

# **BORIN**<sup>®</sup> *Manufacturing, Inc.*

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## **Installation Instructions**

### **For the *Stelth 1*<sup>®</sup> Cu-CuSO<sub>4</sub> Model SRE-002-CFY with “Moisture Retention Membrane”**

**Remove** the plastic bag from the *Stelth 1*<sup>®</sup> reference electrode just prior to installation. There will be moisture if not actual water in this plastic bag. This is intentional as each cell is saturated with fresh potable water prior to shipment. (*We do this to give you a reference cell that will instantly fire up when installed. There will be no waiting time, which was customary in the past.*)

**Always** try to install the *Stelth 1*<sup>®</sup> reference cell **below the frost line** in a buried installation and in a water tank below the frozen surface mass, (In frozen soil or frozen water conditions, reliable potential readings are almost always impossible to obtain. You can obtain good readings year round by installing the *Stelth 1*<sup>®</sup> reference electrode in non-frozen areas).

#### **For Buried Applications:**

1. **Bore** a hole 2 inches in diameter and deep enough to place the *Stelth 1*<sup>®</sup> reference cell level with, or below the spring line (horizontal centerline) of the structure and between **3 inches and 24 inches** from the structure.
2. **Pre-soak** the *Stelth 1*<sup>®</sup> electrode in a clean bucket of fresh potable water just prior to installation for 20 to 30 seconds. Place the *Stelth 1*<sup>®</sup> cell in the hole, at the correct level and then pour the remaining water in the bucket in the hole over the *Stelth 1*<sup>®</sup> reference cell. (This procedure is important because we are creating a condition for the surrounding soil and backfill to penetrate and lock into the pores of the *Stelth 1*<sup>®</sup> cell, giving you the best chance for a reduced IR reading possible. Also, the backfill will easily compact around the electrode with this water present).
3. **Immediately** after soaking and placing the *Stelth 1*<sup>®</sup> in the hole, proceed to backfill **with native soil ONLY, Do not use clean / washed sand** (unless the sand is the native soil such as in tank bottom installations). After backfilling with the native soil, lightly tamp backfill by hand to ensure good compaction. (**NOTE: There is absolutely no requirement for any other backfill other than the native soil. Therefore plasters, bentonite, etc. are not required nor are they in any way recommended. In fact, they will only add significantly to any IR drop problems that might exist.**)

#### **For Water Tank Applications:**

There is no need to presoak the *Stelth 1*<sup>®</sup> reference electrode. The wire connection, to the electrode, is the strongest point over the length of the wire and you do not have to worry about placing a normal load on this connection.

**CAUTION:** If the *Stelth 1*<sup>®</sup> reference electrode is being used to control your rectifier, make sure that the device reading the reference cell has at least 20 MΩ of internal impedance. If not, you will be driving an excessive amount of current through the electrode, which will destroy it or any other electrode placed in the same circumstances. Generally older equipment, dating back to the 1970's, had very low internal impedances. Older SCADA systems almost always **cannot** handle this application correctly.

1. **Run** the lead wire attached to the *Stelth 1*<sup>®</sup> reference electrode to a separate terminal in your test station or rectifier.
2. **Attach** an additional wire to the structure.
3. **Run** this wire from the structure to another terminal in the test station or rectifier. **Don't** connect these wires together. (By connecting these two wires together you may possibly create a condition where current is allowed to pass through the reference cell causing its ultimate failure).

**SPECIAL NOTICE 1:** The *Stelth 1*<sup>®</sup> reference electrode **has been specifically designed to be used** in both **dry soil and water saturated conditions (water tanks)**. In buried applications the *Stelth 1*<sup>®</sup> will hibernate when the soil dries up and there is no circuit to provide an electrical path. The cell will awaken when moisture returns to the soil and a circuit can be re-established.

**SPECIAL NOTICE 2:** The *Stelth 1*<sup>®</sup> reference electrode, model **SRE-002-CFY** has an **indefinite shelf life**.

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