

Title	Demonstrate and apply knowledge of metal flashings and penetrations		
Level	4	Credits	10

Purpose	<p>This unit standard is for people who carry out metal roof and wall cladding work and covers knowledge of metal flashings and penetrations.</p> <p>People credited with this unit standard are able to:</p> <ul style="list-style-type: none"> – demonstrate knowledge of flashing types and design detail; – demonstrate knowledge of flashing materials and folding limits; – describe flashing marking, cutting, and folding; – describe flashing fixing, jointing, scribing, and sealing; – describe flashing intersections, terminations, and corner fabrication; – describe the formation of curved flashings; – describe pattern making for construction of sheet metal flashings; – describe the applications, fitting, and installation of simple penetrations; – describe the applications and identification of complex penetrations; – form simple metal flashings; and – install simple metal flashings.
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Classification	Plumbing, Gasfitting and Drainlaying > Roofing
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Available grade	Achieved
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Guidance Information

- 1 This unit standard has been developed for learning and assessment on-job and off-job.
- 2 References
 Construction Contracts Act 2002;
 Historic Places Act 1993;
 Local Government Act 2002;
 Building Act 2004 and associated regulations;
 Health and Safety at Work Act 2015;
 Resource Management Act 1991;
 Acceptable Solutions and Verification Methods for New Zealand Building Code
 Clause E2 External Moisture;

New Zealand Metal Roof and Wall Cladding Code of Practice;
 Licensed Building Practitioner Scheme – Understanding the Regulatory Environment
 Booklet – available at: <http://www.business.govt.nz/lbp/the-board/getting-licensed/applying-for-licensing>;
 NZS 3604:2011 Timber-framed buildings;
 NZS 3902:2004 Housing, alterations and small buildings contract;
 NZS 4121:2001, Design for access and mobility: Buildings and associated facilities;
 New Zealand Building Code Hand Book – available at:
<http://www.building.govt.nz/building-code-compliance/building-code-and-handbooks/building-code-handbook>;
 and all subsequent amendments and replacements.

- 3 This unit standard applies to both new roof or re-roofing installations.
- 4 Range
- a Candidates must refer to current legislation and Standards during assessment.
 - b Demonstration of safe working practices are essential components of assessment of this unit standard.
 - c All activities and evidence presented for all outcomes and performance criteria in this unit standard must be in accordance with:
 - i legislation;
 - ii policies and procedures;
 - iii ethical codes;
 - iv Standards – may include but are not limited to those cited in the New Zealand Building Code Hand Book;
 - v applicable site, enterprise, and industry practice; and,
 - vi manufacturers' instructions, specifications, and data sheets.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of flashing types and design detail.

Performance criteria

- 1.1 Identify flashing types and described their use.

Range	flashing types – transverse, vertical, ridge, rib cap, barge, apron, chase, valley, parapet, wall jointer, T, window jamb, corner, head, step, sill.
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- 1.2 Describe flashings in terms of cover, lap, and edge detailing.
- 1.3 Describe overall flashing plans and specifications for all flashings on a building.
- 1.4 Describe sectional flashing drawings and specifications.

Outcome 2

Demonstrate knowledge of flashing materials and folding limits.

Performance criteria

- 2.1 Identify metal flashing materials and thicknesses in accordance with industry practice and the New Zealand Building Code.
- 2.2 Describe maximum unstiffened distance.
- 2.3 Describe bend radius limitations.

Outcome 3

Describe flashing marking, cutting, and folding.

Performance criteria

- 3.1 Describe flashing layout to minimise wastage.
- 3.2 Describe fold and cutting marks.
- 3.3 Describe index marks to facilitate correct installation placement.

Outcome 4

Describe flashing fixing, jointing, scribing, and sealing.

Performance criteria

- 4.1 Describe fixing in terms of primary, secondary, and clip fastening.
- 4.2 Describe fastening spacing and lap fixing.
- 4.3 Describe expansion joint installation in accordance with industry practice.
- 4.4 Describe method for scribing a flashing to fit over ribs.
- 4.5 Describe pan clearances for scribed flashings.
- 4.6 Explain surface preparation, sealant application, and clean-up.

Outcome 5

Describe flashing intersections, terminations, and corner fabrication.

Performance criteria

- 5.1 Describe intersections and joins between flashings.

Range valley, hip ridge, barge ridge, internal barge, apron and parapet, apron and ridge, saddle flashings.

Outcome 6

Describe the formation of curved flashings.

Range jennied, lock seamed, crimped.

Performance criteria

6.1 Describe the purpose of curved flashings.

6.2 Describe the forming of curved flashings.

Outcome 7

Describe pattern making for construction of sheet metal flashings.

Performance criteria

7.1 Describe method of transferring information and marking out a pattern for a flashing.

7.2 Describe method of folding pattern and transferring information to the flashing sheet metal.

Outcome 8

Describe the applications, fitting, and installation of simple penetrations.

Range penetrations requiring no additional support and sealed with a pre-fabricated boot or collar flashing.

Performance criteria

8.1 Describe simple penetration applications on sheet metal roof and wall cladding.

8.2 Describe fitting and preparation processes for sheet metal roof and wall cladding.

8.3 Describe final installation fixing and sealing in accordance with the New Zealand Building Code.

Outcome 9

Describe the applications and identification of complex penetrations.

Range soaker under flashings, watershed flashings, tapered flashings, soaker (tray) flashings.

Performance criteria

9.1 Describe complex applications on sheet metal roof and wall cladding.

9.2 Describe identification of complex penetration types.

Outcome 10

Form simple metal flashings.

Performance criteria

10.1 Make and record flashing measurements.

Range folding limits, setting out.

10.2 Mark out flashings, fold, and cut.

Outcome 11

Install simple metal flashings.

Range one vertical wall flashing; one horizontal wall flashing; any two of – barge, apron, ridge, parapet, saddle.

Performance criteria

11.1 Prepare for installation.

Range organisation, selection of tools and equipment, preparation of surfaces, pre-fitting.

11.2 Fix flashing.

Range may include sealing.

11.3 Confirm flashing provides protection from water ingress, vermin, and bird intrusion.

11.4 Correct any defects.

11.5 Remove surplus material including swarf and leave roof and site in a tidy and safe condition that allows any further work to be carried out safely.

Planned review date	31 December 2023
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 January 2009	31 December 2020
Review	2	16 March 2017	N/A
Rollover	3	25 August 2022	N/A

Consent and Moderation Requirements (CMR) reference	0003
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This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.

Comments on this unit standard

Please contact the Waihanga Ara Rau Construction and Infrastructure Workforce Development Council qualifications@waihangaararau.nz if you wish to suggest changes to the content of this unit standard.