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## **MACQUARIE UNIVERSITY SIGNAGE AND WAYFINDING GUIDELINES**

Part Nine / Issue Three  
Specification

**CITIZEN**



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**MACQUARIE UNIVERSITY  
SIGNAGE AND WAYFINDING**  
SIGNAGE SPECIFICATION ISSUE 1

# **MACQUARIE UNIVERSITY SIGNAGE AND WAYFINDING**

SIGNAGE SPECIFICATION ISSUE 1  
14 FEBRUARY 2012

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**1.0 SCOPE**

The scope of work under the contract includes but is not limited to:

- The design, supply, fabrication, protection, storage, delivery, assembly, installation, commissioning and on site fixing of all signage elements, and application of finished graphics as set out in the schedules and drawings and this specification;
- Provide all labour, materials, plant and equipment needed, including such permanent or temporary components, scaffolding, props, bracing, anchors, bolts, fasteners, hoists and trolleys incidental to the work or necessary for its proper completion;
- Preparation of detailed shop drawings and signage schedule;
- Submission of documents and samples in accordance with this Specification;
- Supply and installation of all required separators at points of contact between dissimilar metals;
- The protection of all finished materials from damage during storage, transport, installation and on the building prior to completion;
- Cleaning on completion;
- Quality control and assurance;
- Provide manual of as built drawings;
- Provide maintenance manual;
- Complete a detailed wayfinding study for the area in consideration. This should include a detailed location plan, including a message schedule;
- Artwork for individual sign types to be based on typical artwork supplied by Macquarie University Property;
- Provide signed schedule of rates per sign type; and
- Provide a schedule of parts/components per sign type.

**2.0 REFERENCED DOCUMENTS**

All work and materials shall comply with the latest editions of all relevant Australian codes or standards and Macquarie University guidelines of which the following is a selected list:

**Metalwork**

AS 1170.2	Minimum design loads on structures
AS 4100	Structural steel
AS 1627	Metal finishing – preparation and pre-treatment of surfaces Part 1 – cleaning using liquid solvents and alkaline solutions Part 2 – power tool cleaning Part 4 – abrasive blast cleaning Part 7 – hand tool cleaning of metal surfaces Part 9 – pictorial surface preparation standards for painting steel surfaces
AS 1734	Aluminium and aluminium alloys, flat sheet, coiled sheet and plate
AS 1427	Protection of iron and steel against exterior atmospheric corrosion

**Concrete**

AS 1302	Steel reinforcing bars for concrete
AS 1303	Hard-drawn steel reinforcing wire for concrete
AS 1315	Portland cement
AS 3610	Concrete structures
AS 1379	Ready-mixed concrete
AS 2758.1	Concrete aggregates

**Fasteners**

AS 1214	Hot dip galvanised coatings on threaded fasteners
AS 1420	ISO metric hexagon socket head cap screws
AS 1421	ISO metric hexagon socket set screws
AS 1427	ISO metric machine screws

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**Sealants**

AS 1527 Two part polysulphide based sealing compounds for the building industry

**Paints and coatings**

AS 1231 Aluminium and aluminium alloys – anodised coatings for architectural applications

AS 2039 Methods for testing anodic oxidation coatings on aluminium and aluminium alloys

AS 2310 Glossary of paint and painting terms

AS 2700 Colour standards for general purposes

**General**

AS 1940 The storage and handling of flammable and combustible liquids

AS 1428.1 Design for access and mobility – General requirements for access – buildings

AS 1428.2 Design for access and mobility – Enhanced and additional requirements – buildings and facilities

**Accessibility**

Part D4 of the DDA Premises Standards and Specification, D3.6 of the BCA 2011

DDA Transport Standard and Part H2 of the BCA 2011

AS1428.1 Design for Access and Mobility: General Requirements

AS1428.2 Design for Access and Mobility: Enhanced Requirements

AS1428.4.1 Tactile Ground Surface Indicators

AS2890.1 Off-Street Parking

AS2890.6 Off-Street Parking for people with disabilities

**University Standards**

Macquarie University Signage and Wayfinding guidelines

**3.0 CONTRACTORS QUALIFICATIONS**

**3.1 MANUFACTURER/INSTALLER QUALIFICATIONS:**

All signs shall be manufactured, supplied and fixed by an approved specialist employing only tradespeople skilled in the required class of work.

Not less than five (5) years continuous experience in the manufacture and installation of signage of the types specified.

**3.2 COORDINATION**

Take responsibility for providing other related trades with complete information on the materials and equipment to be installed, the critical dimensions of such work and other data affecting the work of the trades identified.

## 4.0 GENERAL REQUIREMENTS

### 4.1 THE INTENT OF THE TECHNICAL DRAWINGS AND SPECIFICATIONS

The intent of the drawings set out in Macquarie University Signage and Wayfinding Guideline is to describe the dimensions, materials and finishes of signage and graphics consistent with the principle requirements and the design intent.

