

## Where is the Lang Penetrometer Used?

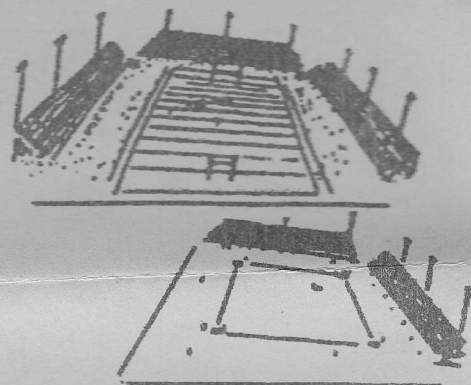
Golf Courses: Greens, Tees, Fairways, Cart Paths

Athletic Fields and Race Tracks

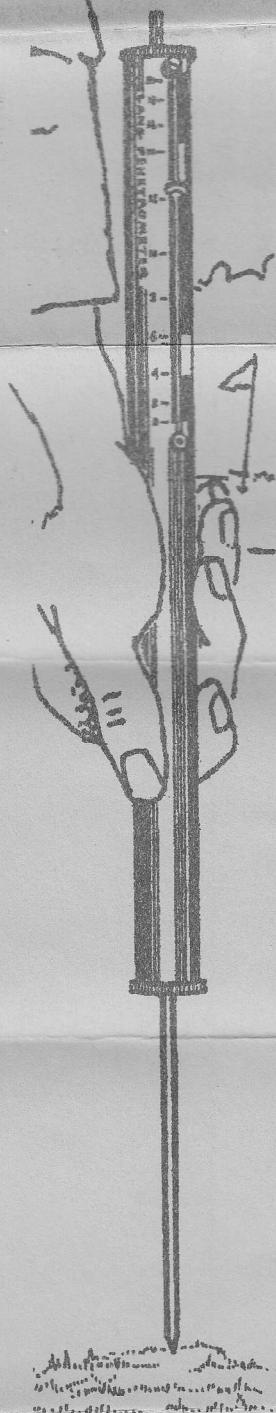
Lawn Care Service, Landscaping Services and Nurseries

Forestry and Conservation

Equestrian Services



### SOIL COMPACTION METER



## DESCRIPTIONS AND INSTRUCTIONS FOR USE

Take the guess work out of testing your soil compaction. Rather than use a pocket knife, screwdriver or other crude instruments, use a Lang Penetrometer™. The Lang Penetrometer will show exact compaction from one area to another with complete accuracy and reproducibility.

This penetrometer is designed to give you calibrated compaction scale. Use the Lang Penetrometer frequently on putting greens, tees, fairways and other athletic areas to determine when to aerify or irrigate to soften the soil.

Example: If your scale reading varies greatly from one area to another within a designated space, then this would indicate the need for aerification and water, or you might choose to renovate by changing the soil construction by adding amendments such as a top dressing mix of sand and peat moss, then aerating vigorously to blend. Use the Lang Penetrometer in extreme wet weather to keep traffic off the turf to avoid unnecessary damage. The Lang Penetrometer is designed with a color code and calibrated scale. Blue is too wet, or too soft, yellow is marginal, green is acceptable, and red is hard or dry. The scale reads from one to twenty. Golf greens will hold a golf shot best at nine to fourteen. Every athletic area supervisor must determine his standards and use the penetrometer whenever necessary to duplicate this degree.

Over the years, we have modified the Lang Penetrometer to better suit the needs of our customers. Recent comments and request by our customers have prompted the following changes to the latest version of our "Green Penetrometer".

Penetrometers shipped with this document have the following new characteristics:

1. We have made the Lang Penetrometer more robust by increasing the size of all screws to 5/40.
2. We have modified the scale to increase accuracy by providing half tick marks.
3. We have increased the corrosion resistance by modifying material specifications.
4. We have increased the accuracy by instituting a new quality control procedure for the spring component. (Given a 13.94 pound weight, the penetrometers are guaranteed to read between 9 3/4 and 10 3/4 (5%) when properly calibrated. We also test at the 7.95 pound and the 18.94 pound points to cover the range from 4 to 14. The penetrometer values are linear throughout the range 2-20. Below 2, pre-tension adjustment due to calibration may affect linearity.
5. A Technical Data Sheet is available on this web site or sent with the new version to provide resistance to penetration data. The values on the Technical Data sheet may vary slightly from the older documentation shipped with the previous versions of the "Green Penetrometer." This is due to the revised quality control method, calibration and operation procedures.

### Instructions for using the Lang Penetrometer:

1. Hold the Penetrometer with the scale facing you and the needle pointed straight down,
2. Turn the knurled calibrator left or right until the top edge of the allen set screw is lined with the top edge of the zero tick mark.
3. Slide the white marker down to the top of the allen screw.
4. Press penetrometer into the ground until the knurled calibrator is flush with the ground surface.
5. Remove penetrometer from the ground and point the needle straight up.
6. Read the scale value from top of marker.

**CAUTION:** Keep out of reach of children. The needle of the Lang Penetrometer can cause stabbing injury or death. Use proper precautions for sharp objects. This product should not be used for any purpose other than described above. Properly calibrate before each use.

