MICHIGAN

DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION

FOR

**EMBEDDED GALVANIC ANODES, HIGH PERFORMING FOR CORROSION CONTROL**

STR:SCK 1 of 2 APPR:JAB:TEB:06-08-21

**a. Description.** This work includes properly installing embedded galvanic anodes in concrete. The embedded galvanic anodes serve to provide corrosion protection to existing steel reinforcement. When placed at the specified spacing along the perimeter of concrete patches or along the interface between the new/existing concrete, the anodes mitigate the formation of new corrosion sites in the existing concrete.

**b. Materials.** Embedded galvanic anodes should be approximately 4 to 5 inches in length and 1½ inches high, pre-manufactured, and must consist of 100 grams (3.5 ounces) minimum of electrolytic high grade zinc in compliance with *ASTM B418* cast around a pair of steel tie wires. Furnish embedded galvanic anodes from Vector Corrosion Technologies (Galvashield XP2), phone number (813) 830-7566, or from Euclid Chemical Company (Euclid SENTINEL Silver), phone number (800) 321-7628, or approved equal. The approved equal anode must supply the calculated amount of zinc of 0.20 lb/ft ±0.03 lb/ft based on anode spacing. Furnish the anodes with a general certification provided by the manufacturers. Deliver, store, and handle all materials in accordance with the manufacturer’s instructions.

Ensure repair mortars, concrete, and bonding agents are Portland cement-based materials. Non­conductive repair materials such as epoxy, urethane, or magnesium phosphate will not be permitted.

**c. Construction.** Perform the concrete work in accordance with sections 706 and 712 of the Standard Specifications for Construction.

1. Galvanic Anode Installation.

A. Install galvanic anodes along the perimeter of the repair at spacing as specified on the plans. Do not mix anode types.

B. Provide 3/4 inch clearance between anodes and substrate to allow repair material to encase anode.

C. Secure the galvanic anodes as close as possible to the patch edge using the anode tie wires. Ensure the tie wires are tightened to allow little or no free movement.

D. If the anode is to be tied to a single bar, or if less than 1½ inch of concrete cover is expected, place anode beneath the bar and secure to reinforcing steel.

E. If 1½ inch concrete cover will exist over the anode, the anode may be placed at the intersection between two bars and secured to each bar.

2. Electrical Continuity.

A. Confirm electrical connection between anode tie wire and reinforcing steel with a multi-meter. Ensure the maximum DC resistance is 1.0 Ohm.

B. Confirm electrical continuity of the exposed reinforcing steel within the repair area. Steel reinforcement is considered continuous when the DC resistance is 1 Ohm or less. If necessary, ensure electrical continuity is established with uncoated steel tie wire.

C. The Engineer must verify proper installation of the galvanic anodes prior to placement of the concrete.

**d. Measurement and Payment.** The completed work, as described, will be measured and paid for at the contract unit price using the following pay item:

**Pay Item Pay Unit**

Embedded Galvanic Anode, High Performing Each

**Embedded Galvanic Anodes, High Performing** includes furnishing and properly installing in the anodes in concrete. Payment will be made only when the Engineer has verified proper installation.

Concrete and steel reinforcement work will be paid for separately.