

**CONDUCTING PLATE LOAD TEST FOR K - VALUE (MODULUS OF  
SUBGRADE REACTION) ON PREPARED SUBGRADE WITH  
ENGINEERING FILL AT INDOSPACE LOGISTIC PARK AT UNIT  
TYPE-B400 WAREHOUSE AT, VILLAGE CHAMARU, RAJPURA,  
PUNJAB**

**1.0 INTRODUCTION**

- 1.1 Ishanvi Industrial & Logistics Park Private Limited , Village Chamaru And Mehtabgarh, Indospace, GT Road, Patiala, Rajpura, Punjab - 140 401 are in the process of constructing Warehouse building at B-400 at Village Mehtabgarh, Rajpura, Punjab.
- 1.2 To design the flooring, Modulus of subgrade reaction (K - value) is required. For this purpose, K-values tests (Plate Load Tests) had been undertaken at four locations on the base of the flooring at the proposed site.
- 1.3 This report contains the results and analysis of the tests carried out at various locations at site.
- 1.4 These tests have been carried out as per authorization of the authorized signatory Ishanvi Industrial & Logistics Park Private Limited, vide their letter II&PPL/2023/Softcos2/53 “Architectural & Design Engineering Services”

**2.0 THE SITE**



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2.1 The site for the proposed project is located at Indospace logistic park, Vividha Industrial state, Quark City, near village Chamaru, Rajpura, Punjab and is situated at a distance of about 3.5km from Rajpura towards Ambala, on National Highway (NH44).

2.2 All the four tests have been conducted at block B400.

2.3 Earth filling and compaction work had been observed to be under progress, during the period of field investigations.

2.4 A schematic site plan showing the locations of the tests is enclosed in this report (fig.1a).

2.5 Photographs showing the Plate Load Test under progress had been shown in fig. 1b.

## 2.6 Seismic Zone

2.6.1 The present site is located in the Seismic Zone IV which is an area of high seismic activity and earthquake intensity, as per the seismic zoning map of India given in BIS code IS:1893 (Part1)-2016.

## 3.0 OBJECT OF INVESTIGATIONS

3.1 To determine modulus of subgrade reaction (K-value) to be used to design the flooring.

## 4.0 SCOPE OF INVESTIGATIONS

4.1 The scope of investigations as stipulated by the client consists of :

- a) Conducting modulus of subgrade reaction (K-value) test by using 30 x 30cm plate at four locations.
- b) Preparation and submission of a technical report in three copies containing the details of the tests carried out along with the results.

## 5.0 FIELD INVESTIGATIONS

### 5.1 Preliminary Details

5.1.1 Field investigations had been carried on 17<sup>th</sup> May 2023 & 18<sup>th</sup> May 2023.



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## 5.2 K- Value Tests (Modulus of Subgrade Reaction)

- 5.2.1 K-value tests PLT1 to PLT4 had been conducted at the locations as shown in the fig. 1a of this report.
- 5.2.2 The plate load tests were conducted on the made up surface (prepared by the client).
- 5.2.3 The size of the plate used for the test was 30x30cm.
- 5.2.4 The load on the plate was applied using the method of reaction loading by jacking against a heavy vehicle (Compactor roller).
- 5.2.5 Dial gauges resting on two diagonal points near the edge of the plate and supported by magnetic stands fixed on datum bars, had been used for recording the settlements of the plate.
- 5.2.6 After the above set up had been arranged, the initial readings of the dial gauges had been noted and the first increment of the static load had been applied. This load had been maintained constant for a period till no further settlement occurred or the rate of settlement became negligible. The readings of the dial gauges had been noted down. The next higher stage load had then been applied and the above procedure had been continued till the maximum specified settlement or loading intensity had been reached.

## 6.0 RESULTS & ANALYSIS

### 6.1 K-value Tests (Modulus of Subgrade reaction test)

- 6.1.1 The results of these tests have been plotted in the form of load vs settlement curve (figs. 2a to 2d).
- 6.1.2 The modulus of subgrade reaction (K value) for the square plate of 30 x 30cm size have been shown in the figs 2a to 2d. The same has been determined as per the guidelines of BIS code IS 9214 - 1979.