Construction details not exposed to view may be refined or modified provided that such refinement or modification is submitted for approval of Macquarie University Property, and that the proposal is presented in ample time prior to the formal submission of shop drawings for the request to be considered.

Approval may be granted at the discretion of Macquarie University Property but only on the basis that, amongst other considerations, such refinements or modification does not compromise the design intent, extra costs will not be incurred, and the warranties and responsibilities under this contract are not reduced or voided in any way whatsoever.

In all cases the Contractor shall be responsible for ensuring that the finished product is structurally sufficient for the service conditions that would be reasonably expected. This shall include any structural computations as required. All concrete structures and reinforcing layout to be designed by Contractor and approved by their Structural Engineer. All fixings of signage to concrete columns, concrete slabs, masonry walls, aluminium framing and any other fixing point to a structure to be supplied by Contractor and approved by their Structural Engineer. All fixing proposals and engineer certifications are to be submitted to Macquarie University Property for approval before fabrication.

### 4.2 MANDATORY REQUIREMENTS

The signage system is mandatory with respect to the following:

- The text and graphic layout to be incorporated for each sign;
- The colours and graphic application;
- The overall size of each sign/structure; and
- The nominated finishes of each sign/structure.

### 4.3 RESPONSIBILITY

The Contractor's responsibility shall include, but not necessarily be limited to:

- Manufacture of any prototypes required for testing, including, where applicable, installation;
- Testing in accordance with the requirements stated in this specification;
- Development of final signage schedules within the limitations outlined in the Macquarie University Signage and Wayfinding Guidelines and this specification;
- Taking all necessary site measurements;
- Supply, installation of all signs/structures;
- Removal of any protection after completion of installation;
- Periodic cleaning and final clean on hand over; and
- Completion requirements.

### 4.4 PROPRIETARY PRODUCTS

Where in this specification or on the drawings, trade names, brands and catalogue numbers are referred to, sole preference to any material or equipment is not intended, unless otherwise stated. The contractor shall be at liberty to substitute other material or equipment provided that the characteristics of type, quality, appearance, finish, method, construction and performance are not less than specified and provided also that the approval of Macquarie University Property is first obtained. Where proprietary products are used the manufacturers instructions and specifications shall be strictly adhered to.

### 4.5 TENDER SUBMISSION

All tender submissions to include test samples as listed below. The following samples are requested to be included:

- Insert as needed

#### **4.6 CONTRACT SUBMISSION**

Prior to supplying any signage or carrying out any installation the Contractor shall confirm the system description provided at Tender and all selections made. Any additional information required to complete the submissions, or additional information as requested by the Macquarie University Property, shall be submitted.

#### **4.7 SHOP DRAWINGS**

Where shop drawings are required, forward to Macquarie University Property a schedule of shop drawings to be submitted and a date for their submission, within two working weeks of acceptance of offer. The date for the first submission of shop drawings shall allow ample time for review, amendment and resubmission before stock piling or fabrication commences.

Shop drawings indicating the proposed fabrication and fixing details of the signage types shall be submitted to Macquarie University Property for subsequent examination and approval. Show plans, elevations and detailed sections; indicate materials, finishes, types of joints, fasteners, anchorages, sleeves and bolts.

The Contractor is to submit for approval shop drawings, descriptive literature and the like as appropriate for the installation as specified.

Shop drawings are required for the following items, one of each type:

— Insert as needed

#### **4.8 SAMPLES AND PROTOTYPES**

Samples and prototypes shall be provided for all work as indicated below or as deemed necessary by Macquarie University Property. All samples and prototypes shall be submitted in sufficient time to permit proper evaluation and, where necessary, resubmission in order to allow production to proceed in accordance with the program. All samples are submitted as an example of material, finish, colour and workmanship.

Approved samples shall become the standard against which work will be matched. Prototypes are defined as "confirmation prototypes", they are defined as part of the Work under the Contract to be constructed off site, for use by the Principal as a confirmation of the construction methods, materials, fittings, fixtures or the like to be used for the works. Once approved the prototype will be used as a quality verification benchmark for the remainder of the installations of that type.

Submit to Macquarie University Property the following prior to commencement of manufacture involving each component:

- a) Full size prototypes of (insert as needed)
- b) All proposed paint finishes, each finish to be provided as a 200 x 200mm sample on the substrate the finish is applied to if it is not covered in a) above;
- c) All metal finishes to be provided as a 200 x 200mm sample to if it is not covered in a) above;
- d) All concrete finishes that signage is applied to if it is not covered in a) above;
- e) All paint colours and finishes including anti-graffiti coatings into specified concrete surface if it is not covered in a) above; and
- f) fixing screws, bolts, all metal finishes including photographic images, cut-out lettering into specified concrete if it is not covered in a) above.

#### **4.9 PROJECT CONDITIONS**

Measurements: Working from lines and levels established by the Contractor, and as shown in relation to the work, establish and maintain benchmarks and other dependable markers to set lines and levels for the work as needed to properly locate each element of the project. Calculate and measure required dimensions as shown (within recognised tolerances if not otherwise indicated). Do not scale drawings to determine dimensions.