For further information or questions, visit us at our website: [www.langpenetrometer.com](http://www.langpenetrometer.com) or contact:

James D. (Boots) Lang

17728 Old Ft. Morgan Trail

Gulf Shores, AL 36542

Phone/Fax (251) 968-7266

Email: [jdlang@gulftel.com](mailto:jdlang@gulftel.com)

Allan D. Lang

Materials Engineer

Email: [info@langpenetrometer.com](mailto:info@langpenetrometer.com)

©1987 James D. Lang

Made in the U.S.A.

© 1987



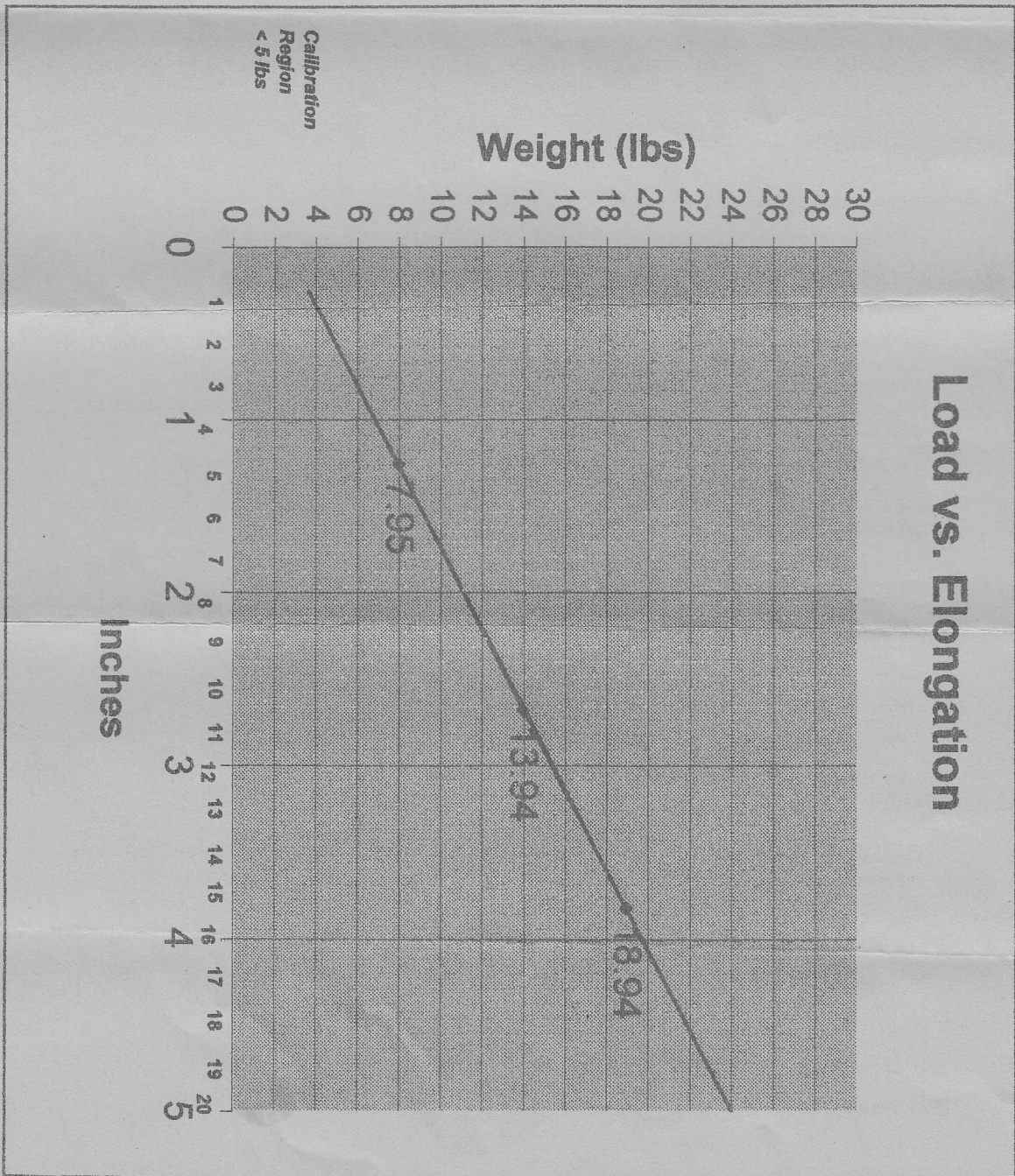
**Lang Penetrometer**  
 17728 Old Ft. Morgan Trail  
 Gulf Shores, AL 36542  
 Phone/Fax (251) 968-7266  
 Email: jdlang@gulfel.com

**Technical Data Sheet**

**Load vs. Elongation**

Scale #	Inches	Weight (lbs)
5.05	1.26	7.95
10.72	2.68	13.94
15.27	3.82	18.94

Scale #	Force-Pounds (lb)	Comments
1	3.57	non-linear
2	4.64	Begin linear range
3	5.72	
4	6.79	
5	7.86	5.05 is Lower QC Point
6	8.94	
7	10.01	10.72 is Middle QC Point
8	11.09	
9	12.16	
10	13.24	
11	14.31	10.72 is Middle QC Point
12	15.39	
13	16.46	
14	17.54	15.27 is Upper QC Point
15	18.61	
16	19.68	Linear Data
17	20.76	
18	21.83	
19	22.91	
20	23.98	



**Note:** Linear elastic range extends well beyond the upper range of penetrometer scale. To obtain PSI, divide Force-Pounds (lb) by 0.276 sq. in.