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6.1.3 The modulus of subgrade reaction (K-value) for 30cm square plate as determined from the results of K-value test is given below. The modulus of subgrade reaction ( K-values) for 75 x 75cm plate size determined based on the relationship given in figure no. 5.1 of Concrete Society report TR -34, 2003 are also given below.

| Test No. | Building No.      | K-value (kg/cm <sup>3</sup> ) |            | K-value (N/mm <sup>3</sup> ) |
|----------|-------------------|-------------------------------|------------|------------------------------|
|          |                   | 30 x 30cm plate               | 75cm plate | 75cm plate                   |
| 1        | Grid: C / 3-4     | 15.2                          | 7.6        | 0.076                        |
| 2        | Grid: L / 1-2     | 22.4                          | 11.2       | 0.112                        |
| 3        | Grid: L-M / 15-16 | 23.2                          | 11.6       | 116                          |
| 4        | Grid: E-F / 20-21 | 23.2                          | 11.6       | 0.116                        |

## 6.2 List of IS Codes

A list of IS Codes referred for providing the recommendations and that which might be required to implement the same is also enclosed in this report.

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## LIST OF IS CODES

### Field Investigation

1. IS 1888 : Method of load test on soils
2. IS 9214 : Method of determination of modulus of sub grade Reaction (K value) of soils in field

