Title	**Print and laminate large format graphics for sign production**		
Level	**4**	**Credits**	**20**

Purpose	This unit standard is for people working in the signmaking industry.
	People credited with this unit standard in signmaking are able to: describe printer types and explain operational requirements; explain digital colour concepts and management; describe and explain the set-up of a large format printer; print large format signs; and apply laminate to printed media.

Classification	Sign Making > Sign Making - Core

Available grade	Achieved

Guidance Information

1   Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:
    Health and Safety at Work Act 2015.

    Any new, amended or replacement Acts, regulations, standards, codes of practice, guidelines, or authority requirements or conditions affecting this unit standard will take precedence for assessment purposes, pending review of this unit standard.

2   Definitions
    Job requirements – refer to specific requirements for the signmaking job at hand. These requirements may or may not be covered in the workplace job documentation and may include special instructions or quality requirements expected by the customer and the production standards of the signmaking workplace or organisation.
    Job specifications – detail that defines an object being made; commonly communicated by annotated and dimensioned drawings; by written description, or by other communication media. External references may also be used to specify objects such as tables or industry standards.
    Large format – greater than 600mm width.
    Service information – refers to the recommended use and maintenance of machinery, tools and equipment.

Workplace procedures – refer to organisation policies and procedures that are documented in memo, electronic, or manual format and available in the workplace, and are consistent with manufacturer's requirements. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the signmaking sector.

3   Assessment information
Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, workplace procedures and legislative requirements.

Outcomes and performance criteria

Outcome 1

Describe printer types and explain operational requirements for signmaking.

Performance criteria

1.1   Describe printer types in terms of their physical configuration options, advantages, and disadvantages for large format sign printing.

Range   types – roll and sheet feed, flatbed, hybrid.

1.2   Describe printer head types in terms of their advantages and disadvantages for large format sign printing.

Range   thermal, piezo.

1.3   Describe ink types in terms of their selection, advantages, and disadvantages for signmaking.

Range   ink types – aqueous dye, aqueous pigment, latex, eco-solvent, solvent, ultraviolet (UV).

1.4   Explain requirements for printer operation in terms of environmental conditions.

Range   dust, humidity, temperature, lighting, ventilation.

1.5   Explain calibration and routine maintenance requirements for a typical large format printer used for sign production.

Range   nozzle checks, head cleaning, base station cleaning, checking wipers and dampers, encoder strip cleaning, media feed calibration, International Colour Consortium (ICC) profiling.

Outcome 2

Explain digital colour concepts and management.

Performance criteria

2.1   Explain the concept of colour perception in terms of reflected compared to emitted light and colour temperature of light source.

2.2   Explain red, green, and blue (RGB), and cyan, magenta, yellow, and key (CMYK) digital colour models in terms of colour categorisation and interpretation.

        Range   explanation includes the difference between spot colours, process colours, and colour gamuts.

2.3   Explain the use of colour management calibration measures.

        Range   measures – monitor calibration, input profiles, output profiles.

2.4   Explain proprietary software techniques for managing colour space conversion.

        Range   rendering intents, under colour removal (UCR), grey component replacement (GCR).

Outcome 3

Describe and explain the set-up of a large format printer for signmaking.

Performance criteria

3.1   Describe printer set up checks in terms of purpose and actions required.

        Range   media loading, take up set-up, origin setting, heater settings, head height, pass rates, unidirectional/bidirectional, gutter settings, resolution.

3.2   Explain pre-flight file checks in terms of purpose and actions required.

        Range   scaling, tiling, image links, font conversion, image resolution, colour space, colour settings, bleed, trim marks, contour cut lines.

Outcome 4

Print large format signs.

Performance criteria

4.1   Set up printer in accordance with job requirements.

4.2   Undertake pre-flight file checks prior to printing to verify file accuracy and compatibility.

4.3   Print sign in accordance with job specifications.

Outcome 5

Apply film laminate to printed media.

Range   laminates may include but are not limited to – calendered, cast, matte, gloss, anti-graffiti, textured.

Performance criteria

5.1   Select film laminate to meet printed media and job requirements.

5.2   Load film into laminator and set up machine.

           Range   tension, pressure, speed.

5.3   Run machine to apply film to media without surface blemishes.

           Range   surface blemishes may include – trapped foreign matter, bubbles, creases, trapped air, silvering.

5.4   Trim laminated print to size.

Planned review date	31 December 2027

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	20 April 2017	31 December 2025
Review	2	29 September 2022	N/A

Consent and Moderation Requirements (CMR) reference	0013

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact the Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.