This test procedure applies to Article 1083.02(a) of the Standard Specifications for Road and Bridge Construction (current year issued).

1.0 GENERAL

1.1 This procedure covers the testing required to determine the bond strength of elastomer to steel laminates used to manufacture Elastomeric Bridge Bearings.

2.0 REFERENCED DOCUMENTS

2.1 ASTM E 4
2.2 ASTM D 429, Method B

3.0 TEST EQUIPMENT

3.1 A testing machine capable of measuring loads up to 100 lbs (445 N) and calibrated to ASTM E 4.

3.1.1 The platen speed shall be 2 ± 0.2 in. (50 ± 5 mm) per minute.

3.1.2 The machine shall be equipped with grips designed for holding rubber without cutting or slipping.

3.1.3 The grips shall have faces at least 1 in. (25 mm) wide.

3.2 A saw capable of cutting smoothly through steel laminate bearing pads.

4.0 TEST PROCEDURE

4.1 Sample preparation.

4.1.1 The samples shall be cut from finished bearings.

4.1.2 A 1 in. (25 mm) wide (full thickness) sample shall be taken from the center 1/3 of the pad as shown in Figure 1.

4.1.3 The minimum length shall be 6 in. (150 mm).

4.1.4 Cut this sample section into test specimens as shown in Figure 2; and initiate peeling by neatly cutting the elastomer back to elastomer-laminate interface as shown in Figure 2. Continue peeling in a uniform manner far enough to allow placement of the sample into the grips of the testing machine. Bend the steel laminate 90° as shown in Figure 2.
4.2 Test Procedure.

4.2.1 Install the sample into the grips of the testing machine so symmetrical tension is applied.

4.2.2 Apply sufficient tension to sample to remove all slack in sample. Stop loading and draw two lines across the sample, 2 in. (50 mm) apart, starting where the peeled portion of the elastomer meets the laminate.

4.2.3 Apply the load at the required rate until the elastomer peels back beyond the 2 in. (50 mm) mark while recording the load.

4.2.4 Record the bond strength in pounds of load per inch of width.

4.2.5 Perform visual inspection and estimate the adhesion failure according to ASTM D 429, Method B. Record the “R” value using the “Adhesion Failure Terminology” in D 429.