Contractor to advise tradesmen performing the work, of marked lines and levels provided for their use in layout of work.

Before ordering material or doing work, verify measurements and be responsible for the correctness of same. No extra charge or compensation will be allowed on account of difference between actual dimensions and the dimensions indicated on the drawings.

#### 4.10 INSPECTIONS

All material and work is subject to inspection. For inspection at the manufacturing workshop the necessary access and facilities shall be provided.

Inspection of works in the shop or on-site does not relieve the Contractor of its continued responsibility to carry out the work in accordance with the drawings, specifications and program.

#### 4.11 DELIVERY AND STORAGE OF MATERIALS

The delivery of all materials and component parts, off loading of trucks and the movement of materials and component materials shall be undertaken by the Contractor.

All materials and component parts shall be stored and protected from damage, by the Contractor.

#### 4.12 PROTECTION OF WORKS UNDER THE CONTRACT

The Contractor shall be responsible for protection of all materials and workmanship against scratching, marking and other damage at all stages of fabrication, handling, delivery and installation until such time as the completed work is accepted by the Macquarie University Property.

In particular, finished metal surfaces and faces with applied graphics shall be protected appropriately to avoid damage during storage, transport or installation.

#### 4.13 PROTECTION OF OTHER TRADES

Adjacent work shall be protected from possible damage during the erection of the work. All surfaces shall be protected including but not be limited to walls, floors, windows, doors, hardware, skirtings, handrails, pavements, glass walls, roads, landscaping, seating and steps in areas in which work is progressing or through which materials are brought.

#### 4.14 MAKING GOOD

All work under the Contract damaged during installation through welding, setting, drilling, site handling or any other cause shall be made good.

#### 4.15 CLEANING UP

Debris and waste material associated with signs shall be removed daily and the complete area cleaned on completion. Remove labels, stains, spots and other foreign matter from all surfaces and frames immediately upon installation of signage, including set out marks. Before handing over the work all signs, carrier supports and other surfaces shall be cleaned using a brush/soft cloth and an approved cleaning fluid.

#### 4.16 ALTERNATIVE MATERIALS

Submit for approval samples of any alternative materials proposed for use in the works to Macquarie University Property prior to commencement of any work involving the use of that material. Alternatives shall not necessarily be approved.

#### 4.17 CONSTRUCTION TOLERANCES

The work of the Signage trade shall be carried out in accordance with the requirements of all relevant Australian standards as a minimum. The completed signage and graphics shall be installed within the following tolerances.

Overall dimensions 0.5mm  
Alignment of butt joints 0.05mm  
Plumbness of columns and panels +1mm in 3M  
Straightness of edges <3M 0.05mm and >3M 0.5mm  
Flatness of sign plate <1M 0.25mm and >1M 0.5mm  
Flatness of concrete no more than 3mm over a distance of 350mm.

#### **4.18 WARRANTY**

The Contractor is to provide a warranty for the whole of the signage installation, including all components and finishes for a period of seven (7) years after date of practical completion of the final stage of the project. The warranty shall be against deterioration by weather, fading, non-uniformity of finishes (i.e. beyond that tolerance accepted on completion) and defects due to faulty workmanship or materials.

#### **4.19 ARTWORK**

Up to 5 indicative graphic setout artwork files will be issued to Contractor following the awarding of the contract. It is the responsibility of the Contractor to complete the graphic setout artwork for all signs in accordance with the principles set out in the files issued. All artwork is to be electronically reproduced by computer. Colours are to be matched from references and where not standard, to be submitted as samples for approval prior to manufacture.

All final artwork is to be approved by Macquarie University Property, and provided as soft copy at the completion of the project.

#### **4.20 DISCREPANCIES IN DOCUMENTS**

Should any discrepancy in, or omission from, the drawings, specification or other documents be noted or should there be doubt as to their meaning, Macquarie University Property shall be notified at once with a request for clarification.

#### **4.21 SIGN CODES**

Signs should be noted on the drawings by code number. These codes are to be read in conjunction with the schedule and specification supplied by the Contractor, draft as supplied in the Macquarie University Signage and Wayfinding Guidelines.

#### **4.22 SIGN REFERENCING**

The Contractor shall be responsible for referencing the suggested documents to identify the location, type, size and layout of any one sign and to provide a list of signs in the contract. Where any of these documents are in conflict with another, the Contractor is to seek clarification. The Contractor will provide Macquarie University Property with a Schedule of Quantities for approval.

#### **4.23 MAINTENANCE MANUAL**

The Contractor shall provide a maintenance manual containing a technical specification of the supplied item (s) and setting out a detailed method statement covering proposed methods for all routine maintenance procedures. The Contractor must provide any required equipment for typical maintenance procedures and changeability procedures, and recommendations for the item (s) use and care. Include the names and addresses of the manufacturers and suppliers of each component.

