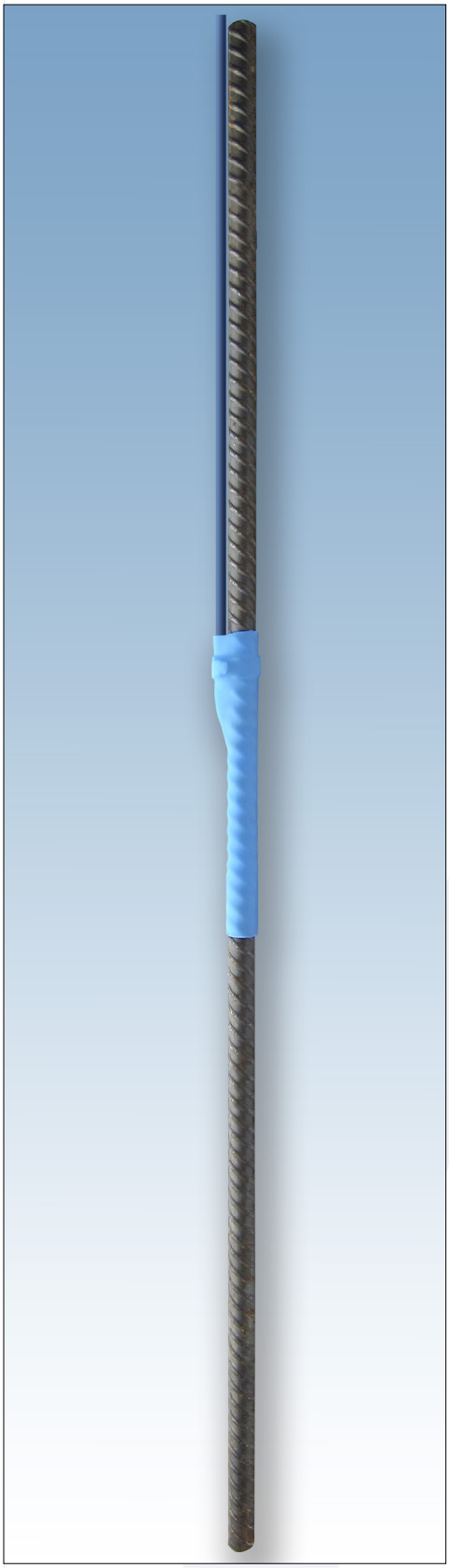
Sister Bar Strain Gauges



Applications

Sister bars are used to monitor strain in steel-reinforced concrete. Typical applications include:

- Determining the distribution of stress in bored piles.
- Monitoring the performance of slurry walls and diaphragm walls.
- Monitoring strains in slabs and footings.

Installation

Sister bars are generally tied to axial members of the rebar cage. In typical applications, sister bars are installed in pairs on opposite sides of the axial members, so that strains due to bending moments can be separated from strains due to axial loading.

Signal cables from the sister bar are carefully routed to the top of the cage. The rebar cage is then lifted, installed into the boring or trench, and concreted.

Operation

The sister bar is a vibrating wire strain gauge built into in a three-foot length of rebar. The length of the rebar ensures good contact so that so that strains in the concrete are fully transferred to the strain gauge.

Readings are obtained with a vibrating wire readout or data logger. Changes in strain are calculated by subtracting the initial reading from the current reading and multiplying by a gauge factor, which is supplied with the sister bar.

Advantages

Easy to Install: Sister bars are simply wired to the axial members of the rebar cage. No welding or protection is needed.

High Survival Rates: The durable rebar body and simple installation give sister bars high survival rates.

Reliable Performance: The 3-foot span of rebar ensures transfer of strains even if there are local cracks or mixed size aggregate in the concrete.

Predictable Response: Sister bars measure strain in the steel rebar, which has a controlled diameter and modulus.

Strain Gauge Specifications

Part Number: PG1SBSG002. Does not include signal cable. Order signal cable listed below.

Sensor Type: Vibrating wire.

Range: 3000 microstrain.

Resolution: 0.4 microstrain.

Accuracy: ± 0.25% F.S.

Temp Sensor: 3k ohm thermistor.

Temp Sensor Accuracy: ±0.5 °C.

Rebar Diameter: #5 (16 mm).

Rebar Length: 3 feet (914 mm).

Note: Resolution and accuracy depend on readout. Values assume typical readouts or dataloggers.

Signal Cable Specifications

Part Number: PG1CABTWPR01.

Shielded cable with four 22 gauge conductors in two twisted pairs, drain wire, and PU jacket. Specify cable length in feet or meters. Cable is attached at factory.