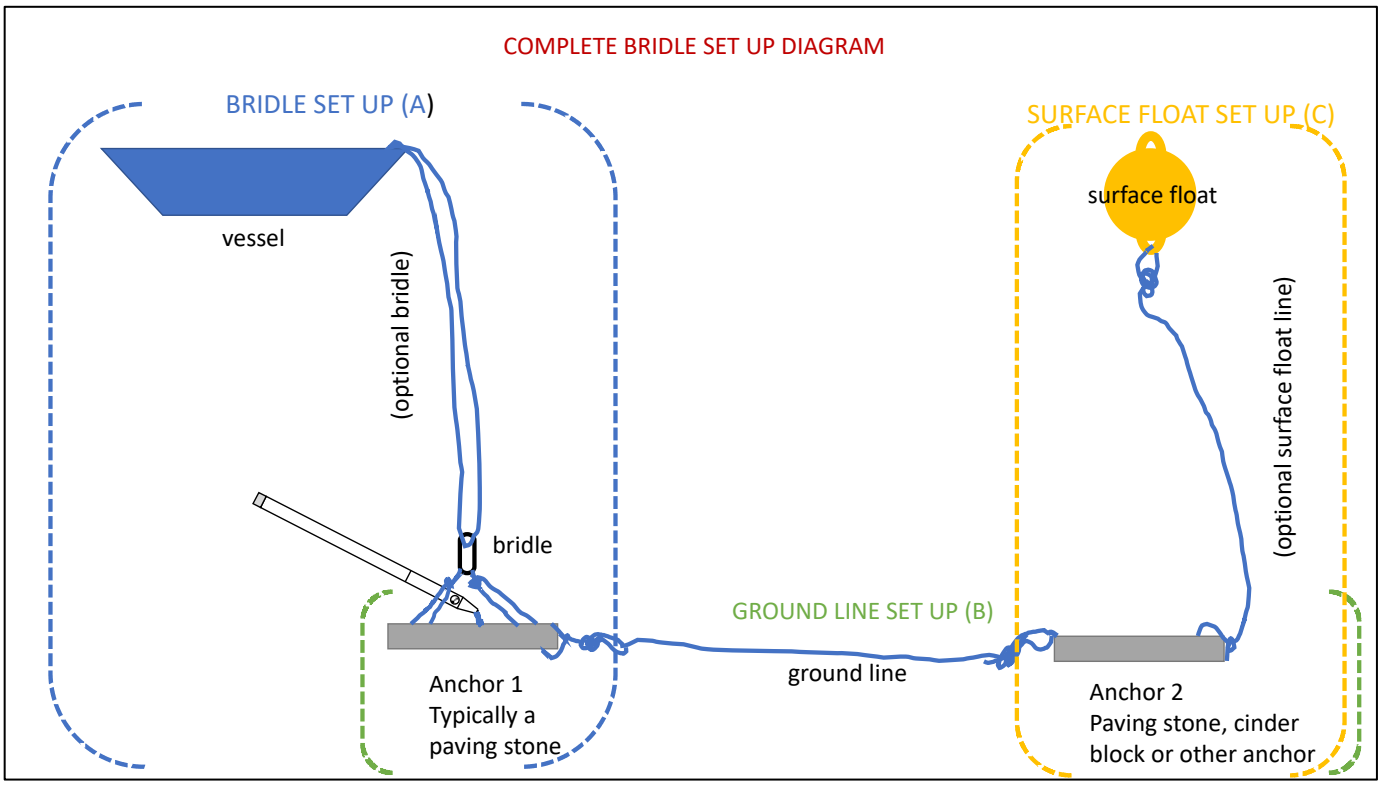
Lowell Instruments

Application Note #TCMB

Using a Bridle, Ground Line and Surface Float Set Up



1 Overview

This application note describes how to deploy a TCM and anchor using a bridle, ground line and surface float set up. There are three parts to this set up that have been broken down: Bridle Set Up (A), Ground Line Set Up (B) and Surface Float Set Up (C). All three are optional but can be advantageous for fast, reliable TCM deployments in relatively shallow water without the need of a diver.

Bridle Set Up (A)

2 Introduction

A bridle set up can be used to lower and deploy a TCM with an anchor. A bridle allows for fast, reliable TCM deployments in relatively shallow water without the need of a diver.

3 Requirements

The following items are required (one set per set up)

- Any TCM-x
- Bridle assembly consisting of:
  - 2 X short sinking lines (approximately 3 feet in length each)
  - 1 X stainless steel quick link
  - Patio stone 12” X 12” or 18” X 18” by 1.75” thick or equivalent
- Tools for construction:
  - Power drill (hammer drill preferred)
  - 5/16” masonry bit
- Rope that is twice the length of the depth of the water where the meter will be lowered and retrieved.
- Optional: 5/8” masonry bit for a ground line hole for optional, secondary anchor and surface float.