Format to be A4, three copies to be supplied. Copies to be bound in hard cover ring binder - 2 copies only, pages to be in individual plastic folders. The Contractor should also provide a soft copy of all files in pdf, Microsoft word or AutoCAD formats.

Manufacturers information: forward original publications or colour copy.

## 5.0 FABRICATION, FINISH AND INSTALLATION

### 5.1 METALWORK

All works shall be of a high standard accurately and neatly constructed and securely fitted and fixed.

Prefabricate and preassemble items in the workshop to the maximum size practicable in consideration of delivery limitations, site conditions and site access.

Where metalwork is required to have only a clear finish particular care shall be taken to select only metal sheets which are free from damage, scratching or other surface degradation.

Similar fabrication techniques and detailing shall be used in all associated fabrications and items to ensure continuity of finished appearance.

Detail all junctions such that bimetallic corrosion does not occur, separate incompatible metals by sleeves, separation layers or coatings as appropriate.

### 5.2 WELDING

All welding shall be carried out in accordance with AS 1554.

Welded, brazed or soldered joints on exposed surfaces shall be ground, buffed or polished as applicable to the material and specified finish. There shall be no buckling or visible surface colour variations to the exposed metal finishes.

### 5.3 STAINLESS STEEL

All stainless steel shall be fabricated in clean shops, isolated from contamination from other ferrous alloys. All tools used for fabrication shall be either used exclusively on the fabrication of stainless steel, or alternatively fully cleaned prior to use.

Where noted as finished finish, stainless steel shall have all edges and faces finished in a uniform longitudinal directional texture. Unless otherwise noted this shall be a 'No 4' finished finish.

### 5.4 MILD STEEL

All mild steel sheets to be in accordance with AS 1397.

Steel components shall be of good quality mild steel of an acceptable gauge for their location and use.

Unless otherwise stated on the drawing, welding must be entirely continuous around sides with no raw edges left exposed.

Steel work must be free of grind and machine marks by way of finishing or sandblasting without damage to the designed form or creating surface irregularities.

Cleaning is to be by way of a suitable multi stage pre-treatment process, including corrosion coating. An alkaline-acid cleaning treatment is preferred. The conversion coating is to be carried out using an iron phosphate at the coating weight recommended by the manufacturer.

Pre-treatments prior to painting are to paint manufacturers specifications.

### 5.5 GALVANISED STEEL

All elements in galvanised steel shall be in accordance with AS1650. All exposed galvanised steel finishes are to be free of burrs, streaks, splatter and other defects and shall have a smooth consistent finish.

## **5.6 ALUMINIUM**

All welding shall be carried out in accordance with AS 1665 using techniques to avoid buckling and discolouration.

The Contractor shall take particular note of availability in specified lengths to suit the structure of signs, as well as locations of joints, etc.

Where anodised aluminium sheets are required to be joined, special care shall be taken to ensure that the adjoining sheets are appropriately colour matched.

Anodising shall be carried out in accordance with AS 1231 and suit a grade of 'external coastal' to represent the most durable application.

The thickness of the anodised aluminium should be as determined by the signage manufacturer.

Cut-out lettering to be of a thickness to provide structural integrity to each letter form. The adhesive fixing to any surface should provide permanent adhesion to substrate.

## **5.7 CONCRETE**

All visible surfaces to be 'off steel form' using class one framework. All visible final finish faces are to 'class one', smooth and free from imperfections and surface of edge blemishes. All visible final finish faces are to be even in colour and with no visible aggregate.

All visible cement to be coloured 'Snow' (white) or 'Voodoo' (charcoal) as specified by Coloured Concrete Solutions Pty Ltd. Sufficient sand/fly ash/aggregate should be premixed to complete job ensuring consistency of surface colour throughout.

Surface flatness must deviate no more than 3mm over a distance of 350mm. Visible surfaces to be free of casting imperfections and handling marks. All signage to be made by the wet pour process unless otherwise approved by Macquarie University Property.

Concrete to be 40Mpa. Concrete to be sufficiently compacted in mould to maximise mass and eliminate air voids. All visible surfaces to be coated with an approved anti-vandal surface treatment and in accordance with manufacturers specifications. Refer AS1302, 1303, 3610, 1379, and 2758.1

The Contractor should ensure that the Concrete mix content considers the delivery of both an even surface of colour and considers the University's sustainability policies. The Macquarie University Signage and Wayfinding Guideline outlined the use of a concrete colouring pigment in the concrete mix, supplied by Concrete Colour Systems (CCS). CCS has confirmed that their pigment can be added to a recycled concrete mix with no adverse affects and a very marginal affect on colouring. Tests should be completed and approved by Macquarie University Property prior to manufacture.

On average Contractors replace between 20-25% of their cement with an industrial waste product such as fly ash of slag aggregate to reduce the overall embodied carbon content. Macquarie University Property requires an increase to at least 60% of the overall mix to lower the embodied energy with sign forms.

