

4. Development of a general soil testing equipment.

Project co-ordinator- Dr. K.K. Tripathi (COEP)

Introduction:

Evaluation of bearing capacity is a major concern for geotechnical engineers. The bearing capacity is an important aspect for selection of types of foundation. The proposed instrument is designed to carry out many geotechnical tests which may be required for bearing capacity evaluation. In the proposed setup both strain controlled tests (such as large box and small box direct shear test, unconfined compression test) as well as stress controlled tests (such as small scale plate load test consolidation test, stress controlled direct shear test) can be carried out. This setup can be also used for tensile strength testing of geosynthetic materials.

Requirements:

- Soil testing, tensile strength of geo synthetic materials.
- Plate Load Test (PLT).
- Space required: $1.6\text{m} \times 0.6\text{m} = 0.96\text{m}^2$.
- Further research is possible for small particle size as it has only 4 ton capacity.
- Cost: 1.5 lakhs approx. (1 lakh manufacturing + 0.5 lakh miscellaneous.)

Approved
P. K. Kulkarni

24/10/12

DIC MEETING

Vicky Sardar

Wed 26-10-2016 17:15

To: kkt.civil@coep.ac.in <kkt.civil@coep.ac.in>

Respected Sir,

Your product proposal has been approved. [A meeting is arranged tomorrow 12.30 pm, Production Department at Rajhans Madam's cabin to discuss about the course of action on the approved proposals.](#) Please be there if it is feasible with your schedule or else kindly send your representative.

Regards,

V.B. Sardar

Research Associate

Design Innovation Centre

9860831581

No. COEP/PEIM/DIC/2017/



COLLEGE OF ENGINEERING, PUNE

(An Autonomous Institute of Govt. of Maharashtra)
Wellesly Road, Shivajinagar, Pune 411 005

Submitted herewith are bills/vouchers duly certified for payment to - **RUSHIKESH ENGINEERING WORKS**

Date: 3/1/2018

1	COEP Project Number :	PE/2015/IITB/NRR/156
2	Project Title :	DESIGN INOVATION CENTRE
3	Project In-charge/Principal Investigator :	Dr. N.R. Rajhans
4	Funding Agency /Grant	IIT BOMBAY
5	Project period :	From- January 2015 to January 2019
6	Project total Sanctioned Amount:	Rs. 47,50,000
7	Total if amounts released till date:	Rs. 47,50,000
8	Cumulative Expenditure till submission of this expenditure :	Rs. 12,58,177/-

Details of expenditure to be done from the project :

Sr. no.	Bill No-	Name of the Party	Description/Item	Amount Rs /-	Budgeted head of Expenditure *
1	897	RUSHIKESH ENGINEERING WORKS	WORK ORDER FOR FABRICATION WORK OF GENERAL BEARING CAPACITY SOIL TESTING EQUIPMENT	1,42,500	WORK ORDER
TOTAL				1,42,500	

Payment from separate Project Bank account No. :

OR from R & D Account no. **30465455638**

Forwarded to Accounts Section:

Name: Dr. N.R. Rajhans
(Project In-charge), Contact No. 7284

Signature: [Signature] Date: 3/1/2018

Name: Dr. S.S. Bhosale
(Head of the Dept.) [Signature] 05/01/18

Signature: _____ Date: _____

Name: Dean R & D (D.W. Pande)

Signature: [Signature] Date: 05/01/18

dc
Kamila T. Patil
05/01/2018

o/c
[Signature]
5/1/18

Project Proposal for DIC

Title: “Development of Portable Soil Boring System”

Origin of the research problem: Soil boring is an important task for the proper geotechnical investigation work. The current boring system is very complex, and thus is operated only by skilled labors. The available space for various operations [such as Standard Penetration Test, sample removal from boring] is less, due to which these operations become difficult. Thus, currently boring is done only by special soil testing contractors and at a very high cost. Hence, most of the time, boring is avoided, unless project is very important. The current boring system (available in market) can carry out boring operations even up to 100m or greater. Whereas, for shallow foundations (generally applicable for most of the minor projects), generally boring up to 20m is sufficient.

Hence, there is a need to simplify the boring operation, so that it can be done quickly and easily, especially for the cases, where, limited depth of boring is sufficient ($< 20\text{m}$). Hence the objective of the project is to develop a new portable boring setup so that boring operations can be done easily and at a low cost.

Literature Research and Research gaps: Currently, Calyx bore drilling machine, a type of rotary drilling machine (Bowles 1997) is most popular because of low cost, see Fig. 1(a). However, in case of Calyx bore drilling machine, it can be observed that, due to limited space available near boring point, it is very difficult to add the next segment of boring pipe and also difficult to carry out SPT (Standard Penetration Test) in the borehole, as shown in Fig. 1(b). Other machines, such as based on hydraulics principle, are also being used for bigger projects and when drilling depth is large and required boring rate is high [see Fig. 2(a) and 2(b)]. However, these machines have high cost, heavy setup, and require very skilled labor to operate.

References:

1. Foundation analysis and design (Vth edition), By J. E. Bowles, Mc GrawHill(1996)
2. www.heicoin.com

Principal Investigators:

Principal Investigator

Dr. Kamallesh Kumar Tripathi,
Assistant Professor,
Civil Engineering, COEP

Student working in this project

Mr. Aditya P. Kapare
Ph.D. Scholar
Civil Engineering, COEP

Approved
B. K. Chakravarty

B. K. Chakravarty
Professor
Industrial Design Centre
Indian Institute of Technology Bombay
Powai, Mumbai - 400 076.

Fw: NEW PROJECT PROPOSALS 2018-19 UNDER DIC

DIC

Wed 17-10-2018 14:08

To:Vaishali Ingale <vvi.extc@coep.ac.in>; Meera Khandekar <mgj.instru@coep.ac.in>; kkt.civil@coep.ac.in <kkt.civil@coep.ac.in>;

Cc:nrr.prod@coep.ac.in <nrr.prod@coep.ac.in>;

2 attachments (1 MB)

AB12CLPECGD_APPROVAL.pdf; DPSBS_APPROVAL.pdf;

PFA. Your project has been approved by IDC. You can start working on it.

Thanks and Regards



