Experiment no 9 Plate Load Test

OBJECTIVE

To determine theallowable bearing capacity of soil.

APPARATUS USED

Bearing plates: Circular or square mild plates of 25 mm thicknesswith chequered bottom

Size: 30,45,60,75,100 cm (or square plates)

30,75 cm diameter (for circular plates)

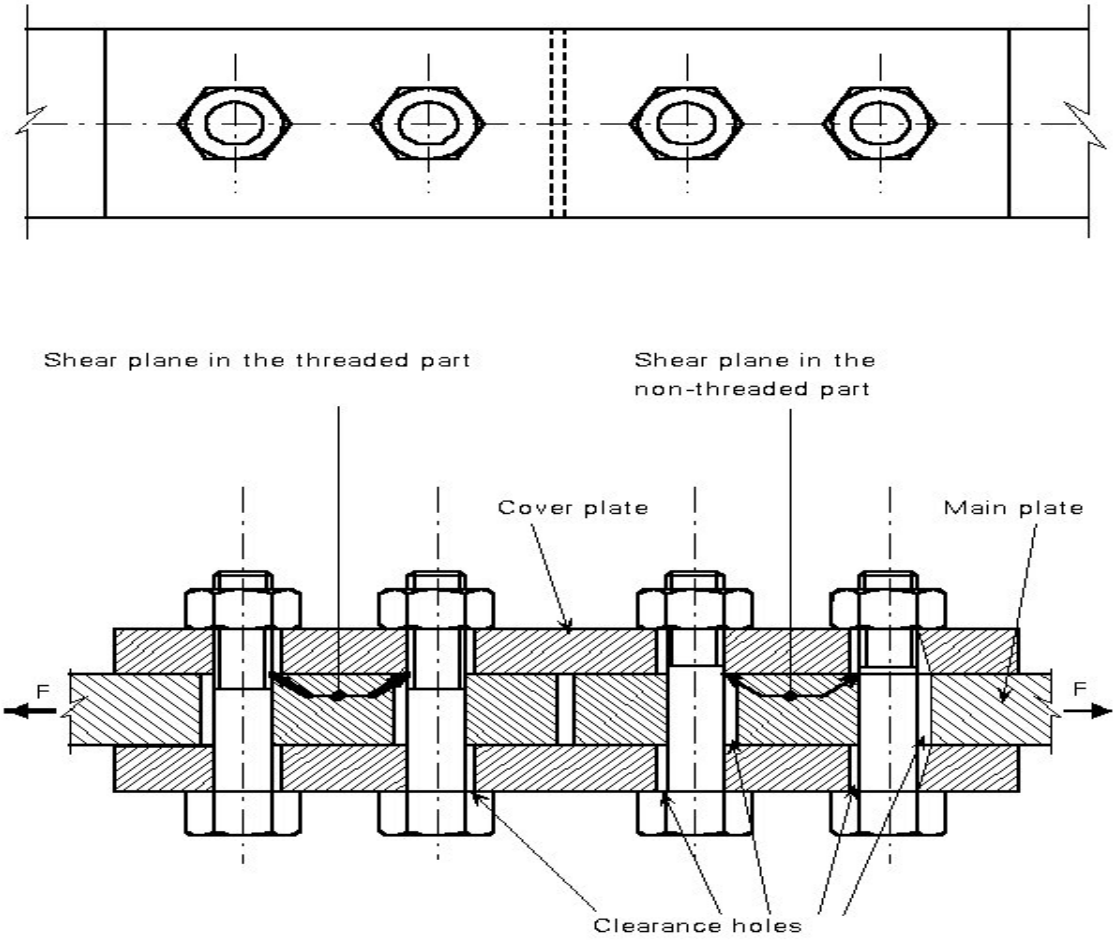


Figure 1 Typical bolted connection with cover plates.

Dial Gauge: Dial Gauges with 25 mm/50 mm travel, having 0.01 mm least count.

Magnetic base: For holding dial gauges (3 to 4 nos.)

Datum bar: An iron rod about 1-1.5 m long to be fitted on two separate supports.