It is a mandatory to use 100% recycled aggregate. Concrete should be sourced as locally as possible to reduce transport emissions. As technology changes, Macquarie University Property are open to the investigation and suggestion of innovative new concrete products that further reduce embodied energy in concrete.

Use recycled water or rainwater in the concrete mix.

Please refer to section 9 of this report when considering material sustainability in light of the University's requirements.

## 5.8 CONNECTIONS AND FASTENERS

Metalwork connections shall be carried out by metal to metal jointing or by mechanical means so as to ensure uniform rigidity throughout the fabricated member.

Fastenings including anchors, lugs, screws, rivets and the like shall be of an approved type, appropriate to the work, capable of transmitting the loads and stresses imposed and sufficient to ensure the rigidity of the assembly. Mixing of hardware, fasteners and materials is not permitted.

Metal thread screw shall have counter sunk, Phillips head or Allen key heads consistent with fixing requirements and equipped with all necessary bearing or sealing washers unless otherwise specified.

Fastenings to stainless steel shall be made with stainless steel fixing devices only.

Fastenings to aluminium or aluminium alloys shall be aluminium or non-magnetic stainless steel.

All fastenings exposed to the weather shall be hot-dip galvanised or stainless steel throughout.

Proposed fastenings in areas exposed to condensation or in aggressive environments shall be approved by Macquarie University Property.

Where concealed tape fixing for example 3M VHB Double Coated Acrylic Foam Tapes or equal is noted on drawings, the Contractor is to use this product strictly in accordance with the manufacturers specifications and recommendations. The Contractor is to ensure external grade tape is used and that the structural integrity of the sign is maintained.

## 5.9 VINYL

The vinyl material selected should carry a minimum of a 5-year warranty, any warranty to be issued to Macquarie University Property after installation.

All vinyl should be installed by an industry professional with no less than 3 years experience. When installing ensure there are no bubbles or imperfections in flat finish face. When weeding excess vinyl ensure all corners and edges of finished letterform, numerals, arrows, pictograms, logotypes or other symbols shall be sharp and true to the selected typeface or artwork with accurate, even curves and serifs where applicable.

When installing on glass it is the University's preference to install onto the rear, or less tamperable surface. This should be reviewed on a case-by-case basis, any direction should be approved by Macquarie University Property prior to manufacture.

## 5.10 TIMBER

Timber selected should be 'grade A', smooth and free from imperfections and surface or edge blemishes. All visible final finish faces are to be even in colour and with as little visible knots as possible. All timber should be appropriately sanded and finished in a suitable 100% clear sealant that change the physical appearance of the raw materials no less more than 5%.

All timber should be sourced from FSC certified sources. The FSC Australia website contains a list of certified products/suppliers: <http://www.fscaustralia.org/buy-fsc>

## 5.11 FINISHES GENERALLY

Edges and surfaces should be clean, neat and free from burrs and indentations. Remove sharp edges to a fine pencil around without excessive radiusing. All visible joints in materials shall be even, hairline joints until noted otherwise and approved on shop drawings for specific functional or visual requirements.

### **5.11A PAINT FINISHES**

All paint is to be long life industrial quality paint. It shall exhibit high standards of adhesion, abrasion resistance, resistance to weathering and colourfastness. Paints are to be UV stabilised and should be able to be warranted to 10 years. The paint systems or supplier of finishing materials for signs should have available a range of products covering powder coating, two component polyurethane, acrylic lacquer and enamel for each of the colour references noted. The painting shall be carried out by personnel experienced in the type and class of work specified, and in accordance with manufacturer's recommendations.

The number of coats specified by the manufacturer is considered to be the minimum. Extra coats shall be applied as necessary to achieve a uniform finish, to the approval of Macquarie University Property.

Unbranded products shall not be used. Use only branded premium lines from quality manufacturers.

All material required for the application of each finish shall be manufactured by an approved manufacturer and used in conjunction with priming and undercoats produced by that manufacturer as a total coating system.

Approval shall be obtained for each finishing system and its method of application prior to starting work.

NOTE: The paint finish recommended for vinyl graphics application is an enamel paint with a smooth surface. The paint is not to contain any Teflon or similar additives as this will prevent the vinyl from adhering.

All paints and sealants should be selected with minimal toxic components. Any internal finishes should meet low-VOC emission limits.

### **5.11B PRETREATMENT**

It shall be the Contractors responsibility to ensure that all surfaces are properly prepared in accordance with coating manufacturers specifications prior to the first application.

Un-primed or damaged primed steelwork shall be abrasive blasted, or power tool cleaned to near white metal, immediately prior to priming or spot priming. Primed steelwork shall be brushed down and degreased using white spirit.

Galvanised steelwork scheduled to be paint finished shall be degreased using white spirit washed water.

Concrete and masonry surfaces shall be cleaned of all oil, grease and loose foreign matter, including efflorescence and dirt, prior to the application of any paint finishes.

