
MARSHALL IMMERSION TEST
FOR BITUMEN

Section 32 12 10

Marginal Wharf Reconstruction
Foxtrap, NL
P/N: 721924

Page 1
2018-03-31

PART 1 - GENERAL

- 1.1 SUMMARY .1 This method covers measurement of loss of Marshall Stability resulting from action of water on compacted asphalt paving mixtures containing penetration grade asphalt cement.
- .2 Numerical index of retained stability is obtained by comparing stability of specimens determined in accordance with usual Marshall procedures with stability of specimens that have been immersed in water for prescribed period.
- 1.2 RELATED SECTIONS .1 Section 32 12 16 - Asphalt Paving.
- 1.3 REFERENCES .1 American Association of State Highway and Transportation Officials (AASHTO)
.1 AASHTO T245-97(2001), Resistance to Plastic flow of Bituminous Mixtures Using Marshall Apparatus.

PART 2 - PRODUCTS

- 2.1 MATERIALS .1 Representative samples of each asphalt paving mixture proposed for use on Project.
- 2.2 EQUIPMENT .1 One or more water baths with automatic controls for immersing specimens. Baths normally used for Marshall test are

MARSHALL IMMERSION TEST
FOR BITUMEN

Section 32 12 10

Marginal Wharf Reconstruction
Foxtrap, NL
P/N: 721924

Page 2
2018-03-31

suitable for test.

- .2 Scale and water bath with suitable accessory equipment for weighing test specimens in air and in water to determine their densities.
- .3 Flat transfer plates of glass or metal. Keep one plate under each specimen during immersion period and during subsequent handling, except when weighing and testing, to prevent breakage or distortion of specimens.
- .4 Apparatus required to conduct Marshall test.

PART 3 - EXECUTION

3.1 PREPARATION OF TEST SPECIMENS

- .1 Prepare at least 8 specimens for each test with hand-operated hammer, in accordance with AASHTO T245, except where specified otherwise.

3.2 TEST PROCEDURE

- .1 Do Marshall testing in accordance with AASHTO T245, except where specified otherwise.
- .2 Weigh each specimen in air and in water. Weigh in water as rapidly as possible to minimize absorption.
- .3 Calculate specific gravity of each specimen as follows:
 - .1 Specific Gravity = $A / (A - B)$
 - .2 Where A = weight of specimen in air in grams
 - .3 B = weight of specimen in water in

MARSHALL IMMERSION TEST
FOR BITUMEN

Section 32 12 10

Marginal Wharf Reconstruction
Foxtrap, NL
P/N: 721924

Page 3
2018-03-31

grams

- .4 Sort each set of 8 specimens into 2 groups of 4 specimens each so that average specific gravity of specimens in group 1 is essentially same as that of group 2.
- .5 Test group 1 specimens for Marshall stability. Calculate S_1 = Marshall stability of group 1 (average).
- .6 Immerse group 2 specimens in water for 24 h at 60°C, then test immediately for Marshall stability. Calculate S_2 = Marshall stability of group 2 (average).

3.3 TEST REPORT

- .1 Report test results to Departmental Representative.
- .2 Report numerical index of retained stability as resistance of asphaltic paving mixtures to detrimental effect of water, expressed as percentage of original stability retained after immersion period.
- .3 Calculate index as follows:
 - .1 Index of Retained Stability = $S_2 / S_1 \times 100$.