

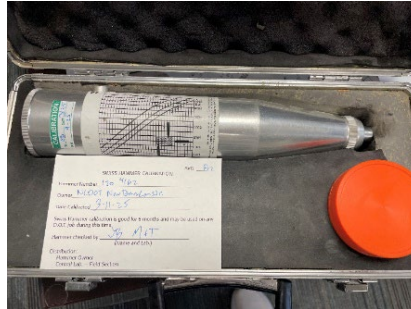
STRUCTURE BULLETIN

NCDOT Construction Unit

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Current Issues: Swiss Hammers

Swiss Hammers, also known as Schmidt Hammers, are rebound hammers used to **estimate** the in-place strength of concrete. While this tool does not replace the need for early break cylinders, it can provide many helpful uses.



Recommended uses include:

- 1) Verifying concrete strength before removing forms and falsework (per Section 420-16).
- 2) Checking if a screed can cross a recently poured bridge deck (per Section 420-20); testing should be done in multiple locations.
- 3) Determining when traffic can be allowed on PC overlays and VES Latex Overlays. VES LMC procedures can be found in this [M&T memo](#).



Several factors can affect the readings of a rebound hammer, including the orientation of the hammer, surface texture, and the presence of moisture. Be sure to only test surface-dry concrete and, if needed, use a grinding stone to create a smooth surface for testing.

ASTM C805 covers the procedures for use of rebound hammers and should be read prior to using. Additionally, it is important to make sure the hammer has been calibrated within the last year. M&T can perform calibrations for both NCDOT and Contractors, free of charge. Contractors can drop them off and pick them up at the Raleigh M&T Lab (attn: Joseph Barbour) or mail them and provide return postage.



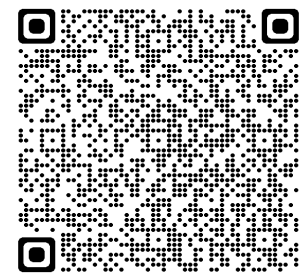
1. Swiss Hammer
2. Thermal Spray Coatings
3. AASHTO/ASTM Standards

AASHTO/ASTM

Did you know that if you have an NCDOT email, you have access to AASHTO/ASTM online standards? To create a free account, log on to [Inside NCDOT](#) and then navigate to the "Transportation Services" tab. Then under Resources, click on "Online Standards – AASHTO/ASTM". Here you can find most of the relevant AASHTO and ASTM standards that our specifications and special provisions reference.

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Thermal Spray Coatings (TSC) - Metallization

Thermal Spray Coatings (TSC), also known as metallization, is a process of spraying melted metal onto a metal substrate which provides a protective coating against corrosion. From a distance, it looks similar to galvanization, but up close, it has a coarse texture. Plan notes and the special provisions will tell you which structure items are to receive which coatings. Metallization is performed at a TSC facility in accordance with [M&T's TSC Program](#) and is inspected prior to shipping to the project. Like all delivered materials, we should verify the condition of the coating and that the correct coating was applied. Table 2 (see below) from M&T's TSC Program specifies that components other than Disc Bearings in Divisions 1-3 are to be coated with 99.9% aluminum while remaining counties receive a 99.9% zinc coating.



FIGURE 1 - METALLIZED EXPANSION JOINT SEAL

[Structure Bulletin Vol. 3, Issue 3](#) discussed proper handling and storage of metallized members to prevent damage to the coating system. However, when repairs are necessary, the special provisions require **2 coats of an approved epoxy mastic to repair aluminum metallization** and **2 coats of an organic zinc-rich coating to repair zinc metallization**. Both repair products can be found on the APL. Aerosol spray cans are never allowed for any coating repair.

Table 2

TSC Alloy	TSC Aluminum	TSC Application Alloy	Seal Coat*
99.9% Aluminum	10-15 mils DFT	All other components not listed in Table 2 and that will be used in Divisions 1, 2 & 3	1.5 mils DFT
85% Zinc / 15% Aluminum	10-15 mils DFT	Pot Bearings & Optional Disc Bearings	1.5 mils DFT
99.9% Zinc	10-15 mils DFT	All other components not listed in Table 2 and that will be used in Divisions 4, 5, 6, 7, 8, 9, 10, 11, 12, 13 & 14	1.5 mils DFT

STRUCTURAL STEEL NOTES

THE PLATES, BENT PLATES, AND ANGLES SHALL BE METALLIZED IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS. FOR THERMAL SPRAYED COATINGS (METALLIZATION) SEE SPECIAL PROVISION.

FOR METALLIZATION, APPLY A THERMAL SPRAYED COATING WITH A SEAL COAT TO ALL STEEL DIAPHRAGM SURFACES IN ACCORDANCE WITH THE DEPARTMENT'S THERMAL SPRAYED COATINGS (METALLIZATION) PROGRAM, THERMAL SPRAYED COATING SPECIAL PROVISION AND SECTION 442 OF THE STANDARD SPECIFICATIONS.

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