4 Bridle Assembly

- Drill 4 5/16” holes where the sinking lines will connect and 1 5/16” hole in the center of the patio stone where the meter lanyard will be secured.
- Slip each line through the holes and secure on the underside of the stone with a knot (figure eight).
- Tie a loop knot (overhand) on each line.
- Put each loop through the quick link and check that the four lengths of the bridal are even so when the stone is picked up by the quick link the stone hangs approximately horizontally.
- Optionally, add a ground line to a secondary anchor (see “Part B” and “Part C” of this App Note).

5 Lowering the Meter

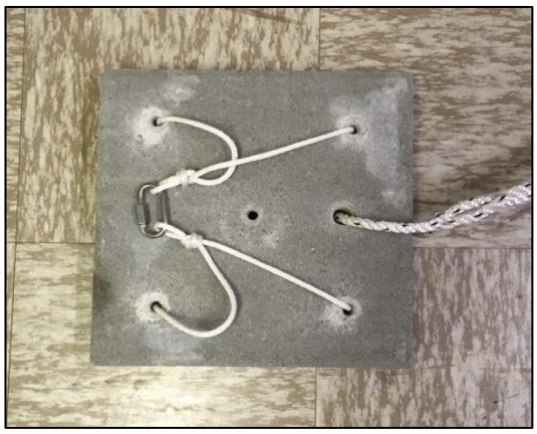


Figure 1A (top): Holes are drilled in the patio stone and each line is slipped through perpendicular holes. A loop is tied to end of each line. (Optional ground line is shown on right.)

Figure 1B (bottom): Lines are slipped through the holes and secured on the underside of the stone with knots.

When lowering the meter to the bottom, the user can use a line that can fit through the quick link and can be slipped out when the anchor reaches the bottom. Rope should be twice the length as the water depth where the meter will be deployed to loop it through.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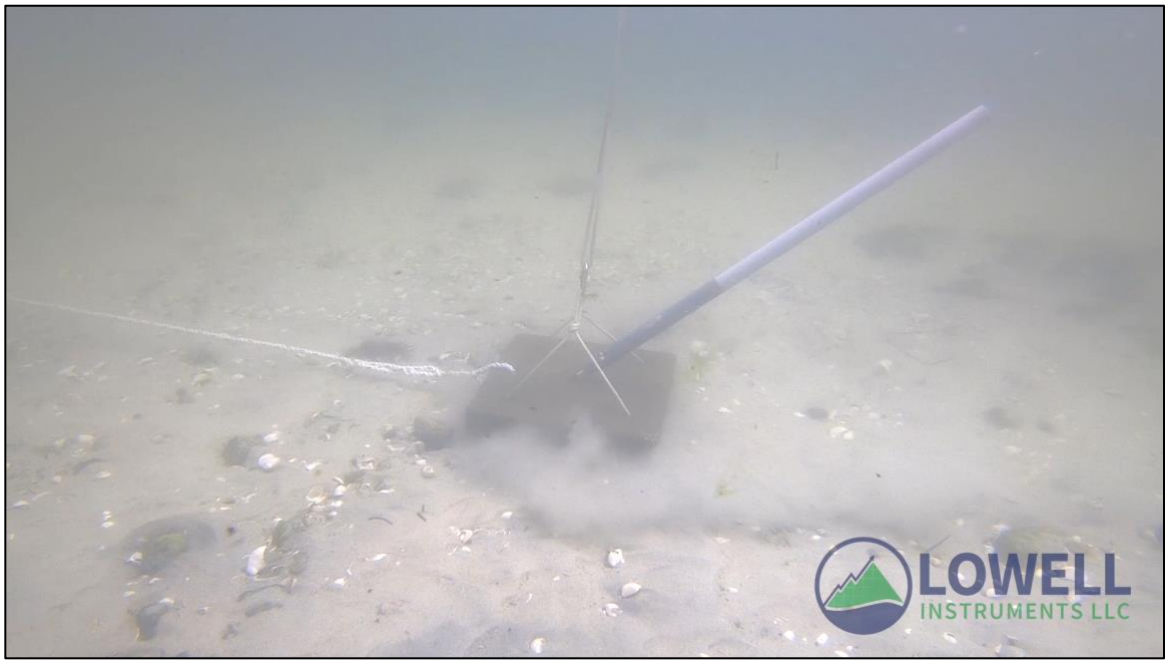
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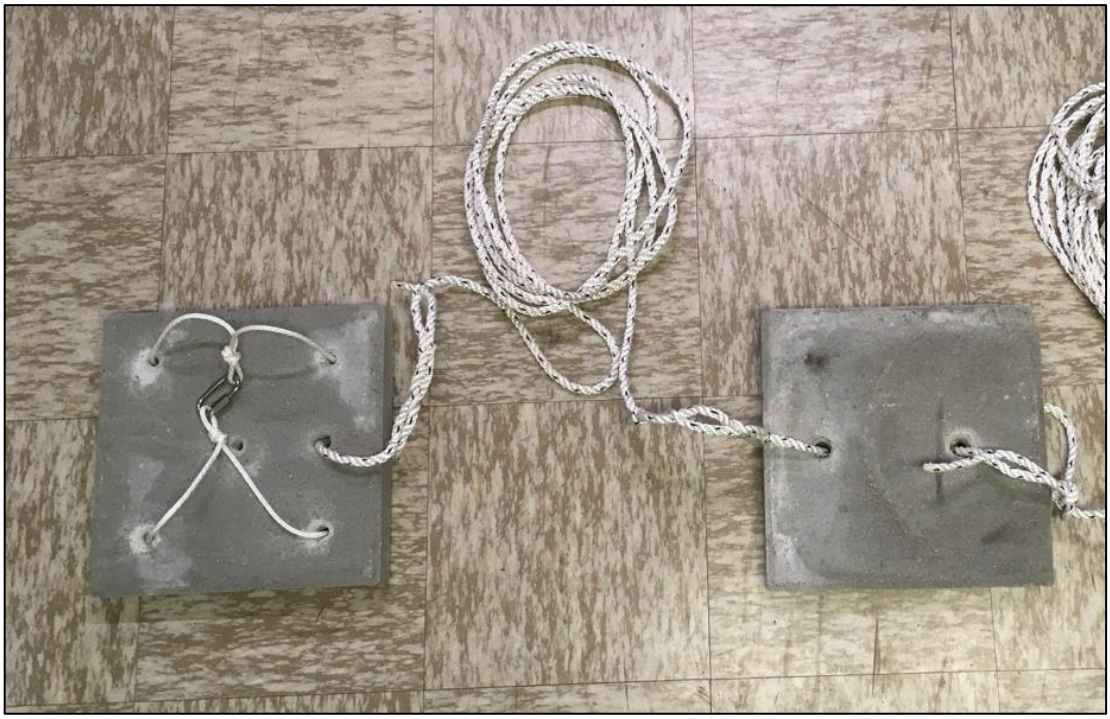
Ground Line Set Up (B)