Wooden blocks, collar, Hydraulic jack, stop watch, spirit level, plumb and

PROCEDURE

Test Arrangements

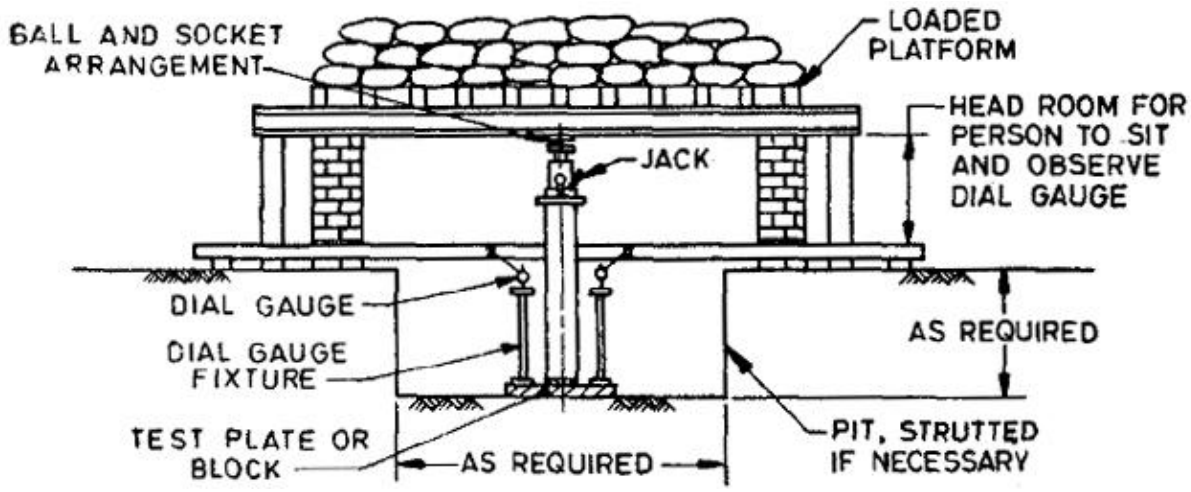
Foundation Pit shall be excavated up to a level of a foundation of building or other structure, to be constructed.

Test plate of given size shall be placed on the prepared sub-base with provisions of 02 dial gauges to note the settlements with least accuracy count of 0.01 mm.

Bearing plate is placed on the test plate over which hydraulic jack is located.

Another bearing plate is placed over hydraulic jack which act as load transferring media.

Further, the system is loaded with point load pattern so that the net load in punching is applied on to the plate without any eccentricity. Point load can be a loaded excavator or loaded lorry or Kent ledgesystem,.etc.



Loading Criterion

Load is increased in increments of 25% of the ultimate load carrying until it reaches the ultimate load intensity (ultimate load intensity is either given or assumed) or the total settlement of the plate is 25 mm or the soil under the plate fails whichever occurs earlier.

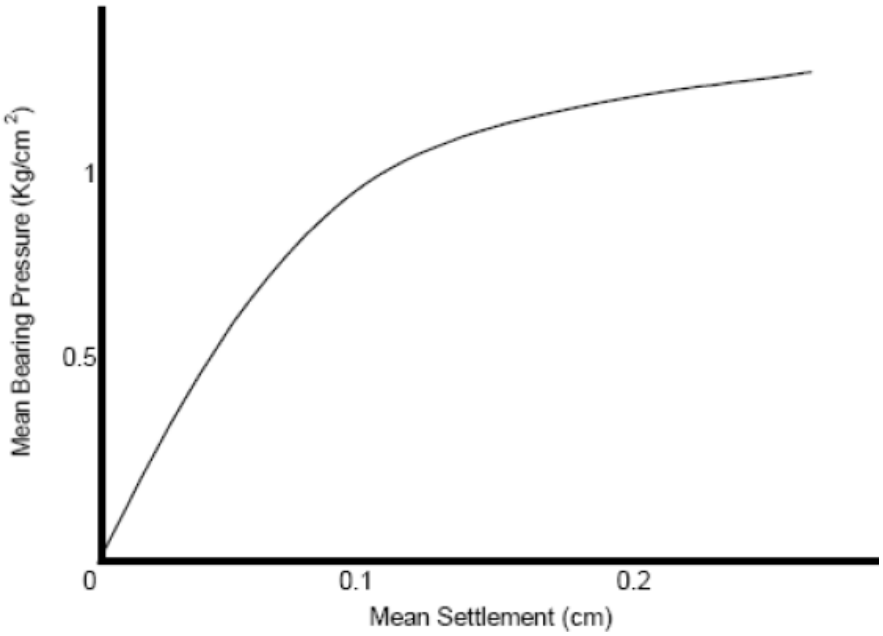
Settlements of the plate is recorded by dial gauges of minimum accuracy of 0.01 mm fixed at diametrically opposite ends

Unloading to check Rebound

Entire load is removed quickly but gradually and the plate is allowed to rebound when no further rebound occurs or the rate of rebound becomes negligible the reading of the dial gauges are again noted.

OBSERVATIONS AND CALCULATIONS

A load settlement curve is plotted.The bearing capacity settlement of the foundation are determined by the load-settlement curve shown below



Calculate the final settlement corresponding to each loading intensity by taking average of the settlement of all the 3-4 final dial gauge reading.

PRECAUTIONS

1)Record the dead loads of all the equipment's used e.g. ball and socket,steel plate, loading column,jack etc., and add the same to each load increment.

2)The loading should be increased gently and without jerks.

3)The test plate should be placed in perfect centre of the reaction girder.

4)Get the soil excavated below the test plate equal to twice the dimensions of the plate after performing the test and dismantling the test apparatus.

REFERENCES

1) IS: 1888-1982-Method of Load Tests on Soil

QUIZ

1) Why there is a need of Plate load test?

2) How Plate load test is better than SPT and CPT methods?

3) What is the difference between Ultimate bearing capacity and safe bearing capacity?