Aluminium should be lightly abraded using fine emery cloth and mineral turpentine as a lubricant. Surfaces should be cleaned with mineral turpentine, washed thoroughly and dried. As soon as surfaces are thoroughly dry, apply self etching primer to all surfaces. Fine sanding and painting should follow immediately thereafter.

### **5.11C MIXING AND BLENDING**

All paints shall be mixed in accordance with manufacturer's recommendations. Chemically cured coatings shall be blended in exact quantities either by weight or by the use of volume matched containers. Accurate and properly calibrated equipment is required capable of weighing to an accuracy of 5 gms. The whole contents of volume-matched containers shall be blended at once. On no account shall part only of volume-matched containers be blended.

Each container shall be thoroughly and separately mixed using clean mixing equipment that has not been in contact with the other container. When blended materials are poured from mixing containers care being taken not to scrape out materials left adhering to the container. Application shall be carried out within 1 hour of mixing.

Thinning shall only be permitted for spray applications or sealing coats and then only with thinners supplied by the finish manufacturer for this purpose.

### **5.11D PROTECTION OF OTHER SURFACES**

All necessary protection and masking shall be provided to protect adjacent surfaces as finishing proceeds and to ensure accurate cutting in. Care shall be taken to select masking materials that are compatible with the surface to which they are being applied and that any residue of adhesive can be easily removed.

Hardware shall be removed prior to finishing and subsequently refixed and adjusted.

### 5.11E PAINT APPLICATION

Painting should be conducted in proper spray booths with filtration capable of significantly reducing the venting to the atmosphere of particulates and VOC's. Touch up where required on site must be to matching colours and compatible finishes.

Paint colours shall be as indicated on the drawings and the schedule of colours.

### 5.11F PROTECTIVE COATINGS

Anti-vandal coating to be applied to all exterior sign types and varying sign surfaces. Anti-vandal clear coating is to provide protection against both harsh chemical and graffiti. The coating should be clear and not substantially change the appearance of the raw surface. If the coating does substantially change the appearance of the raw material, Macquarie University Property must grant approval prior to commencing manufacture. Contractor to provide test samples of graphic element following application of protective coating to ensure that colour rendition and legibility is not adversely affected by the application of the protective coating. To be applied according to manufacturers specifications/recommendations.

## 6.0 EXECUTION

### 6.1 EXAMINATION

Inspect site conditions before start of work on site and before delivery of materials. Ensure conditions are satisfactory for installation.

Perform rectification required before delivery of materials.

### 6.2 PREPARATION

Prepare surfaces affected by the installation in accordance with material manufacturer's instructions.

### 6.3 DELIVERIES, STORAGE AND ERECTION

Transportation and handling: All materials and fabricated items shall be carefully transported and handled at all stages of delivery and erection to minimise risk of damage or staining. Wherever practicable fabrications shall be fully packaged.

All drying and curing times as required by sign forms and materials, shall be strictly observed when handling and transporting pre-finished work.

All building materials and equipment to be delivered by the Contractor must be arranged prior to delivery with Macquarie University Property.

Notice: Provide 24 hours notice prior to delivery to ensure access is available for building materials.

Storage: All materials shall be carefully stored at all times and fully protected from external conditions or contamination. Areas for storage to be allocated by Macquarie University Property, do not store materials in unauthorised areas. No storage of materials in public areas.

### 6.4 INSTALLATION

All signs shall be precisely located and carefully fixed by specialist tradespersons skilled in this work. Particular care shall be taken to fix all signs at the correct height and position and to align adjacent signs where applicable.

All proposed fixings should be indicated on the shop drawings. Generally all fixings shall be concealed fixings.

### 6.5 ANCHORAGE

Contractor to design, supply and install all anchorage devices required to complete the works for positive and permanent fixing, as shown in design intent drawings. This includes but is not limited to the pour of any concrete footings. The Contractor is required to seek written approval from Macquarie University Property of all engineering certification for footings prior to commencing install or manufacture.

Make good surrounds damaged during the installation at no cost to the University.

### 6.6 COMPLETION

**MACQUARIE UNIVERSITY**  
**SIGNAGE AND WAYFINDING**  
SIGNAGE SPECIFICATION ISSUE 1

Complete contracted work in accordance with contract documents and written directions issues by Macquarie University Property. At completion provide all required submissions, spares and equipment, including but not limited to the following:

- As built documentation; and
- Maintenance Manual as specified.

## **7.0 TYPOGRAPHY AND GRAPHICS**

### **7.1 SCOPE OF WORK**

Computer generated artwork should be based on samples provided by Macquarie University Property, and is required to be produced by the Contractor for all signs. The artwork shall be supplied to the University in Adobe Illustrator 8 format at the completion of the project.

The Contractor should provide for the preparation of full size graphic layouts for approval, production of stencils and silk screens, printing onto sign panels and background material, cutting out and fabrication of metal letters all as specified and set out in the approved drawings and signage schedule.

The Contractor must provide 1:1 or 1:2 scale printouts of all artwork for messages, for approval of kerning and fonts by Macquarie University Property.