6 Introduction

You can add a ground line with a second anchor for easier recovery of the meter in the field. This allows for grappling for retrieving the meter and for attaching a surface float or other visible marker. Additionally, a second anchor is ideal for attaching other devices so as not to interfere with the meter.

7 Requirements

The following items are required (one set per set up)

- Any TCM-x
- Bridle assembly
- Ground line assembly consisting of:
    - 1 X ground line (typically 3/8”-1/2” rope) with length of approximately 1.5 times the water depth on site
    - 1 X line for the surface that is approximately twice the maximum water depth
    - Patio stone 12” X 12” or 18” X 18” x 1.75”
- Tools for construction:
    - Power drill (hammer drill preferred)
    - 5/16” masonry bit (for bolt holes in the patio stone)

8 Ground Line Assembly

- Drill 2 holes to the patio stone where the ground lines will be slipped and secured to with a knot.

- Optionally, attach one ground line to the bridle assembly and the second ground line to the surface float and secure (see Set Up C).

Surface Float Set Up (C)

9 Introduction

You can add an optional surface float to your second anchor and ground line by attaching another line with a surface float or other visible marker for easier onsite recovery in the field.

10 Requirements

The following items are required (one set per set up)

- Any TCM-x
- Bridle assembly
- Ground line assembly
- Surface float assembly consisting of:
    - 1 X surface float
    - 1 X line for the surface float that is approximately twice the maximum water depth

11 Attaching the Surface Float

Secure one end of the line that is approximately twice the water depth to the anchor/paving stone with a knot. Attach and secure the surface float or visible marker to the other end of the line.

12 Lowering the Meter and Positioning the Anchors

When lowering the meter to the bottom with the bridle and ground line assembly lower the meter first and then lower the second anchor with the surface float line. Gently pull the second anchor to remove the slack from the ground line. Removing the slack reduces the chances the TCM will foul in the ground line. Once both anchors are on the bottom release the surface float.

13 Recovery

There are three common recovery methods:

1. If a ground line (Part B) and surface float (Part C) were used, then recovery is easy. Simply pick up the float and bring both anchors and the TCM aboard.

2. If a ground line was used (Part B) but there was no surface expression, then the ground line can be picked up with a grappling hook. Alternatively, if a diver is used, the ground line will make it much easier to find the TCM in low visibility water.

3. If no ground line was used (Part B), then the meter is typically retrieved by a diver. In very shallow water, it can be retrieved with a boat hook. Good visibility is required to be able to find the meter and anchor on the bottom.

14 Additional Information

Lowell Instruments has made a good faith effort to make sure that the information in this application note is accurate and complete. However, we are not perfect and this document may contain errors. We also reserve the right to instructions at any time and without notice.

Please contact your local distributor for support or check www.lowellinstruments.com for the most up-to-date documentation including software, manuals, FAQs, firmware updates, and application notes.

You may contact us at support@lowellinstruments.com or (US) 508-444-2616. Our physical address is:

Lowell Instruments, LLC
82 Technology Park Drive
East Falmouth, MA 02536
USA