 of BS EN 12899-1:2007

Table 2

For signs with an area not exceeding 1.5m2	Class UE3, Table 23 of BS EN 12899-1:2007
For signs with an area exceeding 1.5m2 and with a height to width ration less than 2:5	Class UE2 Table 23 of BS EN 12899-1:2007
For signs with an area exceeding 1.5m2 and with a height to width ration greater that 2:5	Class UE1, Table 23 of BS EN 12899-1:2007

3.11 Protective Overlay Film (POF) – a durable solvent resistant transparent sheeting shall be factory applied to the signs with a pressure sensitive adhesive to shield against the effects of dirt and graffiti. The POF shall cause only a slight reduction in reflectivity (not greater than 10%). The POF shall have the same performance life as the base sheeting on which it is applied and shall not be easily picked off by vandals.

Color and Transparency
The POF shall be a clear colourless film and will preserve the initial and retained minimum retroreflectance specified for the sheeting used to fabricate the sign.

Film
The POF shall be a high performance fluoropolymer that provides a barrier and resists staining from common graffiti including paints, permanent marker ink, lipstick, eggs and stickers to allow for easier clean-up.

Adhesive and Liner
The POF shall utilize a clear, transparent, and pressure sensitive adhesive.

Premask
The POF shall have a premask to control application and ensure good adhesion.
The Supplier shall provide details of the proposed POF in compliance with this specification, to the Council for approval prior to manufacture.

4.1 Wind loads - fixed vertical signs are to withstand wind loads as stated in Table NA2 of BS EN 12899-1:2007, specific to Northern Ireland, or in accordance with BS EN 1991-1-4.
For sign overall height <4.0m from Ground Level Table 8 Class WL7.
For sign overall height 4-7m from Ground Level Table 8 Class WL9.
If the sign is being installed in an area >250m above sea level (at ground level), or where the overall sign height is >7m or where the sign is to be installed in an area with significant orography, then the structural design of the sign must be to BS EN 1191-1-4:2005

4.2 Point loads - fixed vertical signs are to withstand point loads class PL3 as given in table 10 of BS EN 12899-1:2007.

4.3 Dynamic loads - fixed vertical signs are to withstand dynamic loads from snow clearance to class DSL0 as specified in table 9 of BS EN 128991:2007.

4.4 Temporary deflections of sign plates and supports must conform to the requirements as shown in Table 3 below:

Table 3
Product Recommended Performance Class
Recommended Performance Class
Bending Class Torsion Class
Sign Plate TDB4, Table 11 of BS EN 12899-1:2007
N/A
Support – not passively safe (Class 0 in BS EN 12767)
TDB4, Table 11 of BS EN 12899 – 1:2007 TDT4
Table 12 of BS EN 12899-1:2007
Support – passively safe (compliant with a performance class from BS EN 12767TDB5, Table 11 of BS EN
12899-1:2007 TDT4, Table 12 of BS EN
12899-1:2007

4.5 Annex 1 and Annex 2 are provided for guidance purposes and provide the minimum requirements for framing and stiffing of triangular, circular or octagonal signs. For other signs, guidance on the minimum horizontal stiffening must be in accordance with Annex 1.

4.6 Where sign plates need to be stiffened this must be achieved in a manner such that the sign face material is not punctured or otherwise damaged to accommodate the stiffening, and, must conform to Table 13 Class P3 of BS EN 12899-1 :2007.

Table 3

Product	Recommended Performance Class	Recommended Performance Class
	Bending Class	Torsion Class
Sign Plate	TDB4, Table 11 of BS EN 12899-1:2007	N/A
Support – not passively safe (Class 0 in BS EN 12767)	TDB4, Table 11 of BS **EN 12899-1:2007**	TDT4 Table 12 of BS EN 12899-1:2007
Support – passively safe (compliant with a performance class from BS EN 12767	TDB5, Table 11 of BS EN 12899-1:2007	TDT4, Table 12 of BS EN 12899-1:2007

4.5 Annex 1 and Annex 2 are provided for guidance purposes and provide the minimum requirements for framing and stiffing of triangular, circular or octagonal signs. For other signs, guidance on the minimum horizontal stiffening must be in accordance with Annex 1.

4.6 Where sign plates need to be stiffened this must be achieved in a manner such that the sign face material is not punctured or otherwise damaged to accommodate the stiffening, and, must conform to Table 13 Class P3 of BS EN 12899-1 :2007.

5.1 To prevent gaps at joints between sections of signs, horizontal stiffeners must be arranged to allow the lower section of sign plate to overlap the stiffener on the upper section. Sections of signs to be joined vertically must be connected using suitable butting plates affixed to the sign plate in such a manner that the sign face material is not punctured or otherwise damaged. Vertical joints to be kept to a minimum.

