Title	**Explain bitumen sprayer tests in a civil engineering laboratory**		
Level	**5**	**Credits**	**10**

Purpose	People credited with this unit standard are able to explain, in a civil engineering laboratory: the bitumen sprayer distribution test method; bitumen sprayer verification test methods; and the application and reporting requirements of bitumen sprayer test results.

Classification	Infrastructure Civil Engineering > Infrastructure Laboratory

Available grade	Achieved

Guidance Information

1 Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable organisational and legislative requirements.

2 Applicable legislation, regulations, rules, standards and codes include but are not limited to: Health and Safety at Work Act 2015, Hazardous Substances and New Organisms Act 1996, and their associated regulations and subsequent amendments; ISO/IEC 17025:2018 *General requirements for the competence of testing and calibration laboratories*, available from https://www.iso.org/store.html.

3 Definitions

Explain refers to describing the components within tests at a specialised technical scientific level and the relationships between them. It may also include describing the interaction between tests in the context of the process or project for which the tests are being completed. Components will vary between tests and may include but are not limited to – the project and/or process specifications, sample specifications, equipment requirements, environmental requirements, sequence of tests, units of measurement, limitations, suitability and uncertainty of measurement for the tests. Explanations demonstrate an understanding of the scientific principles underpinning the test and the implications of test results on downstream client processes and projects. Client processes refer to one or more of the client's quality management, construction and production processes.

Organisational requirements refer to instructions to staff on policy and procedures which are formally documented or generally accepted at the worksite. This may include legislation; industry standards and methods; national and international standards and methods; standard operating procedures; specifications; manuals; and manufacturer's information.

Samples may include but are not limited to – prepared materials and test materials such as standards and reagents.

Outcomes and performance criteria

Outcome 1

Explain the bitumen sprayer distribution test method in a civil engineering laboratory.

Performance criteria

1.1 The test is explained in terms of scope, materials, equipment, processes involved, and results.

1.2 The factors that influence the outcome of the test are explained.

Range may include but is not limited to – sprayer preparation, location, temperature, environment.

1.3 The quality assurance of the test is explained.

Range may include but is not limited to – test method, signatories.

Outcome 2

Explain bitumen sprayer verification test methods in a civil engineering laboratory.

Range temperature gauge verification, speed control verification, dipstick verification.

Performance criteria

2.1 Test is explained in terms of scope, equipment, processes involved and results.

2.2 The critical factors of the test are explained.

Range may include but is not limited to – preparation, location, environment.

2.3 The variables of the test and the methods employed to minimise variability are explained.

Range may include but is not limited to – equipment, apparatus, material, technique, calibration, environment.

2.4 The quality assurance of the test is explained.

Range may include but is not limited to – signatories, recording requirements.

Outcome 3

Explain the application and reporting requirements of bitumen sprayer test results in a civil engineering laboratory.

Range sprayer distribution, temperature gauge verification, speed control verification, dipstick verification.

Performance criteria

3.1 The application of test results is explained in terms of material properties.

Range may include but is not limited to – out of specification results, in specification results, reporting.

3.2 The critical limits of test results are explained.

Range may include but is not limited to – uncertainty of measurement, suitability, limitations.

3.3 The reporting requirements for non-conforming test results are explained.

Range may include but is not limited to – equipment, apparatus, material, technique, calibration, environment.

Planned review date	31 December 2025

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	21 January 2011	31 December 2016
Review	2	19 February 2015	31 December 2021
Review	3	23 January 2020	N/A
Rollover and Revision	4	24 October 2024	N/A

Consent and Moderation Requirements (CMR) reference	0101

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

Comments on this unit standard

Please contact 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.