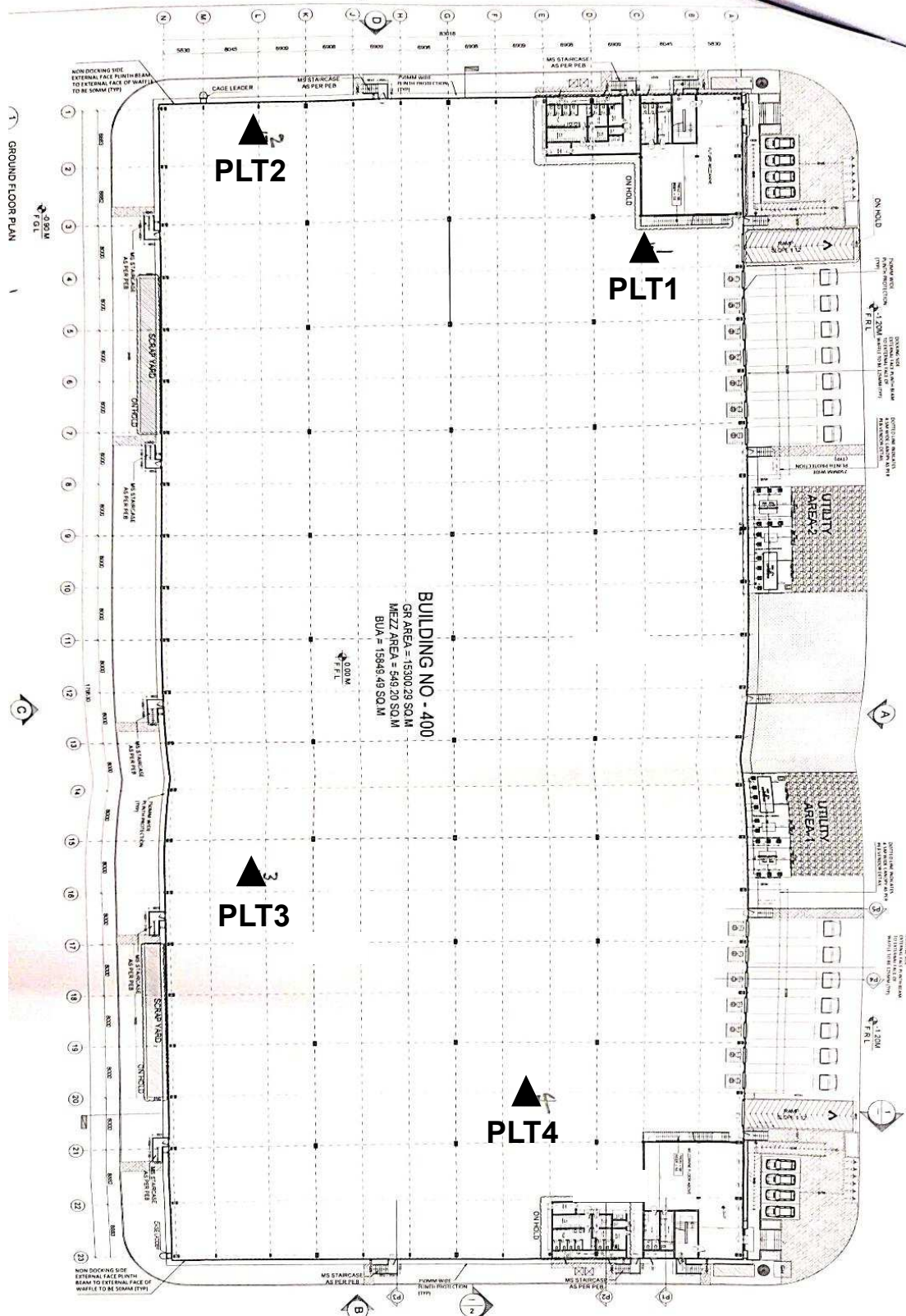


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SCHEMATIC SITE PLAN



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# **PHOTOGRAPHS SHOWING PLATE LOAD TEST UNDER PROGRESS**

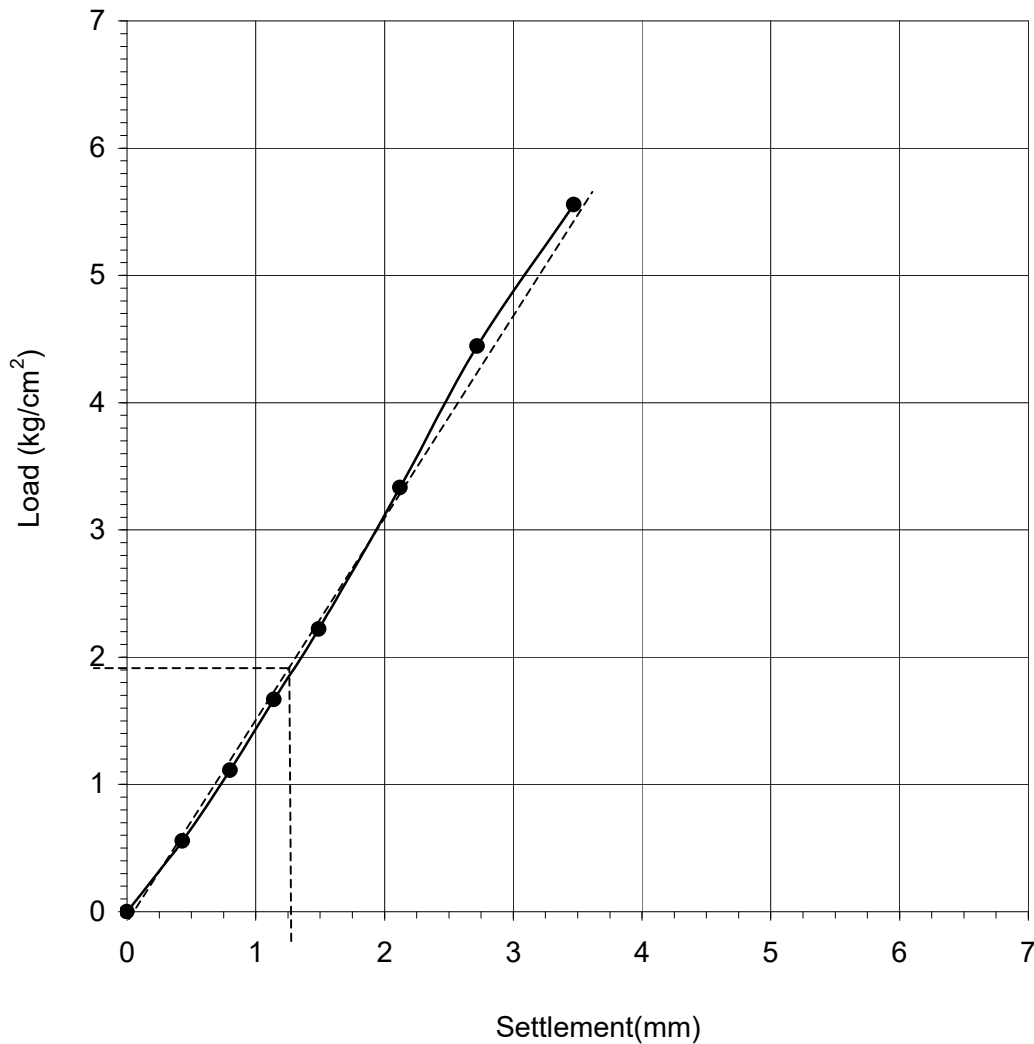


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Sheet No. : 1b



Modulus of Subgrade Reaction (K-value) =  $15.2 \text{ kg/cm}^3$

Size of the Plate : 30 x 30cm  