5.2 Horizontal stiffening must be continuous unless otherwise approved in writing by the Engineer before manufacture.

5.3 Sign frames after fabrication must be treated with stove enamel (aircraft grey). The surface protection against corrosion must be in accordance with table 15 class SP1 of BS EN 12899-1:2007.

5.4 Weathering - Signs must conform to standards as indicated in 4.1.1.5 of BS
EN 12899-1:2007.

5.5 Impact Resistance - All signs must conform to 4.1.2 of BS EN 12899-1:2007

FRAMING REQUIREMENTS (Guidance)

HORIZONTAL STIFFENING size and spacing of horizontal stiffening members must be in accordance with the following table

		Extruded Aluminium Section		
Sign Size (m²)	No of Posts	Section	Spacing	
0 - 0.7	1 or 2	Small	Top to Bottom	
0.7 - 1.5	1	Medium	0.5m centres	
	2	Medium	Top, bottom & mid height	
			Up to 3m wide	Over 3m wide
1.5 - 5.5	2	Medium	0.5m c/c	Do not use
		Large	0.75m c/c	0.6m c/c
			Up to 4.5m wide	Over 4.5m wide
5.5 - 11.0	2	Medium	0.5m c/c	0.4m c/c
	3	Large	0.7m c/c	0.6m c/c
			Up to 5.0m wide	Over 6.0m wide*
11.0+	2	Large	0.4m c/c	0.3m c/c
	3	Large	0.5m c/c	0.5m c/c

ALTERNATIVE STIFFENING MAY BE APPROVED BY THE ENGINEER

For widths above 6.0m wide, stiffening and support arrangements and structural design shall be approved by the Engineer.

ANNEX 2

STIFFENING AND TRIANGULAR, CIRCULAR AND OCTAGONAL SIGNS

Size of Sign Depth (mm)	Position of Stiffening
Up to 750	Top and bottom horizontal rail.
900	Top and bottom horizontal rail and upright **side rails" Fully framed" (for a circular sign,** these stiffening members would be located inside the diameter of the sign).
1200-1500	Fully framed and horizontal rail at mid-height.

6. FIXINGS

6.1 Brackets and clips must be manufactured from strip or extruded aluminium alloy sections, cast- aluminium alloy, 18:8 stainless steel. All brackets and clips must have a guaranteed life of not less than that of the sign face to which it is being attached. Details of the sign face guarantees are detailed in this specification.

6.2 Signs must be supplied with all necessary fixings, brackets, clips, U bolts, screws nuts and washers as necessary. The costs of these elements are to be included in the tendered prices for the sign(s).

6.3 18:8 stainless steel " U "Bolts must be used for fixing. side slung boxes to house electrical equipment. They must pass completely round the post, and must be secured within the box by stainless steel nuts to a slotted angle welded to the frame.

6.4 On plank signs, all planks must be fixed to each post **strictly in accordance with the manufacturer's specification.**

6.5 In the first instance all screws, bolts, nuts and washers must be made from 18:8 stainless steel. Where nuts or bolts are used for fastening, washers must be provided. As an alternative where the potential exists for washers to contact surfaces which may to permanently damaged by over tightening of nuts and bolts then the washers made from Neoprene or other weather resisting material must be used.

6.6 Horizontal stiffeners must be fixed to each post by approved clip assemblies. The minimum number of clips required for each supporting post must be as follows:-

Depth of sign	Minimum No. of clips
0.0-0.90	2
0.9-1.50	3
1.5-3.00	3
3.0-4.50	4
4.5-6.00	5
Over 6.00	6

The table above does not apply to plank signs or to signs using purlins.

6.7 The sign shall have extruded channel section fixed to the rear of the plate for the connection of fixing clips. The section shall be in aluminium and shall be fixed with countersunk rivets to achieve a flush front face.
For wall mounted signs, channels shall not be required to enable flush fixing direct to the wall.

8. SUPPORT POSTS

8.1The posts for signs shall be 50mm or if requested 75mm diameter with a 3.2mm wall thickness and be manufactured from steel complying with grade S275 JO or S275 J2 and BS EN 10 210 BS 873 : Part 7. The post shall be galvanised in compliance with the requirements of BS 873: Part 6.

All posts will be supplied with a tamperproof plastic push fit cap colour grey.

9. INDICATIVE SIGN LAYOUT.

See attached drawing refrences TL01, UD01 and UD02

REV A	NOTES
All dimensions in millimetres. All dimensi	
CONTACT	Gavin Hegarty - e gavin.hegarty@fer
PROJECT TITLE	STANDARD DETAIL
PROJECT NO	-
SCALE	-
DATE	25-02-202

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