

## MODEL 4625



Model 4625 Settlement Plate

## APPLICATIONS

Settlement Systems are designed to measure the settlement of:

- Dams
- Fills and embankments
- Foundations
- Roadways
- Storage tanks
- Surcharges

## OPERATING PRINCIPLE

The Model 4625 Settlement Plate System is designed primarily as an inexpensive means for monitoring in areas where significant settlement or substantial material displacement is expected. The system consists of a base plate and a reference rod (riser pipe) equipped with necessary threaded end connections enabling the pipe sections to connect to each other, as well as attach to the plate.<sup>1</sup> Settlement plates are most commonly installed on an existing ground surface prior to the placement of an embankment, however they may also be successfully utilized in deep excavations. Settlement plates may be used alone or in conjunction with other instrumentation including piezometers, remotely-monitored settlement systems and horizontal inclinometers.

The base plate is placed on the foundation or ground surface of interest with a section of riser pipe attached. Ground elevation and the elevation of the riser pipe should be

established prior to proceeding with placement of fill. These elevations will act as baseline readings and should be surveyed to a fixed datum well outside of the embankment fill area to a known benchmark.

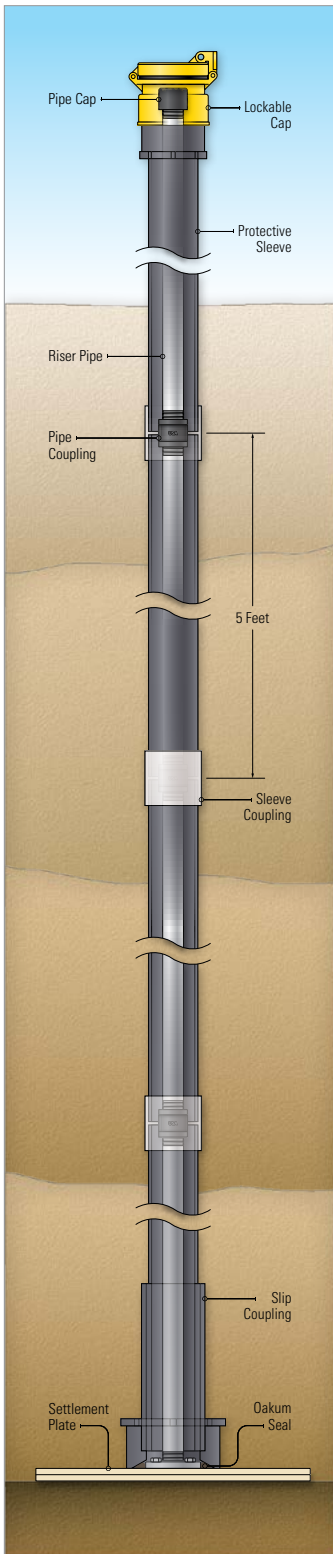
Embankment fill is then placed atop the base plate while incrementally adding sections of riser pipe until the desired elevation is reached. The elevations of the riser pipe, and of the fill, are monitored regularly throughout the duration of the placement and whenever a new section of riser pipe is added. The top of the riser pipe is then periodically surveyed after the entire embankment has been placed, as the elevation will change as the base plate settles beneath the embankment over time. As measured settlements are generally quite small, it is recommended that the surveys should be taken to the greatest accuracy obtainable under expected field conditions.

<sup>1</sup>Meets ASTM D6598 for Externally Referenced Settlement Platform.

## ADVANTAGES AND LIMITATIONS

The greatest advantages of the Model 4625 Settlement Plate System lie in the ease of installation, the minimal system components and the cost efficiency. Settlement plates are also beneficial in situations where a construction "waiting period" is imposed to allow for consolidation settlement to occur and/or to determine if work may begin in advance of the minimum waiting period time.

The greatest disadvantage of settlement plates is that they tend to be a hindrance to the filling process. Settlement plates should be clearly and adequately marked in order to protect the riser pipes from impact during the placement of fill, grading and other construction activities during the monitoring process.



Model 4625 used to monitor settlement on an existing ground surface, after the placement of an embankment. Shown with protective PVC sleeve.

## SYSTEM COMPONENTS

The primary components of the Model 4625 Settlement Plate System are the base plate, the reference rod and the couplings for the rod. The base plate is typically constructed from a 24" square, double thick, pressure treated plywood — however a steel plate may

also be used in its place. The riser pipe (5' long) and couplings (female threaded on both ends) are composed of 1.5" SCH40 Galvanized Steel for maximum durability. The riser pipe features a through-hole, which allows for the installation of a piezometer in

the ground beneath the base plate. A protective PVC sleeve can be placed around the riser pipe, to prevent downdrag forces on the riser pipe from being transmitted to the settlement plate.

## ORDERING INFORMATION

**4625:** Settlement Plate, 24" square, double thick 3/4" PT Plywood with galvanized steel floor flange.

**4625S:** Settlement Plate, 24" square, 1/4" thick steel plate with red oxide primer coating. Includes galvanized steel floor flange.

**4625-1:** Riser Pipe for above, 1 1/2" x 5' long SCH40 Galvanized Steel pipe, male threaded both ends.

**4625-2:** Coupling for above, 1 1/2" SCH40 Galvanized steel, female threaded both ends.

**4625-3:** Pipe Cap for above, 1 1/2" SCH40 Galvanized steel, female threaded.

**4625-4-1:** Adapter for attaching prisms to 1 1/2" riser pipe (1 1/2" NPT to female 5/8" x 11), stainless steel.

**4625-4-2:** Adapter for attaching prisms to 1 1/2" riser pipe (1 1/2" NPT to female 5/8" x 11), galvanized steel.

**4625-5-10:** Protective SCH40 PVC sleeve, 3.5" O.D., 10' length.

**4625-5-5:** Protective SCH40 PVC sleeve, 3.5" O.D., 5' length.

**4625-5C:** Coupling, for Protective PVC sleeve, 4" O.D.

**4625-5SPA:** Slip Coupling, for Protective PVC sleeve, 9" range.

**4625-5WC:** Locking Cap, for Protective PVC sleeve, includes padlock and reduction adapter.

**4625-6:** Oakum (oil treated Jute), three 27" strands.



Model 4625-5WC Locking Cap for Protective Sleeve



Model 4625-5SPA Slip Coupling for Protective sleeve