 Final Loading Intensity :  $5.55 \text{ kg/cm}^2$   
 Corresponding settlement : 3.47 mm

**K- Value Test Curve : PLT1**

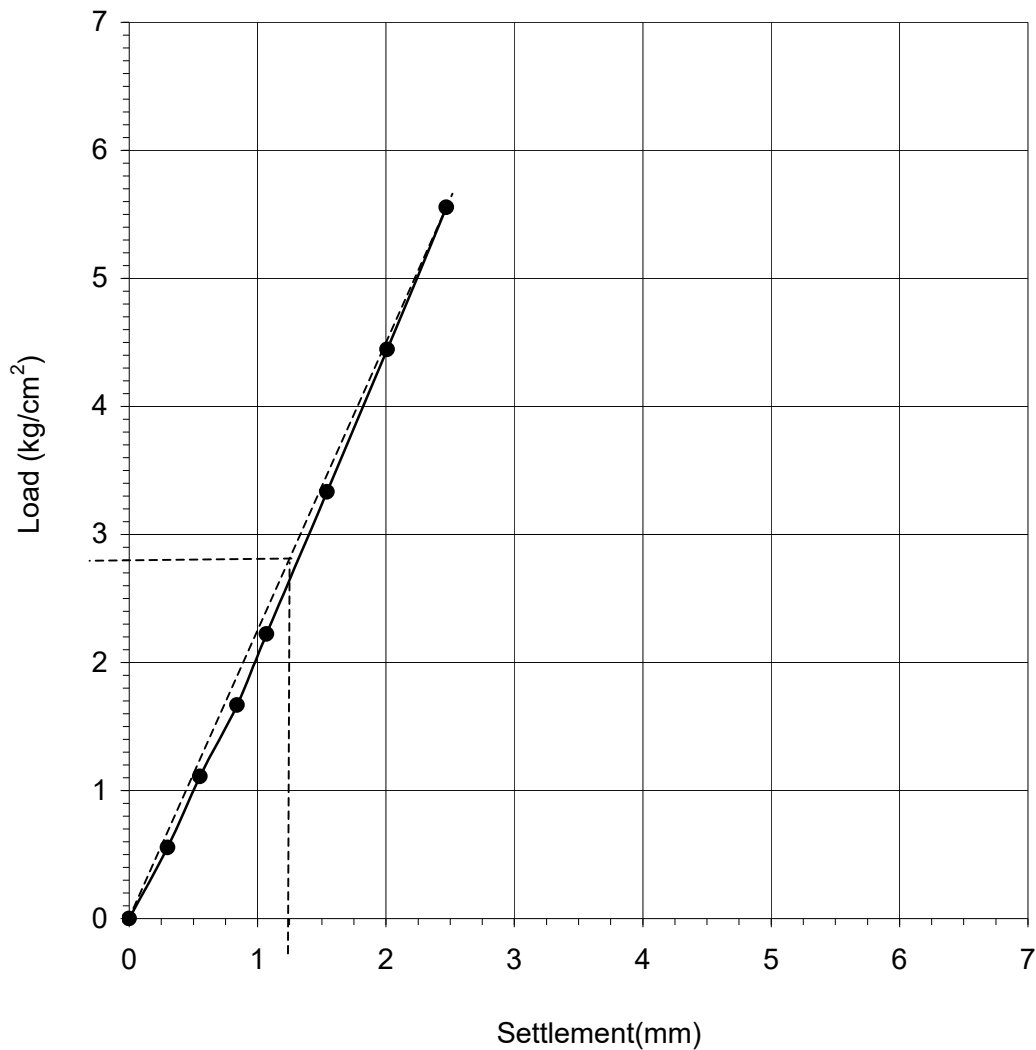


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Sheet No. : 2a



Modulus of Subgrade Reaction (K-value) =  $22.4 \text{ kg/cm}^3$

Size of the Plate : 30 x 30cm  
 Final Loading Intensity :  $5.55 \text{ kg/cm}^2$   
 Corresponding settlement : 2.47 mm