### **7.2 TYPEFACE**

Unless otherwise noted on the drawings or in this specification, the selected typefaces "NationalMQ" and its associated weights shall be used throughout as specified. Submit sample for approval of the reproduction of each typeface that will be produced according to the artwork and the specification. Sample should include typical point sizes to be used and the minimum point sizes used in each typeface and weight. The typeface, its weight, letting, kerning and specific layout is to be precisely adhered to.

It is the Contractor responsibly to purchase a licenced copy of the fonts outlined in the Macquarie University Signage and Wayfinding guideline, or as required.

### **7.3 FINAL COPY**

A schedule of messages (written content) for application to the signs should be provided by the Contractor for approval of Macquarie University Property prior to manufacture. The final text for each sign shall bear Macquarie University Property's signature with the approved wording. Check all completed signs against this schedule prior to the dispatch of the signs to site.

### **7.4 GRAPHIC STANDARDS**

The following rules of graphic quality apply:

- All lettering shall be true to its letter form in face weight and construction; and
- All graphics are to be electronically or photographically reproduced. All colours are to be specified and or eye matched to closest equivalent of PANTONE colour reference system.

### **7.5 SCREEN PRINTING**

Where noted on the drawings all screen-printed graphics shall be applied according to the graphic specification using a screen of 120 threads per inch. Screen print using photographically produced screen templates. Registration shall be accurate according to the highest quality standard of workmanship. Screen-printing ink shall be Sericol polyscreen 2 pack system or equal approved.

### **7.6 PHOTOGRAPHS**

Photographs to be anodised onto aluminium sign face to be reproduced from a high-resolution tiff files.

## 7.7 PICTOGRAMS AND ARROWS

No other pictograms and arrows other than specified in Macquarie University Signage Guideline are to be used.

## 7.8 CUTOUT LETTERING

All corners and edges of finished letterform, numerals, arrows, pictograms, logotypes or other symbols shall be sharp and true to the selected typeface or artwork with accurate, even curves and serifs where applicable. When using laser-cutting techniques, care shall be taken that the cut edges are not overheated and the speed of cutting adjusted to be as slow as is consistent with the achievement of a clean cut. When weeding excess aluminium and vinyl from letter forms ensure mask is undamaged. When spray painting ensure even distribution of paint with no build up at the mask edges.

## 8.0 COLOURS

This specification shall be read in conjunction with the Macquarie University Signage and Wayfinding Guidelines.

## 9.0 SUSTAINABILITY

The University is committed to applying sustainable principles when developing all aspects of the Campus, including signage. Promotion and support of the University's sustainability Vision and Policy are considered as mandatory and part of the scope. This is not limited to manufacture, and may include things like:

- Support the establishment of a comprehensive landscaped open space network;
- Encourage the use of public transport and alternative transport sources (other than private vehicle) through the establishment of cycle and pedestrian networks, greater provision of transport information and concentration of high density uses in proximity to the Station;
- Ensure new University buildings are sited and developed in accordance with ESD principles including a minimum 4 star and a target 5 star Greenstar rating;
- Implement sustainable strategies in relation to water management and existing flora and fauna; and
- Minimising impacts of Climate Change through the adherence to sustainable.

For further information regarding the University's sustainable policies please refer to:

<http://mq.edu.au/policy/docs/sustainability/policy.html>

To further understand the University's vision for the future in terms of sustainability please refer to:

<http://www.mq.edu.au/sustainability/home/ourvision.html>

As part of the development of the signage family the advice for Cundell Sustainability Consultant was sort after to understand the total embodied energy within the concrete sign forms. A copy of this can be referenced in the Appendix of the Macquarie University Signage and Wayfinding Guidelines.

Generally, materials should be selected according to the following sustainable principles:

- Avoidance of ecologically sensitive products (such as scarce minerals and old-growth forest);
- Selection of materials with a low embodied energy & high-recycled content;
- Low toxicity material selection;
- Low impact on the indoor and outdoor environment;
- Durability, flexibility and recyclability;
- Emissions in manufacture and composition, including greenhouse gases and ozone depleting substances;
- Waste reduction – Utilising prefabricated construction to minimise construction work and waste on site.

## **10.0 ELECTRICAL**

It is within the Contractors scope to supply and install electrical services for signage elements as noted in the Macquarie University Signage and Wayfinding Guideline as required. The scope consists of furnishing all labour, supervision, materials, engineering and equipment necessary in connection with electrical work complete and tested by the University onsite, ready for service as specified to within 1 metre of all sign forms.

In general this shall include but not be limited to the following items:

- Lighting - Supply and installation of light fittings including lamps and control gears;
- Data – Supply and install all connectors or control gear required to fulfil the operational intent of the sign;
- Touch Screens – Supply and install of proprietary touch screens as specified by Macquarie University Property;
- Help points / hearing loop – Supply and install of either custom designed or propriety technology required to fulfil the operational intent of help point / hearing loops;
- Supply and installation of required cabling including required conduits, ducts and associated accessories; and
- Supply and appropriate means for connection of earthing wires.