**K- Value Test Curve : PLT2**

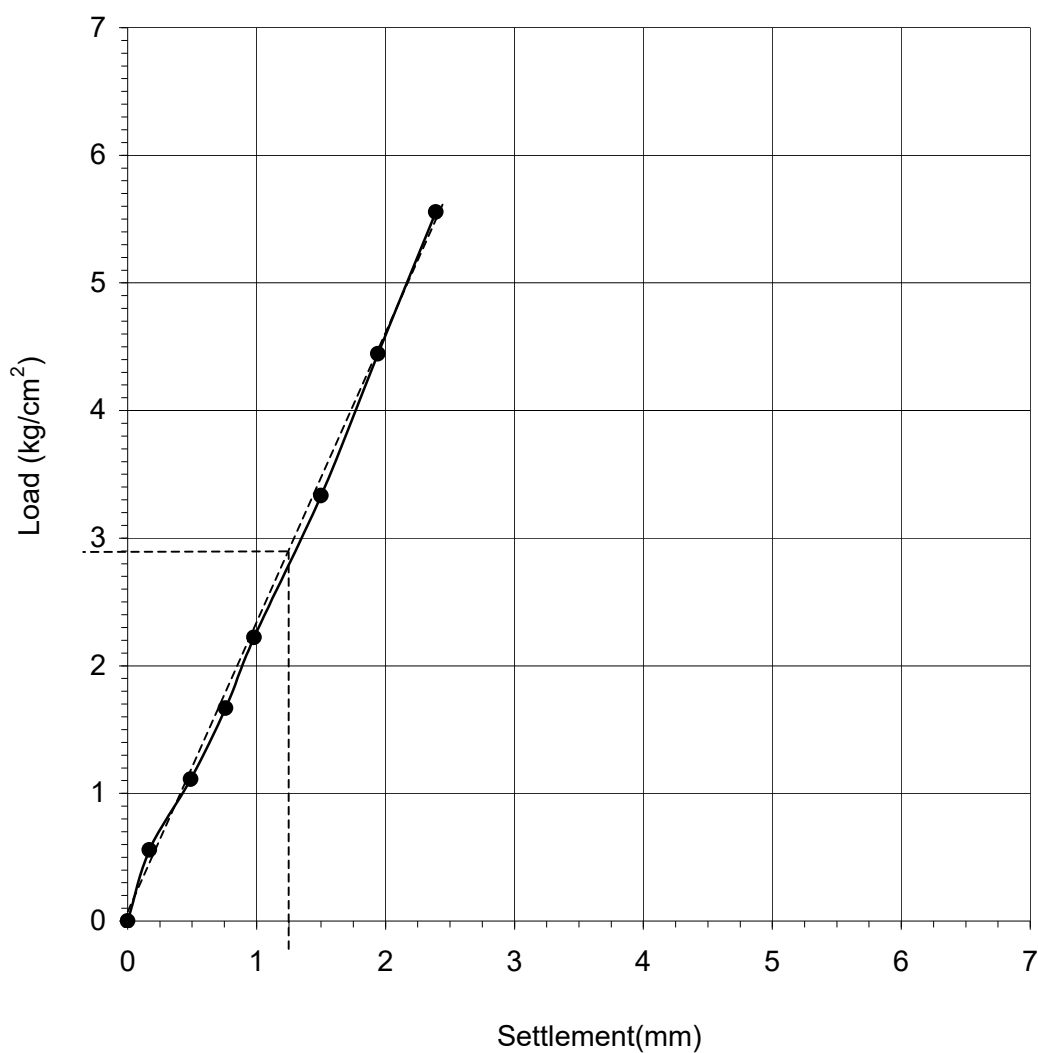


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Modulus of Subgrade Reaction (K-value)=  $23.2 \text{ kg/cm}^3$

Size of the Plate : 30 x 30cm  
 Final Loading Intensity :  $5.55 \text{ kg/cm}^2$   
 Corresponding settlement : 2.39 mm

**K- Value Test Curve : PLT3**

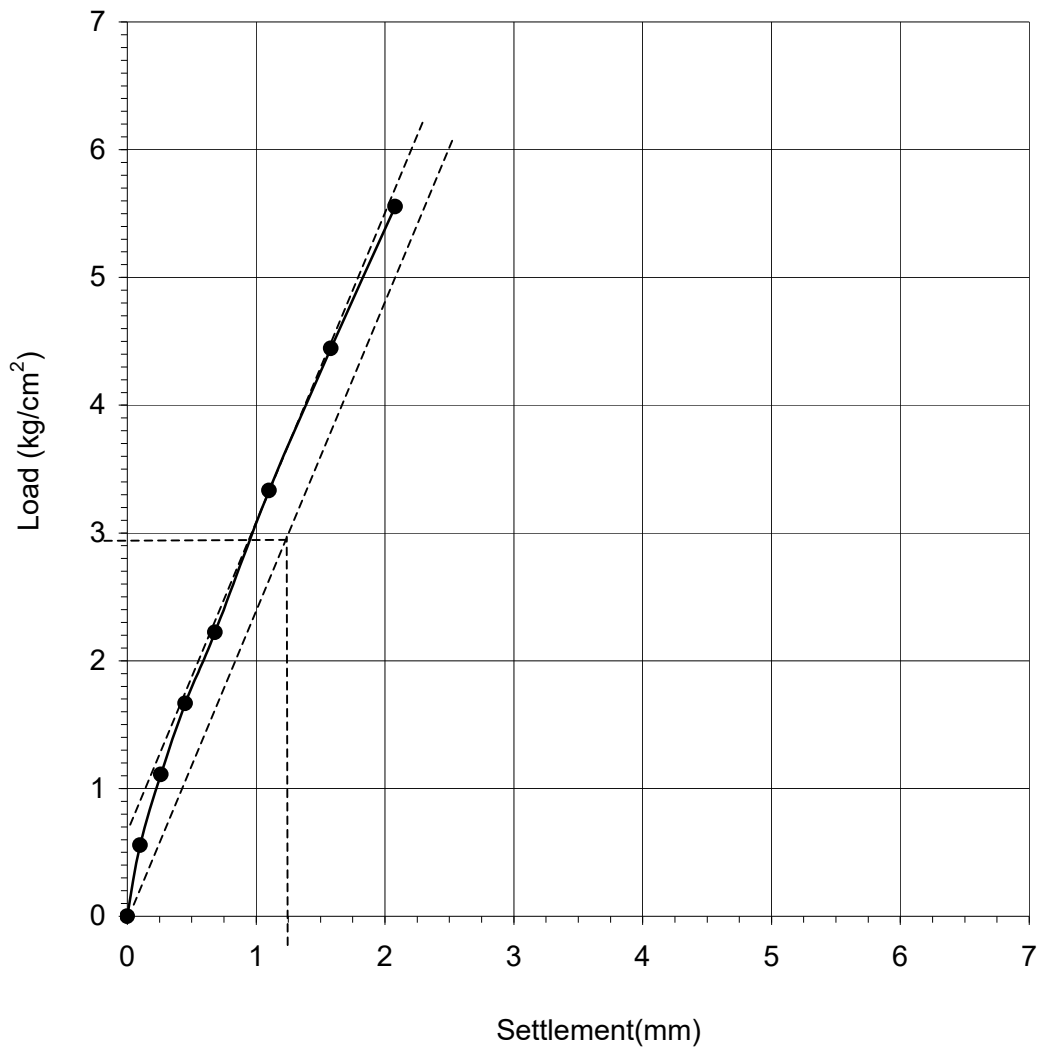


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Modulus of Subgrade Reaction (K-value)=  $23.2 \text{ kg/cm}^3$

Size of the Plate : 30 x 30cm  
 Final Loading Intensity :  $5.55 \text{ kg/cm}^2$   
 Corresponding settlement : 2.08 mm

**K- Value Test Curve : PLT4**



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