Shop drawings shall include details for all electrical connection and supports. The Contractor shall submit shop drawing of proposed design and prototype for approval by Macquarie University Property prior to fabrication. All electrical components to be approved and certified by the Contractor before approval by Macquarie University Property.

All equipment installed shall be provided with clear access for maintenance and replacement. Adequate ventilation of equipment shall be considered in final placement within the signs. All equipment shall be concealed. If exposed to the weather, all equipment shall be adequately weather protected to suit warranty of any proprietary products as required.

Where possible the design of the signs should consider clever ways in which to service electrical within signs without the integrations of an access panel. Where a service panel is required ensure its integration does not hinder design integrity. Any panel should be fully fully concealed and consider tamper proof fixings and hinges. All fasteners to the approval of Macquarie University Property.

Electrical controls are to be linked or compatible with existing University lighting, data and power standards. Specialised documentation indicating electrical, lamping requirements and positioning specifications are to be issued to Macquarie University Property for each electrical variation.

### **10.1 LIGHTING**

Illumination levels shall be uniform throughout and comply with the requirements for maintenance set out relevant NCC and AS, specifically the required contrast for accessible users at night.

Lamp housing should incorporate extrusion designs as heat sinks. Lamp placement is to be such to ensure even consistent illumination of any area void of hot or cold spots.

Internally illuminated structures are to be custom fabricated. They are to be ventilated and when used externally to include drain holes. Easy access for lamp replacement is to be provided and on external lamps vandal resistant fastenings are to be used. All illuminated sign boxes are to be fabricated with weather proof shut off switches for maintenance purposes. The locations of shut off switches are to be consistent on each illuminated sign box in an inconspicuous location not to hinder design intent. Please provide battery (2hr duration minimum) for those signs required by statutory authority.

Intra-cut lettering is to be laser cut polycarbonate or acrylic as specified. Allow for expansion and contraction of material, if necessary. Butt fit of materials is preferred where possible. Ensure waterproof seal to prevent moisture entering light box. Colour to be applied as required either by mask and spray or applied vinyl to rear of intracut letterform to give an even colour when illuminated.

Intra-cut lettering to be flush with the front face of the sign panel, or as noted on drawings. No light spillage or exposed lighting to be visible from the sign form.

Fitting and location of any lighting required for face lit signs should be set out in construction drawings for Macquarie University Property's approval prior to manufacture of purchase of any proprietary product. All lighting **should be**

external grade and carry a warranty of no less than 5 years. Appropriate onsite tests may be required at the discretion of Macquarie University Property prior to approval at no extra cost.

## 10.2 DIGITAL KIOSKS (TOUCH SCREENS) AND DATA

The Contractor is required to work with Macquarie University Informatics to determine an appropriate technology solution for all applications. Final direction on technology will lie with Macquarie University Informatics and Macquarie University Property.

The following factors should be considered when completing shop drawings for sign forms that incorporate digital kiosk (touch screens) and help points:

### Physical Design

- Access to the screen, media player or speaker etc (ease of installation / serviceability);
- Secure internal mounting structure;
- Ventilation / thermal control;
- Compliance with Australian Standards for IP ratings and electrical certification;
- Security of enclosure and resistance to vandalism; and
- Design detailing to maximise efficiency of assembly, production, installation and cost.

### Technical

- Allowance for power (double GPO) and data (2x data outlets) within the enclosure;
- Security, remote operation and diagnostics of the media player;
- Warranty conditions of components and certified operating hours;
- Allowance for a media player or interface device to serve the content and interaction. (At the time of writing, this has been specified as a 'Mac Mini' player); and
- A minimum clearance of 100mm on all sides of the media player should always be allowed. The player may be mounted vertically instead of horizontally if required.

### Service & Maintenance

- Sign forms will provide access to the components; and
- The University will negotiate vendor support, service level agreements, maintenance plans, upgrade allowances etc.

### Outdoors use

More detailed consideration will be required for outdoor screens, requiring construction and orientation details that consider:

- IP Ratings for outdoor use (weather);
- Position and screen angles for glare / visibility;
- Additional security of enclosure and resistance to vandalism; and
- Security of internal network connections.

## 10.2 HELP POINTS

The Contractor is required to work with Macquarie University Informatics to determine an appropriate technology solution for all applications. Final direction on technology will lie with Macquarie University Informatics and Macquarie University Property.

The University's current practice is the application of Jacques Electronics Emergency Help Point Unit HPU – 5E & HPU-5E-i. The full integration of similar technology should follow specifications no less than those outlined for the above unit. For these specifications please refer to [www.jacques.com.au](http://www.jacques.com.au).

## 10.3 WEATHERPROOFING

The signage located outside will be exposed to the elements and will require regular maintenance procedures. Contractor to ensure that signage is waterproof to prevent moisture entering any illuminated sign form, light box/LED or any internal spaces. Sign structure to be sealed and/or drained to prevent water/dirt/insect ingress.



